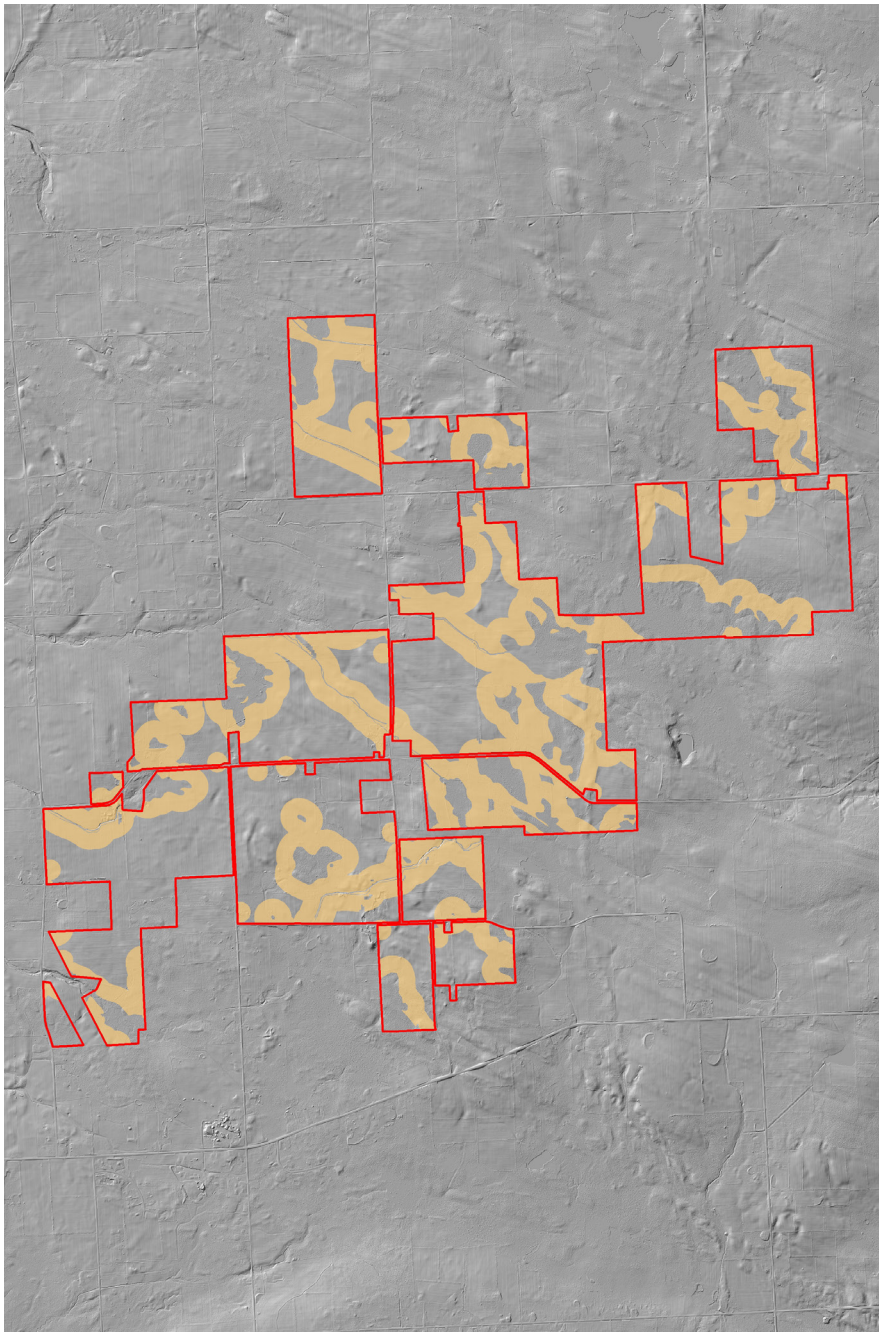
EDR

a better environment

PHASE IA ARCHAEOLOGICAL SURVEY



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Yellow Barn Solar Project

Towns of Groton and Lansing, Tompkins County, New York

Prepared for:

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CS Energy
Building a Cleaner Future

June 2023

Phase IA Archaeological Survey

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June 2023

MANAGEMENT SUMMARY

NYSHPO Project Review Number:	23PR03682
State and Federal Agencies:	New York State Office of Parks, Recreation and Historic Preservation (Section 14.09); New York State Office of Renewable Energy Services (Section 94-c)
Phase of Survey:	Phase IA Archaeological Survey
Location Information:	Towns of Groton and Lansing, Tompkins County
Survey Area:	
Facility Description:	A proposed 160-megawatt utility-scale solar facility consisting of ground-mounted photovoltaic arrays and associated infrastructure.
Facility Site:	Approximately 1,902 acres of private land to contain all components of the proposed Facility.
USGS 7.5-Minute Quadrangle(s):	*West Groton, NY*
Archaeological Resources Overview:	There are no previously reported archaeological sites within, or within 1 mile of, the Facility Site.
Report Authors:	Matthew Victor Weiss, RPA; Kristen Olson; Andrew Roblee
Date of Report:	June 2023

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1.0 INTRODUCTION

On behalf of CS Energy (the Applicant), Environmental Design & Research, Landscape Architecture, Engineering, & Environmental Services, D.P.C. (EDR) has prepared a Phase IA archaeological survey for the proposed Yellow Barn Solar Project (the Facility), located in the Towns of Groton and Lansing in Tompkins County, New York. This survey was prepared as part of the Facility's review under Section 94-C of Article 6 of the New York State Executive Law. The information and recommendations included in this report are intended to assist the New York State Historic Preservation Office (NYSHPO) in their review of the proposed Facility in association with the New York State Office of Renewable Energy Siting (ORES). Please note that this report addresses only archaeological resources; information concerning the Facility's potential effect on historic architectural resources is being provided to NYSHPO under separate cover.

1.1 Purpose of the Investigation

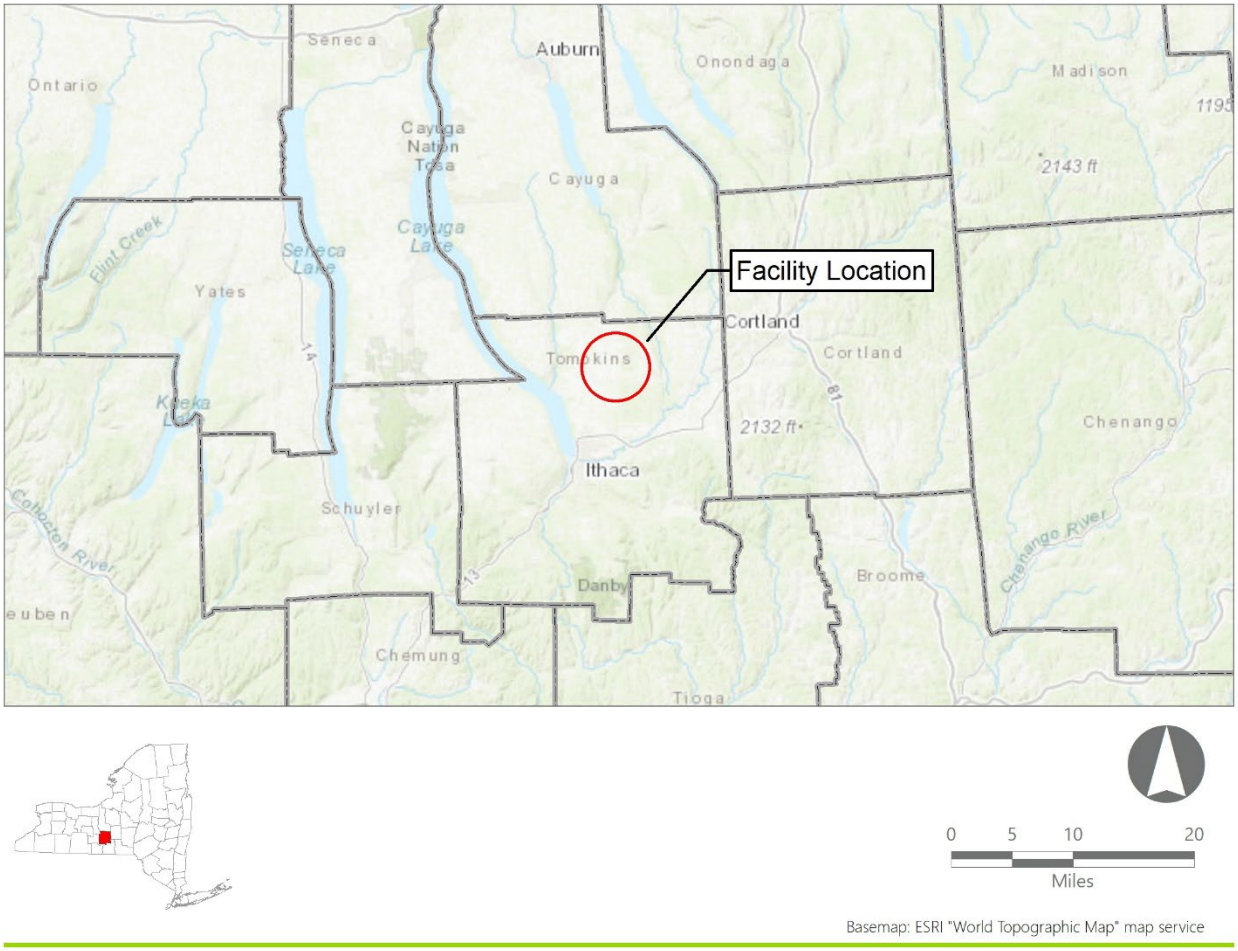
As described in 19 NYCRR § 900-2.10 (Exhibit 9: Cultural Resources), a complete Section 94-c Application shall contain:

> *(a) A study of the impacts of the construction and operation of the facility, interconnections, and related facilities on archaeological/cultural resources within the Project Impact Area.*

The purpose of the Phase IA archaeological survey is to describe previously identified archaeological resources and/or sites of cultural or religious significance that are located within the vicinity of the Facility. In addition, the Phase IA report proposes a methodology to identify previously unrecorded archaeological resources, evaluate their eligibility for the State/National Register of Historic Places (S/NRHP), and assess potential impacts to those resources.

All archaeological services provided by EDR are conducted under the supervision of a Registered Professional Archaeologist who meets the Secretary of the Interior's Standards (per 36 CFR, Part 61) for Professional Qualifications in Archaeology. The Phase IA archaeological survey will be conducted in accordance with the New York Archaeological Council's (NYAC's) 1994 *Standards for Cultural Resources Investigations and the Curation of Archaeological Collections in New York State* and the NYSHPO's 2005 *Phase I Archaeological Report Format Requirements*.

