Exhibit D
Cultural Resources Work Plan

DICKINSON WRIGHT PLLC

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August 25, 2020

Diana Welling
Ohio Historic Preservation Office
800 E. 17th Ave.
Columbus, OH 43211-2474

Re: Cadence Solar Energy Center, Union County, Ohio

Dear Ms. Welling,

Cadence Solar Energy LLC (Cadence Solar) is proposing to construct a solar facility in northern Union County, Ohio of up to 400 megawatts. The solar generation facility will be constructed on 8,208 acres (3,226 hectares) of primarily agricultural land within northern Union County. While Cadence Solar will only develop a portion of the 8,208 acres (3,226 hectares), the larger area is being investigated to allow for shifts in the design to avoid cultural resources, wetlands, visual resources, important wildlife habitat, and other sensitive areas.

The project will require input from your office in accordance with the Ohio Power Siting Board (OPSB) rules for siting electric generation facilities (Ohio Administrative Code [OAC] 4906-4 and 4906-5). The project will not require any federal permitting, funding, or other input that would necessitate compliance with Section 106 of the National Historic Preservation Act.

The enclosed workplan outlines the project, the types of ground disturbances anticipated during construction, and summarizes previous cultural resources identified within or adjacent to the project area. The workplan also details the probability model established for the project and a methodology to conduct the Phase I archaeological survey of the project area. To account for the indirect effect (i.e., visual), the work plan outlines the proposed visual area of potential effect, discusses survey targets within that area, and proposes a methodology to record and report each resource, as well as determine the project's effect on those resources.

SWCA Environmental Consultants (SWCA), on behalf of Cadence Solar, submits the enclosed cultural resource workplan for your review and comment.

If you have any questions or wish to discuss the details of the enclosed documents, feel free to contact me at 412.839.1001 or jlibbon@swca.com.

Sincerely,

Jonathan Libbon, RPA
Principal Investigator

Enclosed: Cultural Resources Work Plan

CULTURAL RESOURCES WORK PLAN FOR THE CADENCE SOLAR ENERGY CENTER UNION COUNTY, OHIO

AUGUST 2020

PREPARED FOR

Cadence Solar Energy LLC

PREPARED BY

SWCA Environmental Consultants

CULTURAL RESOURCE WORK PLAN FOR THE CADENCE SOLAR ENERGY CENTER UNION COUNTY, OHIO

Prepared for

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SWCA Project No. 061596.00

August 2020

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INTRODUCTION

Cadence Solar Energy LLC (Cadence Solar), a subsidiary of Invenergy, is proposing to construct the Cadence Solar Energy Center (project), a solar facility that will generate up to 400 megawatts, and associated collection lines and substation in Union County, Ohio (Figures 1 and 2; also see Appendix A). In accordance with the Ohio Power Siting Board (OPSB) rules for siting electric generation facilities (Ohio Administrative Codes 4906-4 and 4906-5), SWCA Environmental Consultants (SWCA), on behalf of Cadence Solar, submits this cultural resources work plan, which outlines how the project will investigate the project area to determine if archaeological sites and/or historic resources are present and to establish a plan for minimizing the effect of the project on cultural resources, if present.

This work plan provides the proposed methodology for the Phase I archaeological survey of the limit of disturbance (LOD) and the historic architectural reconnaissance of the LOD and the area adjacent to the LOD that may be visually impacted by the proposed project. For the purposes of this work plan, the area of potential effects (APE) is considered to be the LOD for the project and the indirect APE is considered to be the LOD plus the area that will be visually impacted by the project. The APE for the project is 8,208 acres (3,226 hectares [ha]). In general, the methodology for the Phase I archaeological survey was developed based on the Ohio Historic Preservation Office's (OHPO's) *Archaeology Guidelines* (OHPO 1994) and *Guidelines of Conducting History/Architecture Surveys in Ohio* (OHPO 2014), as well as relevant federal guidelines and regulations.

PROJECT DESCRIPTION

The proposed facility will primarily consist of photovoltaic (PV) panels producing direct current (DC) electricity mounted on fixed-tilt racking structures or single-axis tracking structures, allowing the panels to track the sun's movement. Inverters will be placed throughout the facility to convert the DC electricity to alternating current (AC) electricity. From the inverters, a medium voltage collection system will be used to collect the AC output and transfer it to a substation where the total output of the facility will be collected and the voltage increased by step-up transformers to the necessary transmission line voltage. A generation tie line will connect the facility to the designated point of interconnection, the existing 345 kilovolt Marysville substation. The project will also construct internal infrastructure, such as access roads and fencing, and require temporary laydown areas for equipment storage during construction.

While expansive, ground disturbance will largely be limited to the racking being driven into the ground by a pile driving machine (Figure 3) and minor trenching associated with the electrical collection system (Figure 4). As the majority of the project area is located on flat agricultural land, large-scale grading, grubbing, or other impacts typically associated with land clearing are unlikely to be needed. In areas where grading is necessary, topsoil shall be stored separately and during the restoration phase of the project returned to areas of disturbance. Native grass species will then be planted and maintained underneath and around the panels throughout the useful life of the project. The racking will be driven down to a maximum depth of 10 feet (3 meters) and the trenching depth will be approximately 3 feet (1 meter). Cadence Solar is committed to minimizing soil disturbance associated with the project as a way to minimize impacts to cultural resources.

It is important to note that the project area depicted in Figures 1 and 2 and Appendix A will not be completely developed. The development parcels depicted within this work plan and considered to be the APE show a larger area to allow for shifts in the design to avoid cultural resources, wetlands, visual resources, important wildlife habitat, and other sensitive areas. The project will be sited on private, primarily agricultural land, which will be leased by Cadence Solar.

Figure 1. Project area location within Union County, Ohio

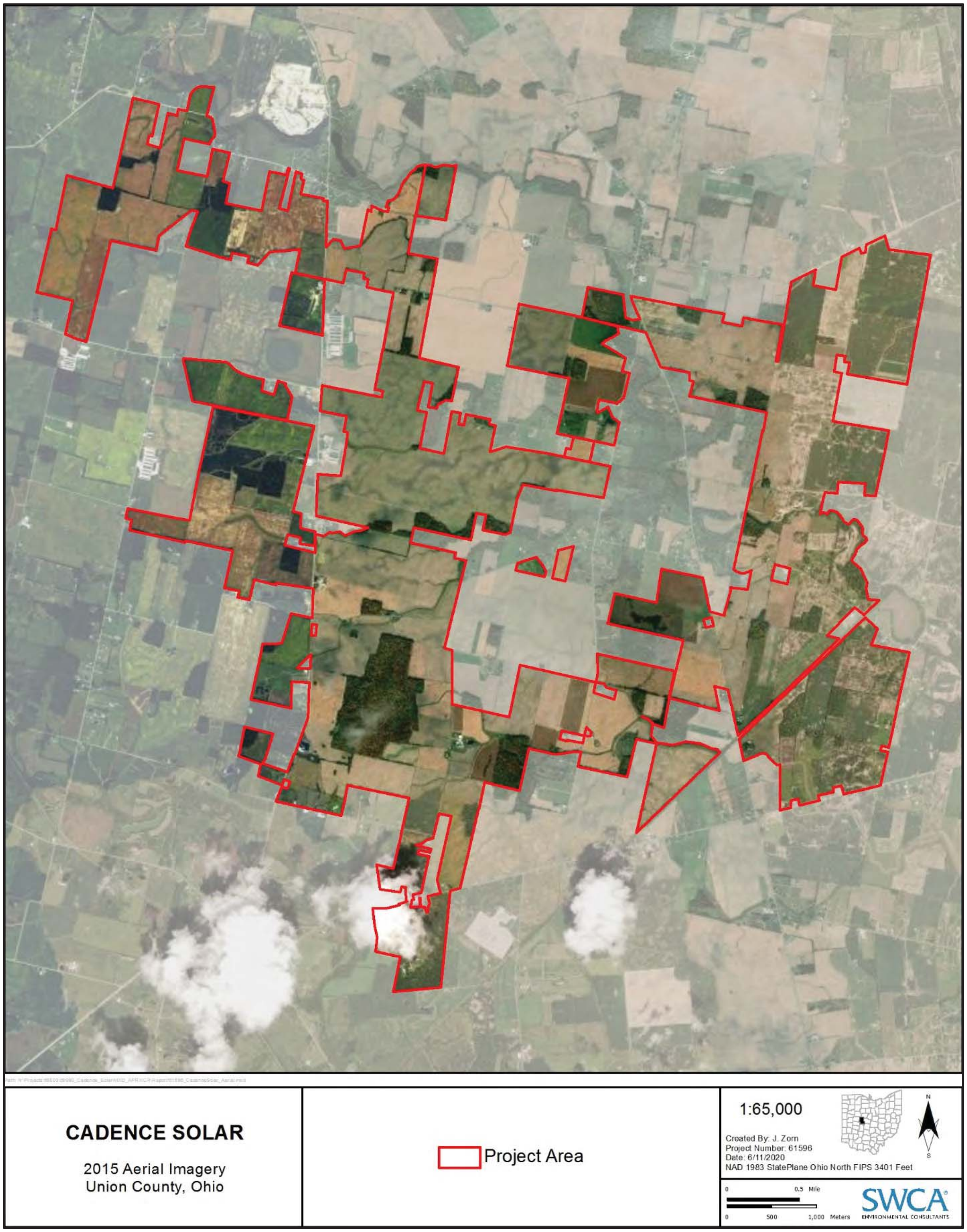

Figure 2. Project area shown on aerial imagery.

Figure 3. Example of racking being driven into the ground by a pile driver during construction.[1]

Figure 4. Example of trenching associated with the electrical collection system.[2]

Due to various project constraints, it is unlikely that the full project will be developed at one time. Instead, Cadence Solar proposes to develop the project in phases. This work plan is meant to provide guidance during the entirety of the project and the various phases of development. Subsequent cultural resource investigations after the initial phase of development will be reported to the OHPO as addendum reports and will reference this work plan and follow the methodology outlined below.

[1] Photo Credit: Power Technology (https://www.power-technology.com/)

[2] Photo Credit: Hirons Cable Ploughing & Trenching (https://www.pjhironstrenching.co.uk/cable_ploughing.htm)

PHASE I ARCHAEOLOGICAL SURVEY

This section will outline previously recorded archaeological sites and surveys within the proposed project area and discuss the probability model established for the project. Based on the project-specific probability model, methodology has been developed for testing the project area.

Previously Recorded Sites

A review of the OHPO online mapping system, accessed July 22, 2020, identified one previously recorded archaeological site, 33UN0434, within the project area. Recorded in 2009 in response to proposed telecommunications development, the context of 33UN0434 is unknown. Both the site form and the report only provide limited information. The assemblage from the site consists of one secondary thinning flake. While not within the project area, a 2017 survey directly adjacent to the southern portion of the project area identified five archaeological sites (33UN540, 33UN541, 33UN542, 33UN543, and 33UN544). Four of the five sites consisted of precontact isolated finds or low-density lithic scatters. One of the sites, 33UN0540, was determined to be the remains of a nineteenth-century farmstead.

Previous Survey

The only previous survey within the APE consists of the 2008 Phase I survey for the Raymond / Styer Wireless Cellular Tower (NADB# 17828), adjacent to Hoover Bault Road in the southern portion of the project area. As described above, the survey identified 33UN0434. While not within the project area, several surveys have been conducted in proximity to the project. A 2017 Phase I survey conducted in response to a transmission project, identified five archaeological sites (33UN540, 33UN541, 33UN542, 33UN543, and 33UN544), although none of the sites were eligible for listing in the National Register of Historic Places (NRHP). In 1999, in response to road improvements along Ohio Route 31, a Phase I survey (NADB# 14409) was conducted on an 11.2-acre (4.5-ha) area. The survey identified 31UN0222, which consisted of one notched biface.

While the small-scale surveys within or adjacent to the project area provide information on ground conditions and the potential presence of archaeological sites, a better comparison to the current project is located to the east of the project area. A Phase I Survey for the Columbus Upground Reservoirs #1 and #2 (NADB#18076) was completed in 2006 for the construction of three reservoirs, a pump station, and a water transmission line. The survey investigated 1,571.74 acres (636.06 ha) in Union and Delaware Counties. The survey for the reservoirs covered a landscape very similar to that of the current survey. During the course of the 2006 survey, 153 archaeological sites of varying size were located within the footprint of the proposed reservoirs, including 33DL2116, a precontact site determined eligible for listing in the NRHP.

In summary, survey within the project area and within proximity to it indicates that precontact and historic period occupation is visible within the archaeological record, although large and/or high-density sites have not been identified. Large-scale survey within the general region of the project has shown that preservation within the region is suitable for larger archaeological sites, including sites eligible for listing in the NRHP.

Historic Land Use

A review of historic maps, atlases, and photographs showed that the project area has largely been undeveloped land used for agriculture throughout the historic past. The first map to show the project area in detail is Mowry’s 1877 *Atlas of Union County Ohio*. The atlas depicts sparse residential settlement along established roadways and, to a lesser extent, established waterway such as Powder Lick Run. While the project area is primarily depicted as having sparse settlement in the late nineteenth century, a cluster of structures is depicted along modern-day Ohio Route 47, specifically where the town of York Center, Ohio, is located in the northern portion of the project area. Modern-day Yearsley Road (County Road 222) in the east half of the project area is depicted as having the most substantial residential development on the 1877 atlas.

The first U.S. Geological Survey (USGS) 7.5-minute quadrangle to depict the project area is the 1913 Richwood, Ohio quadrangle. The 1913 quadrangle depicts the modern roadway system and shows that the residential development of the project area has remained primarily static since the late nineteenth century except for residential settlement along newly depicted Ohio Route 31. The residential development along State Route 31 mirrors the settlement along modern-day Yearsley Road on the 1913 quadrangle. Additionally, the Erie Railroad is also newly depicted on the 1913 quadrangle and runs northeast-southwest in the southwestern portion of the project area.

The 1961 Peoria and York Center, Ohio, USGS 7.5-minute quadrangles show that the modern landscape of the project area has been established and continues to depict the project area as primarily being agricultural land. Most of the structures depicted on the 1913 quadrangle continue to be depicted on the 1961 quadrangles.

Modern aerial imagery shows that the landscape between 1980 and present day has remained relatively static. Modern aerial imagery continues to depict the majority of the project area as agricultural land with scattered farmsteads along established roadways.

In summary, a review of historic cartographic sources for the project area indicates that the overall landscape has changed little since the late nineteenth century. The landscape has maintained its bucolic nature, with scattered farmsteads and residential development being primarily linked to existing roadways and, to a lesser extent, established waterway such as Powder Lick Run. No major disturbance, such as surface mining or quarrying, has taken place within the project area.

Precontact Probability Modeling

SWCA produced a probability model in support of the Phase I sampling strategy, which used stepwise logistic regression to identify environmental variables that significantly correlate with known precontact archaeological site placement within an 11-mile buffer of the project area. The selected model retained elevation (meters above sea level), relative elevation (height above surroundings), solar radiation, degrees from north (0–180), degrees from east (0–180), stream distance, and cost surface (difficulty of crossing an area) as the significant environmental variables describing site placement, while rejecting stream confluence distance, slope, and waterbody distance. Of the 514 sites in the model analysis area, 344 are located in high probability areas (67 percent), and these high probability areas cover 27 percent of the total study area. This moderate model efficiency is attributable to the limited overall topographic richness of the study area, which consists of flat to low rolling, minimally dissected cropland interspersed with patches of temperate forests in the undeveloped areas.

Archaeological Inventory Data

In total, 669 archaeological site and isolated find GIS polygons were obtained from the OHPO database for an area up to 11 miles from the project area (Figure 5). The main clip area was 10 miles; however, some sites extended beyond the 10-mile boundary. This larger 11-mile buffer study area encompasses 402,523 acres and was used to assist in the probability modeling in order to capture the broader pattern in site placement in the region and to provide a robust sample size of sites and survey areas.

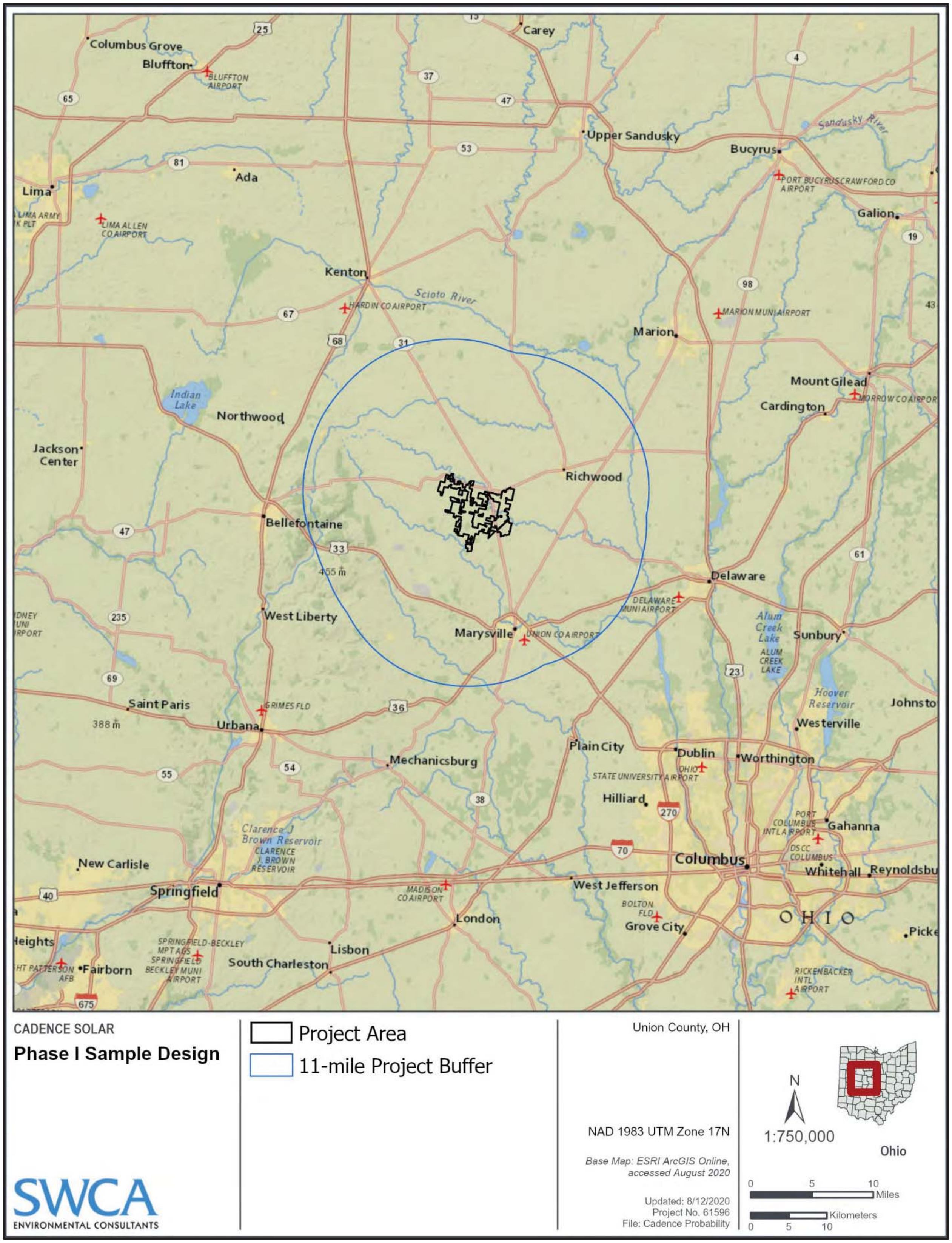

Figure 5. Project area location.

The resource location polygons were joined with an archaeological sites GIS point file that contains information regarding general cultural affiliation (i.e., historic, prehistoric, or unknown), along with other descriptive information regarding more specific time period (e.g., Paleoindian, Early Archaic) and site type (e.g., camp, workshop, village). For the modeling effort, all resources with a precontact component were selected, and those without a definitive precontact component were removed. This produced 592 precontact polygons, two of which were embedded within larger polygons and were subsequently removed.

After a cursory review of the location of precontact resources in the study area, a high density of 78 precontact resources was noted in an area that has since been converted to the Columbus Upground Reservoir #1. This recently completed reservoir is beginning to be recognized in environmental GIS datasets, most notably the 10-m digital elevation model (DEM) for the area. DEMs form the foundation for much of the environmental data used to train the probability model, and given the highly modified topography resulting from the construction of the reservoir and associated berms, all 78 precontact resources documented in this area were removed from consideration in model development. In total, 514 resource locations were used for further model development.

