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4.0 AGENCY CORRESPONDENCE

Prior to any activity authorized under Section 401/404 of the Clean Water Act, coordination is required with the USACE, United States Fish and Wildlife Service (USFWS), Ohio Department of Natural Resources (ODNR), and the Ohio Historic Preservation Office (OHPO). To fulfill these requirements, these agencies were contacted about information pertaining to the site. The information obtained from these agencies is summarized below.

4.1 USACE Jurisdictional Determination

Ohio Revised Code (ORC) 6111.30(A)(1) requires that a 401 Water Quality Certification application include a copy of the Jurisdictional Determination (JD) letter from the USACE documenting its jurisdiction over the wetlands, streams or other waters of the state that are the subject of the 401 Water Quality Certification application. The approved jurisdictional determination for the site from the USACE is provided as Attachment 4A.

4.2 USACE Public Notice

Ohio Revised Code (ORC) 6111.30(A)(1) requires that a 401 Water Quality Certification application include a copy of the USACE Public Notice regarding the Section 404 permit application concerning the proposed project. The public notice will be provided as Attachment 4B when issued.

4.3 Federally Listed Threatened or Endangered Species

The USFWS-published *Federally-Listed Species by Ohio Counties* (April 2015) was reviewed. According to the list, one (1) federally-listed endangered species, the Indiana bat (*Myotis sodalis*), and one (1) federally-listed threatened species, the northern long-eared bat (*Myotis septentrionalis*), are found distributed within Harrison County.

The original rail yard was coordinated with USFWS in a letter dated November 19, 2014. In a letter dated December 18, 2014, USFWS provided the following comment in relation to the Indiana bat and the northern long-eared bat: "If no caves or abandoned mines are present, and tree removal is unavoidable, any tree removal should only occur between October 1 and March 31." Subsequent coordination with USFWS was initiated by EMH&T concerning possible impacts to threatened and endangered species in association with the proposed expansion via a coordination letter submitted on May 13, 2015.

The USFWS responded in an email dated June 16, 2015. USFWS recommended a summer survey be conducted to determine presence or probable absence of Indiana bats at the project site. In addition, USFWS stated that the project is in the vicinity of one or more confirmed records of northern long-eared bats. Due to the project type, size and location, USFWS does not anticipate adverse effects to any other federally endangered, threatened, proposed or candidate species. The USFWS response is provided as Attachment 4C.



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4.4 State Listed Rare or Endangered Species

ODNR was contacted for information available concerning the presence of state-listed endangered, threatened and proposed species or their habitat for the property. ODNR was requested to provide information through a formal search of the ODNR Natural Heritage Database.

The database search revealed that no records of rare or endangered species or their habitat are present on the project site. In addition, there are no records of existing or proposed state nature preserves, unique ecological sites, geologic features, breeding or non-breeding animal concentrations, state parks, state forests, scenic rivers, or wildlife areas in the project area. No Indiana bat capture locations or hibernacula were noted. A copy of the ODNR letter (dated November 17, 2014), is included in Attachment 4D.

4.5 Archaeological and Historical Information

EMH&T archaeologists conducted a Phase I Cultural Resource Management (CRM) Survey for the project area, including a literature review for a surrounding 1.2-mile search radius. Approximately half of the project area was previously surveyed as part of the permitting effort for the original rail yard. The information gathered from the fieldwork and literature review indicated that the project area contains no previously unknown archaeological sites and there are no significant historic buildings or structures located in the area of potential effects. Consequently, it was concluded that the project will have no effect on historic properties and no further work is recommended for the project. A copy of the Phase I CRM Survey is included in Attachment 4E.



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ATTACHMENT 4A

USACE JURISDICTIONAL DETERMINATION



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
PITTSBURGH DISTRICT, CORPS OF ENGINEERS
WILLIAM S. MOORHEAD FEDERAL BUILDING
1000 LIBERTY AVENUE
PITTSBURGH, PA 15222-4186

March 10, 2015

Operations Division
Regulatory Branch
2014-1182

MarkWest Utica EMG, LLC
c/o Heather McBurney
101 East Market Street
Cadiz, Ohio 43907

Dear Ms. McBurney:

Reference is made to your request for review of a delineation, received on December 8, 2014, and subsequent additional information received February 2, 2015. A delineation verification of the 163 acre site in Green Township, Harrison County, Ohio was performed on December 16, 2014, by Tyler Bintrim.

The Corps of Engineers' authority to regulate waters of the United States is based on the definitions and limits of jurisdiction contained in 33 CFR 328. Navigable waters, their tributaries, and surrounding wetlands are waters of the United States subject to the provisions of Section 404 of the Clean Water Act. Based on the information submitted it has been determined that thirteen jurisdictional wetlands totaling 2.16 acres, eight jurisdictional unnamed tributaries to Cross Creek totaling 2,328 linear feet, and two jurisdictional ponds totaling 3.12 acres exist within the review area. (See Enclosure).

Additionally six isolated non jurisdictional wetlands totaling 0.43 acre, one isolated non jurisdictional stream totaling 204 linear feet, and six isolated non jurisdictional ponds totaling 3.68 acres exist within the review area. (See Enclosure). These resources were coordinated with the U.S Environmental Protection Agency and U.S. Army Corps of Engineers Headquarters and no comment was received thereby making this jurisdictional determination final.

This delineation verification will remain valid for a period of five years from the date of this letter, unless new information warrants revision of the delineation. Every effort should be made to avoid impacts to the aquatic resources on-site. If stream or wetland impacts are proposed to jurisdictional resources, this office should be contacted to discuss permit requirements.

If you have any questions, please contact Tyler Bintrim at 412-395-7115 or email at tyler.j.bintrim@usace.army.mil and reference project No. 2014-1182 in all future correspondence with this office regarding this delineation.

Sincerely,

//SIGNED//

By Scott Hans for

Nancy Mullen
Chief, North Section
Regulatory Branch

Enclosure

Copies Furnished:

✓ Robert Milligan
EMH&T
5500 New Albany Rd.
Columbus, OH 43054

Rachel Taulbee
DSW- Ohio EPA
50 West Town Street
Columbus, OH 43216

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Mark West Utica EMG, LLC		File Number: 2014-1182	Date: Mar. 10, 2015
Attached is:		See Section Below	
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of Permission)	A	
	PROFFERED PERMIT (Standard Permit or Letter of Permission)	B	
	PERMIT DENIAL	C	
X	APPROVED JURISDICTIONAL DETERMINATION	D	
	PRELIMINARY JURISDICTIONAL DETERMINATION	E	

SECTION I: The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at: <http://www.usace.army.mil/inet/functions/cw/cecwo/reg/appeals.htm> or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II:

Jurisdictional Wetlands	
Name	Acreage
Wetland A	0.14
Wetland B	0.06
Wetland F	0.43
Wetland G	0.05
Wetland H	0.26
Wetland I	0.03
Wetland J	0.18
Wetland K	0.1
Wetland L	0.06
Wetland M	0.09
Wetland N	0.04
Wetland O	0.07
Wetland P	0.65
Total	2.16

Jurisdictional Streams	
Name	Linear Feet
Stream 1	503
Stream 2	72
Stream 3	32
Stream 5	908
Stream 6	223
Stream 7	15
Stream 8	472
Stream 9	103
Total	2328

Jurisdictional Ponds	
Name	Acreage
Pond 6	2
Pond 7	1.12
Total	3.12

Non Jurisdictional Wetlands	
Name	Acreage
Wetland C	0.03
Wetland D	0.05
Wetland E	0.08
Wetland Q	0.02

Wetland R	0.13
Wetland S	0.12
Total	0.43

Non Jurisdictional Streams	
Name	Linear Feet
Stream 4	204
Total	204

Non Jurisdictional Ponds	
Name	Acreage
Pond 1	0.46
Pond 2	0.53
Pond 3	0.89
Pond 4	0.2
Pond 5	1.44
Pond 8	0.16
Total	3.68



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ATTACHMENT 4B

USACE PUBLIC NOTICE



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ATTACHMENT 4C

USFWS CORRESPONDENCE

Dardinger, Heather

From: susan_zimmermann@fws.gov on behalf of Ohio, FW3 <ohio@fws.gov>
Sent: Tuesday, June 16, 2015 11:39 AM
To: Dardinger, Heather
Cc: nathan.reardon@dnr.state.oh.us; Jenny Norris; Angela Boyer
Subject: Amended Response for the Hopedale North Rail Yard Expansion, Harrison Co. OH



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# 03E15000-2015-TA-1193

Dear Ms. Dardinger,

We have received your recent correspondence requesting information about the subject proposal. This response letter supersedes any prior correspondence for this particular project. There are no federal wilderness areas, wildlife refuges or designated critical habitat within the vicinity of the project area. The following comments and recommendations will assist you in fulfilling the requirements for consultation under section 7 of the Endangered Species Act of 1973, as amended (ESA).

The U.S. Fish and Wildlife Service (Service) recommends that proposed developments avoid and minimize water quality impacts and impacts to high quality fish and wildlife habitat (e.g., forests, streams, wetlands). Additionally, natural buffers around streams and wetlands should be preserved to enhance beneficial functions. If streams or wetlands will be impacted, the 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. All disturbed areas should be mulched and revegetated with native plant species. Prevention of non-native, invasive plant establishment is critical in maintaining high quality habitats.

FEDERALLY LISTED SPECIES COMMENTS: All projects in the State of Ohio lie within the range of the federally endangered **Indiana bat** (*Myotis sodalis*) and the federally threatened **northern long-eared bat** (*Myotis septentrionalis*). In Ohio, presence of the Indiana bat and northern long-eared bat is assumed 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 travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥ 3 inches diameter at breast height (dbh) that have any exfoliating bark, cracks, crevices, hollows and/or cavities), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or

loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) 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 and abandoned mines.

Female Indiana bats exhibit strong site fidelity to summer roosting and foraging areas, meaning that they return to the same area, and often the same trees, to roost, year after year. Because the project will result in a large amount of forest clearing relative to the available habitat in the immediately surrounding area, habitat removal could result in significant impacts to Indiana bats. Because of this, the proposed project may result in indirect adverse effects to Indiana bats, even if tree clearing is conducted during the winter season when Indiana bats are not present. **Therefore, we recommend that a summer survey be conducted to determine presence or probable absence of Indiana bats at the project site.** The summer survey must be conducted by an approved surveyor and be designed and conducted in coordination with the Endangered Species Coordinator for this office. In Ohio, summer surveys must be conducted between June 1 and August 15. We recommend that any Indiana bats captured, especially reproductively active females, be monitored through radio-tracking to determine roost locations.