Figure 1. Regional Facility Location



1.2 Facility Location and Description

The proposed Facility is an approximately 160-megawatt alternating current photovoltaic solar-powered electric generating development to be located within the Towns of Groton and Lansing in Tompkins County, New York (Figure 1). It will consist of the following components:

- Rows of photovoltaic panels (arrays) producing direct current electricity mounted on single-axis tracking structures
- Inverters placed within the panel arrays to convert direct current electricity to alternating current electricity
- A medium voltage collection system that will aggregate the alternating current output from the inverters
- A substation and electrical switchyard where the Facility's electrical output voltage will be combined and increased to the transmission line voltage via step-up transformers
- A generation tie line that will connect the Facility to the designated point of interconnection
- Internal infrastructure including access roads, driveways, and security fencing

- Temporary laydown areas for equipment staging during construction

The design and engineering of the Facility is ongoing concurrently with environmental studies (including archaeology) to identify sensitive resources and allow for avoidance and minimization of potential impacts. The following terms are used throughout this document to describe the proposed action:

- **Facility:** Collectively refers to all components of the proposed project, including photovoltaic panels, access roads and driveways, buried and above ground collection lines, collection substation, point of interconnection switchyard, and staging areas. All components will be located within the Towns of Groton and Lansing in Tompkins County, New York (Figure 1).

- **Facility Site:** Those parcels, or portions of parcels currently under, or being pursued, for lease (or other real property interests) with the Applicant for the location of all Facility components. The Facility Site includes approximately 1,902 acres and is rural and agricultural in nature (Figure 2). Not all land included in the Facility Site will ultimately be developed as part of the project.

- **Area of Potential Effect (APE):** The area within which all proposed construction activities (i.e., soil disturbance) associated with the Facility may occur. The APE will be determined based on the most current Facility design (or layout), which is in the process of being developed by the Applicant.

- **Limits of Significant Ground Disturbance:** The portion of the APE where significant ground disturbing impacts will occur. These include areas of grading and excavation more than 6 inches deep; grubbing, tree, and stump removal; and trenches more than 3 feet wide. In the absence of these activities, the installation of solar arrays, fencing, and utility poles are not considered to involve significant ground disturbance (NYSHPO, 2023). The Limits of Significant Ground Disturbance will be determined based on the most current APE, which is in the process of being developed by the Applicant.

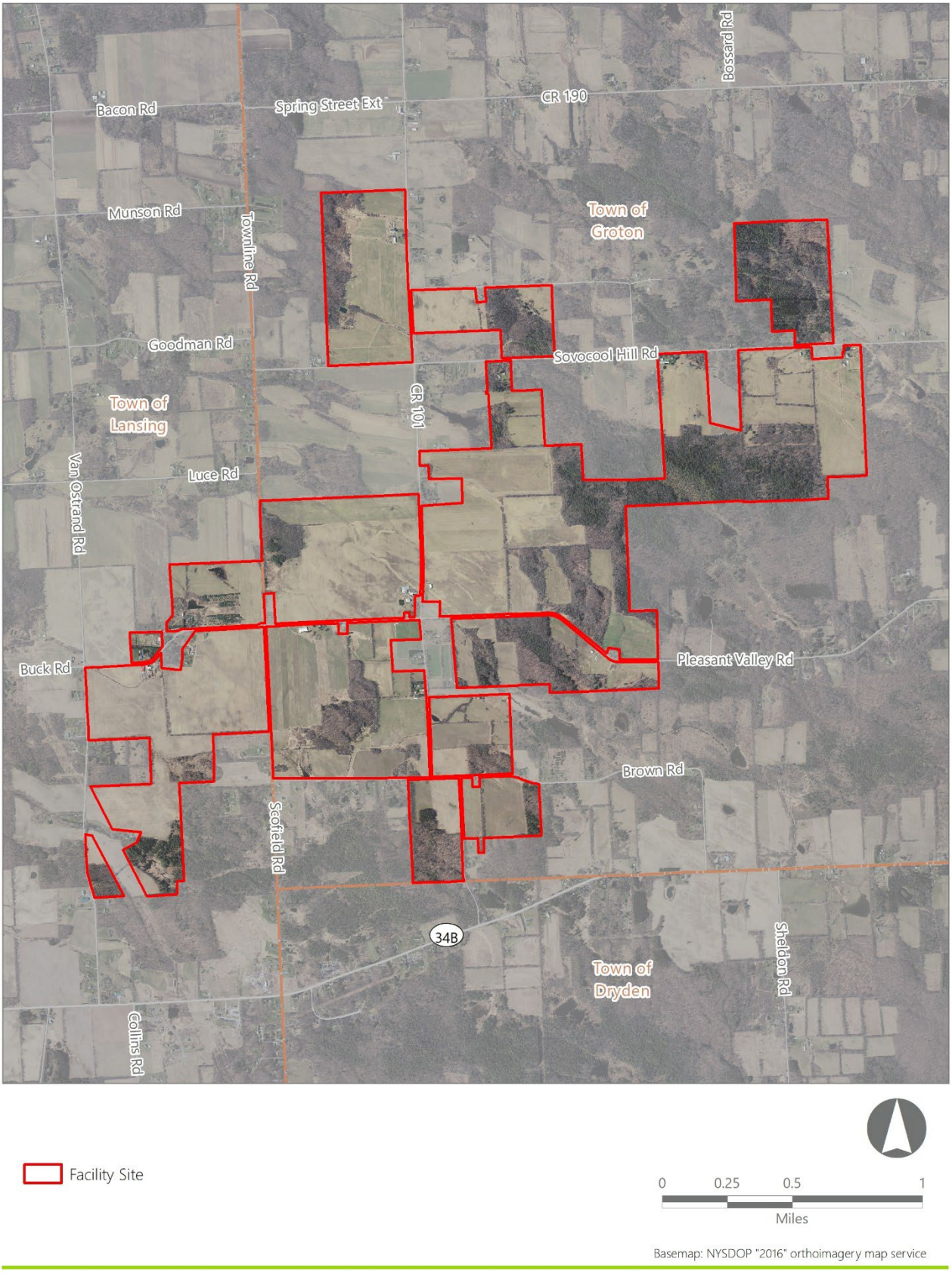
1.3 Agency Consultation

Agency consultation for the Facility is included in Appendix A and has included the following:

- May 3, 2023: On behalf of the Applicant, EDR initiated formal consultation with the NYSHPO via the Cultural Resources Information System (CRIS) website.

- May 15, 2023: In response to EDR's consultation request, the NYSHPO issued a project review letter, which requested the completion of a Phase IA archaeological survey, including Phase IB testing recommendations (NYSHPO, 2023; Appendix A).

Figure 2. Facility Site



2.0 BACKGROUND AND CONTEXT

This section presents the physical and historic contexts for the Facility Site, as well as information on previously documented cultural resources. This information assists in the development of an archaeological sensitivity model and Phase IB archaeological research design, which is discussed in the next section.

2.1 Geology and Soils

The Facility Site is located in Tompkins County, which occupies approximately 491 square miles within the Finger Lakes region of south-central New York. It is bounded by Cayuga County to the north, Cortland County to the east, Tioga County to the southeast, Chemung County to the south, Schuyler County to the west, and Seneca County to the northwest. Lying in both the Appalachian Plateau and Erie-Ontario Plain, Tompkins County straddles two separate physiographic provinces. The majority of the county lies within the Appalachian Plateau, which is characterized by a high plateau dissected by several broad valleys with gently sloping lower hillsides and steeply sloping upper hillsides. South of the Portage Escarpment, which runs roughly northeast-southwest through the center of the county, the Appalachian Plateau is more rugged and higher in elevation. The Erie-Ontario Plain occupies only the northwestern corner of the county adjacent to Cayuga Lake. This physiographic province is characterized by broad, smooth ridges whose hillsides descend steeply to Cayuga Lake and its tributaries (SCS, 1965:1, 231).

Located within north-central Tompkins County, the Facility is located within the less-rugged portion of the Appalachian Plateau physiographic province present within the county. Topography within the Facility Site is dominated by a single, north-south-trending, broad ridgetop and consists of gently to moderately sloping rolling terrain. Elevations within the Facility Site range from approximately 1,140 to 1,400 feet above mean sea level, rising gradually from west to east. Situated on the drainage divide between Cayuga and Owasco Lakes, the Facility Site is bisected by several small headwaters streams that flow into Owasco Inlet to the east, Locke and Salmon Creeks to the west, and Mill Creek to the south. Portions of the Facility Site are poorly drained with numerous wetlands and pockets of marsh/swampland common throughout. Some of these areas have been transformed into artificial ponds.

Repeated glaciation throughout the Pleistocene Epoch is the primary agent in the creation of topography, surficial geology, and soils present throughout Tompkins County today. The final maximal extent of Pleistocene glaciers in New York occurred between approximately 28,000 and 24,000 calendar years before present (cal. BP), when the Laurentide ice sheet began to recede, with minor periodic re-advances. By approximately 15,500 cal. BP the ice sheet had receded as far as modern-day Albany. After that point, ice withdrawal occurred more quickly and the ice sheet receded into modern-day Quebec around 13,100 cal. BP (Ridge, 2003; Lothrop and Bradley, 2012). Within the northwestern portion of Tompkins County, within the Erie-Ontario Plain, topography and soils are the product of former, proglacial Lake Iroquois, which deposited glaciolacustrine sediments around Cayuga Lake. Within the Appalachian Plateau, however, where the Facility is located, topography and soils are the product of glacial scouring and deposition of till.

Due to the Facility's upland setting, surficial geology within the Facility Site is dominated by poorly sorted glacial till deposits dropped by the retreating glacier. A small portion of the Facility Site's southwestern

corner is composed of till moraine deposits. The surficial geology of the Facility Site is summarized below in Table 1 and depicted on Figure 3 (NYSM, 2023).

Table 1. Surficial Geology within the Facility Site.

