Phase IA Cultural Resources Survey

Powell Creek Solar Project

Liberty and Palmer Townships, Putnam County, Ohio

Prepared for:

Powell Creek Solar, LLC
1125 NW Couch Street, Suite 600
Portland, OR 97209
Contact: Matthew Becker, Senior Permitting and Environmental Manager

Prepared by:

Environmental Design & Research,
Landscape Architecture, Engineering, & Environmental Services, D.P.C.
217 Montgomery Street, Suite 1000
Syracuse, New York 13202
www.edrdpc.com

June 2020

MANAGEMENT SUMMARY

Involved State and Federal Agencies:	Ohio Power Siting Board (OPSB) Ohio Historic Preservation Office (OHPO)
Phase of Survey:	Phase IA Cultural Resources Survey
Location Information:	Liberty and Palmer Townships, Putnam County, Ohio
Survey Area:	
Project Description:	An up to 150-megawatt utility-scale solar facility consisting of ground-mounted photovoltaic arrays and associated infrastructure.
Project Area:	An approximately 2022-acre area of leased parcels containing all components of the Project.
Cultural Resources Study Area	The area within two miles of the Project Area, also including portions of Greensburg and Ottawa Townships, Putnam County, Ohio.
Area of Potential Effects (APE)	The APE for Direct Effects is the area containing all proposed soil disturbance associated with the Project, which will be determined based on the Project design. The APE for Indirect (Visual) Effects represents portions of the Cultural Resources Study Area where there is potential Project visibility.
USGS 7.5-Minute Quadrangle Maps:	*Fort Wayne, Indiana*
Archaeology Resources Overview:	There are no Ohio Archaeological Inventory sites within the APE for Direct Effects.
Historic Resources Overview:	The APE for Indirect Effects includes five properties listed on the Ohio Historic Inventory and no properties listed nor eligible on the National Register of Historic Places. Five OGS designated cemeteries within the Cultural Resources Study Area are located within the APE for Indirect (Visual) Effects, none located within the Project Area.
Report Authors:	Moira Magni, Susan Lawson, Doug Pippin, Ph.D., RPA, and Patrick Heaton, RPA
Date of Report:	June 2020

TABLE OF CONTENTS

LIST OF INSETS

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

1.1 Purpose and Goals of the Investigation

Powell Creek Solar, LLC (the Applicant), is proposing to construct the Powell Creek Solar Project, an up-to 150-megawatt (MW) photovoltaic (PV) solar-powered electric generation facility located in rural portions of Liberty and Palmer Townships, Putnam County, Ohio (the Project). The Applicant is in the process of preparing an Application for a Certificate of Environmental Compatibility and Public Need, in compliance with Section 4906.06 of the Ohio Revised Code and in accordance with Chapters 4906-4-01 through 4906-4-08 of the Ohio Administrative Code (OAC), with support from Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C. (EDR) of Syracuse, New York.

On behalf of the Applicant, EDR prepared this Phase IA Cultural Resources Survey in support of environmental review and permitting for the Project. The information and recommendations included in this report are intended to assist the Ohio State Historic Preservation Office (OHPO) with their review of the Project. The Phase IA Cultural Resources Survey has been prepared to satisfy the following required portions of Ohio Administrative Code Chapter 4906-04-08(D) for the Ohio Power Siting Board (OPSB):

> The applicant shall provide information on cultural and archaeological resources.
> (1) Landmark mapping… and registered landmarks of historic, religious, archaeological significance. Landmarks to be considered for purposes of paragraph (D) of this rule are those districts, sites, buildings, structures, and objects that are recognized by, registered with, or identified as eligible for registration by… the state historical preservation office.
> (2) Impacts on landmarks. The applicant shall provide an evaluation of the impact of the proposed facility on the preservation and continued meaningfulness of these landmarks.

The purpose of this Phase IA Cultural Resources Survey is to assist the OHPO in the review of this Project. The Phase IA report documents previously identified cultural resources (i.e., archaeological sites and historic properties) located within the Project Area and surrounding two-mile radius Cultural Resources Study Area that could potentially be affected by the construction and/or operation of the proposed Project. The Phase IA report also proposes research designs for proposed subsequent archaeological and historic resources field surveys that the Applicant anticipates will be necessary for the Project. The archaeological survey research design described herein has been prepared by a Registered Professional Archaeologist (RPA) who meets the Secretary of the Interior's Standards for Archaeology (36 C.F.R. Part 61). The historic resources survey design described herein has been prepared by a qualified architectural historian who meets the U.S. Secretary of Interior's Standards for Historic Preservation (36 C.F.R. Part 61). All cultural

resources services provided by EDR for the Project will be conducted in accordance with applicable portions of the OHPO *Archaeology Guidelines* (OHPO,1994) and *Guidelines for Conducting History/Architecture Surveys in Ohio* (OHPO, 2014).

1.2 Project Location and Description

The Project is a proposed up-to 150 MW PV solar electric generation plant to be located in Liberty and Palmer Townships in Putnam County, Ohio (see Figure 1). The Project will consist of PV panels, a collection substation, an operations and maintenance (O&M) building, a network of racking-mounted and buried cables to collect the electricity, an above-ground transmission line (gen-tie), entrances from public roads, access roads within the facility, meteorological devices, perimeter fencing, and landscaping.

The Project Area will comprise approximately 2022-acres of leased private land in Putnam County (see Figure 2). It is anticipated that following construction, each section of the Project will be surrounded by fencing and selected sections may include landscape buffering/vegetative screening outside the fence. These landscape drawings will be submitted to the OHPO when available.

The following terms are used throughout this document to describe the proposed action:

Project:	Collectively refers to all components of the Powell Creek Solar Project and associated infrastructure (such as solar panels, collection lines, substations, and equipment) in Liberty and Palmer Townships, Putnam County, Ohio.
Project Area:	Those parcels within a contiguous geographic boundary that contain all components of the Project, associated setbacks, and properties under lease or agreement.
Cultural Resources Study Area:	The area within two miles of the Project Area, which is the appropriate study area for indirect, or visual, effects on cultural resources. The Cultural Resources Study Area also includes portions of Greensburg and Ottawa Townships, Putnam County, Ohio.
APE for Direct Effects:	The Area of Potential Effects (APE) for Direct Effects is the area containing all proposed soil disturbance associated with the Project, which will be determined based on the Project design.
APE for Indirect Effects:	The APE for Indirect (or Visual) Effects on historic resources represents portions of the Cultural Resources Study Area where there is potential Project visibility.

The Project Area is rural and set in area of generally low topographic relief. The majority of the landscape within the Cultural Resources Study Area is that of flat, open agricultural fields. These fields are bisected by long, straight rural transportation routes bisected by smaller gravel roads. When not interrupted by rare woodlots, the relatively level topography within the Cultural Resources Study Area allows for clear views to historic resources. Views to farmhouses and agricultural buildings within large scale farming landscapes are dependent on their distance from the public rights-

of-way. Developed features in the Project Area include electric transmission lines, public roads, single family homes and agricultural buildings.

1.3 Project Components

Relative to conventional energy generation methods of a similar scale, solar facilities result in minimal impacts to the environment. Impacts from the construction and operation of solar generation are largely the result of the fact that utility-scale solar energy facilities require large continuous areas for the collection and distribution of energy. The Applicant is committed to minimizing impacts to cultural and natural resources. The Project is sited in a rural, agricultural region in an effort to minimize the need for land clearing and typical construction processes such as surface grading and soil compaction.

The Applicant is also selecting minimally intrusive PV panel mounting systems to minimize soil disturbance so that the land can return to its current agricultural use following the decommissioning of the Project. The solar panel racking will consist of piles that will be driven, or screws that will be rotated, into the ground in long rows or arrays. Only some minimal grading may be required in certain locations, although in most cases, the arrays will follow the natural topography. Following construction, any disturbed areas will be restored with topsoil, and a cover of native grass species will be established underneath and around the solar panels. This section includes a description of the components of the proposed Project and the proposed construction/installation methods associated with each component. These methods will minimize potential direct impacts to archaeological resources within the Project Area.

As presently envisioned, it is anticipated that the Project will include the following components (see Figure 3):

PV Panels

The Project will generate electricity with conventional solar panels, which will be affixed to metal racking. The racking will include piles that will be driven, or screws that will be rotated, into the ground in long rows, or arrays (see Insets 1 and 2, below). The arrays will generally follow the existing topography of the Project Area, although some rough grading may occur. Arrays will be grouped in several large clusters (Solar Fields), each of which will be fenced, with locked gates, for equipment security and public safety. PV panels are not expected to be taller than 12 feet above grade.

Inset 1. Typical steel support beams for photovoltaic panels and pile-driver during construction (Photo: Clean Energy Collective).

Electrical Inverters and Collection System

Within each Solar Field, a network of electric lines and associated communication lines will collect the electric power from different groups of arrays and transmit it to a central location. PV panels will be grouped into series of circuits that are routed, through cable trays on the racking, to combiner boxes. Power from one or more of the combiner boxes will then be transmitted to a DC-to-AC inverter. The equipment comprising each inverter will be mounted on a pre-fabricated foundation such as a metal skid or a concrete block.

Each Inverter will deliver AC power to a single, fenced, Project substation. The Inverters will be connected to the substation through a buried system of electric lines and associated communication lines. All portions of the AC power collection system will be buried to at least 36 inches below grade.

Inset 2. Installation of photovoltaic panel array on steel support beams (Photo: PV Magazine).

Project Substation and Gen-Tie

The equipment for the Project Substation will be constructed on a concrete foundation that is expected to be approximately 1 acre in size (see Inset 3). For equipment security and public safety, a fence with a locked access gate will be installed around the perimeter.

An above ground, 1.6-mile Gen-Tie transmission line will connect the Project substation to the power grid. A self-supporting, steel structure (dead-end structure) will be used where the circuit enters the substation. These dead-end structures will be approximately 60 feet high.

Inset 3. Substation surrounded by photovoltaic panels (Photo: Greentech Media).

Access Roads and Staging Areas

The Project will include several unpaved access roads comprised of aggregate material and/or grass used for accessing each Solar Field (Inset 4). Short driveways will connect access roads to public roads at one or more points for each Solar Field. Access roads are used for the operations, maintenance, repair, and replacement of equipment in addition to providing sufficient access for emergency response. Access roads will only be as long and wide as necessary to accommodate construction and operational activities. All permanent access roads will be a maximum of 20-feet wide, though a number of roads may temporarily be up to 25-feet wide to accommodate construction activities.

Temporary staging areas will be used for the storage of construction equipment and supplies, as well as parking for workers. Staging areas will be constructed by adding crushed stone/gravel to the existing ground surface with minimal, if any, modification. The staging areas are temporary features associated with construction of the Project and will be subject to restoration upon completion of construction activities.

Inset 4. Access road along solar array (Photo: Open Road Renewables).

Pyranometers and Operations & Maintenance Building

The Project will include up to five pyranometers which will be mounted to the PV racking system. Pyranometers are supported on towers with steel pile embedment up to 10 feet. The Project will also include an O&M building, that will be approximately 2,000 square feet, located on privately-owned land, and will serve as a workspace for operations personnel.

2.0 BACKGROUND

Background research for the proposed Project was conducted according to the methodology described below, using numerous source materials and datasets. The information described below was used to develop the archaeological and historic resources survey research designs, presented in Sections 3 & 4, below, respectively.

2.1 Background Research Methods

EDR reviewed numerous sources for information relating to archaeological and historic resources located within the Cultural Resources Study Area. Archives and repositories consulted during EDR's research for the Project included the OHPO online Geographic Information Systems (GIS) mapping system (Ohio History Connection, 2020a), the David Rumsey map collection (Rumsey, 2020), topoView (USGS, 2020) and EDR's in-house collection of historic and archaeological reference materials. Background research included the following records available from the OHPO:

- National Register of Historic Places (NRHP)
- NRHP Determination of Eligibility (DOE)
- National Historic Landmarks (NHL)
- Ohio Historic Inventory (OHI)
- Ohio Department of Transportation (ODOT) Historic Bridge Inventory
- Ohio Archaeological Inventory (OAI)
- Ohio Genealogical Society (OGS) cemetery files
- Mills *Archaeological Atlas of Ohio* (1914)
- OHPO previous cultural resources surveys

2.2 OHPO Previously Identified Cultural Resources

Previously reported cultural resources included in the OHPO online GIS mapping system (OHC, 2020a) are described below and depicted in Figure 4.

National Register of Historic Places (NRHP)

The review of the OHPO online GIS mapping system indicates that there are no NRHP-listed properties within the Project Area nor the Cultural Resources Study Area.

NRHP Determination of Eligibility (DOE)

The review of the OHPO online GIS mapping system indicates there are no resources previously determined eligible for inclusion on the NRHP within the Project Area nor the Cultural Resources Study Area.

National Historic Landmarks (NHL)

No designated NHLs are located within the Project Area nor the Cultural Resources Study Area (NPS, 2020).

Ohio Historic Inventory (OHI)

The review of the OHPO online GIS mapping system indicates there are no OHI-designated resources located within the Project Area. Five OHI-designated properties have been previously recorded within the Cultural Resources Study Area (see Figure 4 and Table 1).

Table 1. Ohio Historic Inventory Properties within 2 miles of the Project Area

OHI ID	Present Name	Township	County	Distance from Project Area (miles)
PUT0006702	Pleasant Bend Depot	Palmer	Putnam	0.1
PUT0004203	Eugene Schmiedebusch Log House	Liberty	Putnam	0.7
PUT0008907	Clarence Agner House	Ottawa	Putnam	1.0
PUT0008607	George Agner Farm	Ottawa	Putnam	1.3
PUT0018206	Road 15 Bridge	Greensburg	Putnam	1.5

Ohio Department of Transportation (ODOT) Historic Bridge Inventory

No historic bridges listed on the ODOT Historic Bridge Inventory are located within the Project Area nor the Cultural Resources Study Area (ODOT, 2020).