As noted above, we have recommended that a summer survey be conducted to determine presence or probable absence of Indiana bats. **The proposed project is in the vicinity of one or more confirmed records of northern long-eared bats.** Therefore, presence of this species in the project area is already confirmed, even if a new summer survey fails to detect northern long-eared bats. However, a summer survey will help determine the level of use of the site by northern long-eared bats. We recommend that any northern long-eared bats captured, especially reproductively active females, be monitored through radio-tracking to determine roost locations.

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 also warranted. Portal surveys must be conducted by an approved surveyor and be designed and conducted in coordination with the Endangered Species Coordinator for this office.

Survey results should be coordinated with this office prior to initiation of any work. Based on the results of the survey(s), we will evaluate potential impacts to the Indiana bats and northern long-eared bats from the proposed project. If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), 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 that 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.

Due to the project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, proposed, or candidate species. Should the project design change, or during the term of this action, 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, consultation with the Service should be initiated to assess any potential impacts.

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 ESA, and are consistent with the intent of the National Environmental Policy Act of 1969 and the Service's Mitigation Policy.

This letter provides technical assistance only and does not serve as a completed section 7 consultation document. We recommend that the project be coordinated with the Ohio Department of Natural Resources due to the potential for the project to affect state listed species and/or state lands. Contact John Kessler, Environmental Services Administrator, at (614) 265-6621 or at john.kessler@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,

A handwritten signature in blue ink that reads "Dan Everson". The signature is fluid and cursive, with the first name "Dan" being more prominent than the last name "Everson".

Dan Everson

Field Supervisor

cc: Nathan Reardon, ODNR-DOW

Jennifer Norris, ODNR-DOW



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ATTACHMENT 4D
ODNR CORRESPONDENCE



Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR

JAMES ZEHRINGER, DIRECTOR

Ohio Division of Wildlife
Scott Zody, Chief
2045 Morse Rd., Bldg. G
Columbus, OH 43229-6693
Phone: (614) 265-6300

November 17, 2014

Heather Dardinger
EMH&T
5500 New Albany Rd.
Columbus, OH 43054

Dear Ms. Dardinger,

After reviewing the Natural Heritage Database, I find the Division of Wildlife has no records of rare or endangered species in the Hopedale North Rail Yard project area, including a one mile radius, in Green Township, Harrison County, Ohio. We are unaware of any unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, nature preserves, parks or forests, national wildlife refuges, parks or forests or other protected natural areas within a one mile radius of the project area. We have no records for Indiana Bat (*Myotis sodalis*) capture locations within a five mile radius or hibernacula within a ten mile radius of the project site.

Our inventory program has not completely surveyed Ohio and relies on information supplied by many individuals and organizations. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. This letter only represents a review of rare species and natural features data within the Ohio Natural Heritage Database. It does not fulfill coordination under the National Environmental Policy Act (NEPA) or the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S. C. 661 et seq.) and does 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.

Please contact me at 614-265-6818 if I can be of further assistance.

Sincerely,

A handwritten signature in blue ink that reads "Debbie Woischke".

Debbie Woischke
Ohio Natural Heritage Database Program



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ATTACHMENT 4E

CULTURAL RESOURCES CORRESPONDENCE



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5500 New Albany Road
Columbus, Ohio 43054
Fax: 614-775-4500
Toll Free: 1-888-775-EMHT

emht.com

2014-1836

**Phase I Cultural Resources Management Survey for
the approximately 78 ac Hopedale North Rail Yard
Expansion located in Green Township, Harrison
County, Ohio.**

May 18, 2015

Engineers

Surveyors

Planners

Scientists

**Phase I Cultural Resources Management Survey for
the approximately 78 ac Hopedale North Rail Yard
Expansion located in Green Township, Harrison
County, Ohio**

By:

Elaine Meyer

Submitted To:

**MarkWest Utica EMG, LLC
101 East Market Street
Cadiz, Ohio 43907**

Submitted By:

**Joel Brown, P.I.
EMH&T, Inc.
Cultural Resources Department
5500 New Albany Road
Columbus, OH 43054
Phone: (614) 775-4530 Fax: (614) 775-4802**

Lead Agency:

United States Army Corps of Engineers, Pittsburgh District

Project #: 2014-1836

18 May 2015

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EXHIBITS

i. Abstract

Phase I Cultural Resources Management investigations were conducted by the Cultural Resources Department of EMH&T for the approximately 78 ac Hopedale North Rail Yard Expansion located in Green Township, Harrison County, Ohio during the months of April and May 2015. These investigations were performed for MarkWest Utica EMG, LLC under the direction of the United States Army Corps of Engineers, Pittsburgh District (USACE). This project is being conducted for a rail yard facility associated with shale oil and gas development. Due to increased natural gas and natural gas liquid (NGL) production throughout the western Pennsylvania and eastern Ohio region, which was not anticipated in 2014 at the time of the Nationwide Permit application, MarkWest is proposing to expand the Hopedale North Rail Yard immediately east of the original rail yard. The permits for the Hopedale North Rail Yard were authorized in April 2015 and that portion of the project is currently under construction west of the subject area.

Approximately half of the project area had been previously surveyed in 2014. There were no historic properties located within the project area at that time. These results were submitted to the USACE (Meyer 2014). The eastern previously unsurveyed portion of the project area, consisting of approximately 24 acres of testable land, underwent field investigations through a combination of shovel testing and visual inspection. Large portions of the project were formerly strip mined for coal and were visually inspected. No previously unknown archaeological sites were identified within the project area.

There were no significant historic buildings or structures noted in the area of potential effects for the project. No historic properties were identified within the APE of this project and, consequently, the project will have no effect on historic properties. As a result, no further work is recommended for this project provided the scope of work remains the same.



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1. Introduction

Phase I Cultural Resources Management investigations were conducted by the Cultural Resources Department of EMH&T for the approximately 78 ac Hopedale North Rail Yard Expansion located in Green Township, Harrison County, Ohio during the months of April and May 2015. These investigations were performed for MarkWest Utica EMG, LLC under the direction of the United States Army Corps of Engineers, Pittsburgh District (USACE).

The project area is located in northern Green Township (Figures 1 and 2). It is an irregularly shaped area located approximately 2 miles northwest of the Village of Hopedale. The project consists of a rail yard and natural gas liquids (NGLs) loading facility that will connect to the Ohio Central Railway. It is located north of the existing Hopedale Processing Facility in Green Township, Harrison County, Ohio. The rail yard will tie into the Ohio Central Railway mainline to allow for complete run-through capability to service the facility and support the natural gas and NGL production industry throughout western Pennsylvania and eastern Ohio.

Due to increased natural gas and natural gas liquid (NGL) production throughout the western Pennsylvania and eastern Ohio region, which was not anticipated in 2014 at the time of the Nationwide Permit application, MarkWest is proposing to expand the Hopedale North Rail Yard immediately east of the original rail yard. The permits for the Hopedale North Rail Yard were authorized in April 2015 and that portion of the project is currently under construction west of the subject area.

A significant portion of the project area was indicated as having been subjected to coal strip mining in the past (Figure 2). The ground cover in the project area is primarily woods with some grass fields.

The area surrounding the project is woods, fields, and the adjacent Hopedale Fractionation Facility. The Area of Potential Effects (APE) for this particular project should largely be limited to the footprint of the ground disturbance and immediately adjacent areas extending approximately 950 ft. from the project (Figure 9). This APE was established based on the fact that the area surrounding the proposed rail yard facility is remote, sparsely populated, very dissected high relief land and includes a sizable fractionation facility. The project will not be visible from the Village of Hopedale.



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2. Environmental Setting

2.1. Climate

The average winter temperature in Harrison County is 30° F, with the low temperatures reaching as low as the twenties and even into the negatives (USDA, SCS 1998). The average high temperature in the summer is 71° F, with the high temperatures reaching up to 100° F (USDA, SCS 1998). The total annual precipitation is 38 inches (USDA, SCS 1998). The prevailing winds are generally out of the south-west (USDA, SCS 1998).

2.2 Physiography

Harrison County is located within the unglaciated Allegheny Plateau Region of Ohio. The landscape has many drainage ways, which have left deep valleys and narrow ridge tops (USDA, SCS 1998). The streams in the county either flow east to the Ohio River or west into the Tuscarawas River (USDA, SCS 1998). The highest elevation above sea level is 1,366 feet, which is located in German Township. The lowest is 861 feet, which is located in Washington Township (USDA, SCS 1998).

2.3 Geomorphology

Harrison County is located in the unglaciated Allegheny Plateau Region (USDA, SCS 1998). The three plateaus in this region are the Muskingum-Pittsburgh, Marietta, and Little Switzerland (Brockman 1998). The Muskingum-Pittsburgh Plateau is a moderately high to high relief dissected plateau with valleys and terraces with medium-grained bedrock sequences (Brockman 1998). The Marietta Plateau is a dissected high relief plateau containing fine-grained rocks and red soils (Brockman 1998). The Little Switzerland Plateau is a highly dissected high relief plateau with fine grained rocks and red soils (Brockman 1998).

The surface deposits in the county are primarily colluvium with some lake deposits throughout the west, northwest, and southwestern portions of the county (ODNR 2001). Colluvium is areas where sediments have collected at the base of a hill or slope due to erosion. Areas of lake deposits characteristically have fine grained clay and silt sized sediments (ODNR 2001).

2.4 Geology

The bedrock in the county is made up of sedimentary rocks. The two systems present include the Pennsylvanian and Permian Age Systems (USDA, SCS 1998). The Pennsylvanian System, the older of the two, is present over the entire county and consists of beds of sandstone, shale, limestone, and coal (USDA, SCS 1998). The Permian System can be found in surface outcrops on the ridge tops in the far southeast corner of the county (USDA, SCS 1998). In the valleys of the creeks in the county alluvial deposits are also present and are made up of mostly silt and clay (USDA, SCS, 1998).



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2.5 Hydrology

The principal waterways of Harrison County are Cross Creek and Short Creek in the east and to the west are Conotton Creek, Little Stillwater, and Stillwater Creek (USDA, SCS 1998). The drainages that flow east go into the upper Ohio River, and the ones that flow west go into the Tuscarawas River (USDA, SCS 1998).