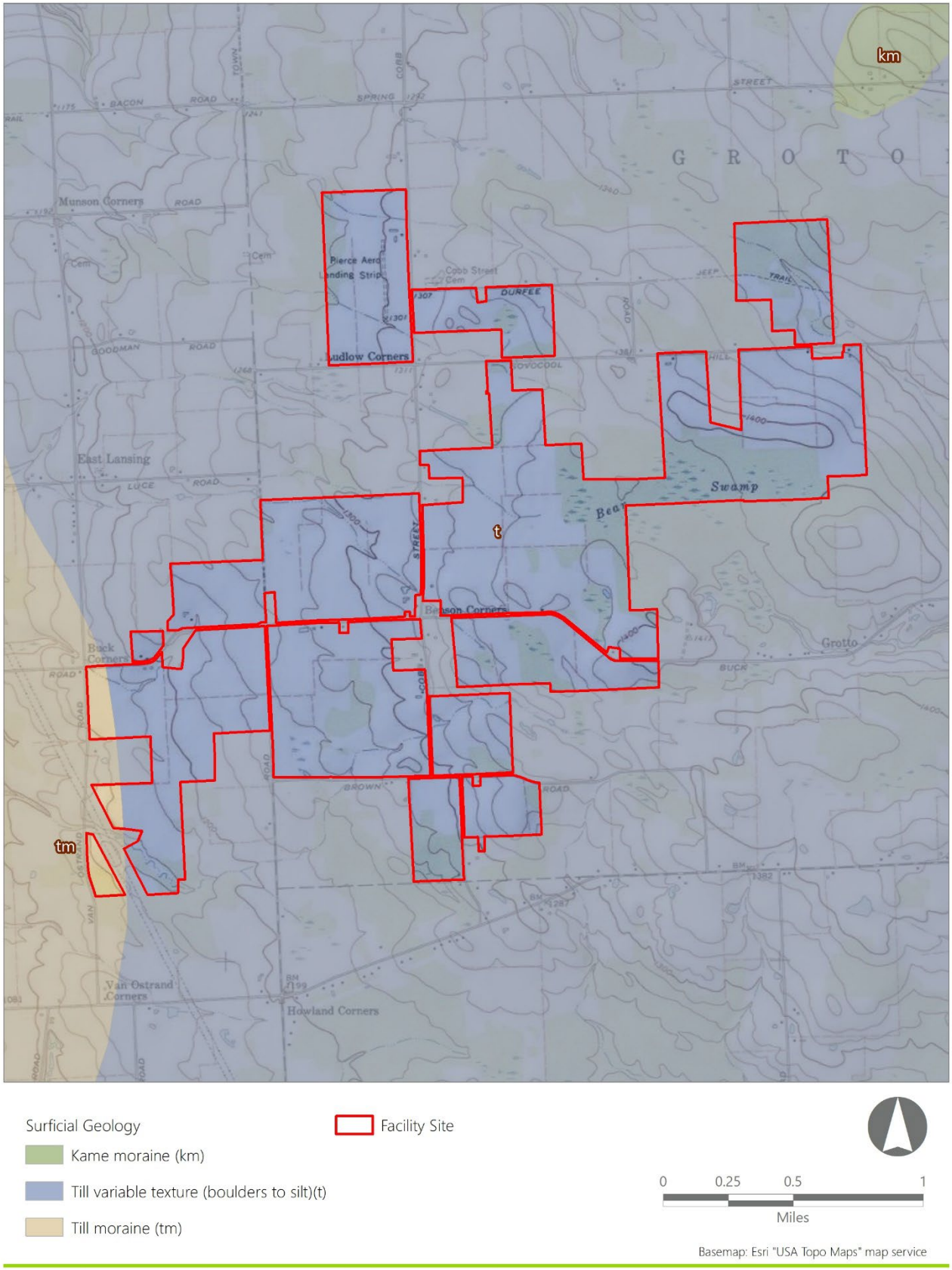
Surficial Geology	Acres in Facility Site	Percent of Facility Site	Composition
Till variable texture (boulders to silt) (t)	1,860	98	Variable texture (boulders to silt); usually poorly sorted sand-rich diamict; deposition beneath glacier ice; permeability varies with compaction; thickness variable (1-50 meters)
Till moraine (tm)	42	2	Variable texture (size and sorting); generally low permeability; deposition adjacent to ice; thickness variable (10-30 meters)

Due to the Facility's upland setting and till-dominated surficial geology, the large majority – 99% – of the Facility Site's mapped soil units (20 of 21) are unlikely to have deeply buried cultural horizons. Shovel testing conducted within these soils should extend at least 10 centimeters into sterile subsoil. The most common of these soils – the Langford channery silt loam – which may be considered representative of the Facility Site, is described below in Table 2. One alluvial soil unit – the Wayland soils complex – which may contain deeply buried cultural horizons, is mapped as comprising 1% of the Facility Site. This soil is also described below in Table 2 (NRCS, 2023).

Table 2. Representative Soils within the Facility Site.

Soil Name	Percent of Facility Site	Soil Horizon Depth (inches)	Soil Horizon Description	Slope, Drainage, and Landform	Recommended Shovel Test Depth
Langford channery silt loam	21	Ap: 0 to 9 Bw: 9 to 17 E: 17 to 21 Bx: 21 to 48 C: 48 to 72	Ap: Channery silt loam Bw: Channery silt loam E: Channery loam Bx: Channery silt loam C: Channery silt loam	2 to 8% slopes; moderately well drained; hills	At least 10 cm into sterile subsoil
Wayland soils complex	1	A: 0 to 6 Bg1: 6 to 12 Bg2: 12 to 18 C1: 18 to 46 C2: 46 to 72	A: Silt loam Bg1: Silt loam Bg2: Silt loam C1: Silt loam C2: Silty clay loam	0 to 3% slopes; poorly drained; floodplains	1 meter or depth of basal gravels

Figure 3. Facility Site Topography and Surficial Geology



2.2 Existing Conditions

The proposed Facility is located in a rural part of Tompkins County, approximately 1.8 miles west of the Village of Groton. Existing conditions within the Facility Site were evaluated with aerial imagery, topographic maps, digital elevation model (DEM) data, and National Land Cover Database (NLCD) data (MRLCC, 2019). General observations of existing conditions within the Facility Site include the following:

- Land use within the Facility Site is typical for a rural, agricultural area in the Finger Lakes region of south-central New York and consists of cultivated crop fields, hay fields, pastures, fallow fields in various stages of secondary succession, shrubland, and large patches of undeveloped, second-growth forest.

- Agricultural fields comprise the largest portion of the Facility. Approximately 36% of the Facility Site consists of pasture and hay fields while approximately 31% is used for cultivated crops. A substantial portion of the Facility is forested, with deciduous and coniferous woodland accounting for approximately 29% of the Facility Site (including woody wetlands; MRLCC, 2019).

- Much of the Facility Site is poorly drained and mapped as wetland or marsh/swampland by the New York State Department of Environmental Conservation and USGS, respectively. Per NLCD data, approximately 12% of the Facility Site consists of wetlands (including former wetlands that have been transformed into artificial ponds), most of which are wooded (MRLCC, 2019). These wetlands account for approximately 41% of the forested area within the Facility. Artificial ponds within the Facility Site appear to have been primarily created for watering livestock.

- No areas of concentrated settlement occur within the Facility Site. Residential development occurs along roadways and consists of scattered homes and farms, often widely spaced apart. Roadways within the Facility Site are paved, generally bounded by ditches, and are generally oriented in a north-south/east-west grid due to the lack of steep terrain.

- The Facility Site does not appear to have been subjected to significant previous ground disturbance.

2.3 Previous Archaeological Surveys

EDR consulted the NYSHPO's online CRIS database, and county maps used by the NYSHPO prior to the implementation of the CRIS database, to determine if previous archaeological surveys have been conducted within or adjacent to (i.e., within 500 feet) the Facility Site. This research revealed that no previous archaeological surveys have been conducted within or adjacent to the Facility Site.

2.4 Previously Identified Archaeological Resources

EDR consulted the NYSHPO's online CRIS database to determine if previously recorded archaeological sites have been identified within, or within 1 mile of, the Facility Site. This research revealed that no previously identified archaeological sites are located within, or within 1 mile of, the Facility Site. The apparent absence of sites is likely due to the lack of archaeological surveys that have been conducted in this area.

2.5 Cemeteries

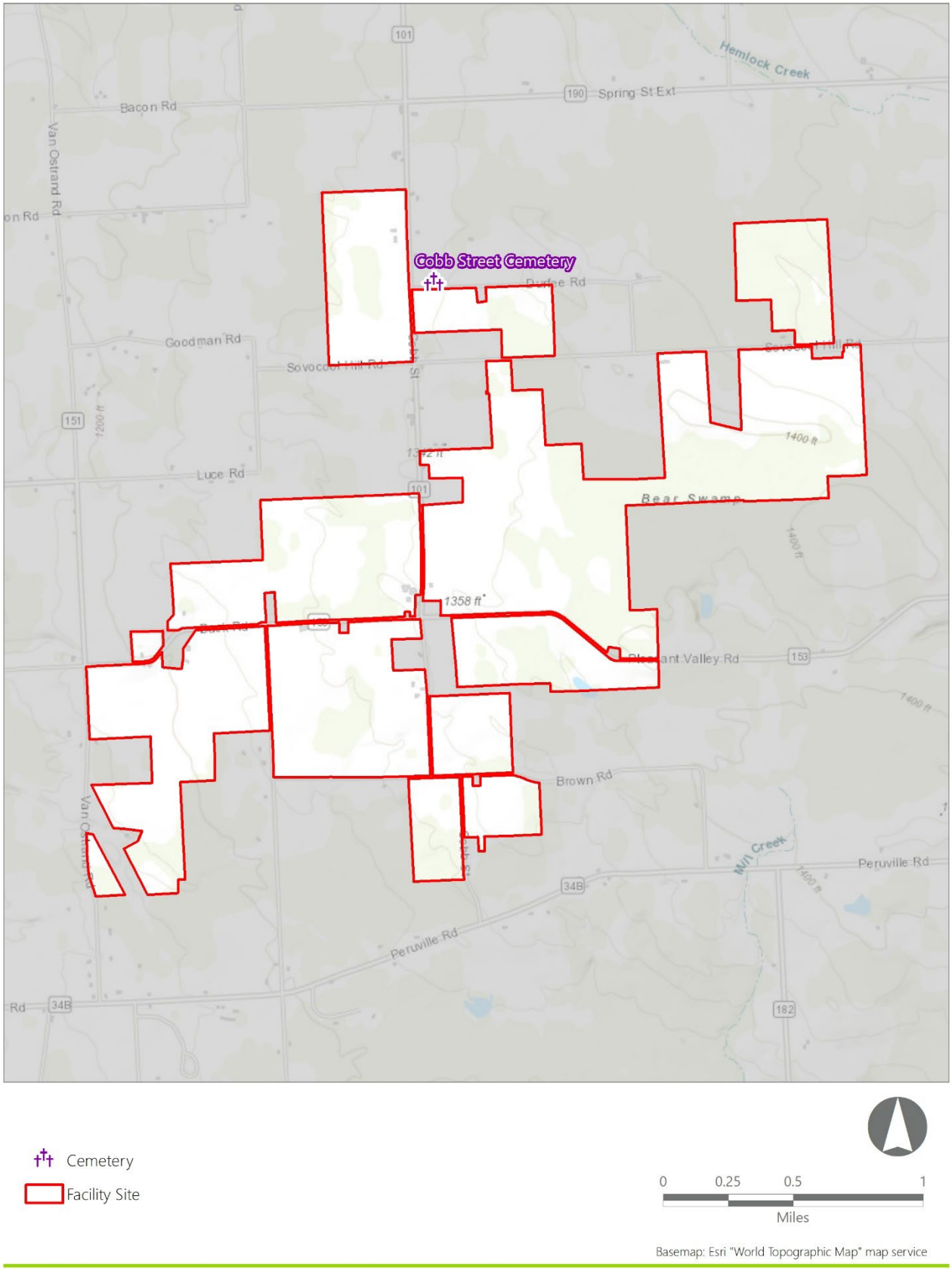
EDR consulted the NYSHPO's online CRIS database and U.S. Geological Survey (USGS) topographic quadrangles to determine if previously identified/mapped cemeteries are located within or adjacent to (i.e., within 500 feet) the Facility Site. This research revealed that no cemeteries are located within the Facility Site; however, the Cobb Street Cemetery is located adjacent to the Facility Site (Figure 4). The cemetery will be avoided by Facility-related impacts as it is located on the opposite side of the street from the Facility Site and as its boundary is clearly visible in aerial imagery. Although one mapped cemetery is located adjacent to the Facility Site, it is possible that additional private family plots that have not been previously reported in published and available mapping sources may also be present.