In addition to the precontact resources, survey areas are a critical aspect of model development, because these areas were surveyed and found to not contain observable precontact resources. These are referred to as “known nonsites,” and they are contrasted with the precontact resource locations during the stepwise logistic regression analysis (described below) to generate the probability results. A sample of nonsite data was generated by randomly sampling nonsite point locations that are a minimum of 100 m from an archaeological site boundary.

Exploratory Pattern Analysis

To systematically investigate spatial patterning in the archaeological record in relation to the surrounding landscape, a series of correlative tests examined the environmental settings of cultural resource locations and the nonsite locations. The purpose of these comparisons is to identify patterned differences in the environmental settings of sites and nonsites, to assist in our understanding of both precontact site locations and the settings in which these sites are discoverable. Comparing sites and nonsites in this way allows for patterns in site locations to be identified that may not be evident from a more qualitative assessment of site patterning based upon previous experience and prior knowledge.

Environmental Variables

Human behavior is not determined by a specific, constrained set of variables, yet models must employ only a select sample of variables to predict outcomes. The selection process is guided by the availability of data, their potential applicability, and the level of detail they provide at a particular scale. For example, if a model covered the entire eastern United States, geographic ecoregions may be a useful variable. However, if the model only involves one ecoregion, that same dataset is no longer applicable. Also, there is no particular set of variables that is unanimously agreed upon as applicable to archaeological modeling. Every model will have a unique set of constraints that guides the selection process, and variables can be added or removed in each model run as information is gained. The models use publicly available datasets to represent several environmental variables thought to potentially influence archaeological site locations. Using national standard datasets ensures that the model is replicable because anyone can access the same data. Using these public datasets also increases the likelihood that the data are reliable and accurate.

As is commonly understood, the environment has not remained constant throughout the span of human occupation, and the environmental variables used in this model do not necessarily reflect the environment at the time that Native American groups occupied the area. Topography, exposed bedrock, surface geomorphology, soils, climate, precipitation, flora, and fauna have all changed throughout the human occupation, as have cultures, land use strategies, mobility, and technology. However, the intent of this modeling is to better understand patterns in the exposures of cultural material as observable today. The intent is not to model precontact behaviors or the placement of sites on some ancient landscape that is no longer directly observable. With this discovery-based approach, the intention is to use the decades of inventory data that have been collected from the modern ground surface to interpret the patterns in observable site presence and absence. With this focus, the changing environment through time is not applicable to this analysis. Rather, it is the current environmental parameters that allow for the discovery of archaeological sites that are pertinent. Variables that were considered and then ultimately used in the analysis developed here are described in detail below.

VARIABLES CONSIDERED BUT NOT INCLUDED

Several variables that have been previously used in probability models were considered for use in the models developed here but were rejected upon initial examination. Others, such as soils (discussed below), required further research before being excluded from model development. The intent here is not to provide an exhaustive list of every environmental variable considered for model development, but rather to provide context for the current approach. Some environmental variables used in previous efforts are out of date and have been replaced by others using modern GIS techniques. An example is height above water (Larralde and Chandler 1981). GIS currently allows distance to water to incorporate both vertical and horizontal distance (i.e., path distance), so there is no need to consider only height. Another example is shelter or shelter indices and view or viewspread (e.g., Kvamme 1992; Larralde and Chandler 1981). These variables have been replaced by relative elevation or height above surroundings (discussed below), which accounts for both sheltered areas and those with expansive viewsheds. Distance to certain landcover types is also not included (e.g., distance to wood [Larralde and Chandler 1981]). A large proportion of the study area has been modified by modern land use practices, and modern landcover no longer approximates prehistoric landcover.

VARIABLES INCLUDED

As described above, the modeling approach used here estimates the relationships between modern environmental variables and archaeological site location, and these patterns are then mapped across the study area. If the modern variables selected influence site location, and if site location is nonrandom, then the model should be useful in allowing site locations to be predicted with a better-than-random chance of success. Every conceivable mapped environmental condition does not need to be considered for model development; rather, the group variables considered should reflect what are commonly interpreted as possible factors influencing archaeological site location (Table 1). Further, modeling approaches change with our state of knowledge, our sample of sites to build the models from, and the statistical techniques that are currently available. With this in mind, the variables used are primarily a reflection of those used for previous archaeological probability models (e.g., Beck, Cannon, Benson, et al. 2015; Beck, Cannon, Vicari, et al. 2015; Bureau of Land Management [BLM] 2008; Burnett et al. 2009; Burnett et al. 2016; Heilen et al. 2013; Jochim 1976; Kvamme 1992; Larralde and Chandler 1981; Lundell 2012; Zier et al. 1981). Maps of these variables are provided after their descriptions (Figures 6–14).

Table 1. Variables Used for the Archaeological Pattern Analysis

Variable	Data Sources
Archaeological inventory areas	OHPO
Archaeological sites	
Elevation (m)	1/3 arc-second DEM (USGS)
Slope	
Aspect (degrees from north [0–180]), degrees from east [0–180])	
Relative elevation within 500 m	
Cost surface	
Distance to streams, waterbodies, and confluences	DEM and National Hydrography Dataset,

Elevation. Considering the potential influence of elevation and site placement, raw elevation values from the DEM were included in this study as one aspect of topographic variability. Elevations in the study area range from a high of over 460 m to a low of 266 m (Figure 6). Overall, the area is characterized by only minor elevation changes. Still, this topographic variability is assumed to have affected prehistoric site formation and exposure, and previous studies have demonstrated its correlation with site placement (Beck, Cannon, Benson, et al. 2015; Beck, Cannon, Vicari, et al. 2015; Kvamme 1988a:318; Mandry et al. 2006; Schroedl 1988; Warren and Asch 2000; Wescott and Kuiper 2000; Whitley 2006).

Relative Elevation. Also referred to as local elevation, height above surroundings, or relief, relative elevation may have influenced prehistoric site formation and exposure, and it has been used as an environmental parameter in a similarly wide variety of studies as raw elevation. Some archaeological sites may be positioned in areas with panoramic views of the surroundings, and in contrast, others may be located in sheltered canyons. This varied topographic positioning influences not only visibility and shelter but also exposure to environmental conditions such as wind and extreme temperature. Jochim (1976:51, 55) notes both view and shelter as being highly important to hunter-gatherer decision-making regarding site placement. Previous models have used ranked categories describing shelter quality, degree of exposure, and viewspread (e.g., Kvamme 1980, 1988a:318; Larralde and Chandler 1981). Given current GIS technology, attributes of exposure and shelter can be approximated on a continuous (rather than ordinal) scale. For the current models, this environmental variable is expressed in meters and is defined as the raw elevation value of a grid cell (meters above sea level) minus the average elevation of the surrounding cells (meters above sea level). Relative elevations within 100-m, 500-m, and 1,000-m ranges have been tested for previous models, and the 500-m relative elevations were selected for use after model testing indicated that this was the most significant in terms of influencing site placement (Figure 7). This variable can be further defined using a simplified example. If a small butte 10 m across stood 10 m above an expansive flat plain, the grid cell representing this butte would have a relative elevation value of 10 m. In contrast, in a sinkhole 10 m across and 10 m deep that was also surrounded by an expansive flat plain, the bottom of the sinkhole would have a relative elevation value of -10 m. Broad, flat plains therefore have relative elevations at or near 0.

Slope. Slope is ubiquitously used in archaeological site location studies (Beck, Cannon, Vicari, et al. 2015; Burnett 2010, 2012, 2013, 2014; Burnett et al. 2009; Burnett et al. 2016; Duncan and Beckman 2000; Heilen et al. 2013; Jochim 1976; Kohler et al. 1980; Kvamme 1988a:318, 1992; Larralde and Chandler 1981; Lundell 2012; Mandry et al. 2006; Schroedl 1988; Warren and Asch 2000; Zier et al. 1981). Slope is typically one of the more significant factors in prehistoric site placement because of the basic requirements of a stable surface for habitation and ease of movement. In contrast, some site types, such as rock art sites, may be correlated with steep slopes. This study was interested in recognizing either pattern – site correlations with either low slopes or steep areas. Slope (in degrees) is derived from the DEM (Figure 8).

Cost Surface. Similar to slope, the ease of movement across rugged topography is assumed to have influenced prehistoric land use and site placement due to the constraints that it places on basic human movement. Topographic roughness or "cost surface" represents both the slopes and the variability in the slopes of the surrounding terrain. Representing the relative cost of traversing a slope, high cost surfaces exhibit steep, rugged slopes, whereas low cost surfaces have gentle, smooth slopes. Following Heilen et al. (2013), this is derived from the DEM as follows. First, the mean slope within 50 m of each cell is calculated. Next, the standard deviation of slopes within 50 m is calculated. A value of 1 is added to each of these variables and the natural logarithms are calculated. These are added together to produce the cost surface, which estimates trends in both slope and surface roughness (Figure 9).

Aspect. Aspect is another very common environmental parameter employed in site location studies (Beck et al. 2015a, 2015b; Burnett 2010, 2012, 2013, 2014; Burnett et al. 2009; Burnett et al. 2016; Cannon et al. 2016; Heilen et al. 2013; Larralde and Chandler 1981; Kvamme 1988a:318; Mandry et al. 2006; Schroedl 1988; Warren and Asch 2000; Zier et al. 1981). Aspect-mediated differences in temperature, effective moisture, vegetation, and wind velocity may have influenced prehistoric land use and site placement. Aspect is derived from the DEM, and, following Kvamme (1988b:337), ArcGIS is used to calculate aspect in terms of degrees from north (0–180) (Figure 10) and degrees from east (0–180) (Figure 11). This produced continuous datasets rather than treating aspect as a categorical variable by segregating it into categories of north, northeast, east, etc.

Distances to Streams, Confluences, and Waterbodies. Because streams are conduits through the landscape, their function as travel corridors may have been just as significant, if not more so, than access to water in terms of prehistoric land use patterns. Distances to various water features are among the most commonly employed environmental variables in archaeological predictive models (e.g., Beck et al. 2015a, 2015b; BLM 2008; Burnett 2010, 2012, 2013, 2014; Burnett et al. 2009; Burnett et al. 2016; Cannon et al. 2016; Heilen et al. 2013; Kohler et al. 1980; Kvamme 1988a:318; Larralde and Chandler 1981; Mandry et al. 2006; Schroedl 1988; Warren and Asch 2000; Zier et al. 1981). Waterbodies do not benefit mobility in the same way, but proximity to these resources may also have affected site placement decisions in terms of water availability and associated unique habitats. In many areas, there is a tendency for sites to be concentrated around stream confluences, which may represent intersections in the natural transportation corridors. Additionally, confluences often offer nearly-level sunny areas favorable for occupations. Distance to confluence is calculated using ArcGIS from the digitized stream data and the DEM. Both vertical and horizontal distance is incorporated into this calculation (i.e., path distance). Artificial waterbodies, canals, etc. were removed from the dataset used for the prehistoric site studies to the extent possible (Figures 12–14). These artificial water features were identified based upon the GIS attribute data. This could not be resolved given the available data and level of effort that would be necessary to confirm every feature.

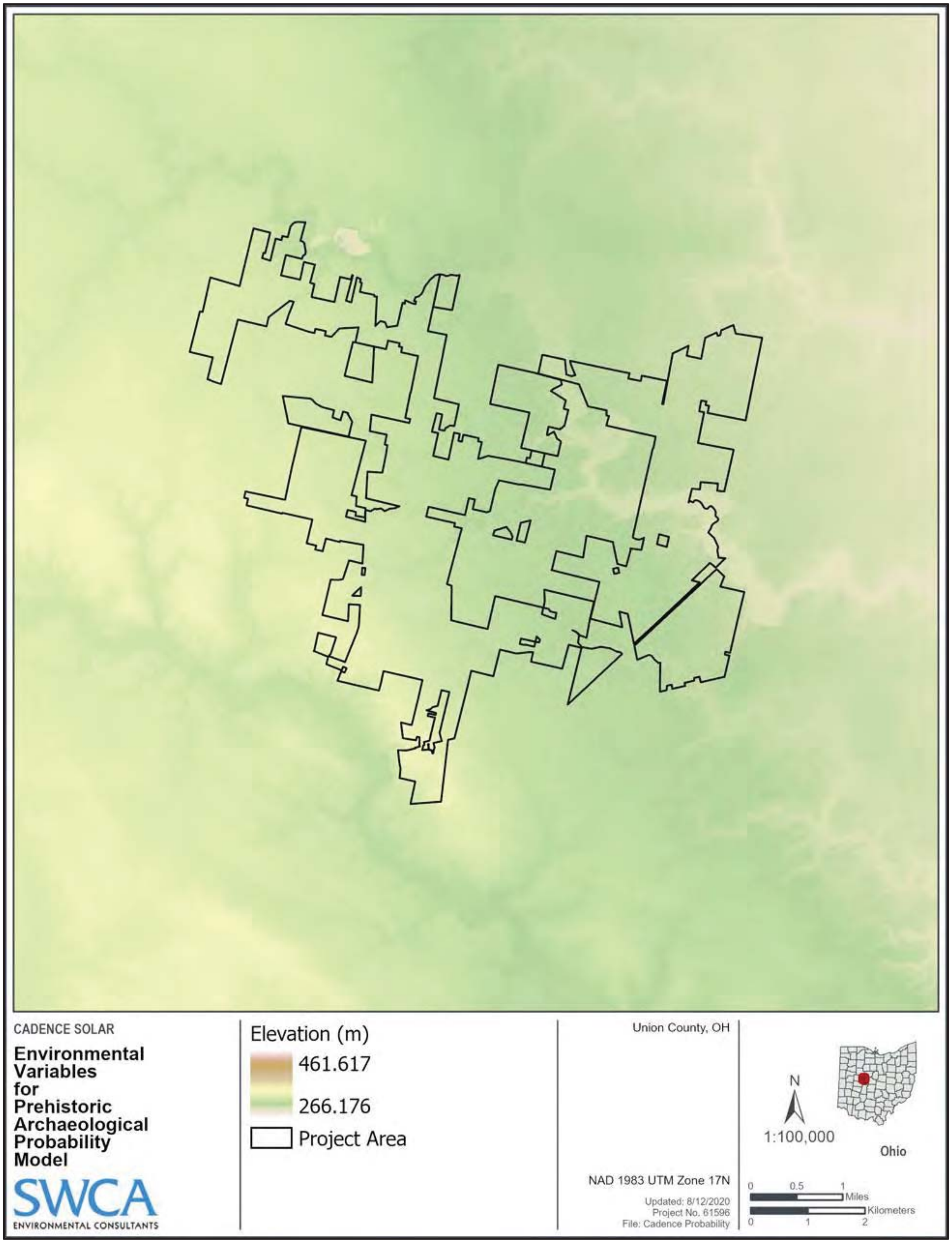

Figure 6. Elevation (meters above sea level).

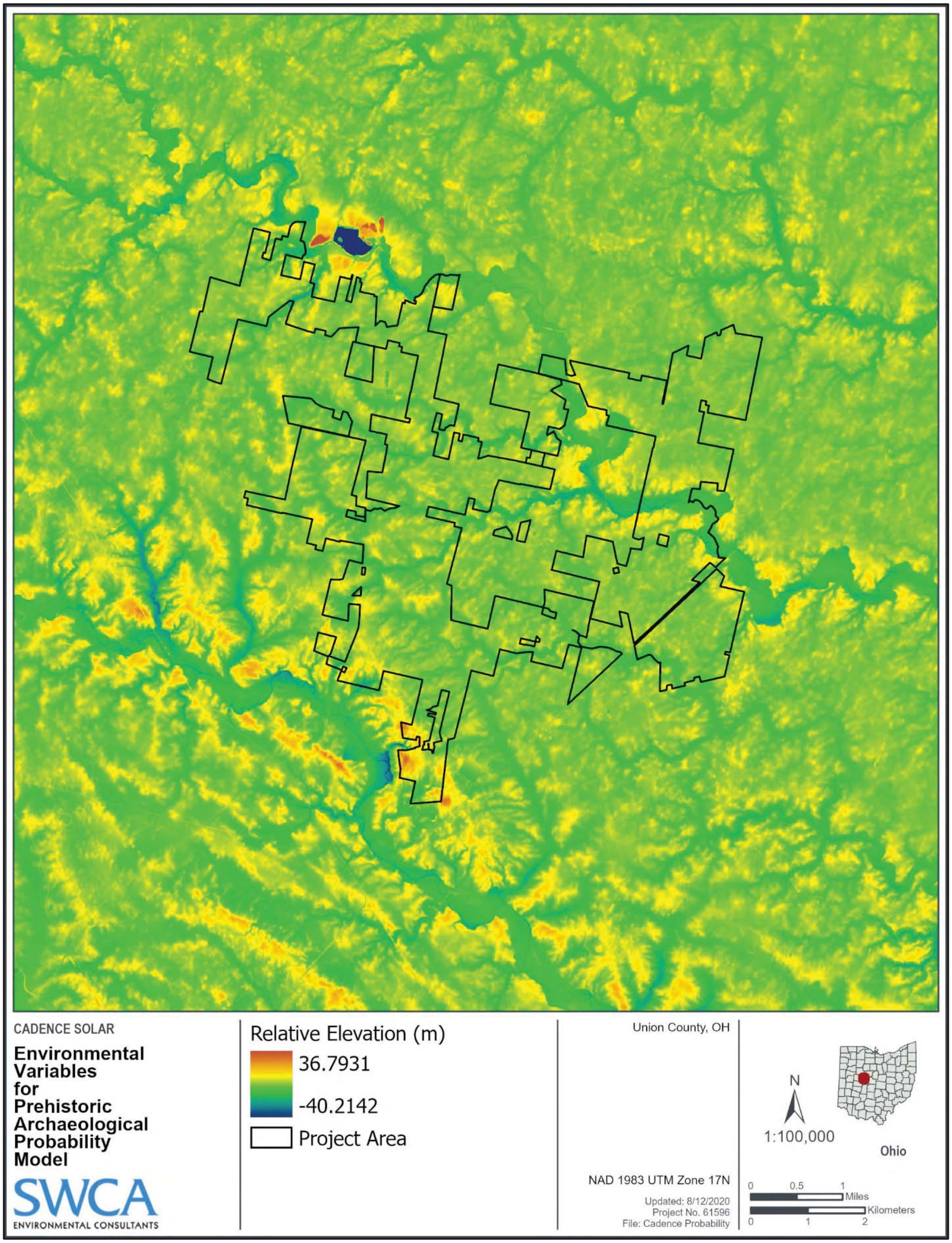

Figure 7. Relative elevation.