2.6. Soils

The project area is contained within the Morristown-Guernsey soil association. This soil association consists of nearly level to very steep soils that are well and moderately well drained (USDA, SCS 1992). The specific soils included within the project area include: Berks channery silt loam (BkE; 25-35% slope), Coshocton silt loam (CnC; 6-15% slope), Morristown channery silty clay loam (MoD; 8-25% slope), Morristown channery silt loam (MrF; 25-70% slope), and Westmoreland-Dekalb complex (WnE; 25-40% slope). The untested portion of the project area is located within the Berks, Coshocton, and Morristown soils. Gilpin and Morristown soils are well drained and Coshocton soils are moderately well drained (USDA, SCS 1992). In general, the soil types indicate there are significant areas that appear unsuitable for prehistoric habitation. The Berks and Morristown soils have a low probability to contain sites due to the high degree of slope. Additionally, the Morristown soils were formed from strip mining.



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3. Prehistoric Cultural Setting

3.1. Introduction

Ohio has a long culture history dating back to the end of the last ice age. The following text is meant as a brief introduction to what is known of the unrecorded prehistoric period in Ohio. This summary is merely meant as an introduction to the various cultures and artifacts which may be encountered during the current cultural resources management investigation.

3.2. Paleo-Indian Period: 10050-8050 BC

It is generally accepted that the Paleo-Indians migrated to this area from the Southwest and Plains states. These nomadic people traveled in small groups hunting and gathering. In addition to the rather sparse plant foods, many types of animals were hunted. They hunted and butchered mammoths and mastodons but it appears that they killed weakened or wounded individuals as well as scavenged carcasses. Other large mammals that may have been hunted include giant beaver, giant ground sloth and bison. In addition to the mega-fauna, caribou, elk and rabbit have all been located in dated Paleo-Indian contexts. Archaeological evidence recovered from eastern Paleo-Indian sites has confirmed the use of nut and berry resources by these early inhabitants (Hooge and Lepper 1992).

Paleo-Indian sites are typically located near kettle bogs, end moraines and glacial kames (Tankersley et al. 1990). In Ohio, the majority of the Paleo-Indian sites are comprised mostly of isolated find spots of fluted points (Prufer and Baby 1963). Other site types include small campsites, chert quarries, butchering and kill sites. Sites which may be associated with habitation are usually located on hilltops and bluffs which overlook the larger tributary valleys.

Paleo-Indian artifacts include fluted projectile points, lanceolate shaped projectile points, drills, burins made on flakes and broken points, denticulates, alternately beveled knives, backed knives, unifacial knives, square knives, unifacial endscrapers with and without graver spurs, sidescrapers, pitted stones and adzes to name a few of the more common cultural trappings (Gramly 1992, Converse 1973). Subsurface features and evidence of structural remains are exceedingly rare from this period.

3.3. Archaic Period: 8050-300 BC

3.3.1. Early Archaic Period: 8050-4550 BC

With the recession of the glacier and the extinction of the Pleistocene mega-fauna, the Early Archaic Indians faced some major changes. Broad leaf forests were replacing the spruce and pines that previously dominated the terrain. Increasing dryness and warming made large, previously inhospitable tracts of land available and opened up the majority of Ohio to settlement. More space, combined with the increasing sources of food, led to a sustained population growth throughout the Archaic. Archaic populations had base camps which were centrally located for the best access to the most resources (Chapman 1985). From these base camps smaller groups or individuals would make forays to collect resources to bring back to the base camps (Chapman 1985). During the winter, small family groups would radiate out from the base camp, returning



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again when resources were more plentiful. Early Archaic groups were still nomadic in nature, much like the Paleo-Indians of the preceding period.

With the expansion of the broadleaf forests, plant foods became more prominent in the diet (Fagan 1995). In addition, herd animals became the focus of hunting. Deer, elk, caribou and bison were probably the main sources of protein. Smaller animals that are common today such as rabbits, squirrel, mink, fox and others were also important for their meat as well as fur.

Early Archaic artifacts include large beveled knives such as Dovetails (St. Charles), Thebes and Lost Lakes, Kirk varieties, and bifurcated points such as Lake Eries, MacCorkles and LeCroys (Justice 1987, Converse 1973). Tools found on Early Archaic sites include endscrapers, sidescrapers and utilized flakes among others. Groundstone and slate artifacts became common during this period for the first time. These included various axes, chisels, gouges, and bannerstones. Early Archaic artifacts are found throughout the state in geographically diverse environments and made from many different flint types. This would seem to indicate that Early Archaic populations were utilizing a wider range of food sources and habitats than previously exploited in the Paleo-Indian Period.

3.3.2. Middle Archaic Period: 4550-3050 BC

The Middle Archaic Period in Ohio is not very well understood. Many Middle Archaic sites within Ohio consist of isolated finds and small lithic scatters only identifiable as such based on the recovery of diagnostic point types.

This period occurs at the end of a warm, dry trend known as the hypsithermal climatic interval. The drying of the environment led to a decrease in forests, which were being replaced by grasslands. This in turn led to technological developments to deal with the more arid environment. In more northerly climes like Michigan this period is marked by a transition from a spruce to pine to deciduous forest (Fitting 1970). Important sites from this period are all located well south of the Ohio region. New groundstone implements such as pitted anvils, grinding stones and pestles make their appearance. These appear to be a result of utilizing more plant foods, especially nuts and starchy seeds that become more common with the drying of the environment. Whitetail deer and turkey were the most important game animals. Riverine resources such as shellfish, fish and waterfowl were also important. The ephemeral nature of most Middle Archaic sites in Ohio suggests a low population with high mobility. It has been postulated that during this time period the lack of Middle Archaic type sites is best explained by a lack of environments to which the Middle Archaic people were best adapted (Fitting 1970).

Middle Archaic artifacts which may be encountered in Ohio include; Eva points, Morrow Mountain points, Raddatz points and White Springs points. The ranges for these are all limited to extreme southern Ohio along the Ohio River, with the exception of Raddatz points which are found throughout Ohio (Justice 1987).

3.3.3. Late Archaic Period: 3050-300 BC

During the Late Archaic Period, rising waters from the melting of the last of the glaciers created a focus on riverine environments. Plant foods seemed to gain importance and a population increase



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followed accordingly (Fagan 1995). A more sedentary lifestyle is evident with good examples of storage pits and re-occupied base camps. Pottery was first introduced in the Southeast during this period around 2500 BC (Fagan 1995). It is also during this period that rather unique culturally based mortuary expressions are first seen.

The Glacial Kame Culture (2950-2450 BC) is a unique burial cult of the Late Archaic Period. It was labeled based on the way the dead were buried in the gravelly glacial deposits of the same name. It is most common in the northwest part of the state. This culture was involved in the importation of exotic trade goods. Conch shells were brought from the coasts, cannel coal from Southern Ohio and copper from the Upper Peninsula of Michigan. Some of the burial items recovered include; sandal sole gorgets, shell gorgets, copper celts and awls, birdstones, humped back gorgets and constricted center gorgets (Converse 1979).

Late Archaic artifacts include the following point types; various Brewerton, Matanzas, Table Rock, Bottleneck, Lamoka, Karnak, McWhinney, Ashtabula, Turkey tail and Meadowood points (Justice 1987). Slate gorgets are first present during this period and are often found as burial goods. Many of these point types have overlapping distributions indicating a lot of movement between peoples and a high diversity of tool types.

3.4. Woodland Period

3.4.1. Early Woodland Period: 500 BC-100 AD

The Early Woodland Period is sometimes known as the period of the Adena Culture. The Early Woodland period is marked by changes in subsistence practices, social organization, cultural traits and regional exploitation of resources. The Early Woodland populations likely followed a hunter-gatherer subsistence pattern with a greater reliance on gathering. There also appears to have been a primitive form of social hierarchy beginning among populations of the Early Woodland period. It is during the Early Woodland period that the practice of constructing earthen mounds for burial practices first begins. It is also during this period that a greater degree of regionalism and territorialism is seen.

It is during the Early Woodland period in Ohio that the use of ceramic vessels becomes common. These early ceramics are usually quite thick and usually poorly fired. The ceramics were often flat-bottomed vessels with lug handles. Often, cordmarking is present on the exterior and interior of the vessel. Latter ceramic designs include stamped designs and incised lines (Tuck 1978). The practice of building earthworks and burial mounds also first appears during the Early Woodland period.

The construction of residential dwellings as well as the increased use of ceramics is often used to suggest an increase in sedentism of the Early Woodland populations. The Early Woodland peoples also appear to have had established home ranges which a single political unit (likely the family) would exploit for providing the necessary resources for survival.

Artifacts which are considered to be diagnostic of the Early Woodland (Adena Culture) of Ohio include weak-shouldered lobate-stemmed spear or dart points such as Cresap Stemmed, Kramer, Robbins, Dickson Contracting Stemmed, and Adena Stemmed projectile points, bar and keel



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shaped gorgets, cigar-shaped and block-end-tube smoking pipes, quadriconcave gorgets, bi-concave gorgets, elliptical gorgets, indented gorgets, loafstones, bar amulets, keyhole pendants, bell-shaped pendants, boatstones, bust-type birdstones, and expanding center gorgets (Webb and Snow 1945; Webb and Baby 1966[1957]; Dragoo 1963, Converse 1978).

3.4.2. Middle Woodland Period: AD 0-450

The Middle Woodland period is perhaps one of the most visible of all of Ohio's prehistoric populations due to their construction of large-scale geometric earthworks. For this reason, the Middle Woodland period of Ohio is often thought of as the period of the Hopewell culture. The Hopewell culture practiced an elaborate mortuary cult that involved mound and earthwork construction, the importation of exotic trade goods, elaborate ceremonial items and cremation practices.

It is during the Middle Woodland period that there appears to be an increase in the levels of social organization as evidenced by the burial populations and associated burial items, which have been recovered. However, the burial populations are limited and do not appear to include any individuals of the perceived lower classes of Hopewell society.

The Middle Woodland period is also noted for its monumental architecture in the form of large geometric earthworks. These shapes include circles, octagons and squares and more symbolic forms such as a bear paw, a menorah-like form, a horseshoe-like form (Atwater 1820; Squier and Davis 1848), and even what appears to be an outline of a giant Hopewellian House for the Dead [Mound City] (Shumaker 1965). The Hopewell peoples also constructed large earthen enclosures which were often placed in specific locations to take advantage of natural features such as is seen at Fort Hill in Highland County and at Fort Ancient in Warren County.