2.6 Historic Context

Since at least the last glacial recession, humans have occupied the traditional homelands of the Gayogo̱hó:nǫ' ("The People of the Great Swamp," or Cayuga Nation) and the Onoñda'gegá' ("The People of the Hills," or Onondaga Nation). The Cayuga Nation homeland stretches from the Susquehanna River to Lake Ontario and roughly between Seneca Lake to the west and Owasco Lake to the east, where it meets the Onondaga Nation homeland. The Onondaga Nation homeland extends north to Lake Ontario and the St. Lawrence River, east to the Thousand Islands and Oneida Lake, and south to the Susquehanna River (Tuck, 1971). Historian W. Glenn Norris identifies the boundary between the Cayuga and Onondaga homelands as lying approximately 1.5 miles east of the Facility Site, along Owasco Creek (Norris, 1969). Although the Facility Site appears to have been within the Cayuga Nation homeland since at least the seventeenth century, both the Cayuga and Onondaga may have occupied the area in previous centuries.

Archaeological evidence suggests that initial occupation in what is now Central and Western New York began with Paleoindian groups following the retreating Laurentide Ice Sheet around 13,000 years before present (BP). During the ice sheet's retreat, much of Central and Western New York was inundated by pro-glacial Lake Iroquois (essentially a major expansion of Lake Ontario), which quickly drained out the Mohawk and later St. Lawrence River Valleys as the ice sheet receded to the north (Lothrop et al., 2014). The first human groups to enter this post-glacial landscape specialized in hunting large game (likely caribou; and possibly mammoth and mastodon) in the recently exposed periglacial tundra and spruce forests. These groups also exploited the diverse floral resources, small game, and fish available in the post-glacial ecosystems (Ritchie and Funk, 1973). Although populations during this time were never high, Central and Western New York was densely settled relative to other parts of the continent. These early groups were highly mobile, but there is also evidence of moderate to large aggregations in certain places during the year (e.g., the Bull Brook sites in Massachusetts) (Curran, 1999).

Figure 4. Previously Identified Cultural Resources



Post-Glacial conditions stabilized by approximately 10,000 BP, and small groups of hunter-gatherers reduced their mobility to exploit the diverse resources available to them in the newly emerging mixed deciduous/coniferous forests. Although megafauna were now extinct, larger to medium game such as deer, elk, and moose, and perhaps woodland caribou, were still available, as were small game, fish, and wild plants (Funk, 1978). Material culture during this time is characterized by stemmed and corner-notched projectile points as well as the first appearance of notched stone net-sinkers (Funk, 1978). Groundstone plant processing technology, including nutting stones which indicate the first systematic exploitation of mast resources such as acorns, hickory nuts, and chestnuts, was first used after approximately 6,000 BP (Funk, 1978; Ritchie and Funk, 1973:7). Beginning approximately 3,500 BP, regional diversity led to a greater variety of stone tools, including broad, side-notched projectile points, as well as gouges, plummets, and ground slate artifacts (Funk, 1978; Ritchie 1980). Between approximately 4,000 and 3,000 BP, steatite (soapstone) bowls, ceramic vessels, decorative steatite gorgets, and burial ceremonialism appears in the archaeological record (Whitthoft, 1949; Ritchie and Funk, 1973; Tuck, 1978).

The establishment of agriculture in northeastern North America began approximately 2,500 BP, possibly in response to favorable climatic conditions during the Medieval Climatic Anomaly (Fitting, 1978:44). Central and Western New York at this time were within the northeastern edge of the Hopewell cultural sphere, characterized by mound burials and other earthworks, dentate-stamped and rocker-stamped ceramic vessels, elaborate tobacco pipes, and stemmed, side-notched, and triangular unnotched Levanna projectile points (Engelbrecht, 2014; Ritchie and Funk, 1973). Groups in the northeast during this period also maintained extensive trade networks, as evidenced by the presence of exotic goods like fossil shark teeth and some ceramic motifs (Fitting, 1978; Ritchie 1980; Ritchie and Funk, 1973). Smaller settlements were more common during this period, but larger settlements are not documented in Western and Central New York until approximately 1,000 BP. In the centuries following, the appearance of maize (corn), beans, and squash agriculture led to the growth of more substantial village sites, including some protected with palisades and earthwork defenses (Ritchie and Funk, 1973; Ritchie, 1980). These villages were occupied year-round, although people still traveled far to hunt, fish, harvest plants, and trade (Cowan, 1999). Several known village sites are located in Tompkins County, dating from as early as 1150 CE (Norris, 1969).

Archaeological evidence for the development of Iroquoian[1] culture points to a gradual in situ development in Central and Western New York, as opposed to the immigration of Iroquoian groups from outside the region (MacNeish, 1952; Tuck, 1971; Snow, 1994; Hart and Brumbach 2003; 2005; 2009; Brumbach, 2011; Hart, 2011). Haudenosaunee oral history also supports a deep history of occupation within Central and Western New York (Wonderley, 2004).

While sources differ on the specific date of the emergence of the Haudenosaunee, many researchers agree that a formalized Confederacy of five nations (also, the Great League of Peace; the Five Nations; or, the Six Nations) took shape during the late fifteenth or early sixteenth century. The initial five nations of the Haudenosaunee included, loosely from west to east, the Seneca, Cayuga, Onondaga, Oneida, and Mohawk.

[1] The terms Iroquois and Iroquoian are used here to describe indigenous groups with a suite of cultural traits (e.g., ceramic styles and settlement patterns) and linguistic traits. The term Haudenosaunee is used specifically to denote the five (and later) six nation confederacy present from approximately the sixteenth century onward.

The Tuscarora later became a member nation in 1722. Initially, the Confederacy functioned indirectly as a religious council, calming internal conflicts through ceremonies associated with the Great Law as prescribed by the Peacemaker (Deganawidah) and Hiawatha. As conflicts arose with neighboring nations and European settlers, the Confederacy's role became more political; however, the member nations largely retained their autonomy (Richter, 2005).

European missionaries, explorers, and traders began visiting the Cayuga and Onondaga homelands by the mid-seventeenth century. At the time of non-Indigenous settlement in the late eighteenth century, a year-round Cayuga village was located in the present-day Town of Lansing on the east shore of Cayuga Lake, west of the Facility (Norris, 1969). Prior to the Revolutionary War, the Cayuga resided in three main villages surrounding Cayuga Lake, while the principal Onondaga villages were located close to Onondaga Lake (Figure 5). Both nations interacted with Jesuit missionaries in the late seventeenth century and missions are reported to have been located at or near some of the main Cayuga and Onondaga villages. Meanwhile, Dutch and English land companies and settlers claimed land farther west into the Mohawk River Valley and Central New York, fueling preexisting tensions with the Haudenosaunee regarding the competitive fur trade, international wars, and diseases. In contrast to the other Haudenosaunee member nations, the Cayuga mostly maintained political neutrality in their contact with the French and English over several centuries. In 1664, the British gained control of New Netherland from the Dutch and began working to challenge French control of trade routes along the rivers and Great Lakes that lay on the colony's frontier. Conflicts between the Haudenosaunee and the French continued into the eighteenth century as French forts were established throughout New York. By the 1730s, a Cayuga faction began migrating to Ohio to join with existing Haudenosaunee communities and other nations. Those who remained in New York State sponsored neighboring groups, including the Saponi-Tutelo, Nanticokes, Delawares, and Conoys, and incorporated them into Cayuga territory. In the 1750s, a pro-French faction representing about half of the Onondaga population moved to the French fort and mission at Oswegatchie (present-day Ogdensburg, St. Lawrence County), while pro-English Onondagas remained in their established villages near Onondaga Lake (Figure 5; Anderson, 2005; Dixon, 2005; Obomsawin, 2005).

Hostilities between England and France culminated in the French and Indian War between 1754 and 1763, at the conclusion of which France ceded territory that it claimed east of the Mississippi (Allen, 2005). Following the French and Indian War, the 1768 Treaty of Fort Stanwix established a boundary line to demarcate the Haudenosaunee, Delaware, and Shawnee territories and regulate westward colonial expansion (Figure 5). This boundary, sometimes referred to as the "Line of Property," extended southwest from the Susquehanna River in New York to the mouth of the Tennessee River. In exchange, the Haudenosaunee forfeited their claims to the Ohio River Valley. Although the treaty bound colonists to remain east of the line, many continued to migrate and settle on Indigenous land (Anderson, 2005; Dixon, 2005; Preston, 2005).

Figure 5. 1776 Sauthier and Ratzer *A Map of the Province of New-York*



Throughout the American Revolutionary War, the Haudenosaunee experienced tumultuous shifts in their population and settlements due to internal conflicts as well as fighting with European and American soldiers. Both the British and the Americans embraced the aid of various Haudenosaunee member nations during the war, despite the Confederacy's official policy of neutrality, and the war divided the Haudenosaunee, with the Oneida and Tuscarora aiding the American colonists and the Mohawk, Seneca, Cayuga, and Onondaga providing support to the British. In retaliation, George Washington ordered the Sullivan-Clinton campaign of 1779, during which 6,000 American troops destroyed 40 Haudenosaunee villages, burning homes, crops, and food stores throughout Central and Western New York. Several Cayuga and Onondaga villages were destroyed. Many of those who survived the campaign fled to the Niagara frontier. Although the campaign drove many Haudenosaunee from Central and Western New York permanently, they continued to participate in raids against the Americans from Fort Niagara (White, et al., 1978; Schein, 1993; Dixon, 2005; Fischer, 2005).

