LETTER OF NOTIFICATION FOR

The Dayton Power and Light Company d/b/a AES Ohio

Madison 345 kV Substation Project
PUCO Case No. 22-1079-EL-BLN

Submitted to:

The Ohio Power Siting Board

Pursuant to OAC 4906-06

Submitted by:

AES Ohio

December 2022

TABLE OF CONTENTS

ATTACHMENTS

Letter of Notification

This Letter of Notification has been prepared on behalf of The Dayton Power and Light Company d/b/a AES Ohio ("AES Ohio") in accordance with Ohio Administrative Code (OAC) Section 4906-6-05 for the review of Accelerated Certificate Applications for the Madison 345kV Project ("the Project"). The following section corresponds to the administrative code sections for the requirements of a Letter of Notification.

4906-6-05(B) GENERAL INFORMATION

4906-6-05(B)(1) Project Description

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

Name of Project:

Madison 345 kV Substation Project

Reference Numbers:

PUCO Filing Number:	The Project has been assigned Public Utilities Commission of Ohio (PUCO) Case Number 22-1079-EL-BLN.
Circuit Reference:	This project is associated with the Madison-Beatty 345kV circuit and the Madison-Greene 345kV circuit. These are new circuits formed by tapping an existing 345 kV circuit and Madison-S. Charleston 69kV circuit.

Brief Description of the Project:

AES Ohio is proposing the construction of the new electric transmission, Madison 345 kilovolt ("kV") Substation ("the Project"), located south of South Charleston, in Madison Township, within Clark County, Ohio. The proposed Project involves the construction of the new 345/69kV substation of approximately 7 acres, located on South Charleston Pike (SR-41). The Project will tap into the existing Greene-Beatty 345kV transmission line and will install eight 345kV breakers arranged in a breaker-and-one-half configuration, three 69kV breakers also arranged in a ring bus, a 345/69kV transformer and associated equipment. The proposed Project is located entirely on AES Ohio-owned property.

Project "Madison 345kV Substation Project", Case Number 21-1237-EL-BLN, was previously reviewed by the Ohio Power Siting Board and recommended for automatic approval effective May 3, 2022 in an April 26, 2022 report. The previous project has been expanded by adding an additional five 345kV circuit breakers (from three in 21-1237-EL-BLN to eight in this proposed Project).

This PJM supplemental number is s0322. The project was included in AES Ohio's 2022 LTFR on Form FE-T10, page 127. The additional 345kV scope included in this new filing is submitted to PJM and will be presented to the Transmission Expansion Advisory

Committee (TEAC) on December 6, 2022. AES Ohio will provide OPSB Staff any new supplemental project numbers if PJM elects to issue new supplemental numbers associated with the expansion presented at TEAC.

Letter of Notification Requirement:

This Project qualifies as a Letter of Notification (LON) filing because it meets the requirements of OAC 4906-1-01, Appendix A, items (1)(b) and (3), *Application Requirement Matrix for Electric Power Transmission Lines*:

1. *New construction, extension, or relocation of single or multiple circuit electric power transmission line(s), or upgrading existing transmission or distribution line(s) for operation at a higher transmission voltage, as follows:*
    b. *Line(s) greater than 0.2 miles in length but not greater than two miles in length.*

3. *Constructing a new electric power transmission substation.*

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

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

This Project will tap into the existing Greene-Beatty 345 kV line and inject a source via the new Madison Substation almost directly in line with the existing 345 kV line. Providing a new 345 kV source and associated 69 kV outlets via the Madison Substation into the area will significantly reduce exposure to long duration outages for radially fed substations at Cedarville, Jeffersonville, and South Charleston to enhance reliability of service. The Project will also support the addition of a proposed new 345kV double circuit line to be built in response to increased load growth due to economic activity in the Jeffersonville area. In addition, this Project will help provide operational flexibility to the area by providing looped feeds which will allow AES Ohio to take maintenance related outages on existing equipment once this project is complete.

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

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

The project is located on South Charleston Pike (SR-41), south of South Charleston, in Madison Township, within Clark County, Ohio. The coordinates of the Project are approximately 39.779132, -83.617166. The location of the Project is depicted in Attachment A – Figures. Figure 1 shows the general project vicinity depicted on a USGS quadrangle topographic map. Figure 2 depicts the planned substation location and 345 kV ring bus location compared to existing transmission lines in the Project vicinity and additional details depicted on an aerial imagery map.

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

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

The proposed Project will occur entirely on AES Ohio-owned property. Therefore, no additional alternatives were considered since the proposed Project represents the alternative with the least impacts. The socioeconomic, ecological, and land use assessments are further discussed in Section 4906-6-05(B)(10).

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

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

The proposed new substation will be built entirely on AES Ohio-owned property. Landowners with property adjacent to the Project area will be sent a letter by AES Ohio providing information about the proposed facility and timeframe for the construction and restoration activities. Information on the ongoing status of this Project, how to request a copy of the LON, and other AES Ohio transmission projects can be found at the following website: https://www.aes-ohio.com/transmission-improvements. A copy of the LON will be provided to the chief executive officer of the county and township and the head of relevant public agencies whose duties include environmental protection or land use planning in the area where the Project is located. A copy of the LON will also be provided to the Clark County Public Library Houston Branch.

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

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

Construction activities associated with the construction of the Project is tentatively planned to begin April 1, 2023 and anticipated to be completed by April 30, 2024.

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

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

Attachment A – Figures depicts the general location of the Project. Figure 1 shows the general Project vicinity depicted on a USGS quadrangle topographic map. Figure 2 shows the planned transmission line location and additional details depicted on an aerial imagery map.

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

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

The proposed Madison Substation will be constructed on an approximately 7-acre portion of a 16.1-acre property owned by AES Ohio (Parcel ID 1601605723000044). The Project is located

within existing AES Ohio property, right-of-way, and a private easement needed for the installation of detention basin outfall pipes. This easement will be obtained from the adjacent property owner to the north (Parcel ID: 1601605723000045, MATTINSON WILLIAM E TRUSTEE) of the AES Ohio parcel.

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

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

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

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

The proposed Madison Substation will be constructed on an approximately 7-acre portion of a 16.1-acre property owned by AES Ohio (Parcel ID 1601605723000044).

The equipment and facilities described below will be installed within the fenced area of the proposed Madison Substation:

- 345/69 kV megavolt amperes (MVA) transformer
- Eight 345 kV circuit breakers
- Three 69 kV circuit breakers

Additionally, the Project consists of the installation of four (4) new 345 kV structures to route an existing line into a new substation.

Voltage:	345 kV
Structure Type:	four (4) monopoles, galvanized steel
Conductors:	2-1024.5 kcmil 30/7 strands ACAR
Static Wire:	7#8 Alumoweld
Insulators:	345 kV glass, strain
Height:	ranging from 110’ – 160’ above ground
ROW:	within existing AES Ohio property and right-of-way (ROW).

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

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

Not applicable. There are no occupied residences or institutions located within 100 feet of the Project.

4906-6-05(B)(9)(b)(i) Calculated Electric and Magnetic Field Levels

Calculated electric and magnetic field strength levels at one meter above ground under the lowest conductors and at the edge of the right-of-way.

Not applicable. There are no occupied residences or institutions located within 100 feet of the

Project.

4906-6-05(B)(9)(b)(ii) Design Alternatives for EMF
A discussion of the applicant's consideration of design alternatives with respect to electric and magnetic fields and their strength levels, including alternate conductor configuration and phasing, tower height, corridor location, and right-of-way width.

Not applicable. There are no occupied residences or institutions located within 100 feet of the Project.

4906-6-05(B)(9)(c) Project Cost
The estimated capital cost of the project.

The estimated capital cost of the Project is $27M.

4906-6-05(B)(10) Social and Ecological Impacts
The applicant shall describe the social and ecological impacts of the project:

4906-6-05(B)(10)(a) Land Use Characteristics
Provide a brief, general description of land use within the vicinity of the proposed project, including a list of municipalities, townships, and counties affected.

The Project is located in Madison Township, within Clark County, Ohio. The land use of the proposed Project area includes existing agricultural land. The proposed project will impact the existing and future land uses since 7-acres of the area will be converted to the new substation and will no longer be used for agricultural purposes.

4906-6-05(B)(10)(b) Agricultural Land Information
Provide the acreage and a general description of all agricultural land, and separately all agricultural district land, existing at least sixty days prior to submission of the application within the potential disturbance area of the project.

The property is currently used for agriculture; however, the land is zoned as commercial based on correspondence with the Clark County Auditor’s Office on November 12, 2021.

4906-6-05(B)(10)(c) Archaeological and Cultural Resources
Provide a description of the applicant’s investigation concerning the presence or absence of significant archaeological or cultural resources that may be located within the potential disturbance area of the project, a statement of the findings of the investigation, and a copy of any document produced as a result of the investigation.

The Ohio History Connection, Ohio’s Historic Preservation Office (OHPO) online mapping system, was consulted to identify previously recorded cultural resources within 0.8 kilometer (0.5 mile) of the Project Area (the Study Area). Results of this preliminary records check indicate that one historic structure is mapped within the Study Area. This historic structure is the William Mattinson Farmstead (Resource Number CLA-1483-10), located approximately 0.34 miles northeast of the Project area. Consultation was submitted to OHPO on November 29, 2021.

Based on the provided desktop review results, OHPO requested in a response letter dated December 7, 2021, that a Phase I survey be performed on the affected parcel. A Phase I study was performed, and results were submitted to OHPO in a report dated March 30, 2022. OHPO

responded in a letter dated April 11, 2022, stating that based on the information submitted, it is OHPO's opinion that the proposed undertaking will not affect properties listed in or eligible for listing in the National Register of Historic Places and no further coordination is required. Refer to Attachment B – Cultural Resources Review for the Phase I Report and OHPO's response letter.

4906-6-05(B)(10)(d) Local, State, and Federal Agency Correspondence
Provide a list of the local, state, and federal governmental agencies known to have requirements that must be met in connection with the construction of the project, and a list of documents that have been or are being filed with those agencies in connection with siting and constructing the project.

The anticipated environmental permits and authorizations for the Project are summarized in the table below.

Agency	Approval/ Clearance/ Authorization	Agency Review Time	Comments
USACE – Huntington District	Clean Water Act Section 404 Nationwide Permit #57 – Electric Utility Line and Telecommunications Activities	N/A (automatic approval anticipated)	One stream is located within the Project area, and minimal impacts are expected from the installation of two detention basin outfall pipes to the stream. The Project is anticipated to be automatically authorized by the USACE under NWP 57 without a pre-construction notification (PCN) since the Project is not located within a township listed in NWP Regional General Condition 5, impacts are expected to be less than 300 feet, and there are no section 10 waterbodies, national/wild/scenic rivers, or waters of special concern in the Project area.
U.S. Fish and Wildlife Service (USFWS)	Federally Listed Threatened or Endangered Species or Critical Habitat Review	N/A	Correspondence with the USFWS was initiated on September 16, 2021, and a response was received on September 21, 2021, which described any rare, threatened, or endangered species within the Study Area vicinity (Attachment C).
Ohio Department of Natural Resources (ODNR) Office of Real Estate	Areas of Ecological Concern Review	60 Days	Correspondence with ODNR was initiated on September 16, 2021, and a response was received on October 8, 2021, which described any areas of ecological concern, and any rare, threatened, or endangered species within one mile of the Project area. This correspondence is further discussed in Sections 4906-6-05(B)(10)(e) and 4906-6-05(B)(10)(f) of this LON. Response Letter is found in Attachment C.
Ohio Historic Preservation Office (OHPO)	Archaeological and Cultural Resources Review	30 Days	A consultation letter was submitted to OHPO on November 29, 2021, and a response was received on December 7, 2021, requesting a Phase I investigation of the Project area. A Phase I

			investigation was performed, and results were submitted to OHPO. No further coordination is needed with OHPO. These results are discussed further in Section 4906-6-05(B)(10)(c) of this LON.
Ohio Environmental Protection Agency (OEPA)	Clean Water Act Section 401 Review	45 Days	Currently, the USACE has determined that the OEPA will waive all 401 certifications, thus the USACE is not requiring 401 water quality certifications for the sixteen modified or new NWPs in Ohio which includes NWP 57.
	National Pollutant Discharge Elimination System (NPDES) Construction Site General Permit Notice of Intent (NOI)	NOI submitted 21 days to start of construction	The total disturbance for the Project is anticipated to be greater than one acre, thus coverage under this permit is required.
Clark County Community and Economic Development	Zoning Certificate Application	N/A	A zoning certificate is required for the Project. A Plat Plan must also be submitted with the application.
	Non-Residential Plan Approval Application	N/A	A commercial application is required for this Project. Construction drawings and scope/fee worksheets must also be submitted with the application.
Clark County Engineer's Office	Application for Drive Permit	N/A	A driveway permit is required for the Project since a new driveway will be constructed to access the proposed Madison Substation.
	Application for Storm Water Control Plan and Storm Water Pollution Prevention	N/A	A storm water control plan and storm water pollution prevention plan review will be required for storm water permit prior to construction.

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

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

Coordination with the U.S. Fish and Wildlife Service (USFWS) was initiated on September 16, 2021, in an effort to identify the Project's potential effect on any federally listed threatened or endangered species or critical habitat within a one-mile radius of the Project. A response from the USFWS was received September 21, 2021, regarding rare, threatened, and endangered (RTE) species located within a one-mile radius. The response from the USFWS indicated the federally listed endangered Indiana bat (*Myotis sodalis*) and threatened northern long-eared bat (*Myotis septentrionalis*) occur throughout the State of Ohio. There is no tree clearing planned for this Project. However, if any incidental tree clearing is required, and due to the project type, size, location, and the proposed implementation of seasonal tree cutting (clearing of trees ≥3 inches diameter at breast height between October 1 and March 31) to avoid impacts to the federally listed

bat species, no adverse effects to any federally endangered, threatened, proposed, or candidate species are expected to occur. An IPaC resource list analysis was also performed and a report of species and critical habitat within a 0.5-mile radius of the Project was generated. The IPaC report indicated that one insect, the Monarch Butterfly (federally listed candidate species) and one flowering plant, the Eastern Prairie Fringed Orchid (federally listed threatened species), can be found in or near the Project area. Monarch Butterflies lay their eggs on milkweed host plants and the Eastern Prairie Fringed Orchids occur in mesic prairies and wetlands; however, since the current land use of the Project area is for row-crop agriculture, Project activities are not likely to impact these species. A copy of the USFWS response can be found in Attachment C – Rare, Threatened, and Endangered Species Correspondence.

Additionally, coordination with the Ohio Department of Natural Resources (ODNR) was initiated on September 16, 2021, to identify the Project's effect on any state listed threatened or endangered species within a 0.5-mile radius of the Project. A response from the ODNR Division of Wildlife (DOW) was received on October 8, 2021, regarding RTE species located within a 0.5-mile radius of the Project. ODNR DOW noted in their response letter that the Project is within the range of two state-endangered, one federally endangered, and one federally threatened bat species. As recommended by ODNR, a desktop habitat assessment was performed using the current USFWS "Range wide Indiana Bat Survey Guidelines" to determine if a potential bat hibernaculum is present within the Project area. The desktop assessment, using ODNR's Mines of Ohio map, revealed no existing caves or abandoned mines within 0.25 miles of the Project. Additionally, one state-endangered reptile, two state-threatened reptiles, two state-endangered mussel species, two state-endangered birds, and one state-threatened bird. Due to the location, the type of habitat within the project area, and the type of work proposed, ODNR proposes that the Project is not likely to impact these species. The ODNR-DOW also noted that the Project is within range of two state-endangered and one state-threatened fish species. It is expected that instream work will occur with the installation of two storm water outfalls, however, no in-water work will take place within perennial streams from March 15 to June 30, as recommended by ODNR DOW to reduce impacts to these aquatic species and their habitat. If the Project schedule changes and in-stream work is needed within a perennial stream during the restricted timeframe, AES Ohio will coordinate with ODNR prior to any such activity. The perennial stream is not a stream of sufficient size or substrate to contain suitable habitat for the listed mussel species, therefore, the project is not likely to impact these species. According to the ODNR NHD, one state endangered species, the Upland sandpiper (*Bartramia longicauda*), has been recorded within one mile of the project. The Upland sandpiper utilizes dry grasslands for nesting; since the current land use of the Project area is for row-crop agriculture, Project activities are not likely to impact this species.

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

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

GAI conducted an investigation for areas of ecological concern. As a part of GAI's investigation, a request was submitted to the ODNR Natural Heritage Program on September 16, 2021, to research the presence of any unique ecological sites, geological features, animal assemblages, scenic rivers, state wildlife areas, nature preserves, parks or forest, national wildlife refuges, or

other protected areas within one mile of the Project area, using the ODNR Natural Heritage Database (NHD). A response from the ODNR – Office of Real Estate was received on October 8, 2021 (see Attachment C). No national and state forests and parks, floodplains, wetlands, designated or proposed wilderness areas, national and state wild and scenic rivers, wildlife areas, wildlife refuges, wildlife management areas, or wildlife sanctuaries were identified within the one-mile radius of the Project area.

As a part of the field investigation and ecological assessment, GAI conducted a Regulated Waters Assessment of the Project area. GAI's investigation included an approximately 16.1-acre Study Area around the proposed substation, access roads, transmission line structures, and additional workspace areas. A wetland and waterbody delineation survey was conducted on September 2, 2021. The survey identified one (1) probable jurisdictional perennial stream (Stream-001) totaling approximately 1,021.6 linear feet within the survey area. Significant impacts to the stream are not anticipated to occur as a result of construction activities, and no additional water quality permitting is needed. Results from GAI's field investigation can be found in Attachment D – Regulated Waters Assessment. A review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) revealed that the Project area does not lie within any 100-year floodplains.

4906-6-05(B)(10)(g) Unusual Conditions
Provide any known additional information that will describe any unusual conditions resulting in significant environmental, social, health, or safety impacts.

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

4906-6-08: Public Notice for Letter of Notification Applications
Within seven days of the filing of a Letter of Notification application, the applicant shall give public notice in newspapers of general circulation in the project area and shall supply the board with proof of such publication no later than thirty days from the date of publication. The applicant is permitted to correct any inadvertent failure of service or publication, provided substantial compliance with these requirements is met. The notice shall occupy not less than one-fourth of each newspaper's standard page, with letters not less than ten-point type and shall bear the heading "Notice of Proposed Major Utility Facility" in bold letters not less than one-fourth inch high or thirty-point type.

A newspaper notice will be provided in the Springfield News-Sun and the Dayton Daily News within seven days of filing this application, consisting of no less than a fourth of a standard page. Similarly, proof of publication within 30 days of the date of publication will be provided. Within seven days of filing this LON, notice will be sent to each property owner affected by the Project, with a description of the Project, a map showing the location and layout of the Project, the location of where accessible copies of this LON are available, and a statement including the assigned docket number that this LON is now pending before the Board. This letter will also describe how to participate and comment in the board's proceedings.

Additionally, along with OPSB filing, a copy of this LON will be provided to the public officials, departments, and agencies of Clark County and Madison Township that are listed below. A copy of the LON will also be provided to the Clark County Public Library listed below for public viewing.