The ceramic technology becomes more refined during the Middle Woodland period. The ceramics which are produced by the Middle Woodland populations are thinner walled than that of the Early Woodland and are better fired. The highest quality ceramics are often recovered in burial mound contexts. The utilitarian ceramics are more rarely encountered. This is likely due to the poor preservation factors at most of these habitation sites (Licking County Archaeological and Landmarks Society [LCALS] 1985).

Artifacts which are considered to be diagnostic of the Middle Woodland (Hopewell Culture) of Ohio include projectile points such as Snyders, Steuben Expanded Stem, Bakers Creek and Chesser Notched. Other items which are considered diagnostic are bladelets, prepared bladelet cores, squared celts, rectangular two-hole gorgets, expanding center gorgets, boat shaped gorgets, reel-shaped gorgets, boatstones, anchor pendants, shovel-shaped pendants, pentagonal pendants, trapezoidal pendants, cones, and bust type birdstones, among other items.

3.4.3. Late Woodland: AD 450-1000

The Late Woodland period is markedly different from the preceding prehistoric periods in Ohio. During the Late Woodland period, regionalism of specific cultural groups becomes apparent in the archaeological record. The evidence of long distance trafficking of exotic trade goods is no longer as prevalent as it was in the preceding Middle Woodland period. Late Woodland



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populations practiced agricultural oriented subsistence practices. The crops produced by these populations included maize, beans, sunflower and squash. Other features of Late Woodland life included living in more permanent villages, some of which were surrounded by palisades that were for defensive purposes. There are several phases of the Late Woodland period in Ohio as well as several distinct cultural manifestations.

3.4.4 Late Prehistoric Period: AD 900-1670

The Monongahela Culture stretches over far eastern Ohio, Southwestern Pennsylvania and Northern West Virginia. The culture is focused along the Ohio River but also extends up the Monongahela, Youghiogheny and Casselman watersheds.

The Monongahela people lived in oval or round villages surrounded by a stockade for protection (Brown 1981). A number of circular homes surrounded an open plaza in the center of the settlement. These people relied on agriculture for a good portion of their diet, growing corn, beans and squash. They also gathered nuts and other edible plants and hunted woodland game. In the warmer months fish and mussels from the rivers would have been an important source of food. Burials were typically put in a flexed position and oftentimes buried within the walls of the stockade and sometimes within trash pits (Brown 1981). Burial goods were typically sparse but consisted of utilitarian items and personal adornments. Typical artifacts include; shell and limestone tempered pottery, pottery disks, triangular arrow points and knives and bone and antler tools (Brown 1981).



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4. Historic Setting

4.1. Protohistoric to Historic

During the mid 1600's, European traders and explorers traveled through the Great Lakes region in search of pelts for the lucrative fur trade. The French primarily traded with the Great Lakes Indians, while the English concentrated on trading with the Iroquois and other groups east of the Great Lakes. The first recorded village in Ohio, Teanontoria was located on the western bank of the Maumee River (Tanner 1987). The Tionontati Indians occupied it in 1652-1653 (Tanner 1987). In the 1670's, three recorded Shawnee villages on the banks of the Little Miami also appear in Ohio (Tanner 1987). The Iroquois Wars of 1641-1701, were sporadic hostilities that covered a large area from the Plains to New England and into Canada. The fur trade played a major role in Iroquois aggressions towards their neighboring native populations. The large quantities of furs east of the Great Lakes had become depleted and were no longer able to support the Five Nations. They began to move westward into the land of the French and their allies. The Iroquois' westward expansion was greatly aided by the supplied firearms from the British. The Hurons, being decimated by the Iroquois, sought refuge among the Erie of Ohio and other native groups. Later the Iroquois expelled the Erie from their lands in northern Ohio (Tanner 1987). During the 1870's, the Iroquois were being ravaged by European diseases and could no longer sustain their widespread attacks. This gave the Great Lakes Indians and their French allies time to rebuild their numbers and defenses, thus ending the Iroquoian threat.

During the early to late 1700's, the French and British rivalry over the Indian trade had hit its peak. The French concentrated their trade on the Mississippi and the area surrounding Detroit. Using the numerous waterways for transportation they spread their trade across the Great Lakes region. The British concentrated mainly in the town of Albany in New York (Tanner 1987). In Ohio at this time, the Shawnee Indians began to consolidate its scattered groups in the lower half of the state. In the 1750's, the French and Indian forces fought the British at Pickawillany, capturing British traders and a Miami leader (Tanner 1987). The French then began to move south into Kentucky and into eastern Ohio, securing trade with the Indians. They remained in control of the trade in Ohio until the beginning of the Seven Years War in Europe. The conflict between France and Great Britain climaxed in the French and Indian War of 1754-60 (Tanner 1987). The war began with the defeat of General Braddock's British forces at Fort Duquesne in 1755 (Tanner 1987). The Great Lakes Indians supported the French as a way to stop the land hungry British from taking more Indian lands. The Indians concentrated their attacks on the British outposts and small settlements, also sending large numbers to aid the French battling the British militia. The final battle of the French and Indian War took place in Montreal on September of 1760 (Tanner 1987). With the French capitulation, and surrender of all military posts, the British gained full control of the trade routes. In 1763, Great Britain was granted the Ohio lands under the laws set forth in the Treaty of Paris (Tanner 1987).

The Ohio lands consisted of at least six different tribal groups circa 1768. The Ottawa and Miami were located in the northwest. The Shawnee were located primarily in the southwest. The Wyandot were located in the north-central part of the state. The Delaware and Mingo were in the eastern half of the state. The conflicts between the tribes had lessened considerably due to their concerns with the British. In 1795, the Treaty of Greenville was established to move all native peoples north of the 42nd parallel (Tanner 1987). The last major development involving



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the Ohio Native Americans, British and Americans was The War of 1812. The battles that ensued culminated in the defeat of the British and the Indians being sent to reservations in Northwest Ohio.

4.2. Harrison County History

Harrison County, part of the Seven Ranges of Ohio, was officially established in 1813. The area had settlers as early as 1787, due to the fact that it was the first part of wilderness open to people by Congress during the westward expansion. The county is made up of what were once parts of Jefferson and Tuscarawas Counties and contains 15 different Townships. It was named after General William Henry Harrison, who would later go on to be President. (www.rootsweb.ancestry.com).

This area was settled by farmers who in the late 19th Century were known for producing large amounts of wool (www.harrisoncountyohio.org). The 20th Century gave way to coal mining, which resulted in the production of wool significantly declining. A large amount of land that was used for agriculture was then taken over and destroyed by the mines.

The Croskey family was one of the first to settle this area, specifically in what would become Green Township. Robert Croskey arrived in 1802 and settled there for the remainder of his life (www.rootsweb.ancestry.com). Many of Robert Croskey's children married and either stayed in the vicinity or ended up moving back to the county at some point. John Croskey, Robert's son born in 1802, was known as one of the best blacksmiths in the County (rootsweb.ancestry.com).

Alma College, which became Franklin College in 1826, was founded by Reverend John Walker in New Athens in 1818 (www.harrisoncountyohio.org). Franklin College was a major part of the abolitionist movement before and during The Civil War. There were a significant amount of Senators, Congressmen, Governors, State Legislators, lawyers, and other notable professions who graduated from Franklin College that were a major asset in abolishing slavery during the Civil War. The school lasted until 1919, when it was then merged with Muskingum College (www.harrisoncountyohio.org).

Many influential people called Harrison County home. George Armstrong Custer, the famous general in the Battle of the Little Bighorn, was born in the northern part of the County in 1839 (www.harrisoncountyohio.org). Clark Cable, born in Cadiz in 1901, went on to become a famous Hollywood actor (www.harrisoncountyohio.org). Edwin Stanton, although not born in Harrison County, served as the County Prosecutor, was a teacher at Franklin College, then went on to be Abraham Lincoln's Secretary of War (www.harrisoncountyohio.org).

4.3. Green Township History

Green Township was established in 1807 while it was a part of Jefferson County (Eckley 1921). The current boundaries of the township were formed within Harrison County in 1833 (Eckley 1921). It is located along the eastern county line. Early settlers of the township prior to 1805 include: John Baker, Anthony Bricker, George Brokaw, John Craig, Robert Croskey, Robert Davidson, William Hogg, William Moore, John Nicodemus, John Ramsey, Robert Orr, John



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Ramsey, Rev. John Rea, Martin Snyder, Galbreath Stewart, John Taggaert, John Wallace, Bazaleel Wells, and Daniel Welch (Eckley 1921).

The Village of Hopedale was platted by Cyrus McNeely in 1849 and filed for record in 1851 (Eckley 1921). It is the largest village in the township, which was due in large part to the establishment of Hopedale College (Eckley 1921). It was started by Cyrus McNeely in 1849 and later closed in 1902 (www.remarkableohio.org). It was the first coeducational college for teachers in eastern Ohio, with George Armstrong Custer being a notable graduate in 1856 (www.remarkableohio.org). The village was also an important stop on the Underground Railroad, with several stations located within the village (www.remarkableohio.org).

The coal mining industry played an important role since most of the county was lined with rich Pittsburgh No. 8 coal (Eckley 1921). This resulted in surface mining, also known as “stripping”, which was more lucrative than deep mining. Coal became profitable after the railroads were laid out (www.remarkableohio.org).



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5. Literature Review

5.1. Introduction

The literature review encompasses a circular area of 2 km (1.2 mi.) in radius centered on the project area. This area includes a portion of the United States Geological Survey (USGS) 1960 (*Photoinspected 1976; Photorevised 1972*) *Cadiz, Ohio, 7.5 Minute Series (Topographic)* map. The historic features identified within these limits are detailed below.

5.2. William C. Mills' *Archaeological Atlas of Ohio* (1914)

In the early part of the past century the director of the Ohio Archaeological and Historical Society, William C. Mills, produced a generalized map of mound and site locations at the county level through personal inspection and correspondence. Examination of William C. Mills' *Archaeological Atlas of Ohio* (1914; Figure 3) identified no documented sites within or near the project area. In fact, there are no documented sites within all of Green Township.

5.3. Ohio Archaeological Inventory (OAI) Forms

A search was conducted of the Ohio Archaeological Inventory files to determine if any previously documented archaeological sites were located within the study radius. Six archaeological sites were located within the study radius (33-Hn-[154, 155, 167, 190, 191, & 201]) based on review of the OHPO GIS website. Three of the sites are prehistoric, two are historic, and one is both prehistoric and historic. Based on personal knowledge, the study radius contained an additional prehistoric site (33-Hn-234; Meyer 2014).

