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PHASE IB CULTURAL RESOURCES RECONNAISSANCE SURVEY
OF THE PROPOSED GCE DURHAM SOLAR CENTER ALONG
MIDDLEFIELD ROAD IN DURHAM, CONNECTICUT

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ABSTRACT

This report presents the results of the Phase IB Cultural Reconnaissance survey of a proposed solar facility located along Middlefield Road in Durham, Connecticut. Heritage Consultants, LLC completed a previous Phase IA cultural resources assessment survey of the Facility area and determined that the Area of Potential Effect retained moderate to high archaeological sensitivity. It was designated as Sensitivity Area SA-1, which measured 17.8 acres in size and is characterized by gently sloping topography that includes a mixture of open areas, hardwood/deciduous forests, dense weeds and shrubs, as well as well-drained soils present throughout. In addition, the Phase IA investigation led to the identification of a previously identified Archaic period archaeological site in the southern portion of the Facility area. Site 38-2, which is also known as the Gastler Site, was initially identified in April of 1979 during a surface collection survey headed by the staff of the Connecticut Archaeological Society (CAS). No further investigation of this site has occurred since its initial identification.

The Phase IB Cultural Reconnaissance Survey was completed in January of 2024. A total of 166 of 180 (92 percent) planned shovel tests, as well as 12 radial shovel tests were excavated across Sensitivity Area SA-1. A total of 22 of the shovel tests contained cultural material: 11 yielded post-European Contact period material, eight contained precontact materials, two contained both precontact and post-European Contact period materials, and one yielded an ecofact that could not be assigned to any specific time period. The subsurface testing effort of Sensitivity Area SA-1 resulted in the recovery of 39 artifacts, of which 21 were classified as post-European Contact cultural material, 17 as precontact cultural material, and one as lacking temporal designation. The post-European Contact period artifacts consisted of ceramic sherds, glass shards, various types of nails, and a zinc alloy metal fragment, as well as modern and early-twentieth century farm equipment along the edges of the parcel. In addition, a single bivalve shell was recovered from a test pit lacking other cultural materials. The latter was designated as an ecofact that originated from an indeterminate time period. The post-European Contact period artifacts and the ecofact were yielded from primarily disturbed contexts, as well as recovered in low densities. Thus, these deposits appear to represent field scatter and do not retain research potential of the qualities of significance for listing in the National Register of Historic Places applying the criteria for evaluation (36 CFR 60.4[a-d]). No additional archaeological examination of the recovered post-European Contact period component or ecofact associated with Sensitivity Area SA-1 is recommended.

The precontact era artifact assemblage was yielded from three areas throughout the parcel that were designated as previously identified archaeological Site 38-2, Isolated Find ISO-1, and Locus 1. The concentration of artifacts designated as Locus 1 is located in the eastern portion of the northern field and consisted of a single quartz flake fragment and two pieces of quartz angular debris. These artifacts were recovered from the disturbed plowzone or from the organic duff layer and were not found in association with any cultural features. ISO-1 is located in the central area of the parcel's southern field and is characterized by a single quartz flake originating from the B-Horizon (subsoil); it was found in association with a redware ceramic sherd, indicating that this area contained intrusive finds. Despite careful investigation, no additional precontact material culture or features were identified during delineation of Locus 1. Therefore, it is the professional opinion of Heritage that due to a lack of depositional integrity and association with previously identified archaeological sites or cultural features, both Locus 1 and ISO-1 retain no research potential or the qualities of significance for listing in the National Register of Historic Places applying the criteria for evaluation (36 CFR 60.4[a-d]). No additional archaeological examination of Locus 1 or ISO-1 is needed prior to development.

Phase IB shovel testing in the vicinity of previously identified Site 38-2 suggests for the occupation that extends approximately 210 meters (689 feet) in a west-east direction by 40 meters (131.2 feet) in a north-south direction; however, this boundary may extend further to the east, west, or south outside of the project area. Shovel testing of Site 38-2 resulted in the collection of 12 lithic artifacts, including various types of debitage (n=10), a biface fragment (n=1), and a debitage tool (n=1); the remaining artifact consisted of a single shell fragment recovered from the B-Horizon. The majority of the artifacts were recovered from the subsoil (n=5) and plowzone (n=6) horizons. While Site 38-2 has been subjected to some previous disturbance, cultural material was recovered from intact B subsoils, indicating the presence of intact cultural deposits. This site was assessed as potentially significant applying the National Register of Historic Places criteria for evaluation (36 CFR 60.4[a-d]); however, project-related ground disturbance within the site area will be limited to a minor amount tree clearing. As long as the tree stumps are left in place and no stump grinding occurs, no impacts to Site 38-1 are anticipated. AS a result, no additional archaeological examination of the site area is recommended prior to project construction.

Finally, the pedestrian survey portion of the Phase IB survey resulted in the identification of three dry-laid stonewalls that help to define the boundaries of the project parcel, as well as a capped well. The stonewalls were dry-laid and lined the majority of the project parcel. They all appear to range from good to fair condition. The capped stone well is situated to the west of Stonewall 1 and directly north of a creek that interrupts the wall. It has a diameter of approximately 1.3 meters (4.5 feet) and is surrounded by large rocks. It is recommended that, to the extent practicable, Stonewalls 1 through 3 and the capped stone well be left in place and that they be included on construction maps and marked with high visibility fencing in the field so that they are not impacted during construction.

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CHAPTER I

INTRODUCTION

This report presents the results of a Phase IB Cultural Resources Reconnaissance survey of the proposed solar facility (the Facility) located along Middlefield Road in Durham, Connecticut (Figure 1). A previously conducted Phase IA cultural assessment survey indicated that approximately 17.8 acres of land associated with the proposed Facility retained moderate to high archaeological sensitivity. Vanasse Hangen Brustlin (VHB) requested that Heritage Consultants, LLC (Heritage) complete a Phase IB cultural resources reconnaissance survey of the archaeologically sensitive areas prior to Facility development. The Phase IB survey was completed by Heritage in January of 2024. All work associated with this project was performed in accordance with the *Environmental Review Primer for Connecticut's Archaeological Resources* (Poirier 1987) promulgated by the Connecticut State Historic Preservation Office (CT-SHPO).

Project Description, Methods, & Results Overview

The proposed solar Facility will consist of two solar arrays, an interconnection route, fencing, and associated infrastructure that will impact 17.8 acres of land in Durham, Connecticut (Figure 2). The Facility area is situated at elevations ranging from approximately 60 to 113 meters (197 to 371 feet) NGVD. The Project parcel is bounded by agricultural fields to the north, residential development with wooded areas to the west and south, and commercial development with dense wooded vegetation to the east. The Phase IB survey consisted of the archaeological examination of one area of moderate/high archaeological sensitivity (Sensitivity Area SA-1), which measures 17.8 acres in size and extended along two fields; these were designated as the northern field and the southern field. Sensitivity Area SA-1 is characterized by gently sloping topography that includes a mixture of open areas, deciduous forests, as well as dense weeds and shrubs.

The previous Phase IA cultural assessment survey resulted in the identification of Site 38-2, which is located along the southern edge of the proposed Facility's area of potential effect (APE). Site 38-2, which is also known as the Gastler Site, was initially identified in April of 1979 during a surface collection survey headed by the staff of the Connecticut Archaeological Society (CAS). The precontact era artifacts assemblage recovered during the 1979 surface collection consisted of a flint side-notched point, as well as an unspecified number of quartz scrapers and untyped flint projectile points. No further investigation of this site has occurred since its initial identification; however, the state archaeological site form suggests that the site may provide information on the utilization and manufacturing process of flint and quartz materials. The field methods employed during the Phase IB survey to investigate Sensitivity Area SA-1 and Site 38-2 consisted of pedestrian survey, mapping, photo-documentation, and subsurface testing throughout the archaeologically sensitive area. The details of the field methods used, as well as the results of the Phase IB survey, are reviewed below.