Clark County

Ms. Melanie Flax Wilt, Mr. Lowell R. McGlothin, and Ms. Sasha Rittenhouse
Clark County Board of Commissioners
3130 E. Main Street
Springfield, OH 45503

Clark County Community and Economic Development Department
3130 E. Main Street
Springfield, OH 45503

Mr. Johnathon A. Burr, P.E., P.S.
Clark County Engineer
4075 Laybourne Road
Springfield, OH 45505

Madison Township

Mr. Russ White, Mr. Tom Florence, and Mr. Mike Garringer
Clark County Board of Trustees
228 W. Columbus Road
P.O. Box V
South Charleston, OH 45368

Library

Clark County Public Library Houston Branch
5 W. Jamestown Street
South Charleston, OH 45368

Attachment A – Figures

PROJECT LOCATION

CLARK COUNTY, OH

REFERENCE:
TOPOGRAPHIC MAP:
- Earl's USA Topo Map, Accessed: 11/29/2022.
RAILWAY:
- Ohio Department of Transportation's Railroads, 2/29/2020.
HIGHWAY:
- Earl's U.S. Major Roads, 5/10/2018.
PROJECT DETAILS:
- AES Ohio.

State Highway | Project Area | Existing 345kV Transmission Line
Railway

aes Ohio
gai consultants

0 250 500 Feet
1 in = 500 feet

FIGURE 1
PROJECT LOCATION

Ohio Power Siting Board Letter of Notification

Madison 345kV Substation Project

DRAWN BY: MBH DATE: 11/29/2022
CHECKED: TDB APPROVED: MRW

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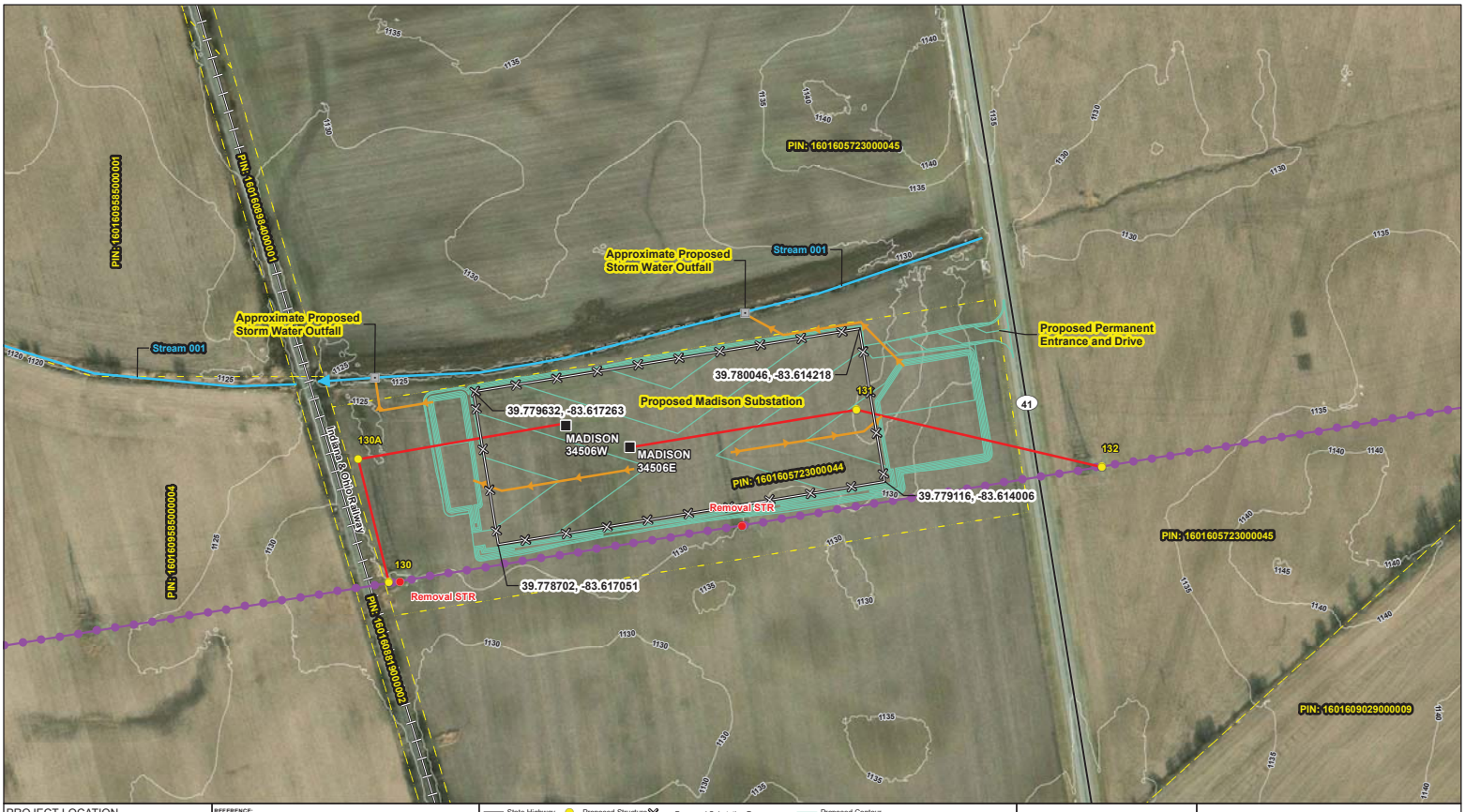

PROJECT LOCATION

CLARK COUNTY, OH

REFERENCE:
AERIAL PHOTOGRAPH:
- Esri's World Imagery 2020, Accessed: 11/29/2022.
HIGHWAY:
- Ohio U.S. Major Roads, 5/1/2018.
LOCAL ROAD:
- Ohio Department of Transportation's Roads, 7/27/2021.
RAILWAY:
- Ohio Department of Transportation's Railroads, 2/29/2020.
PARCEL BOUNDARY:
- Parcels downloaded from Clark County GIS website. 8/25/2021.
5-FOOT CONTOUR:
- Ohio Geographically Referenced Information Program (OGRIP). Clark County, 2007.
DELINEATED FEATURE:
- GAI Consultants.
PROJECT DETAILS:
- AES Ohio.

State Highway
Railway
Proposed Structure
Removal Structure
Storm Water Outlet
Facility Point
Proposed Substation Fence
Delineated Stream
Storm Sewer
Proposed 345kV Transmission Line
Existing 345kV Transmission Line
Proposed Contour
Parcel Boundary
5-Foot Contour

aes Ohio

gai consultants

0 100 200 Feet
1 in = 200 feet

FIGURE 2
PROJECT LAYOUT

Ohio Power Siting Board Letter of Notification

Madison 345kV Substation Project

DRAWN BY: MBH DATE: 11/29/2022
CHECKED: TDB APPROVED: MRW

G:\R210571.00 - GIS\MXD\OPSB\R210571_00_Madison_Sub_OPSB_FIG2_Project_Layout_2022_11_29.mxd

Attachment B – Cultural Resources Review

In reply refer to
2021-CLA-53204

April 11, 2022

William J. Caramana
GAI Consultants, Inc.
Pittsburgh Office
385 East Waterfront Drive
Homestead, Pennsylvania 15120-5005

Dear Mr. Caramana:

RE: Madison Substation, Madison Township, Clark County, Ohio

This is in response to the receipt, on March 30, 2022, of *Technical Report Phase I Cultural Resources Investigation, Madison Substation Project, Clark County, Ohio.* The comments of the Ohio Historic Preservation Office are submitted in accordance with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended.

Intensive visual inspection and shovel testing of the project area failed to identify any previously unrecorded archaeological sites. Based on the information submitted, it is my opinion that the proposed undertaking will not affect properties listed in or eligible for listing in the National Register of Historic Places. No further coordination is required unless the project changes or archaeological remains are discovered during the course of the project. In such a situation, this office should be contacted as per 36 CFR 800.13.

Please be advised that this is a Section 106 decision. This review decision may not extend to other SHPO programs. If you have any questions, please contact me at (614) 298-2000, or by email at nyoung@ohiohistory.org. Please note the Ohio SHPO now accepts electronic-only submissions for state and/or federal review under Section 106 and ORC 149.53. Please send your submissions to section106@ohiohistory.org. We have also updated our Survey Report Submission Standards

Sincerely,

Nathan J. Young, Project Reviews Manager
Resource Protection and Review

gaiconsultants.com | transforming ideas into reality®

gai consultants

CONTAINS PRIVILEGED INFORMATION – DO NOT RELEASE

Technical Report
Phase I Cultural Resources Investigation

Madison Substation Project
Clark County, Ohio

OHPO # 2021-CLA-53204
GAI Project #: R210571.00

March 30, 2022

aes Ohio

Prepared by: GAI Consultants, Inc.
Pittsburgh Office
385 East Waterfront Drive
Homestead, Pennsylvania 15120-5005

Prepared for: AES Ohio
1900 Dryden Road
Dayton, Ohio 45439

CONTAINS PRIVILEGED INFORMATION – DO NOT RELEASE

Technical Report
Phase I Cultural Resources Investigation

Madison Substation Project
Clark County, Ohio

OHPO # 2021-CLA-53204
GAI Project #: R210571.00

March 30, 2022

Prepared for:
AES Ohio
1900 Dryden Road
Dayton, Ohio 45439

Prepared by:
GAI Consultants, Inc.
Pittsburgh Office
385 East Waterfront Drive
Homestead, Pennsylvania 15120-5005

Report Authors:

Dana B. Cress

Digitally signed by Dana B. Cress
DN: E=D.Cress@gaiconsultants.com,
CN=Dana B. Cress
Date: 2022.03.30 11:55:02-04'00'

Dana Cress, M.A.
Senior Architectural Historian,
and

Digitally signed by William J. Caramana
DN: cn=William J. Caramana,
email=w.caramana@gaiconsultants.com
Date: 2022.03.30 11:52:46 -04'00'

William J. Caramana
Project Archaeologist

Abstract

GAI Consultants, Inc. (GAI), on behalf of AES Ohio (AES), conducted a Phase I cultural resources investigation in February and March 2022 for the proposed Madison Substation Project. The Project involves the construction of a new 1.5-hectare (ha) (3.7-acre [ac]) substation and associated transmission line connections. The substation will be constructed within a 6.5-ha (16.08-ac) parcel that is situated within a cultivated field and is privately owned. No tree clearing is necessary for this Project. AES is preparing to submit a Letter of Notification to the Ohio Power Siting Board.

The area of potential effect (APE) for the Project's Phase I archaeological investigation involves direct potential impacts by the Project to archaeological resources. The direct impact APE is the area of potential ground disturbance where there will be physical alteration and/or disturbance of surface and subsurface soils created by Project construction activities. Given that the Project is still in the design phase, GAI conducted a Phase I archaeological survey of the entire 6.5-ha (16.08-ac) parcel, known for this Project as the APE, encompassing the proposed 1.5-ha (3.7-ac) substation, potential access road(s) areas, extra workspaces, and associated transmission line connections. In addition, GAI conducted a historical and architectural survey of the indirect APE, which is considered the possible visual impact to aboveground structures within the immediately adjacent area within line-of-sight of the direct APE.

Background research indicates that one historic architectural resource (CLA0148310) has been recorded within a 0.8-kilometer (km) (0.5-mile [mi]) radius of the overall Project area. This resource is known as the William Mattinson Farmstead and is a circa 1865 farmstead which has not been evaluated for its eligibility to the National Register of Historic Places. This resource is located along the east side of South Charleston Pike, approximately 0.32 km (0.2 mi) north of the Project APE. No archaeological sites or other resources have been recorded within 0.8 km (0.50 mi) of the APE.

GAI conducted a historical and architectural resources survey on February 1, 2022, and a Phase I archaeological survey between March 1 through 3, 2022. The archaeological survey included the excavation of 297 STPs. No cultural resources were identified during the Phase I archaeological investigation. The historical and architectural resources survey identified two aboveground resources 50 years or older within a half-mile radius of the Project. These resources represent the William Mattinson Farmstead (CLA0148310) and the Detroit, Toledo & Ironton Railroad (GAI-1). GAI is recommending that these resources are not eligible for listing in the National Register of Historic Places.

Given these results, GAI recommends that the Project should be allowed to proceed as planned without further cultural resources investigations. If design plans change to incorporate areas not addressed in the current study, additional cultural resources investigations may be required, in accordance with Section 106 of the National Historic Preservation Act or Section 149.53 of Ohio Revised Code, as applicable.

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1.0 Introduction

1.1 Project Description

GAI Consultants, Inc. (GAI), on behalf of AES Ohio (AES), conducted Phase I cultural resources surveys of the Madison Substation Project (Project) in Madison Township, Clark County, Ohio (OH) in February and March 2022 (Figure 1). This Project involves the construction of a new 1.5-hectare (ha) (3.7-acre [ac]) substation and associated transmission line connections. The substation will be constructed within a 6.5-ha (16.08-ac) parcel that is situated within a cultivated field and is privately owned. No tree clearing is necessary for this Project. AES is preparing to submit a Letter of Notification to the Ohio Power Siting Board.

Consultation for this Project was initiated with the Ohio Historic Preservation Office (OHPO) in a consultation letter and a Section 106 Review – Project Summary form, dated November 29, 2021. In a December 7, 2021, response, the OHPO recommended that a Phase I archaeological survey and the documentation of buildings over 50 years of age be conducted.

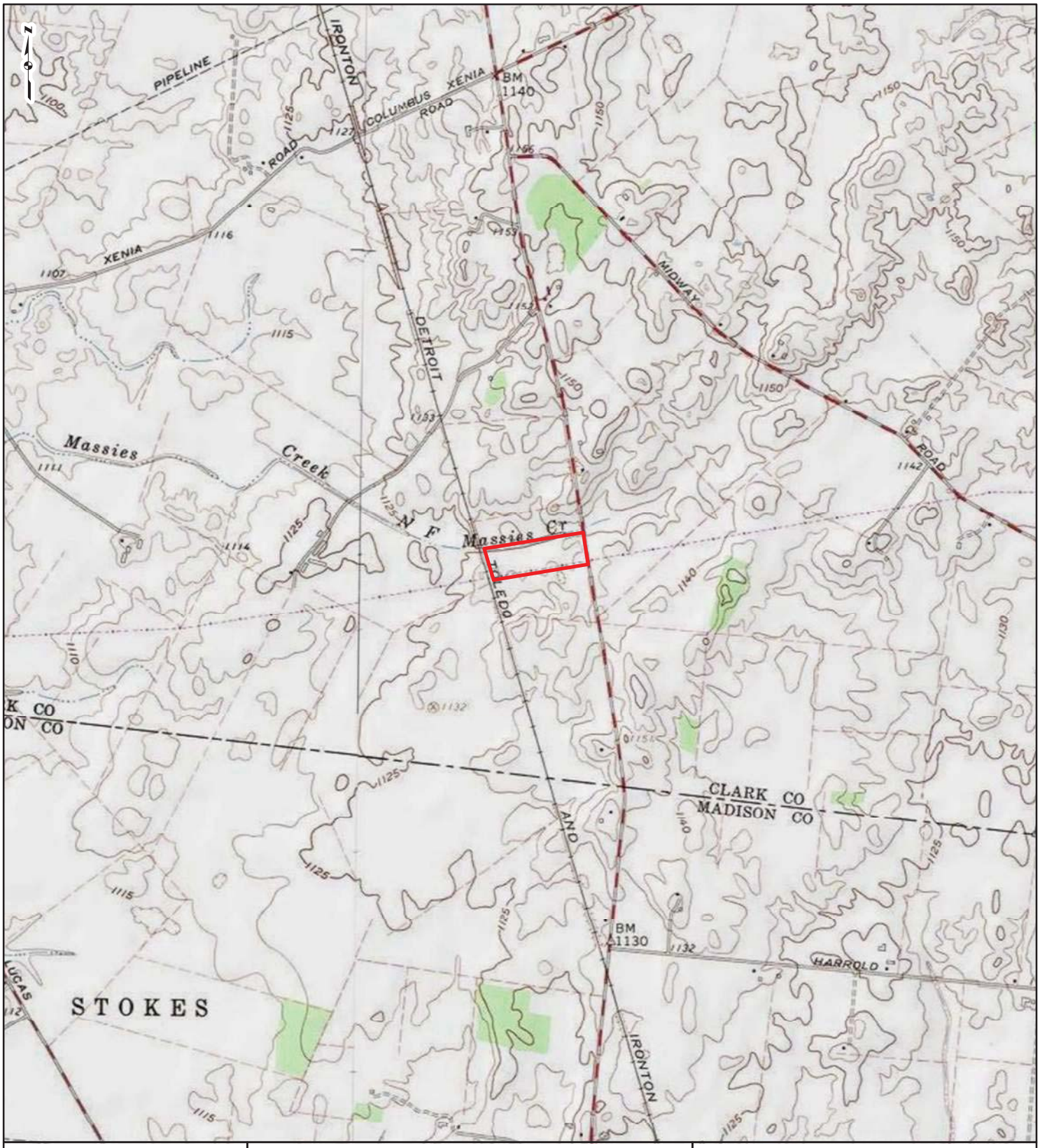
1.2 Area of Potential Effect

The Area of Potential Effect (APE) for the Project's Phase I archaeological investigation involves direct potential impacts by the Project to archaeological resources. The direct impact APE is the area of potential ground disturbance where there will be physical alteration and/or disturbance of surface and subsurface soils created by Project construction activities. Given that the Project is still in the design phase, GAI conducted a Phase I archaeological survey of the entire 6.5-ha (16.08-ac) parcel, known for this Project as the APE, encompassing the proposed 1.5-ha (3.7-ac) substation, potential access road(s) areas, extra workspaces, and associated transmission line connections (Figure 2). In addition, GAI conducted a historical and architectural survey of the indirect APE, which is considered the possible visual impact to aboveground structures within the immediately adjacent area within line-of-sight of the direct APE.

1.3 Summary of Results

Background research indicates that one historic architectural resource (CLA0148310) has been recorded within a 0.8-kilometer (km) (0.5-mile [mi]) radius of the overall Project area. This resource is known as the William Mattinson Farmstead and is a circa 1865 farmstead which has not been evaluated for its eligibility to the National Register of Historic Places (NRHP). The building complex for this resource is located along the east side of South Charleston Pike, approximately 0.32 km (0.2 mi) north of the Project APE. No archaeological sites or other resources have been recorded within 0.8 km (0.50 mi) of the APE.

GAI conducted a historical and architectural resources survey on February 1, 2022, and a Phase I archaeological survey between March 1 through 3, 2022. The archaeological survey included the excavation of 297 STPs within the Project's 6.5-ha (16.08-ac) APE. No cultural resources were identified during the Phase I archaeological investigation. The historical and architectural resources survey identified two aboveground resources 50 years or older within a half-mile radius of the Project. These resources represent the William Mattinson Farmstead (CLA0148310) and the Detroit, Toledo & Ironton Railroad (GAI-1). GAI is recommending that these resources are not eligible for listing in the NRHP and the Project should be allowed to proceed as planned.



PROJECT LOCATION

CLARK COUNTY, OHIO

LEGEND

Area of Potential Effect

0 1,000 2,000 4,000 Feet

FIGURE 1
PROJECT LOCATION

MADISON SUBSTATION PROJECT

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DRAWN BY: AJW DATE: 3/15/2022

CHECKED: MDO APPROVED: WJC

REFERENCE: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLES: SOUTH CHARLESTON (1975), AND FLORENCE (1975), OHIO, OBTAINED THROUGH ESRI USA TOPO MAPS, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 03/2022.