Four of the prehistoric sites are temporally undefined, while the fifth was able to be correlated with the Early Archaic time period. Two of the sites were isolated find spots while another contained only two lithic artifacts. The multi-component prehistoric and historic site was recorded on a preliminary documentation form which indicated it contained an unknown amount of debitage and historic artifacts. The two historic sites are non-aboriginal.

Archaeological site 33-Hn-234 is located within the portion of the project area which is currently under construction. It is a temporally undefined small, low density lithic scatter which only had two artifacts. It was determined to be ineligible for inclusion onto the NRHP and, as a result, no further work was recommended.

5.4. Ohio Historic Inventory (OHI) Forms

A review of the archived OHI forms stored at the OHPO was conducted prior to conducting the fieldwork. There were two previously recorded OHI properties located within the study radius of the project area (HAS-[666 & 667]-04). They are located approximately 4,500 ft. and 4,700 ft., respectively, to the northeast of the project area.



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5.5. National Register of Historic Places (NRHP) Files

A review of the archived NRHP files stored at the OHPO was conducted prior to the initiation of fieldwork. These investigations failed to identify any historic properties located within the study radius.

5.6. Ohio Genealogical Society Cemeteries

A review of the archived Ohio Genealogical Society (OGS) Cemeteries files stored at the OHPO was conducted. There were two cemeteries identified in the study radius.

The Orr-Smith Cemetery (OGS # 5004) is located approximately 2,400 ft west of the project area. The Bethel Cemetery (OGS # 4997) is located approximately 3,000 ft west of the project area.

5.7. Cultural Resources Management (CRM) Reports

Five Cultural Resources Management (CRM) reports were identified within the 2 km study radius based on the OHPO GIS website and personal knowledge:

Biehl, Stephen M.

2013 Phase I Cultural Resources Survey of the Proposed 6.4 Acre Hopedale Mine (Permit D-0424 IBR) Project, German Township (Section 17), Harrison County, Ohio.

Keener, Craig

2009 Phase I Cultural Resource Management Survey of a 1.8 ha (4.5 A.) Hopedale Mining, LLC Permit D-0424 IBR Area in Green Township, Harrison County, Ohio.

MacDonald, Douglas H. and Jared N. Tuk

2006 Phase I Cultural Resource Survey Report for the CAM Ohio Coal Ash Disposal Project, Nelms #2 Mine (Application # D-0424-3) in Green and German Townships, Harrison County, Ohio.

Meyer, Elaine

2014 Phase I Cultural Resources Management Survey for the approximately 70 ac Hopedale North Rail Yard Expansion located in Green Township, Harrison County, Ohio.

Pecora, Albert M. and Rory J. Krupp

1998 Phase I Archaeological Survey of the Proposed Adjacent Area Permit Application D-0424-2, Section 17, German Township, Harrison County, Ohio.

5.8. Historic Atlases and Topographic Maps

Atlases, pertinent histories, 15' series topographic maps and 7.5' topographic maps for Green Township, Harrison County were researched for locations of historic buildings and for past owners and their possible historical importance.



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The Green Township portion of the *Harrison County O.* map (Jarvis 1862; Figure 4) indicates that the project area was owned by Wm. Croskey (200 ac). This map did not record buildings or structures.

The Green Township portion of *Caldwell's Atlas of Harrison County, Ohio* map (Caldwell 1875; Figure 5) indicates that the project area was owned by E. Hall (200 ac). There was a coal deposit indicated within the project area at that time. No buildings were located within the project area.

The *1901 Cadiz, Ohio Quadrangle 15 Minute Series (Topographic)* map (Figure 6) indicates no buildings located within the project area.

The USGS *1960 (Photoinspected 1976; Photorevised 1972) Cadiz, Ohio Quadrangle 7.5 Minute Series (Topographic)* map (Figure 2) indicates no buildings located within or near the project area. It does show that a significant portion of the project has been strip mined for coal.



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6. Research Design

The research design is a series of general questions used to direct the fieldwork by focusing the efforts towards a specific goal. The goal of this particular project is to locate, document and evaluate for the National Register of Historic Places all the cultural resources which may be located within the project area. The research design draws on the information gathered from the environmental situation, prehistoric and historic settings, locally specific literature review, historic maps and atlas review and authors' experience in the region. These factors are taken together to form a series of general research questions that are formulated prior to the initiation of fieldwork. The goal of the research questions is to develop expectations as to where and why cultural resources are located within the project area.

6.1. Fieldwork Methodologies

There are three basic methodologies that may be utilized during the fieldwork portion of these Cultural Resources Management Investigations; visual inspection, surface collection and subsurface investigations. The use of each methodology is dependent on the conditions experienced in the field.

6.1.1. Visual Inspection

All portions of the project area will be subjected to visual inspection. Visual inspection will be utilized to identify any structures, buildings, objects, or properties that are over 50 years old. It will also be used as a supplementary form of investigation to examine portions of the project area that may be steep, disturbed, or saturated.

6.1.2. Surface Collection

Any portions of the project area which offer sufficient bare ground surface visibility (>50%) will be subjected to surface collection methodologies. Surface collection will be conducted through pedestrian transects which will be paced at 3 m (10 ft) intervals. Where possible, all encountered artifacts may be initially flagged with pin flags for the purpose of defining spatial distribution of encountered archaeological sites. The pin flags will also allow the Principal Investigator to review the locations of the artifacts and to determine if concentrations, densities, or clusters are apparent on the inter-site level. If the Principal Investigator deems that there are no concentrations, densities, or clusters present at the encountered site, then the location and boundaries of the site will be plotted on a map and the artifacts will be grab sampled. If the Principal Investigator observes concentrations, densities, or clusters at an identified site then the artifacts will be collected by grid blocks, or the artifacts will be piece plotted.

6.1.3. Subsurface Investigation

All portions of the project area which do not offer sufficient bare ground surface visibility (<50%), and are less than 15 degrees slope will be investigated through subsurface testing methodologies. Subsurface testing in the form of shovel test units will be performed at 15 m or 50 ft intervals in the form of a grid system across the whole of the project area except in areas of low probability. If the project consists of a corridor, units will be excavated at 15 m or 50 ft



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intervals along the length of the corridor except in areas of low probability. Areas of low probability include areas such as those that are seasonally inundated and poorly drained. In this case intervals may be increased at the discretion of the field supervisor. Also, the areas immediately surrounding known historic structures may be excavated at decreased intervals due to the increased probability of remains. These shovel test units measure 0.5 m x 0.5 m (1.6 ft x 1.6 ft). All soil from each unit will be screened through 0.25 in² hardware cloth. The artifacts from each unit will be bagged and labeled as such. The floor of each unit will be scraped level and examined for subsurface features. Any cultural features identified within a shovel test unit will be exposed, troweled and cleaned for pictures and a plan view drawing. Depending on the size and location of the feature it could either be quartered or halved and excavated by hand with appropriate profile drawings and pictures taken. If stratified fill is evident then the remaining portions of the feature could be excavated accordingly. A sample of fill measuring 3 liters (size permitting) will be collected for the purpose of flotation to recover organic remains (primarily prehistoric features). A portion of the feature not to exceed one half of the total size may be left *in situ* at the discretion of the field supervisor.

6.2. Artifact Analysis Methodologies

6.2.1. Prehistoric Period Artifact Analysis Methodology

After the completion of the fieldwork, trained personnel will conduct a detailed analysis on the artifacts that are recovered. All of the artifacts that are recovered will be maintained and inventoried by site designation. The artifacts that are non-diagnostic in nature will be classed into their functional attributes (described below). The analyses that will be conducted on the temporally diagnostic prehistoric artifacts that may be recovered from the project area will be based upon various projectile point and tool form typology sources and guides which will include but may not be limited to Bell (1958, 1960), Converse (1973, 1974, 1978, 1994), DeRegnaucourt and Georgiady (1998), Gramly (1992), Justice (1987), Perino (1968, 1971) and Waldorf and Waldorf (1987). A chert type analysis will also be performed on all of the chert artifacts that are collected based solely on the macroscopic attributes of each type.

6.2.3. Historic Period Artifact Analysis Methodology

After the completion of the fieldwork, an artifact analysis will be conducted by trained personnel, on the historic period artifacts that may have been recovered. Historic period artifacts will be maintained and inventoried by site. They will be typed through the use of various guidebooks and other resources for the purpose of determining the approximate age of the artifacts as well as to aid in site interpretation. The guidebooks and resources which will be used include, but are not limited to, the following: Ball (1984), DeBolt (1994), Feild (2001), Gurke (1987), Hume (1969), Ketchum (2000), Kovel and Kovel (1986a, 1986b), Lehner (1988), Majewski and O'Brien (1987), Manson and Snyder (1997), McAllister (2001), Newman (1970), Shuman (1998), South (1977), Sussman (1977) and Thorn (1947). After an analysis has been performed and the artifacts have been inventoried, the site will be analyzed as to function, economic status of the inhabitants (when possible) and artifact patterning (when possible).



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6.3. Background Information

A review of the archived OAI forms stored at the Ohio Historic Preservation Office (OHPO) was conducted in order to get the necessary background information. This research identified only four previously recorded prehistoric archaeological sites within the study area.

Based on the USDA Natural Resources Conservation Service soil survey (websoilsurvey.nrcs.usda.gov), the entire project is composed of well and moderately well drained soils. However, much of the topography within the project is the result of former strip mines.

Review of the historic atlases and maps indicate the project contained no historic buildings within the project area.

6.4. Expected Results

The information gathered from the literature review indicated that there were minimal prior surveys in the study area. These surveys identified four previously recorded prehistoric archaeological sites which had at least 1-2 artifacts apiece. Generally, the prehistoric activity would be limited to the well-drained soils on gently rolling topography that are located near important resources. As a result, it is expected that there is a potential for encountering prehistoric archaeological sites. The topographic maps indicate that the project includes a significant amount of previously strip mined land which lowers the chance of finding any archaeological sites.

The early atlases and topographic maps indicated that the project area contained no historic buildings. As a result, it is not expected to recover historic artifacts.