The examination of the Sensitivity Area SA-1 was completed through the systematic excavation of shovel test pits spaced at 20 meter (65.6 foot) intervals along parallel survey transects positioned 20 meters (65.6 feet) apart. All shovel tests excavated measured 50 x 50 centimeters (19.4 x 19.4 inches) in size and were excavated until glacially derived C-Horizon soils or immovable objects (boulders, large tree roots) were encountered. The Phase IB survey effort resulted in the excavation of 166 of 180 (92 percent) planned shovel tests, as well as 12 radial test pits around artifacts findspots. Of these, 11 yielded post-European Contact period artifacts, eight produce precontact materials, two contained both post-European Contact period and precontact era materials, and a single test pit yielded an ecofact

(shell fragment) that could not be assigned to any specific time period. The subsurface testing effort of Sensitivity Area SA-1 resulted in the recovery of 39 artifacts, of which 21 were classified as post-European Contact cultural material, 17 as precontact era cultural material, and one, the shell fragment, that could not be assigned to a particular period. The post-European Contact period cultural artifacts included examples of ceramic sherds, glass shards, various types of nails, and a zinc alloy metal fragment. They were collected from disturbed fill soils, including the Ap (plowzone) horizon, and an A-Horizon. Modern trailers and mid-twentieth century agricultural equipment were also identified along the edges of the parcel. The post-European Contact period artifacts and the shell fragment mentioned above originated from primarily disturbed contexts and were recovered in relatively low densities. Thus, these deposits appear to represent field scatter and do not retain research potential of the qualities of significance for listing in the National Register of Historic Places applying the criteria for evaluation (36 CFR 60.4[a-d]). No additional archaeological examination of the post-European Contact period component or the area that yielded the shell fragment is recommended.

The precontact era artifacts were recovered from three areas spread throughout the parcel. These were designated as previously identified archaeological Site 38-2, Isolated Find ISO-1, and Locus 1. The concentration of artifacts designated as Locus 1 was situated in the eastern portion of the northern field and was originally identified through the recovery of a single quartz flake. Delineation of the area led to the recovery of an additional piece of quartz primary reduction debris. These artifacts were recovered from the disturbed plowzone or from the organic duff layer, respectively and were not found in association with any cultural features. It is the professional opinion of Heritage that due to a lack of depositional integrity and association with previously identified archaeological sites or cultural features, Locus 1 does not retain research potential. Therefore it lacks the qualities of significance for listing the National Register of Historic Places applying the criteria for evaluation (36 CFR 60.4[a-d]). No additional archaeological examination of the Locus 1 area is recommended prior to development.

Isolated Find ISO-1 was identified in the central area of the parcel's southern field and is characterized by a single quartz flake and a redware ceramic sherd that both originated from the B-Horizon (subsoil) in the same shovel test. These two artifacts appeared to be intrusive to the subsoil. Despite careful investigation, no additional cultural material, precontact era or post-European Contact period, or features were identified during delineation of Isolated Find ISO-1. Therefore, it is the professional opinion of Heritage that due to a lack of depositional integrity and association with previously identified archaeological sites or cultural features Isolated Find ISO-1 lacks research potential. It was assessed as not eligible for listing on the National Register of Historic Places applying the criteria for evaluation (36 CFR 60.4[a-d]). No additional archaeological examination of Locus 1 is recommended prior to development.

Phase IB shovel testing of Site 38-2 suggested a preliminary boundary that extended approximately 210 meters (689 feet) in a west-east direction by 40 meters (131.2 feet) in a north-south direction; however, this boundary may extend further to the east, west, and south outside the Project area. Shovel testing of Site 38-2 yielded 13 of 17 (76 percent) of precontact era artifacts from across the project area. The precontact era material recovered during shovel testing of Site 38-2 consisted of 12 lithic artifacts, including various types of debitage (n=10), a biface fragment (n=1), and a debitage tool (n=1). The remaining item recovered from the site area, an ecofact, consisted of a single shell fragment; it originated from the B-Horizon. While Site 38-2 has been subjected to some previous disturbance, cultural material was recovered from intact B subsoils, indicating the presence of intact cultural deposits within the project area. This site was assessed as potentially significant applying the National Register of Historic Places criteria for evaluation (36 CFR 60.4[a-d]); however, project-related ground disturbance

within the site area will be limited to a minor amount of tree clearing. As long as the tree stumps are left in place and no stump grinding occurs, no impacts to Site 38-1 are anticipated. AS a result, no additional archaeological examination of the site area is recommended prior to project construction.

In addition, the pedestrian survey portion of the Phase IB survey identified three dry-laid stonewalls that defined part of the project boundaries of the project parcel, as well as a capped well. Stonewall 1 was located on the eastern boundary of the southern field and extends approximately 120 meters (393.7 feet) on a north-south axis. It measures approximately 70 centimeters (2.3 feet) in width and 91 centimeters (3 feet) in height and remains in good condition. Stonewall 2 consists of four segments that outline the northern, western, and eastern boundaries of the northern field, as well as the northern boundary of the southern field; these four segments extend a cumulative length of approximately 0.75 kilometers (2,460.6 feet) along the edges of the APE. Similarly, these segments measure approximately 70 centimeters (2.3 feet) in width and 91 centimeters (3 feet) in height and remain in fair condition. The final stonewall, Stonewall 3, follows the southern boundary of the southern field; it measures approximately 147 meters (482.3 feet) along an east-west axis. This wall is 61 centimeters (2 feet) tall and 76 centimeters (2.5 feet) wide. Finally, a capped stone well is situated to the west of Stonewall 1 and directly north of a creek that bisects the wall. It has a diameter of approximately 1.3 meters (4.5 feet) and is surrounded by large rocks. It is recommended that, to the extent practicable, Stonewalls 1 through 3, as well as the capped stone well, be left in place, that they be included on construction maps, and that they be marked with high visibility fencing in the field so that they are not impacted during construction.

Project Personnel

Key personnel for this investigation included David R. George, M.A., RPA, (Principal Investigator), Melissa Wales, B.A, (Field Director), Linda Seminario, M.A., (Project Archaeologist), David Naumec, PhD., (Historian), Sean Buckley, M.A., (GIS Specialist); and Erica Lang, M.A., (Laboratory Specialist).

CHAPTER II

NATURAL SETTING

Introduction

This chapter provides a brief overview of the natural setting of the region containing the Facility in Durham, Connecticut. Previous archaeological research has documented that specific environmental factors can be associated with both precontact era and post-European Contact period site selection. These include general ecological conditions, as well as types of fresh water sources present, degree of slopes, and soils situated within a given study area. The remainder of this chapter provides a brief overview of the ecology, hydrological resources, and soils present within the Project area and the larger region in general.

Ecoregions of Connecticut

Throughout the Pleistocene and Holocene Periods, Connecticut has undergone numerous environmental changes. Variations in climate, geology, and physiography have led to the “regionalization” of Connecticut’s modern environment. It is clear, for example, that the northwestern portion of the state has different natural characteristics than the coastline. Recognizing this fact, Dowhan and Craig (1976), as part of their study of the distribution of rare and endangered species in Connecticut, subdivided the state into various ecoregions. Dowhan and Craig (1976:27) defined an ecoregion as:

“An area characterized by a distinctive pattern of landscapes and regional climate as expressed by the vegetation composition and pattern, and the presence or absence of certain indicator species and species groups. Each ecoregion has a similar interrelationship between landforms, local climate, soil profiles, and plant and animal communities. Furthermore, the pattern of development of plant communities (chronosequences and toposequences) and of soil profile is similar in similar physiographic sites. Ecoregions are thus natural divisions of land, climate, and biota.”

Dowhan and Craig defined nine major ecoregions for the State of Connecticut. They are based on regional diversity in plant and animal indicator species (Dowhan and Craig 1976). Only one of the ecoregions is germane to the current investigation: Southeast Hills Ecoregion. A brief summary of this ecoregion is presented below. It is followed by a discussion of the hydrology and soils found in and adjacent to the project area.