Ohio Archaeological Inventory (OAI)

The review of the OHPO online GIS mapping system indicates there are no OAI sites within the Project Area nor the Cultural Resources Study Area.

Ohio Genealogical Society (OGS) Cemeteries

The review of the OHPO online GIS mapping system indicates there are no OGS-recorded cemeteries within the Project Area. Five OGS cemeteries are located within the Cultural Resources Study Area (see Figure 4 and Table 2).

Table 2. Ohio Genealogical Society Cemeteries within 2 miles of the Project Area

OGS ID	Cemetery Name	Township	County	Distance from Project Area (miles)
10139	Saint Nicholas Cemetery	Palmer	Putnam	0.1

OGS ID	Cemetery Name	Township	County	Distance from Project Area (miles)
10102	Crow Cemetery	Greensburg	Putnam	1.5
10104	Forest Grove-William Varner Cemetery	Greensburg	Putnam	1.5
10101	Brower-Verhoff Cemetery	Greensburg	Putnam	1.7
10103	East-Myers Cemetery	Greensburg	Putnam	1.9

Mills Archaeological Atlas of Ohio (1914)

The review of the Mills 1914 *Archaeological Atlas of Ohio* indicates there are no documented resources within the Project Area and there is one burial within the southern boundary of the Study Area. Information from the Mills Atlas is discussed in greater detail in Section 2.3, below. See Figure 5.

Previous Cultural Resources Surveys

No previous cultural resource surveys have been completed within the Project Area or the Cultural Resources Study Area.

2.3 Pre-Contact Context for the Cultural Resources Study Area

The Archaeological Atlas of Ohio (Mills,1914) and the OMS indicate that numerous pre-contact Native American earthworks (e.g.: burial mounds and enclosures) and interments are found in southwestern Ohio, though in his 1914 Archaeological Atlas of Ohio, Mills notes that Putnam County has a very limited number of pre-contact sites, the total for the county coming to 11: six mounds, one village site, and four burials. Pre-contact trails along the Auglaize River are common, and the burial is within close proximity to Blanchard River, which is received by the Auglaize River in the western portion of the county.

In his analysis of Late Paleoindian and Early Archaic settlement in Ohio, Chidester (2011) discusses an apparent boom in settlement in northwestern and north-central Ohio as the regional climate became warmer and drier during the Early Holocene. Settlement in Ohio during this period (approximately 11,500 to 7,750 years ago) clustered along the northern shore of Lake Erie and the lake plains of northwestern and north-central Ohio (Chidester, 2011; Stothers, 1996). To the south, Paleoindian sites are also found along the terraces of the Ohio River and adjacent saline springs, which proved attractive to Paleoindian peoples and game alike (Cunningham, 1973). Seeman and Prufer (1982) also note the presence of higher density Paleoindian artifacts along major rivers in central and southern Ohio, particularly the Ohio, Miami, Scioto, and upper Muskingum valleys. Sites along these major river valleys, which are theorized to have provided easily traversed routes for large game animals, are concentrated on elevated landforms such as terraces (Cunningham, 1973; Seeman and Prufer, 1982). More specifically, Paleoindian sites along river valleys tend to concentrate near confluences (Seeman and Prufer, 1982). In his overview of Ohio Archaic sites, Purtill (2009) notes

that Late Archaic semi-annual to year-round settlements are located along major rivers, including the Ohio, particularly on terraces and near confluences with other streams.

In Late Archaic and Early Woodland settlement patterns in the western Lake Erie region, Stothers and Abel (1993) note that in the lower Maumee River and its tributaries, clusters of sites are known at virtually every major rapid. This pattern reflects seasonal congregations to fish at these locations. They further note that large settlement sites in this area (which typically contain cemeteries) are always located close to the river, whereas smaller "nuclear family hunting and collecting camps" are located both along rivers and in upland settings (Stothers and Abel, 1993).

In his analysis of Late Woodland settlement in the Hocking River Valley of southeastern Ohio, Wakeman (2003) argued that foraging Late Woodland populations appeared to place higher value on areas suitable for resource extraction; whereas, Late Prehistoric farmers appeared to place higher value on extensive flat areas with well-drained soils suitable for growing crops. This is reflected in the archaeological record with Late Woodland sites evenly spread across the landscape on a variety of different landforms and with major Late Prehistoric sites concentrated along the bottoms of major river valleys.

For settlement patterns in an eight-county study area in central Ohio, Nolan (2014), found a preference for well-drained soils across all pre-contact time periods. He also found that streams proved to be a better predictor of archaeological site location than wetlands (i.e., sites were more consistently located in close proximity to streams than wetlands) across all time periods (Nolan, 2014).

2.4 Historic Context for the Cultural Resources Study Area

Archives and repositories consulted during research included the online digital collections of the Library of Congress and the David Rumsey Historical Map Collection as well as EDR's in-house collection of reference materials. Historic maps reviewed included the *1868 Atlas of Ohio: Counties of Williams, Fulton, Defiance, Henry, Paulding and Putnam* (Stebbins, 1868) and the 1899 *Ohio Indian Land Cessions in the United States* (Royce and Thomas, 1899).

Sources reviewed included the *History of Putnam County, Ohio, Illustrated Containing Outline Map, Fifteen Farm Maps and A History of the County; Lithographic View of Buildings—Public and Private; Portraits of Prominent Men; General Statistics; Miscellaneous Matters, &c*. (Hardesty & Co., 1880), *The Putnam County Atlas* (Seitz and Talbot, 1895), *A Brief History of The State Board of Agriculture, The State Fair, District and Agricultural Societies, and Farmers' Institutes in Ohio* (Heer, 1899), the *Historical Collections of Ohio in Two Volumes, An Encyclopedia of the State: History Both General and Local, Geography with Descriptions of Its Counties, Cities and Villages, Its Agricultural*

Manufacturing, Mining and Business Development, Sketches of Eminent and Interesting Characters, Etc., With Notes of A Tour Over It In 1886, Vol. II (Howe, 1907), and the *History of Putnam County, Ohio: Its People, Industries and Institutions with Biographical Sketches of Representative Citizens and Genealogical Records of Many of the Old Families*, Vol. I. (Kindler, 1915).

In the mid-eighteenth-century, Virginia, New York, Massachusetts, and Connecticut each laid claim to sections of the Northwest Territory based on seventeenth- and early eighteenth-century charters. These lands encompassed parts of present-day Ohio, Illinois, Indiana, Michigan, Minnesota, and Wisconsin; however, land companies' and speculators' efforts to survey and sell these lands were hindered by the French and Indian War (1754-1763), Pontiac's War (1763-1766), and the American Revolutionary War (1775-1783). By 1786, the aforementioned states and colony ceded the Northwest Territory to the burgeoning United States federal government. This territory was augmented by Native land cessions, most notably in the treaties of Fort Stanwix (1784), Fort McIntosh (1785), Fort Finney (1786), Fort Harmer (1789), and Greenville (1795). The Treaty of Greenville established the boundaries of Indian Territory, which contained land that would later become part of Putnam County. Military conflicts as well as controversies surrounding Native and settler land titles continued into the nineteenth century (see Inset 5) (Seitz and Talbot, 1895; Ohio History Central, 2019d).

Inset 5. 1899 Royce and Thomas Ohio Indian Land Cessions in the United States. This map indicates the number and location of each cession by, or reservation for, the Native nations in present-day Ohio (Royce and Thomas, 1899, Collections of the Library of Congress, Geography and Map Division).

In the 1780s, these newly acquired lands in Ohio were divided and reclassified as Congress lands, US Military lands, Virginia Military District, Western or Connecticut Reserve, Fire lands, Ohio Company's Purchase, Donation Tract, Symme's Purchase, Refugee Tract, French Grant, Dolerman's Grant, Zanes Grant, Canal lands, Turnpike lands,

Maumee Road lands, School lands, College lands, Ministerial lands, Moravian Grants, and Salt Sections. Putnam County was included in the Indian Territory previously established in the Treaty of Greenville (1795). This land was later acquired by the US in 1817 at the Treaty of the Foot of the Rapids of Lake Erie. The 1817 treaty also established the Ottawa Reservation in Putnam County; however, by 1833, the reservation was sold to the US and its inhabitants were removed to Indian Territory in what is now present-day Missouri, Kansas, and Oklahoma (Seitz and Talbot, 1895; Kindler, 1915).

Putnam County was formed by the state legislature in 1820; however, it was attached to Wood and Williams Counties until it gained a viable population. It was named in honor of General Israel Putnam, a celebrated American Revolutionary War veteran. During the 1820s, the county was surveyed and the township lines were laid out. In 1829, the county seat was established at the Village of Kalida, and by 1834, the county became an independent political unit. The county's boundaries were reduced due to the formation of Auglaize County and the loss of additional townships to Allen County. Following a fire at the county courthouse, the county seat was moved to the Village of Ottawa in 1866. Settlement and population growth in Putnam County proceeded modestly, with 5,132 residents in 1840 and 23,713 by 1880 (Hardesty & Co., 1880; Seitz and Talbot, 1895; Howe, 1907; Kindler, 1915; Ohio History Central 2019d).

The Black Swamp (or the Great Black Swamp) stretched across northwestern Ohio, rendering thousands of acres inaccessible and unsuitable for settlement or cultivation. Putnam County's location within the Black Swamp hindered its development until state- and township-wide artificial drainage projects diverted the expansive wetlands in the mid-nineteenth-century. In *The Putnam County Atlas*, the county is described as "one of the most malarious of Ohio. Fever and ague and bilious fevers, with various other climatic diseases were the curse of this country." Putnam County invested over one million dollars in county and township drainage, eventually installing more than 700 miles of ditches and tile underdrains (Seitz and Talbot, 1895: 21; Howe, 1907).

Greensburg Township was formed in 1834 and its boundaries decreased in 1848 to accommodate the formation of Union Township. It was named by Henry Wing, an early settler, "although history does not record why he chose the name" (Kindler, 1915: 118). In the mid- to late nineteenth-century, the Villages of Avis, Cuba, Crosswell, and Dornington were established along the Blanchard River and various rail lines. This rural township exhibited limited population growth, with 275 residents in 1840 and 1,078 residents in 1910. Despite its slow development, Greensburg Township was among Putnam County's leading crop producers (Hardesty & Co., 1880; Howe, 1907; Kindler, 1915).

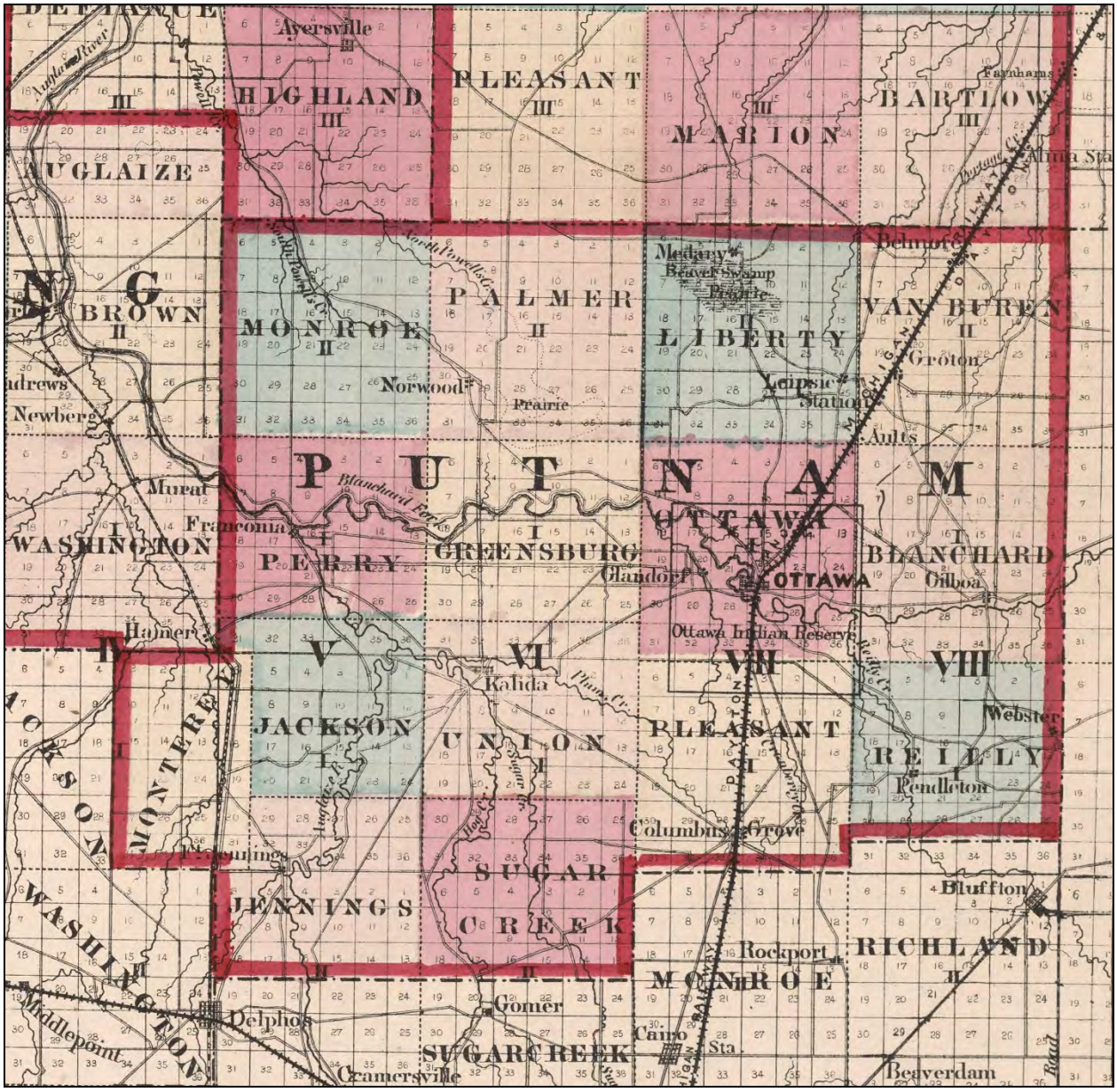
Ottawa Township was formed in 1835 and named after the area's previous Native inhabitants, the Ottawa. It was surveyed in 1834 by Aughinbaugh and Barnett; the land comprised of the former Ottawa town of Lower Tawa and the

former Ottawa Reservation (sold to the US in 1833). The first settlements were established at the Village of Ottawa, which was incorporated in 1861 and became the new county seat in 1866. Residents of the former county seat in Kalida moved to the Village of Ottawa; resultantly, this rural township exhibited modest population growth, with 640 residents in 1840 and 3,805 residents in 1910. Although it never became a major commercial hub, Ottawa was home to several small-to-mid-scale industries and served as the rural county's political and economic center (Hardesty & Co., 1880; Howe, 1907; Kindler, 1915).