In the aftermath of the Revolution, the Onondaga were forcibly removed from the Oswegatchie mission by New York State and relocated to the Mohawk Nation community at St. Regis or returned to their homeland in present-day Onondaga County, while still others moved to the Buffalo Creek (Seneca Nation) Reservation on the Grand River in Ontario, Canada. Onondaga territory was reduced through a series of treaties with New York State between 1788 and 1822 until only 7,300 acres remained; however, many Onondagas would

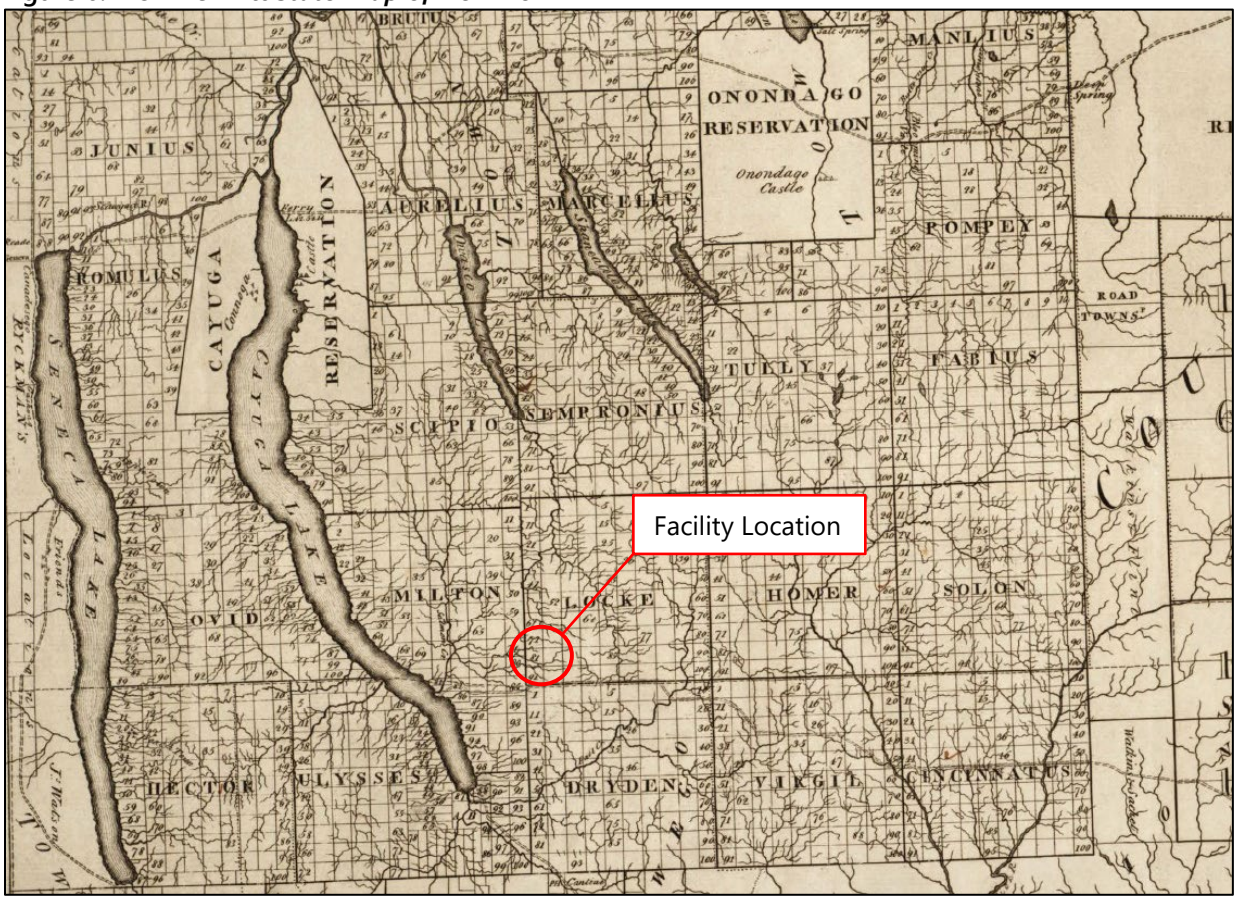
return to their homeland to settle on the reservation during the nineteenth century (Figure 6; Obomsawin, 2005).

Many Cayugas settled with the Seneca, as well as other Haudenosaunee and non-Haudenosaunee people, at the Buffalo Creek and Cattaraugus Reservations in Western New York or migrated to the established settlement at Sandusky, Ohio following the American Revolution. Still others joined Joseph Brant's loyalist faction on the Grand River in Ontario, Canada. Despite this dispersal, a group of Cayuga remained in the heart of their homeland around Cayuga Lake until they were dispossessed of their remaining land in a series of questionable treaties. The 1789 Treaty at Albany established the 100-square-mile Cayuga Reservation, depicted on the 1792 De Witt *State-Map of New-York* as the "Cayuga Reservation," along both sides of the northern end of Cayuga Lake, in what comprised the New Military Tract (Figure 6).

The Trade and Intercourse Act (also, the Non-Intercourse Act) of 1790 and the Treaty of Canandaigua in 1794 prohibited the sale of Indigenous lands without the participation and consent of the federal government, and reaffirmed Haudenosaunee sovereignty, respectively. Despite these measures, the 1795 Treaty at Cayuga Ferry resulted in the loss of reservation land to New York State. The remaining land was reconfigured into two reservations, both in Cayuga County: the "Resident Reservation" (4 square miles) on the border between the Towns of Springport and Ledyard and the "Mine Reservation" (1 square mile) northeast of the Village of Union Springs in the Town of Springport. In 1807 a group of Cayugas moved to the established reservation in Sandusky, Ohio; that reservation was subsequently lost in a treaty with the United States in 1831 and its residents were removed to Indian Territory. Following the loss of the Buffalo Creek Reservation in 1842, Cayugas living there were forced to move to the Cattaraugus (Seneca Nation) Reservation. In 1846, one-third of the Cayugas still living in New York moved to Indian Territory in Kansas. Those who remained fought the diminishment of their territory and lobbied the New York State Assembly in the 1850s and 1860s for just compensation, citing the state's enormous profits from selling Cayuga land (CCHS, 1908; Anderson, 2005; Dixon, 2005; MacLeitch, 2005).

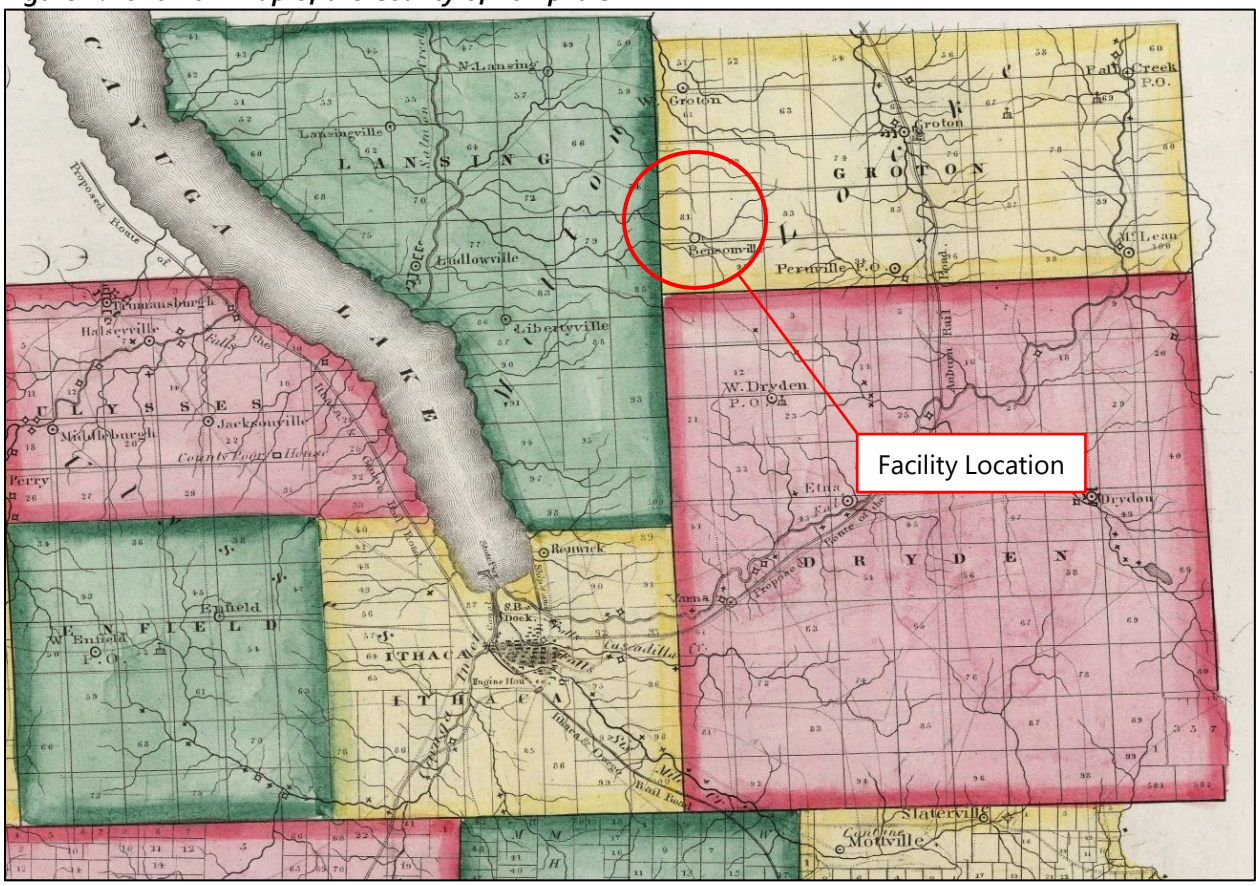
A portion of Tompkins County, which includes the Facility Site, is within the New Military Tract, a 1.5-million-acre tract set aside by the state in 1782 for soldiers of the Revolutionary War. Through its creation, the state encouraged migration and settlement by war veterans as well as by Euro-American settlers in the land expropriated from the Seneca, Cayuga, and Onondaga in the Treaty of Fort Schuyler. The tract was divided into 28 townships, each containing 100 lots of 600 acres arranged in a uniform grid pattern. Although the land was set aside for veterans, many of them either neglected to claim their land or sold their land to speculators. As a result, the tract was settled primarily by migrants from New England, New Jersey, Pennsylvania, Virginia, and the Hudson Valley, beginning in the last decade of the eighteenth century. Present-day State Route 34B, adjacent to the south side of the Facility Site, was in use by 1796. For much of its length along the east side of Cayuga Lake, State Route 34B follows an already established Indigenous trail, which served as the main transportation route for non-Indigenous settlers entering the region (Reid and Winterbotham, 1796; Norris, 1969; Dieckmann, 1986; Schein, 1993; 2005).