Southeast Hills Ecoregion

The Southeast Hills ecoregion consists of “coastal uplands, lying within 25 miles of Long Island Sound, characterized by low, rolling to locally rugged hills of moderate elevation, broad areas of upland, and local areas of steep and rugged topography” (Dowhan and Craig 1976). Elevations in the Southeast Hills ecoregion generally range from 75.7 to 227.2 m (250 to 750 ft) above sea level (Dowhan and Craig 1976). The bedrock of the region is composed of schists and gneisses deposited during the Paleozoic. Soils in the region have developed on top of glacial till in upland locales, and on top of stratified deposits of sand, gravel, and silt in the local valleys and upland areas (Dowhan and Craig 1976).

Hydrology of the Study Region

The Facility location is situated within close proximity to several sources of freshwater, including the Coginchaug River to the west, as well as Sawmill Brook and the Connecticut River to the east. Small, unnamed bodies of water are also nearby. Previously completed archaeological investigations in Connecticut have demonstrated that streams, rivers, and wetlands were focal points for precontact era

occupations because they provided access to transportation routes, sources of freshwater, and abundant faunal and floral resources.

Soils Comprising the Project Area

Soil formation is the direct result of the interaction of several variables, including climate, vegetation, parent material, time, and organisms present (Gerrard 1981). Once archaeological deposits are buried within the soil, they are subject to many diagenic processes. Different classes of artifacts may be preferentially protected, or unaffected by these processes, whereas others may deteriorate rapidly. Cyclical wetting and drying, freezing, and thawing, and compression can accelerate chemically and mechanically the decay processes for animal bones, shells, lithics, ceramics, and plant remains. Lithic and ceramic artifacts are largely unaffected by soil pH, whereas animal bones and shells decay more quickly in acidic soils such as those that are present within the Project area. In contrast, acidic soils enhance the preservation of charred plant remains.

The project parcel is characterized by the presence of Cheshire, Wethersfield, and Yalesville soils, which are characterized as very deep well drained loamy soils. Where they are not disturbed, these types of soils are generally well correlated with both post-European Contact period and precontact era archaeological site locations. A descriptive profile for each soil type is presented below; they were gathered from the National Resources Conservation Service.

Cheshire Soils

The Cheshire series consists of very deep, well drained loamy soils formed in supraglacial till on uplands. They are nearly level through very steep soils on till plains and hills. Slope ranges from 0 to 60 percent. A typical soil profile is as follows: **Ap**--0 to 8 inches; dark brown (7.5YR 3/2) fine sandy loam, pinkish gray (7.5YR 6/2) dry; weak medium granular structure; friable; common fine roots; 5 percent gravel; strongly acid; **Bw1**--8 to 16 inches; reddish brown (5YR 4/4) fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; 10 percent gravel; strongly acid; **Bw2**--16 to 26 inches; reddish brown (5YR 5/4) fine sandy loam; weak medium subangular blocky structure; very friable; few fine roots; 10 percent gravel; strongly acid; and **C**-- 26 to 65 inches; reddish brown (2.5YR 4/4) gravelly sandy loam; massive; very friable with firm lenses; 20 percent gravel and cobbles; strongly acid.

Wethersfield Soils

The Wethersfield series consists of very deep, well drained loamy soils formed in dense glacial till on uplands. The Wethersfield soils are moderately deep to dense basal till. They are nearly level to steep soils on till plains, low ridges, and drumlins. Slope ranges from 0 to 35 percent. A typical profile associated with Wethersfield soils is as follows: **Oe**--0 to 3 cm; black (10YR 2/1) moderately decomposed plant material; **A**--3 to 8 cm; dark brown (7.5YR 3/2) loam; moderate medium granular structure; friable; many fine and medium roots; 10 percent gravel; strongly acid; clear wavy boundary; **Bw1**--8 to 22 cm; reddish brown (5YR 4/4) loam; weak medium subangular blocky structure; friable; common fine and medium roots; 10 percent gravel; strongly acid; clear wavy boundary; **Bw2**--22 to 69 cm; dark reddish brown (5YR 3/3) gravelly loam; weak medium subangular blocky structure; friable; few medium roots; 15 percent gravel and cobbles; strongly acid; clear wavy boundary; and **Cd**--69 to 165 cm; reddish brown (2.5YR 4/4) gravelly loam; weak thick platy structure; very firm, brittle; few silt films and black coatings on some plates; 20 percent gravel and cobbles; strongly acid.

Yalesville Soils

The Yalesville series consists of moderately deep, well drained soils formed in a loamy till. They are nearly level to moderately steep soils on hills and ridges. Slope ranges from 0 to 50 percent. A typical

soil profile is as follows: **Ap**--0 to 20 cm; dark brown (7.5YR 3/2) fine sandy loam, pinkish gray (7.5YR 6/2) dry; weak medium granular structure; friable; common very fine, fine, and medium roots; 5 percent gravel; moderately acid; abrupt smooth boundary; **Bw1**--20 to 36 cm; reddish brown (5YR 4/4) fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; few very dark grayish brown earthworm casts; 5 percent gravel; moderately acid; gradual wavy boundary; **Bw2**--36 to 64 cm; reddish brown (5YR 4/4) loam; weak medium subangular blocky structure; friable; few fine roots; 5 percent gravel; moderately acid; gradual wavy boundary; **C**--64 to 91 cm; reddish brown (2.5YR 4/4) gravelly sandy loam; massive; firm; 12 percent gravel and 3 percent cobbles; moderately acid; abrupt wavy boundary; and **2R**--91 cm; reddish brown (2.5YR 4/4) hard sandstone bedrock.

Summary

A review of mapping, geological data, ecological conditions, soils, slopes, and proximity to freshwater suggests that portions of the proposed Facility appear to be amenable to both precontact era and post-European Contact period occupations. This includes areas of low to moderate slopes with well-drained soil located near freshwater sources. The types of Native American sites that may be contained in these areas include task specific, temporary, or seasonal base camps, which may include areas of lithic tool manufacturing, hearths, post-molds, and storage pits.

CHAPTER III

PRECONTACT ERA SETTING

Introduction

Prior to the late 1970s and early 1980s, very few systematic archaeological surveys of large portions of the State of Connecticut had been undertaken. Rather, the precontact period of the region was studied at the site level. Sites chosen for excavation were highly visible and they were in such areas as the coastal zone, e.g., shell middens, and Connecticut River Valley. As a result, a skewed interpretation of the precontact period of Connecticut was developed. It was suggested that the upland portions of the state, i.e., the northeastern and northwestern hills ecoregions, were little used and rarely occupied by precontact Native Americans, while the coastal zone, i.e., the eastern and western coastal and the southeastern and southwestern hills ecoregions, were the focus of settlements and exploitation in the precontact era. This interpretation remained unchallenged until the 1970s and 1980s when several town-wide and regional archaeological studies were completed. These investigations led to the creation of several archaeological phases that subsequently were applied to understand the precontact period of Connecticut. The remainder of this chapter provides an overview of the precontact setting of the region encompassing the project parcel.

Paleo-Indian Period (12,000 to 10,000 Before Present [B.P.])

The earliest inhabitants of the area encompassing the State of Connecticut, who have been referred to as Paleo-Indians, arrived in the area by ca., 13,000 B.P. (Gramly and Funk 1990; Snow 1980). Due to the presence of large Pleistocene mammals at that time and the ubiquity of large fluted projectile points in archaeological deposits of this age, Paleo-Indians often have been described as big-game hunters (Ritchie and Funk 1973; Snow 1980); however, as discussed below, it is more likely that they hunted a broad spectrum of animals. While there have been over 50 surface finds of Paleo-Indian projectile points throughout the State of Connecticut (Bellantoni 1995), only three sites, the Templeton Site (6-LF-21) in Washington, Connecticut, the Hidden Creek Site (72-163) in Ledyard, Connecticut, and the Brian D. Jones Site (4-10B) in Avon, Connecticut have been studied in detail and dated using the radiocarbon method (Jones 1997; Moeller 1980; Singer 2017a; Leslie et al. 2020).