Liberty Township was formed in 1837. The township's early residents settled on elevated land, known as "the Ridge," until artificial drainage cleared the extensive swamp. While the Villages of Leipsic and West Leipsic provided small-scale industrial opportunities, agriculture predominated. This rural township exhibited limited population growth, with 125 residents in 1840 and 1,608 residents in 1910 (Hardesty & Co., 1880; Howe, 1907; Kindler, 1915).

Palmer Township, the last township organized in Putnam County, was formed in 1854. Prior to its creation, the territory was known as North Greensburg. The township was named in honor of Judge Palmer, a celebrated early settler and businessman. Palmer Township featured some of the most uninhabitable land in the county; the Black Swamp and extensive flooding from beaver dams inundated the township in up to two feet of water. The installation of artificial drainage in the mid-nineteenth-century revealed fertile soil well suited to potato and onion cultivation. The Village of Miller City, laid out in 1882 as "St. Nicholas," became a shipping hub for the township's crops and lumber due to its location along the New York, Chicago & St. Louis and the Nickel Plate railroads. Despite its success, this rural township exhibited limited population growth, with 929 residents in 1880 and 1,612 residents in 1910 (Hardesty & Co., 1880; Howe, 1907; Kindler, 1915).

Throughout the nineteenth-century, much of the state was occupied by small farms. Early settlers primarily relied on the Blanchard River and streams for transportation, while dirt roads and trails were used seasonally. Shortly after the county was established, western Putnam County utilized the Miami & Erie Extension Canal. As the Black Swamp was drained, local and county roads were laid out along rivers, streams, and the surveyor's section subdivision lines. These local roads were followed by the construction of turnpikes and macadamized roads in the 1880s. During this period, the Dayton & Michigan Railroad, and later rail lines such as the Nickel Plate, the Findlay, Fort Wayne & Western, the Mad River & Lake Erie, the Ohio & Indiana, and the Detroit, Toledo & Ironton, connected the townships to neighboring states and the East Coast (see Inset 6) (Seitz and Talbot, 1895; Kindler, 1915).



Inset 6. 1868 Stebbins Atlas of Ohio: Counties of Williams, Fulton, Defiance, Henry, Paulding and Putnam. Although the rail lines greatly improved regional mobility for Putnam County, many remote farmers and residents continued to rely on waterways as well as local roads and turnpikes for transportation (Stebbins, 1868, Collections of the David Rumsey Historical Map Collection.)

Putnam County, once drained of its wetlands, contained thousands of acres of arable land well-suited to corn, wheat, potatoes, and oats as well as pastureland for livestock. In 1887, the county was among the state's leading producers of corn with 1,505,147 bushels that season. The dairy and wool industries, although secondary to corn and wheat, resulted in the rise of small creameries and wool mills throughout the county. In addition to the swamps, the area was also known for its abundance of timber, which was later exhausted by the lumber industry and converted to agricultural land. By the twenty-first-century, ninety-four percent of the available land in Putnam County was under cultivation.

(OSBA, 1858; Howe, 1907; Ohio History Central, 2019d).

In 1845, the Ohio Board of Agriculture (renamed the Ohio State Board of Agriculture in 1846 and later replaced by the Ohio Department of Agriculture in 1920) was created to support and celebrate Ohio farmers through the establishment of farmers' institutes and county fairs. To achieve this, agricultural boards were created in each county to identify the county's needs and lead the planning process. Concurrently, the Ohio State Board of Agriculture also established the Ohio State Fair in 1849. Due to a cholera epidemic, the fair was postponed until 1850 and held in Cincinnati (Ohio History Central, 2019b, 2019c).

Agricultural societies and fairs provided opportunities for farmers to share information with each other as well as with the public. The Putnam County Agricultural Society was formed on February 3, 1855 and held its first fair on October 3 and 4, 1855 in Gilboa. The Ohio State Board of Agriculture's *Twelfth Annual Report* (OSBA, 1858) includes a brief account of the Putnam County Agricultural Society's proceedings for 1857. The Society awarded the county fair's exhibitors with their choice of cash or agricultural books, a practice that "placed in the hands of our farmers a vast amount of agricultural reading matter, which they could not readily have got in any other way" (OSBA, 1858: 283; Heer, 1899).

By the late nineteenth-century, farms struggled to remain viable as they faced competition from farms in western states, large local farms, increased mechanization, and the prohibitive cost of machinery. In the early twentieth-century, Governor James M. Cox directed state funds to support agricultural experiments and education for rural regions. Shortly after, Ohio farmers faced the economic impacts of the Great Depression along with severe droughts and crop failures. President Franklin D. Roosevelt instituted Depression-era programs to alleviate the financial strain and soil depletion. Rural areas gradually gained access to electricity, which increased efficiency. By the 1940s, agricultural production rebounded during World War II as farmers supplied food for United States and Allied forces. This period of prosperity immediately following WWII enabled Ohio farmers to invest in modern machinery. The number of farmers in Ohio and size of farms steadily decreased during the latter half of the twentieth-century; however, industrial agriculture remains a key economic driver of Ohio's modern economy (Ohio History Central, 2019a).

2.5 Historic Maps Review

Historic maps depict nineteenth- and twentieth-century settlement and development within the Cultural Resources Study Area. Maps reviewed for the Study Area included the 1868 Stebbins *Atlas of Putnam County, Ohio* (see Figure 6); the 1895 Seitz *Atlas of Putnam County, Ohio* (See Figure 7)*;* the 1914 Mills *Archaeological Atlas of Ohio* (see Figure 5), and the 1953 *Fort Wayne, Indiana* USGS Topographic Quadrangle (see Figure 8).

1868 Stebbins *Atlas of Putnam County, Ohio* and the 1895 Seitz *Atlas of Putnam County, Ohio*

Figures 6 and 7 show the primarily agricultural land use in the mid/late-nineteenth century within the vicinity of the Project between the years of 1868 and 1895. The grid pattern is subdivided into square-mile agricultural lots bounded by roads, typically with a farmhouse structure shown within agricultural property lines. All maps document a moderate amount of railway activity, with the 1868 Stebbins *Atlas* showing the Dayton and Michigan Rail line through the lower portion of the Liberty Township as well as a Toledo, Delphos and Burlington Railroad (TD&B) line running through the north west portion of the township. The 1895 Seitz *Atlas* shows an existing railway with the New York, Chicago and St. Louis Railroad (NYC&StL) and indicates an increase in subdivided lots for both Liberty and Palmer Townships over the course of fifteen years, particularly in the Miller City and Elm City areas.

1914 Mills *Archaeological Atlas of Ohio*

The 1914 Mills *Archaeological Atlas of Ohio* (see Figure 5) was also reviewed during background research for the current project, and precontact archaeological sites depicted in the atlas were discussed in Section 2.3 of this report. In addition to archaeological sites, the Mills *Atlas* also depicts the state of development throughout Ohio in 1914. The Mills *Atlas* also depicts the state of development throughout Putnam County, Ohio in 1914. The Mills *Atlas* depicts both the sparse development of the area as well as the Miller City railway stop along the New York, Chicago and St. Louis Railroad.

1953 *Fort Wayne, Indiana* USGS topographic quadrangle

Figure 8 depicts little change in the pattern of land use the mid-twentieth century within the Project Area. New vehicular transportation routes include State Route 15 and State Route 108 with these routes intersecting just south of the Project Area within the 2-mile Study Area. State Route 108 runs north/south through the center of the Project Area. Also notable on the *Fort Wayne, Indiana* topographic quadrangle are the multiple streams and creeks in the general vicinity of the Study Area.

3.0 ARCHAEOLOGY SURVEY RESEARCH DESIGN

The archaeological research design described below was prepared in accordance with the OHPO Ar*chaeology Guidelines* (1994). It includes a description of the APE for Direct Effects and the potential impact on archaeological resources for the proposed Project. In addition to conducting a literature review and background research for the proposed Project, EDR created a GIS-based archaeological sensitivity model in order to assess the probability of encountering archaeological resources based on variables described below. This assessment evaluates the relative potential for the presence of archaeological resources based on elevated and reduced sensitivity for either pre-contact or historic-period resources.

Project components will be constructed entirely on relatively level ground and within areas presently or historically used as agricultural fields. Due to the relatively flat relief, very little to no grading is expected to be necessary for the Project, except for the Project substation which may require significant grading and excavation. In general, no large areas of excavation or soil removal/disturbance are anticipated. Construction of the Project will be accomplished via use of machines that are consistent in terms of size, weight, and tread with the agricultural machines that are currently used on these properties.

Only very minimal, on-site ground disturbance will be required by the design of the Project. Installation of the solar panels will not include disturbance of large surface areas. Instead, the solar panels will be installed by driving or rotating a series of relatively narrow posts into the ground, to a depth of no more than eight feet. However, the Project will include on-site access roads, and laydown areas for construction activities. These access roads, as well as parking areas for maintenance vehicles within the Project, will be constructed with compacted gravel but are not anticipated to require significant excavation or grading.

3.0 APE for Direct Effects

The APE for Direct Effects for the Project is defined as all areas of potential soil disturbance (or other direct, physical impacts) during Project construction. Preliminary design of the Project was discussed above in Section 1.3, and the APE for Direct Effects will occupy less than the Project Area. It is currently expected to encompass approximately 1,122 acres within the Project Area. The solar panels will be mounted on racks with a relatively small footprint (in terms of soil disturbance), typically consisting of small I-beam posts driven into the ground. In addition, relatively minor ground disturbance will occur during installation and construction of the Project's electrical collection cables (which will be buried in trenches), the substation, access roads, and other components. The Project Area is located in an area with flat topography, which will require minimal (if any) grading during construction. Therefore, the total ground disturbance during construction is anticipated to be minimal relative to the overall size of the Project Area.

3.1 Archaeological Sensitivity Assessment

The Project will not directly (physically) impact any previously recorded archaeological resources. As described in Section 2.2, above, no OAI resources or previous cultural resource surveys are recorded within the Project Area. As part of the research design, EDR assessed the probability of encountering archaeological resources within the APE for Direct Effects based on review of the OHPO's online database, the results of background research and historical map analysis, and GIS-based landscape/environmental analysis. The results of this assessment for pre-contact Native American and historic-period archaeological resources is presented below and represented in Figure 9.

3.1.1 Pre-Contact Archaeological Sensitivity

EDR prepared a GIS-based landscape analysis to identify areas of elevated archaeological sensitivity. The analysis included review of publicly available data sets for environmental variables, such as proximity to water resources and ground slope. In addition to the environmental variables examined, the model also takes into account proximity to previously recorded pre-contact Native American archaeological sites.

Per the National Wetlands Inventory (NWI) mapping, aquatic resources are organized by type, and include riverine, pond, lake, emergent wetland, forested/shrub wetland, and "other," waterways/bodies. In line with Nolan's (2014) research, this analysis revealed that riverine aquatic resources are a much stronger predictor of pre-contact site location than wetlands. Regardless, the Ohio History Connection (2020b) describes wetlands as some "of the most archaeologically sensitive areas in Ohio." During this analysis, several ponds were noted in close proximity to sites, but almost always appeared to be of artificial origin. As such, ponds were largely excluded from this analysis.

Data sources used for streams and wetlands include the NWI mapped streams and wetlands as well as streams and wetlands delineated during the stream and wetland survey conducted for the Powell Creek Solar Project. In order to eliminate as many artificial waterways or waterbodies from consideration, any mapped streams with Canal, Ditch, or Cutoff in the name were eliminated from consideration. Additionally, any unnamed mapped streams occurring in straight lines, containing right angles, and/or aligned with the road-grid were also eliminated from consideration. Any ponds which appeared to be man-made were also excluded. It is important to note that additional artificial streams or waterbodies may be identified in the field by archaeological survey crews and, therefore, the archaeological sensitivity model may be adjusted slightly following Phase I fieldwork.

EDR has also examined the relationship between pre-contact sites and soil drainage and found that a majority of sites occur in soil areas that are moderately well drained. Soil drainage characteristics are derived from Soil Survey

Geographic Database (SSURGO) data. In addition, least-cost pathways represent the shortest travel distance between archaeological sites, taking into consideration avoidance of steep topography and proximity to water resources. Least cost pathways between previously recorded archaeological sites containing earthworks are considered areas of elevated archaeological sensitivity. Our analysis indicates that the 1000-foot buffer used for elevated sensitivity near water resources already reflects the least cost pathways between the mounds indicated in the Mills Atlas and OAI inventory sites.