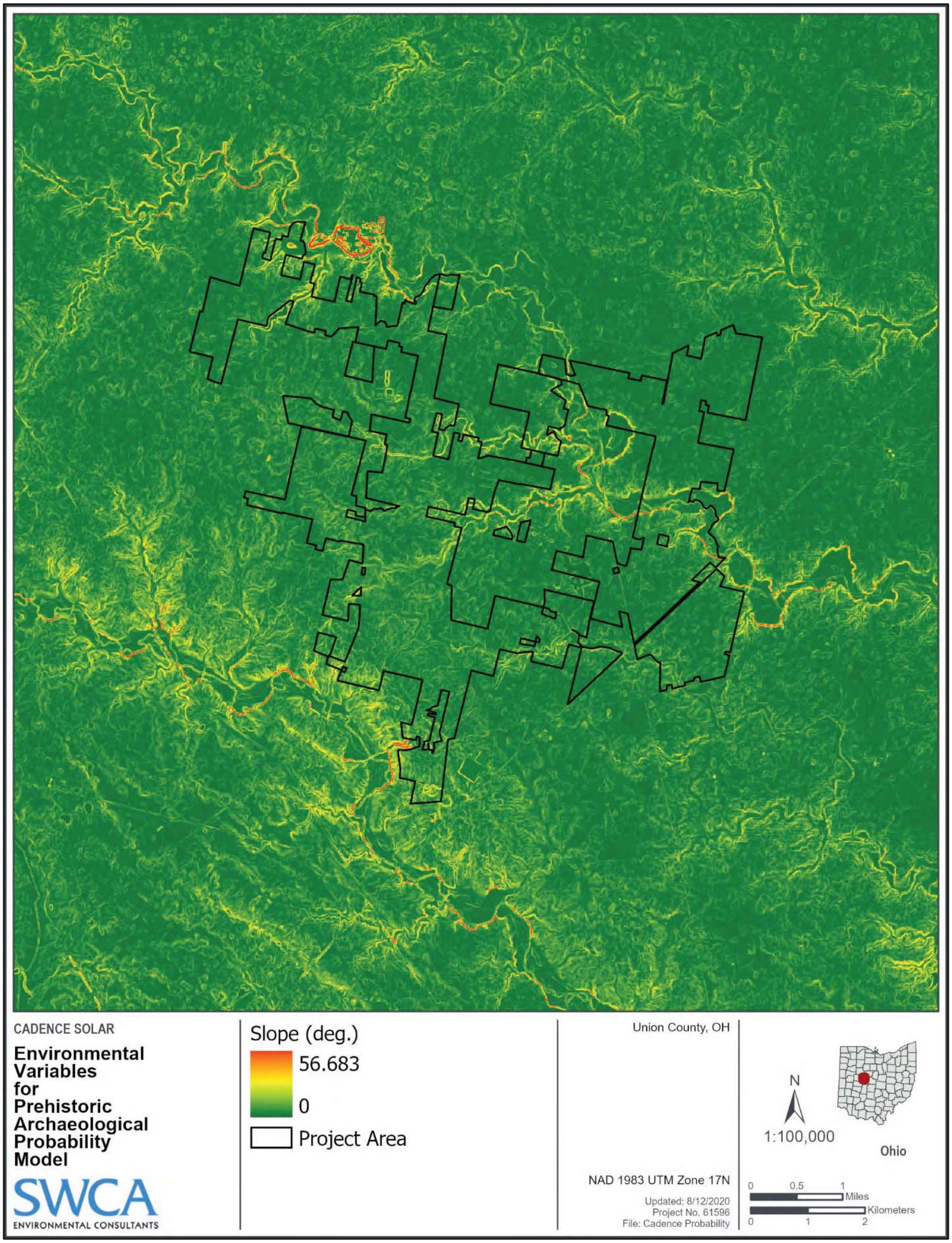

Figure 8. Slope.

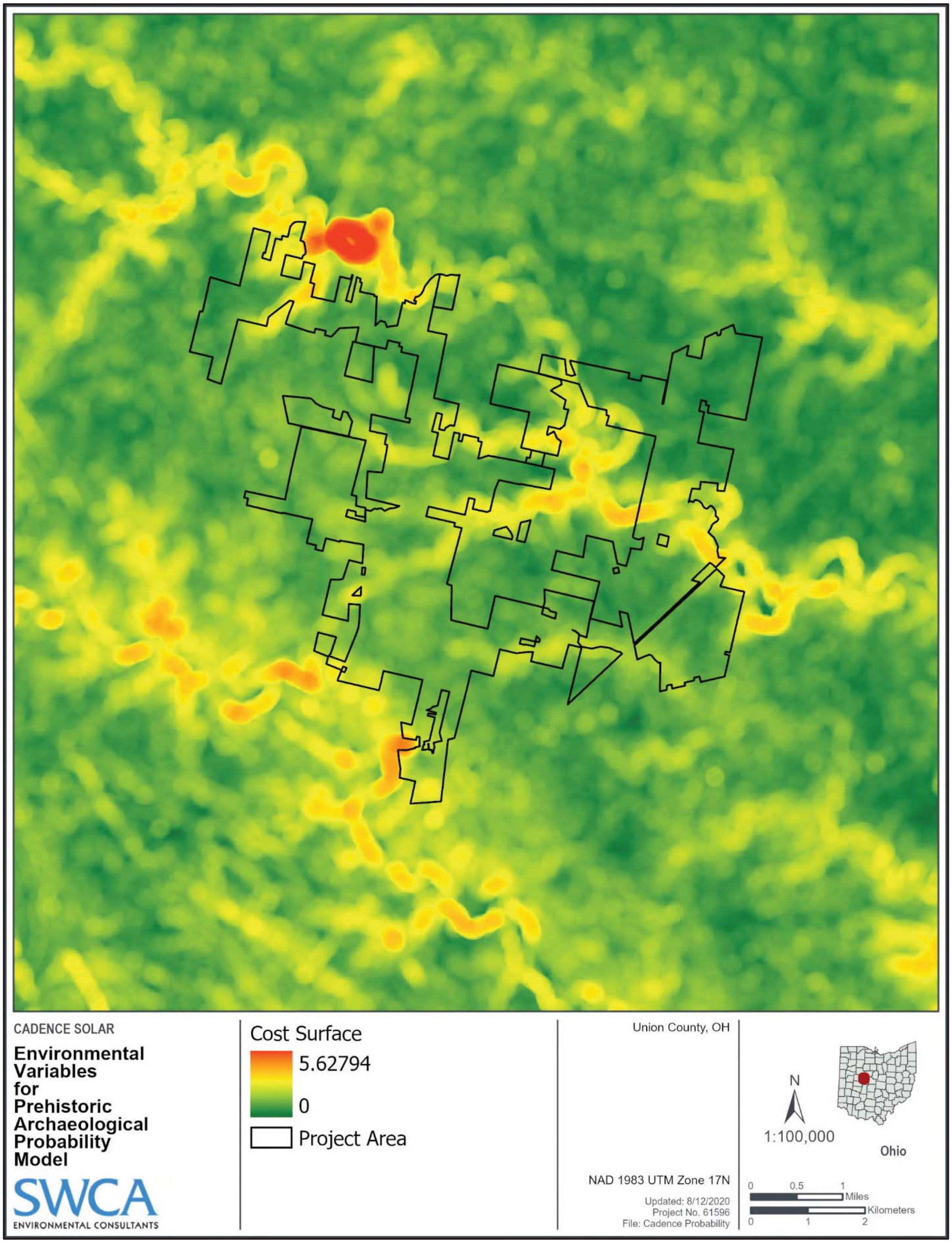

Figure 9. Cost surface (i.e., surface roughness).

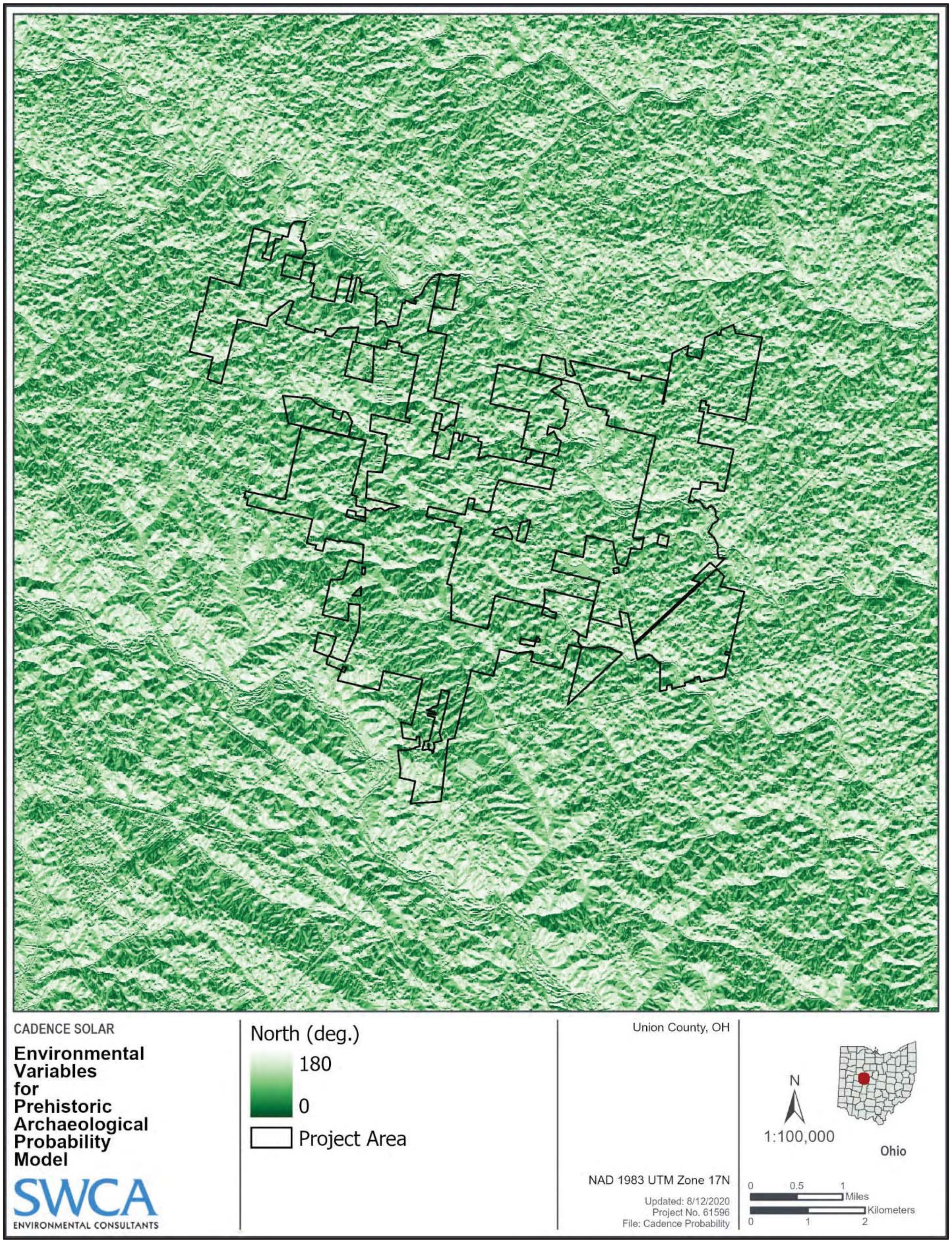

Figure 10. Degrees from north.

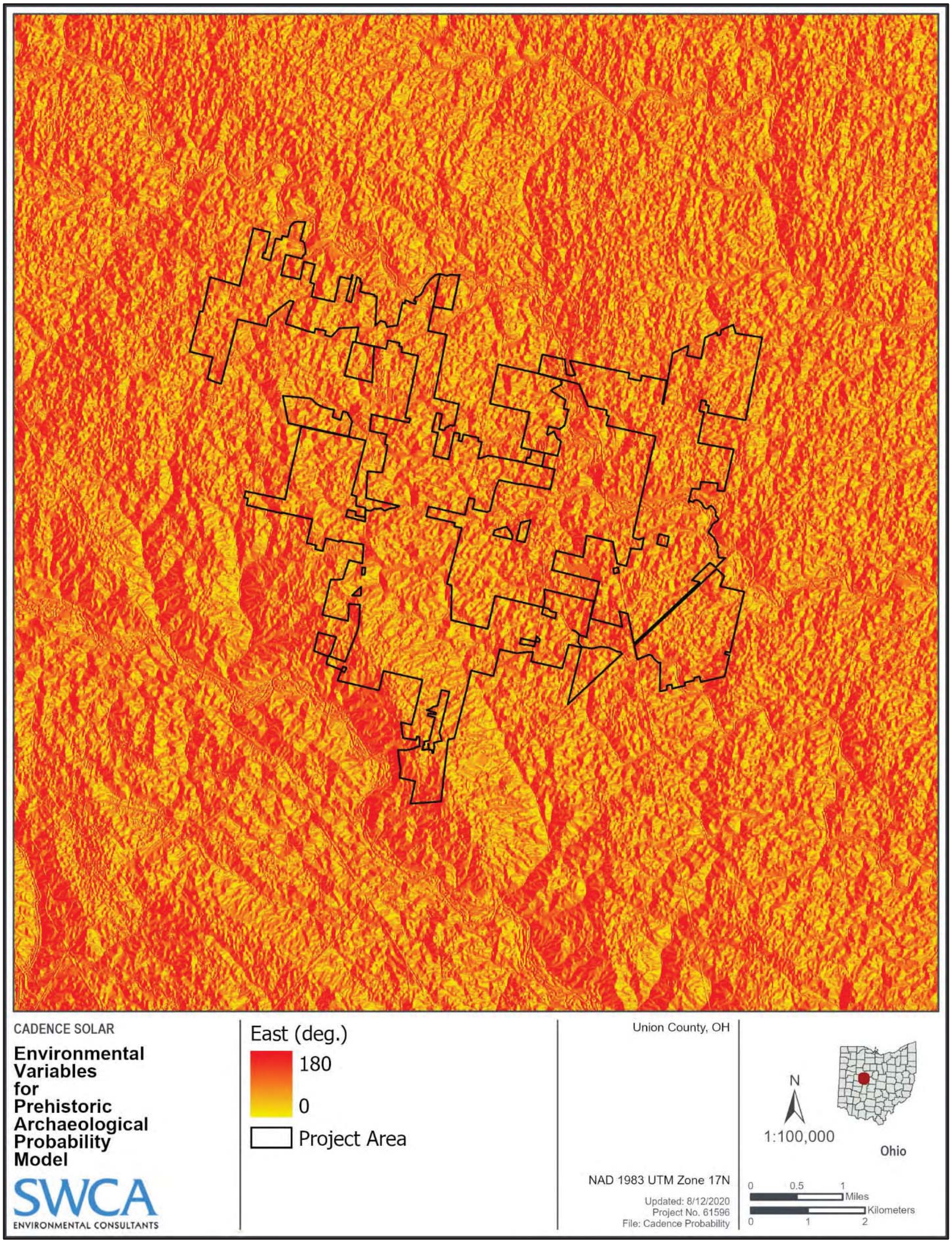

Figure 11. Degrees from east.

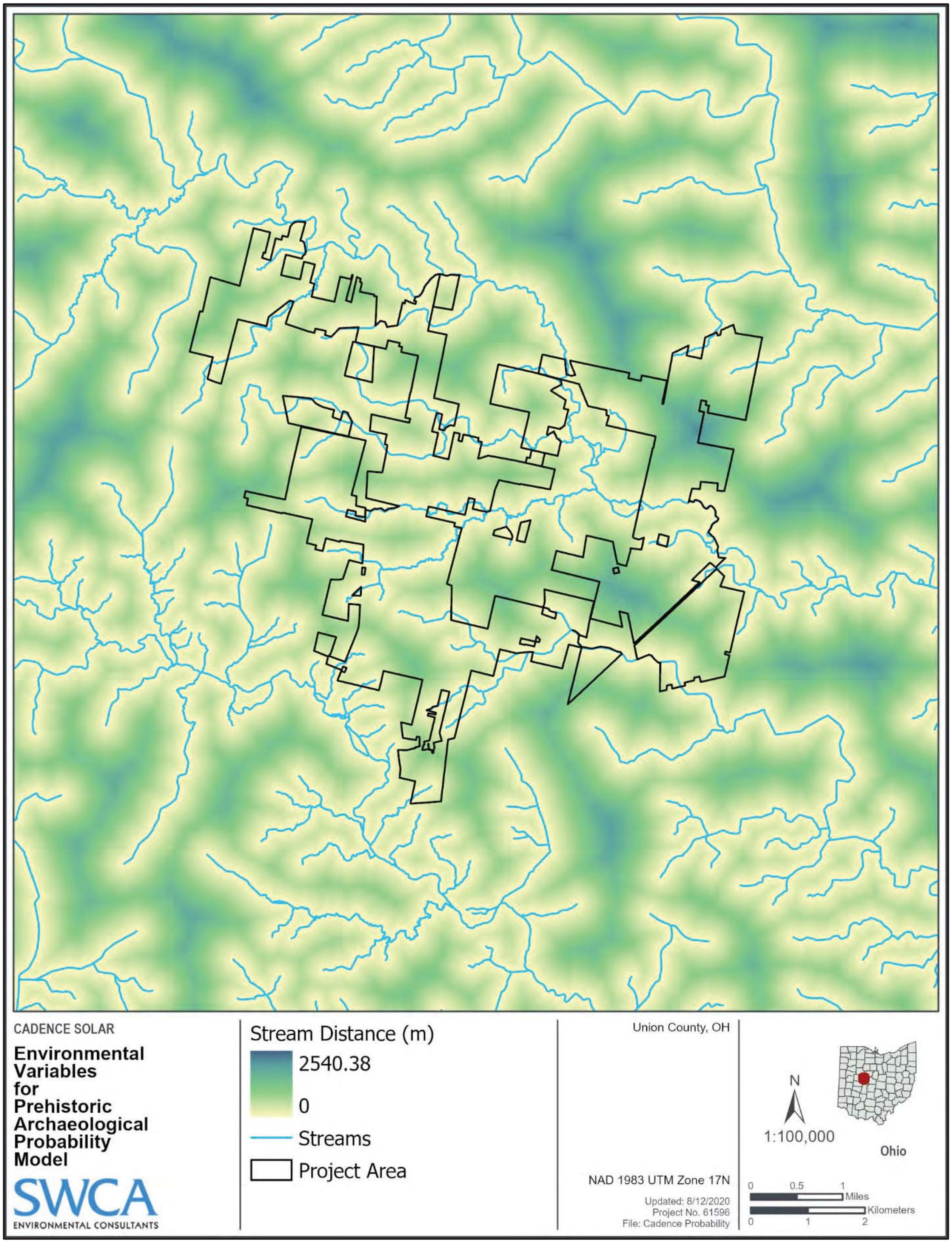

Figure 12. Stream distance.

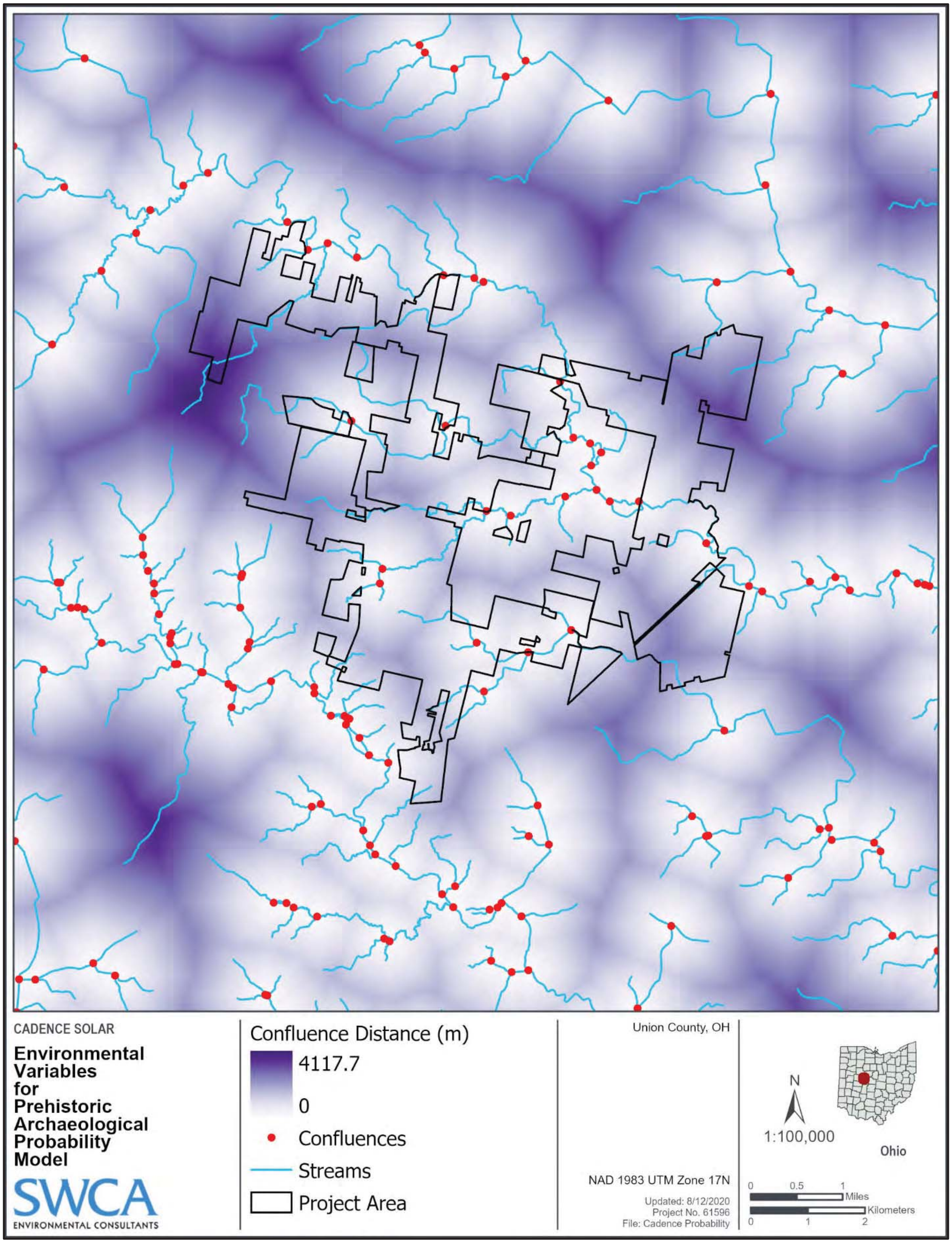

Figure 13. Stream confluence distance.