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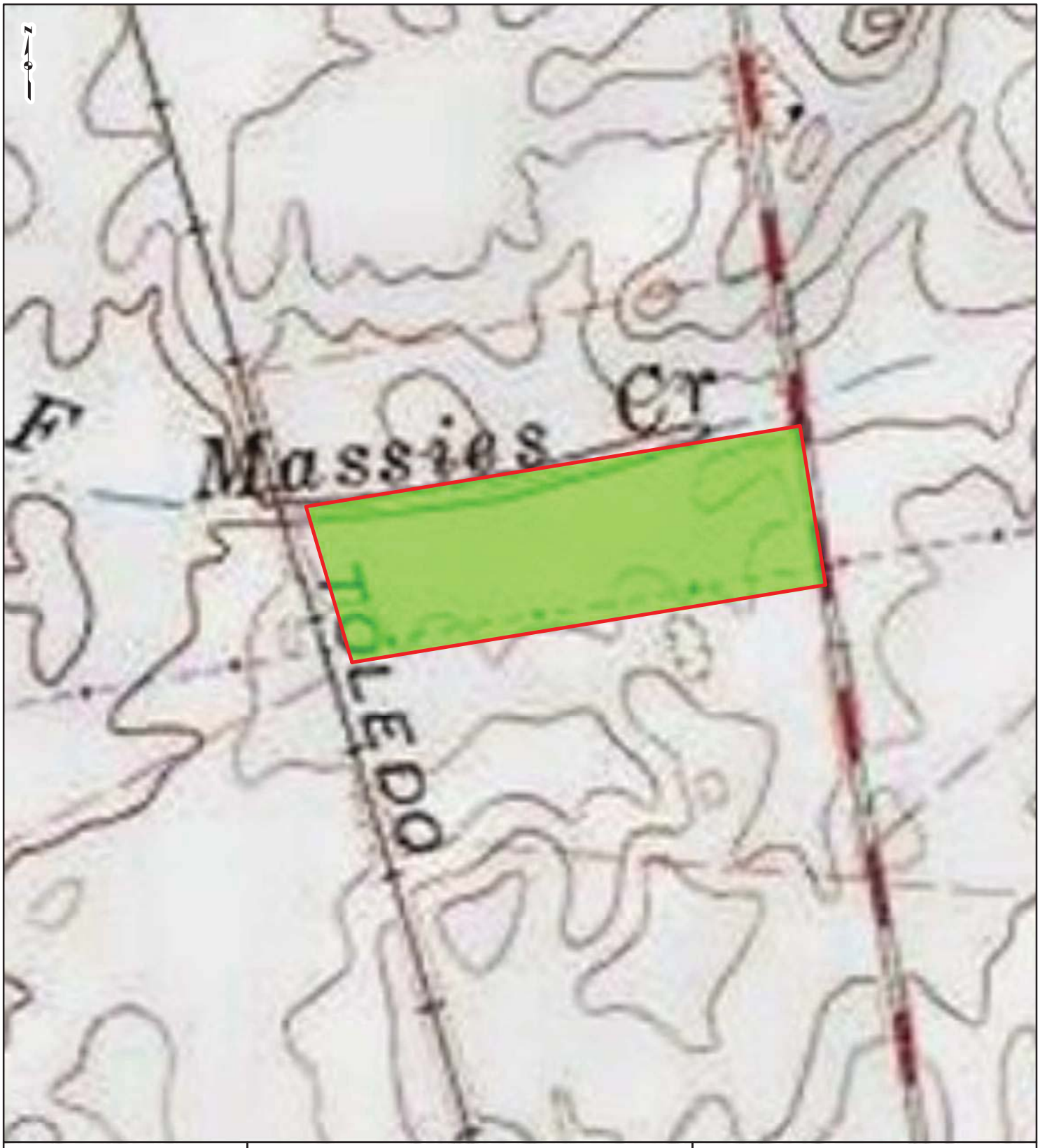

PROJECT LOCATION

CLARK COUNTY, OHIO

LEGEND

Area of Potential Effect

Tested Area

0 200 400 800 Feet

FIGURE 2
PROJECT OVERVIEW

MADISON SUBSTATION PROJECT

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DRAWN BY: AJW DATE: 3/15/2022
CHECKED: MDO APPROVED: WJC

REFERENCE: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE: FLORENCE (1975), OHIO, OBTAINED THROUGH ESRI USA TOPO MAPS, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 03/2022.

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1.4 Report Contents and Acknowledgements

This report presents the results of GAI's Phase I cultural resource investigations within the Project APE, as defined above. Sections 2.0 and 3.0 describe the Project's environmental and cultural setting. Section 4.0 provides the results of background research and discusses archaeological potential. Section 5.0 describes the survey methods. Section 6.0 includes the archaeological survey results, while Section 7.0 provides the historical and architectural resources survey results. Section 8.0 provides recommendations and a project summary. Section 9.0 includes references for this report. Appendix A provides project correspondence.

William J. Caramana served as the Cultural Resources Principal Investigator for the Project and co-authored this report with Dana Cress. Field investigations were led by Scott Rivas, with a crew consisting of Caleb Self, Sam Witham, Alexandria LaPietra, and Susan Vlasak. Report Figures were prepared by Amanda Wasielewski.

2.0 Project Location and Setting

2.1 Physiography, Hydrology, Geology, and Soils

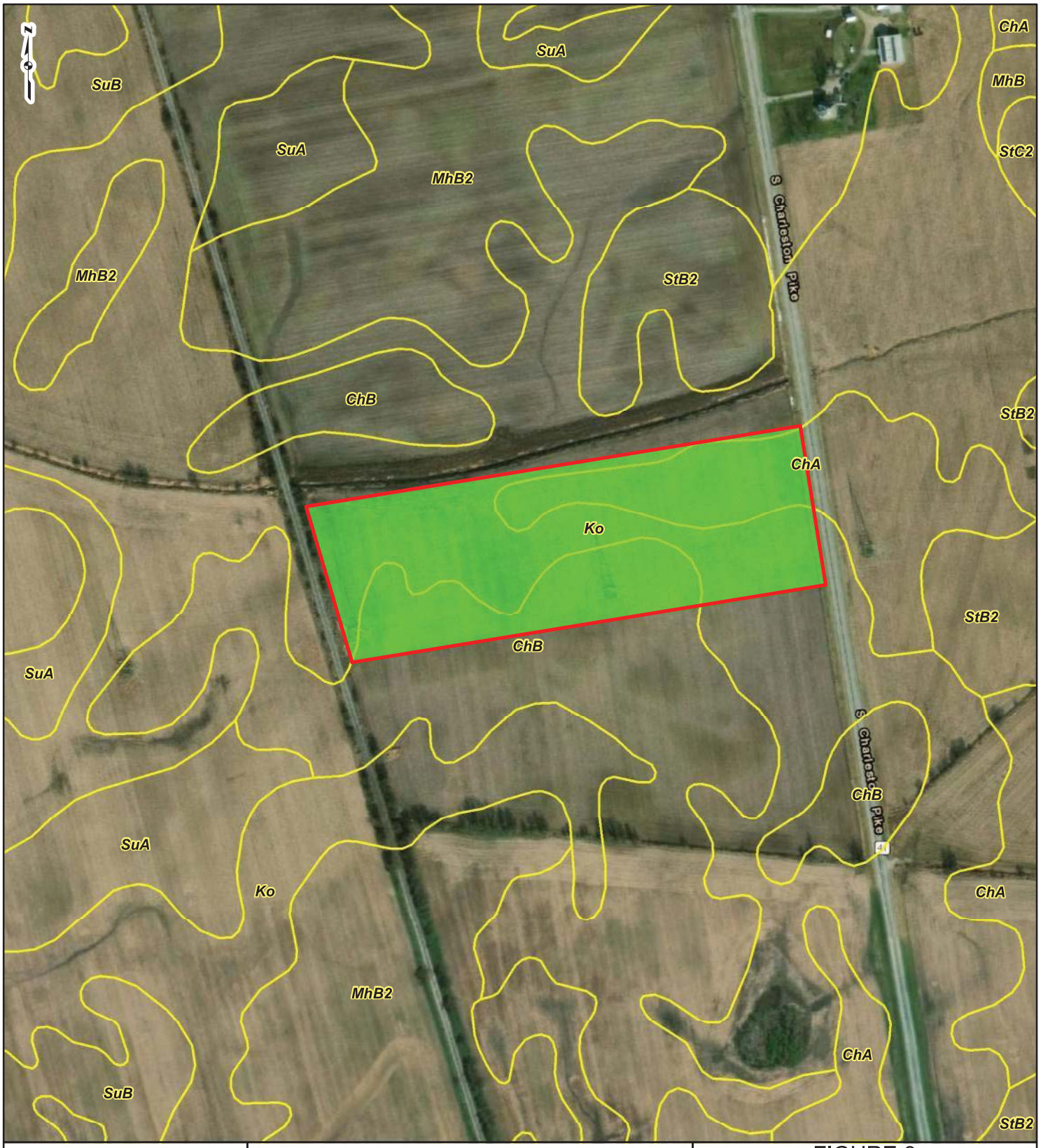
The Project lies within the Till Plains section of the Central Lowlands Province (Brockman 1998). This province includes most portions of central and western Ohio and is underlain by limestone and dolomite, with some shale beds, mostly of Silurian age and Ordovician aged portions of bedrock in the southwestern part of the province. These outcrops of rocks are a result of sediment deposits from Pleistocene glaciers (Brockman 1998). The Till Plains section is characterized as a fertile region with gently rolling hills. Most of these hills are a series of moraines, formed from glacial activity. Glaciers created terraces along the valley sides within the Till plains and formed new drainage patterns, including today's Ohio River (Brockman 1998; Ohio Division of Geological Survey 2006; Ohio History Central 2022).

The Project is located in the southeast corner of Clark County within the Little Miami River watershed. The region is drained by North Fork Massies Creek, the headwaters of which are located directly north of the Project APE, and later flows into Massies Creek and Little Miami River (Ohio University Voinovich School of Leadership and Public Service 2021; Sherman 1999).

The Project area is located within the Kokomo-Strawn-Celina general soil association. This soil association is characterized as well drained to very poorly drained, very deep, nearly level to sloping soils within glacial till (Miller 1999). Soils encountered within the Project vicinity are depicted in Figure 3. Table 1 provides descriptions of soils mapped within the Project APE.

Table 1. Descriptions of Soils within the Project Area.

Soil Series	Description (NRCS 2022)
ChA—Celina-Strawn complex, 0 to 2 percent slopes	The Celina component makes up 50 percent of the map unit. This component is on flats. The parent material consists of till. Depth to a root restrictive layer, densic material, is 20 to 40 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. The Strawn component makes up 35 percent of the map unit. This component is on rises. The parent material consists of till. Depth to a root restrictive layer, densic material, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded.
ChB—Celina-Strawn complex, 2 to 6 percent slopes	
Ko—Kokomo silty clay loam, 0 to 2 percent slopes	The Kokomo component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions, till plains. The parent material consists of loamy glaciofluvial deposits derived from sedimentary rock over loamy till derived from limestone and dolomite. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is frequently ponded.



PROJECT LOCATION

CLARK COUNTY, OHIO

LEGEND

- Area of Potential Effect
- Tested Area
- Soil Type Boundary

0 200 400 800 Feet

FIGURE 3
USDA SOILS IN PROJECT VICINITY

MADISON SUBSTATION PROJECT

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DRAWN BY: AJW DATE: 3/15/2022

CHECKED: MDO APPROVED: WJC

REFERENCE: ESRI WORLD IMAGERY, PROVIDED BY VIVID - MAXAR, 2021, AND WORLD TRANSPORTATION, OBTAINED THROUGH ESRI ARCGIS ONLINE, © 2012 ESRI, DeLORME, NAVTEQ, TOMTOM, ACCESSED 03/2022.
SOIL SURVEY GEOGRAPHIC (SSURGO) DATABASE FOR OHIO, USDA/NRCS, 2020.

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2.2 Modern and Past Climates

2.2.1 Paleoclimate

During the period of peak glacial advance (21,000 B.C. to 14,500 B.C.) when the ice sheet extended to a point north of the Ohio River, there existed a 60- to 100-km-wide belt of tundra, which may have reached into portions of the Appalachians (Delcourt and Delcourt 1981:123-165). Maxwell and Davis (1972) also described pollen evidence that suggests the presence of tundra vegetation along the alpine zone south of the ice margin. By about 13,000 B.C., the eastward expansion of spruce and jack pine forests had spread well into Kentucky, as had the northern expansion of conifer and northern hardwood forests (Delcourt and Delcourt 1981:147). The xerothermic interval (8000 to 3000 B.C.) would have provided a warmer and drier climate, which allowed the glaciers to retreat north of the Great Lakes and permitted the northern advance of oak-hickory and mixed hardwood forests.

It has been suggested the Late Glacial environment represented a mosaic of diverse plant and animal communities. The Pre-Boreal/Boreal episode (8000 B.C. - 6500 B.C.) marked a transition from Pleistocene to Holocene climate. There was a reduction of open grassland and a spread of boreal forests with spruce and pine the dominant species; some oak forests also existed at this time. The spread of closed coniferous forest would have drastically lowered faunal carrying capacity. The Atlantic climatic episode (6500 B.C. - 3100 B.C.) was characterized by a warming trend. There was an increase in precipitation and an expansion of mesic forests, first of hemlock and later of oak (Carbone 1976). Oak became the predominant species by about 5000 B.C. (Bernabo and Webb 1977). The Sub-Boreal climatic episode (3100 B.C. - 800 B.C.) was a warm and dry period (mid-post glacial xerothermic), which peaked around 2350 B.C. This was followed by a period of increasing moisture and slowly decreasing temperature. The mid-post glacial xerothermic occurred from 2700 B.C. – 2000 B.C. and led to dramatic floral/faunal changes (Custer 1985). The climate of the sub-Atlantic episode (810 B.C. - A.D. 1000) saw an increase in moisture and milder temperatures that led to a close approximation of modern conditions (Meltzer 1999).

Forest characteristics under which precontact-period cultural colonization occurred were apparently formed during a trend of gradual cooling and increased precipitation that began about 3000 B.C. Contemporary forest communities in the study area are second- and third-growth stands that have replaced original forests impacted by logging, land clearing, and the chestnut blight of the 1930s, and are only moderately similar to the historical conditions under which Native Americans existed.

Braun defined several topographic/environmental zones that served to refine various hardwood assemblages according to location, water availability, slope and altitude (Braun 1950:87-88). Braun classified this region as the Beech-Maple Forest Region. The Beech-Maple Forest Region includes the glaciated parts of Ohio, most of which is utilized as croplands. American beech, sugar maple, American elm, black cherry, white ass, northern red oak, and white oak are common components in the forest region (Dyer 2006).

2.2.2 Modern Climate

The current climate of Ohio is conditioned by the convergence of warm moist tropical air masses and drier, often cooler, continental air masses. Winds are generally from west to east across the state (Goddard 1979:60). The average annual total precipitation in Miami County is 37.82 inches, which is distributed more heavily between April and August. In the summer temperatures are moderately warm and humid with a few days reaching 90 degrees or higher.

Winters are relatively cold and cloudy with extreme conditions diving into the subzero temperatures (Miller 1999).

2.2.3 Flora

Because the structure of vegetation controls the structure and species composition of animal populations, the availability of plant resources was important to precontact-period hunting-and-gathering communities in determining their subsistence strategies (Evans 1978:4). In Ohio, pioneer-era and earlier vegetation patterns have been ascertained primarily through the study of early land survey records, including witness tree recordation (Gordon 1969) and palynology (Shane 1994).

The vegetational community consisted of a canopy dominated by oak-maple-beech assemblages (Hutchins 1979). Associated subdominant and small tree/tall shrub species included yellow poplar (*Liriodendron tulipifera*), elm (*Ulmus Americana*), black ash (*Fraxinus nigra*) and/or white ash (*F. americana*), sometimes with the inclusion of sugar maple (*Acer saccharum*), silver maple (*Acer saccharinum*) and/or red maple (*Acer rubrum*), white oak, red oak, black oak (*Acer saccharum var. nigrum*), black cherry (*Prunus serotina*), musclewood (*Carpinus carolinana*), birch (*Betula lenta, B. nigra*.), aspen (*Populus grandidentata*, *P. tremuloides*), hickories (*Carya* spp.), flowering dogwood (*Cornus florida*), and sourwood (*Oxydendrum arboreum*). The common understory that would likely have been present would have included blueberry (*Vaccinum* spp.), catbriar (*Smilax rotundifolia*), white snakeroot (*Eupatorium rugosa*), poison ivy (*Toxicodendron radicans*), summer grape (*Vitis aestivalis*), ground ivy (*Glechoma hederaceae*), multiflora rose (*Rosa multiflora*), grapevine (*Vitis* spp.), Christmas fern (*Polystichum acrostichoides*), club mosses (*Lycopodium* spp.), violets (*Viola* spp.), wingstem (*Actinomeris alternifolia*), Canada rye (*Elymus canadensis*), white snakeroot (*Eupatorium rugosa*), wild yams (*Discorea villosa*), purple coneflower (*Echinacea pallida*), wood strawberry (*Fragaria virginiana*), and woodland sunflower (*Helianthus hirsutus*) (Klinge et al. 2008).

Land use over the past 200 years has greatly altered the original vegetative systems that existed prior to settlement by Euro-Americans. Deforestation occurred following the shift to greater agricultural usage and the push for settlement of the region. The best timber was removed from the original forests, leaving smaller trees and agricultural fields (Klinge et al. 2008).

2.2.4 Fauna

The fauna in Ohio has changed dramatically due to agricultural and industrial land use and residential development. Consequently, the species represented in the area today do not reflect the diversity of species that were once present. Prior to settlement in the region, natural phenomena such as glaciation during the Pleistocene and the associated climate changes, had a major effect on both fauna and flora (Anderson et al. 1976).

Typical mammalian species could include but would not have been limited to: White-Tailed Deer (*Odocoileus virginianus*), Elk (*Cervus canadensis*), Coyote (*Canis latrans*), Beaver (*Castor canadensis*), muskrat (Ondatra zibethicus), Voles (*Microtus* spp.), Mice (*Peromyscus spp.*), Eastern Chipmunk (*Tamias striatus*), Eastern Gray Squirrel (*Sciurus carolinensis*), Fox Squirrel (*Sciurus niger*), Striped Skunk (*Mephitis mephitis*), Least Shrew (*Cryptotis parva*), Virginia Opossum (*Didelphis virginiana*), Woodchuck (*Marmota monax*), Raccoon (*Procyon lotor*), Red Fox (*Vulpes vulpes*), Gray Wolf (*Canis lupus*), Black Bear (*Ursus americanus*), and Little Brown Bat (*Myotis lucifugus*) (Gottschang 1981).

A wide range of avian species that would likely have been found in the area could have included Wild Turkey (*Meleagris gallopavo*), Bobwhite Quail (*Colinus virginianus*), Mallard (*Anas platyrhynchos*), and Bank Swallow (*Riparia riparia*). A variety of songbirds such as American Redstart (*Setophaga rusticilla*) (among other warblers), American Goldfinch (*Carduelis tristis*), American Robin (*Turdus migratorius*), Northern Cardinal (*Cardinalis cardinalis*), Blue-Gray Gnatcatcher (*Polioptila caerulea*), Carolina Wren (*Thryothorus ludoricianus*), and Black-Capped Chickadee (*Parus atricapillus*) would also likely been encountered. Woodpeckers such as Red-Bellied Woodpecker (*Melanerpes carolinus*), Downy Woodpecker (*Picoides pubescens*), Pileated Woodpecker (*Dryocopus pileatus*), and Northern Flicker (*Colaptes auratus*) could also have been residents of the area. Owls such as Barred (*Strix varia*) and Eastern Screech Owl (*Otus asio*) are likely to utilize both forest habitat for perching and field habitat for foraging. Birds of prey such as Red-Tailed Hawk (*Buteo jamaicensis*), Cooper's Hawk (*Accipiter cooperi*), Broad-Winged Hawk (*Buteo lineatus*), and American Kestral (*Falco sparvarius*) are also likely to utilize both field and forest habitats close to the site. Corvidae species such as American Crow and Blue Jay (*Cyanocitta cristata*) are likely to be present in all habitat types. Additional species such as Killdeer (*Charadrius vociferus*), Purple Martin (*Progne subis*), Northern Mockingbird (*Mimos polyglottos*), Brown Thrasher (*Taxostoma rufum*), Gray Catbird (*Dumetella carolinensis*), and Eastern Bluebird (*Sialia sialis*) are likely to utilize agricultural and strips of edge habitat (Peterjohn 1989; Peterjohn and Rice 1991).