6.5. Curation and Submission of Artifacts

In accordance with the property laws of the State of Ohio, all artifacts remain the property of the landowner till such a time as they relinquish their rights with the understanding that the artifacts will become the property of an acceptable curation facility. With the full cooperation of the landowner and pending acceptance of the artifacts by the selected curation facility, all artifacts will be washed and prepared for permanent curation. Until this time all artifacts will be stored in a temporary manner in a limited access facility under the direction of the Cultural Resources Department.



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7. Field Work and Interpretation

7.1. Fieldwork

Phase I Cultural Resources Management investigations were conducted by the Cultural Resources Department of EMH&T for the approximately 78 ac Hopedale North Rail Yard Expansion located in Green Township, Harrison County, Ohio during the months of April and May 2015. These investigations were performed for MarkWest Utica EMG, LLC under the direction of the United States Army Corps of Engineers, Pittsburgh District (USACE).

The entire project area is located within woods, a grass field, and a construction site (Exhibits 1-3). Approximately half of the project had been previously tested during the 2014 survey for the original rail yard expansion (Meyer 2014; Figure 7). The permit was authorized in April 2015 and was under construction during these fieldwork investigations. This previously surveyed portion of the project will be utilized in earthmoving and soil stockpiling. The untested portion is located solely within woods and a small grass field. The remaining areas required the use of shovel testing field methods. However, the portions of the project which have been strip mined were visually inspected to confirm the disturbance. Some of the project also includes severe slope which did not warrant testing, although this was entirely within the strip mined areas regardless (Exhibit 4). Standard shovel testing at 15 m intervals was conducted within the undisturbed portions of the project and was paced so some human error is expected. This resulted in approximately 27 acres of the project being tested, the remaining portion was previously strip mined.

The portion of the project area which was previously tested and is currently under construction also contained some sizeable strip mined areas. One temporally undefined, small prehistoric lithic scatter (33-Hn-234) was identified in a single shovel test unit in the northern portion of the project area.

Only one datum point was established for the previously untested eastern portion of the project area (Figure 8). It is located at the southeast corner of the project area. For the most part, the units were placed in a general east-west direction that ran along the southern edge of the project area. The units placed along the edge of strip mining and followed the contour of the visually evident strip mining because of the narrow width and irregular shape of that testable area. Some disturbance was sporadically encountered, presumably caused from strip mining in the area. Aside from the strip mine disturbance, the units displayed normal soil stratigraphy. No previously unrecorded archaeological sites were identified within this portion of the project area.

Area of Potential Effects

The Area of Potential Effects (APE) for this project has been limited to the footprint of the ground disturbance and immediately adjacent properties (Figure 9). This is justified by the remote, sparsely populated, high relief land, and the Hopedale Fractionation Facility in the area. Due to the varying sizes of the adjacent properties, the APE is irregular in shape and extends approximately 950 ft from the project area. The project area is surrounded by woods, fields, and a fractionation facility. The historic maps and current aeriels were reviewed to identify historic buildings within the APE since the Harrison County Auditor's website does not provide real estate property information to indicate construction dates.



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One house and one outbuilding were initially identified on the 7.5 minute topographic maps within the APE of the project. They are located approximately 600-800 ft. west of Black Road and 700-900 ft. east of the project area. They were both recorded as being built between 1962 and 1970 and are, therefore, potentially historic. The barn was found to be demolished and currently a pile of debris, while the house was still standing but in a severely dilapidated state (Exhibit 5). Due to the distance from the road and project area, it was difficult to definitely assess the features of the house. Overall, it appears to be a one-and-a-half story Vernacular style residence with wood siding and a gable roof. The front side of the house has partially collapsed. Due to the lack of exceptional architectural style and historical significance, this house does not seem to be eligible for inclusion onto the National Register of Historic Places under Criteria A or C.

7.3. Conclusions

The fieldwork that was conducted for the approximately 78 ac Hopedale North Rail Yard Expansion located in Green Township, Harrison County, Ohio identified no previously unknown archaeological sites within the previously unsurveyed portion of the project area.



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8. Expected Results Evaluation

There were expected results prepared before the commencement of the field work portion of these investigations, based on the background information and previous experience in the area. These questions were formulated so that the field work portion of these investigations could be conducted with some direction and with a set of goals in mind.

The background research indicated that the local area contained little evidence of previously recorded prehistoric archaeological sites. Based on the soils, topography, and documented previous disturbance within the project, it was expected that there was a low chance that previously unknown prehistoric archaeological sites could be located within the unsurveyed portion of the project area. Not surprisingly, no prehistoric sites were identified.

It was thought unlikely that historic period archaeological sites could be located within the project area since no buildings were identified on the historic maps. Not surprisingly, historic artifacts were not recovered within the project area.



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9. Eligibility Assessment

The Phase I Cultural Resources Management Investigations conducted for the approximately 78 ac Hopedale North Rail Yard Expansion located in Green Township, Harrison County, Ohio identified no previously unknown archaeological sites within the unsurveyed eastern portion of the project area. One known prehistoric period site (33-Hn-234) was identified within the previously surveyed western portion of the project (Meyer 2014).

Site 33-Hn-234 was a small, low density (n=2) prehistoric period site located within the western portion of the project area. This site was identified during a prior survey for the Hopedale North Rail Yard Expansion project (Meyer 2014). The site was determined to be ineligible for inclusion onto the National Register of Historic Places. The United States Army Corps of Engineers, Pittsburgh District (USACE) authorized the permit for the project in April 2015 (Appendix A) and the area where the site was identified is currently under construction.

One potentially historic house was noted in the APE and is not considered to be potentially eligible for inclusion onto the National Register of Historic Places based on Criteria A and C due to the lack of historical significance and lack of exceptional architectural style. There does not appear to be any historic properties in the APE for this project.



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Figures



Figure 1. Political map of Ohio showing the approximate location of the project area.

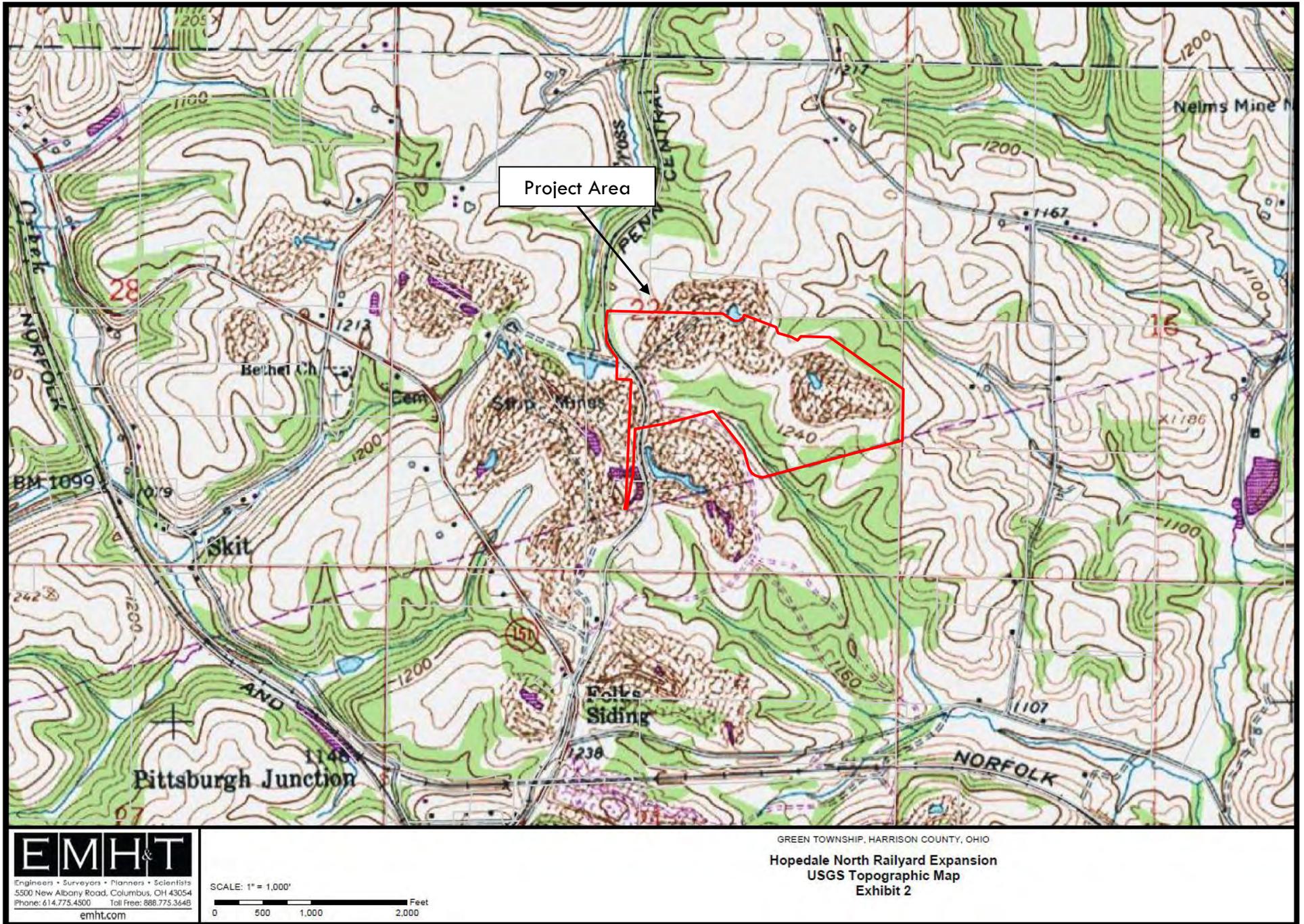


Figure 2. Portion of the United States Geological Survey (USGS) 1960 (*Photoinspected 1976; Photorevised 1972*) Cadiz, Ohio 7.5 Minute Series (Topographic) map showing the location of the project area.