The Templeton Site (6-LF-21) is in Washington, Connecticut and was occupied between 10,490 and 9,890 years ago (Moeller 1980). In addition to a single large and two small, fluted points, the Templeton Site produced a stone tool assemblage consisting of graters, drills, core fragments, scrapers, and channel flakes, which indicates that the full range of stone tool production and maintenance took place at the site (Moeller 1980). Moreover, the use of both local and non-local raw materials was documented in the recovered tool assemblage, suggesting that not only did the site's occupants spend some time in the area, but they also had access to distant stone sources, the use of which likely occurred during movement from region to region. More recently, the site has undergone re-investigation by Singer (2017a and 2017b), who has determined that most tools and debitage are exotic and were quarried directly from the Hudson River Valley. Recent research has focused on task-specific loci at the Templeton Site, particularly the production of numerous Michaud-Neponset projectile points, as identified through remnant channel flakes.

The Hidden Creek Site (72-163) is situated on the southeastern margin of the Great Cedar Swamp on the Mashantucket Pequot Reservation in Ledyard, Connecticut (Jones 1997). While excavation of the Hidden Creek Site produced evidence of Terminal Archaic and Woodland Period components (see below) in the upper soil horizons, the lower levels of the site yielded artifacts dating from the Paleo-Indian era.

Recovered Paleo-Indian artifacts included broken bifaces, side-scrapers, a fluted preform, graters, and end-scrapers. Based on the types and number of tools present, Jones (1997:77) has hypothesized that the Hidden Creek Site represented a short-term occupation, and that separate stone tool reduction and rejuvenation areas were present.

The Brian D. Jones Site (4-10B) was identified in a Pleistocene levee on the Farmington River in Avon, Connecticut; it was buried under 1.5 m (3.3 ft) of alluvium (Leslie et al. 2020). The Brian D. Jones Site was identified by Archaeological and Historical Services, Inc., in 2019 during a survey for the Connecticut Department of Transportation preceding a proposed bridge construction project. It is now the oldest known archaeological site in Connecticut at +12,500 years old. The site also provides a rare example of a Paleo-Indian site on a river rather than the more common upland areas or on the edges of wetlands. Ground-penetrating radar survey revealed overbank flooding and sedimentation that resulted in the creating of a stable ancient river levee with gentle, low-energy floods. Archaeological deposits on the levee were therefore protected.

Excavations at the Brian D. Jones Site revealed 44 soil anomalies, 27 of which were characterized as cultural features used as hearths and post holes, among other uses. One hearth has been dated thus far ($10,520 \pm 30$ 14C yr BP; charred Pinus; 2-sigma 12,568 to 12,410 CAL BP) (Leslie et al. 2020:4). Further radiocarbon testing will be completed in the future. Artifact concentrations surrounded these features and were separated in two stratigraphic layers represented at least two temporally discrete Paleo-Indian occupations. The recovered lithic artifacts are fashioned from Normanskill chert, Hardyston jasper, Jefferson/Mount Jasper rhyolite, chalcedony, siltstone, and quartz (Leslie 2023). They include examples of a fluted point base, preforms, channel flakes, pièces esquillées, end scrapers, side scrapers, grinding stones, bifaces, utilized flakes, graters, and a drilled stone pendant fragment. Lithic tools numbered over 100, while toolmaking debris was in the thousands. The channel flakes represent the production of spear points used in hunting. Scrapers, perforators, and grinding stones indicate animal butchering, plant food grinding, the production of wood and bone tools, and the processing of animal skins for clothing and tents. Other collected cultural materials included charred botanicals and calcined bone. Botanicals recovered in hearth features included burned remains of cattail, pin cherry, strawberry, acorn, sumac, water lily, and dogwood (Leslie 2023). Approximately 15,000 artifacts were collected in total.

The scarcity of identified Paleo-Indian sites suggests a low population density during this period. The small size of most Paleo-Indian sites, their likely inundation by rising sea levels, and the high degree of landscape disturbance over the past 10,000 years likely contribute to poor site visibility, although the presence of two deeply alluvially buried Paleo-Indian sites in Connecticut suggests that other sites may be located along stable rivers (Leslie et al. 2021).

Archaic Period (10,000 to 2,700 B.P.)

The Archaic Period, which succeeded the Paleo-Indian Period, began by ca., 10,000 B.P. (Ritchie and Funk 1973; Snow 1980), and it has been divided into three subperiods: Early Archaic (10,000 to 8,000 B.P.), Middle Archaic (8,000 to 6,000 B.P.), and Late Archaic (6,000 to 3,400 B.P.). These periods were devised to describe all non-farming, non-ceramic producing populations in the area. Regional archeologists recently have recognized a final “transitional” Archaic Period, the Terminal Archaic Period (3,400-2,700 B.P.), which was meant to describe those groups that existed just prior to the onset of the Woodland Period and the widespread adoption of ceramics into the toolkit (Snow 1980; McBride 1984; Pfeiffer 1984, 1990; Witthoft 1949, 1953).

Early Archaic Period (10,000 to 8,000 B.P.)

To date, very few Early Archaic sites have been identified in southern New England. As a result, researchers such as Fitting (1968) and Ritchie (1969), have suggested a lack of these sites likely is tied to cultural discontinuity between the Early Archaic and preceding Paleo-Indian Period, as well as a population decrease from earlier times; however, with continued identification of Early Archaic sites in the region, and the recognition of the problems of preservation, it is difficult to maintain the discontinuity hypothesis (Curran and Dincauze 1977; Snow 1980).

Like their Paleo-Indian predecessors, Early Archaic sites tend to be very small and produce few artifacts, most of which are not temporally diagnostic. While Early Archaic sites in other portions of the United States are represented by projectile points of the Kirk series (Ritchie and Funk 1973) and by Kanawha types (Coe 1964), sites of this age in southern New England are identified on the basis of a series of ill-defined bifurcate-based projectile points. These projectile points are identified by the presence of their characteristic bifurcated base, and they generally are made from high quality raw materials. Moreover, the recovery of these projectile points has rarely been in stratified contexts. Rather, they occur commonly either as surface expressions or intermixed with artifacts representative of later periods. Early Archaic occupations, such as the Dill Farm Site and Sites 6LF64 and 6LF70 in Litchfield County, are represented by camps that were relocated periodically to take advantage of seasonally available resources (McBride 1984; Pfeiffer 1986). In this sense, a foraging type of settlement pattern was employed during the Early Archaic Period.

Another localized cultural tradition, the Gulf of Maine Archaic, which lasted from ca. 9,500 to 6,000 14C BP, is beginning to be recognized in Southern New England (Petersen and Putnam 1992). It is distinguished by its microlithic industry, which may be associated with the production of compound tools (Robinson and Peterson 1993). Assemblages from Maine (Petersen et al. 1986; Petersen 1991; Sanger et al. 1992), Massachusetts (Strauss 2017; Leslie et al. 2022), and Connecticut (Forrest 1999) reflect the selection of local, coarse-grained stones. Large choppers and hoe-like forms from southeastern Connecticut's Sandy Hill Site likely functioned as digging implements. Woodworking tools, including adzes, celts, and gull-channeled gouges recovered at the Brigham and Sharrow sites in Maine (Robinson and Petersen 1993:68) may have been used for dugout canoe manufacture. The deeply stratified Sandy Hill (Forrest 1999; Jones and Forrest 2003) and Sharrow sites (Petersen 1991), with their overlapping lenses of "black sand" floor deposits, suggest intensive site re-occupations according to an adaptation that relied, in part, on seasonally available wetland resources. Thus far, sites from this tradition have only been identified within coastal and near-coastal territories along the Gulf of Maine, in southeastern Connecticut, and in Massachusetts.

Middle Archaic Period (8,000 to 6,000 B.P.)

By the onset of the Middle Archaic Period modern deciduous forests had developed in the region (Davis 1969). Increased numbers and types of sites associated with this period are noted in Connecticut (McBride 1984). The most well-known Middle Archaic site in New England is the Neville Site in Manchester, New Hampshire studied by Dincauze (1976). Careful analysis of the Neville Site indicated that the Middle Archaic occupation dated from between 7,700 and 6,000 years ago. In fact, Dincauze obtained several radiocarbon dates from the Middle Archaic component of the Neville Site associated with the then-newly named Neville type projectile point, ranging from 7,740 \pm 280 and 7,015 \pm 160 B.P. (Dincauze 1976).