Reptile and amphibian and other aquatic resources that may occur in and around the area could include Black King Snake (*Lampropeltis getula nigra*), Blue Racer (*Coluber constrictor foxi*), Eastern Milk Snake (*Lampropeltis triangulum*), Bull Frog (*Rana catesbeiana*), Green Frog (*Rana clamitans*), American Toad (*Bufo americanus*), Eastern Box Turtle (*Terrapene carolina*), Northern Fence Lizard (*Sceloporus undulates*), and Redback Salamander (*Plethodon cinereus*), Least Brook Lamprey (*Lampetra aepyplera*), Channel Catfish (*Ictalurus punctatus*) (Conant 1951; Anderson et al. 1976).

3.0 Culture History

The purpose of this chapter is to provide a general cultural context for the studies performed for the Madison Substation Project. Both Native American and Euro-American culture history sections focus on the regional area of Ohio.

3.1 Precontact Period

3.1.1 Paleoindian (12,000 to 9,500 B.P.)

Many archaeologists speculate that the initial entrance of humans into the New World occurred as early as 40,000 years ago across the Bering land bridge. However, the evidence to support this theory is still inconclusive and open to debate. The Late Wisconsinan stage produced the final glaciation during the Pleistocene into Southern Ohio. Around 13,000 years ago the ice retreated, opening the area for Paleoindian occupation (Shane 1994:11). In the northeast, the earliest Paleoindian material is found at the Meadowcroft Rockshelter in Southwest Pennsylvania with a radiocarbon date between 14,225-11,300 B.C. (Adovasio et al. 1977, 1990). The interface between glaciers and warm air masses from the Gulf of Mexico created a wetter and cooler environment that supported boreal forests, containing spruce, white pine, and hemlock.

Potter (1980) conjectures that the first Paleoindians entered the southwest region of Ohio moving north, then east. Paleoindian cultural tradition in the northeastern United States has been recognized as part of a widespread homogeneous New World culture typified by a distinctive lithic assemblage (Cunningham 1973). Lithic similarities are shared with the Clovis and Folsom cultures of the Great Plains. An example of this continuity is the bifacially flaked, lanceolate projectile point with longitudinal grooves or "flutes." Specifically, Paleoindian cultures in Ohio are characterized by the Clovis and Dalton clusters (Justice 1987). Paleoindian peoples used Clovis tools in hunting Pleistocene megafauna and migratory game. It has been argued that the earliest subsistence strategies in the Northeast were not typified by a hunting bias toward megafauna, but rather were characterized by a balanced hunting economy based on the exploitation of migratory game, especially caribou or bison, and supplemented by extensive gathering (Fitting 1965:103-104; Fitting et al. 1966; Ritchie and Funk 1973:336; Smith 1991).

Post-Pleistocene adaptive strategies were geared for coping with a harsh, but rapidly changing, environment. In general, Paleoindian sites reflect areas where small groups of people would perform specific tasks of relatively short duration (Klinge et al. 2008). This type of site maintains a very low archaeological profile across the landscape. Paleoindian sites are found on hilltops and bluffs overlooking major river valleys and tributary river valleys and near confluences of streams on high Wisconsin-aged terraces (Klinge et al. 2008).

As the glaciers retreated, the climate changed. Drier and warmer conditions precipitated an increase of deciduous forest species that became the dominant forest type (Cleland 1966:20-23). Oak-hickory forests eventually became dominant, although a substantial variety of other tree species were present (Shane 1994:13). Megafauna became extinct and smaller game filled the opening in ecological niches. Climatic changes forced adaptation in human behavior, as noted in the shift away from the Clovis tool tradition. The end of the Paleoindian period is distinguished by the emergence of more specialized ecological adaptation as the modern Holocene climate developed (Klinge et al. 2008).

Seeman and Prufer (1982) have updated an earlier survey of fluted point distribution in Ohio by Prufer and Baby (1963). Their later work details several factors that influence the location of fluted points. They identify one negative and two positive correlations with locational variables: 1) fluted points frequently are found in major stream valleys and confluences, 2) they tend to occur in proximity to quality flint resources, and 3) these points are rarely found in extensive swampy lowlands or in rugged highlands, such as the unglaciated portions of southeastern Ohio. Brown (1982), in studying the distribution of Paleoindian sites throughout the Muskingum basin, noted that this earliest occupation is evident in the Walhonding subbasin, which includes an extensive area south of the Lake Erie watershed. Within this subbasin, he points out that Paleoindian, including Plano, sites are known to occur on both hilltops and river terraces.

3.1.2 Early Archaic (9,500-8,000 B.P.)

The Early Archaic period represents a transition from the Paleoindian lifeways of the late Pleistocene. Early Archaic inhabitants lived as part of a developing system, and their subsistence strategies and settlement patterns reflected changing environmental conditions.

The Archaic sites in Ohio that have been excavated suggest the Early and Middle Archaic cultures lived in small campsites occupied for short periods of time (Leeper 1994:149). This differs from the settlement patterns of Archaic cultures in the southern states, particularly parts of Kentucky where groups were able to live for long periods of time along large rivers.

Brown and Cleland (1968) postulated that while Paleoindians exploited post-Pleistocene biotic communities that were mosaic in nature, Archaic cultures represent adaptations to the rather recent zonation of floral and faunal assemblages. This zonation of biotic communities presented Archaic peoples with particular geographic regions occupied by specifically adapted flora and fauna. The consolidation of differentially maturing resources into zones allowed Archaic bands to schedule the procurement of subsistence items as they became seasonally available.

During this period, the expanding deciduous forests produced a more favorable habitat for game species, particularly white-tailed deer (Cleland 1966). There also was a parallel shift from lanceolate fluted points to smaller, stemmed types (Justice 1987:85–97), such as Palmer, Kirk, Stanley, and other bifurcated-base styles. During this time, the material culture expands to reflect more diversified activities including axes, gouges, drills, and grinding stones (Jennings 1989:118–120). Hunting practices of the Early Archaic focused on smaller game, such as deer, elk, bear, rabbit, quail, and wild turkey. Advances in hunting technology resulted in the use of an atlatl, or throwing stick, which increased accuracy and productivity. Pine forests dominated the landscape during the Early Archaic. This vegetative cover is not conducive to subsistence practices of humans, and is considered to be the key factor in the sparse distribution of Early to Middle Archaic evidence. The majority of Early Archaic sites tend to be small and scattered, limited to surface discoveries of lithics, and usually occur in uplands near secondary stream valleys (Benchley 1975). These small and scattered sites are indicative of the highly mobile and seasonally sensitive nature of Early Archaic life.

3.1.3 Middle Archaic (8,000-5,000 B.P.)

In parts of the Middle Ohio Valley, the Middle Archaic sites are usually found along major waterways where artifacts reflect a reliance on aquatic resources. Purtill (2005) notes an apparent reduction of the number of known sites in many areas of Ohio from the Early Archaic to Middle Archaic periods. Around this time occurred the altithermal climatic episode during which temperatures were elevated (Ahler et al. 1992:16; Jennings 1989:150).

During the Middle Archaic period, the continuing amelioration of climatic conditions led to a greater variety of available resources, which marked an increase in the exploitation of forest and riverine resources. The diversification of subsistence-related activities increased and an emphasis on the exploitation of seasonal resources began to grow in importance (Cantley and Novick 1980). The Middle Archaic economy became more diffuse with an emphasis still on deer hunting but with utilization of a wider variety of plant foods (Cleland 1966:92-93). Specialization in certain activities generated a more complex social structure within the band network as evidenced by what Griffin (1978:229) calls the early indication of "status differentiation among the band members." Subsistence practices included the collection and preparation of plant materials for food. Bell-shaped and cylindrical-shaped stone pestles were introduced for grinding nuts, seeds, berries, and roots. Stone axes were used for chopping trees, and adzes were used to hollow out tree trunks for canoes. Archaic cultures initiated a new stone-working technique for other rock types, such as granite, sandstone, and steatite. This technique involved pecking the rock with a hammerstone, and then grinding and polishing its surfaces until the object was smooth (Chapman 1975:6; Griffin 1968:133).

The material culture of Middle Archaic peoples reflects the progressively more sophisticated technology adapted to the intensive exploitation of forest and riverine environments. This transition to the expanding food resource base is marked in the material culture by a change from lanceolate spear points, ideal for hunting larger animals, to a series of smaller, more diversified notched and stemmed projectile points, scrapers, knives, drills, and ovoid blades (Stothers et al. 2001:236–237; Klinge et al. 2008).

3.1.4 Late Archaic (5,000-2,900 B.P.)

The Late Archaic is characterized as a great diversity of pre-Woodland cultural traditions throughout eastern North America. The recognized cultural differentiation of the Late Archaic is based primarily on the development of stabilized regional and local environments that made "maximum use of all resources within restricted areas" (Dragoo 1976:11). In the Late Archaic period, the expansion of deciduous forest reached its most northern limit around 2000 B.C., and the climate was warmer than at present (Cleland 1966:93). This trend towards greater exploitational efficiency culminated in the Late Archaic with what Caldwell (1958) defined as "primary forest efficiency": a complete and effective adaptation to and utilization of a forest-edge environment.

The Late Archaic period was warmer and drier than the present day climatic conditions (Cleland 1966:93; Pielou 1991). Concurrent with climate change, increased population and territorial restriction appear to have led to regional cultural adaptations (Converse 1980; Cunningham 1948; Duerksen and Doershuk 1998; Ledbetter and O'Steen 1992; Stothers et al. 2001:252-253).

Late Archaic sites are characteristically large and represent occupations over long periods of time. Unlike the Middle Archaic period, where people moved freely among various river valleys, the Late Archaic populations remained at specific sites for longer periods of time in a semi-sedentary state (Stump et al. 2005:36, 37). A variety of settlement-subsistence patterns have been hypothesized to account for Late Archaic lifeways. These patterns include some version of cyclical coalescence and dispersal based on seasonal resource abundance or scarcity (Boisvert 1986; Ledbetter and O'Steen 1992; Vickery 1976). During spring and summer, the exploitation of shellfish, fish, turtles, migratory birds, and other aquatic resources produced concentrations of sites that can be characterized as small camps on slight knolls. The fall harvest of nuts and vegetables took place at sites that can be characterized as small camps on

slight knolls. Winter campsites were situated above the valleys for the effective exploitation of upland game such as deer, other mammals, and birds. Early evidence of cultigens is also associated with this time period. In Missouri and Kentucky, they occur by 2300 B.C. (Chomko and Crawford 1978:405). At Salts Cave, chenopodium, sunflower, and gourd seed were reported, dating approximately to 1500 B.C. (Yarnell 1973:20).

Not only are Late Archaic sites larger in size, but they also tend to contain more cultural remains, such as food refuse consisting of bone, shell and vegetal remains, as well as bone and shell artifacts. More specialized objects were utilized during the Late Archaic. These items include steatite and sandstone bowls, stone tubes and beads, polished plummets, net sinkers, whistles and rattles, birdstones, boatstones, bone awls, needles, and perforators (Boisvert 1986; Chapman 1975:6; Klinge et al. 2008). More elaborate, formalized mortuary practices mark an increase in ceremonialism as evidenced by the presence of exotic burial goods that were procured through emerging trade networks (Chapman and Otto 1976:20; Stothers et al. 2001:252; Klinge et al. 2008).

3.1.5 Early Woodland (2,900-2,100 B.P.)

The adoption of ceramic vessels by essentially Late Archaic groups marks the transition into the Woodland culture period. While there are several other criteria separating Late Archaic and Early Woodland populations, the presence of ceramics is the most archaeologically visible (Railey 1996:81). The development of pottery improved methods of food processing, especially the cooking of grains (Seeman 1986:564). Other factors indicating the progression to Early Woodland from Late Archaic are the emergence of stemmed projectile points, the deliberate construction of mortuary earthworks, and the increased use of cultigens (Emerson 1986:622). In addition, bone beamers began to be used instead of chipped stone endscrapers, and ungrooved celts replaced grooved axes (Railey 1990:248).

The Early Woodland period represents a cultural expansion of the Late Archaic, and is characterized by a greater tendency toward territorial permanence, as well as an increasing elaboration of ceremonial exchange and mortuary rituals. Traits that were once believed to have been indicative of the Early Woodland are now known to have their origins in the Archaic (Dragoo 1976:16; Jennings 1989:224–225). Burial practices, which formed the core around which Early Woodland mortuary complexes evolved, were, in fact, extant throughout the Archaic, and persisted into the Early Woodland (Webb 1947). Evidence that the Early Woodland diet was supplemented by domestication of various native and non-native cultigens like sunflower and chenopodium (Struever and Vickery 1973:11–19) should be amended to note the earlier use of these cultivated garden crops in the Archaic (Gremillion 1996; Yarnell 1973). Also, Wymer and Abrams (2003:188–190) note that southeast Ohio Early Woodland paleoethnobotanical finds indicate the increased collecting of a broad array of nut resources (hickory nuts, acorns, walnuts) and the increased use of starchy cultigens.

Central to the definition of the Early Woodland phase in Ohio is the Adena culture, noted for the use of pottery and the use of constructed conical mounds for interment (Chapman and Otto 1976:21). Ritualized status, rank burials, and construction of burial mounds probably had their origins in previous Late Archaic ceremonial complexes (Brose 1976:66-67; Heyman et al. 2005:67-81). Like the Late Archaic peoples, the Adena were semi-sedentary, but were more territorially restrictive, a fact evidenced through the occurrence of semi-permanent village sites and the first manufacture of pottery (Chapman and Otto 1976:21). According to Crowell et al. (2005:94), Early Woodland habitation sites were not year-round occupation sites. Rather, the sites were seasonal habitations. Fall and spring habitations were located on terraces. Winter

occupations were likely in rockshelters, and summer habitations were on the floodplains. These habitation sites were spatially defined homesteads, territorially distinct from those of neighboring communities.

The observation that potters within many different localities were making thick walled vessels tempered with locally available materials, hints at a broad regional technological adaptation. Finely made leaf-shaped blades and a variety of stemmed projectile points such as Cresap, Robbins, and Adena were manufactured (Chapman and Otto 1976:21). Copper was used to fashion ornaments such as beads, bracelets, rings, gorgets, and reels. Other typical artifacts included tubular pipes, quadraconcave gorgets, pendants of banded slate materials, full-grooved axes, hematite celts, and incised stone tablets (Chapman and Otto 1976:21).

Cultivation during the Early Woodland included sunflower, sumpweed or marsh elder, chenopodium, and amaranth, maygrass, erect knotweed and squash. Botanical remains suggest nuts were a significant part of Late Archaic subsistence and this continued into the Early Woodland diet. In addition, identified faunal resources suggests that deer was the dominant animal source of food (Brose 1976:67; Crowell et al. 2005:95, 96; Potter 1980:6; Stothers and Abel 1993; Struever and Vickery 1973:11-19).

3.1.6 Middle Woodland (2,100-1,500 B.P.)

The Middle Woodland period represents a period of complex sociocultural integration across regional boundaries via networks of trade. This concept has been described as the Hopewell Interaction Sphere by Caldwell (1958) and Struever (1964). The designation "Hopewell" is applied to a particular archaeological phenomenon that has been found from western New York to Kansas and from the Gulf of Mexico to Lake Huron. Jennings (1989:237) recognizes Scioto Hopewell, Havana Hopewell, and Crab Orchard as dominant complexes or focal areas existing during the Middle Woodland: the Scioto or Southern Ohio Hopewell are the "core" of Hopewell society (Pacheco 1996:18), while Havana societies occurred along the Illinois River valley and adjacent areas, and Crab Orchard was found in areas surrounding the Ohio and Mississippi River confluences. In Ohio, Hopewell, which is a culmination of Late Archaic and Early Woodland trends (Dragoo 1964), is a dramatic cultural manifestation in terms of stylistic traits, mortuary ceremonialism, and complexity of earthworks. Fagan (1995) stresses that Hopewell is a phenomena and not a widespread culture with finite boundaries. The underlying culture was always local. The Hopewell style was diffused over a vast area of eastern North America through this trade network. Fagan (1995) suggests the distinctive religious beliefs possibly served as a common identity to scattered kin groups.

Hopewell is characterized by elaborate geometric earthworks, enclosures, and mounds that are often associated with multiple burials and a wide array of exotic ceremonial goods. Hopewellian trade networks were more extensive, and materials used in the manufacture of ceremonial objects were acquired from various regions of North America: copper and silver from the Upper Great Lakes; quartz crystals and mica from the Lower Allegheny mountain region; obsidian and grizzly bear teeth from the west; and shark and alligator teeth, marine shell, and pearls from the Gulf Coast region (Prufer 1964; Vickery 1996). Lithic types attributed to the Hopewell are Snyders points, Hopewell leaf-shaped blades, Copena points, small side-notched points without basal grinding, prismatic blades and associated polyhedral cores (Greber et al. 1981), and flake knives, most of which were manufactured from high-grade flint, another important trade commodity (Justice 1987:200–203; Mayer-Oakes 1955).

The Hopewell culture is also known for their artistic development. Their elaborate and decorative artistic style is common in their pottery and pipe making. The Hopewell made grit

tempered pottery similar to their predecessors, the Adena. Hopewell pottery was "vase-like" in appearance. The exterior was cord-marked or flat. The exterior was decorated with punctate markings, incised designs made from plants, and rocker stamping, which resulted in zig-zag lines across the surface (Potter 1980). Hopewell pipes were manufactured in the platform style with a curved or rectangular base. The stem of the pipe encompassed half of the platform. Pipe formations are plain or effigy shapes of animals, particularly birds, or human heads. Other artworks made by the Hopewell are marine shells used as containers, shark and alligator teeth, obsidian, mica sheets cut into geometric and representational forms, mirrors made from mica, and copper items associated with burials: bracelets, beads, breastplates, and earspools (Potter 1980; Fagan 1995).

Most of the information on the Hopewell centered on their funerary rites and the Cult of the Dead, as well as their distinctive, elaborate and decorative styles of lithic tools, pottery vessels and pipes. As such, little information was known about their settlement patterns. Middle Woodland subsistence was based on hunting and collecting, and small-scale agriculture probably more accurately described as horticulture. Wymer (1997) posited that 60 to nearly 90 percent of seeds recovered from Ohio Hopewell sites are components of the Eastern Agricultural Complex—maygrass, erect knotweed, and goosefoot. Other significant cultigens include sumpweed or marshelder, sunflower, and yellow flowered gourd squash. Significant nut resources include hickory nuts, black walnut, butternut, acorn, and hazelnut. Horticultural and plant gathering activities provided for the majority of the Middle Woodland diet, but were complemented by hunting, fishing, and gathering. Hunting was focused on the white-tailed deer. Other animal species taken include black bear, elk or wapiti, beaver, various fish species, and mussels (Griffin 1968).