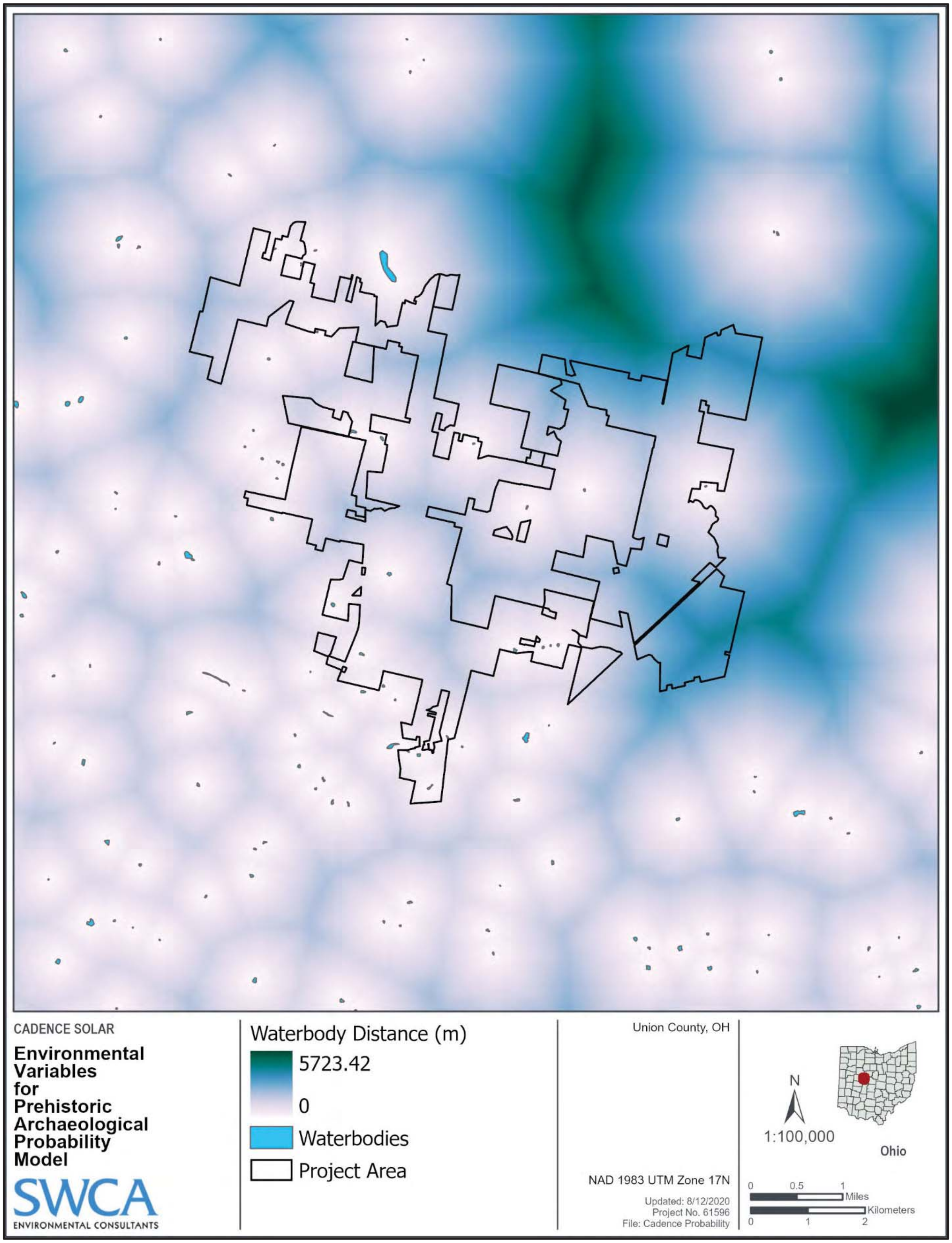

Figure 14. Waterbody distance.

Z-Score Transformation. The raw environmental parameter data were transformed so that they could all share a similar distribution, in terms of order-of-magnitude numerical variation. This can be advantageous when combining multiple parameters for analysis. This problem was mitigated by transforming the original continuous data to z-scores. Z-scores are computed as follows:

$$Z = (\text{cell value} - \text{mean})/\text{standard deviation}$$

Because ArcGIS does not support decimals for certain functions, these z-scores were multiplied by 10,000 and converted to integer datasets (lacking decimal points). Multiplying the values by 10,000 prior to converting them to integer datasets preserves the variability in the original z-score values. The z-score transformed data retain the variability in the original dataset while standardizing the range of values across the diverse set of environmental variables.

Welch's t-tests

The environmental data for site and nonsite locations were compared for statistical differences using Welch's t-tests, which is a Student's t-test that assumes unequal variances (Welch 1947). This is used to test the null hypothesis that two population means are equal (a two-tailed test). For this study, the two populations are prehistoric locations and nonsites. The tests are run on the environmental data associated with each site and nonsite group in JMP 13, using the function named "Student's t: two groups unequal variance."

As an example, a test completed on elevation answers the question, "Do the population sites have a tendency to be located at an elevation significantly higher or lower than the population of nonsites?" If the site and nonsite samples share the same mean elevation, the Welch's t-test would return a nonsignificant probability value, indicating that the null hypothesis could not be rejected. Conversely, a significant probability value would be returned if the means were different. These tests were completed for each site type in each physiographic area, which produced a systematic evaluation of the differences in environmental settings of sites and nonsites. In the case of elevation, prehistoric archaeological locations have mean elevations lower than the associated nonsite locations.

The results of this analysis document that discoverable prehistoric sites tend to be in the following areas:

- Low overall elevation (meters above sea level)
- High relative (i.e., local) elevation
- High slopes
- High surface roughness (i.e., cost surface)
- Low solar radiation
- East- and south-facing slopes
- Near waterbodies, streams, and stream confluences.

The term "discoverable" is deliberate, in that these patterns do not necessarily describe patterns of prehistoric site use of the different areas, but rather describe the conditions in which prehistoric material can be identified on the modern ground surface. The results of these t-tests form the foundation for further analyses that combine the significant environmental variables.

Stepwise Logistic Regression

Stepwise logistic regression is the method used to derive the model equations, and a variety of tests are employed to evaluate their predictive capacity. This technique is one of the most widely used approaches for evaluating the statistical relationship between environmental parameters and site locations (Aldrich and Nelson 1984; Hosmer and Lemeshow 2000; Peduzzi et al. 1980; Stopher and Meyburg 1979). The stepwise procedure systematically screens a wide variety of environmental variables for significant associations to known site presence and absence. An advantage of stepwise logistic regression is that it can incorporate both continuous and categorical data. Continuous data are quantitative and have a natural ordering (e.g., slope), whereas categorical data have no greater-than/less-than rules (e.g., ecological site).

This type of statistical analysis was used for several reasons. In addition to being capable of incorporating a wide variety of data, it is designed to accept a large number of independent variables (i.e., environmental datasets) and exclude those that either are redundant or do not correlate significantly with the dependent variable (i.e., site presence/absence). This is particularly useful for archaeological models, when it is not always clear *a priori* what factors may be affecting site placement. Third, the method applies unique weights to the independent variables in the optimal equation that determines the probability of site presence, and the values in this equation can be replicated in GIS.

The stepwise procedure uses an algorithm with decision rules to determine the statistical importance of the environmental variables in discriminating known site presence from site absence (Hosmer and Lemeshow 2000:125). “Importance” is determined using a statistical program (JMP 13, in this case). This is done automatically in JMP during the stepwise procedure using the Wald or Score (also known as Lagrange multiplier) chi-square tests. The probability values are derived from the chi-square values and associated degrees of freedom. These test the null hypothesis that the regression coefficient for each environmental variable is equal to zero. If the null cannot be rejected, then removing the parameter would not harm the predictive fit of the model. If the null is rejected, then the parameter increases the predictive fit and is therefore retained in the prediction equation. The critical probability value to include a parameter in the model is set by the user. Selecting a very small p-value (e.g., $p = 0.05$) can result in a model that is too strict, excluding what could be important variables. Following Lee and Koval (1997), Hosmer and Lemeshow (2000:118) recommend using a p-value between 0.15 and 0.20. P-values generated during stepwise selection are not p-values in the traditional sense as they relate to hypothesis testing, but instead should be viewed as signifying the relative importance of the variables being compared (Hosmer and Lemeshow 2000:120).

After the fit of each environmental parameter as a single predictor variable is determined through the Wald or Score chi-square tests as described above, the variable producing the best fit is added to the model, and subsequent predictor variables are added or deleted in a cycle until the combination of variables producing the best fit is identified. The final model equation is then generated.

The model equation defines an S-shaped logistic probability curve that ranges from a low to high likelihood of site presence. Possible values range from 0 (low site likelihood) to 1 (high site likelihood):

$$\text{Probability (site)} = 1 / (1 + \exp[(-\text{linear combination})]).$$

The “linear combination” in the above equation includes a constant value (or y-intercept) and multipliers for the selected environmental variables. Environmental variables that significantly correlate with site presence and absence are uniquely weighted in the linear combination to describe the magnitude of their effect on site presence and absence:

$$\text{linear combination} = \text{constant} + \text{value}*\text{variable}(1) + \ldots + \text{value}*\text{variable}(n).$$

The stepwise regression can be run in a forward, backward, or mixed direction in JMP. “Forward” progresses by including parameters that improve model fit if they are significant at the probability set to enter. “Backward” removes parameters with the least effects on the fit if they are not significant at the level specified in the probability to leave. “Mixed,” the method by which this model was developed, alternates forward and backward steps, including the parameters that satisfy the probability to enter and removing the least significant term satisfying the probability to leave. This is done until the remaining items are significant, and it then proceeds in a forward direction. The final nominal regression is then run using the environmental parameters selected in the stepwise procedure, which generates the probability equation.

The logistic regression equation provided by JMP not only describes the relationship of sites, non-sites, and environmental variables, but it also is weighted according to the class ratio pattern, which describes the ratio of non-sites to sites. However, because equal proportions of site and non-site cells were used here, no adjustment to the equation was necessary.

RESULTS

The resulting linear combination equation from the model is as follows. For categorical variables, the model output results in opposite multipliers for both presence and absence of the variable:

> -0.181351807618189 + -0.0000418010649474497 * elevation + 0.0000489962863574061 * relative elevation + -0.0000084457327021734 * solar radiation + 0.0000152187367828434 * degrees from north +-0.0000028524550726974 * degrees from east + -0.0000090890072901054 * stream distance + 0.0000499889981393271 * cost surface

The multipliers reflect the effect of the variable on site prediction. For example, sites are negatively correlated with raw elevation (meters above sea level) but positively correlated with relative elevation, or height above surroundings. To map the output from the stepwise logistic regression, the probability equation is entered into GIS, which applies the weights to each environmental variable and combines them accordingly into the probability equation. This produces a probability map with values ranging from 0 to 1 (Figure 15). These values are then converted to categories of low (0.0 – 0.25), medium (0.25 – 0.5) and high (0.5–1.0) (Figure 16).

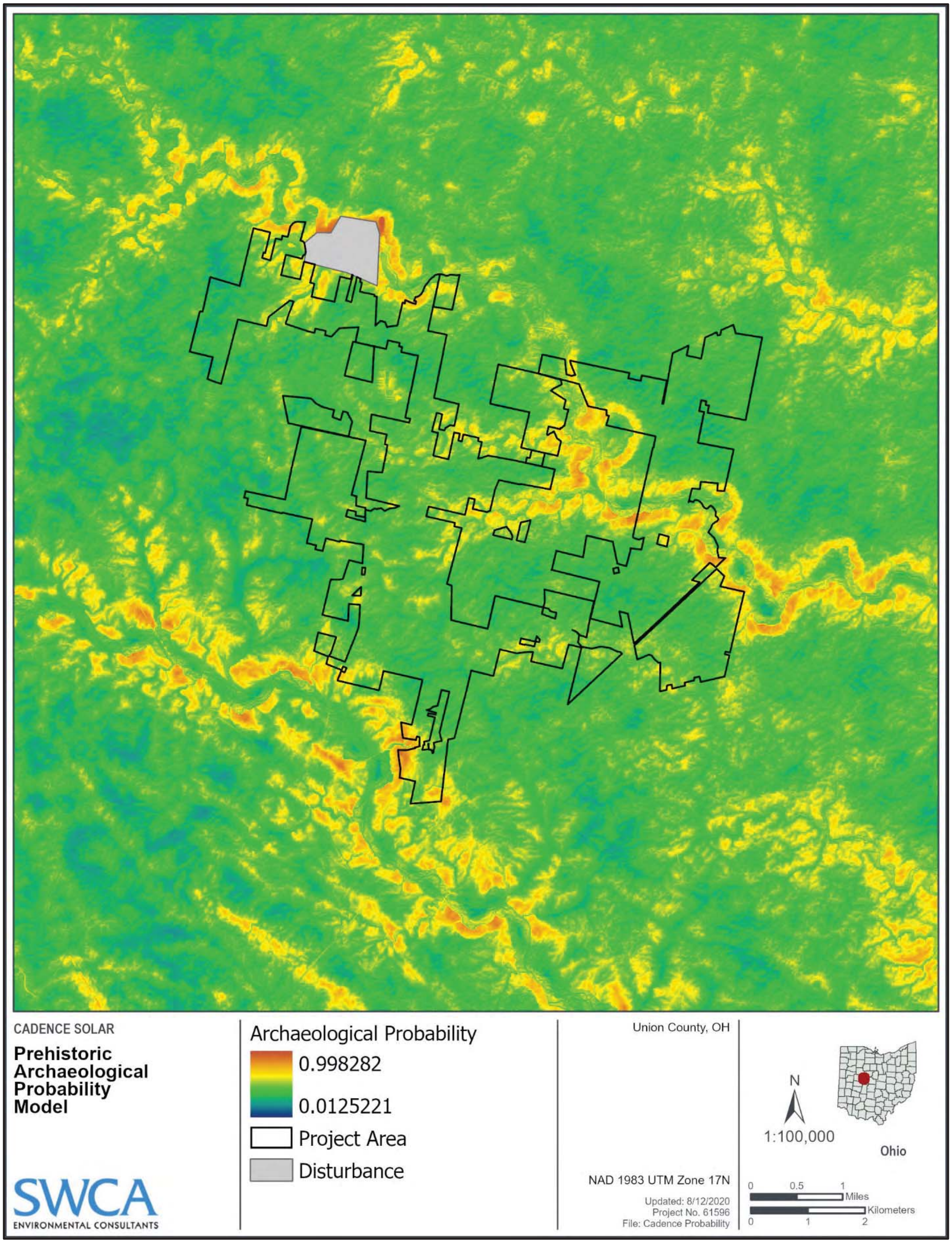

Figure 15. Archaeological probability in the Cadence Solar Project area.

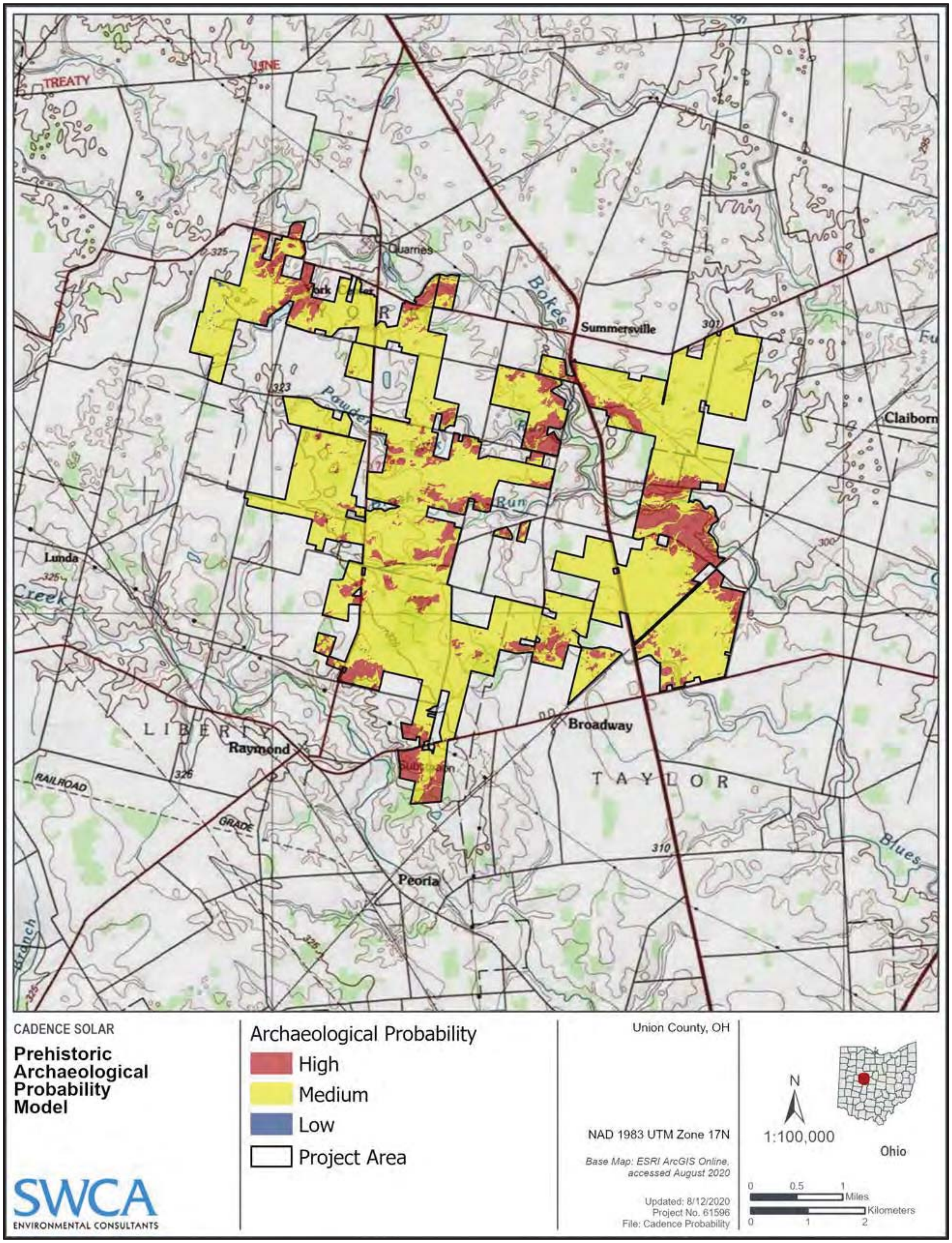

Figure 16. Archaeological probability categories for the Cadence Solar Project.

Model Tests

Model predictive power is tested using a variety of methods. First, the number of correct and incorrect predictions based on the 10 × 10–m grid cells in the set-aside sample is established. Second, the gain statistic is calculated, which assesses the number of known sites (not cells) that were correctly predicted in comparison with the size of the high probability areas. Next, the model precision is estimated, which assesses the overall extent of high probability areas. Lastly, an estimate of model performance over random chance is calculated.

Contingency Tables. The first method compares predicted outcomes with data from the set-aside sample using a contingency table, which is a summary table of true/false positive and true/false negative predictions (Table 2). These tables describe the classic Type I and Type II errors as defined by Neyman and Pearson (1933a, 1933b). Type I errors result when the null hypothesis is rejected when it is actually true. This is comparable to the model predicting a site when there actually is none (i.e., false positive). Type II errors occur when the null hypothesis is accepted when it is false, or in this case, when the model predicts a low probability area when there actually is a site present (i.e., false negative). For management reasons, Altschul (1988:62) refers to these as wasteful and gross errors. False positives are wasteful in that they cause areas to be shown to be high probability when they in fact are not, and false negatives are gross errors in that they fail to identify a site that is actually present. As described by Altschul (1988:62), models should seek to minimize both types of errors, but because they are in fact *models*, there will be wrong predictions.
For management purposes, however, gross errors (false negatives) are more costly than wasteful ones (false positives).