In addition to Neville points, Dincauze (1976) described two other projectile points styles that are attributed to the Middle Archaic Period: Stark and Merrimac projectile points. While no absolute dates

were recovered from deposits that yielded Stark points, the Merrimac type dated from 5,910±180 B.P. Dincauze argued that both the Neville and later Merrimac and Stark occupations were established to take advantage of the excellent fishing that the falls situated adjacent to the site area would have afforded Native American groups. Thus, based on the available archaeological evidence, the Middle Archaic Period is characterized by continued increases in diversification of tool types and resources exploited, as well as by sophisticated changes in the settlement pattern to include different site types, including both base camps and task-specific sites (McBride 1984:96).

Late Archaic Period (6,000 to 3,700 B.P.)

The Late Archaic Period in southern New England is divided into two major cultural traditions that appear to have coexisted. They include the Laurentian and Narrow-Stemmed Traditions (Funk 1976; McBride 1984; Ritchie 1969a and b). Artifacts assigned to the Laurentian Tradition include ground stone axes, adzes, gouges, ulus (semi-lunar knives), pestles, atlatl weights, and scrapers. The diagnostic projectile point forms of this time period in southern New England include the Brewerton Eared-Notched, Brewerton Eared and Brewerton Side-Notched varieties (McBride 1984; Ritchie 1969a; Thompson 1969). In general, the stone tool assemblage of the Laurentian Tradition is characterized by flint, felsite, rhyolite, and quartzite, while quartz was largely avoided for stone tool production.

In terms of settlement and subsistence patterns, archaeological evidence in southern New England suggests that Laurentian Tradition populations consisted of groups of mobile hunter-gatherers. While a few large Laurentian Tradition occupations have been studied, sites of this age generally encompass less than 500 m² (5,383 ft²). These base camps reflect frequent movements by small groups of people in search of seasonally abundant resources. The overall settlement pattern of the Laurentian Tradition was dispersed in nature, with base camps located in a wide range of microenvironments, including riverine as well as upland zones (McBride 1978, 1984:252). Finally, subsistence strategies of Laurentian Tradition focused on hunting and gathering of wild plants and animals from multiple ecozones.

The second Late Archaic tradition, known as the Narrow-Stemmed Tradition, is unlike the Laurentian Tradition, and it likely represents a different cultural adaptation. The Narrow-Stemmed Tradition is recognized by the presence of quartz and quartzite narrow stemmed projectile points, triangular quartz Squibnocket projectile points, and a bipolar lithic reduction strategy (McBride 1984). Other tools found in Narrow-Stemmed Tradition artifact assemblages include choppers, adzes, pestles, antler and bone projectile points, harpoons, awls, and notched atlatl weights. Many of these tools, notably the projectile points and pestles, indicate a subsistence pattern dominated by hunting and fishing, as well the collection of a wide range of plant foods (McBride 1984; Snow 1980:228).

The Narrow-Stemmed Tradition also marks one of the most prevalent manifestations of the archaeological record in southern New England, narrow-stemmed projectile points, often untyped, or typed as Lamoka, Wading River, or Squibnocket Stemmed forms. These are generally attributed to a form of projectile technology, but some (Boudreau 2008), have suggested that these tool forms might not be related to projectile technology, and may instead relate to graver or drill functions. Boudreau (2008) also drew important connections to the forms of these narrow-stemmed points with later Woodland era forms, such as Rossville points, which are nearly identical. Others (Lavin 2013; Zoto 2019) have similarly suggested a continuation of the Narrow-Stemmed Tradition into the Woodland era, with most of this evidence originating at coastal sites in southern New England. The vast majority of Narrow-Stemmed projectile points that are associated with cultural features suitable for radiocarbon dating, particularly Lamoka style projectile points, are associated with Late Archaic date ranges (Lavin 2013).

The Terminal Archaic Period (3,700 to 2,700 B.P.)

The Terminal Archaic, which lasted from ca., 3,700 to 2,700 BP, is perhaps the most interesting, yet confusing of the Archaic Periods in southern New England precontact periods. Originally termed the “Transitional Archaic” by Witthoft (1953) and recognized by the introduction of technological innovations, e.g., broadspear projectile points and soapstone bowls, the Terminal Archaic has long posed problems for regional archeologists. While the Narrow-Stemmed Tradition persisted through the Terminal Archaic and into the Early Woodland Period, the Terminal Archaic is coeval with what appears to be a different technological adaptation, the Susquehanna Tradition (McBride 1984; Ritchie 1969b). The Susquehanna Tradition is recognized in southern New England by the presence of a new stone tool industry that was based on the use of high-quality raw materials for stone tool production and a settlement pattern different from the “coeval” Narrow-Stemmed Tradition.

The Susquehanna Tradition is based on the classification of several Broadspear projectile point types and associated artifacts. There are several local sequences within the tradition, and they are based on projectile point type chronology. Temporally diagnostic projectile points of these sequences include the Snook Kill, Susquehanna Broadspear, Mansion Inn, and Orient Fishtail types (Lavin 1984; McBride 1984; Pfeiffer 1984). The initial portion of the Terminal Archaic Period (ca., 3,700-3,200 BP) is characterized by the presence of Snook Kill and Susquehanna Broadspear projectile points while the latter Terminal Archaic (3,200-2,700 BP) is distinguished by Orient Fishtail projectile points (McBride 1984:119; Ritchie 1971).

In addition, it was during the late Terminal Archaic that interior cord marked, grit tempered, thick-walled ceramics with conoidal (pointed) bases made their initial appearance in the Native American toolkit. These are the first ceramics in the region, and they are named Vinette I (Ritchie 1969a; Snow 1980:242); this type of ceramic vessel appears with much more frequency during the ensuing Early Woodland Period. In addition, the adoption and widespread use of soapstone bowls, as well as the implementation subterranean storage, suggests that Terminal Archaic groups were characterized by reduced mobility and longer-term use of established occupation sites (Snow 1980:250).

Finally, while settlement patterns appeared to have changed, Terminal Archaic subsistence patterns were analogous to earlier patterns. The subsistence pattern was still diffuse in nature, and it was scheduled carefully. Typical food remains recovered from sites of this period consist of fragments of white-tailed deer, beaver, turtle, fish, and various small mammals. Botanical remains recovered from the site area consisted of *Chenopodium* sp., hickory, butternut, and walnut (Pagoulatos 1988:81). Such diversity in food remains suggests at least minimal use of a wide range of microenvironments for subsistence purposes.

Woodland Period (2,700 to 350 B.P.)

Traditionally, the advent of the Woodland Period in southern New England has been associated with the introduction of pottery; however, as mentioned above, early dates associated with pottery now suggest the presence of Vinette I ceramics appeared toward the end of the preceding Terminal Archaic Period (Ritchie 1969a; McBride 1984). Like the Archaic Period, the Woodland Period has been divided into three subperiods: Early, Middle, and Late Woodland. The various subperiods are discussed below.

Early Woodland Period (ca., 2,700 to 2,000 B.P.)

The Early Woodland Period of the northeastern United States dates from ca., 2,700 to 2,000 B.P., and it has thought to have been characterized by the advent of farming, the initial use of ceramic vessels, and increasingly complex burial ceremonialism (Griffin 1967; Ritchie 1969a and 1969b; Snow 1980). In the

Northeast, the earliest ceramics of the Early Woodland Period are thick walled, cord marked on both the interior and exterior, and possess grit temper. Archaeological investigations of Early Woodland sites in southern New England resulted in the recovery of narrow stemmed projectile points in association with ceramic sherds and subsistence remains, including specimens of white-tailed deer, soft and hard-shell clams, and oyster shells (Lavin and Salwen: 1983; McBride 1984:296-297; Pope 1952). McBride (1984) has argued that the combination of the subsistence remains and the recognition of multiple superimposed cultural features at various sites indicate that Early Woodland Period settlement patterns were characterized by multiple re-use of the same sites on a seasonal basis by small co-residential groups.

Middle Woodland Period (2,000 to 1,200 B.P.)