Proximity to streams and wetlands appears to be the most powerful environmental factor influencing pre-contact settlement in this area. Based on the analysis of similar sites and contexts—EDR has found that a majority of pre-contact Native American sites are located within 1,000 feet (305 meters) of a mapped stream or wetland. EDR's experience with two recent archaeological projects in Paulding County and Brown County, Ohio respectively (EDR, 2019a & 2019b), show positive results for the use of the sensitivity model summarized in Table 3, below. The Phase I archaeological survey for the Timber Road IV Wind Farm (EDR, 2019a) identified or revisited 37 archaeological resources, 32 (86%) of which were located partially or wholly within archaeologically sensitive areas, as defined by the model. In the Hillcrest Solar Project Phase I archaeological survey (EDR, 2018b), the sensitivity model strongly predicted the locations of archaeological resources. The survey identified 22 total archaeological resources (sites and isolated finds), 21 (96%) of which were located partially or wholly within archaeologically sensitive areas, as defined by the model. Only one historic-period site was in an area identified as having low archaeological sensitivity by the model. This site was located just beyond the 200-foot perimeter of elevated historic-period sensitivity, a discrepancy possibly due to cartographic inaccuracies in the historic maps.

From on this correlation, portions of the Project Area within 1,000 feet of naturally occurring streams and wetlands are considered to have an elevated sensitivity for containing pre-contact archaeological material (see Figure 9), while areas more than 1,000 feet from naturally occurring streams and wetlands are considered to have a reduced sensitivity for containing such material.

3.1.2 Historic-Period Archaeological Sensitivity

Historic maps depict nineteenth-century settlement and twentieth-century expansion within the vicinity of the Project Area. There are no previously recorded historic-period archaeological sites within the Project Area. As described above in Section 2.5, EDR reviewed the following maps to identify the locations of former structures within and surrounding the Project Area:

- 1868 Stebbins *Atlas of Ohio Counties of Williams, Fulton, Defiance, Henry, Paulding and Putnam*

- 1895 Seitz's *Atlas of Putnam County, Ohio*
- 1914 Mills *Archaeological Atlas of Ohio*
- 1953 USGS *Fort Wayne, Indiana* 1:24000 scale Topographic Quadrangle (USGS, 1962)

Map-documented structures (MDS) in the vicinity of the Project are generally located adjacent to existing roadways. In some instances, MDS represent existing buildings and/or farms. In other instances, they are abandoned structures that may now be represented only by archaeological remains. Potential archaeological resources associated with these MDS locations could include abandoned residential, municipal (i.e., school), and/or farmstead sites, where the complete residential, municipal, and/or agricultural complex consisting of foundations, structural remains, artifact scatters, and other features, would constitute an archaeological site. In other locations, more limited remains of these sites, perhaps represented by only a foundation or an artifact scatter, may be present.

Areas located in the immediate vicinity (within approximately 200 feet) of MDS locations are considered to have high potential for the presence of historic-period archaeological resources. Early historic-period occupation in the vicinity of the Project, however, may not always be map-documented. Early historic-period sites not appearing on early maps would likely be located within close proximity to the water resources. As such, the 1000-foot buffer for pre-contact Native American archaeological resources would encompass early historic-period resources. The remaining (non-MDS) portions of the Project Area are considered to have reduced sensitivity to contain historic-period archaeological resources.

3.2 Phase I Archaeological Survey Methodology

It is proposed that the Phase I survey will include archaeological investigation within all areas of the APE for Direct Effects, in accordance with the archaeological sensitivity model described above in Section 3.2. The Phase I survey methodology proposed in this survey strategy was designed in accordance with the *Archaeology Guidelines* (OHPO, 1994). The archaeological research design and sensitivity model are summarized below in Table 3 and depicted in Figure 9. It is proposed that Phase I archaeological investigations will be conducted in 100% of all areas that show an elevated sensitivity for pre-contact and historic-period archaeological sensitivity. Those areas that are not considered to have elevated sensitivity for archaeological resources will be subjected to Phase I archaeological survey at a 50% sample.

Table 3. Archaeological Sensitivity Model

Archaeological Sensitivity	Criteria	Acreage in the APE for Direct Effects	Recommended Phase I Survey
Elevated Sensitivity for Historic-Period Archaeological Material	<200 feet from historically map-documented structure	32-acres	100% Phase I survey
Elevated Sensitivity for Pre-Contact Archaeological Material	<1,000 feet from naturally occurring stream/wetland	655-acres	100% Phase I survey
Elevated Sensitivity for both Historic-Period and Pre-Contact Archaeological Material	<200 feet from historically map-documented structure and <1,000 feet from naturally occurring stream/wetland	25-acres	100% Phase I survey
Reduced Sensitivity for Pre-Contact and Historic-Period Archaeological Material	>200 feet from historically map-documented structure and >1,000 feet from naturally occurring stream/wetland	435-acres	50% sample Phase I survey with specific areas selected on a judgmental basis under the supervision of an archaeologist meeting the Secretary of the Interior's Standards (36 CR 61)

Within the areas of reduced sensitivity for archaeological resources, 50% of the area will be selected for archaeological survey at the same sample rate as the elevated sensitivity areas, as opposed to increasing the pedestrian survey interval to 20-meter transects from the standard 10-meter, and/or conducting 8 shovel tests per acre rather than the normal 16. Selection of the reduced sensitivity areas to be sampled by Phase I survey will prioritize areas of potential pre-contact occupation not identified during the archaeological sensitivity assessment presented above. These could include small wetlands not identified in the wetlands mapping available for the area, or micro-variations in topography. Surveying 50% of the reduced sensitivity areas at the normal survey interval, per the *Archaeology Guidelines* (OHPO, 1994), is preferable to surveying 100% of reduced sensitivity areas at a wider survey interval.

It should be noted that the APE for Direct Effects may change from the current acreages presented herein, as the Project layout may be modified following submission of this research design. However, any changes in the extent of the survey will be consistent with the archaeological sensitivity model and research design presented herein. The

approach and level of effort proposed for the archaeological survey is expected to generate an adequate testing sample to evaluate the Project's potential effect on archaeological resources.

3.2.1 Pedestrian Surface Survey

In existing agricultural fields with greater than 50% ground surface visibility within the APE for Direct Effects, EDR personnel will conduct pedestrian surface survey to determine whether archaeological sites are present. In these areas, archaeologists will traverse the APE for Direct Effects along transects spaced at 30-foot (10-meter) intervals while inspecting the ground surface for artifacts and/or archaeological features. The timing for this work is critical as surface survey needs to be conducted after a field has been freshly plowed and disked, preferably following a rain event. If any artifacts or other indications of an archaeological site are observed on the ground surface, then the location will be recorded using professional-grade Global Positioning System (GPS) equipment. After recording the horizontal extent of artifacts and the locations of any features present at a given site, archaeologists assess whether the artifacts present on the ground surface warrant collection. In most instances, a sample of diagnostic or especially significant artifacts will be collected, with most artifacts being noted but left *in situ*. All diagnostic pre-contact artifacts will be collected for further analysis. Collected artifact's will be subjected to subsequent laboratory identification and analysis, in accordance with standard archaeological methods. At least one 50 x 50-cm shovel test will be excavated at each archaeological site or isolated find to assess the subsurface stratigraphy and the potential for buried artifacts and features. It is anticipated that the majority of the APE for Direct Effects will be investigated using pedestrian surface survey. These pedestrian survey methods will be used in both elevated and reduced areas for probability of archaeological resources, with the caveat that, as discussed above, only 50% of reduced probability areas will be surveyed.

3.2.2 Shovel Testing

In addition to the pedestrian surface survey described above, archaeologists will excavate shovel tests in any portions of the APE for Direct Effects with less than 50% ground surface visibility in order to determine whether archaeological sites are present per the *Archaeology Guidelines* (OHPO, 1994). Where conditions warrant, shovel tests will be excavated throughout the APE for Direct Effects at 100% of elevated probability areas and 50% of reduced probability areas, at the same sampling strategy described above.

Additionally, at least one shovel test will be excavated at each archaeological site or isolated find identified during the pedestrian surface survey in order to assess the subsurface stratigraphy and the potential for buried artifacts and features. Shovel tests will be 50 x 50 cm squares, excavated to a depth of at least 10 cm into the "B" horizon subsoil stratum. Shovel tests will be excavated in 10-cm arbitrary levels and/or by natural stratigraphic levels, depending on

the stratigraphy encountered. Archaeologists will record the locations of shovel tests with professional-grade GPS equipment with real-time reported sub-meter accuracy (with all field data post-processed), while also noting shovel test locations on field maps. All soils excavated from shovel tests will be screened through 0.25-inch hardware cloth to ensure uniform recovery of cultural material. Archaeologists will record shovel test stratigraphic profile data on standardized field record sheets that include strata depth, Munsell soil colors, soil texture and inclusions, and any cultural materials (these data will be included in the final Phase I report).

3.2.3 Artifact Collection and Analysis

In the event that artifacts are collected during the Phase I archaeological survey, standard provenance information will be recorded in the field and the locations of all finds will be recorded using professional-grade GPS equipment and documented with field notes. All artifacts will be placed in temporary sealed plastic field bags labeled with provenance data. All collected artifacts will be returned to EDR's Syracuse office for processing and placement in archival-grade polyethylene artifact bags. Typically, diagnostic, unique, or unusual artifacts, or samples thereof, from shovel tests will be collected during the Phase I survey. Clearly modern materials (i.e., less than 50 years old) and commonplace twentieth-century materials will not be collected as part of the Phase I survey (however, the presence of these materials will be recorded in field notes and representative photos taken in the field, as appropriate).

Following the completion of fieldwork, all recovered materials will be washed, dried, and cataloged per standard archaeological laboratory procedures. Artifacts will be described (to the extent possible) according to their count, material, type, metric attributes, decorative motif, form, function, and cultural/temporal association. Artifact identification will be conducted according to standard references for pre-contact and historic-period artifacts. A complete listing of all recovered artifacts will be included as an appendix of the final Phase I report. Artifacts will be curated in accordance with Section V of the *Archaeology Guidelines* (OHPO, 1994).

3.3 Archaeological Site Avoidance/Minimization

It is anticipated that potentially significant (i.e., potentially NRHP-eligible) archaeological sites identified during the Phase I survey will be avoided or minimized by Project design. Because the Project Area includes large tracts of mostly open agricultural land, and the flexible nature of solar energy project components (in terms of siting requirements), it should be possible to avoid or minimize impacts to any potentially significant archaeological sites identified within the APE for Direct Effects through relatively minor modifications to the Project layout. In the event that a potentially NRHP-eligible archaeological site cannot be avoided by the proposed Project, then additional Phase II site investigations and, potentially, Phase III data recovery/mitigation would be conducted at the site. The nature of the additional investigations needed would be determined based on consultation with the OHPO.

In most instances, the types of finds noted below will not be considered NRHP-eligible. As such they will not require avoidance or additional archaeological investigations:

- isolated pre-contact finds,
- isolated historic-period finds,
- small low-density lithic scatters that lack diagnostic artifacts and/or indications of intact subsurface features,
- low-density scatters of historic-period artifacts (particularly in agricultural fields, which likely represent artifacts associated with manuring practices that cannot be associated with specific households or contexts), and
- artifacts/deposits of clearly modern origin.

4.0 HISTORIC RESOURCES SURVEY RESEARCH DESIGN

The historic resources survey research design was prepared in accordance with the *Guidelines for Conducting History/Architecture Surveys in Ohio* (OHPO, 2014; hereafter called the *OHPO Guidelines*). It defines the APE for Indirect Effects on historic resources for the Project. To accurately determine the Project's APE, the viewshed analysis was based on a digital elevation model (DEM), which only considers the screening effects of topography. Buildings and vegetation were not considered. Additional detail about the APE for Indirect Effects is provided in Section 4.1, below.

The goal of this Historic Resources Survey Research Design is to:

- Define the APE for Indirect Effects on historic resources for the Project (see Section 4.1);
- Establish the criteria by which historic resources will be evaluated (see Section 4.2);
- Propose a methodology for reconnaissance survey of historic resources (see Section 4.3);
- Establish expectations regarding resource typologies and survey results (see Section 4.4); and
- Define the deliverables for the historic resources survey (see Section 4.5).

4.1 APE for Indirect Effects

The APE for Indirect Effects on historic resources includes those areas where the Project may result in indirect effects on cultural resources, such as visual or auditory impacts. The APE for Indirect Effects includes portions of Liberty and Palmer Townships as well as portions of Greensburg and Ottawa Townships, all located in Putnam County. The Project's potential indirect effect on historic resources would be a change (resulting from the introduction of solar panels or other Project components) in the historic resource's setting. This could theoretically consist of auditory and/or visual impacts; however, utility-scale solar facilities produce minimal noise, so auditory impacts resulting from the Project are not considered a significant type of impact to the setting of historic resources. Therefore, potential visual impacts associated with the Project are the most significant consideration for defining an APE for Indirect Effects.

In order to accurately determine the Project's APE for Indirect Effects, a preliminary viewshed analysis for the proposed PV panel arrays was prepared using Environmental Systems Research Institute (ESRI) ArcGIS® software with the Spatial Analyst extension . The viewshed analysis was based on a digital elevation model (DEM), which only considers the screening effects of topography. Buildings and vegetation were not considered. The DEM used in this analysis was downloaded from the Ohio Geographically Referenced Information Program (OGRIP) for Putnam County.

Through simulations prepared for several previous Ohio solar projects, EDR had determined that the practical limits of PV panel visibility end at approximately two miles due to the relatively low height, estimated at a maximum of 12 feet. Furthermore, the visual effect of substations and their associated interconnections are anticipated to be insignificant because the equipment will be screened by vegetation and structures and/or blend into the existing landscape from any open views beyond two miles. The generally flat topography in the area and absence of elevated vantage points further contributes to the lack of distant Project views more than two miles away.

The potential visual effects that could result from construction and operation of the Project's taller components associated with the electrical system (see Section 1.3) will be minimal. This is due to intentional project siting, combined with design, and visual character of the proposed equipment, they avoid visual impacts. The collection system will be buried underground and have no above ground components outside of the fence line, which is typical for solar projects. The gen-tie will be installed as a short overhead line, approximately 1.6-miles long, with limited visually prominent features including a single approximately 60-foot tall dead-end structure. These components are typically located directly adjacent to an existing transmission line and the proposed substation. Located as such, the dead-end structure will blend with the existing structures and the proposed substation equipment, thus minimizing any visual impact. From distances beyond two miles these overhead structures will be hard to discern from the landscape because of their low height.