Figure 6. 1792 De Witt *State-Map of New-York*



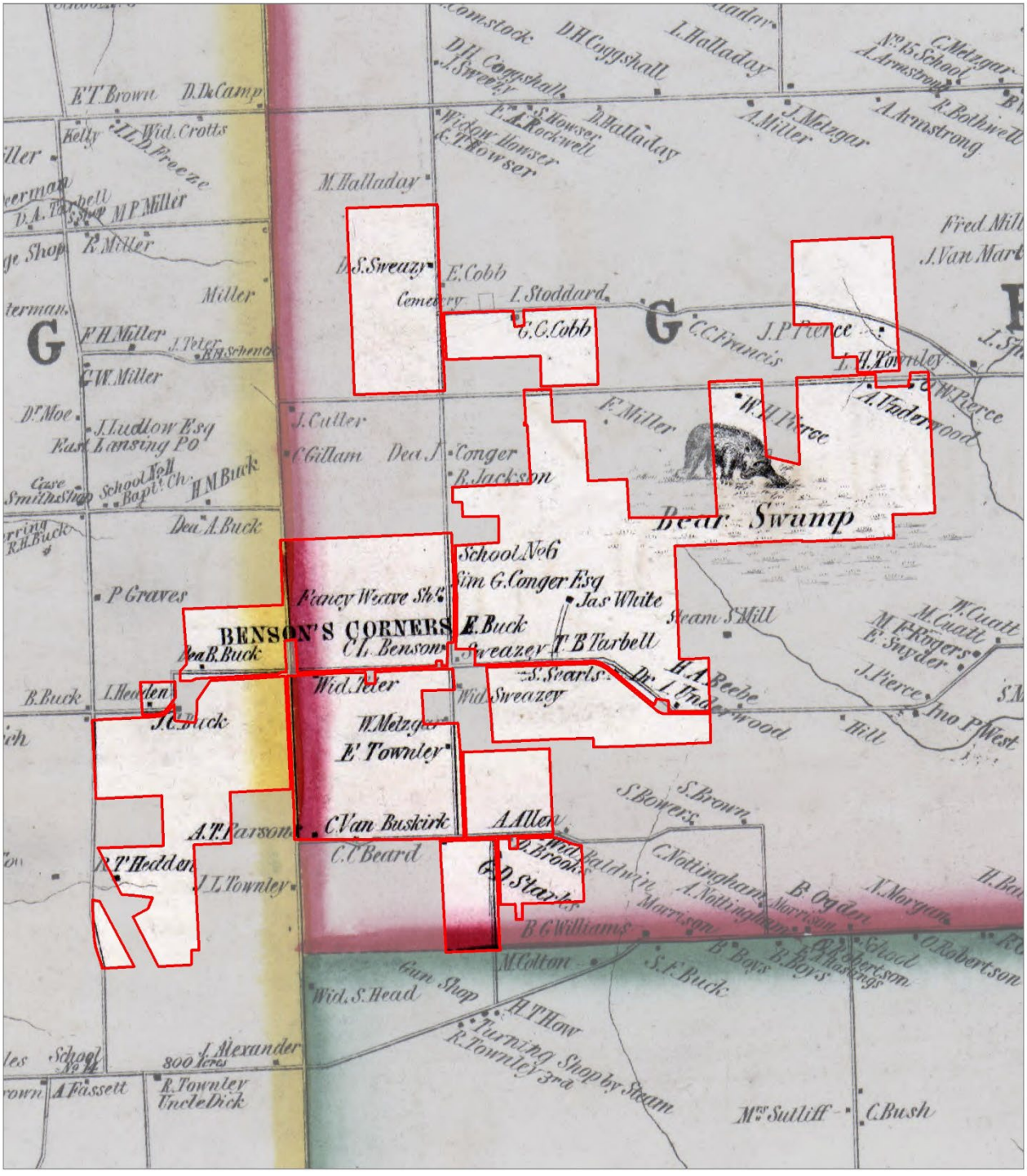
Tompkins County was formed in 1817 from Cayuga and Seneca Counties, although the final boundaries were not set until 1854. The county's agricultural economy was somewhat slow to develop; however, Cayuga Lake and the Ithaca-Owego Turnpike formed an important early transportation route for the shipment of salt from nearby Onondaga County. Due to its elevation and geography, the Facility Site was, and remains, agricultural in character. Near the Facility Site, the hamlets of Ludlowville and Groton grew up around mill sites in the first decades of the nineteenth century and were connected by a network of roads generally following the orthogonal grid of the New Military Tract lots; these hamlets remained the principal population centers within the Towns of Lansing and Groton, respectively, throughout the nineteenth century (Burr, 1829). By 1840, smaller population centers had been established, including the postal hamlet of Bensonville (also, Benson's Corners) within the Facility Site, and the hamlets of West Groton (north of the Facility Site) and Peruville (east of the Facility Site) (Figure 7). Although a railroad connecting the Village of Groton with Ithaca and Auburn had been proposed by this date, a railroad would not be built through the Town of Groton until 1870. Additional small hamlets were established later in the century, including the postal hamlets of East Lansing (west of the Facility Site) and Grotto (east of the Facility Site) (Selkreg, 1894; Kammen, 2005).

Figure 7. 1840 Burr *Map of the County of Tompkins*



The Towns of Groton (named for Groton, Connecticut) and Lansing were formed from the Towns of Locke and Genoa, respectively, when Tompkins County was established in 1817. The Village of Groton (incorporated 1860) developed a modest manufacturing base in the nineteenth century. Notable employers included the Groton Iron Bridge Company and the L.C. Smith Co. (later, Smith-Corona). The Town of Lansing, by contrast, remained almost entirely agricultural, but with some boatbuilding, salt making, and local manufacturing activity. Lansing reached a peak population of 4,000 in 1830 but had just 2,721 residents in 1930 (Selkreg, 1894; Dieckmann, 2005a; 2005b; Kammen, 2005). The 1853 Fagan *Map of Tompkins County, New York* depicts that by the mid-nineteenth century, the Facility Site and immediate vicinity were moderately populated with farmsteads, along with a handful of sawmills, churches, and schoolhouses; "Bear Swamp" is depicted in the northeastern portion of the Facility Site (Figure 8). By this time, both towns had reached their peak nineteenth-century population and were experiencing gradual declines as regional farming began to face competition from the newly settled Midwest (Kammen, 2005).

Figure 8. 1853 Fagan *Map of Tompkins County, New York*



Consistent with the overall decline in regional agriculture, the Facility Site and immediate vicinity did not experience significant development through the latter half of the nineteenth century. The 1898 USGS *Moravia, NY* 1:62500 Topographic Quadrangle depicts moderate growth of the hamlets of East Lansing and Grotto, but little or no discernable growth of Peruville or West Groton, nor any significant growth in the number of farmsteads outside of the hamlets (Figure 9).

The 1943 USGS *West Groton, NY* 1:24000 Topographic Quadrangle shows that the Facility Site did not change significantly in the first half of the twentieth century. Throughout the Facility Site and immediate vicinity, several buildings depicted on the 1898 quadrangle do not appear to have been extant in 1943, and few new buildings are evident (Figure 10). Several buildings depicted on the 1943 quadrangle are no longer extant today, but, based on a review of current aerial imagery, there has been a modest amount of late-twentieth century and early-twenty-first century rural residential development in the Facility Site and immediate vicinity, particularly along Sovocool Hill, Pleasant Valley, Munson, Goodman, and Luce Roads.

Tompkins County experienced significant demographic and economic changes throughout the twentieth century, with the decline in farming and manufacturing offset by the continued growth of Cornell University (established in Ithaca in 1868). The total number of farms in the county fell from over 3,000 in 1850 to just 447 in 1997; however, the total county population has risen steadily, tripling since 1900. Cornell University remains the largest employer in the county in the twenty-first century. West of the Facility Site, the Cargill Corporation (formerly, the Cayuga Rock Salt Company) operates the deepest salt mine in the United States on the east shore of Cayuga Lake in the Town of Lansing. Today, the Facility Site and much of the Towns of Lansing and Groton remain primarily agricultural. Lansing did not contain an incorporated village until suburban residential and commercial development led to the incorporation of the Village of Lansing, approximately two miles southwest of the Facility Site, in 1974 (Dieckmann, 1986; Kammen, 2005).

Today, the Cayuga are divided into three primary groups: the Seneca-Cayuga Tribe of Oklahoma, the Cayuga at Grand River Reservation (Ontario, Canada), and the Cayuga Nation in New York State. While litigation regarding illegal treaties and land restitution continues into the twenty-first century, the Cayuga Nation of New York has adopted a land acquisition policy to purchase former homelands in the Cayuga Land Claim Area. The Nation's reclaimed land holdings include approximately 824 acres in Cayuga and Seneca Counties. The Cayuga Nation does not currently have a reservation in New York State and its 493 enrolled members reside in Western New York and elsewhere in the United States. The Cayuga Nation is also a regional employer, operating several businesses including Lakeside Trading and Entertainment, Pullens, Harford Glen Water, Cayuga Corner, Gakwiyo Garden, Arrow Head Hemp, and Lake View Cattle Company. The Onondaga Nation has retained control of the Onondaga Indian Reservation, located in Onondaga County, which had approximately 1,600 nation members residing there in the early twenty-first century. Approximately 600 Onondaga nation members reside at the Six Nations of the Grand River Reserve, while still others reside at other Haudenosaunee nation reservations or in non-Indigenous communities (Anderson, 2005; Dixon, 2005; Obomsawin, 2005; Cayuga Nation of New York, 2021a; 2021b).