The Middle Woodland Period is marked by an increase in the number of ceramic types and forms utilized (Lizee 1994a), as well as an increase in the amount of exotic lithic raw material used in stone tool manufacture (McBride 1984). The latter suggests that regional exchange networks were established, and that they were used to supply local populations with necessary raw materials (McBride 1984; Snow 1980). The Middle Woodland Period is represented archaeologically by narrow stemmed and Jack's Reef projectile points; increased amounts of exotic raw materials in recovered lithic assemblages, including chert, argillite, jasper, and hornfels; and conoidal ceramic vessels decorated with dentate stamping. Ceramic types that are indicative of the Middle Woodland Period include Linear Dentate, Rocker Dentate, Windsor Cord Marked, Windsor Brushed, Windsor Plain, and Hollister Stamped (Lizee 1994a:200).

In terms of settlement patterns, the Middle Woodland Period is characterized by the occupation of village sites by large co-residential groups that utilized native plant and animal species for food and raw materials in tool making (George 1997). These sites were the principal place of occupation, and they were positioned close to major river valleys, tidal marshes, estuaries, and the coastline, all of which would have supplied an abundance of plant and animal resources (McBride 1984:309). In addition to villages, numerous temporary and task-specific sites were utilized in the surrounding upland areas, as well as in closer ecozones such as wetlands, estuaries, and floodplains. The use of temporary and task-specific sites to support large village populations indicates that the Middle Woodland Period was characterized by a resource acquisition strategy that can best be termed as logistical collection (McBride 1984:310).

Late Woodland Period (ca., 1,200 to 350 B.P.)

The Late Woodland Period in southern New England dates from ca., 1,200 to 350 B.P., and it is characterized by the earliest evidence for the use of corn in the lower Connecticut River Valley (Bendremer 1993; Bendremer and Dewar 1993; Bendremer et al. 1991; George 1997; McBride 1984); an increase in the frequency of exchange of non-local lithics (Feder 1984; George and Tryon 1996; McBride 1984; Lavin 1984); increased variability in ceramic form, function, surface treatment, and decoration (Lavin 1980, 1986, 1987; Lizee 1994a, 1994b); and a continuation of a trend towards larger, more permanent settlements in riverine, estuarine, and coastal ecozones (Dincauze 1974; McBride 1984; Snow 1980).

Stone tool assemblages associated with Late Woodland occupations, especially village-sized sites, are functionally variable and they reflect plant and animal resource processing and consumption on a large scale. Finished stone tools recovered from Late Woodland sites include Levanna and Madison projectile points; drills; side-, end-, and thumbnail scrapers; mortars and pestles; nutting stones; netsinkers; and celts, adzes, axes, and digging tools. These tools were used in activities ranging from hide preparation to

plant processing to the manufacture of canoes, bowls, and utensils, as well as other settlement and subsistence-related items (McBride 1984; Snow 1980). Finally, ceramic assemblages recovered from Late Woodland sites are as variable as the lithic assemblages. Ceramic types identified include Windsor Fabric Impressed, Windsor Brushed, Windsor Cord Marked, Windsor Plain, Clearview Stamped, Sebonac Stamped, Selden Island, Hollister Plain, Hollister Stamped, and Shantok Cove Incised (Lavin 1980, 1988a, 1988b; Lizee 1994a; Pope 1953; Rouse 1947; Salwen and Ottesen 1972; Smith 1947). These types are more stylistically diverse than their predecessors with incision, shell stamping, punctation, single point, linear dentate, rocker dentate stamping, and stamp and drag impressions common (Lizee 1994a:216).

Summary of Connecticut Precontact Period

The precontact period of Connecticut spans from ca. 13,000 to 350 B.P., and it is characterized by numerous changes in tool types, subsistence patterns, and land use strategies. Much of this era is characterized by local Native American groups who practiced a subsistence pattern based on a mixed economy of hunting and gathering plant and animal resources. It is not until the Late Woodland Period that incontrovertible evidence for the use of domesticated species is available. Further, settlement patterns throughout the precontact period shifted from seasonal occupations of small co-residential groups to large aggregations of people in riverine, estuarine, and coastal ecozones. In terms of the region that includes the proposed Project area, a variety of precontact site types may be expected, ranging from seasonal camps utilized by Paleo-Indian and Archaic populations to temporary and task-specific sites of the Woodland era.

CHAPTER IV

POST EUROPEAN CONTACT OVERVIEW

Introduction

The proposed Facility is located along Middlefield Road in the Town of Durham, which is located in Middlesex County, Connecticut. This chapter provides a brief overview of Middlesex County followed by a history of Durham with a focus on the project area. Most Connecticut towns, including Durham, originated as Indigenous settlements and later became English colonial villages. Originally known as “Coginchaug” by the areas Native American people it was incorporated by English colonists as the Town of Durham in 1708 and developed as an agricultural community with close ties to the neighboring cities of Middletown and Meriden. Throughout the nineteenth century Durham remained an agricultural hub with some traces of manufacturing. During the twentieth century, the town maintained its agricultural practices but also developed as a suburban area due to its proximity to several nearby cities. In the twenty-first century, the Town of Durham has become a residential community which retains significant elements of its natural landscape and agricultural past.

Middlesex County

Middlesex County was incorporated in 1785 from land taken from Hartford County and New London County (Beers 1884). Located in south-central Connecticut, Middlesex County is bounded to the north by Hartford and New London Counties, to the west by New Haven County, to the east by New London County, and to the south by Long Island Sound. Bisected by the Connecticut River, Middlesex County is also the location of Middletown, incorporated in 1651, named in 1653, and incorporated as a city in 1784 (Beers 1884). Other important population centers in Middlesex County include Portland and Cromwell (Connecticut 2021). The landscape varies from coastal lowlands and river basins to higher elevations in the interior. Important bodies of water associated with Middlesex County include the Salmon River, Coginchaug River, Mattabesset River, Millers Pond, and Pocotopaug Lake. Its shoreline also has many smaller unnamed rivers, harbors, islands, and inlets. The Town of Durham is situated in the central, western part of the county bounded north by Durham and Middletown, east by Haddam, south by Killingworth, Madison, Guilford, as well as North Branford and to the west by Wallingford. The Metacomet Ridge runs along the western edge of the town while important waterways include the Coginchaug River, Allyn Brook, Sawmill Brook, Sumner Brook, and Millers Pond, as well as numerous unnamed streams and rivulets.

Woodland Period to Seventeenth Century

During the Woodland Period of northeastern North American history (c., 3000 to 500 years ago) the Indigenous peoples who resided in the project region were part of the greater Algonquian culture of northeastern North America (Lavin 2013). They spoke local variations of Southern New England Algonquian languages and resided in extended kinship groups on lands they maintained for a variety of horticultural and resource extraction purposes (Goddard 1978). Native people in the region practiced subsistence activities including hunting, fowling, and fishing, along with the cultivation of various crops, the most important of which were maize, squash, and beans. They supplemented these foods seasonally by collecting shellfish, fruits, and plants during warmer periods, and gathering nuts, roots, and tubers during colder times (Lavin 2013). In addition, these communities came together in large groups to hunt deer in the fall and winter. Indigenous peoples lived with their immediate or extended families in large settlements often concentrated along rivers and/or wetlands. Some villages were fortified by wooden palisades. Their habitations, known as a *weetu* or *wigwam*, were generally constructed of a tree sapling

frame and covered in reed matting during warm months and tree bark throughout the winter. These varied in size from a small, individual dwelling to an expansive “long house” which could accommodate several families. Indigenous communities commonly traded among both their immediate neighbors and often maintained long-distance networks as well (Lavin 2013). The Native people who resided in present-day Durham were known as Mattabessett, or more specifically, the Wangunk. Their neighbors to the south were the Quinnipiac Hammonasset and the Podunk and Suckiaug to the north (De Forest 1852).