The project substation will have an approximate size of one acre, as typical for project substations associated with these size projects. The tallest structure in the substation will be the lightning mast with an approximate height of 65 feet, with most other parts remaining well below that maximum. The lightning mast is very thin and will typically fall within the mature canopy of nearby hedgerows and forest stands. During leaf-off conditions the scale of the mast tip is similar in scale to the branching structure of the mature canopy allowing for the minimalization of impact throughout all seasons. The lower, more visually dominant components of the substation remain below the height of adjacent vegetation and will benefit from additional screening due to understory vegetation. Therefore, visibility and visual impact of the proposed substation is anticipated to be localized and minor and are not anticipated to result in significant visual impacts. For equipment security and public safety, a fence with a locked access gate will be installed around the perimeter of the substation.

Therefore, an appropriate APE for Indirect Effects for the Project includes those areas within the Cultural Resources Study Area with potential visibility of the Project as defined by the DEM viewshed results, for its various components

considering all maximum heights (see Figure 10). For previous solar projects in the state of Ohio, EDR has received approval to define the APE for Indirect Effects using the above methodologies[1].

4.2 Criteria for Evaluating the Significance for Historic Resources

Historically significant properties are defined herein to include buildings, districts, objects, structures and/or sites that have been listed on, or determined eligible to the NRHP, as well as those properties that have been recorded in the OHI, OGS, and ODOT historic resource inventories. Criteria set forth by the National Park Service for evaluating historic properties (36 CFR 60.4) state that a historic building, district, object, structure or site is significant (i.e., eligible for listing on the NRHP) if the property conveys (per CFR, 2004; NPS, 1990):

> The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:
>
> (A) that are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> (B) that are associated with the lives of persons significant in our past; or
>
> (C) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> (D) that have yielded, or may be likely to yield, information important in prehistory or history.

Historic resources surveys undertaken by EDR in association with the Project will be conducted by architectural historians who satisfy the professional qualifications criteria per the Secretary of the Interior's Standards for Historic Preservation (36 CFR 61).

EDR staff are thoroughly familiar with vernacular architectural styles and agricultural traditions, historic settlement and agrarian land use patterns, and relevant historic contexts for the Cultural Resources Study Area. Expectations about the kind, number, location, character and conditions of historic properties within the APE for Indirect Effects is discussed in Section 4.4.

[1] On April 6, 2020, EDR submitted a memo to the OHPO relating to two solar projects, addressing potential visibility of components over 15 feet in height, such as gen-tie dead end structures and substations. EDR proposed a reduction the OHPO's requested 5-mile study area for assessing potential impacts to historic properties associated with these taller project components (EDR, 2020). A response from OHPO was received on May 5, 2020, acknowledging that a 2-mile Cultural Resources Study Area was appropriate for all components of solar projects (Koehlinger, 2020).

4.3 Historic Resources Survey Methodology

EDR will conduct a historic resources survey for the Powell Creek Solar Project to fulfill the requirements of the Application. The historic resources survey will be conducted in accordance with the 2014 *OHPO Guidelines*. Field observations and photographs, in conjunction with viewshed mapping, will provide the basis for evaluating the Project's potential effect on historic resources including buildings, structures, objects, sites and districts.

In addition to the historic context and historic maps review (Sections 2.4 and 2.5 above), additional research will be conducted during fieldwork such as visits to history rooms at local libraries, the Putnam County Historical Society & Museum and the county auditor's office to further inform the historic resources survey.

EDR will conduct a reconnaissance-level historic resources survey of the Project's APE for Indirect Effects (i.e., areas within 2 miles of the Project where viewshed analysis indicates potential visibility). The historic resources survey will identify and document those buildings, sites, structures, objects, and/or districts within the APE that, in the opinion of EDR's architectural historian, appear to satisfy NRHP eligibility criteria. In addition, the survey will also be conducted for the purpose of providing updated photographs and recommendations of eligibility for NRHP-listed and eligible resources, as well as previously designated OHI, ODOT and OGS sites within the APE whose NRHP eligibility has not formally been determined. EDR will photo-document previously unidentified historic properties within the APE for Indirect Effects, that, in the opinion of EDR's architectural historians, do not meet NRHP-eligibility criteria. The purpose is to assist the OHPO with its determination regarding "which resources warrant further investigation and which resources, due to a lack of integrity, architectural significance, etc., do not" (OHPO, 2018).

Historic resources survey fieldwork will include systematically driving all public roads within the APE for Indirect Effects to evaluate historic resources within the Project viewshed. When those resources are identified, the existing conditions of the property will be documented. This includes photographs of the building(s) and property, a photograph of each outbuilding, a brief description of the setting, estimated construction date(s), and field notes describing the style, physical characteristics and materials (e.g., number of stories, plan, external siding, roof, foundation, and sash), condition, and physical integrity for each resource. Other known criteria aside from architecture which may contribute to a property's NRHP eligibility will be noted and evaluated as well.

Evaluation of historic resources within the APE will focus on the integrity (with respect to design, materials, feeling, and association) to assess the potential architectural significance of each resource. However, physical condition will not be the primary determinant of inclusion, per the 2014 *OHPO Guidelines* which instruct that surveys are to include "vernacular and high style examples, paying attention to regional and repeated building types as they often reflect

important patterns in regional or statewide development." EDR will document through field notes the extent to which the visual setting associated with these properties could be affected by the proposed project.

All properties included in the historic resources survey will be photographed and assessed from public rights of way and evaluated based solely on the visible exterior of the structures. No inspections or evaluations requiring access to the interior of buildings, or any portion of private property, will be conducted as part of this assessment. Although the survey will focus on buildings that are over 50 years old with high architectural integrity, buildings that are less than 50 years in age with a distinctive architectural style, representing a physical expression of the modern period, or having historical significance through a historic theme as evaluated by EDR's architectural historian will also be documented per the 2014 *OHPO Guidelines.*

4.4 Expected Survey Results

Five previously identified OHI-recorded buildings and five OGS-designated cemeteries within the Cultural Resources Study Area suggests likeliness that additional historic buildings and cemeteries will be identified within the APE for Indirect Effects. Buildings may include those typical of agricultural landscapes such as farmhouses, barns and agricultural support buildings. Based on desktop research, it is not expected that any OGS-identified cemetery would be eligible for NRHP listing based on Criterion Consideration D.

The Project Area itself does not include any population centers or major industries. Within the APE for Indirect Effects, the buildings of the village of Miller City may have collective significance as a potential historic district. It is possible that historic residential resources will be newly identified within village boundaries.

In addition, consultation with local historic societies and/or historians will continue to identify properties that may be NRHP-eligible due to non-architectural associations (i.e. their significance is derived from associations with significant events or persons per National Register Criteria A and B).

4.5 Historic Resources Survey Report and Inventory Forms

EDR will prepare a stand-alone historic resources survey report following the format outlined in the 2014 *OHPO Guidelines* and updated *Survey Report Submission Requirements* (OHPO, 2018). Special attention will be paid to the viability of farmsteads and agricultural structures associated with the historic context of the Cultural Resources Study Area.

Per the OHPO *Survey Report Submission Requirements* (OHPO, 2018), the historic resources survey report will also include completion of Ohio Historic Inventory Forms (I-Forms) for newly identified historic properties that, in the opinion of EDR's architectural historians, meet or exceed the NRHP eligibility criteria, as well as updating existing I-Forms for existing OHI designated properties, using the OHPO I-Form Application Database, as required by the 2014 *OHPO Guidelines*. Information included will be appropriate to a reconnaissance-level survey. Prior to submitting the forms, EDR will contact the OHPO with a list of surveyed resources and addresses for each property so that OHI numbers can be assigned.

Per the *Survey Report Submission Requirements*, one color hard copy and one digital PDF copy of the survey report (including GIS data), will be submitted to the OHPO for project review.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The proposed Project will not directly (physically) impact any known cultural resources. It is currently proposed that 100% of the APE for Direct Effects identified as having elevated archaeological sensitivity (for either pre-contact or historic-period archaeology) will be subjected to Phase IB archaeological survey, and 50% of the APE for Direct Effects identified as having reduced sensitivity for archaeological resources (for either pre-contact or historic-period archaeology).

The Project has the potential to cause indirect visual impacts to aboveground historic resources within the Cultural Resources Study Area where there are five OHI properties, and five OGS cemeteries. Based on review of historic maps, there may be several nineteenth century and/or early-twentieth century map-documented structures within the APE for Indirect Effects. To determine if there are extant or additional historic resources that could be affected by the Project, a reconnaissance survey for architectural resources would need to be conducted throughout the APE for Indirect Effects.

The records review and research designs presented herein is provided to OHPO for approval in advance of cultural resource surveys, to evaluate the proposed sampling strategy, field methodologies, as well as to ensure that the proposed scope of the survey is consistent with OHPO's standards. Please provide a formal response indicating OHPO's concurrence with and/or comments on the research design described herein.

6.0 REFERENCES

Chidester, Robert C. 2011. Re-Evaluating Colonization and Cultural Change During the Early Archaic Period in Northwestern Ohio. *Archaeology of Eastern North America* 39:109-130.

Code of Federal Regulations (CFR). 2004. Title 36 - Parks, Forests, and Public Property, Chapter I - National Park Service, Department of the Interior, Part 60 - National Register of Historic Places, Section 60.4 - Criteria For Evaluation. http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title36/36cfr60_main_02.tpl.

Cunningham, Roger M. 1973. Paleo-Hunters along the Ohio River. *Archaeology of Eastern North America* 1(1):118-126.

Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C. (EDR). 2020. Re: Request for Refined Study Area, Alamo and Angelina Solar Projects (2018-PRE-43613, 2018-PRE-43527). Review correspondence from EDR to Kristen Koehlinger (OHPO). Environmental Design and Research, Landscape Architecture, Engineering, and Environmental Services, D.P.C., Syracuse, NY.

Heer, F.J. 1899. *A Brief History of The State Board of Agriculture, The State Fair, District and Agricultural Societies, and Farmers' Institutes in Ohio*. Fred J. Heer, Columbus, OH.

H.H. Hardesty & Co. 1880. *History of Putnam County, Ohio, Illustrated Containing Outline Map, Fifteen Farm Maps and A History of the County; Lithographic View of Buildings—Public and Private; Portraits of Prominent Men; General Statistics; Miscellaneous Matters, &c*. H.H. Hardesty & Co., Chicago, IL.

Howe, H. 1907. *Historical Collections of Ohio in Two Volumes, An Encyclopedia of the State: History Both General and Local, Geography with Descriptions of Its Counties, Cities and Villages, Its Agricultural Manufacturing, Mining and Business Development, Sketches of Eminent and Interesting Characters, Etc., With Notes of A Tour Over It In 1886*. C.J. Krehbiel & Co., Cincinnati, OH.

Kinder, G.D. 1915. *History of Putnam County, Ohio: Its People, Industries and Institutions with Biographical Sketches of Representative Citizens and Genealogical Records of Many of the Old Families,* Vol. I. B.F. Bowen & Company, Inc., Indianapolis, IN.

Koehlinger, Kristen. 2020. Re: Revised History/Architecture Study Area. Review correspondence from Kristen Koehlinger (OHPO) to Susan Lawson. State Historic Preservation Office, Columbus, OH. May 5, 2020.

Mills, William C. 1914. *Archaeological Atlas of Ohio.* The Ohio State Archaeological and Historical Society, Columbus, Ohio.

National Park Service (NPS). 2020. *National Register of Historic Places* [website]. U.S. Department of the Interior. Available at: https://www.nps.gov/subjects/nationalregister/index.htm. (Accessed April 2020).

Nolan, Kevin C. 2014. An Exploratory Analysis of Diachronic Settlement Patterns in Central Ohio. *Journal of Ohio Archaeology* 3:12-37.

Ohio Department of Transportation (ODOT). 2020. Division of Planning, Environmental Services. *Cultural Resources: Historic Bridges* [website]. Available at: http://www.dot.state.oh.us/divisions/planning/environment/cultural_resources/HISTORIC_BRIDGES/Pages/default.aspx. (Accessed April 2020).

Ohio History Central. 2019a. "Agriculture and Farming in Ohio." *Ohio History Connection*. Available at http://www.ohiohistorycentral.org/w/Agriculture_and_Farming_in_Ohio. (Accessed April 2020).

Ohio History Central. 2019b. "Ohio Department of Agriculture." *Ohio History Connection*. Available at http://www.ohiohistorycentral.org/w/Ohio_Department_of_Agriculture. (Accessed April 2020).

Ohio History Central. 2019c. "Ohio State Fair." *Ohio History Connection*. Available at http://www.ohiohistorycentral.org/w/Ohio_State_Fair. (Accessed April 2020).

Ohio History Central. 2019d. "Putnam County." *Ohio History Connection*. Available at https://ohiohistorycentral.org/w/Putnam_County. (Accessed May 2020).

Ohio History Connection (OHC). 2020a. *Online Mapping System* [website]. Available at: https://www.ohiohistory.org/preserve/state-historic-preservation-office/mapping. (Accessed April 2020).

OHC. 2020b. Wetlands and Archaeological Sites. Ohio History Connection, Columbus, Ohio. Available Online: https://www.ohiohistory.org/preserve/state-historic-preservation-office/hpsurvey/archaeology-in-ohio/wetlands-and-archaeological-sites. (Accessed April 2020).

Ohio Historic Preservation Office (OHPO). 1994. *Archaeological Guidelines*. Ohio History Connection, Columbus, Ohio.

OHPO. 2014. *Guidelines for Conducting History/Architecture Surveys in Ohio.* Ohio History Connection, Columbus, Ohio.

OHPO. 2018. *Survey Report Submission Requirements.* Ohio History Connection, Columbus, Ohio.

Ohio Office of Information Technology. 2020. *Ohio Geographically Referenced Information Program (OGRIP)* [website]. Available at: http://ogrip.oit.ohio.gov/. (Accessed April 2020).