Table 2. Model Test Contingency Table and Percent Correct Predictions

Predicted Most Likely	Reality	
	N(0)	N(1)
0	3,372 (67.6%)	2,115
1	1,615	2,877 (57.6%)

Contingency tables are useful in testing the accuracies of the two independent samples per site type, but these cell comparisons can also be used to test the accuracy of the map produced by the GIS that depicts the probability equation. If the equation is correctly entered in the GIS, then the number of positive and negative cells will match the positive and negative cells depicted in the GIS map. SWCA developed a custom GIS script modeling that produces true positive, false positive, true negative, and false negative shapefiles whose cells can be compared to those produced by the statistical software. These are easily compared in tabular format, and this was done to ensure that the predictive maps were correctly rendered. This step is critical to confirming that the equation generated by the statistical software is being mirrored in the GIS.

Gain. Following Kvamme (1988b:329), the gain statistic gauges model efficiency by comparing the area predicted to contain sites with the actual number of sites known in those areas using the following equation:

Gain = 1 – (% of area predicted to contain sites / % sites within the predicted site area)

A shapefile containing all areas with at least a 50 percent site probability is produced in GIS. Dividing the acreage represented by this shapefile (109,708 acres) by the total project acreage (402,523 acres) and multiplying by 100 yields the nominator in the gain equation (percentage of area predicted to contain sites). High probability acres represent 27.3 percent of the total land surface within the modeled area. This shapefile is then used to identify sites in high probability areas, which for this model totaled 344 of the

514 sites in the sample (66.9 percent). The resulting gain statistic for this model is 0.59. A large percentage of the known archaeological sites are located in high probability areas.

Model Precision. After the gain statistics are calculated, the base probability that a model predicts a site is calculated, which is referred to as p(M) (Kvamme 2006):

$$p(M) = (\text{high probability acreage} / \text{total study acreage})$$

This base probability ranges from 0 (low) to 1 (high) and describes the overall surface covered by high probability areas. These values describe the minimum percentage of sites expected to be located in high probability areas for a model with zero predictive capacity. The model contains 109,708 high probability acres within the entire model area, which covers 402,523 acres. The base probability for this site type is therefore 0.27 (p(M). In other words, if 27 percent of the sites were located in high probability areas, and p(M) = 0.27, the model would have no predictive utility. In contrast, 66.9 percent of these known sites are located in high probability areas, which exceeds the base probability. Building from p(M), Kvamme (2006) defines model precision as follows:

$$p(M') = 1 - p(M)$$

In other words, a model containing very small high probability acreages would be very *precise*. This value is useful in interpreting the overall acreage considered to be high probability. Values approaching 1 indicate a very precise model, while values approaching 0 indicate a lack of precision. In the model, p(M′) = 0.73, which indicates a reasonably precise model.

Improvement over Chance. The last evaluation of the model employs elements of the previous evaluations to establish model improvement over chance:

$$\%\ \text{Model Improvement Over Chance} = (\%\ \text{sites in high probability areas}) - (p(M) \times 100)$$

Using this calculation, it is possible to evaluate model performance in terms of both precision and the number of known sites occurring in the high probability areas. For example, there would be zero improvement over chance if 25 percent of the known sites were located in high probability acreages that covered 25 percent of the modeled area. This value would approach 100 when p(M) is very small and the number of sites in the high probability areas is very large. In the model, 66.9 percent of previously recorded sites are contained within high probability areas, and (p(M) × 100) = 27.3, so the model reflects a 39.7 percent improvement over chance.

Archaeological Sensitivity within the Project Area

For this modeling effort, the potential area of direct effects is the project footprint. Overall, the project area is mapped as predominantly medium to high archaeological probability areas (Table 3). Low probability areas are more common within the overall study area but outside of the actual project footprint.

Table 3. Archaeological Sensitivity within the Project Area

Sensitivity	Project Area Acres	%
High	1,571.6	19
Medium	6,629.6	81
Low	7.6	0
Total	***8,208.8***	***100***

SUMMARY OF PROBABILITY MODELING RESULTS

Model tests indicate that the probability model developed is reasonably accurate at predicting known archaeological site locations. There has been only minimal formal archaeological survey conducted in the vicinity of the project area. However, the modeling suggests that sites are likely present, albeit in low numbers. Sites are most likely to occur near the edges of uplands adjacent to the shallow valleys that have been dissected by stream networks. Areas of medium archaeological sensitivity are located across the flat lands of the majority of the project area. To minimize impacts to potentially significant precontact archaeological sites, SWCA recommends systematic survey within the high probability areas, and reconnaissance of the medium probability areas in exposed areas.

Historic Probability Analysis

To account for historic period archaeological sites, SWCA reviewed the 1870 *Map of Union County Ohio* (Beers 1870), 1877 *Atlas of Union County Ohio* (Harrison Sutton & Hare 1877), 1908 *Map of Union County, Ohio* (Marysville Map Company 1908), and the 1913 Richwood, Ohio, USGS quadrangle to identify historic buildings and structures within and adjacent to the project area. Special attention was given to buildings and/or structures that appear on the cartographic sources listed above and are no longer present on modern aerials. This review identified 34 buildings that were once present within the project area that are no longer present on modern aerials (Figure 17). These potential historic archaeology sites are typically located within agricultural fields or adjacent to modern development.

Methodology

Field Methodology

SWCA proposes to conduct the Phase I survey in accordance with the OHPO *Archaeology Guidelines* (OHPO 1994) and other relevant federal and state guidelines and regulations. As the majority of the project area is located within agricultural fields, SWCA proposes to survey the project area primarily through pedestrian reconnaissance. In the portions of the project area located in agricultural fields, outside of any areas of alluvial development that may be present, where ground surface visibility is greater than 50 percent, archaeologists will traverse survey transects between 5 and 10 meters [m] (16 and 33 feet) apart. If artifacts are identified on the surface, closer interval transects will be surveyed to delineate the boundaries of the artifact scatter or determine whether the artifact is an isolated find. If cultural material is identified through pedestrian reconnaissance, shovel test pits (STPs) will be excavated within the surface extent of artifacts to record the soil profile present at the site and determine if a subsurface component is present. STPs will consist of 0.5 × 0.5–m units, hand-excavated by natural stratigraphic levels. All soil excavated will be screened through ¼-inch mesh. STP excavation will be extended at least 10 cm (4 inches) into culturally sterile subsoil. The location of each shovel test will be recorded with a handheld GPS unit capable of submeter accuracy and recorded on appropriate field forms. The extent of the artifact scatter visible on the surface will be recorded with a handheld GPS and drawn onto a site map. If the density of artifacts is less than 10, each artifact location on the surface will be recorded with a handheld GPS capable of submeter accuracy. If the density of artifacts on the surface is greater than 10, surface find locations will be marked with a pin flag and a GPS point will be taken at the center of a 5 × 5–m (16.4 × 16.4–foot) square. Artifacts will then be collected and bagged according to their spatial provenience or centroid.

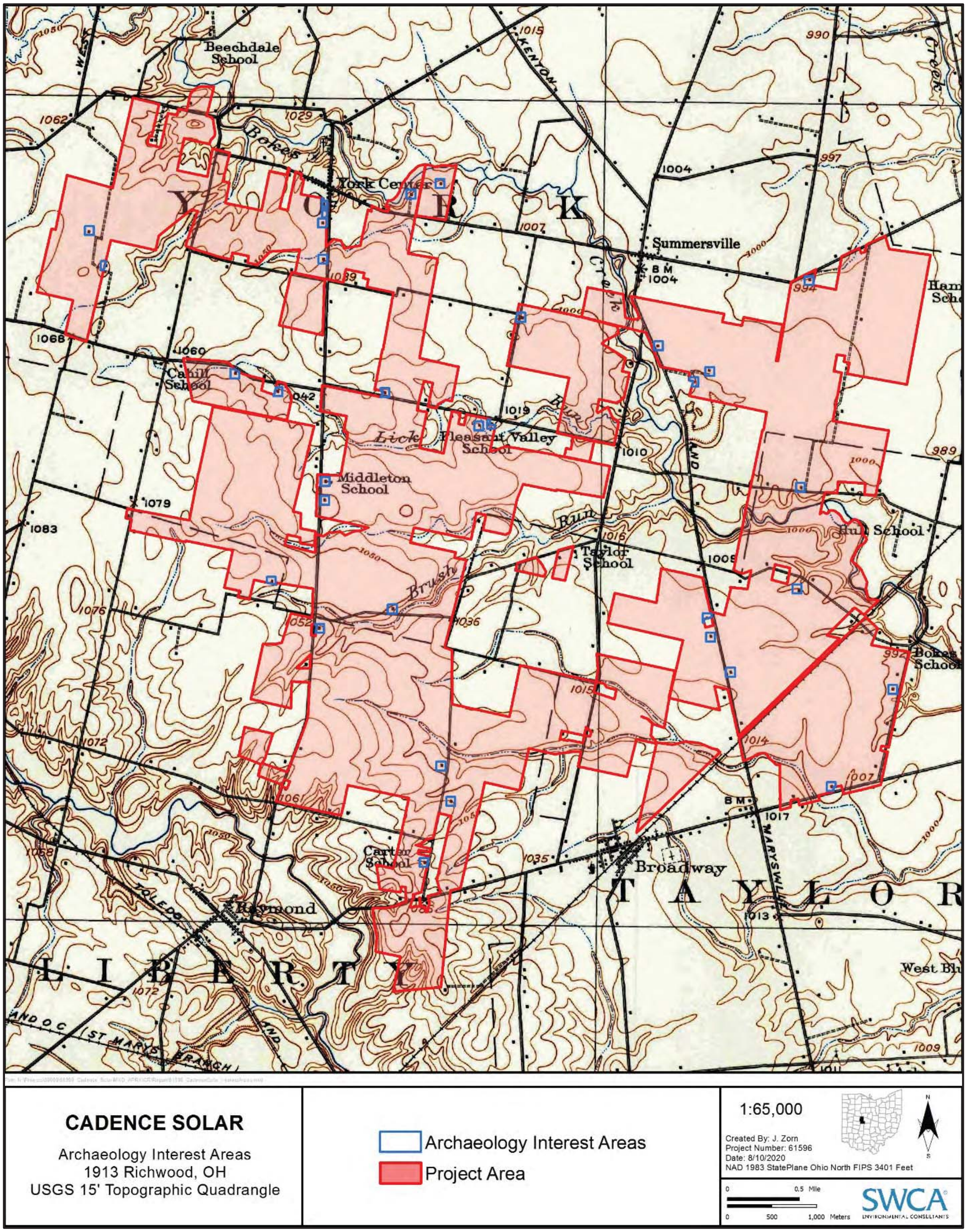

Figure 17. Potential historic period archaeological sites.

In areas where suitable ground surface visibility is not present, SWCA will excavate STPs at 15-m (50-foot) intervals. STPs will be excavated as described above. If artifact(s) are identified in an STP, radial STPs will be excavated at 5-m (16-foot) intervals until a site boundary has been determined by the presence of two negative shovel tests adjacent to each other. Deep testing is not anticipated as the project area is not adjacent to any large streams or rivers or located on any active floodplains. If during field testing alluvial deposition is identified that would require deep testing, further consultation would be conducted with the OHPO prior to initiating deep testing.

When cultural material is recovered through shovel testing or pedestrian reconnaissance, a sequential field site number will be assigned. Sites will be photographed to augment field maps and document any associated landscape feature (e.g., historic tree lines or plantings, spring heads).

SURVEY AREA

Based on the probability modeling outlined above, it is proposed that out of the 8,208-acre (3,226-ha) project area, survey should focus on the 1,572-acre (636-ha) area that has a high potential of containing precontact archaeological resources, and that a 10 percent randomly selected sample of the moderate/medium probability area (663 acres [268 ha]) should be surveyed as well. To account for historic period archaeological sites, it is proposed that the survey focus on the 34 locations identified on the 1913 Richwood, Ohio, USGS quadrangle (see Figure 17) as containing buildings within the project area but that, according to modern aerials, are no longer existent. In these areas, it is proposed that surveys investigate, at minimum, a 100 × 100–m (328 × 328–foot) square and expand as necessary, within the boundaries of the APE, to record any historic artifact scatters present.

It is proposed that of the 8,208-acre (3,226-ha) project area, 2,319 acres (939 ha) should be investigated for archaeological sites.

Laboratory Methods

Any cultural material and associated documents will be transported to SWCA's Pittsburgh, Pennsylvania, office for processing and analysis. Recovered cultural material will be recorded in a standard bag log prior to cleaning and cataloging. Prehistoric lithic materials will be washed and dried. Historic artifacts will be cleaned following a similar procedure, with the exception of metal artifacts, which will be dry-brushed to prevent corrosion. Once the artifacts are cleaned and dried, they will be placed into clean plastic bags and recorded in a Master Artifact Catalog.

PRECONTACT ARTIFACTS

After the cleaning and initial cataloging of precontact cultural material, all artifacts will be separated into analytical class (e.g., bone, pottery, lithic). The lithic assemblage from the site will be further separated based on material class (e.g., hafted biface, biface, debitage, shatter) and raw material. Debitage will be classified to better understand the reduction sequence taking place at the site and will be conducted based on the percentage of cortex present. Referred to as the Triple Cortex Approach (Andrefsky 1998), this method was designed to analyze the amount of cortex on the dorsal side of the flake in order to place the individual artifact in the reduction sequence. Primary flakes, considered the earliest stage of the lithic reduction sequence, have cortex covering 50 to 100 percent of the dorsal side of the flake, secondary flakes have cortex present on less than 50 percent of the dorsal side of the flake, and tertiary flakes have no cortex present. Hafted bifaces will be analyzed and placed into existing typologies, where feasible. Overall lithic raw material will be weighed to better categorize the usage of the material. To assist with the identification of lithic material during the analysis phase, regional guides (such as DeRegnaucourt and Georglady 1998) will be used to identify the chert type.

Prehistoric pottery will be sorted based on temper and surface treatment. After the initial sort, sherds will be separated into groups based on the portion of the parent vessel represented. Possible categories include rim sherds, neck sherds, body sherds, base sherds, and sherdlets. Sherdlets consist of sherds that are less than 2 cm^2 (0.3 square inch) in surface area. Sherdlets will be counted and removed from further analysis unless identifiable decorative characteristics are visible. After the removal of sherdlets, the remaining pottery will be cataloged based on defining attributes and recorded in the site-specific catalog. Where possible, pottery will be placed into existing typologies.

HISTORIC ARTIFACTS

Historic artifact analysis will focus on ascertaining the function of the site, determining the research potential, and helping to determine when the site was occupied. To accomplish these goals, the assemblage will be divided into functional groups (i.e., Domestic, Structural, Personal, Activities, or Indeterminate). Stanley South (1977) developed the functional group model to help characterize and compare artifact assemblages from sites dating from the Colonial period. To better characterize the type of historic artifact assemblages traditionally encountered in Union County, the modifications to South's methodology proposed by the Society for Historical Archaeology and the Anthropological Studies Center at Sonoma State University will be incorporated. The proposed modifications to South's functional groups are designed to better describe artifact assemblages dating from the nineteenth to the early twentieth century (Gibson and Praetzellis 2008).

As the classification scheme utilized relates back to the questions being asked of the assemblage, further detail regarding the artifacts typically encountered in each functional group is provided below to form a context for the results.

The Domestic Functional Group contains artifacts related to the consumption, preparation, or storage of food, as well as artifacts related to the maintenance of clothing, decorative items, and artifacts related to heating and lighting. Common artifacts categorized within this functional group include ceramics, glass from lamps, drinking glasses, pressed glass bowls and cups, faunal remains, and container glass. Many artifacts common on historic archaeological sites related to households are considered to be part of the Domestic Functional Group.

The Structural Functional Group consists of artifacts related to buildings, the construction of buildings, and structural hardware. Common artifacts within the Structural Functional Group consist of window glass, bricks, slate roofing, mortar, nails, fasteners, and brackets. While these artifacts can make up large portions of artifact assemblages, the analytical value of the Structural Functional Group for sites that date to the recent past is limited due to the low number of temporal markers typically found on the cultural material.

The Personal Functional Group consists of artifacts related to individuals. Artifacts traditionally classified in the Personal Functional Group consist of accoutrements, clothing, grooming/health, toys, and artifacts related to the consumption of alcohol or tobacco. While typically found in smaller quantities than the Domestic and Structural Functional Groups, the Personal Functional Group can provide insight into the personal preferences and choices made by people in the past.

Artifacts from the Activities Functional Group are associated with commerce, firearms, tools, and transportation. Typical artifacts recovered from historic archaeology sites that are classified as coming from the Activities Functional Group consist of coins, shotgun shell casings, horseshoes, and metal tools (e.g., wrenches, screw drivers, pocketknives). Artifacts from this group can provide researchers with information regarding the specific function of activity areas within the larger site.

The final functional group is Indefinite Use. This functional group is utilized to classify artifacts that are either too fragmentary or so far out of context that another functional group cannot be assigned. Typical artifacts that fall within this functional group include colorless glass shards too small to identify function or form, heavily corroded metal artifacts, or artifacts that have been thermally altered to a point where form and function are unknown.

After the initial functional analysis, artifacts will be subdivided based on material type (e.g., ceramic, glass, metal, faunal). Material type groups will then be further divided into material classes that fit into existing established historic artifact typologies (see Adams 2002, 2003; Weiland 2009; Young 1994). These typologies will then be used to provide a date range based on known temporal chronologies.

Ceramics are common on historic sites and have relatively narrow temporal ranges. After being assigned a functional group, ceramics will be separated into coarse and refined earthenware. These two categories well be further divided into specific ware type, such as redware, stoneware, porcelain, and ironstone. Temporal markers, such as transfer print patterns and/or maker's marks, will be recorded and researched using established temporal chronologies (see Gibson 2011; Miller 1980, 1991; Miller et al. 2000).

In addition to ceramics, glass artifacts are common on historic sites and are often found in abundance on sites dating to the late nineteenth and early twentieth centuries, as machine-manufactured glass became prevalent. Similar to ceramics, glass artifacts, after being assigned a functional group, will be divided based on form. Typically, glass artifacts will be divided into bottle glass, serving or eating dishes, window glass, or indefinite. Manufacturing marks, such as mold seams, pontil scars, and other indicators, will be noted, as will be bottle marks, if present. If possible, bottle marks will be typed to determine temporal periods of production. Window glass, if present, will be used to provide an approximation of occupation of date based on an average thickness encountered across the site (see Weiland 2009 for a full explanation of the methodology and regression charts). Condition of the glass shards will also recorded, such as solarization (i.e., glass that takes on a purple hue based on the silica's exposure to sunlight), thermal melting, and other such conditions.

Reporting

Following the completion of the fieldwork and analysis phases of the project, a full Phase I report will be prepared in accordance with the OHPO's guidelines on reporting (OHPO 1994). The report will contain a description of the background research conducted for the project, outline the methodology used, and provide the results of the fieldwork. Any archaeological sites identified will be described in detail, including discussions of the artifacts recovered, how the site fits into the regional chronology and/or the documentary record for the area, and a recommendation if further work is necessary. The report and associated mapping will be submitted to the OHPO with associated spatial data. As the project will not be developed all at once, addendum reports will be submitted to the OHPO covering each development phase. The reports will utilize the same format, follow the same methodology, and abide by the sampling strategy proposed in this document.

If archaeological resources are encountered during the course of the survey of the project area, SWCA will complete an Ohio Archaeological Inventory (OAI) form through the I-Form Application Database for each archaeological resource identified. Prior to the completion of an OAI form, SWCA will contact the Archaeology Survey Manager at the OHPO for the assignment of state site numbers for each newly identified archaeological resource. If existing archaeological resources are relocated during SWCA's survey, then a "revised" OAI form will be completed for each relocated archaeological resource. OAI forms are used to record archaeological resources, as defined in 36 CFR 296.3(a), with the exception that the 100-year minimal age criterion is waived. Accordingly, these resources include any material remains of past human life or activities that are of archaeological interest. If any of the resources identified are considered an "Isolated Find", a single artifact found in an isolated context, an OAI Isolated Find Site

Form for each such find will be completed. After completion, OAI forms will be submitted to the Archaeology Survey Manager at the OHPO through the I-Form Application Database for review. All AOI forms will be completed in accordance with the OHPO's *Archaeological Guidelines* (OHPO 1994).