Seventeenth to Eighteenth Century

As Native communities maintained oral tradition rather than a written record, most surviving information of the indigenous people of present-day Durham was recorded by European observers (Lavin 2013). The earliest Europeans known to have entered Long Island Sound and the Connecticut River along present-day Middlesex County were the Dutch. During his 1614 voyage, Captain Adrian Block created a figurative map of the region that depicted the shoreline, the Connecticut River, and identified Native nations in the region including the “Sequins,” known today as the Wangunk, around the area of present-day Durham. The Dutch established trade relationships with Native people of the area including the Middletown and by the early 1620’s they entered an agreement with the Pequot of present-day southeastern Connecticut who provided wampum and furs for European goods. Through this relationship the Pequot accessed a variety of valuable European trade goods they distributed to tributaries and/or trade with others in the region. The Pequot extended their dominance over the Connecticut shoreline, eastern Long Island, and the lower Connecticut River Valley bringing all the Native nations in those areas into a tributary relationship under their leadership (Hauptman and Wherry 2009; McBride 2013).

To break from the Pequot, several Connecticut River sachems invited the English to the valley; they arrived in Windsor in 1633, Wethersfield in 1634, and both Hartford and Saybrook by 1635 (Van Dusen 1961). Increased European interaction resulted in exposure to diseases and epidemics Indigenous people had never encountered and to which they had no natural immunity. Illnesses such as smallpox, measles, tuberculosis, and cholera devastated Native communities. In 1633, an epidemic spread through the region impacting the Pequot and people further west (Lavin 2013). Tensions between Native and European groups in the Connecticut River Valley resulted in the death of English traders between 1634 and 1636 which were blamed on the Pequot. In retaliation, English forces from Massachusetts Bay destroyed Pequot and Niantic villages on the Pequot (Thames) River in August 1636 which began the Pequot War. The Pequot laid siege to Saybrook Fort at the mouth of the Connecticut River during the winter of 1636-1637 and attacked Wethersfield in April 1637 further upriver. Connecticut Colony declared war on the Pequot and were joined by Native warriors from the Connecticut River and Mohegans under the Sachem Uncas (Oberg 2006). In May 1637, English allied forces destroyed the fortified Pequot village at Mistick and pursued Pequot refugees west towards present-day Fairfield (Cave 1996). After the war, the Connecticut English claimed Pequot lands as conquered lands for their growing colony. In January of 1639, the “fundamental orders” were adopted which outlined the framework for Connecticut Colony, a self-governed colony separate from Massachusetts Bay or Plimoth (Trumbull 1886).

The colonization of Middletown began in the 1650s when settlers from Hartford and Wethersfield migrated down the Connecticut River. Lands further south were known as Coginchaug, or “long swamp” by the Wangunk who utilized the land for hunting grounds. In 1672, land was granted in Coginchaug to several English proprietors although the earliest settlers would not arrive to 1699 from Guilford (Fowler 1866; Beers 1884). The Wangunk community continued to reside in their homelands which were being colonized by the English and in 1675 the General Assembly laid out reservation lands for the Wangunk in Middletown on both sides of the Connecticut River (DeForest 1852).

By 1700, early English settlement began in present-day Durham and the area slowly developed as a farming community. In 1703, a town plot was established where the Village of Durham now stands and in 1707 three highways were laid out across Coginchaug Swamp to better connect the growing community. The following year, in 1708, the General Assembly incorporated the Town of Durham and soon after both a church and school were established (Fowler 1866; Beers 1884). Early on efforts were made to drain parts of Coginchaug Swamp which resulted in much of the southern end of the wetlands being converted to valuable meadow lands. Durham developed into a robust agricultural community and several grist mills, sawmills, and tanneries were constructed early on (Beers 1884). During the Inter-Colonial Wars men from town served on campaigns against the French including Durham native Major General Phinehas Lyman who commanded Connecticut Troops during the French and Indian War (1754-1763) (Fowler 1866). The 1756 Connecticut colonial census reported 765 “Whites” and 34 “Negroes” living in Durham although it was not noted who was enslaved or indentured (Trumbull 1756). Slavery likely existed in Durham and the 1774 Connecticut colonial census recorded a “White” population of 1,031 and “Black” population of 44, and 1 “Indian” in Durham; however, it did not distinguish between free and enslaved people (Hoadly 1887).

During the colonial era, Durham was a typical inland colonial Connecticut town and the individuals who lived there focused on subsistence farming and sold any available surplus to nearby markets, some as far as Boston and the West Indies (Fowler 1866). During the American Revolution (1775-1783), Durham played an important role in recruiting soldiers, offering food stores, and providing a variety of military goods for the war effort. General James Wadsworth was a lawyer from Durham who achieved the rank of major general of Connecticut military in 1777 (Fowler 1866). After the Revolution, Durham recovered from wartime economic disruptions thanks to its robust agricultural production and maritime trade. In 1784, the State passed a gradual manumission law, but slavery was not fully abolished until 1848 (Normen 2013). On January 9, 1788, Connecticut ratified the U.S. Constitution to become the fifth state (Van Dusen 1961).

Nineteenth Century through the Twenty-First Century

As of 1800, the Town of Durham reported 1,029 individuals living in town with most families involved in the agricultural economy (Connecticut 2023a). In 1819, the *Gazetteer of the States of Connecticut and Rhode-Island* reported that Durham’s main products were rye, corn, and flax, while numerous households produced shoes that were sold to the southern states. The town’s modest population supported three different churches while its agrarian economy was reflected in the presence of tanneries, grain mills, sawmills, a wool-carding machine, and a cider distillery but no factories (Pease & Niles 1819). A later 1837 description of the town noted that Durham was well-known for its cattle (Barber 1837). Despite its small population, in the 1820’s the town had four turnpikes which were maintained by private corporations passing through it although within a few decades these companies failed due to competition from the railroads, even though Durham did not have a railroad station (Beers 1884).

Quarrying became a prominent industry in the nineteenth century, with various sites providing stone used for foundations, buildings, and gravestones. A quarry in Haddam Quarter supplied stone that was used for projects in Cromwell and New Haven, including a building at Yale University. It became such an important industry that the area in town where it occurred became known as the “Quarry District” (Fowler 1866; Beers 1884). Other industries also took hold in Durham, most notably the Merriam Manufacturing Company (1851) which made tinware items and became a significant employer in town. That same year there was a factory established to produce a skin cream known as “Pond’s Extract”

(Beers 1884). These factories resulted in a brief increase in population by 1860 with 1,130 people living in town but overall, they did not result in an influx of people residents (Connecticut 2023b; Table 1).

During the Civil War (1861-1865) Durham recruited 95 men who served in the Union Army in 17 different regiments (Fowler 1866; Hines 2002). Following the war, the town’s population slowly declined through the end of the century. The industrializing trend of many Connecticut towns did not develop in Durham and the town remained largely agricultural and by 1890, Durham had a population of 856 residents (Connecticut 2023b; Table 1).

At the turn of the twentieth century, the town had lost a significant amount of its population, possibly due to factory closures. As of 1900, 845 residents remained in town, which increased slightly to 1,002 by 1910 (Connecticut 2023c; Table 1). In 1916, the town began a tradition of holding the Durham Fair, a multi-day event that has occurred annually since (Durham Fair 2016). The town remained relied mainly on its agricultural economy although the Merriam Manufacturing Company remained in important industry and in 1932 the State Register reported that Durham’s principal industries were “agriculture and the manufacture of cash boxes, safe deposit boxes and various kinds of metal boxes” (Connecticut 1932).

By the mid-twentieth century, the trend toward post-war suburban living brought more permanent residents to industrial towns and cities, further boosting the regional population. This suburban trend was facilitated by the widespread adoption of the automobile by the American middleclass and new highway construction. In 1953, Route 9 was proposed as an intrastate expressway linking the Hartford area with the shoreline which paralleled the Connecticut River to the east and bisected Middlesex Country, providing greater transportation connectivity throughout the state and increased growth to the city of Durham (DeLuca 2020). To the west, Interstate 91 was built through Meriden in 1965, a short distance from Durham which allowed quick access to New Haven and Hartford (DeLuca 2020). As a result, the town experienced a substantial increase in population from 1,804 residents in 1950 to 3,096 in 1960 (Connecticut 2023c; Table 1).

The town managed to balance suburban growth with its agricultural economy as well as some industry into the twenty-first century. In the year 2000 Durham’s population totaled 6,627 residents and by 2010 the town counted 7,388 residents (Connecticut 2023d; Table 1). Although Durham maintained a modest population for decades, and retained a strong employment base, town planners focused on balancing economic and residential development, with a strong emphasis on tourism (Durham 2017). As of 2021, the town’s largest employers were manufacturers and local government while the town’s population rose to 7,221 residents (AdvanceCT 2021). Despite its suburban population growth and modest industrialization, Durham retains much of its rural landscape interspersed with residential housing (Durham 2016).