Ohio Power Siting Board (OPSB). 2020. Ohio Administrative Code Chapter 4906-04-08(D). Columbus, OH.

Ohio State Board of Agriculture (OSBA). 1858. *Twelfth Annual Report of the Ohio State Board of Agriculture.* Richard Nevins, Columbus, Ohio.

Purtill, Matthew P. 2009. The Ohio Archaic: A Review. In *Archaic Societies: Diversity and Complexity across the Midcontinent*, edited by Thomas E. Emerson, Dale L. McElrath, and Andrew C. Fortier, p. 565-606. State University of New York Press, Albany, New York.

Royce, C.C. and Thomas, C. 1899. *Ohio Indian Land Cessions in the United States*. Library of Congress, Geography and Map Division, Washington, D.C. Available at https://www.loc.gov/resource/g3701em.gct00002/?sp=49. (Accessed April 2020).

Rumsey, David. 2020. David Rumsey Map Collection. Cartography Associates. San Francisco, CA. Available at https://www.davidrumsey.com/. (Accessed April 2020).

Seeman, Mark F. and Olaf H. Prufer. 1982. An Updated Distribution of Ohio Fluted Points. *Midcontinental Journal of Archaeology* 7(2):155-170.

Seitz, D.W. and Talbot, O.C. 1895. *The Putnam County Atlas*. D.W. Seitz and O.C. Talbot, Ottawa, OH.

Stebbins, H.S. 1868. *Atlas of Ohio Counties of Williams, Fulton, Defiance, Henry, Paulding and Putnam*. H.H. Lloyd & Co., New York, NY. David Rumsey Historical Map Collection. Available at https://www.davidrumsey.com/luna/servlet/detail/RUMSEY~8~1~306075~90076123:Counties-of-Williams,-Fulton,-Defia?sort=Pub_List_No_InitialSort%2CPub_Date%2CPub_List_No%2CSeries_No&qvq=w4s:/where%2FOhio%2Fwhen%2F1868;sort:Pub_List_No_InitialSort%2CPub_Date%2CPub_List_No%2CSeries_No;lc:RUMSEY~8~1&mi=6&trs=27. (Accessed May 2020).

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

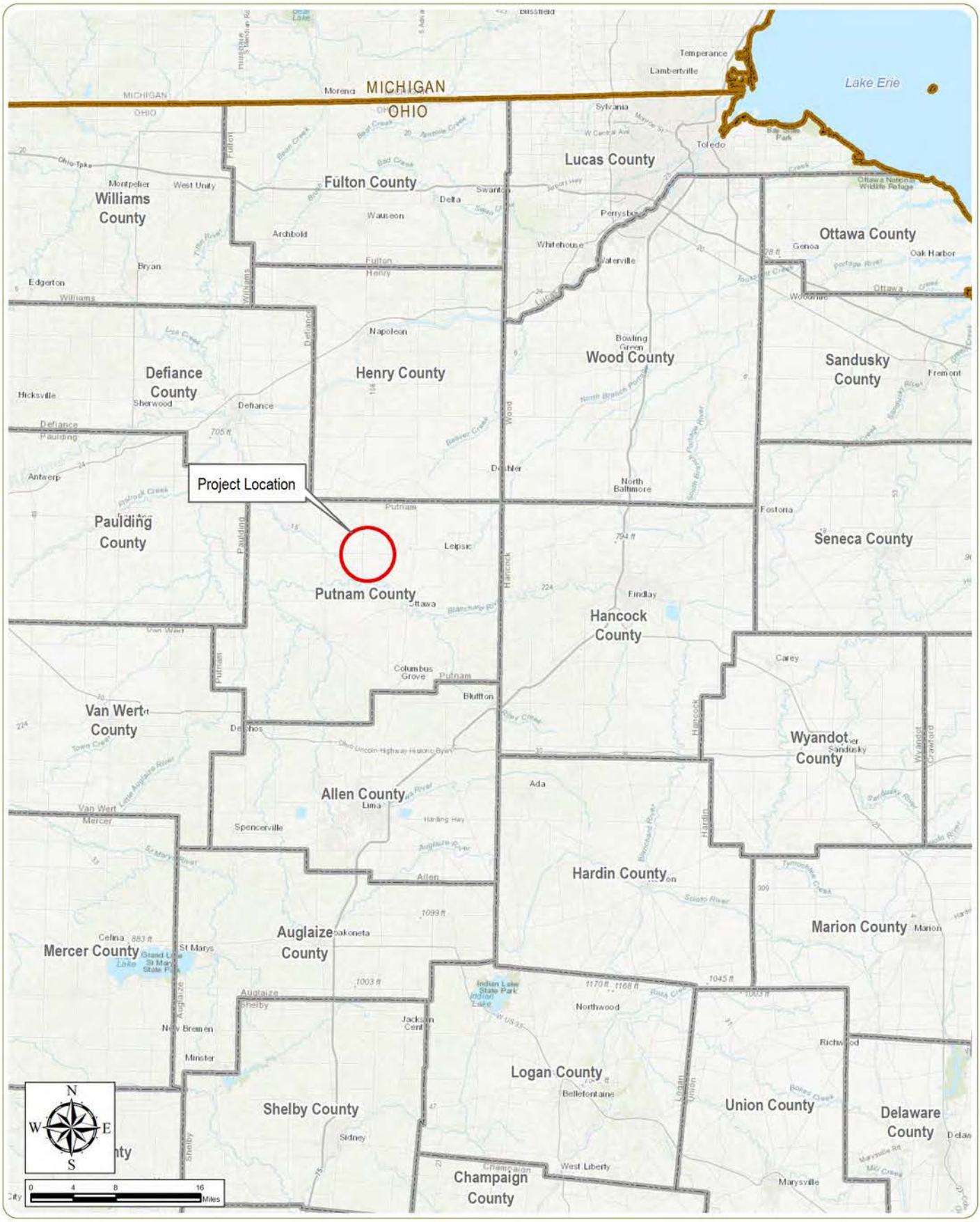
Stothers, David M. and Timothy J. Abel. 1993. Archaeological Reflections of the Late Archaic and Early Woodland Time Periods in the Western Lake Erie Region. *Archaeology of Eastern North America* 21:25–109.

United States Geological Survey (USGS). 2020. United States Department of the Interior, Geological Survey, Washington, D.C. Available at https://ngmdb.usgs.gov/topoview/. (Accessed April 2020).

United States Geological Survey (USGS). 1953. *Fort Wayne, Indiana.* 15 Minute Series (Topographic). United States Department of the Interior, Geological Survey, Washington, D.C.

Wakeman, Joseph E. 2003. *Archaeological Settlement of Late Woodland and Late Prehistoric Tribal Communities in the Hocking River Watershed, Ohio*. Master's Thesis, Department of Sociology and Anthropology, Ohio University, Athens, Ohio

Figures



Powell Creek Solar

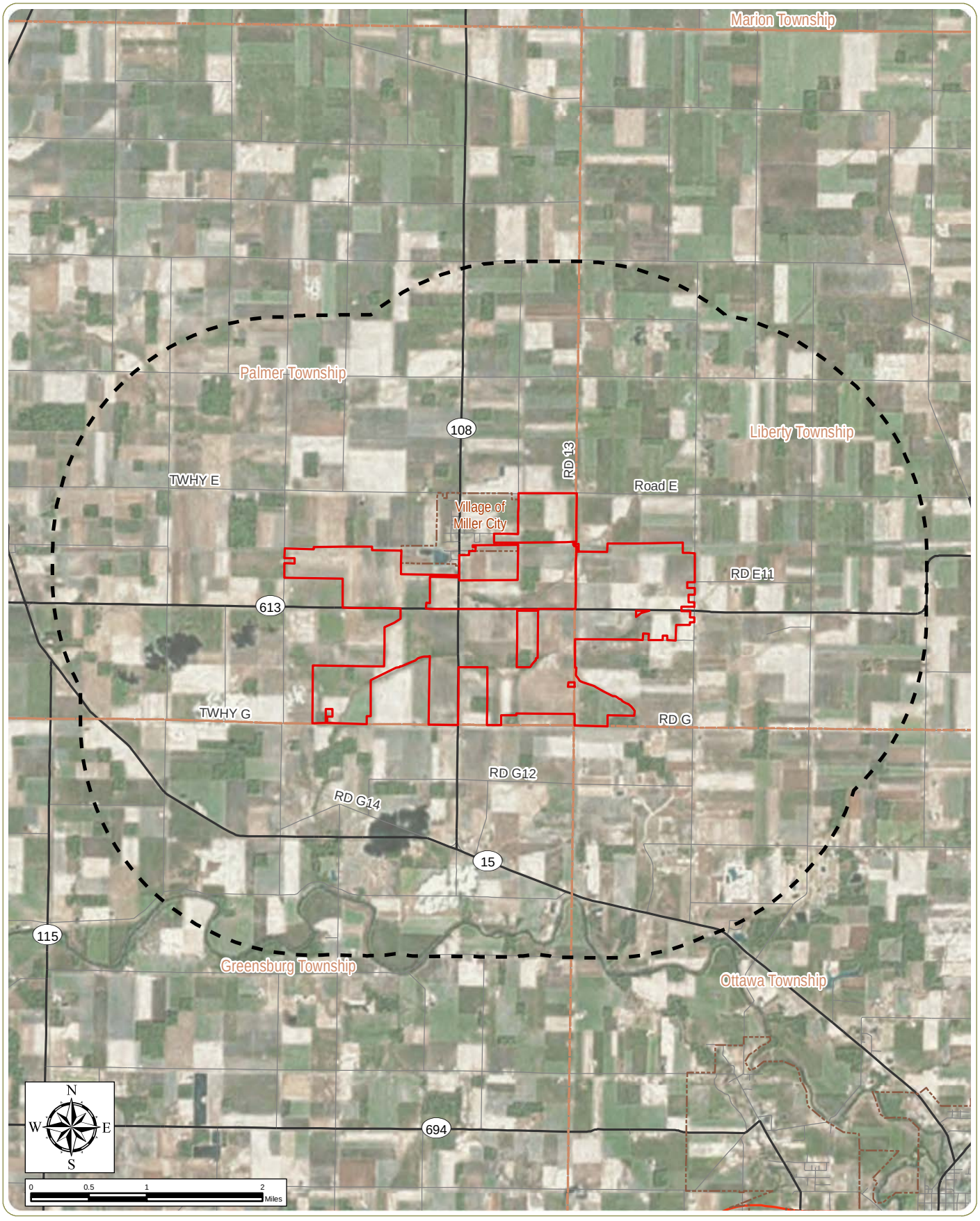
Liberty and Palmer Townships, Putnam County, Ohio

Figure 1: Regional Project Location

Notes: 1. Basemap: ESRI ArcGIS Online "World Topographic Map" map service.. **2.** This map was generated in ArcMap on June 3, 2020. **3.** This is a color graphic. Reproduction in grayscale may misrepresent the data.

edr

www.edrdpc.com



Powell Creek Solar

Liberty and Palmer Townships, Putnam County, Ohio

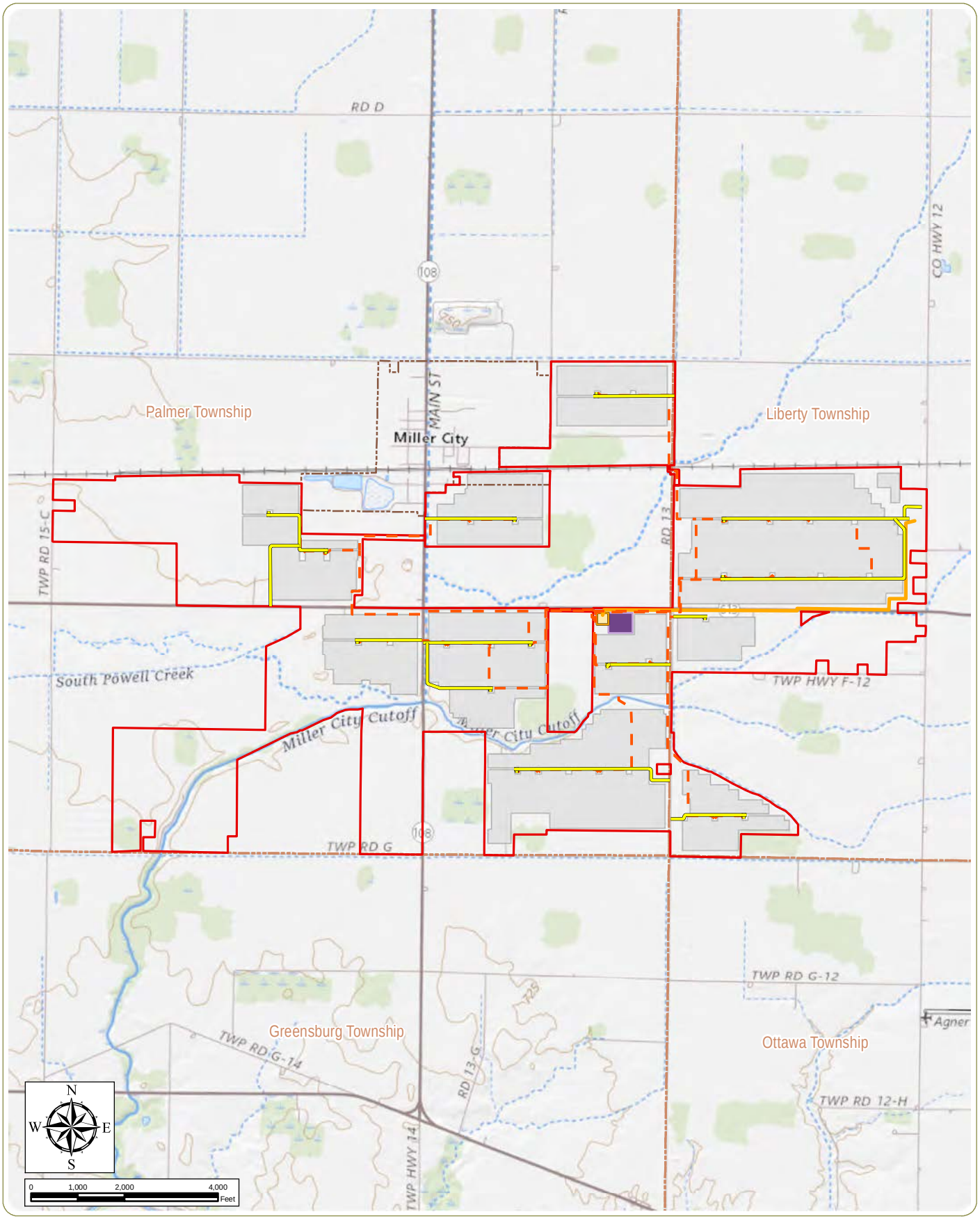
Figure 2: Project Area and Cultural Resources Study Area