The settlement pattern in the Middle Woodland was originally described as a series of vacant ceremonial centers surrounded by outlying farming villages (Prufer 1964). This Vacant Center-Dispersed Agricultural Hamlet model is based on the Mesoamerican Vacant Ceremonial Center-Dispersed Agricultural Hamlet pattern, wherein the ceremonial center is the focus of settlement, but is itself not a center of domestic activity (Dancey and Pacheco 1997). This model was updated by Dancey and Pacheco (1997) and referred to as the Dispersed Sedentary Community Model. The model is still based on the concept of isolated households dispersed across the landscape, usually organized around regional drainages, both primary and secondary. In the Upper Little Miami and Great Miami drainages, the average distance between enclosures is approximately 10 km (6.2 mi). Woodland settlements cluster on terraces and at stream confluences, often in association with earthworks sites (Keener and Biehl 1999:330). These small settlements are dispersed enough to allow for a subsistence strategy that combined horticulture, hunting, and collecting. Most of these small settlements were only briefly occupied; they do not have substantial structures, thick middens, or evidence of long-term occupations (Yerkes 2000:5). Other components of the settlement pattern include "outlying camps, public works, and symbolic places" (Dancey and Pacheco 1997:8).

The ebb of Middle Woodland cultural florescence marked the beginning of the Late Woodland period, ca. 1500 B.P. From 2100 -1500 B.P., the Scioto Hopewell had reached a cultural apex (Shane and Murphy 1975). Around the sixth century A.D., a decline and realignment took place, the exact causes of which are unknown. Both Cleland (1966) and Farnsworth (1973) hypothesize that societal changes led to less reliance on exchange and redistribution, bringing an end to the Hopewell interaction sphere. Dancey (1996) explains the breakdown of Hopewell as the result of a redirection of energy toward intensification of labor and community aggregation. The aggregation of the communities negated the need for ritual ceremonial

centers and the construction and maintenance of the earthworks lapsed. Other theories concerning the Hopewell decline are linked to unchecked population growth resulting from new technology, such as the bow and arrow. Another theory is based on long-term cultural processes. Exchange and trade networks utilized throughout the Late Archaic to Middle Woodland encouraged intensified agriculture. Intensified agriculture had two possible effects. One effect was the success of horticulture variation in providing local resource availability, thereby eliminating the need for long distance exchange and reciprocal ties. The second outcome of intensified agriculture increases the carrying capacity of the land, creating the risk of famine, and catastrophic shortages among denser populations (Potter 1980; Fagan 1995).

Regardless of the reasons, it is evident that by 1,300 B.P., major changes in subsistence and settlement were occurring, and that there was more diversity in occupation patterns. Ceremonial centers were abandoned, trade networks dissipated, and less emphasis was placed on burial ceremonialism. These trends are recognized as marking the beginning of the Late Woodland period and a return to the more mundane, generalized characteristics of the Woodland tradition, with an increased reliance on domesticated plants supplemented by hunting and intensive gathering. Variants of this pattern became focused within major drainages throughout the region resulting in the definition of several Late Woodland phases throughout the central and upper Ohio Valley: Newtown (Oehler 1973), Peters (Prufer and McKenzie 1966), Chesser (Prufer 1964, 1967), and Watson Farm (Mayer-Oakes 1955).

3.1.7 Late Woodland (1,500-1,100 B.P.)

The ebb of the Middle Woodland cultural florescence marked the beginning of the Late Woodland period, circa A.D. 500 - 1000. As summarized above, much speculation has been put forth on the causes of this change. One additional theory involves a climatic fluctuation which resulted in a cold, dry period (Griffin 1961). It is possible that the shift in climatic patterns may have inhibited agricultural practices. The Late Woodland Period was composed of two distinct types of sites occupied on a seasonally interchangeable basis (Railey 1996). During the summer, a base camp or village was established with habitation structures and cultivated fields and was re-occupied from year to year. After the harvest, these sites would be temporarily abandoned for hunting camps in the nearby forests. In this way, increases in population density that put stress on stream valley resources could be alleviated. At the same time, the widespread adoption of the bow and arrow increased hunting efficiency, and upland sites were utilized to contribute substantial faunal, as well as agricultural resources, to the subsistence base (Styles 2000; Railey 1996). This major territorial reorganization, between the Middle and Late Woodland periods, indicated the gradual restriction of total catchment area, thus suggesting geographically more confined and more autonomous social units.

Much of the characterization of the Central and Southern Ohio Late Woodland has been based on ceramic assemblages (Murphy 1975). Several different pottery types, distinguished by their primary tempering technique, are used to define these assemblages. Central Ohio is represented by the Cole series—first identified from the Cole site in Delaware County—which consists mainly of cordmarked, grit-tempered ceramics. Southern Ohio ware is characterized by the Peters series, which is primarily cordmarked and chert tempered, and the cordmarked and limestone-tempered Chesser series (Prufer 1964, 1967; Prufer and McKenzie 1966). The Late Woodland lithic assemblage is represented by triangular projectile points, Raccoon Notched, and Chesser Notched points (Klinge et al. 2008).

In the middle Ohio Valley, the Late Woodland period is characterized by the development of nucleated villages after 1,600 B.P., many of which were encircled by ditches or embankments.

Some of these villages may have housed upwards of 100 people. Smaller open sites are interpreted as homesteads or temporary camps for task groups from larger settlements. Seeman and Dancey (2000:597) state that such sites occur within lesser stream valleys, and discuss whether such evidence would constitute outward expansion of Late Woodland peoples into locales of marginal locales as a manifestation of population increase.

The Late Woodland Newtown phase denotes a cultural complex that succeeded the Hopewell and preceded the Fort Ancient culture in Southern Ohio. Newtown sites show a marked preference for elevated land surfaces above floodplains. Newtown sites generally consist of circular-to-oval sheet middens covering approximately 1.2 to 2.0 ha (3.0 to 5.0 ac), with basin-shaped oven features extending below the midden (Seeman 1980). Subsistence for Newtown peoples was centered on the white-tailed deer (Odocoileus virginianus) and appears to be less generalized than the Fort Ancient occupation that follows (Seeman 1980). Floral assemblages are dominated by nuts such as hickory, black walnut, butternut, acorn, and hazelnut. Reliance upon cultigens is transitional between that of the Middle Woodland and the Fort Ancient.

The artifact assemblages are characterized by Chesser and/or Lowe projectile points, chipped stone celts, shale or limestone discs, rectangular slate or bone gorgets, and ground stone celts (Seeman 1980). In addition, some Newtown sites have a well-developed bone tool industry with awls, needles, projectile points, flaking tools, and flutes. Typical Newtown pottery was grit tempered with cordmarked exteriors. Rims were usually flattened and squared. Angular shouldered pots have also been found on many Newtown sites. Later Newtown ceramics include pieces with cambered rims, collared rims, and notched lips.

The Terminal Woodland period (A.D. 700-1000) marked the end of the Newtown phase, and a return to a dispersed settlement pattern, as evidenced in northeastern and central Kentucky (Railey 1996:116). After A.D. 700, maize horticulture increased in importance, changing the lifestyles of Late Woodland groups (Railey 1991:70). The use of maize had been diffusing through the southeast since about A.D. 400, with varying degrees of acceptance and levels of use (Cobb and Nassaney 1995:209). The widespread adoption of maize is one of the characteristics indicating the end of the Late Woodland Period.

3.1.8 Late Prehistoric (1100-250 B.P.)

Originally defined by Mills (1906, 1914), Fort Ancient was delineated from materials collected at sites such as Fort Ancient, Baum, Gartner, and other localities along the Great and Little Miami Rivers in Ohio. Archaeologists now define Fort Ancient as a group of sedentary horticulturists who were the last prehistoric culture to occupy the Middle Ohio Valley before direct European contact (Henderson 1992). Geographically, the Fort Ancient culture area extends from southeastern Indiana to just east of the mouth of the Muskingum River in south-central Ohio, and into the Inner Bluegrass region of Kentucky.

The Fort Ancient culture appeared in Southern Ohio and surrounding areas from A.D. 960 to 1000, its emergence from a Late Woodland base stimulated by an increasing reliance on maize agriculture, an increase in sedentism, and the influx of southern Mississippian influences (Brose et al. 1978; Essenpreis 1978). Although several chronologies have been formulated for the region, research conducted in northeastern Kentucky has resulted in the development of the most concise chronological sequence (Henderson 1992). In addition, this research has identified diachronic trends within the Fort Ancient sequence in ceramic and lithic assemblages (Henderson 1992). Fort Ancient peoples built villages with extensive plaza areas; some lived in semi-subterranean and wall-trench houses, although some houses are recognized only by postmold configurations (Drooker 2000:228–254; Ledbetter and O'Steen 1992:284; Sharp

1996:181). It should be noted that Riordan (2000:404–405) documented several small Fort Ancient sites that might have been resource extraction locales or isolated homesteads in the Upper Little Miami valley and its tributaries. Pitner (2000) documents one of the few natural rock overhangs in southwest Ohio, on Massie's Creek in Greene County. However, the Owens Rockshelter (33GR670), although it was utilized for 4000-5000 years, was most heavily used in late prehistory. A variety of projectile points and other stone tools, grit- and shell-tempered ceramics, and an extensive inventory of faunal remains were recovered at the site (Klinge et al. 2008).

Early Fort Ancient is the earliest phase in Henderson's study area and is contemporary with the Baldwin, Baum, and Brush Creek phases (A.D. 950–A.D. 1250) in south-central and southeastern Ohio (Henderson 1992, 1993, 1995; Prufer and Shane 1970). The Croghan phase reflects continuities with the preceding Late Woodland period, such as similarities in vessel form, house size, and site size. However, Croghan phase sites are restricted to the lower Scioto River Valley and the area surrounding the confluence of the Scioto and Ohio rivers (Klinge et al. 2008).

Early Fort Ancient ceramic assemblages are characterized by the Baum series. Baum series ceramics are tempered with crushed rock, mussel shell (exclusively used or used in combination with other tempers), and grog. The majority of vessels were cordmarked, although smoothed exterior surfaces occur as well. Jars are the singular vessel form and have mainly direct rims, elongated bodies, and rounded bases. Appendages consist of lugs and crude loop and strap handles (Henderson 1992). Lithic assemblages consist of Type 2: Flared Base Fine Triangulars (Henderson 1992), and ground, pecked, and battered tools such as pitted stones, celts, and net sinkers. A variety of bone and antler tools (beamers, antler projectile points, beads, and awls) was also recorded (Henderson 1992).

Subsistence data from these sites indicate a diverse pattern of plant exploitation and a multiple plant-oriented subsistence strategy with three distinct components: plant cultivation, wild plant gathering, and wild nut collecting (Henderson 1992, 1993, 1995). Cultivated plants include corn, squash, and beans, although they have not been directly recovered from Early Fort Ancient sites (Henderson 1992, 1993, 1995). Animal exploitation was geared toward the procurement of large terrestrial species such as deer, bear, elk, and turkey, and differed little from the preceding Late Woodland period. A variety of small mammals, birds, fish, and shellfish constituted minor percentages of the diet. This pattern of animal exploitation reflects an adaptation to the uplands of the Interior Low Plateaus region (Henderson 1992, 1993, 1995).

The SunWatch Site (33My757) is a 1.2-ha (3-ac) Fort Ancient village site that was discovered by a local landowner along the Great Miami River in Dayton. More than 20 years of excavations (mostly salvage work for a sewer plant) have revealed a planned, circular, stockade village, estimated to have been occupied for about 20 years (ca. A.D. 1200). The site apparently had astronomical alignments. The village site includes a stockade, house remains, deep storage/trash pits, and an open ceremonial space with limestone slab burials (Miller and Hauser 2004). SunWatch contained many well-preserved artifacts, including fragile items such as crayfish pincers, fish scales, fragments of turkey eggshell, and even uncharred wood remains (Boonshoft Museum of Natural History 2007).

The Middle Fort Ancient time period is contemporary with the Fuert phase in south-central and southeastern Ohio (Prufer and Shane 1970), the Philo phase of southeastern Ohio (Carskadden and Morton 1977), and the Shoemaker phases in southwestern Ohio and surrounding regions.

In the Middle Fort Ancient period, the dependence on corn became even more pronounced, as the culture became one of "true farmers" (Sharp 1996:170).

Middle Fort Ancient ceramics share many similarities with Baum series, while later Middle Fort Ancient ceramics are similar to the Madisonville series. McAfee series (Sharp and Turnbow 1987) sherds are also present, as are Madisonville series sherds (Henderson 1992, 1993, 1995). Generally, shell is the most commonly used tempering agent, although limestone or grit and mixtures of shell/limestone/grit can occur. Jars that exhibit Z-twist cordmarked exterior surfaces dominate these assemblages. However, net-impressed/knot-roughened examples first appear in Middle Fort Ancient assemblages. Burnishing in the neck and rim area is also noted (Henderson 1992, 1993, 1995). Middle Fort Ancient lithic assemblages consist of Type 2: Flared Base, Type 3: Coarsely Serrated, and Type 5: Straight Sided, Fine Triangulars. A variety of ground, pecked, battered tools such as pitted stones, celts, and net sinkers have been recovered from these sites. In addition, two distinct lithic artifact types appear and include chipped stone discs and discoidals (Henderson 1992, 1993, 1995).

Middle Fort Ancient sites are located on terraces close to confluences of smaller streams and on the Ohio River floodplain and ridgetops (Henderson 1992, 1993, 1995). Villages are larger and were occupied for longer periods of time, and are circular or linear in shape. Structures were sub-rectangular in shape, and made of wattle and daub (Brose 1982; Brose et al. 1978). Some sites are associated with low burial mounds that have been recorded within the plaza, outside the ring of habitation in circular habitations, or near the edge of linear villages (Henderson 1992, 1993, 1995). These data indicate variability within a common Fort Ancient theme. This is also supported by Carskadden and Morton's (1977) findings of a complete lack of cordmarking on sherds associated with the Philo components at the Philo II and Richards sites. Low-level social ranking is suggested by the fact that the dead were interred within mounds and village areas (Henderson 1992, 1993, 1995).

Defined in 1986 as a result of an informal discussion, the Madisonville horizon (Graybill 1981; Sharp 1990) was divided into two phases, Gist (A.D. 1400–1550) and Montour (A.D. 1550-1750) by Henderson (1992, 1993, 1995) to distinguish factors of historic contact. Henderson (1992) noticed sweeping regional similarities in material culture items that suggested a level of increased regional and extraregional interaction during the Gist phase (A.D. 1400–1550). The Madisonville ceramic series is the predominant series within the Gist phase. Major types are Madisonville Cordmarked and Madisonville Plain. Minor ceramics series include Fox Farm (Checkstamped and Colander), Todd series (Todd Plain; variety Fox Farm and unspecified variety), Kenton Fabric Impressed, and McAfee series (Henderson 1992, 1993, 1995). Shell is used for temper almost exclusively and new vessel forms such as globular jars, pans, and colanders appear. Lithic assemblages include Type 4: Short Excurvate, Type 5: Straight Sided, and Type 6: Concave Base triangulars, and unifacial endscrapers are introduced (Henderson 1992, 1993, 1995). Varieties of ground/pecked/battered tools are recovered from Gist phase sites, as well.

Subsistence patterns show a focus on deer, elk, bear, and turkey for meat resources. Corn, beans, and squash, along with a variety of wild nuts and plants, were also exploited. Gist phase villages are somewhat larger than those of their predecessors. Village plans indicate that some villages were circular but the majority were organized in a linear fashion and were similar to those of the Montour phase (Henderson 1992, 1993, 1995). There are no burial mounds presently recorded for Gist phase sites.

Although specific aspects of prehistoric culture were retained during the Montour phase (A.D. 1550–1750), cultural forces associated with Euroamerican contact distinguish it from the preceding Gist phase (Henderson 1992, 1993, 1995). Trade goods such as beads, copper,

brass, and silver have been recovered from early Montour phase sites in the area. Madisonville series ceramics continue to be the major ceramic type and shell tempering is almost exclusive. Toward the end of the Montour phase, Madisonville Groove Paddles becomes the major ceramic type and pans are no longer manufactured (Henderson 1992, 1993, 1995). Lithic assemblages are dominated by Type 6: Concave Base, Type 4: Short-Excurvate, and Type 5: Straight Sided triangulars. In addition, bifacial endscrapers are introduced (Henderson 1992).

The Madisonville horizon was spreading, influencing changes in pottery and projectile point styles (Sharp 1996:171). These trends were still continuing at the time of European contact, as evidenced by the presence of Euro-American materials at late Fort Ancient sites (Sharp 1996:180). Such cultural changes throughout the Fort Ancient time period reflect adaptations to an increasing population, increasing warfare, changes in technology, and ideology (Ledbetter and O'Steen 1992:282). Trade and warfare played important roles in Fort Ancient Society, as many exotic artifacts appear in assemblages in Kentucky and throughout the region, and many individuals showing evidence mortal wounds have been found (Sharp 1996:180).

Ethnohistoric and archaeological data suggest Montour phase sites were large permanent settlements located on terraces adjacent to the Ohio River and on ridges. Smaller seasonal hunting camps were also occupied (Henderson et al. 1986). Houses of the Montour phase are long, rectangular structures with rounded corners (Henderson 1992, 1993, 1995). The presence of a large council house has been documented at sites such as Lower Shawneetown, and indicates changes in social or political organization.

Euroamerican contact at the end of the Montour phase was direct and varieties of trade goods were introduced, such as guns, metal knives and axes, and metal cooking vessels. By the eighteenth century, aboriginal exchange networks had been replaced by Euroamerican trade networks. The introduction of disease, population reduction, and population movement signaled the end of the Montour phase and the end of indigenous lifeways in the middle Ohio Valley (Klinge et al. 2008).

3.2 Historic Period

Data collected during the background research phase was analyzed and incorporated in the historic context for the Project. The development of the historic context drew upon historic mapping of the project area, previous architectural survey work, cultural resources compliance reports, NRHP nominations, recorded architectural site file information, and additional research. The historic context is used to provide a framework to evaluate the NRHP eligibility of the surveyed architectural resources.

The historic context is tailored to a framework intended to support NRHP eligibility determinations and/or local historic site designations for the surveyed architectural resources. This context highlights important historical themes, such as colonial expansion, settlement, community development, domesticity, agriculture/subsistence competency, the market revolution, civil war, commercialization, transportation, and industrialism as they relate to the region's built environment and as they are reflected in examples of local architecture and history. As such, the context is organized according to historic time periods for Ohio.

3.2.1 Euromerican Exploration and Settlement

At the time of European contact with the Ohio Country, the land of present-day Clark County was primarily occupied by the Miami and Shawnee Indians. Early contact between native groups and Europeans in western Ohio was primarily with the French, who began to explore the region from the Great Lakes, along the region's rivers, to the Mississippi River. Wanting

access to land and Native American trading, the British began expanding into the region during the 1740s. In 1748, British colonists in Virginia created the Ohio Company. The Ohio Company aimed to both make money on land speculation and keep tabs on French developments in contested territories. The proximity of the land purchased by the Ohio Company in present-day Southeast Ohio angered the French, and helped lead to the start of the French and Indian War (Chase 1833, Ohio History Connection n.d.A).

Another point of contention between the colonial powers and their native allies leading up to the French and Indian War was Pickawillany, near present-day Piqua in neighboring Miami County. The Miami Indians established the town of Pickawillany on the Miami River in 1747. The Miami, searching for trade competition with the French, invited the British to set up a trading post in the town, ultimately challenging the French colonial control of the area. After an unsuccessful attempt to strengthen their trade alliance with the Miami in the region, the French, along with other Indian allies, attacked Pickawillany in 1752. The attackers killed Chief La Demoiselle and took several British prisoners. The British did not retaliate. As a result, the Miami abandoned the town, moved to present-day Indiana, and realigned themselves with the French, as the British proved unable or unwilling to protect them as allies in the borderland (Ohio History Connection n.d.B)

The French and Indian War began in 1756 and ended at the signing of the Treaty of Paris in 1763. In the conflict, the Mingo, an Iroquoian group, and the Wyandot of Ohio sided with the British, while the Delaware, Shawnee, and Miami sided with the French. While no battles took place within the project area, the expansion of British territory westward directly led to the conflict. By 1768, the Treaty of Fort Stanwix officially opened lands west of the Alleghenies as far as the Ohio River to European and American settlers, and the Native American groups, including the Iroquois, Delaware and Shawnee, were pushed further north and west (National Park Service 2020).