Figure 9. 1898 USGS *Moravia, NY* 1:62500 Topographic Quadrangle

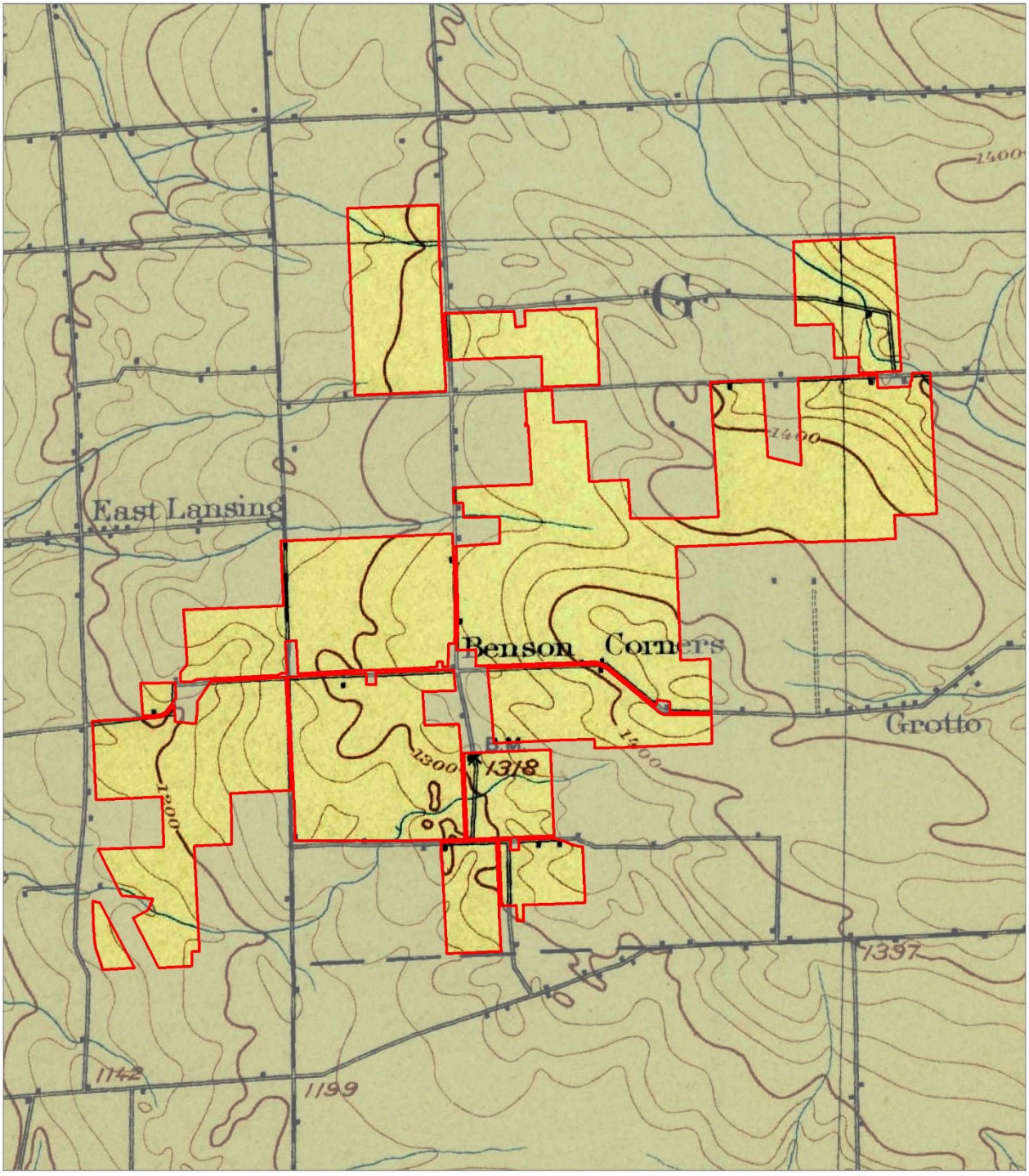
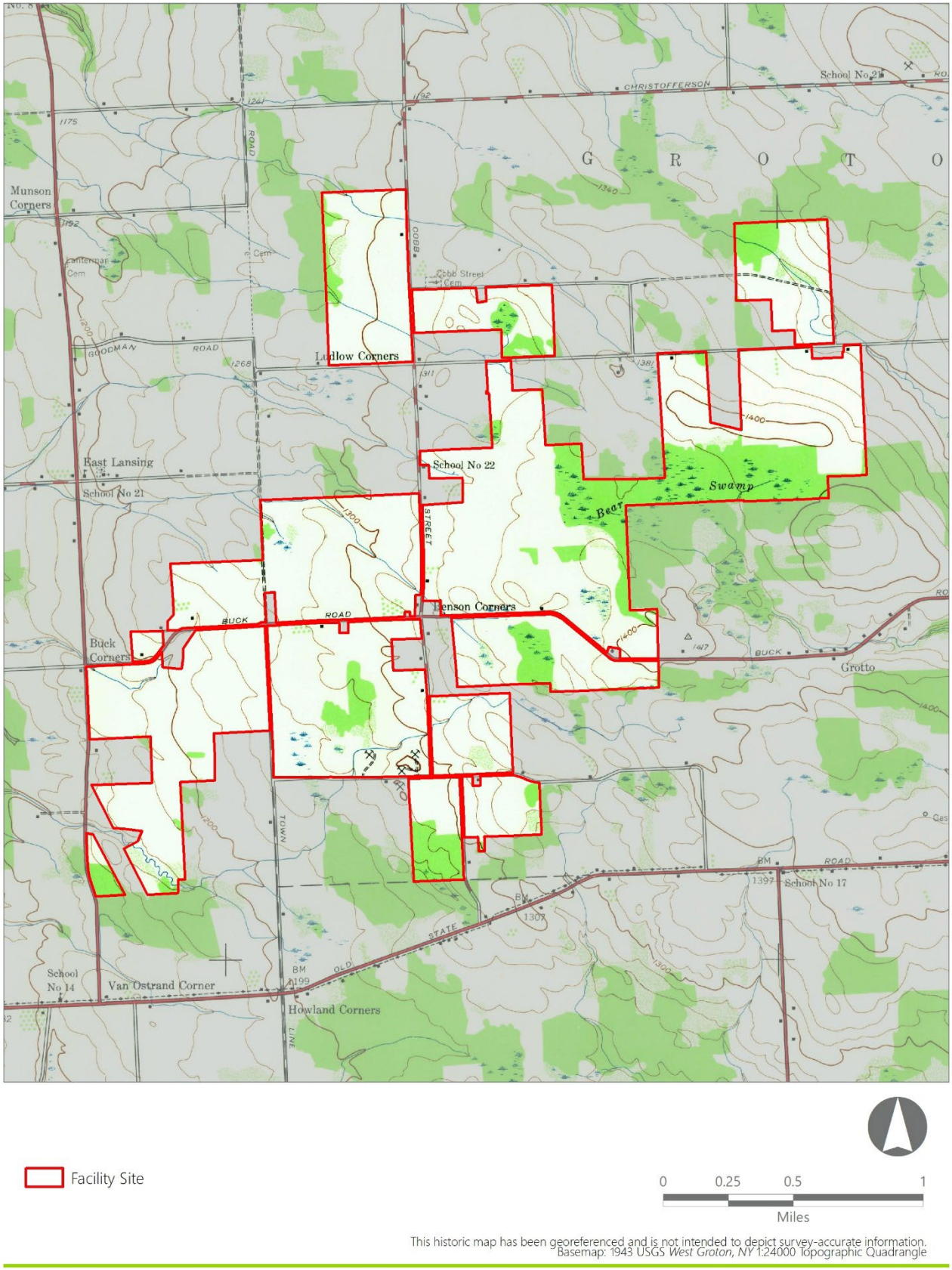


Figure 10. 1943 USGS *West Groton, NY* 1:24000 Topographic Quadrangle



3.0 ARCHAEOLOGICAL SURVEY RESEARCH DESIGN

EDR has prepared a Phase IB archaeological survey research design based on guidance received from the NYSHPO (2023; Appendix A). This research design includes an archaeological sensitivity model for the proposed Facility and a proposed methodology for the Phase IB archaeological survey.

3.1 Archaeological Sensitivity Model

EDR developed a GIS-based archaeological sensitivity model of the Facility Site (Figure 11), using guidance provided by the NYSHPO (2023; Appendix A), to provide a more refined assessment of where other archaeological sites are likely to be present. The NYSHPO's model identifies areas of elevated archaeological sensitivity as possessing one or more of the following criteria:

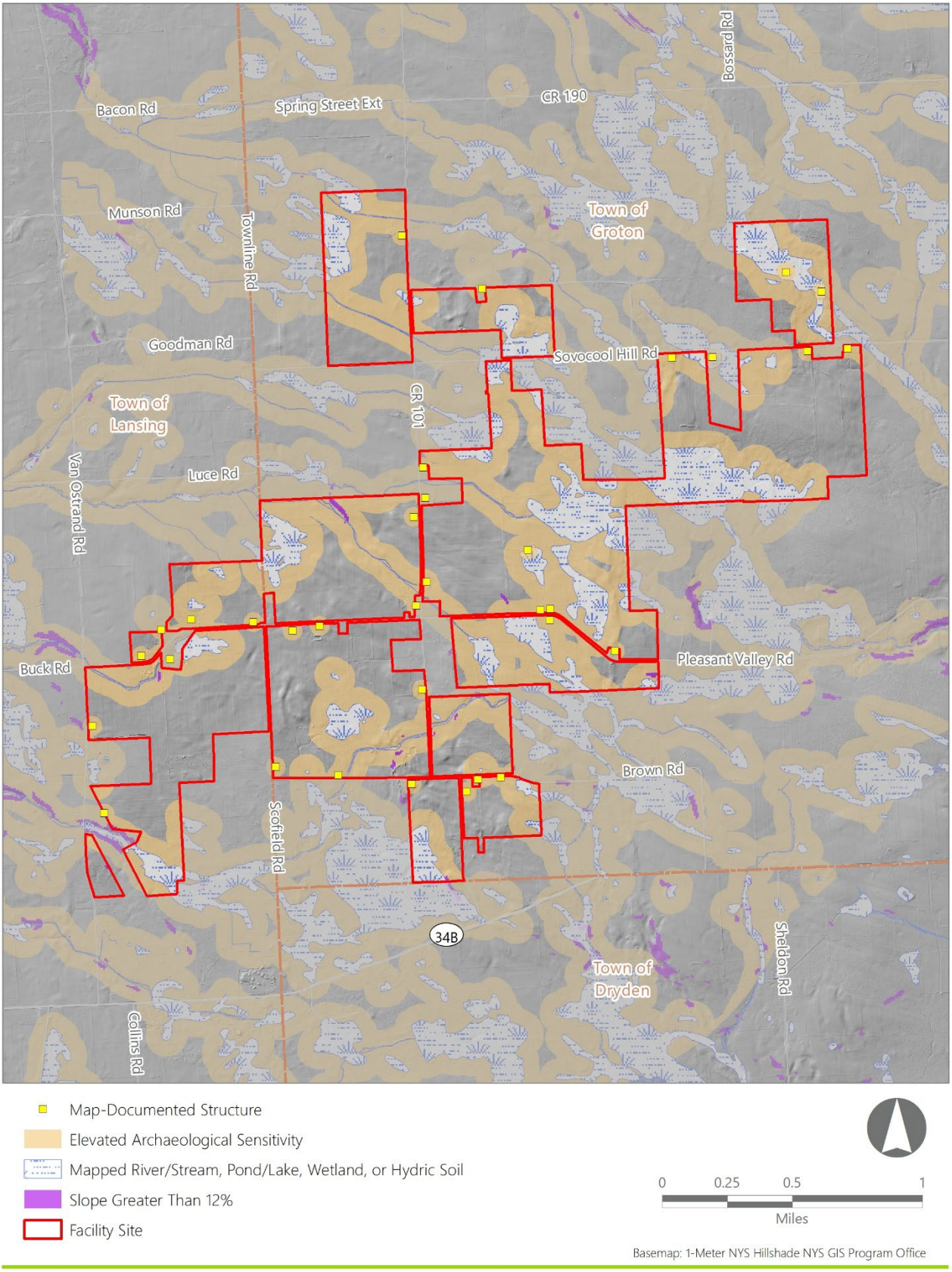
- **Criterion 1:** Within 100 meters of permanent water (rivers, streams, wetlands, ponds and lakes, and hydric soils) and on slopes equal to or less than 12%.
- **Criterion 2:** Within or near known archaeological sites.
- **Criterion 3:** Locations of standing or demolished historic structures.

EDR's archaeological sensitivity model incorporated data specific to this Facility and applied them to the NYSHPO's criteria as follows:

- **Criterion 1:** EDR has incorporated this criterion into the archaeological sensitivity model with no alterations or additions.
- **Criterion 2:** No previously identified archaeological sites are located within, or within 1 mile of, the Facility, as discussed in Section 2.3 above. As such, no data exists for this criterion to be incorporated into the archaeological sensitivity model.
- **Criterion 3:** EDR digitized the mapped locations of structures from georeferenced historic maps (i.e., MDSs) including the 1853 Fagan *Map of Tompkins County, New York*; the 1866 Stone & Stewart *New Topographical Atlas of Tompkins County, New York*; the 1898 USGS *Moravia, NY* 1:62500 Topographic Quadrangle; and the 1943 USGS *West Groton, NY* 1:24000 Topographic Quadrangle. As these maps are georeferenced from modern features, potential sources of error inherent in this process include cartographic inaccuracies, differences in scale, and changes in the modern landscape. As such, areas within 200 feet of MDS locations are considered to be archaeologically sensitive. This represents a conservative evaluation of nearby areas and therefore increases the likelihood of sites being located.