Project Area

Cultural Resources Study Area

Notes: 1. Basemap: ESRI ArcGIS Online "World Imagery" map service. 2. This map was generated in ArcMap on May 20, 2020. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

www.edrdpc.com



Powell Creek Solar

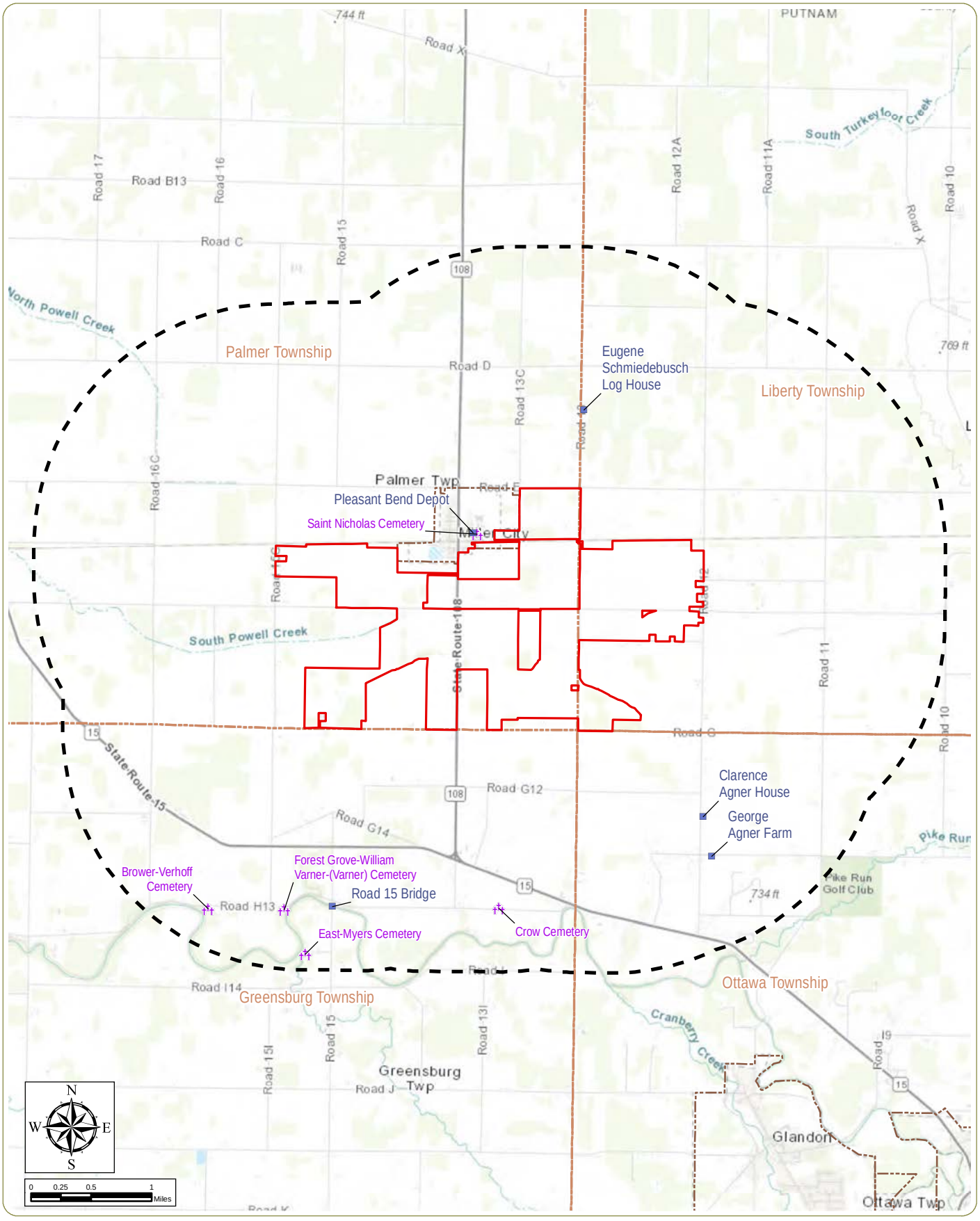
Liberty and Palmer Townships, Putnam County, Ohio

Figure 3: Project Components

Notes: 1. Basemap: ESRI ArcGIS Online "USGS National Map" map service. 2. This map was generated in ArcMap on June 3, 2020. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

- Access Road
- Collection Line
- Transmission Line
- Collection Substation
- O&M Building / Laydown Yard
- PV Panel Area
- Project Area

www.edrdpc.com



Powell Creek Solar Project

Liberty and Palmer Townships, Putnam County, Ohio

Figure 4: Previously Identified Cultural Resources

Notes: 1. Basemap: ESRI ArcGIS Online "World Topographic Map" map service. 2. This map was generated in ArcMap on May 20, 2020. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

- OGS Cemetery
- OHI Historic Structure
- Project Area
- Cultural Resources Study Area

www.edrdpc.com

Powell Creek Solar Project

Palmer and Liberty Townships, Putnam County, Ohio

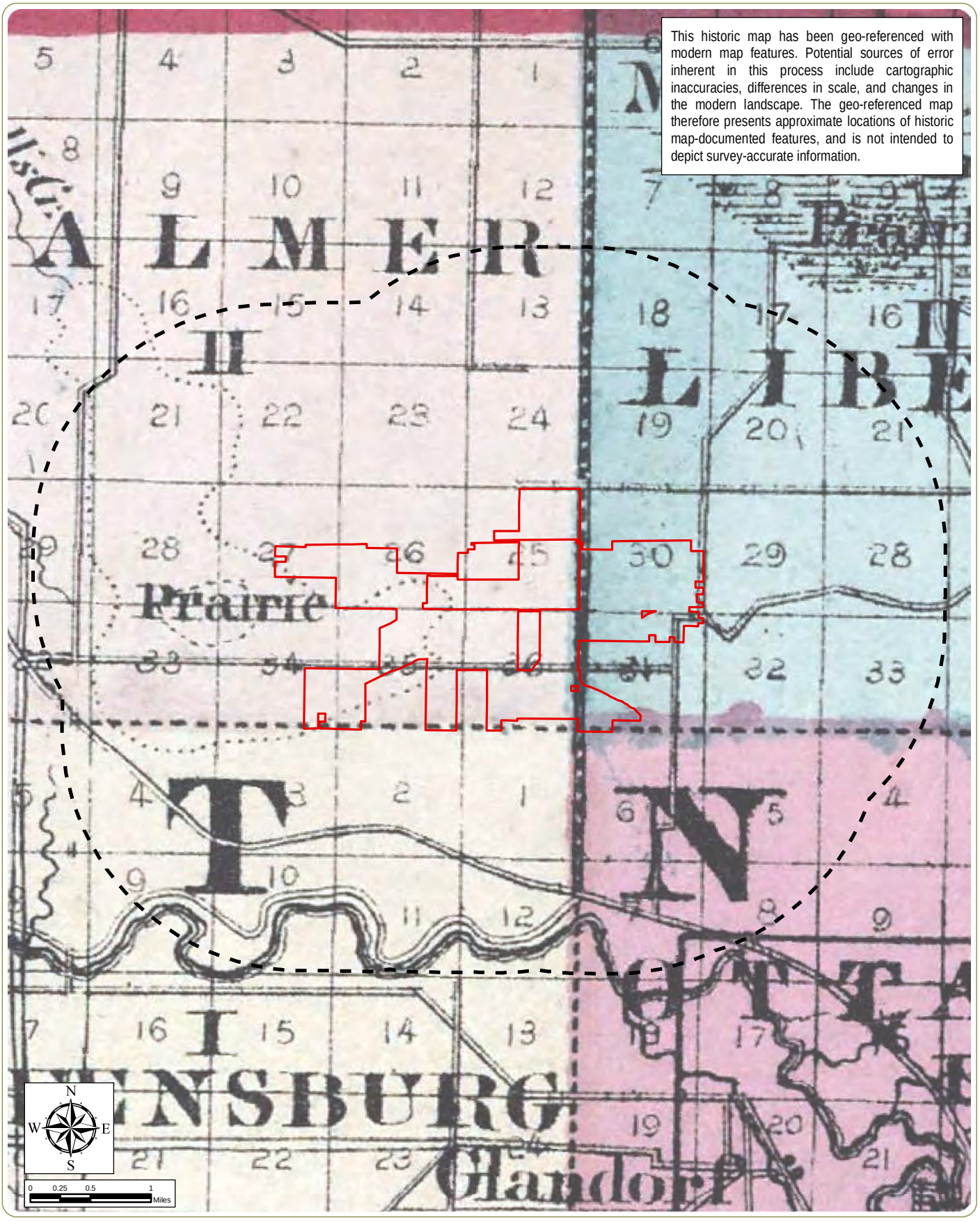
Figure 5. 1914 Mills *Archaeological Atlas of Ohio*

Project Area

Cultural Resources Study Area

Notes: 1. Basemap: 1914 Mills *Archaeological Atlas of Ohio*. 2. This map was generated in ArcMap on May 20, 2020. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

www.edrdpc.com



Powell Creek Solar Project

Palmer and Liberty Townships, Putnam County, Ohio

Figure 6. 1868 Stebbins *Atlas of Ohio Counties of Williams, Fulton, Defiance, Henry, Paulding and Putnam*

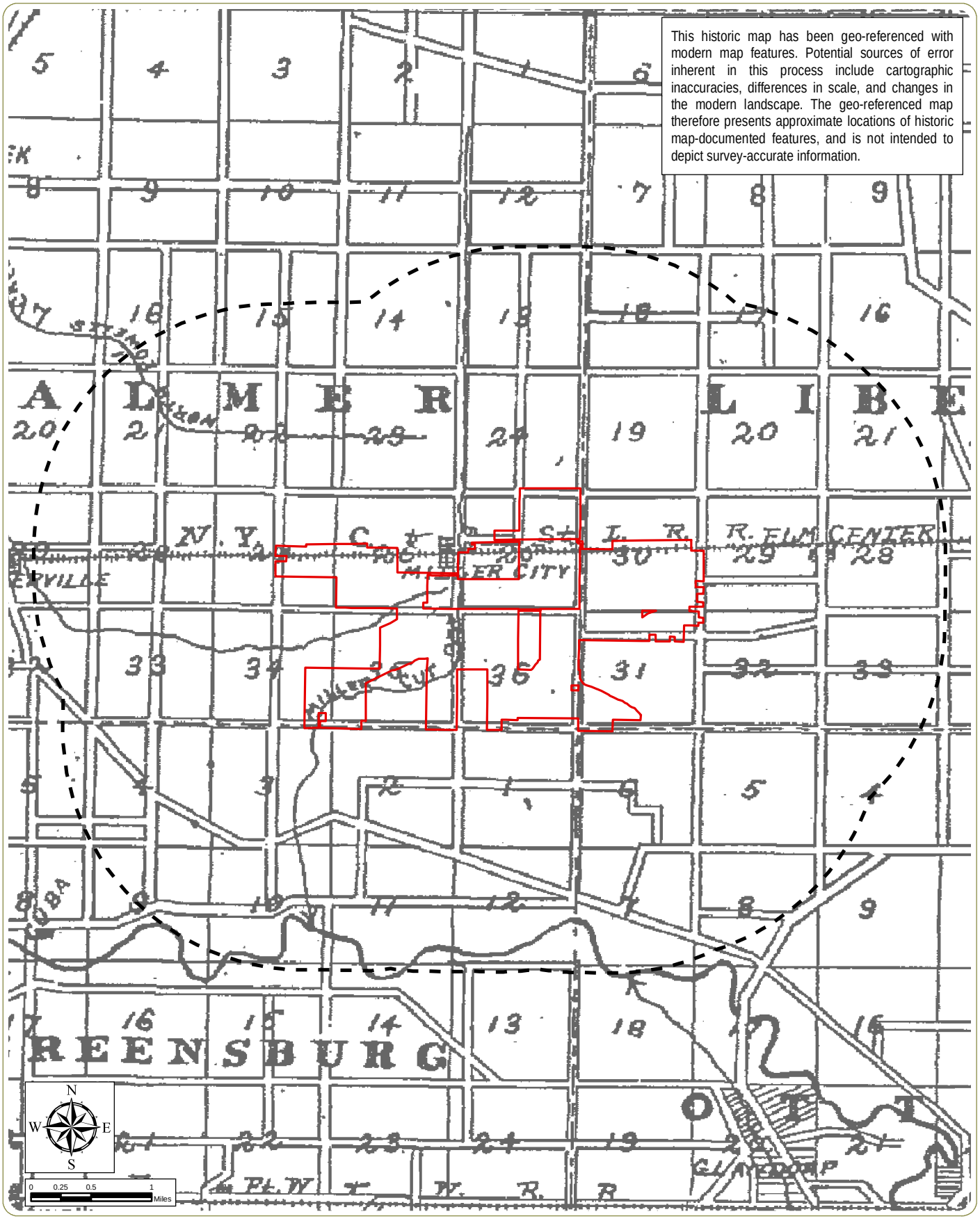
Project Area

Cultural Resources Study Area

Notes: 1. Basemap: 1868 Stebbins *Atlas of Ohio Counties of Williams, Fulton, Defiance, Henry, Paulding and Putnam*. 2. This map was generated in ArcMap on May 20, 2020. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