Curation

If any material remains (physical evidence of prehistoric or historic human habitation, occupation, use, or activity) are recovered during the survey of the project area, the material remains can either be submitted to the State of Ohio (Ohio History Connection) or remain as the landowner's property. Cadence Solar is only leasing the property from private landowners and will not own any portion of the project area.

The Ohio History Connection accepts archaeological collections that have educational and/or research potential for a fee based on the material remains recovered. If the landowner chooses to gift the material remains recovered on their property to the Ohio History Connection, the landowner will be asked to sign an *Agreement for Gifting Artifacts to the Ohio History Connection*. The landowner will sign the agreement and acknowledge that the material remains found on their property will have their ownership transferred to the Ohio History Connection to be used or disposed of at their discretion. Additionally, SWCA will notify the Ohio History Connection with an "Intent to Curate" letter to initiate the process of donating material remains to the Ohio History Connection after all the *Agreement for Gifting Artifacts to the Ohio History Connection* forms are signed by the appropriate landowner. An Archaeology Collections Referral Form/Donor and the requisite documentation will be submitted to the Ohio History Connection's Collections Management Team (CMT). If approved by the CMT, the collections are expected to be delivered within 6 months of the date they were accepted by the CMT. Upon receipt of the collection and related documentation, the Registrar of Collections will issue a Deed of Gift form to be signed by the donor. The collection and all associated documentation will then become the property of the Ohio History Connection and will be handled according to the Ohio History Connection's Collection Management Policy and related procedures. All collections will be handled in accordance with the Ohio History Connection's collection guidelines.

HISTORIC ARCHITECTURE SURVEY

To account for the potential visual effect of the project, a historic architecture reconnaissance survey is proposed to determine if any NRHP-eligible buildings are present within the project area or adjacent to it. The project will not result in the demolition or direct impact of any building or structure. To establish the indirect APE, the nature of the proposed construction, as well as the topography and vegetation of the project area and the adjacent area, was accounted for. In general, the project area is relatively flat to rolling topography with minor elevation change. The largest visual impact will be the PV panels, which will have a maximum height of 2.4 m (8 feet). As such, the visual impact of the project is expected to be confined to the project area and the parcels located directly adjacent to the project area.

To identify survey targets, a review of historic cartographic sources prior to 1970 was undertaken and cross-referenced with the Union County tax parcel GIS. Based on this review, 114 properties were identified within or adjacent to the project area that are 50 years or older (Appendix B). For many, the initial date of construction could not be determined by cartographic sources and was listed as "Old" within the Union County tax parcel GIS.

In accordance with the OHPO *Guidelines for Conducting History/Architecture Surveys in Ohio* (OHPO 2014), it is proposed that each of the 114 properties be photographed and documented from the project area or public right-of-way. This will include documenting each historic resource at oblique angles, if possible, from an adjacent public right-of-way or the project area. All character-defining features, exterior materials, and landscape conditions will be noted and when possible, data pertaining to the location, address, property type, form or plan, stylistic influence, construction date, and initial assessments of NRHP eligibility will be noted in the field. Once the field documentation is complete, background research into each of the properties' histories will be undertaken to better understand the historic context and help determine if the properties were significant in the past. This research and the field documentation will be assembled to complete Ohio Historic Inventory (OHI) forms through the I-Form Application Database for each architectural resource identified. After completion, OHI forms will be submitted through the I-Form Application Database to the State Historic Preservation Office Inventory (SHPOI) and Registration staff. Due to the number of forms expected to be submitted, the SHPOI and Registration staff will be notified upon the completion of the first five OHI forms. The notification to the SHPOI and Registration staff will be done to facilitate a review of submitted forms for correctness, and to alleviate any issues they may have with OHI form submittals before the remaining OHI forms are completed. All OHI forms will be completed in accordance with the OHPO's *Guidelines for Conducting History/Architecture Surveys in Ohio* (OHPO 2014).

Additionally, an overall report will be prepared that provides an overview of the historic architecture survey that was completed for the project, provides the objectives of the survey, and summarizes the methodology used to document the properties and background research conducted to understand each property's historic context. The report will also outline the results of the field investigation, as well as recommendations regarding the NRHP eligibility of the properties documented. Similar to the archaeology report, each phase of development will be accompanied by an addendum report after the initial submittal. Addendum reports will utilize the same format, follow the same methodology, and abide by the documentation and reporting methods proposed in this document.

SUMMARY AND CONCLUSIONS

Cadence Solar is proposing to construct a solar facility in Union County, Ohio of up to 400 megawatts. As part of the OPSB application for the facility, analysis of the project's effect on cultural resources is required. To determine if the project will have an effect on archaeological sites, the methodology outlined above proposes to investigate the portions of the APE with the highest likelihood of containing intact archaeological resources. If archaeological sites are identified, the proposed methodology is designed to determine if further work is necessary to determine if the site is eligible for listing in the NRHP or if further work is needed, and then convey that information to the OHPO.

To account for the project's visual effect, it is proposed that the 114 resources that are 50 years or older within or adjacent to the project area be documented, and that the NRHP status of each resource be determined.

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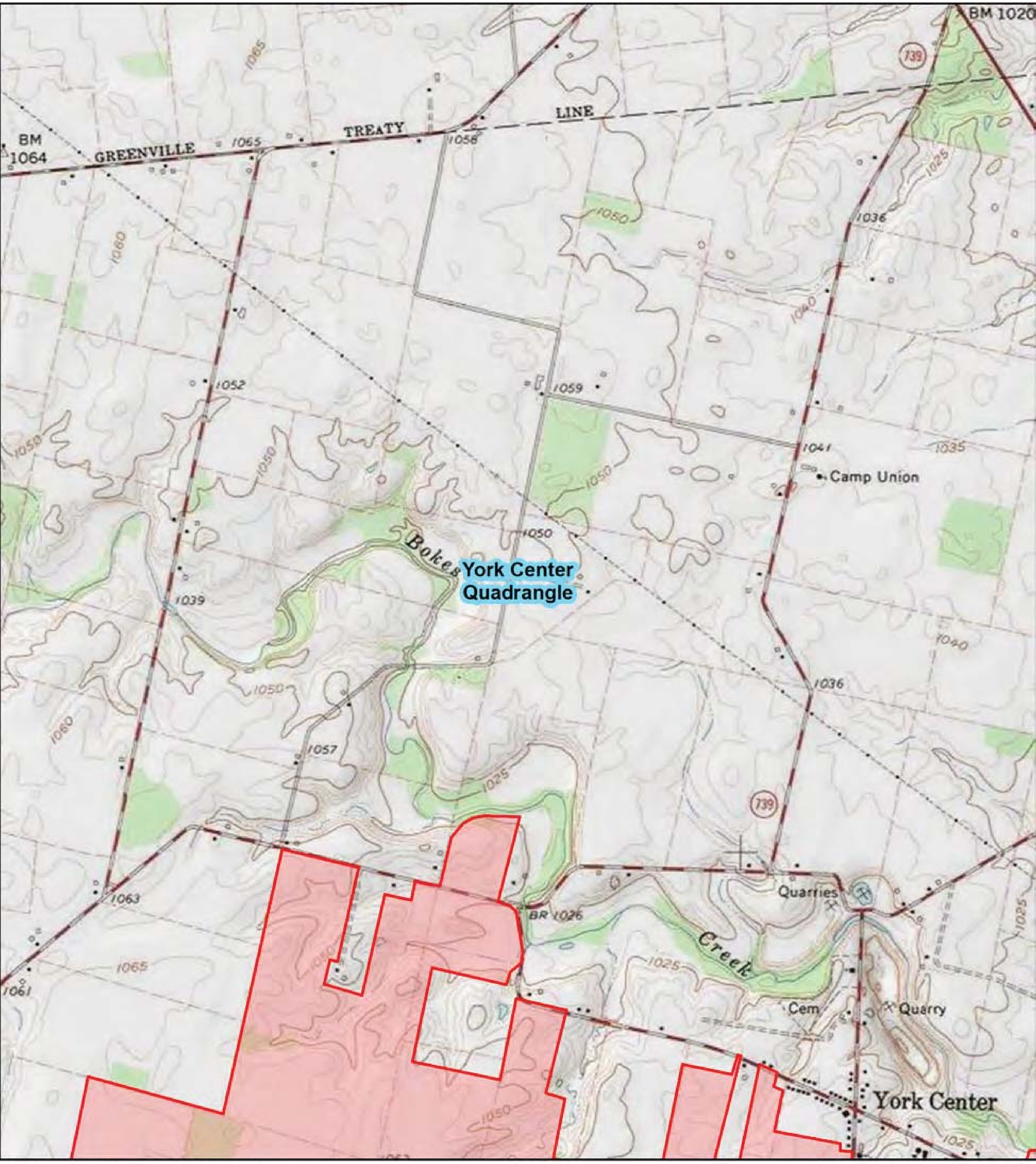
Appendix A

USGS Mapping

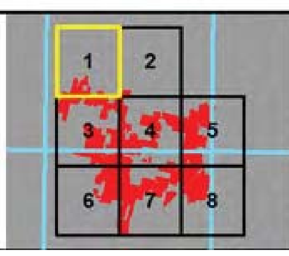


CADENCE SOLAR

USGS Topographic Quadrangles:
1963 York Center, OH
1963 Richwood, OH
1975 Peoria, OH
Page 1 of 8

Project

7.5-Minute Quadrangle Boundary



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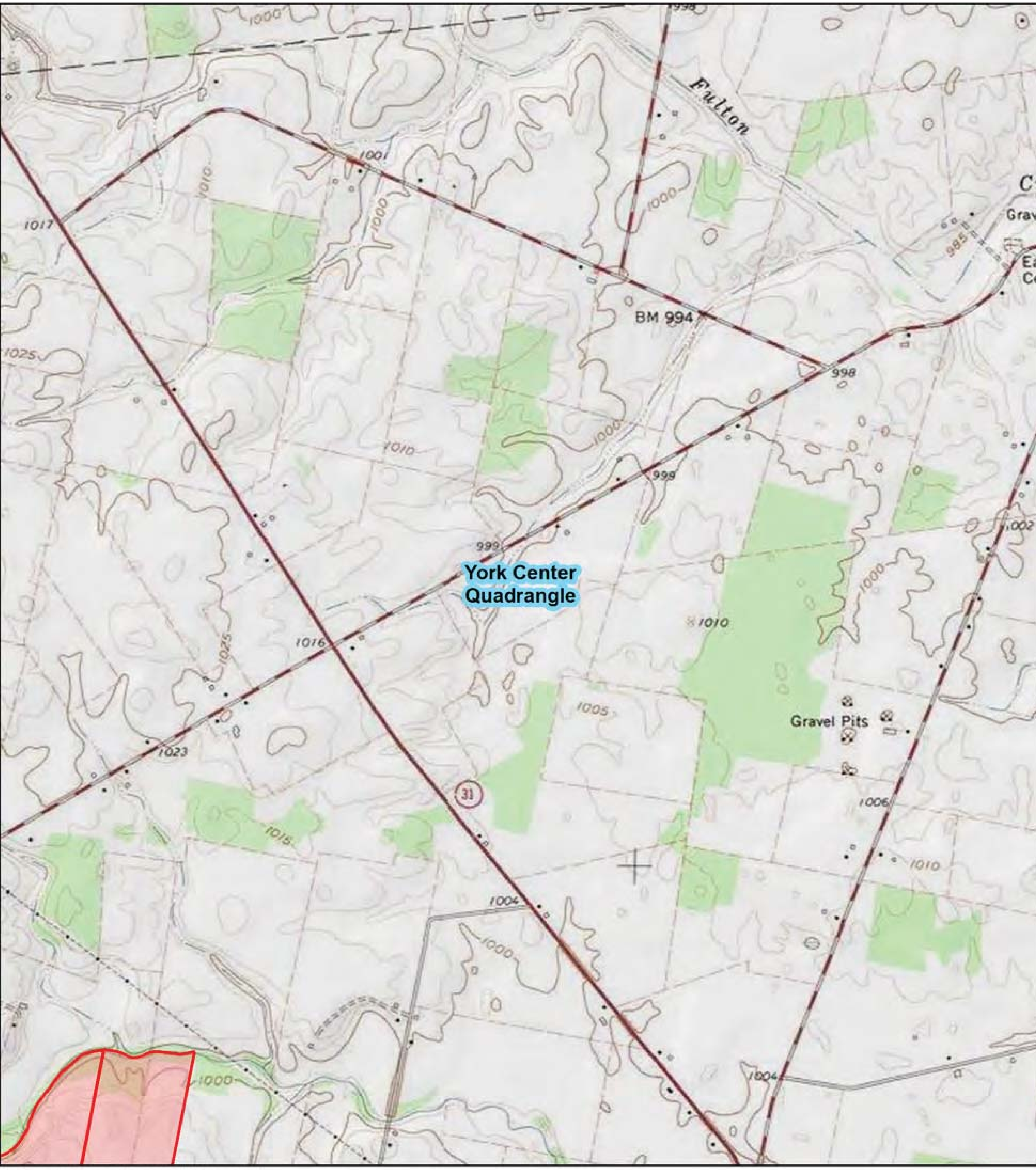
SWCA ENVIRONMENTAL CONSULTANTS



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Page 2 of 8

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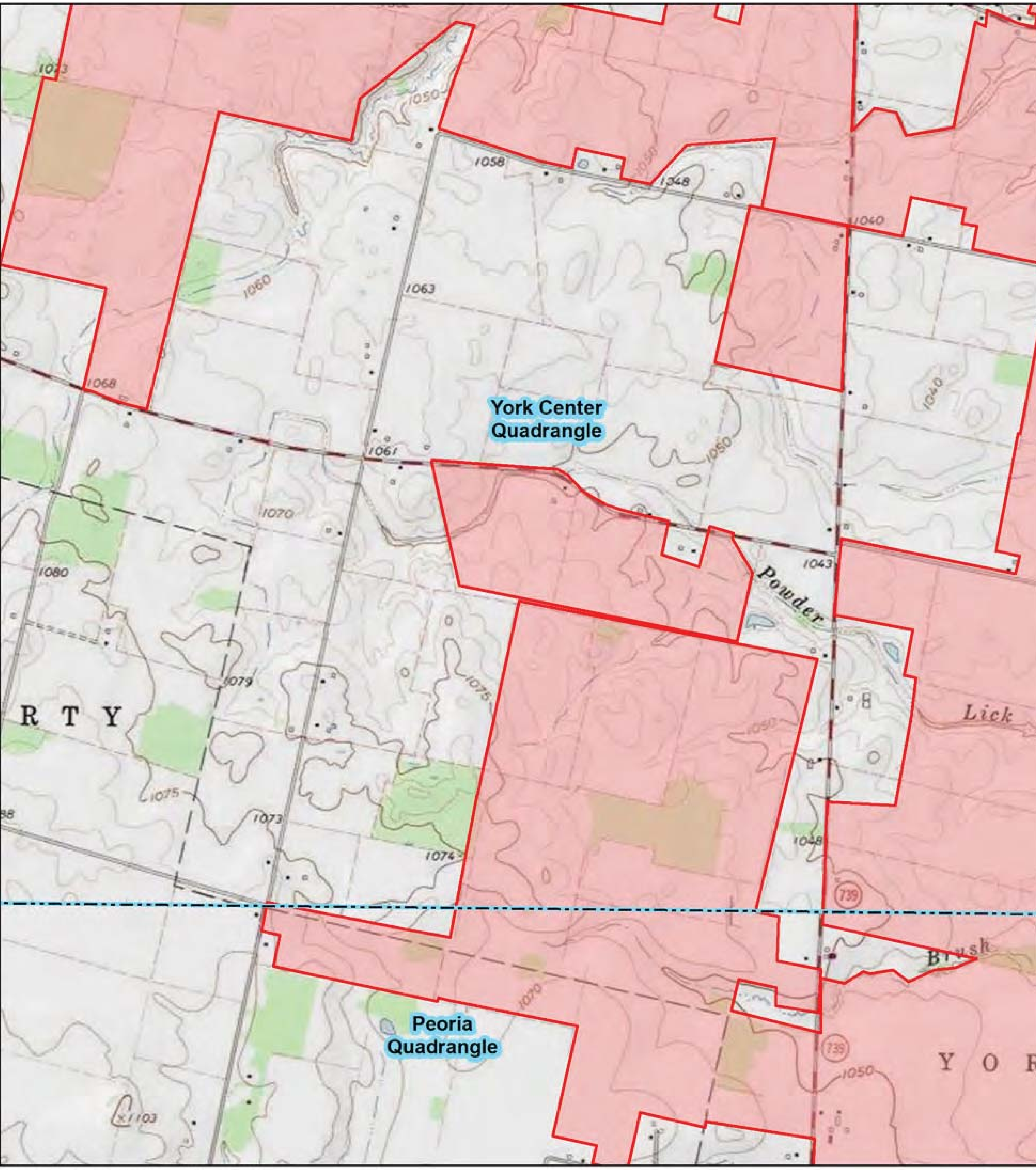

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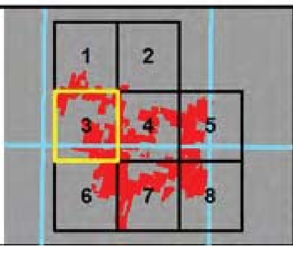

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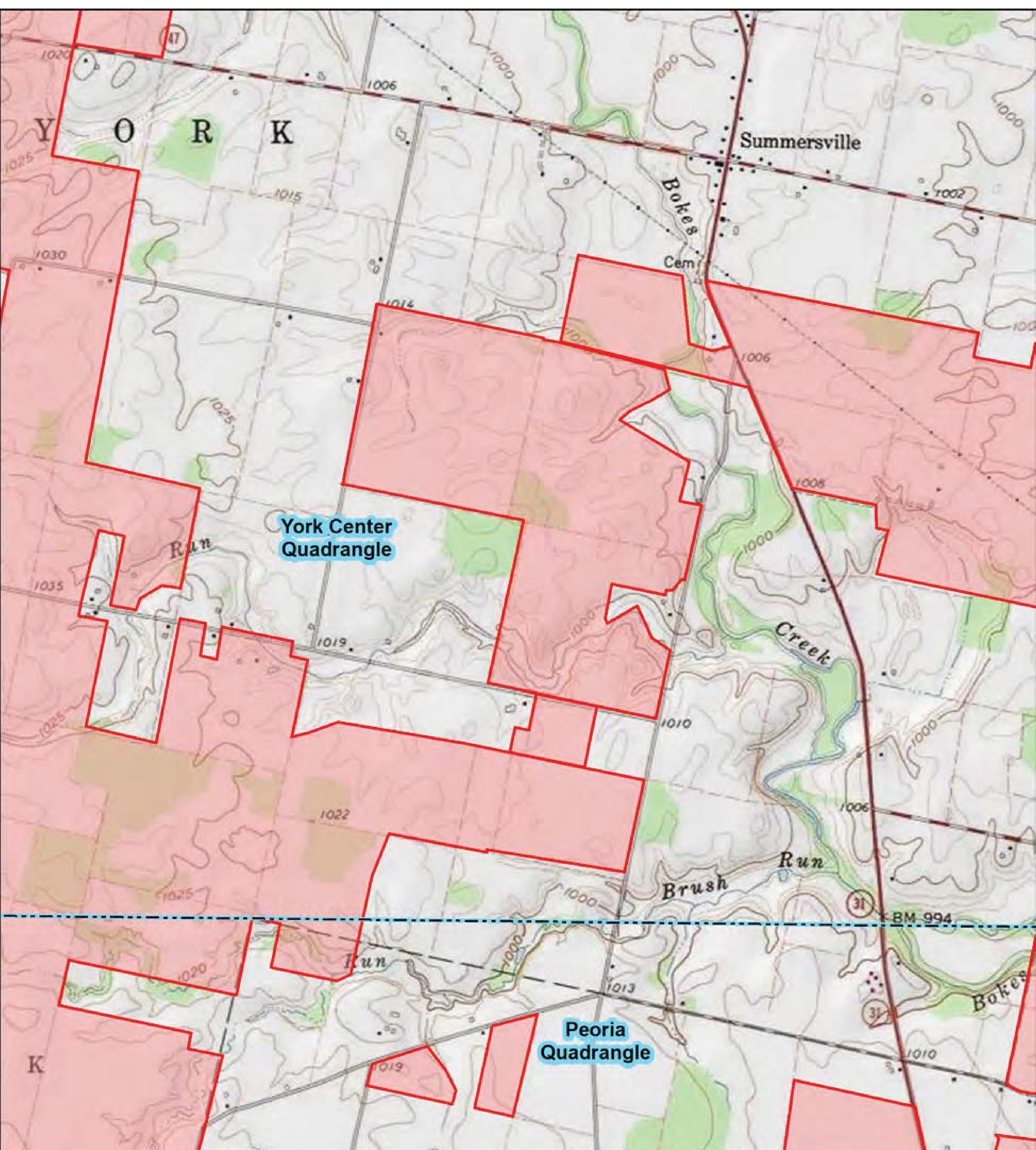