Using these criteria, the GIS-based sensitivity model resulted in the identification of approximately 831 acres (44%) of elevated archaeological sensitivity within the Facility Site (Figure 11). The proposed application of this sensitivity model to the Phase IB archaeological survey is described below in Section 3.2.

Figure 11. Archaeological Sensitivity Model



3.2 Phase IB Archaeological Survey Methodology

The Phase IB survey for the Facility will include archaeological testing within areas of elevated sensitivity where proposed substantial ground disturbance will occur. The APE will be determined based on the most current Facility design (or layout), which is in the process of being developed by the Applicant. Archaeological survey will be conducted using the following standard field methods:

- **Fields Planted in Row Crops – Pedestrian Surface Survey**: In existing crop fields and/or previously cultivated areas with greater than 70% ground-surface visibility, archaeologists will conduct a pedestrian surface survey to determine whether archaeological sites are present. In these areas, archaeologists will traverse the APE along transects spaced at 5-meter intervals while inspecting the ground surface for artifacts and/or archaeological features. If any artifacts or other indication of an archaeological site is observed on the ground surface, then the locations of finds will be recorded using sub-meter accuracy Global Positioning System (GPS) equipment. Archaeologists may collect a representative sample of observed artifacts and/or temporally diagnostic artifacts for subsequent laboratory identification and analysis, in accordance with standard archaeological methods. The primary goal of Phase IB surface survey methodology will be to determine site spatial boundaries.

- **Hay Fields, Forests, and Shrubland – Shovel Test Pits**: In areas of elevated archaeological sensitivity not suitable for pedestrian surface survey, archaeologists will excavate shovel test pits (STPs) to determine whether archaeological sites are present. STPs will be excavated along transects at 50-foot (15-meter) intervals, and in open fields in a grid pattern at a 50-foot spacing for a total of 16 STPs per acre. STPs will be 30 to 50 centimeters in diameter and excavated 10 centimeters into sterile subsoil or the practical limits of hand excavation. Field data will be recorded for each STP that describe soil stratigraphy and record whether any artifacts were recovered. All soils excavated from STPs will be screened through 0.25-inch hardware cloth. If an isolated Indigenous artifact is recovered from an isolated STP, then up to eight additional STPs will be excavated at 1- and 3-meter intervals around the original STP to determine whether the artifact represents an isolated find or may indicate the presence of a more substantial archaeological site.

- **Map-Documented Structure Locations:** The MDS buffers described in Section 3.1 are intended to serve as a guide for identifying cultural material and features associated with MDSs and not as the limits of testing. If surface features (e.g., cellar hole) or artifacts are identified near or outside the limits of an elevated sensitivity buffer, Phase IB survey will be extended outside the buffer to delineate site boundaries. Within the suspected yard area of an MDS (if one can be identified), archaeologists will excavate STPs at 7.5-meter intervals, excavate judgmentally-placed STPs, and/or excavate STPs adjacent to (i.e., within 1 meter if possible) identified foundations.

- **Alluvial Settings:** Any portions of the Facility Site that overlap with alluvial settings (i.e., floodplains) have the potential to contain deeply buried cultural material. In such settings, STPs will be excavated until sterile gravels are encountered, up to the practical limits of hand excavation (approximately 1 meter in depth), to ensure that all potential artifact-bearing soil horizons are

tested. If basal gravels are not encountered within the STPs, hand-augering at the base of the STPs will be conducted to determine the depth of such deposits as well as the presence or absence of any soil horizons that have the potential to contain cultural material (e.g., paleosols). If all potential artifact-bearing soil horizons are tested during STP and/or hand auger excavation, no additional testing methods will be employed during the Phase IB survey. If, however, STP and/or hand auger excavation determines that deeply buried archaeological deposits have the potential to be present below the limits of hand excavation, but not below the depth of proposed Facility-related impacts, additional deep testing strategies will be determined in consultation with the NYSHPO. Please note that the need for any additional deep testing would be dependent on the anticipated depth of disturbance for proposed Facility components in these areas.

Per NYAC's 1994 *Standards for Cultural Resources Investigations and the Curation of Archaeological Collections in New York State*, the following portions of the Facility Site will not be subject to Phase IB archaeological survey:

- **Areas where ground slope exceeds 12%:** Ground slope is anticipated to be a relatively minor factor in the archaeological sensitivity of the Facility Site as the wider area is characterized by gently rolling topography with few steep slopes (Figure 11). Furthermore, Facility components will be preferentially sited on flat or gently sloping terrain to minimize the grading required for Facility construction.

- **Areas of delineated wetland:** Wetland communities within the Facility Site are being investigated as part of the environmental review for the Facility. Facility components will be sited, to the greatest extent practicable, in areas that avoid/minimize impacts to wetland communities.

- **Areas that have been previously disturbed:** Previous ground disturbance within the Facility Site is, for the most part, limited to previous or ongoing agricultural activities. However, farming is not considered significant in terms of its potential to affect the integrity of archaeological resources (NYAC, 1994; NYSHPO, 2005). Some areas immediately adjacent to existing roads within the Facility Site include drainage ditches, culverts, buried utilities, and areas of cut and/or fill. With the exception of these areas, the Facility Site in general does not appear to have been subjected to significant previous ground disturbance.

- **Areas where previous cultural resources surveys have been conducted:** As described in Section 2.2 above, no previously conducted archaeological surveys overlap with the Facility Site. As such, no areas requiring Phase IB survey will be excluded as a result of previous Phase IB survey efforts.

3.3 Actions Taken in the Event of Discovery of Human Remains

While no archaeological sites containing human remains have been previously identified within the Facility Site, the Applicant recognizes the potential concern for human burials to be present. In the event of an unanticipated discovery of potential human remains and/or funerary objects during the Phase IB survey, all work in the immediate vicinity will stop until further notice, the site of the find will be secured as best as

possible, and the NYSHPO, the county coroner/medical examiner, and local law enforcement will be contacted. The potential remains/funerary objects will be treated with respect, left in situ by onsite personnel (including the surrounding soils), and protected from further disturbance. If human remains or funerary objects are determined to be Indigenous, a treatment plan will be developed in consultation with the NYSHPO and the appropriate Indigenous Nations, consistent with established protocols and guidance. These will include NYSHPO's (2021) *Human Remains Discovery Protocol*, the Advisory Council on Historic Preservation's "Policy Statement Regarding Treatment of Burial Sites, Human Remains and Funerary Objects" (ACHP, 2007), and the *Haudenosaunee Policy on Human Remains* (Grand Council of the Haudenosaunee, 2002).

3.4 Phase IB Archaeological Survey Reports and Delivery of Electronic Data

Results of subsequent Phase IB archaeological survey conducted for the Facility will be presented in an illustrated report prepared in accordance with applicable portions of the NYSHPO's 2005 *Phase I Archaeological Report Format Requirements*. Descriptive information for any archaeological sites identified during the Phase IB surveys will be uploaded to the NYSHPO's online CRIS database at the same time as the survey report. EDR will also provide accurate location information for any sites identified during the Phase IB surveys via CRIS.

4.0 SUMMARY AND CONCLUSIONS

4.1 Summary of Phase IA Archaeology Survey

Relative to the potential for archaeological sites to be located in the Facility Site, the results of the Phase IA archaeological resources survey for the Facility can be summarized as follows:

- No previous archaeological surveys have been conducted within or adjacent to the Facility Site.
- No previously identified archaeological sites are located within, or within 1 mile of, the Facility Site.
- No mapped cemeteries are located within the Facility Site; however, one is located adjacent to (i.e., within 500 feet) the Facility Site. The cemetery will be avoided by Facility-related impacts as it is located on the opposite side of the street from the closest portion of the Facility Site and as its boundary is clearly visible in aerial imagery.
- Historic maps depict structures located along current and abandoned roadways within the Facility Site. Areas located in the immediate vicinity—within approximately 200 feet—of MDS locations are considered to have high potential for the presence of archaeological resources.
- EDR's sensitivity model resulted in the identification of approximately 831 acres (44%) of elevated archaeological sensitivity within the Facility Site.

4.2 Recommendations

Construction of the proposed Facility will include ground disturbing activities that have the potential to impact archaeological resources. The APE will include all areas of proposed construction activities and will be determined based on the most current Facility design (or layout), which is in the process of being developed by the Applicant. Phase IB archaeological testing is recommended for those areas within the Limits of Significant Ground Disturbance that have an elevated sensitivity for archaeological resources, consistent with the field methods and research design presented in this report.

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Appendix A

NYSHPO Correspondence

NEW YORK STATE OF OPPORTUNITY. Parks, Recreation and Historic Preservation

ANDREW M. CUOMO
Governor

ERIK KULLESEID
Commissioner

SOLAR FACILITY ARCHAEOLOGY COMMENTS

Phase IA Archaeological Survey Recommendations/Sensitivity Model
Project: Yellow Barn Solar Project/106 MW AC/1,902 Acres
PR#: 23PR03682
Date: 05/15/2023

The State Historic Preservation Office/Office of Parks, Recreation and Historic Preservation (SHPO/OPRHP) recommends a Phase IA archaeological survey, including Phase IB testing recommendations. A Phase IA Literature Search and Sensitivity Study is the initial assessment of the overall sensitivity of a project area (*Area of Potential Effects or APE*) for the presence of archaeological sites and Native American sites of religious and cultural significance and functions to guide subsequent field investigations.

The SHPO/OPRHP recommends that Phase IB archaeological testing is warranted for areas of substantial proposed ground disturbance that fall within areas of high archaeological sensitivity. Substantial proposed ground disturbance includes: (1) grading and excavation more than six inches deep; (2) grubbing, tree and stump removal; and (3) trenches more than three feet wide. Phase IB archaeological testing is not recommended for panel arrays; perimeter fencing and utility poles, if their associated posts are driven or drilled into the ground and no grubbing or grading is involved, and for excavations and grading less than six inches in depth.

The SHPO/OPRHP defines areas of high sensitivity, where archaeological sites are most likely to be identified, as those: (1) within 100-meters (328 feet) of permanent water (rivers, streams, wetlands, ponds and lakes and hydric soils) and on slopes equal to or less than 12%; (2) within or near to known archaeological sites; and (3) locations of standing or demolished historic structures. Hydric soils are included to account for areas that may not be currently near water but were in the past. The 100-meter cut off from water is based on data presented by Robert E. Funk in his 1993 *Archaeological Investigations in the Upper Susquehanna Valley, New York State.* Testing should conform to the 1994 New York Archaeological Council Standards.

All other portions of the project area are considered to have low sensitivity for the presence of archaeological sites, including areas of previous ground disturbance. The SHPO/OPRHP has no archaeological concerns with low sensitivity areas and does not recommend Phase IB testing in these locations.

If project design flexibility or shovel ready status is desired, the SHPO/OPRHP recommends 100% sampling of all highly sensitive areas irrespective of the nature and type of construction impacts. With this approach, changes in project design will not require further archaeological consultation except for changes that may impact sites within the APE or that increase the size of the project area.

Our office does not conduct archaeological surveys. A 36 CFR 61 qualified archaeologist should be retained to conduct this work.