During the American Revolution, frontiersmen led troops to battle against British-aligned Native Americans within the empire borderlands, far removed from the battles against the British and Continental Armies. General George Rogers Clark, aided by 1,050 troops, including Daniel Boone, led an attack on Shawnee villages within present-day Southwest Ohio. On August 8, 1780, a major encounter occurred between the Shawnee and Clark's forces near present-day Springfield, Ohio. Both sides suffered significant loss at what is now known as the Battle of Piqua (The Piqua Shawnee Tribe 2017).

Later, the Indian Wars (1790-1794), which were fought between Native American tribes and American forces in northwest Ohio, lasted until the Battle of Fallen Timbers, which marked the defeat of Native Americans in the Ohio Territory. The subsequent Treaty of Greenville in 1795 was signed with leaders of many tribes and opened up approximately three-fourths of Ohio for settlement, which followed quickly in the region (Ohio History Connection n.d.C).

3.2.2 Statehood and Early Development

In November 1802, a constitutional convention was held for the purposes of drafting a state constitution and petitioning for statehood. A constitution was drafted in just three weeks, and sent to Congress. In 1803, agreement was reached between Congress and the Ohio representatives, and the state of Ohio was created. Ohio entered the Union on equal footing with the original states, as the first state government organized through the Northwest Ordinance (Howe 1846).

The Ohio government authorized the creation of Clark County on March 1, 1818, from parts of Greene, Champaign, and Madison counties. The county was named after General George Rogers Clark, the Revolutionary War general who led troops against the Ohio Shawnee. By 1820, Clark County reported a population of over 9,000 residents. The county seat, Springfield, was incorporated as a town in 1827. Springfield received its city charter from the Ohio government by 1850, owing the advancement to the rapid regional settlement (Wittenberg University n.d.).

Several factors contributed to the county's rapid population growth during the mid-nineteenth century. The Old National Road was constructed through Springfield in 1839, directly connecting the county to the east coast, and eventually, as far west as Illinois. During this same period, Ohio officials planned the construction of a canal through neighboring Miami County, generally following the path of the Miami River. The canal provided a direct market access to Dayton and Cincinnati, and even as far as New Orleans by way of the Ohio and Mississippi Rivers. Despite the initial success of the canal through the region, it quickly became an outdated form of extended travel, as methods of travel that were not reliant on bodies of water existed in the region. Railroads were constructed in Ohio as early as the mid-1820s as the canals also began construction. The goals of most of these early railroads were to connect communities that did not have access to the canals, Lake Erie, or the Ohio River, to these major water-based shipping routes, and to provide cheap means of transportation between the east and west sides of the state. Railroads began to appear in Clark County by the 1840s, offering a faster way to transport goods and people. By the 1850s when the Baltimore and Ohio Railroad provided the first interstate connection (Wittenberg University n.d.; Ohio History Connection n.d.D).

Increased transportation options during the mid-nineteenth century greatly expanded the region's market endeavors, especially those related to agriculture. Western Ohio heavily relied on agricultural production since its earliest settlements. The area became known for its agriculture-related industries by the 1860s as Springfield became the world's leading manufacturer of agricultural equipment. A local resident, William Whitely, invented the combined self-raking reaper and mower in 1856. This new farm machinery began to be locally produced Whiteley, Fassler, and Kelly, a farming implement company (Wittenberg University n.d.; Springfield News-Sun 2018).

During this same period of agriculture industry in the mid-nineteenth century, Clark County was also an active participant in the Underground Railroad. One prominent case was that of Addison White, an enslaved person escaping from Kentucky through the area. White found refuge at a farm outside of Mechanicsburg, in neighboring Champaign County, at the farm of Udney Hyde, who was rumored to have aided over 500 enslaved individuals to freedom. When federal marshals came to collect the fugitive, Mechanicsburg citizens forced them to leave, but four men were arrested for their obstruction. During the course of the men's trials in Springfield and Urbana, the federal marshals severely beat the Clark County Sheriff, John Layton, during a confrontation in the village of South Charleston. After an attempted escape, the marshals were bounded to Clark County Common Pleas Court and found guilty of assault and battery. They were eventually cleared of their charges when the case was brought to federal court. After witnessing the beating of the local authority by federal officials, residents of South Charleston resolved to resist additional meddling by federal authorities by making their town "too hot to hold any spy or informer" (Stafford 2018).

3.2.3 Industrialization

Following the Civil War, the county continued to grow as an industrial powerhouse region, with agriculture as the center of industrial production. Among Springfield's largest manufacturers during the late nineteenth century were the Standard Manufacturing Company, the Champion Machine Company, and the Lagonda Agricultural Works. By 1880, Whitely's Champion Machine Company produced more farm machinery than all the factories in Chicago combined and was supposedly the largest industrial facility under one roof in the United States. In 1902, several of these companies, including companies from Chicago and Milwaukee, merged to become International Harvester. International Harvester began making truck in the early twentieth century. While Springfield maintained a production facility for International, the headquarters were established in Chicago (Ohio History Central 2011a; Springfield News-Sun 2018).

The same year International Harvester was established, A.B. Graham, a Springfield teacher, started the 4-H program, which provided agricultural education to school-age children. The program has since grown to encompass education about a variety of skillsets. Today, 4-H is active in 40 countries and involves over six million children a year (Ohio State University Extension n.d.).

In addition to industrial and agricultural growth, Ohio experienced significant railroad growth following the Civil War, with several smaller routes integrated together at this time. By 1910, Ohio had more than 9,500 miles of track. Railroads remained the dominant mode of transportation in Ohio until after World War II (Ohio History Connection n.d.D).

In the 1870s, a rail line was constructed adjacent to the Project area, originally chartered as the Springfield, Jackson & Pomeroy Railroad in 1875. The SJ&P was built as a narrow gauge railroad, but converted to standard gauge in 1879. In 1901, the SJ&P, along with several other small, regional lines, were purchased by the Detroit, Toledo & Ironton. The railroad connected Detroit to Ironton, Ohio along the Ohio River. The DT&I operated as disconnected segments for several years until Henry Ford became interested in the rail line to provide resources to his factories in Detroit. Ford purchased the railroad in 1920 and spent $15 million on improvements before selling the rail line in 1929 (The Henry Ford n.d.; American-Rails 2022).

3.2.4 World War II - Present

Following a trend of national economic growth due to industrialization and a wartime economy during World War I, the United States experienced a nationwide depression during the 1930s. However, the county's industries kept the area relatively sustained. The county also benefitted from its relative location to the Wright Patterson Airforce. The region continued to prosper in the post-war period. As suburban developments became popular housing options for returning GIs, Clark County experienced population growth, leading the expansion of local municipalities. Interstate 70 was constructed through the county during the 1960s. Many of these new residents commuted to nearby Dayton companies. Despite the population and infrastructure development, the county population declined in the 1970s through 1990s, likely associated with the nationwide trend of industrial decline (Ohio History Central 2011b).

4.0 Background Research and Archaeological Potential

GAI conducted background research to identify previously recorded cultural resources in the Project vicinity in order to: (1) assess the Project area's potential to contain unrecorded cultural resources; and (2) to develop a context for evaluating resources identified within the Project APE. Data was collected on previously recorded archaeological sites, architectural and historical resources, NRHP properties, and previous cultural resources studies mapped within a 0.8-km (0.5-mi) radius of the Project. GAI reviewed Ohio Archaeological Inventory and Ohio Historic Inventory files and previous archaeological research for the Project vicinity using data maintained by the OHPO. A review of the NRHP and historic structure survey files was also undertaken. Historical maps were examined to consider the locations of existing and former structures in the Project area and vicinity.

The OHPO database includes all Ohio listings on the NRHP, previous cultural resources surveys, previously recorded resources, districts, archaeological sites, buildings, structures, and objects. GAI's desktop review indicates that one previously recorded historic architectural resource (CLA0148310) has been recorded within a 0.8-km (0.5-mi) radius of the overall Project area (Figure 4). No archaeological sites or other resources have been recorded within a 0.8-km (0.5-mi) radius of the APE. In addition, no previous surveys have been conducted within the background review area.

4.1 Historic Structures

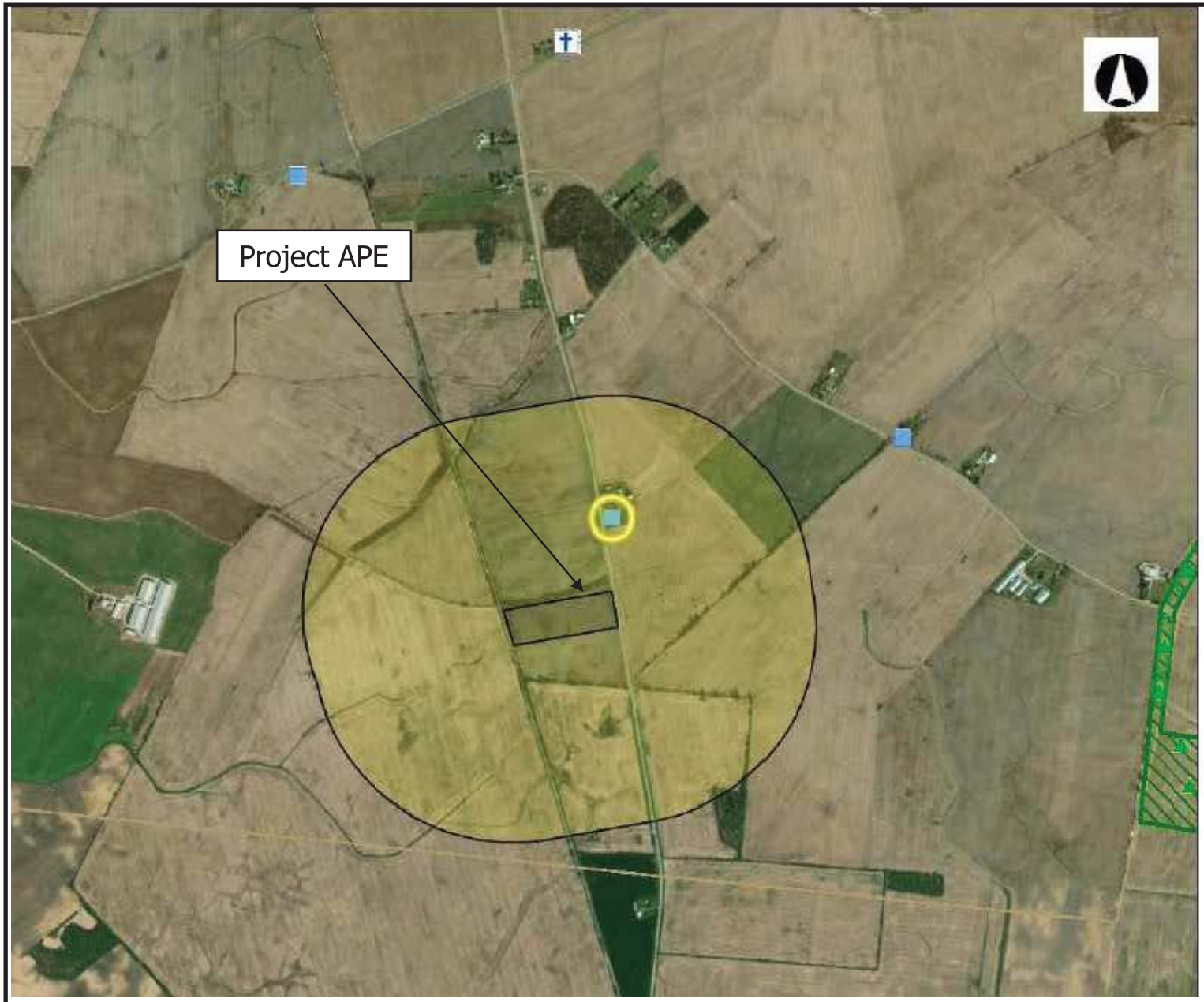
Background research identified one historic structure within 0.8-km (0.5-mi) radius of the Project. This resource is known as the William Mattinson Farmstead (CLA0148310) and is a circa 1865 farmstead which has not been evaluated for its eligibility to the NRHP. The building complex for this resource is located along the east side of South Charleston Pike, approximately 0.2 miles north of the Project APE.

4.2 Historical Research

Historical topographic maps and aerial photographic research was used to identify the potential for architectural/historic resources that may be over 50 years of age within the review radius. United States Geological Survey (USGS) topographic maps and aerial photographs dating to the mid-twentieth century (Figure 5) indicates that the entire Project area was relatively rural, with sparse houses along the roadways, surrounded by primarily farmland (USGS 1943 and 1962). The Detroit, Toledo, and Ironton Railroad is depicted directly to the west of the current Project area. Through the latter half of the twentieth century and early twenty-first century, the area remains rural, sparsely populated, and agricultural-based (USGS 1975 and 1990; NETR 1984, 2007, and 2017).

GAI also consulted the Archeological Atlas of Ohio (Mills 1914). Two mounds have been mapped in Madison Township. The nearest to the Project is approximately 3.54 km (2.2 mi) north/northwest of the APE, along the Detroit, Toledo, and Ironton Railroad (Figure 6).

Based on a review of previously recorded sites in the Project vicinity and a review of site location data from the surrounding area, undisturbed, relatively level to gently sloping portions of the Project area on well-drained soils were considered to maintain a moderate to high potential for unrecorded precontact-period sites. The Project area maintains a moderate potential to contain unrecorded historic-period archaeological sites. Such sites were expected to be associated primarily with domestic and/or agricultural use of the area. GAI further concluded that within the Project area, historic archaeological sites would likely be found along relatively level to gently sloping settings such as floodplains and stream valleys, in proximity to roadways.



OHIO HISTORY CONNECTION
State Historic Preservation Office

Legend

NR Listings
- Listed
- National Historic Landmark
- Delisted

Determinations of Eligibility
- DOE
- Demolished

- Archaeological Sites
- Historic Structures
- Historic Bridges
- Historic Tax Credit Projects
- Local Designations

OGS Cemeteries
- Confident
- Not Confident

- Historic Markers
- Dams
- UTM Zone Split

0 0.44 0.88 Miles

1: 34,715

Datum: [Datum]
Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

FIGURE 4. PROJECT LOCATION ON OHPO ONLINE MAPPING TOOL

gai consultants

MADISON SUBSTATION PROJECT

AES OHIO

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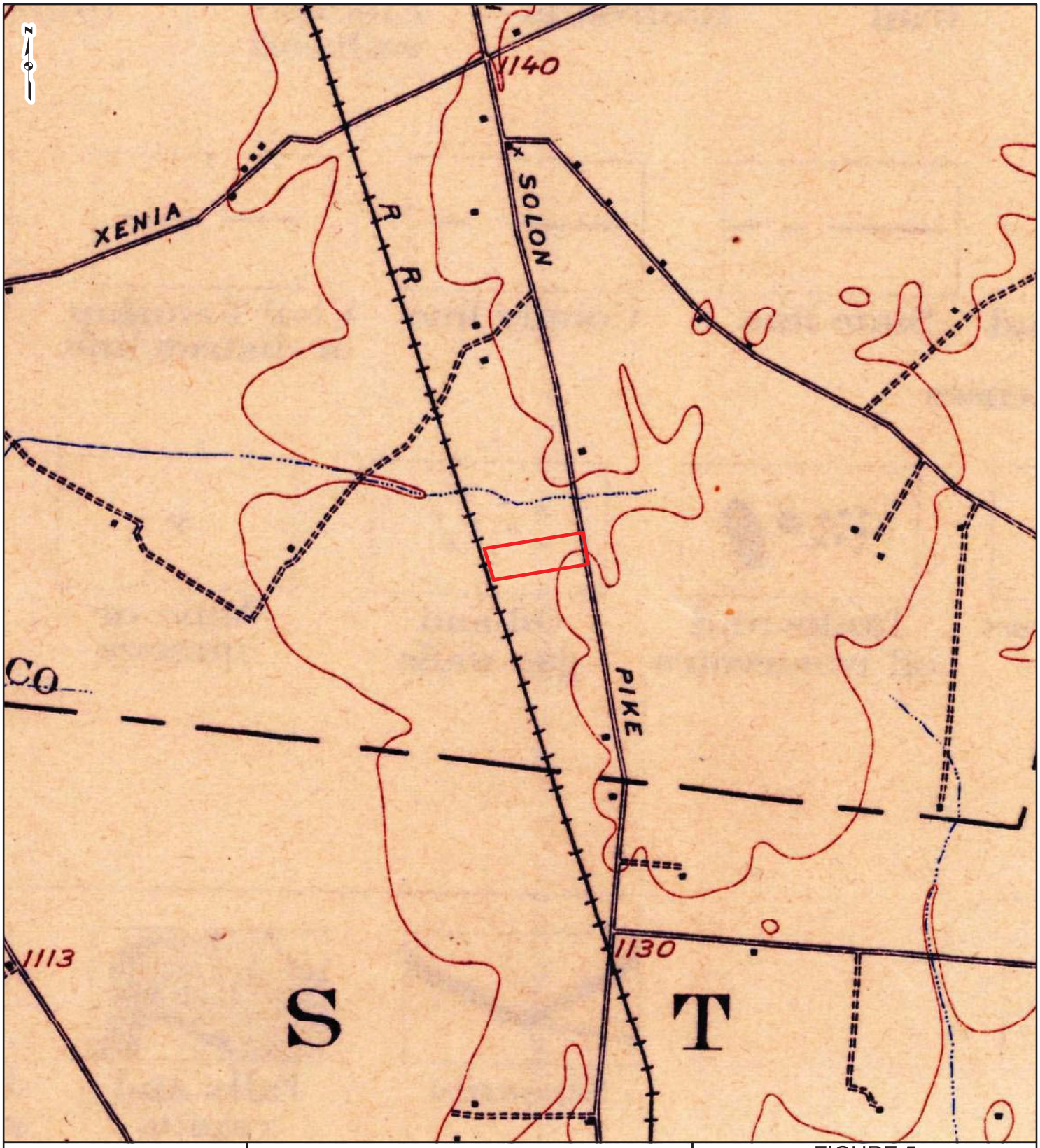
DRAWN: WJC
CHECKED: SR

DATE: MARCH 15, 2022
APPROVED: JG



PROJECT LOCATION

CLARK COUNTY, OHIO

LEGEND

Area of Potential Effect

0 1,000 2,000 4,000 Feet

FIGURE 5
PROJECT LOCATION
IN 1907

MADISON SUBSTATION PROJECT

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DRAWN BY: AJW DATE: 3/15/2022
CHECKED: MDO APPROVED: WJC

REFERENCE: USGS 15 MINUTE TOPOGRAPHIC QUADRANGLE: SOUTH CHARLESTON (1907), OHIO, OBTAINED THROUGH ESRI USA HISTORIC TOPO MAPS, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 03/2022.