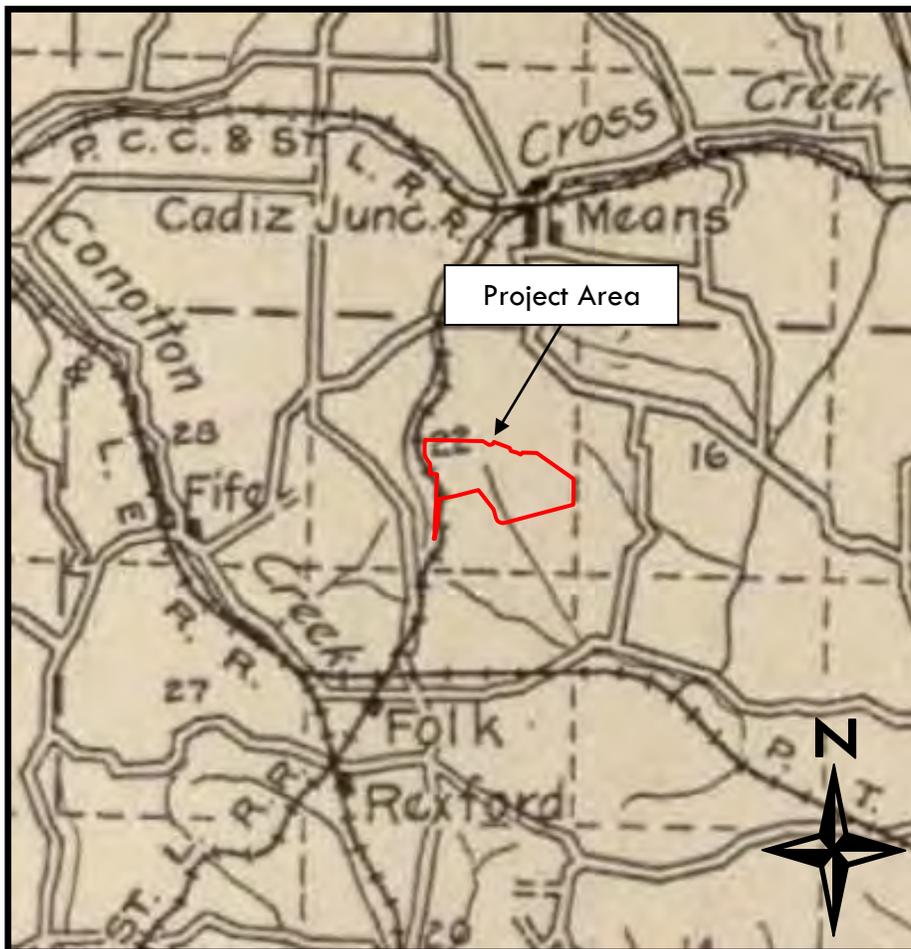


Figure 3. Harrison County portion of the *Archaeological Atlas of Ohio* (Mills 1914) showing the approximate location of the project area.

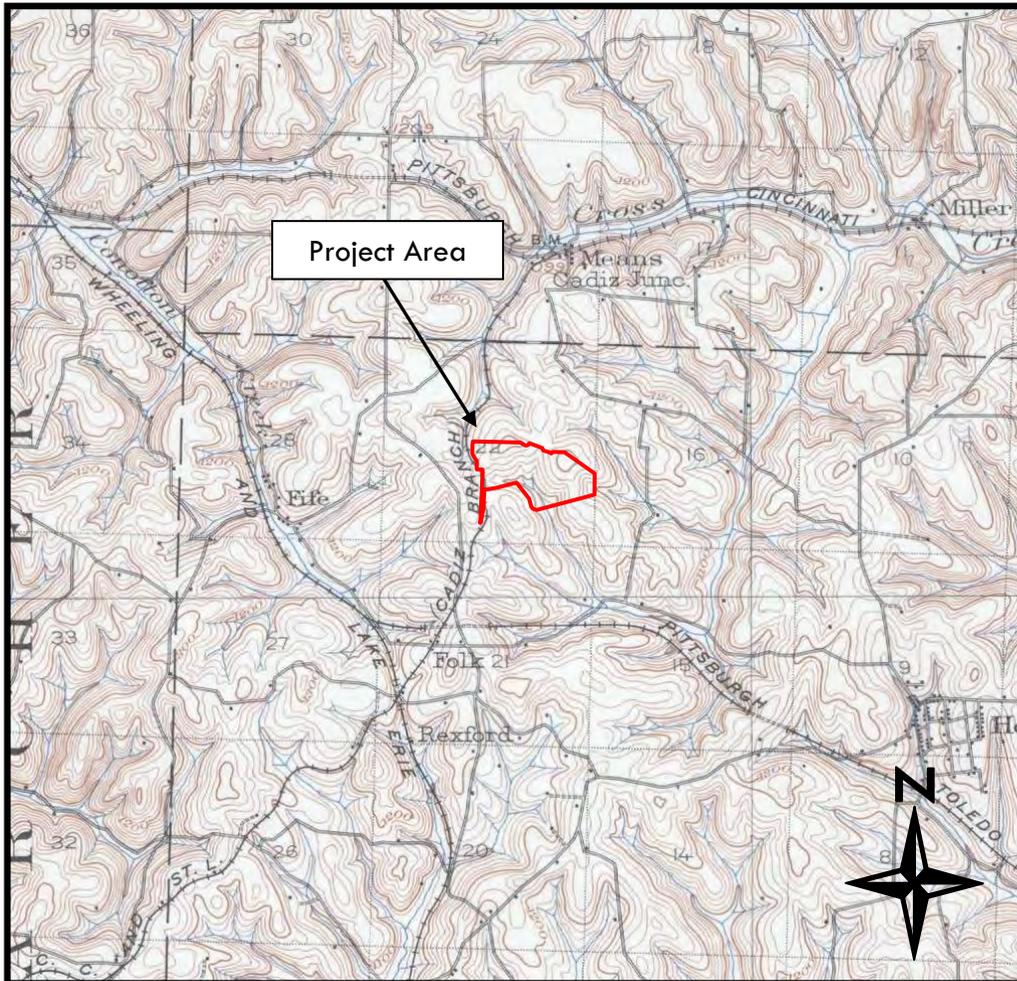


Figure 6. Portion of the USGS 1901 Cadiz, Ohio Quadrangle 15 Minute Series (Topographic) map showing the approximate location of the project area.

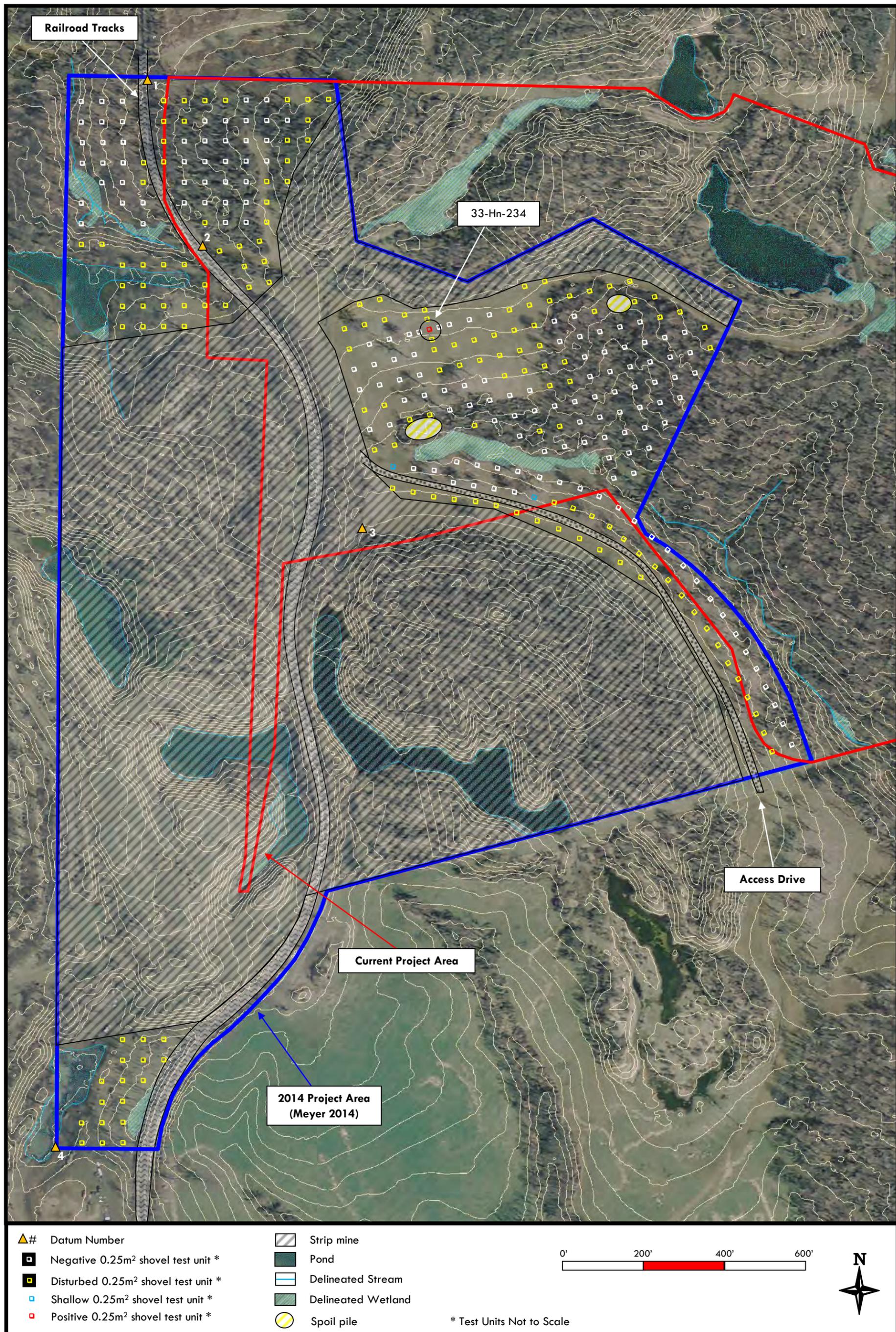


Figure 7. Fieldwork map showing the field conditions and testing strategies within the 70 acre project area conducted in 2014 (Meyer 2014) as it relates to the current project area.