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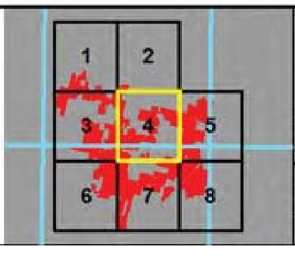

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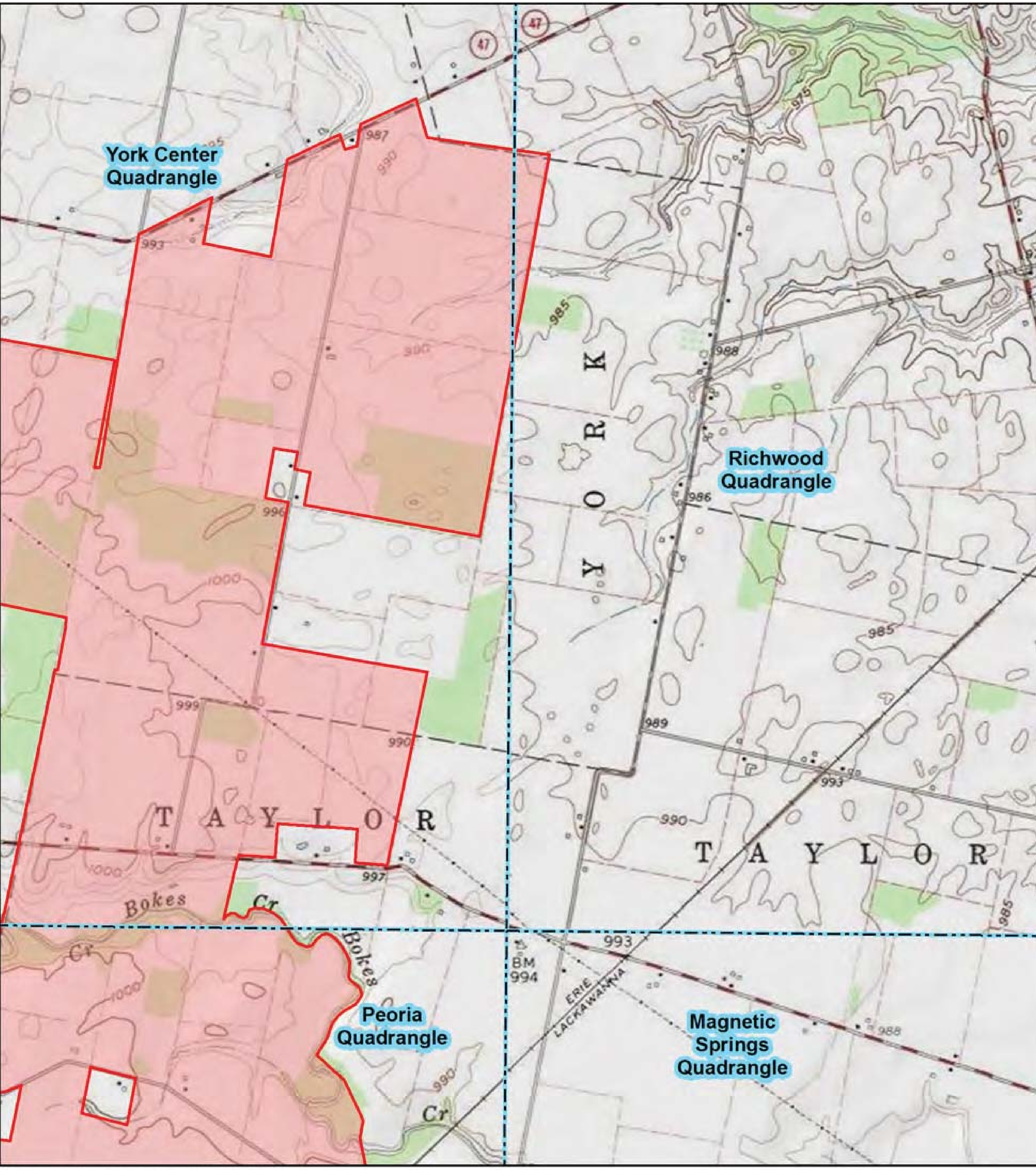

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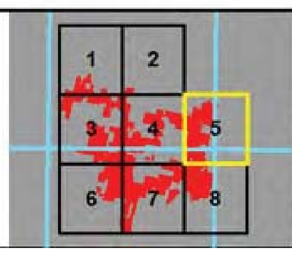

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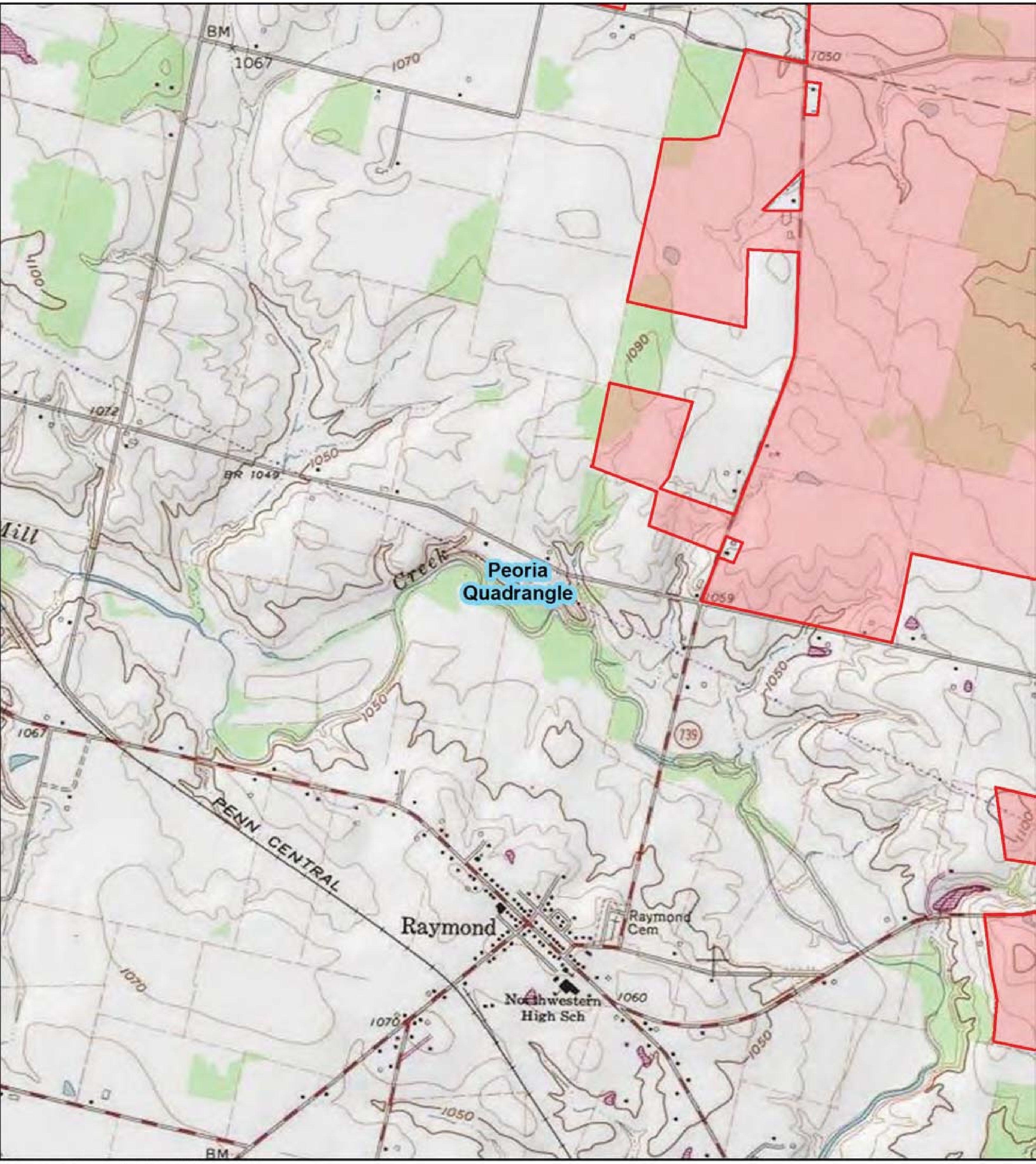

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Project

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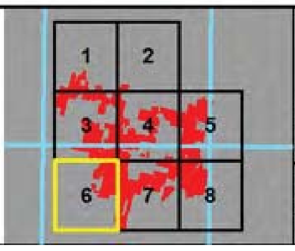

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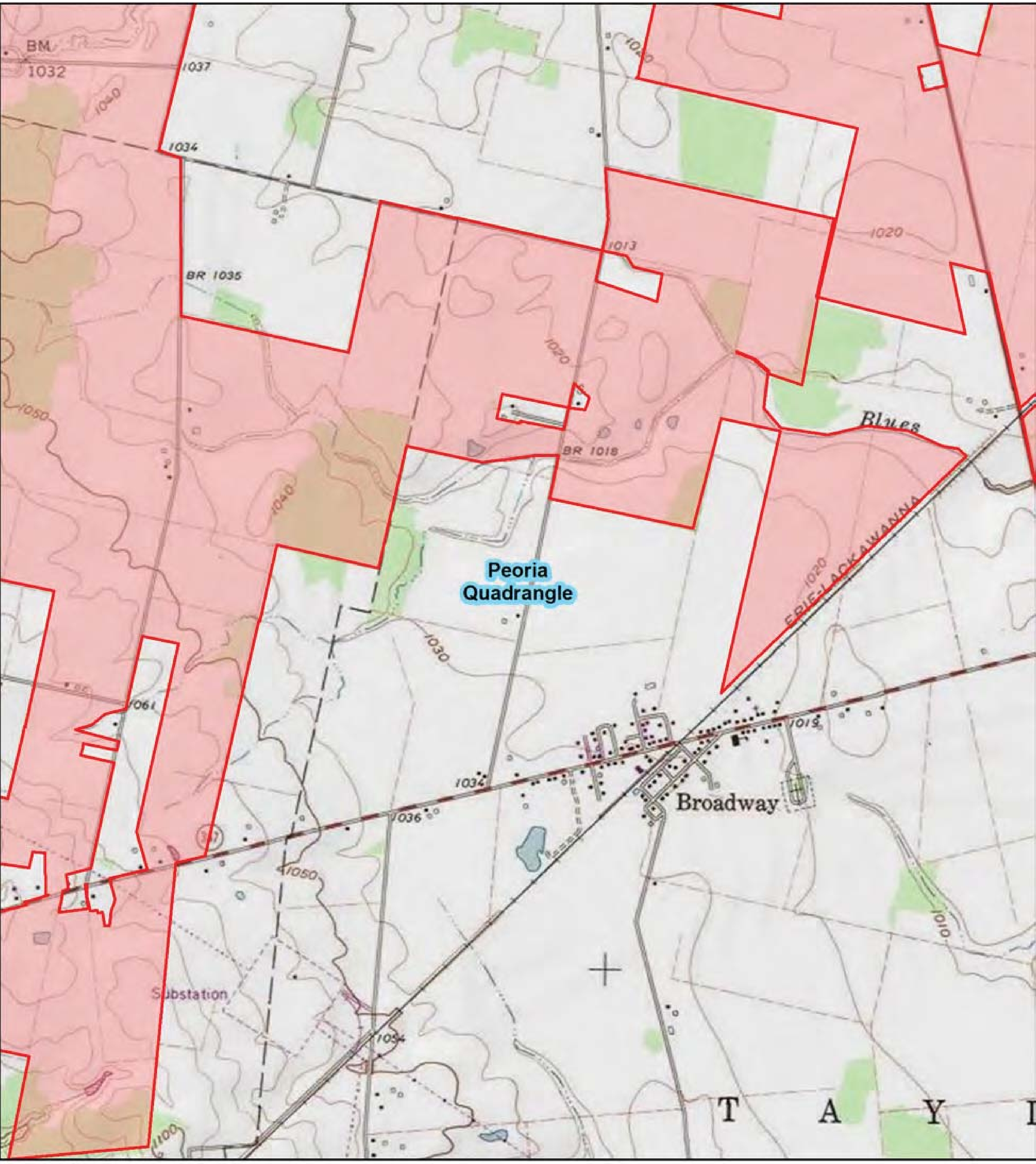

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Page 7 of 8

Project

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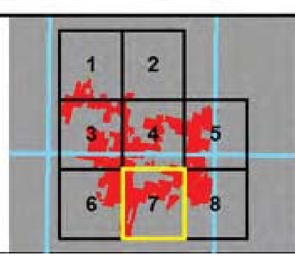

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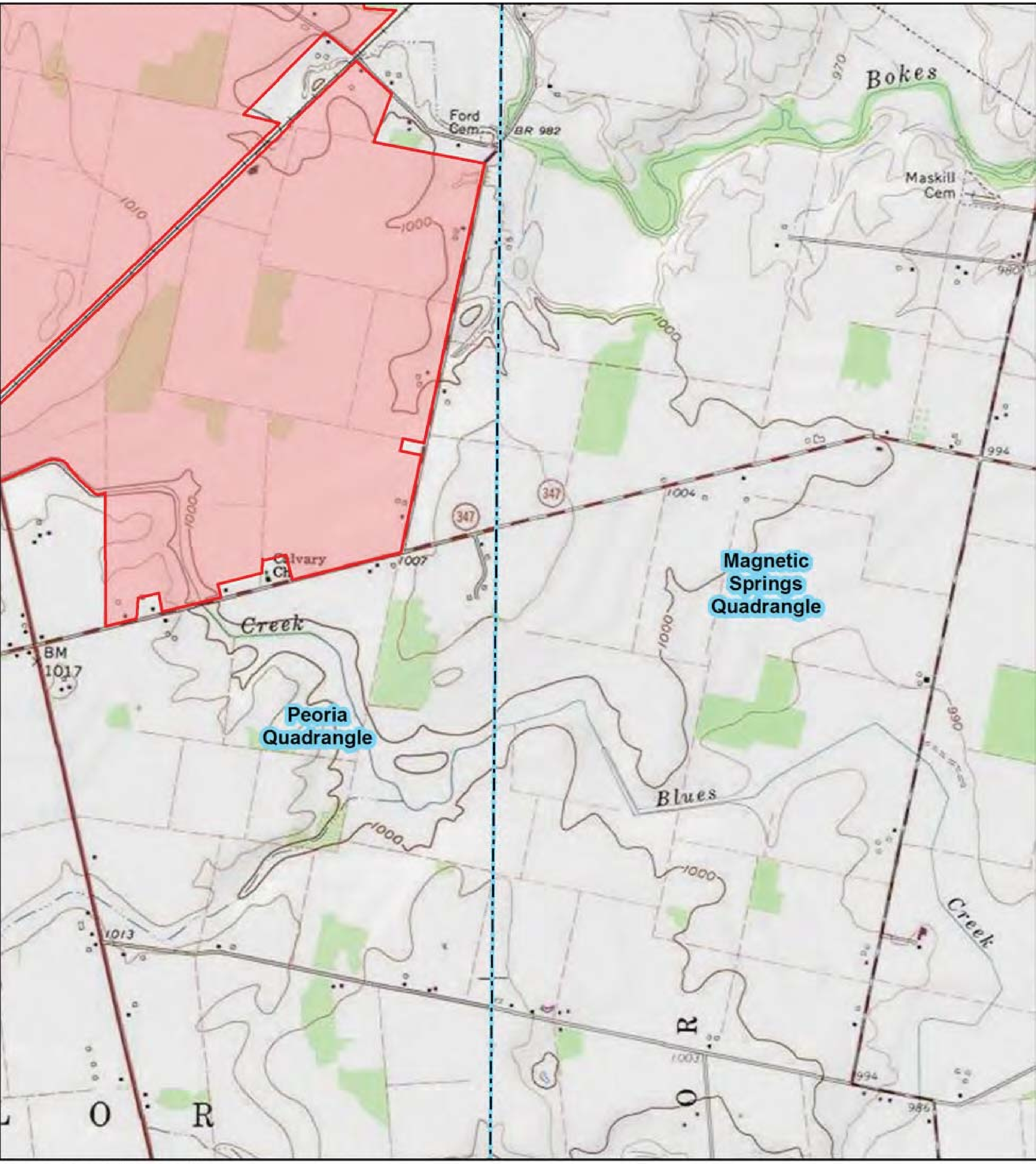

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USGS Topographic Quadrangles:
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Page 8 of 8

Project

7.5-Minute Quadrangle Boundary

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Project Number: 61596
Date: 6/11/2020
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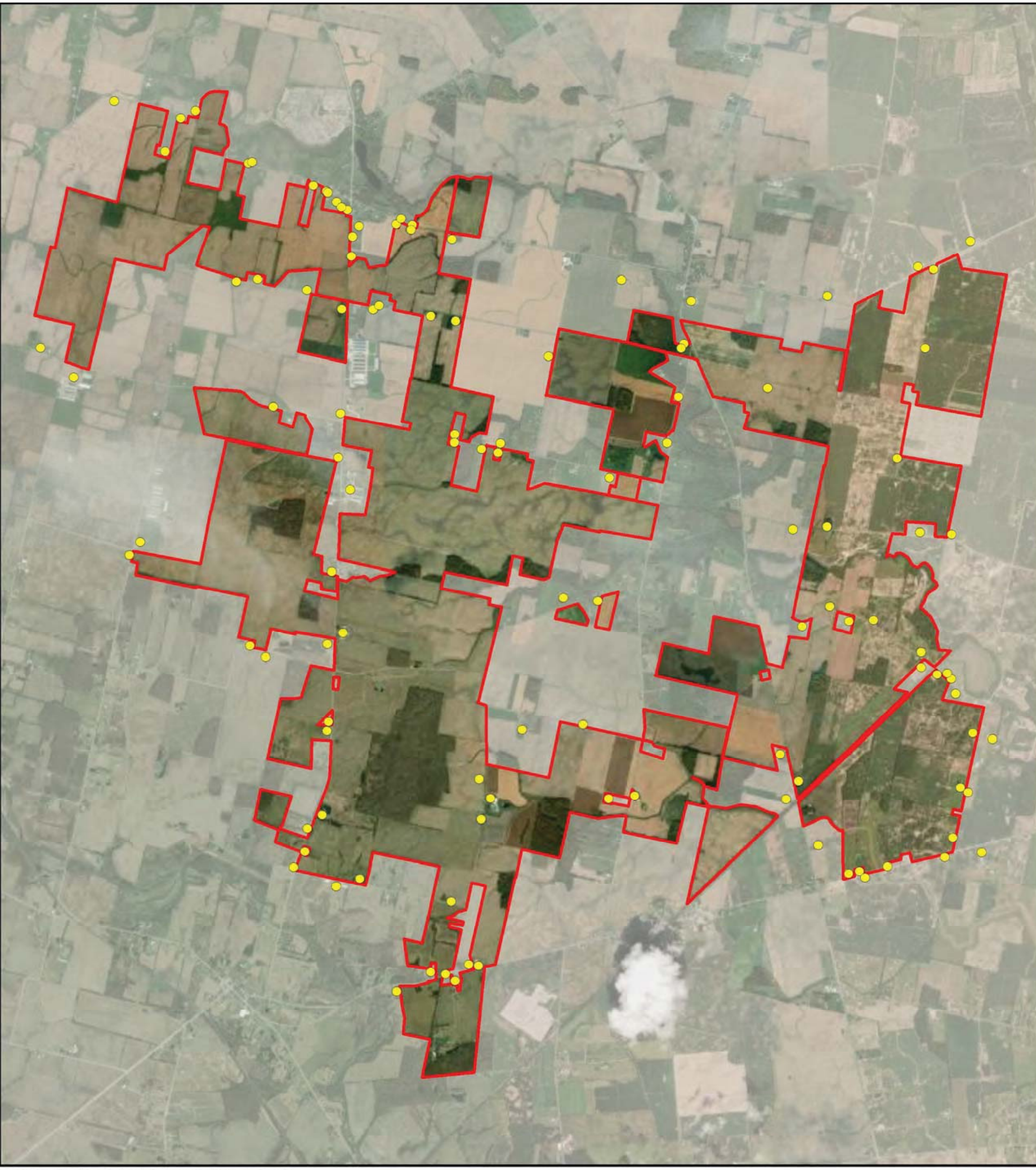
SWCA ENVIRONMENTAL CONSULTANTS