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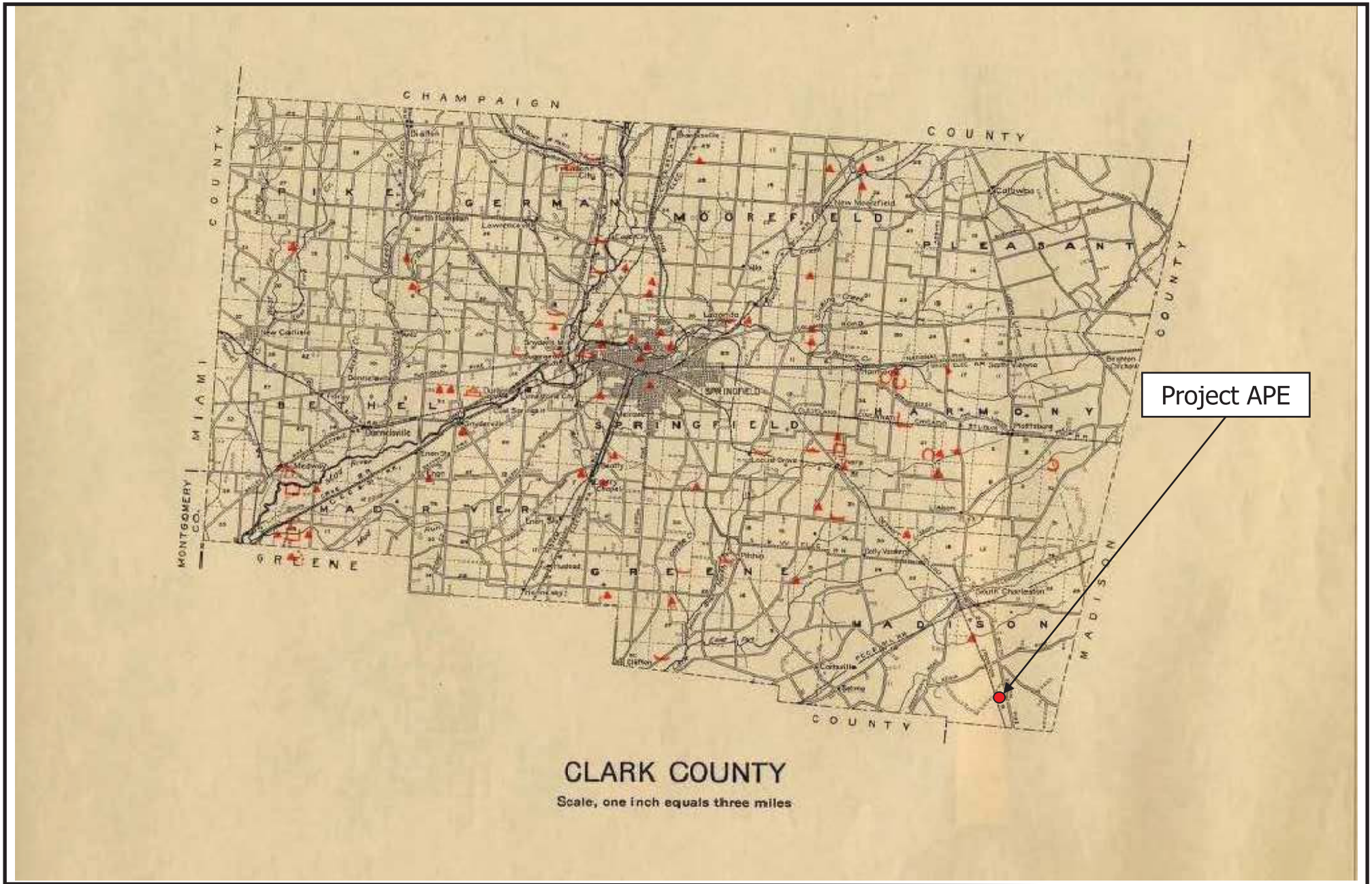

FIGURE 6. PROJECT LOCATION ON 1914 ARCHAEOLOGICAL ATLAS OF OHIO

REFERENCE:
Mills, William C.
1914 Archeological Atlas of Ohio. Ohio State Archaeological and Historical Society, Fred J. Heer, Columbus.

SCALE
0 MI 3 MI 6 MI

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MADISON SUBSTATION PROJECT

AES OHIO

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DRAWN: WJC
CHECKED: SR

DATE: MARCH 15, 2022
APPROVED: JG

5.0 Archaeological Methods

5.1 Field Methods

The goals of the archaeological survey were to: (1) identify archaeological sites within the Project APE; (2) define approximate site boundaries within the Project APE; and (3) evaluate the potential National Register eligibility of identified sites, where applicable.

GAI's Phase I survey began with an archaeological reconnaissance of the entire APE to verify preliminary assessments of archaeological potential and to target localities that would be subject to subsequent subsurface testing. No portions of the APE were considered to have low potential due to steep slopes (in excess of 20 percent grade), standing water, or previous disturbance. Relatively level, well-drained, undisturbed settings were concluded to have moderate to high archaeological potential and were subjected to systematic shovel testing (Figure 7).

Subsurface investigation consisted of systematic excavation of STPs within testable areas of the APE. GAI archaeologists used a compass, tape, and measured pacing to establish a regular testing pattern within the APE. STPs were generally placed at 15-m (49-ft) intervals along transects spaced 15 m (49 ft) apart.

Each square shovel test measured at least 50 x 50 cm (20 x 20 in) and was hand-excavated by natural soil horizons at least 10 cm (3.9 in) into culturally sterile subsoil. Excavated soils were screened through 6-millimeter (mm) (0.25-in) hardware cloth for systematic artifact recovery. Archaeologists recorded results on standardized field forms noting provenience data, depth of soil horizons, soil descriptions (color and texture) and the presence/absence of artifacts. STP locations were plotted on Project maps and each STP was backfilled upon completion. Investigators further documented the Project with representative photographs of excavations and the Project area and STPs were documented by way of a mapping grade, handheld global positioning system (GPS) unit, as appropriate. In general, GPS positions were taken of STPs marking the start and end of each transect.

GAI architectural historians documented potential resources 50 years old or older within and adjacent to the Project area to account for direct and indirect (visual) impacts, which defined the APE for architectural and historical resources. The goals of this architectural survey were to: (1) define the Project APE through visual identification of the Project's line-of-sight; (2) identify architectural resources within the Project APE; and (3) evaluate the potential NRHP-eligibility of identified resources, where applicable. Resources identified within the APE were documented from the public right-of-way using a high-resolution DSLR camera. Notes about the property and buildings were taken in the field.

PROJECT LOCATION

CLARK COUNTY, OHIO

REFERENCE: ESRI WORLD IMAGERY, PROVIDED BY VIVID - MAXAR, 2020, AND WORLD TRANSPORTATION, OBTAINED THROUGH ESRI ARCGIS ONLINE, © 2012 ESRI, DeLORME, NAVTEQ, TOMTOM, ACCESSED 03/2022.

LEGEND

- Negative STP
- Area of Potential Effect
- Tested Area

0 50 100 200 Feet

FIGURE 7
ARCHAEOLOGICAL TESTING LOCATIONS

MADISON SUBSTATION PROJECT

AES OHIO

DRAWN BY: AJW DATE: 3/15/2022

CHECKED: MDO APPROVED: WJC

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6.0 Phase I Archaeological Survey Results

This chapter presents the results of GAI's Phase I archaeological survey of the Project. GAI conducted Phase I fieldwork from March 1 through 3, 2022, reviewing a 6.5-ha (16.08-ac) parcel for the proposed Madison Substation Project (see Figure 7). The Project APE is situated on a broad till plain through a corn field that had been harvested prior to survey (Photographs 1-3; Figure 8). The APE is bordered by South Charleston Pike to the east, the Detroit, Toledo & Ironton Railroad to the west, and the headwaters to North Fork Massies Creek directly to the north.

Photograph 1. General view of Project APE along South Charleston Pike, facing south.

GAI archaeologists established a 15-m (49-ft) grid over the 6.5-ha (16.08-ac) parcel. The entire parcel was determined to maintain moderate to high archaeological potential, as such a total of 297 STPs were excavated within the Project APE (Figure 7). Shovel testing within the Project revealed a varying Ap-Bt soil horizon sequence, as typified in STPs B7 and H27. Stratum I of STP B7 contained a very dark gray (5YR 3/1) silt loam Ap horizon to a depth of 25 cm (9.8 in) below ground surface (bgs). Stratum II exhibited a grayish brown (10YR 5/2) silty clay loam Bt horizon. STP B7 was terminated at a depth of 35 cm (13.7 in) bgs within sterile subsoil (Figure 9). STP H27 revealed a dark yellowish brown (10YR 4/4) silty clay loam Ap horizon to a depth of 30 cm (11.8 in) bgs. Stratum II exhibited a yellowish brown (10YR 5/8) silty clay Bt horizon. STP H27 was terminated at a depth of 40 cm (15.7 in) bgs within sterile subsoil (Figure 9).

This Phase I archaeological survey did not identify any cultural resources within the Project APE. Figure 7 illustrates the results of Phase I testing within the Project APE, and photograph locations are depicted on Figure 8.

Photograph 2. General view of Project APE taken from STP E20, facing east.

Photograph 3. General view of Project APE taken from STP J15, facing southwest.

PROJECT LOCATION

CLARK COUNTY, OHIO

LEGEND

Photo Location / Direction

Area of Potential Effect

Tested Area

0 200 400 800 Feet

FIGURE 8
PHOTOGRAPH LOCATIONS

MADISON SUBSTATION PROJECT

AES OHIO

DRAWN BY: AJW DATE: 3/15/2022

CHECKED: MDO APPROVED: WJC

REFERENCE: ESRI WORLD IMAGERY, PROVIDED BY VIVID - MAXAR, 2021, AND WORLD TRANSPORTATION, OBTAINED THROUGH ESRI ARCGIS ONLINE, © 2012 ESRI, DeLORME, NAVTEQ, TOMTOM, ACCESSED 03/2022.

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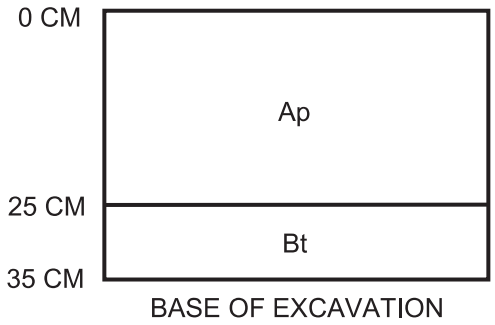
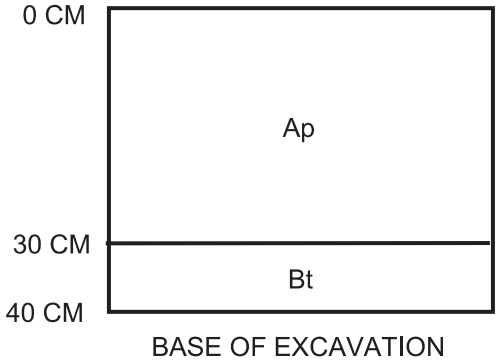
STP B17



Ap – VERY DARK GRAY (5YR 3/1) SILT LOAM

Bt – GRAYISH BROWN (10YR 5/2) SILTY CLAY LOAM

STP H27



Ap – DARK YELLOWISH BROWN (10YR 4/4) SILTY CLAY LOAM

Bt – YELLOWISH BROWN (10YR 5/8) SILTY CLAY

FIGURE 9. REPRESENTATIVE SOIL PROFILES

SCALE

0 CM 25 CM 50 CM

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MADISON SUBSTATION PROJECT

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CHECKED: SR APPROVED: JG

7.0 Historical and Architectural Resources Survey Results

GAI's cultural resources investigations included a survey of historic-period (50 years old or older) standing structures potentially impacted by the Project. GAI investigated an APE that considered both the construction impacts of the LOD, as well as the visual impact to aboveground structures within the line-of-sight of the potential Project.

This architectural survey was conducted on February 1, 2022. Aboveground resources 50 years or older were examined within a half-mile radius of the Project. Two resources were identified meeting this criteria (Figure 10; Table 2). Of these two resources, one is previously recorded (CLA0148310), and the other is newly recorded within the county (GAI-01). These resources are further described and evaluated based on the NRHP criteria below.

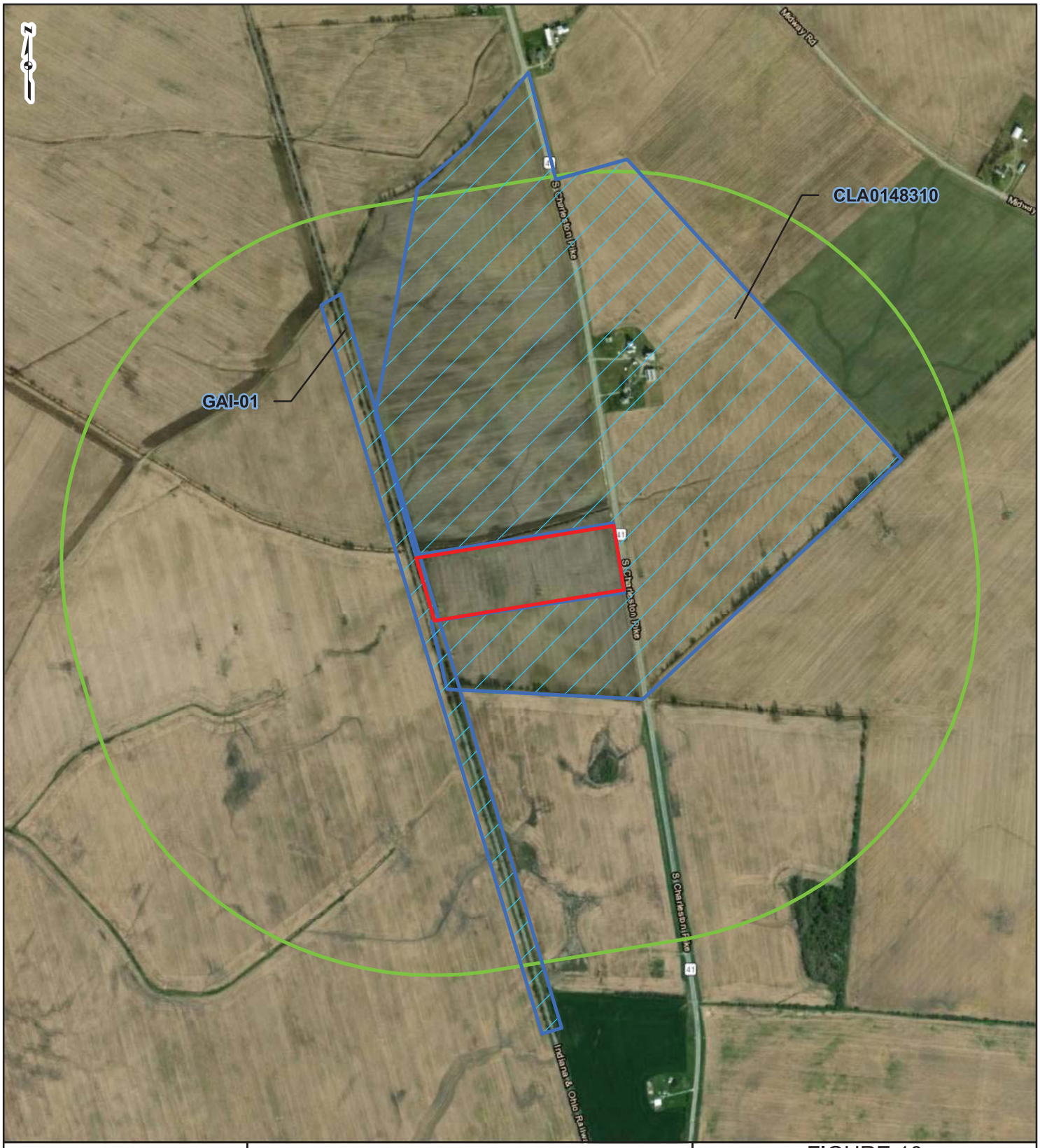
Resources were recorded in the field with digital cameras and noted on topographic field maps. GAI architectural historians then examined and assessed the resources based on their integrity and historic context. The identified resources are recommended not eligible for the NRHP due to loss of integrity.

Table 2. Surveyed Architectural Resources

ID #	Name / Location	Date	Style	Recommendation	Photograph
CLA0148310	William Mattinson Farmstead / 14218 South Charleston Pike	c.1865; 1898	Vernacular	Recommended Not Eligible	
GAI-01	Detroit, Toledo & Ironton Railroad	c.1875	n/a	Recommended Not Eligible	

7.1 CLA0148310 - William Mattinson Farmstead

The building complex for this resource is located on the east side of South Charleston Pike, approximately 0.85 miles south of the intersection with Midway Road, although the property yards also extend west of the road. The surrounding area is rural.



PROJECT LOCATION

CLARK COUNTY, OHIO

LEGEND

- Direct Area of Potential Effect
- Architectural Resource
- 0.5-Mile Area of Potential Effect

0 500 1,000 2,000 Feet

FIGURE 10
ARCHITECTURAL RESOURCES

MADISON SUBSTATION PROJECT

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DRAWN BY: AJW DATE: 3/15/2022

CHECKED: MDO APPROVED: WJC

REFERENCE: ESRI WORLD IMAGERY, PROVIDED BY VIVID - MAXAR, 2021, AND WORLD TRANSPORTATION, OBTAINED THROUGH ESRI ARCGIS ONLINE, © 2012 ESRI, DeLORME, NAVTEQ, TOMTOM, ACCESSED 03/2022.

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The resource was previously recorded in 2004 and consists of a circa-1865, two-and-a-half-story, frame vernacular dwelling standing three bays wide (Photograph 4). The dwelling has a stone foundation, is clad with vinyl siding, and capped by a hipped roof covered in asphalt shingles. A hipped dormer is located on the west roof slope. Two extended bays are located on the south elevation. A one-story addition capped with a shed roof is appended to the rear (east) elevation. The primary entrance is located on the east elevation within the front porch. The porch is capped with a hipped roof supported by columns. A side porch located on the north elevation contains a secondary entrance. Fenestration includes one-over-one, double-hung, vinyl-sash windows. A large window flanked by two smaller windows is centered on the second story of the façade (west elevation).

Photograph 4. CLA0148310, Mattison Farmstead, Dwelling and Outbuildings, Facing Northeast.

The resource also includes several outbuildings. A circa-1960, single-car garage with a gable roof is located to the rear (east) of the building complex. A circa-1960 machine shed is clad in metal siding and located northeast of the dwelling. A circa-1885 livestock barn with a cross-gable roof is located northeast of the dwelling (Photograph 5). A circa-1885 sheep barn is located north of the dwelling (Photograph 6). A circa-1885, drive-through corncrib is located west of the livestock barn. Two small outbuildings are also present in the barnyard. Metal grain bins and silos were constructed on the property in the 1990s.

Photograph 5. CLA0148310, Mattinson Farmstead, Livestock Barn and Corncrib, Facing East.

Photograph 6. CLA0148310, Mattinson Farmstead, Sheep Barn, Facing Northeast.

While the resource is associated to late-nineteenth century agriculture, the farmstead has undergone some modifications since its construction, including the loss of historic outbuildings, the construction of mid-twentieth century outbuildings, and the use of non-historic materials. As such, the resource does not serve as a significant example of this theme and is recommended not eligible under Criterion A. The farmstead is connected to Edwin Peirce and Darwin Peirce. While these individuals were local farmers and associated to the broader historic theme of regional agriculture, they were not historically-significant to local, state, or national development. Therefore, the resource is recommended not eligible under Criterion B. The farmstead does not represent a significant type, style, method of construction, or the work of a master. As such, the resource is recommended not eligible under Criterion C.

7.2 GAI-01 - Detroit, Toledo & Ironton Railroad

The resource runs approximately parallel to South Charleston Pike from South Charleston, laid out in a northwest-southeast direction. The surrounding area is rural.