edr

www.edrdpc.com



Powell Creek Solar Project

Palmer and Liberty Townships, Putnam County, Ohio

Figure 5. 1895 Seitz's *Atlas of Putnam County*

Project Area

Cultural Resources Study Area

Notes: 1. Basemap: 1895 Seitz's *Atlas of Putnam County*. 2. This map was generated in ArcMap on May 20, 2020. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

www.edrdpc.com

Powell Creek Solar Project

Palmer and Liberty Townships, Putnam County, Ohio

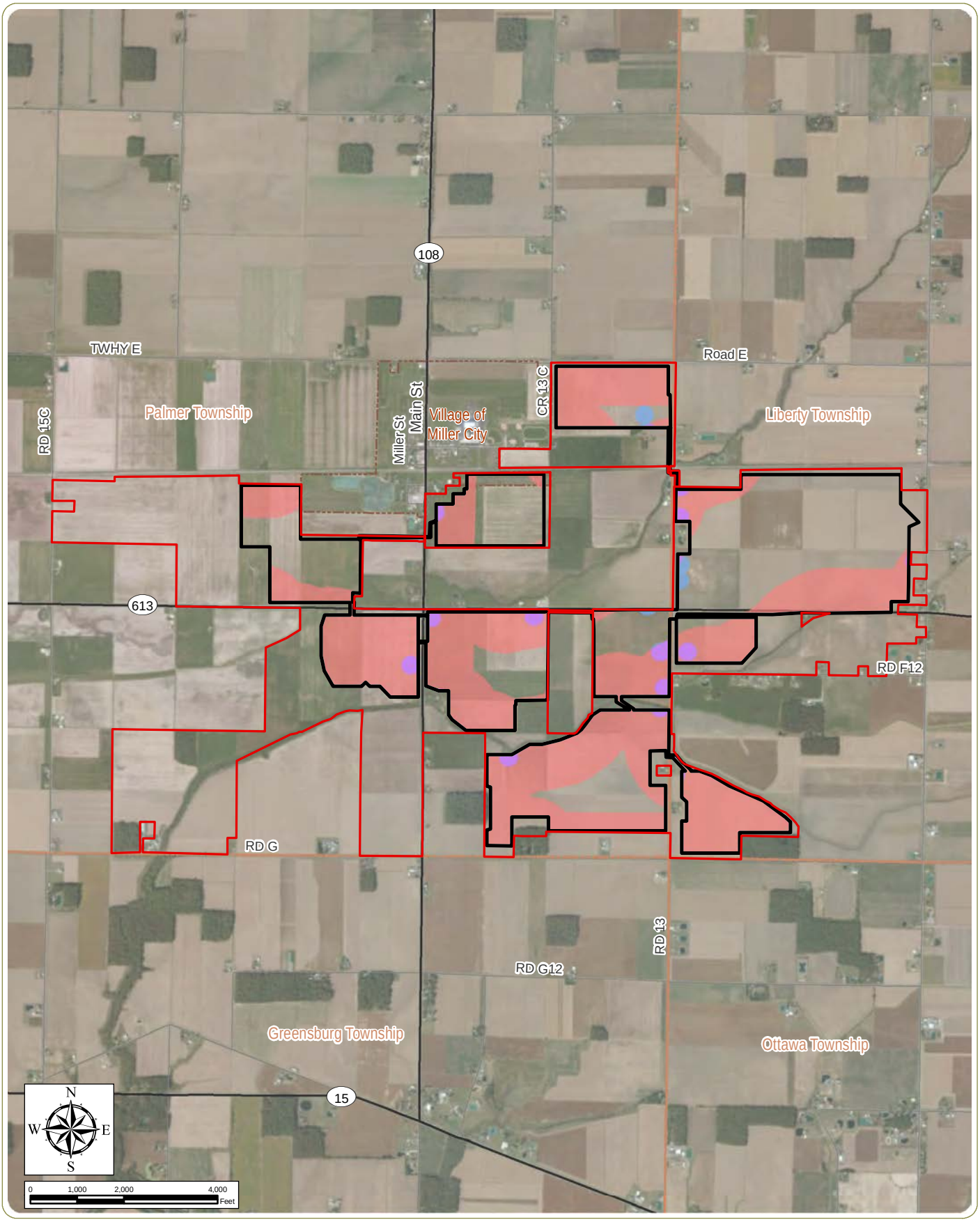
Figure 7. 1953 *Fort Wayne, Indiana USGS Topographic Quadrangles*

Project Area

Cultural Resources Study Area

Notes: 1. Basemap: 1953 *Fort Wayne, Indiana USGS Topographic Quadrangles*. 2. This map was generated in ArcMap on May 20, 2020. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

www.edrdpc.com



Powell Creek Solar

Liberty and Palmer Townships, Putnam County, Ohio

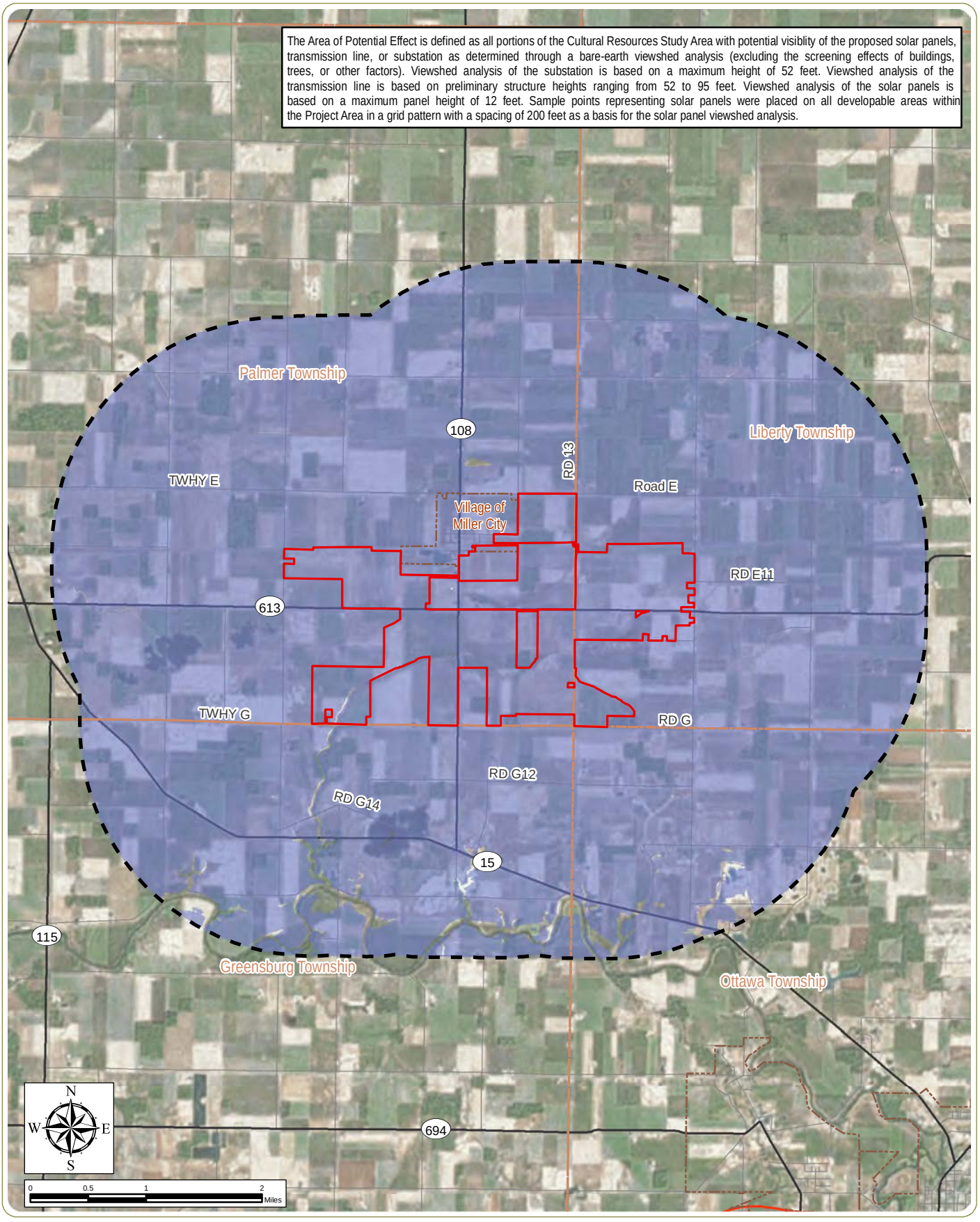
Figure 9: Archaeology Sensitivity Model

Notes: 1. Basemap: ESRI ArcGIS Online "World Imagery" map service. 2. This map was generated in ArcMap on June 3, 2020. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

- Areas of Elevated Sensitivity for Historic-Period Archaeological Material
- Areas of Elevated Sensitivity for Pre-Contact Archaeological Material
- Areas of Elevated Sensitivity for Pre-Contact and Historic-Period Archaeological Material
- APE for Direct Effects
- Project Area

edr

www.edrdpc.com



Powell Creek Solar

Liberty and Palmer Townships, Putnam County, Ohio

Figure 10: APE for Indirect Effects

Notes: 1. Basemap: ESRI ArcGIS Online "World Imagery" map service. 2. This map was generated in ArcMap on May 20, 2020. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

- Area of Potential Effect for Indirect (Visual) Effects
- Project Area
- Cultural Resources Study Area

edr

www.edrdpc.com

In reply refer to:
2020-PUT-48905

July 23, 2020

Douglas J. Pippin, PhD, Archaeology Project Manager,
Environmental Design & Research
274 North Goodman Street
Rochester, New York 14607
Email: dpippin@edrdpc.com

RE: Initial Project Consultation Phase 1A Cultural Resources Survey Powell Creek Solar Project Liberty and Palmer Townships, Putnam County, Ohio.

Dear Dr. Pippin

This letter is in response to your email transmittal sent on June 24, 2020, requesting review from the Ohio State Historic Preservation Office (SHPO) for the desktop cultural resources review and archaeological and historic resources research designs to satisfy Ohio Administrative Code Chapter 4906-04-08(D) for the Ohio Power Siting Board (OPSB) for the above-mentioned project. These comments are made in accordance with provisions of Section I 06 of the National Historic Preservation Act of 1966, as amended, and the associated regulations at 36 CFR Part 800.

Environmental Design & Research (EDR) has requested approval from the SHPO for the proposed research design for the following:

- Phase I Archaeological Survey Methodology
- Archaeological Site Avoidance/Minimization
- Historic Resources Survey Research Design

EDR has concluded that the proposed project will not directly(physically) impact any known cultural resources and that 100% of the area of potential effect (APE) for Direct Effects be subjected to a Phase 1B archaeological survey and 50% of the APE for Direct Effects identified as having reduced sensitivity for archaeological resources is to also be subjected to a Phase I B archaeological survey to be selected on a judgmental basis under the supervision of an archaeologist meeting the Secretary of the Interior's Standards (36 CR 61).

EDR has also concluded that the proposed project has the potential to cause indirect visual impacts to above-ground historic resources within the 2-mile Cultural Resources Study Area which includes 5 OHI properties and 5 cemeteries. Furthermore, there may also be several 19th and/or early 20th century structures within the APE for Indirect Effects; therefore, EDR recommends a reconnaissance survey for architectural resources throughout the entire APE for Indirect Effects.

What follows below are two sections of comments and recommendations offered by the SHPO concerning 1. Archaeology, and 2. Concerning History Architecture:

1. **Archaeology Comments:**

   As per the *Archaeology Guidelines* (1994:53), the SHPO would like EDR to conduct a visual inspection of the entire proposed project area. This should provide the investigator with information on topography the extent of prior disturbance, and indicators of the presence or absence of archaeological resources. The results should be combined with background documentary research to develop the research design and should be used by the archaeologist to become familiar with field conditions and types and densities of cultural resources present, and aid in developing the methods of field investigation to be used in various parts of the APE for Direct Effects.

   The SHPO also recommends that results of the field visit should be coordinated with the agricultural schedule for the croplands within the APE for Direct Effects to maximize ground surface visibility at the time of the archaeological field survey. This should also be used to identify "reduced sensitivity" areas that have good ground surface visibility and are easily accessible and should thus be considered as being part of the 50% sample to be investigated in the field.

   The SHPO also recommends that all archaeological sites identified during surface collections, also have at least one stratigraphic shovel text be excavated within the boundary of each site in order to assess the subsurface conditions and potential for buried archaeological deposits. This would add greatly to being able to assess the integrity and potential for significant archaeological information at each archaeological site identified during field investigations.

   Finally, the SHPO approves of the proposed sampling strategy and field methodologies for Phase I archaeological investigations for this proposed project in conjunction with the comments and recommendations offered above.

2. **History/Architecture Comments:**

   The SHPO approves of the proposed 2-mile radius APE and of the proposed Historic Resources Survey Research Design.

As a result of this review, the SHPO requests further coordination with our office as this project proceeds. The Ohio SHPO appreciates EDR's initiative and early coordination efforts, and we sincerely hope that these comments can lead to improvements in development of an effective Phase I Cultural Resources Survey for the proposed project.

If you have any questions concerning archaeology for this review, please contact me by email at jschweikart@ohiohistory.org, or for questions/comments concerning history/architecture, please contact my colleague, Kristen Koehlinger kkoelinger@ohiohistory.org

Sincerely,

John F. Schweikart, Project Reviews Manager (archaeology)
State Historic Preservation Office

Serial No. 1084637

Summary: Application Exhibit K - Phase 1A Cultural Resources Survey electronically filed by Teresa Orahood on behalf of Dylan F. Borchers