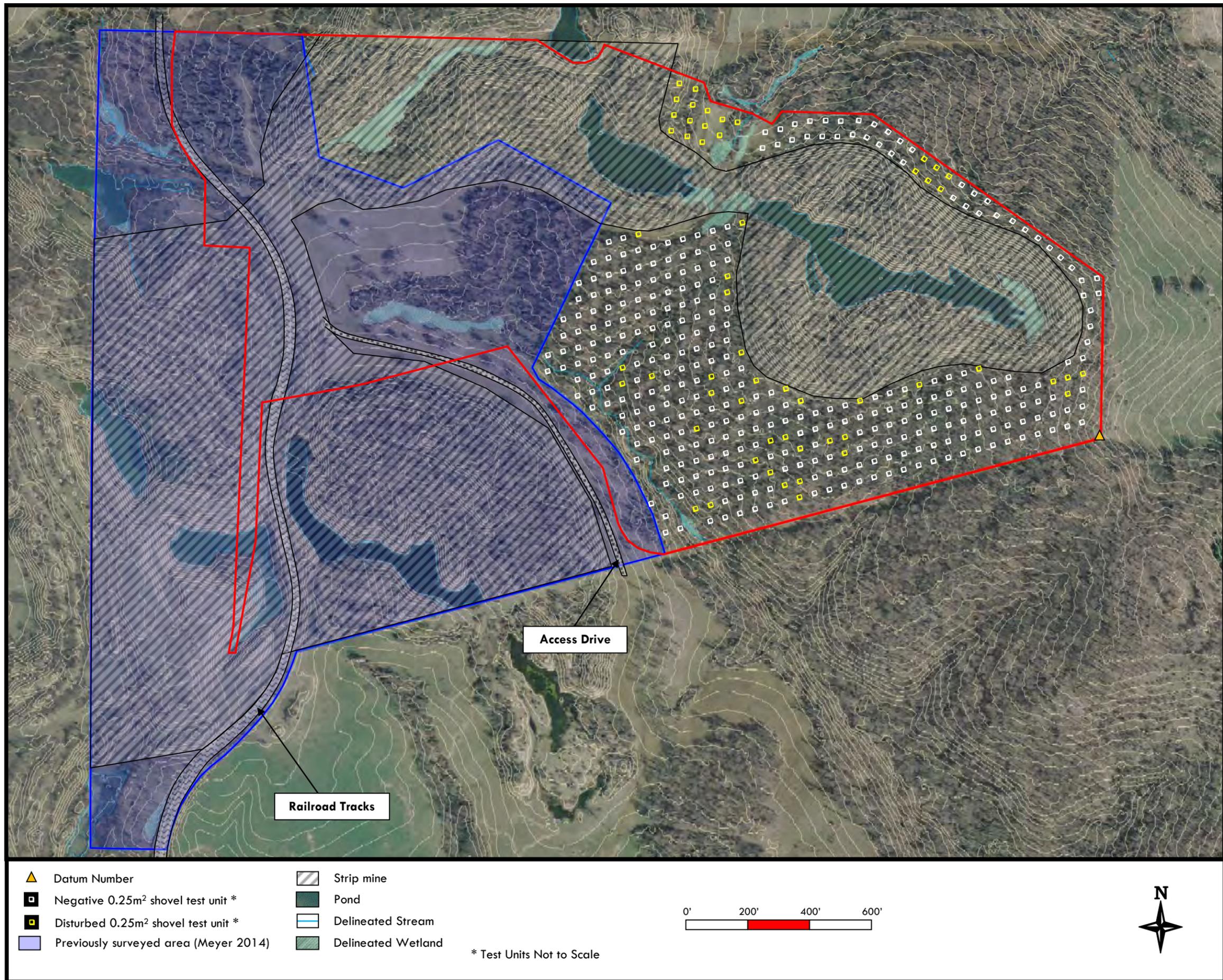


Figure 8. Fieldwork map showing the field conditions and testing strategies within the project area.

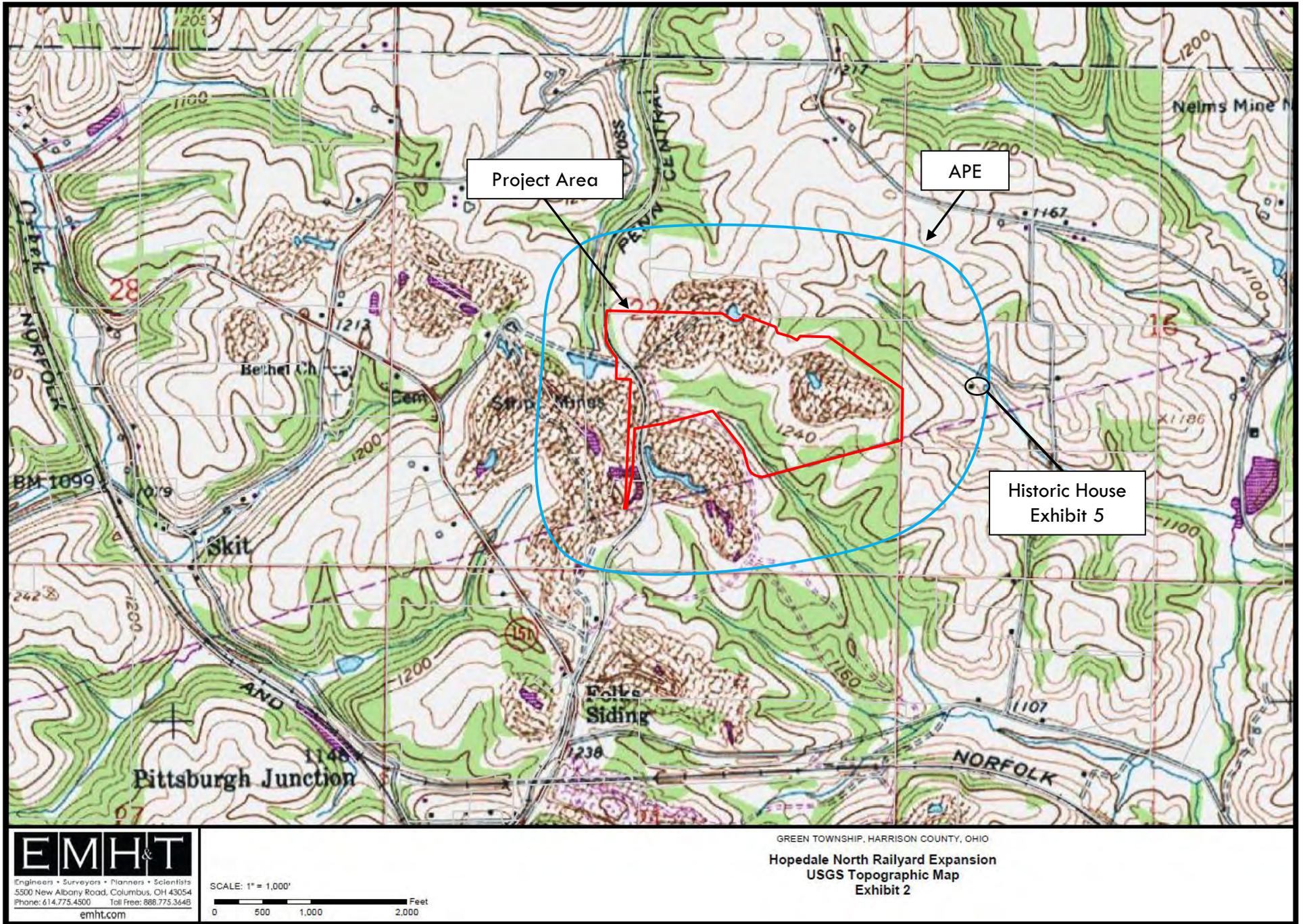


Figure 9. Portion of the United States Geological Survey (USGS) 1960 (Photoinspected 1976; Photorevised 1972) Cadiz, Ohio 7.5 Minute Series (Topographic) map showing the location of the project area and historic buildings located within the APE.



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Exhibits



Exhibit 1. View of a typical wooded portion within the project area.



Exhibit 2. View of the grass field within the project area.



Exhibit 3. View of the construction located within the western portion of the project area.



Exhibit 4. View of a typical strip mined area located within the project area.

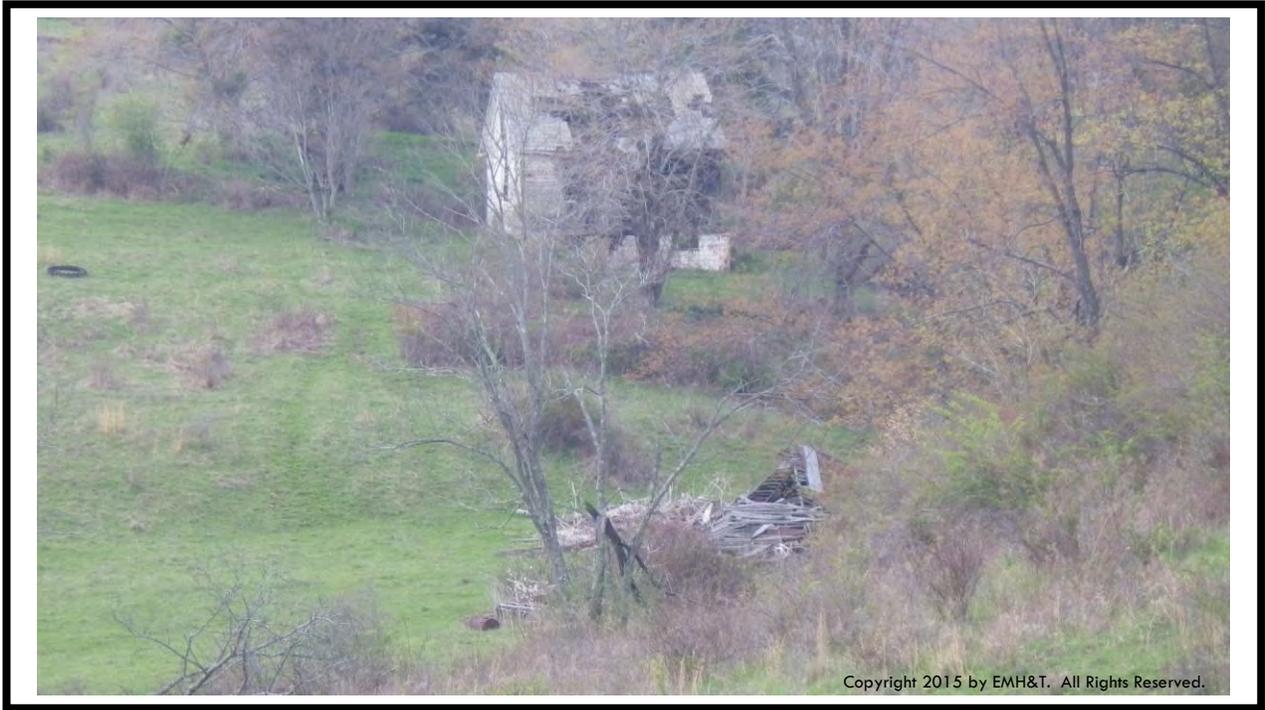


Exhibit 5. View of the house and outbuilding remains located within the APE of the project area to the east of the project area.