The resource consists of a steel track with wood ties and a raised stone ballast (Photograph 7). The resource was constructed in the 1870s, originally chartered as the Springfield, Jackson & Pomeroy Railroad in 1875. The SJ&P was built as a narrow gauge railroad but converted to standard gauge in 1879. In 1901, the SJ&P, along with several other small, regional lines, were purchased by the Detroit, Toledo & Ironton. The railroad connected Detroit to Ironton, Ohio along the Ohio River. The DT&I operated as disconnected segments for several years until Henry Ford became interested in the rail line to provide resources to his factories in Detroit. Ford purchased the railroad in 1920 and spent 15 million dollars on improvements before selling the rail line in 1929 (The Henry Ford n.d.; American-

Photograph 7. GAI-01, Detroit, Toledo & Ironton Railroad, Facing Northwest from Project area.

Rails 2022). In 1983, after several ownership changes, DT&I merged with Grand Trunk Western. The railroad is still active today.

The resource is associated with regional transportation development. As the line and ties have been replaced several times since its construction and only retains its original location, the resource is recommended not eligible under Criterion A. No historically-significant person is directly linked to the resource; it is therefore recommended not eligible under Criterion B. The resource does not significantly represent a type, style, method of construction, work of a master, or engineering feat, and no other bridge, culvert, or building is related to the resource within the Project APE. Therefore, the resource is recommended not eligible under Criterion C.

8.0 Project Summary and Recommendations

On behalf of AES Ohio, GAI conducted a Phase I cultural resources investigation in February and March 2022 for the proposed Madison Substation Project. The Project involves the construction of a new 1.5-ha (3.7-ac) substation and associated transmission line connections. The substation will be constructed within a 6.5-ha (16.08-ac) parcel that is situated within a cultivated field and is privately owned. No tree clearing is necessary for this Project. AES is preparing to submit a Letter of Notification to the Ohio Power Siting Board.

The APE for the Project's Phase I archaeological investigation involves direct potential impacts by the Project to archaeological resources. The direct impact APE is the area of potential ground disturbance where there will be physical alteration and/or disturbance of surface and subsurface soils created by Project construction activities. Given that the Project is still in the design phase, GAI conducted a Phase I archaeological survey of the entire 6.5-ha (16.08-ac) parcel, known for this Project as the APE, encompassing the proposed 1.5-ha (3.7-ac) substation, potential access road(s) areas, extra workspaces, and associated transmission line connections. In addition, GAI conducted a historical and architectural survey of the indirect APE, which is considered the possible visual impact to aboveground structures within the immediately adjacent area within line-of-sight of the direct APE.

Background research indicates that one historic architectural resource (CLA0148310) has been recorded within a 0.8-km (0.5-mi) radius of the overall Project area. This resource is known as the William Mattinson Farmstead and is a circa 1865 farmstead which has not been evaluated for its eligibility to the NRHP. The building complex for this resource is located along the east side of South Charleston Pike, approximately 0.32 km (0.2 mi) north of the Project APE. No archaeological sites or other resources have been recorded within 0.8 km (0.50 mi) of the APE.

GAI conducted a historical and architectural resources survey on February 1, 2022, and a Phase I archaeological survey between March 1 through 3, 2022. The archaeological survey included the excavation of 297 STPs within the Project's 6.5-ha (16.08-ac) APE. No cultural resources were identified during the Phase I archaeological investigation. The historical and architectural resources survey identified two aboveground resources 50 years or older within a half-mile radius of the Project. These resources represent the William Mattinson Farmstead (CLA0148310) and the Detroit, Toledo & Ironton Railroad (GAI-1). GAI is recommending that these resources are not eligible for listing in the NRHP.

Given these results, GAI recommends that the Project should be allowed to proceed as planned without further cultural resources investigations. If design plans change to incorporate areas not addressed in the current study, additional cultural resources investigations may be required, in accordance with Section 106 of the National Historic Preservation Act or Section 149.53 of Ohio Revised Code, as applicable.

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APPENDIX A
Correspondence

In reply refer to
2021-CLA-53204

December 7, 2021

William J. Caramana
GAI Consultants,Inc.
385 East Waterfront Drive
Homestead, PA

Dear Mr. Caramana:

RE: Madison Substation Construction, Madison Township, Clark County, Ohio

This is in response to your transmittal of November 29, 2021 concerning the proposed project. The comments of the Ohio Historic Preservation Office are submitted in accordance with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended.

The project involves construction of a new electric substation on a 16 acre parcel in Southeastern Clark County, Ohio. A check of our records shows that the project area has not been surveyed and that a large number of sites have been identified near the project area. Given the presence of sites nearby on similar topography, we recommend that a preliminary archaeological survey be conducted to identify sites in this area.

A survey will include a review of records and documents and a field investigation, generally excavation of small subsurface test units or if the ground surface is visible, surface collection. Frequently, enough information is obtained from the survey that the archaeologists can make recommendations on the National Register eligibility of historic properties or recommend further investigation. Additionally, any buildings that appear to be over 50 years old should be documented and evaluated for National Register eligibility.

Please be advised that this is a Section 106 decision. This review decision may not extend to other SHPO programs. If you have any questions, please contact me at (614) 298-2000, or by email at nyoung@ohiohistory.org. Please note the Ohio SHPO now accepts electronic-only submissions for state and/or federal review under Section 106 and ORC 149.53. Please send your submissions to section106@ohiohistory.org. We have also updated our Survey Report Submission Standards

Sincerely,

Nathan J. Young, Project Reviews Manager
Resource Protection and Review

Attachment C – Rare, Threatened, and Endangered Species Correspondence

Marie G. Bezold

From: Ohio, FW3 <ohio@fws.gov>
Sent: Tuesday, September 21, 2021 3:51 PM
To: Marie G. Bezold
Cc: nathan.reardon@dnr.state.oh.us; Parsons, Kate
Subject: AES Ohio Madison Substation, Clark County, Ohio

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

TAILS# 03E15000-2021-TA-2370

Dear Ms. Bezold,

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

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

Seasonal Tree Clearing for Federally Listed Bat Species: Should the proposed project site contain trees ≥3 inches dbh, we recommend avoiding tree removal wherever possible. If any caves or abandoned mines may be disturbed, further coordination with this office is requested to determine if fall or spring portal surveys are warranted. If no caves or abandoned mines are present and trees ≥3 inches dbh cannot be avoided, we recommend removal of any trees ≥3 inches dbh only occur between October 1 and March 31. Seasonal clearing is recommended to avoid adverse effects to Indiana bats and northern long-eared bats. While incidental take of northern long-eared bats from most tree clearing is exempted by a 4(d) rule (see http://www.fws.gov/midwest/endangered/mammals/nleb/index.html), incidental take of Indiana bats is still

prohibited without a project-specific exemption. Thus, seasonal clearing is recommended where Indiana bats are assumed present.
If implementation of this seasonal tree cutting recommendation is not possible, a summer presence/absence survey may be conducted for Indiana bats. If Indiana bats are not detected during the survey, then tree clearing may occur at any time of the year. Surveys must be conducted by an approved surveyor and be designed and conducted in coordination with the Ohio Field Office. Surveyors must have a valid federal permit. Please note that in Ohio summer mist net surveys may only be conducted between June 1 and August 15.

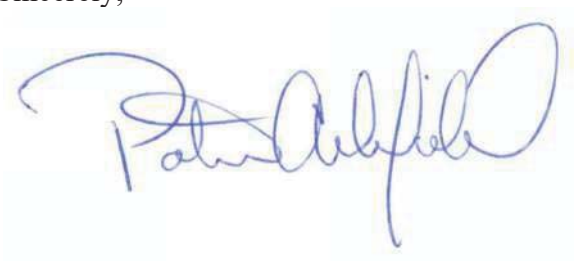
Section 7 Coordination: If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), then no tree clearing should occur on any portion of the project area until consultation under section 7 of the ESA, between the Service and the federal action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

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

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

Thank you for your efforts to conserve listed species and sensitive habitats in Ohio. We recommend coordinating with the Ohio Department of Natural Resources due to the potential for the proposed project to affect state listed species and/or state lands. Contact Mike Pettegrew, Acting Environmental Services Administrator, at (614) 265-6387 or at mike.pettegrew@dnr.state.oh.us.

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



Patrice M. Ashfield
Field Office Supervisor

cc: Nathan Reardon, ODNR-DOW

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Clark County, Ohio

Local office

Ohio Ecological Services Field Office

(614) 416-8993
(614) 416-8994

4625 Morse Road, Suite 104
Columbus, OH 43230-8355

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Indiana Bat Myotis sodalis — Endangered
Wherever found
There is **final** critical habitat for this species. The location of the critical habitat is not available.
http://ecos.fws.gov/ecp/species/5949

Northern Long-eared Bat Myotis septentrionalis — Threatened
Wherever found
This species only needs to be considered if the following condition applies:
- Incidental take of the northern long-eared bat is not prohibited at this location. Federal action agencies may conclude consultation using the streamlined process described at https://www.fws.gov/midwest/endangered/mammals/nleb/s7.html

No critical habitat has been designated for this species.
http://ecos.fws.gov/ecp/species/9045

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. http://ecos.fws.gov/ecp/species/9743	Candidate

Flowering Plants

NAME	STATUS
Eastern Prairie Fringed Orchid Platanthera leucophaea Wherever found No critical habitat has been designated for this species. http://ecos.fws.gov/ecp/species/601	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

THERE ARE NO MIGRATORY BIRDS OF CONSERVATION CONCERN EXPECTED TO OCCUR AT THIS LOCATION.

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look

carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

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

October 8, 2021

Marie G. Bezold
GAI Consultants
11 Spiral Drive, Suite 8
Florence, KY 41042

Re: 21-0857; AES Ohio Madison Substation Project

Project: The proposed project involves the construction of a new, approximately 3.75-acre substation.

Location: The proposed project is located in Madison Township, Clark County, Ohio.

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

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

Upland sandpiper (*Bartramia longicauda*), E

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

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

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

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

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

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

The DOW also recommends that a desktop habitat assessment is conducted, followed by a field assessment if needed, to determine if a potential hibernaculum is present within the project area. Direction on how to conduct habitat assessments can be found in the current USFWS "*Range-wide Indiana Bat Survey Guidelines*." If a habitat assessment finds that a potential hibernaculum is present within 0.25 miles of the project area, please send this information to Erin Hazelton for project recommendations. If a potential or known hibernaculum is found, the DOW recommends a 0.25-mile tree cutting and subsurface disturbance buffer around the hibernaculum entrance, however, limited summer or winter tree cutting may be acceptable after consultation with the DOW. If no tree cutting or subsurface impacts to a hibernaculum are proposed, this project is not likely to impact these species.

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

The project is within the range of the Iowa darter *(Etheostoma exile),* a state endangered fish, and the tonguetied minnow (*Exoglossum laurae*), a state threatened fish. The DOW recommends no in-water work in perennial streams from March 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed in a perennial stream, this project is not likely to impact these or other aquatic species.

The project is within the range of the eastern massasauga (*Sistrurus catenatus*), a state endangered and a federally threatened snake species. The eastern massasauga uses a range of habitats including wet prairies, fens, and other wetlands, as well as drier upland habitat. Due to the location, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the Kirtland's snake (*Clonophis kirtlandii*), a state threatened species. This secretive species prefers wet meadows and other wetlands. Due to the location, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the spotted turtle (*Clemmys guttata*), a state threatened species. This species prefers fens, bogs and marshes, but is also known to inhabit wet prairies, meadows, pond edges, wet woods, and the shallow sluggish waters of small streams and ditches. Due to the location, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact this species.

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

The project is within the range of the loggerhead shrike (*Lanius ludovicianus*), a state endangered bird. The loggerhead shrike nests in hedgerows, thickets and fencerows. They hunt over hayfields, pastures, and other grasslands. If thickets or other types of dense shrubbery habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 1 through July 31. If this habitat will not be impacted, this project is not likely to impact this species.

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

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

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

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

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

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

Mike Pettegrew
Environmental Services Administrator (Acting)

Attachment D – Regulated Waters Assessment

gai consultants

Northern Kentucky Office
11 Spiral Drive
Suite #8
Florence, Kentucky 41042

T 859.795.2550
F 859.647.6685

January 27, 2022

GAI Project No. R210571.00

Ms. Amanda Foti
AES Ohio
1900 Dryden Road
Dayton, OH 45439

Regulated Waters Assessment
AES Ohio Madison 345 kV Project
Clark County, Ohio

Dear Ms. Foti:

This report presents the findings of the regulated waters assessment and identifies the resulting anticipated regulatory permitting compliance requirements for the AES Ohio Madison 345 kV Project (Project), located in Madison Township within Clark County, Ohio **(Appendix A, Figure 1)**. This field survey effort was done in support of due diligence as required for a Letter of Notification (LON), submitted to The Ohio Power Sitting Board (OPSB). Results from the regulated waters field survey are summarized below.

Project Summary

The Project will require the construction of a substation called Madison and associated transmission line tie-in which will tap into the existing Greene – Beatty 345 kV line. The proposed Project is located on existing AES Ohio property in Madison Township, Clark County, Ohio.

Work Summary

A remote environmental screening review followed by an on-site field survey was completed by GAI Consultants Inc. (GAI) on September 2, 2021 in order to evaluate potential regulated waters impacts associated with the Project. These investigations were limited to a 14.08-acre study area which includes a 75-foot-wide buffer around the 3.7 acre proposed substation location, proposed access roads, and proposed transmission line structure locations.

The study area was investigated for the presence of wetlands and streams on September 2, 2021. Wetland delineations were conducted in accordance with the 1987 United States Army Corps of Engineers (USACE) Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory, 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0) (USACE, 2012). Wetlands were classified using the Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al, 1979). Classification of the indicator status of vegetation is based on The National Wetland Plant List: 2014 Update of Wetland Ratings (Lichvar, et al, 2014).

Each wetland and waterbody feature was given a unique map designation and was recorded using a Trimble R1 receiver global positioning system mapping grade unit with the capability of sub-meter accuracy. Judgmental upland and wetland soil test pits were taken within the study area at the discretion of the delineator to confirm the presence or absence of wetlands in areas with exhibiting wetland indicators. Wetland boundaries, stream banks and/or centerlines were mapped in relation to existing

Project data supplied by AES Ohio and various environmental and cadastral background data in Geographical Information Systems (GIS).

Environmental Survey Results

Land use within and adjacent to the study area consists primarily of maintained transmission line ROW, and active agricultural areas.

National Wetland Inventory (NWI)

The United States Fish and Wildlife Service's (USFWS) National Wetland Inventory (NWI) maps were reviewed for potential wetland locations within the Project Area. The NWI maps were prepared from high altitude photography and, in most cases, were not field verified. As a result, wetlands are sometimes erroneously identified, missed, or misidentified within this data set. The presence of an NWI wetland does not necessarily constitute the presence of a wetland meeting USACE criteria. The NWI map of the area did not identify any NWI features within the study area.

100-Year Floodplain and Floodway

A review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) revealed that the Project Area is not located within a mapped 100-year floodplain or floodway (see Figure 2).

Wetlands

No jurisdictional wetlands were identified in the Project area.

Waterbodies

To evaluate potential streams within the study area, GAI reviewed existing United States Geological Survey (USGS) topographic maps, aerial photography, National Hydrography Dataset (NHD) stream data, and site contour data.

One (1) likely jurisdictional perennial stream feature, totaling 1,021.6 feet, was documented within the Study Area. This stream feature connects directly to North Fork Massies Creek, according to the NHD dataset and was observed as a channelized agricultural drainage. Photographs of the stream feature can be found in **Appendix B**. The location of this stream relative to the study area can be found in **Appendix A, Figure 2**

Minimal impacts are expected from the installation of two detention basin outfall pipes to Stream 001. The Project is anticipated to be automatically authorized by the USACE under NWP 57 without a pre-construction notification (PCN) since impacts are expected to be less than 300 feet, there are no section 10 waterbodies, national/wild/scenic rivers, or waters of special concern in the Project area, and the Project is not located in a listed township per NWP Regional General Condition 5. Currently, the USACE has determined that the OEPA will waive all 401 certifications, thus the USACE is not requiring 401 water quality certifications for the sixteen modified or new NWPs in Ohio which includes NWP 57. Discharges from the project are anticipated to be covered under a NPDES (National Pollutant Discharge Elimination System) permit through the OEPA Surface Water Permit Program.

Sincerely,

GAI Consultants, Inc.

Tyler E. Rankin, MS, CNRP
Senior Project Environmental Specialist

Attachments:

Appendix A - Figures
Appendix B - Photographs

APPENDIX A
Figures

PROJECT LOCATION

CLARK COUNTY, OH

REFERENCE:
TOPOGRAPHIC MAP:
- Esri's USA Topo Map, Accessed: 11/29/2022.

RAILROADS:
- Ohio Department of Transportation's Railroads, 2/29/2020.

COUNTY BOUNDARY:
- Ohio Department of Transportation's Counties, 9/11/2018.

HIGHWAY:
- Esri's U.S. Major Roads, 5/10/2018.

12-DIGIT WATERSHED:
- United States Geological Survey's 12-Digit Hydrologic Units, 6/16/2020.

PROJECT DETAILS:
- AES Ohio.

State Highway
Railway
County Boundary
Study Area
North Fork Massies Creek

aes Ohio

gai consultants

0 250 500 Feet
1 in = 500 feet

FIGURE 1
PROJECT LOCATION

Regulated Waters Assessment Report

Madison 345kV Substation Project

DRAWN BY: MBH DATE: 11/29/2022
CHECKED: TDB APPROVED: MRW

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PROJECT LOCATION

CLARK COUNTY, OH

REFERENCE
AERIAL PHOTOGRAPH:
Early World Imagery 2020, Accessed: 11/29/2022.
HIGHWAY:
U.S. Major Roads, 5/10/2018.
LOCAL ROAD:
Ohio Department of Transportation's Roads, 7/27/2021.
RAILWAY:
Ohio Department of Transportation's Railroads, 2/29/2020.
NHD FLOWLINE:
United States Geological Survey's National Hydrography Dataset Best Resolution, 6/16/2020.
NWI WETLAND:
United States Fish and Wildlife Service's National Wetland Inventory, 10/1/2020.
SOIL TYPE BOUNDARY:
United States Department of Agriculture's SSURGO, 6/11/2020.
HYDRIC SOIL TYPE:
Soil Type where proportion of the map unit classified as hydric is greater than 90 percent according to SSURGO database 6/11/2020 (hydcpnx field)
PARCEL BOUNDARY:
Downloaded from Clark County GIS website, 8/25/2021.
5-FOOT CONTOUR:
Ohio Geographically Referenced Information Program (OGRIP), Clark County, 2007.
DELINEATED FEATURES:
GAI Consultants.
PROJECT DETAILS:
AES Ohio.

State Highway
Local Road
Railway
Proposed Structure
Removal Structure
Culvert
Delineated Stream
Proposed Substation Fence
Study Area
NHD Flowline
NWI Wetland
Soil Type Boundary
Hydric Soil Boundary
Parcel Boundary
5-Foot Contour

aes Ohio

gai consultants

0 100 200 Feet
1 in = 200 feet

FIGURE 2
RESOURCE LOCATION

SHEET 1 of 1

Regulated Waters Assessment Report

Madison 345kV Substation Project

DRAWN BY: MBH DATE: 11/29/2022
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APPENDIX B
Photographs

Photographs

Photograph 1. East end of Stream 001. Facing upstream. (September 2, 2021)

Photograph 2. West end of Stream 001. Facing downstream. (September 2, 2021)

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

12/1/2022 2:40:39 PM

in

Case No(s). 22-1079-EL-BLN

Summary: Notification Letter of Madison 345 kV Substation Project electronically filed by Ms. Sarah Howdeshelt on behalf of Dayton Power & Light Company d/b/a AES Ohio