Appendix B

Historic Architecture Survey Targets



CADENCE SOLAR

Historic Structures
Requiring Survey
Union County, Ohio

Historic Structure

Project Area

1:65,000

Created By: J. Zorn
Project Number: 61596
Date: 8/13/2020
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0 0.5 Mile

0 500 1,000 Meters

SWCA ENVIRONMENTAL CONSULTANTS

Appendix B

Temp. #	Property Name	Tax Parcel	Buildings	Age of Buildings	Within LOD or Adajcent	Notes
1	Davis Property	028-00-00-022.000	6	1920 - 2012	Adjacent	Dwelling was built in 1920, all other buildings on property were constructed in 2004 or later. (Age of shed not listed)
2	Smith Property	029-00-00-017.000	3	1954 - 1971	Adjacent	
3	Hamm Property	029-00-00-015.000	2	1890 - 1974	Adjacent	Structures incude dwelling and pole building
4	Bocook Property	029-00-00-023.000	2	1917 - 2005	Adjacent	Not directly adjacent - separated by ag. field property. Dwelling constructed in 1917.
5	Ball Property	030-00-00-058.000	3	1959 - 2011	Adjacent	Not directly adjacent but nearby. Dwelling and 2 sheds.
6	Smith Property	030-00-00-059.000	5	Old - 1965	Adjacent	Not directly adjacent but nearby. Dwelling constructed in 1959. Property includes 2 pole buildings and 2 "Lean-to"
7	Hardman Property	030-14-03-022.000	1	1962	Adjacent	Associated with a larger adjacent parcel w/ modern structures on property
8	Young Property	030-14-03-019.000	2	Old - 2000	Adjacent	Dwelling listed as "old"
9	Thompson Property	030-15-03-018.000	2	Old - Old	Adjacent	Both dwelling and garage losted as "old"
10	Corbin Property	030-14-03-011.000	6	1960 - 1980	Adjacent	No main dwelling on parcel. Structures include cabin and open porch constructed in 1960, associated outbuildings constructed 1975 and later
11	Sproull Property	030-14-03-002.000	4	Old - 1990	Adjacent	Dwelling listed as "old". Accociated outbuildings built 1987 and later
12	Sproull Property	030-14-03-004.000	3	1900 - 1970	Adjacent	Associated with Property_11. Includes pole building constructed in 1970 and lean-to structure build in 1900
13	York Center United Methodist	030-14-02-006.000	2	1967 - 2002	Adjacent	Church constructed in 1967
14	Reisinger Property	030-14-02-008.000	6	Old - 2006	Adjacent	Dwelling is modern mobile home. Barn on property listed as "old". Other buildings include 3 lean-to structures and a
15	Hansen Property	030-00-00-043.000	3	1920 - 1959	Adjacent	Dwelling constructed in 1920
16	Cardone Property	039-00-00-069.000	5	1910 - 2016	Adjacent	Not directly adjacent - separeted by ag. field property. Dwelling constructed in 1910. Associated outbuildings are either modern (2016) or do not include a contruction date
17	Soller Property	039-00-00-065.000	3	1915 - 1925	Adjacent	Dwelling and garage constructed in 1915
18	Baldridge Property	039-00-00-064.000	8	Old - 1920	Adjacent	Large parcel with structures near Storms Rd. Dwelling listed as old, remodeled in 1980. Buildings include 2 lean-to structures
19	New Day Farms LLC	038-00-00-030.001	4	1964 - 2017	Adjacent	Pole building constructed 1964, 2 poultry houses constructed 1970
20	Kelley Property	038-00-00-042.000	12	1915 - 1981	Adjacent	Dwelling and barn constructed 1915, silo in 1965. All other structures build 1972+ or do not include date. Includes 2 lean-to structures

Appendix B

Temp. #	Property Name	Tax Parcel	Buildings	Age of Buildings	Within LOD or Adajcent	Notes
21	Hamilton Property	039-00-00-020.000	11	Old - 2016	Within	Barn listed as "old", dwelling contructed in 1926, pole building in 1950. Other structures built 1970+ or do not include dates.
22	Cardone Property	039-00-00-018.000	8	Old - 2017	Adjacent	Not directly adjacent. Dwelling and barn listed as "old". Other structures are modern or do not provide date. Trash appears to be widespread across parcel.
23	Muncie Property	039-00-00-012.000	5	Old - 1971	Adjacent	Dwelling listed as "old", shed constructed 1900. Other stuctures build 1971 or not dated
24	Hoffman Property	039-00-00-017.000	9	Old - 2006	Within	Multiple structures listed as "old". One shed was built 2006
25	Gilliland Property	039-00-00-016.000	5	Old - 1965	Within	Dwelling listed as "old"
26	Chapman Property	039-00-00-007.000	4	1956 - 2015	Adjacent	Dwelling constructed in 1956, all other buildings are modern
27	Newman Property	030-00-00-035.000	4	1957 - 2006	Adjacent	Dwelling constructed in 1957, other buildings are modern
28	Close Property	030-00-00-037.000	7	1893 - 1965	Adjacent	Dwelling constructed in 1893, other buildings are 1965 or earlier
29	Mosier Property	039-00-00-006.000	2	1960 - 1991	Within	Modern dwelling (1991). Pole building constructed in 1960
30	Pyers Property	039-00-00-004.000	4	1965 - 1983	Adjacent	Dwelling and 1 of 2 pole buildings constructed in 1960's
31	Hamilton Property	039-00-00-036.000	6	1900 - 2000	Adjacent	Barn on property listed at 1900, other structures are modern
32	Leininger Property	039-00-00-040.000	2	1933	Adjacent	Dwelling constructed in 1933. No date on shed
33	Overfield Property	039-00-00-038.000	9	1965-1970	Adjacent	Dwelling is mobile home contructed in 1970. All other buildings constructed between 1965 and 1970. Includes 3 lean-to structures
34	Hamilton Property	040-00-00-018.000	4	1920 - 1995	Adjacent	Dwelling build in 1920 and remodeled in 1980. All other structures are modern
35	Starks Property	040-00-00-017.000	8	Old - 1979	Adjacent	Dwelling and 1 of 3 pole buildings listed as "old". Dates not provided for many of the outbuildings
36	Meeker Property	040-00-00-027.000	8	Old - 1974	Adjacent	Dwelling, barn, and silo listed as "old". Hog house built in 1930. Other structures are modern or do not provide date
37	Kemp Property	040-00-00-013.000	3	Old - 2016	Adjacent	Dwelling and barn listed as "old", dwelling remodeled in 2016

Appendix B

Temp. #	Property Name	Tax Parcel	Buildings	Age of Buildings	Within LOD or Adajcent	Notes
38	McMahan Property	040-00-00-006.000	4	Old - 1980	Adjacent	Dwelling and barn listed as "old". Structures lie on large agricultural parcel and are not directly adjacent to the project area
39	McMahan Property	040-00-00-040.000	11	Old - 1990	Adjacent	Associated with property 38. No dwelling on property. Buildings are related it agricultural purposes
40	Lydic Property	040-00-00-037.000	9	Old - 1950	Adjacent	Dwelling was constructed in 1920. Outbuildings are listed as "old" or have no provided dates
41	McMahan Property	040-00-00-036.000	3	Old - 1952	Within	No dwelling on property. Includes pole building, silo, and milk house
42	Wilds Property	040-00-00-034.000	8	1900 - 2016	Adjacent	Pole building from 1960 and shed from 1900, all other structures are modern
43	Wachs Property	040-00-00-032.000	7	1880 - 1987	Adjacent	Dwelling constructed in 1880, pole building in 1960. All other structures are modern or do not procide dates.
44	Yoder Property	049-00-00-055.000	3	1900 - 1986	Adjacent	Dwelling constructed in 1900, remodeled in 1986
45	Ballinger Property	049-00-00-057.000	7	1910 - 1977	Adjacent	Dwelling constructed in 1910, remodeled in 1977. All other structures built between 1976 and 1977
46	Poling Property	049-00-00-067.000	11	Old - 1980	Adjacent	Agricultural buildings, including 2 barns listed as "old". No dwelling listed on parcel
47	D & B Family Farms LLC	048-00-00-007.000	23	Old - 2010	Within	Property includes dwelling and numerous agricultural buildings. Many of the buildings predate 1970
48	George Property	048-00-00-028.000	2	1936 - 2004	Adjacent	Dwelling constructed in 1936
49	Holland Property	048-00-00-028.002	10	1900 - 1960	Within	No dwelling listed on parcel. All other listed structures predate 1970
50	Heyne Farms LLC	048-00-00-035.000	6	Old - 2017	Within	Dwelling listed as "old", Barn listed at 1900. Other structures are modern
51	Schulze Property	048-00-00-031.000	4	Old - 2000	Adjacent	Dwelling listed as "old"
52	Green Property	057-00-00-030.000	1	Old	Adjacent	Dwelling listed as "old"
53	Strickland Property	057-00-00-032.000	6	Old - 1958	Adjacent	Dwelling constructed in 1958. Barn and 4 lean-to structures listed as "old"
54	Jackson Property	057-00-00-028.000	11	Old - 2013	Adjacent	Dwelling listed as "old". Accociated buildings are agricultural related
55	Jackson Property	057-00-00-026.000	11	Old - 1971	Within	Dwelling and various agricultural structures listed as "old"
56	Rutan Property	048-00-00-014.000	7	1900 - 2000	Adjacent	Dwelling constructed in 1930. Shed and Pole building listed at 1900

Appendix B

Temp. #	Property Name	Tax Parcel	Buildings	Age of Buildings	Within LOD or Adajcent	Notes
57	Skaggs Property	048-00-00-011.000	5	Old - 1995	Adjacent	Dwelling listed as "old", all other buildings are modern
58	Nature Pure LLC	039-00-00-048.000	19	1957 - 2016	Adjacent	Large farm complex. One pole building was constructed in 1957 and one grain bin was constructed in 1965 - all other buildings were contructed in 1970 or later
59	Kates Property	039-00-00-052.000	3	Old	Adjacent	Dwelling and outbuildings listed as "old"
60	Alexander Property	039-00-00-027.000	2	Old - 1970	Adjacent	Dwelling listed as "old", wood deck constructed in 1970
61	Stout Property	039-00-00-060.000	1	Old	Adjacent	Dwelling listed as "old"
62	Nature Pure LLC	038-00-00-016.000	4	1925 - 1979	Adjacent	Dwelling was contructed in 1925, all other buildings are 1973 or later
63	Culbertson Property	047-00-00-056.000	4	Old - 2014	Adjacent	Dwelling listed as "old" (does not look old in photo, but could be renovated). Other structures are modern
64	Beluscak Property	048-00-00-027.000	5	Old - 1900	Adjacent	Dwelling and associated outbuildings listed as "old". Utility building listed at 1900
65	Strickland Property	048-00-00-022.000	2	Old - 1989	Adjacent	Dwelling listed as "old"
66	Hockett Property	057-00-00-019.000	2	Old - 1920	Within	Dwelling has been demolished. 1920's barn may still remain on property
67	Shumway Property	057-00-00-061.000	2	1957 - 1960	Adjacent	Property includes dwelling and barn. The dwelling was constructed in 1957 and remodeled in 2008
68	Graves Property	057-00-00-011.000	7	1900 - 2000	Adjacent	Property includes 4 sheds listed at 1900. Dwelling and pole buidling constructed in 1944 and 1950. Modern carport (2000) on property
69	Cunningham Property	057-00-00-002.001	2	1920 - 1998	Adjacent	No dwelling on parcel. Includes 1920's barn and modern pole building
70	Cunningham Property	057-00-00-003.000	6	Old - 1981	Within	Property includes modern sheds and modern pole building. Dwelling is listed as "old". Owned by same family as Property 69
71	Sitarski Property	057-00-00-004.000	6	Old - 1985	Adjacent	Property includes 2 barns listed as "old" and 3 modern structures. Dwelling was constructed in 1952
72	Hollaway Property	057-00-00-063.000	4	1876 - 1990	Adjacent	Dwelling is listed as constructed in 1876 - building does not appear to be nearly that old in the provided photo. Info or photo may be innaccurate or dwelling was heavily modified. Property inludes 1960s garage and utility building

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Temp. #	Property Name	Tax Parcel	Buildings	Age of Buildings	Within LOD or Adajcent	Notes
73	Trapp Property	048-00-00-041.000	8	Old - 1977	Within	Property includes dwelling and multiple agricultural buildings. Dwelling is listed as "old". One modern pole building lies on parcel
74	Trapp Property	049-00-00-068.000	19	1940 - 2016	Within	Agricultral complex property, owned by same family as Property 73. One barn is listed at 1940 - all other structures are modern
75	Trapp Property	048-00-00-040.000	1	1960	Within	Related to properties 73 and 74. Includes one 1960's pole building
76	Rausch Property	049-00-00-042.000	8	1900 - 1980	Adjacent	Dwelling is modern (1980). Includes barn listed at 1900 and pole building at 1968
77	Eastman Property	049-00-00-041.000	3	1946	Adjacent	Dwelling and shed constructed in 1946
78	Blaisdell Property	049-00-00-043.000	3	1915	Adjacent	Dwelling constructed in 1915, no other dates provided
79	Converse Property	059-00-00-043.000	12	Old - 1940	Adjacent	Property includes 2 dwellings and multiple agricultural structures, some do not provide dates. The dwellings are listed at 1920 and 1900
80	Seger Property	049-00-00-020.000	6	1910 - 2017	Adjacent	Dwelling was constructed in 1910 - all other buildings are modern
81	Converse Property	050-00-00-042.000	14	Old -2017	Within	Property consists of dwelling and multiple outbuildings. Dwelling and barn listed at 1900, and a pole buidling as "old". Many of the associated structures are modern
82	Thorne Property	049-00-00-021.000	3	1920 - 1973	Adjacent	Dwelling was constructed in 1920
83	Walker Property	050-00-00-041.000	12	1915 - 1985	Adjacent	Many of the buldings are modern, includes 3 lean-to structures. Dwelling was constructed in 1915
84	Morgan Property	050-00-00-039.000	7	1910 - 2012	Within	Dwelling was constructed in 1947, barn and upground cellar in 1910. Other structures are modern or do no provide dates
85	Eppelheimer Property	050-00-00-037.000	9	1900 - 1980	Adjacent	Four of the structures are modern. The dwelling and barn were constructed in 1920. Property includes 3 lean-to structures
86	Disbennett Property	050-00-00-035.000	6	1970 - 1986	Within	This property is just on the fringe of being historic - it’s a ranch home built in 1970. Other structures were built 1976+ or do not provide dates
87	Porschet Property	050-00-00-034.000	4	1910 - 2001	Within	The dwelling was constructed in 1910, pole building in 1920. The other 2 structures are modern

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88	Nace Property	050-00-00-032.000	12	1915 - 2015	Adjacent	Dwelling, barn, and milk house constructed in 1915. Property includes 3 mordern structures. 4 structures do not provide dates
89	Sutherly Property	050-00-00-029.000	7	1900 - 1987	Within	Dwelling was constructed in 1900 and a garage was built in 1987. All other structures were built in 1910
90	Smith Property	050-00-00-027.000	2	Old - 1920	Adjacent	Dwelling is listed as "old", shed built in 1920. Appears to be associated with Property 91
91	Smith Property	050-00-00-027.002	2	1955 - 2011	Adjacent	Appears to be associated with Property 90. Includes barn built in 1955 and modern pole building
92	McClain Property	050-00-00-026.000	7	1950 - 2014	Adjacent	Dwelling, garage, and shed were constructed in 1969, 1970, and 1950, respectively. All other structures are modern (2014)
93	Baer Property	050-00-00-024.000	5	1910 - 1995	Within	Dwelling was constructed in 1910, pole building and poultry house in 1940. The remaining 2 buildings are modern
94	Oelmann Property	050-00-00-018.002	6	1900 - 1962	Adjacent	Dwelling was constructed in 1900. All building either predate 1970 or do not provide dates
95	Nelson Property	050-00-00-020.000	5	1900	Adjacent	All buildings are listed at 1900 or do not provide dates. Property includes 1 lean-to structure and 1 upground cellar
96	Land Farms LLC	050-00-00-023.000	11	Old - 1985	Within	Dwelling is listed as "old". Property includes various agricultural buildings and lean-to structures. 2 buuldings are modern, 3 do not provide dates
97	Braithwaite Property	050-00-00-021.000	6	Old - 2000	Within	Dwelling was constructed in 1900, hog house listed as "old". Three structures are modern (2000), a pole building and 2 lean-to structures
98	Land Farms LLC	059-00-00-003.000	23	1900 - 1985	Adjacent	Large farm complex. Property includes 2 dwellings (1920 and 1935) and numerous agricultural buildings. Buildings are not directly adjacent to project area - separated by ag. fields
99	Hobson Property	059-00-00-004.000	3	1910	Adjacent	Property includes dwelling and 2 sheds. Dwelling and 1 shed built in 1910, other shed has no date
100	Calvary Babtist Church INC	059-00-00-010.000	2	1950 - 1992	Adjacent	Associated with nearby church - church is modern. Property includes a dwelling from 1950 and a garage from 1992

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Temp. #	Property Name	Tax Parcel	Buildings	Age of Buildings	Within LOD or Adajcent	Notes
101	Vigar Property	059-00-00-013.000	4	1947 - 1979	Adjacent	Dwelling was constructed in 1947, pole building in 1963. Other buildings are modern or do not provide dates
102	Dashner Property	059-00-00-014.000	9	1853 - 1999	Within	There are 2 dwellings on parcel - one is modern (1993) and one was constructed in 1853. Property includes a barn built in 1915 and a shed in 1930
103	Buksa Property	059-00-00-012.000	6	Old - 1971	Adjacent	Dwelling and barn are listed as "old", and there is a shed from 1940
104	Beard Property	040-00-00-055.000	1	1952	Adjacent	Dwelling was built in 1952. Lies within agricultual field
105	Hane Property	041-00-00-027.000	6	Old - 1900	Within	Dwelling and barn listed at 1900, lean-to structure as "old". Other buildings do not provide dates
106	Webb Property	041-00-00-031.000	5	Old - 2017	Adjacent	Dwelling, granary, and lean-to listed as "old". Granery was remodeled in 2017, dwelling appears to be remodeled in the provided photo
107	Thomas Property	041-00-00-032.000	6	Old - 2003	Adjacent	Dwelling is listed as "old", and barn at 1900. Other buildings are modern or do not provide dates
108	Schultz Property	041-00-00-021.000	4	Old - 1980	Within	Dwelling constructed in 1920, open porch listed as "old". Other 2 structures are modern (1980) or do not provide dates
109	McMahan Property	040-00-00-041.000	1	Old	Within	Large agricultural property involved one barn listed as "old"
110	Stinemetz Property	041-00-00-014.000	8	1957 - 2017	Within	No dwelling on property. Barn was built in 1957, all other buildings are modern
111	Guy Property	041-00-00-007.000	9	Old - 2016	Adjacent	Not directly adjacent - separated by ag. Field property. Dwelling was constructed in 1950, barn is listed as "old". 3 buildings are modern and 3 do not provide dates
112	Kale Property	041-00-00-004.000	12	Old - 2000	Adjacent	Dwelling, barn, and 3 lean-to structures are listed as "old". All other buildings were constructed between 1970 and 2000
113	McMahan Restoration LLC	041-00-00-010.000	4	Old - 1995	Adjacent	Dwelling is listed as "old", other buildings are modern. Property includes 2 lean-to structures. Dwelling has likely been remodeled
114	Nickelson Property	032-00-00-031.000	3	Old - 1930	Adjacent	Not directly adjacent - separated by ag field property. Dwelling listed as "old", barn built in 1930. Includes lean-to structure