Table 1: Population of Durham, Connecticut 1870-2020 (Connecticut 2023a-d, Connecticut 2021)

Town	1870	1880	1890	1900	1910	1920	1930	1940
Durham, Middlesex County, Connecticut	1,086	990	856	884	997	959	1,044	1,098
	1950	1960	1970	1980	1990	2000	2010	2020
	1,804	3,096	4,489	5,143	5,732	6,627	7,388	7,152

History of the Project Area

The proposed project area is located along Middlefield Road in the Town of Durham. According to Walling's 1859 map of Middlesex County, it is in what was the northern portion of Durham at that time. As of 1859, there was a dwelling house on the project parcel owned by "J. Thayer." The remainder of the project area appears undeveloped as of 1859 and likely under agricultural cultivation associated with dwelling. Abutting the property to the north was a dwelling owned by a "J. W. Miller" and another to the south owned by "T. W. & F. Lyman." The village of Durham is visible to the south as is the Coginchaug River and swamp to the west (Figure 3; 1859 Map). The Beers 1874 Middlesex County map little has changed in the vicinity of the project parcel upon which stands a dwelling house owned by "E. Thayer" and the rest of the property remains undeveloped, likely under agricultural cultivation. The dwelling house to the north of the project parcel was then owned by a "Chas Miller," whereas the dwelling to the south was owned by a "G. H. Lyman" (Figure 4; 1874 Map).

During the twentieth century the land near the proposed Facility remained cleared and under agricultural cultivation as demonstrated by a 1934 aerial photograph in which several field systems are evident and a dwelling house with associated outbuildings is situated in the western portion of the property on Middlefield Road. The Coginchaug River and what remains of the swamp was evident to the west of the project parcel and Route 17 was visible to the east. A small stream ran along the southeastern bounds of the property and passed under Middlefield Road and met the Coginchaug River. Nearly all of the surrounding land was cleared and being utilized for agricultural purposes as of 1934 (Figure 5; 1934 Aerial).

Little appears to have changed on the landscape over the years according to 1951 and 1970 aerial photographs, both of which show the project parcel as still cleared and under agricultural cultivation, perhaps being utilized as hay lots. A dwelling house and associated structure are visible along the western border of the property on the east side of Middlefield Road in the 1970 aerial photograph. To the north of the project parcel stands another residential structure, as well as another to the south. There also appears to be a new structure standing across Middlefield Road almost directly across from the dwelling house located on the project parcel, although it is unclear if it is a dwelling or outbuilding such as a barn. To the east of the proposed project area and east of the brook stand several new commercial and/or industrial buildings. The Coginchaug River and swamp are visible to the west while the surrounding landscape remains largely clear and under agricultural cultivation (Figures 6 and 7; 1951 Aerial and 1970 Aerial).

A color aerial image taken nearly 50 years later in 2019 reveals a landscape that remained relatively unchanged in the vicinity of the project area. The project parcel itself remains undeveloped and is no longer used for agricultural cultivation as the open lots have reverted to woodland. Some suburban residential development occurred along the western side of Middlefield Road and additional housing is visible further west along Route 17. Several commercial and industrial buildings are located to the east of the project parcel. Abutting the northwestern edge project parcel is a dwelling house and associated gardens that belonged to Gastler Farm, a self-described farm, flower garden, and event space (Gastler 2023). There are two newly constructed homes north of the Gastler Farm and the project parcel, as well while another residential home located about 50 meters (164 feet) south of the project area (Figure 8; 2019 Aerial).

Conclusions

The documentary review of the proposed project parcel located indicates that it was used throughout its history as farmland and an outlying parcel. Based on the past use of the land for agriculture, there is

the possibility of encountering remains of farmhouses, outbuildings, stonewalls, or other evidence of post European Contact era farming.

CHAPTER V

PREVIOUS INVESTIGATIONS

Introduction

This chapter presents an overview of previous archaeological research completed within the vicinity of the proposed Facility in Durham, Connecticut and it provides the comparative data necessary for assessing the results of the current Phase IB cultural resources reconnaissance survey. It also ensures that the potential impacts to all previously recorded cultural resources located within and adjacent to the Facility area are taken into consideration. Specifically, this chapter reviews previously identified archaeological sites and National/State Register of Historic Places properties situated in the Project region (Figures 9 and 10). The discussions presented below are based on information currently on file at the CT-SHPO in Hartford, Connecticut. In addition, the electronic site files maintained by Heritage were examined during this investigation. Both the quantity and quality of the information contained in the original cultural resources survey reports and State of Connecticut archaeological site forms are reflected below.

Previously Recorded Archaeological Sites and National/State Register of Historic Places Properties/Districts in the Vicinity of the Project Area

A review of data currently on file at the CT-SHPO, as well as the electronic site files maintained by Heritage, resulted in the identification of two previously identified archaeological sites located within 1.6 km (1 mi) of the project area (Figure 9). In addition, the Fairchild Merwin House and the John Swathel House, two Connecticut State Register of Historic Places properties, and the Main Street Historic District and the Thomas Lyman House, National Register of Historic places properties/districts, were also identified within 1.6 km (1 mi) of the project area (Figure 10). The identified cultural resources are described below.

Site 38-2

Site 38-2, which is also known as the Gastler Site, was recorded in April of 1979 by staff of the Connecticut Archaeological Society (CAS) (Figure 10). It is located on private land along Route 157 near the junction of Route 17 in Durham, Connecticut. The Archaic period camp site was surface collected by Hicks and Gastler, and the artifacts recovered included a single flint side-notched projectile point, quartz scrapers, and untyped flint projectile points. CAS staff noted that the presence of both flint and quartz tools would allow for a comparative study of the tool making process, as well as utilization of the raw materials. Site 38-2 has not been assessed applying the qualities of significance as defined by the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]), however it is located within the boundaries of the current project area and may be impacted by the proposed construction.

Greenbackers Farm

The Greenbackers Farm Site is located on private land in Durham, Connecticut (Figure 10). It is unknown when the site was recorded or by whom, however it was characterized as a Paleoindian camp site, a rare site type on Connecticut. The site was surface collected, however the types of artifacts collected are unknown. The Greenbacker's Farm Site has not been assessed applying the qualities of significance as defined by the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). It is located well enough away that the site will not be impacted by the proposed construction.

Fairchild Merwin House

The Fairchild Merwin House is located in a residential area along Haddam Quarter Road in Durham, Connecticut (Figure 11). It is situated approximately 800 meters (2,625 feet) to the southeast of the proposed project parcel. This Lean-to/Saltbox style structure, which was constructed in ca., 1727, was recorded by H. C. Darbee and listed on the State Register of Historic Places on October 23, 1968. At the time of its listing, the house was described as appearing “newly painted and well maintained.” The house has a chimney of field stones that had been reconstructed. Original clapboards and handwrought nails were still present; however, it was noted that the windows had likely been replaced and were not original to the structure. The Fairchild Merwin House is located well enough away from the project area that it will not be directly impacted by the proposed construction.

John Swathel House

The John Swathel House is situated in a residential area along Maple Avenue in Deep River, Connecticut (Figure 11). The Colonial style structure was constructed in ca., 1780 by John Swathel Sr. The house was listed on the State Register of Historic Places in 1974. The house was described as having a central door that opens into a large hall with a wide staircase. A parlor is situated to the right and a sitting room to the left. At the end of the hall is a “keeping-room” with a large fireplace. To the right of the keeping-room is a “borning-room” which was common in Colonial houses of the time. The John Swathel House is a contributing element to the Main Street Historic District which is discussed below. The residence is well enough away from the project area that it will not be directly impacted by the proposed construction.

Thomas Lyman House

The Thomas Lyman House is located at 105 Middlefield Road in Durham, Connecticut (Figure 11). The Colonial style house is a two-and-a-half story, five bay, clapboard house with an overhang above the first floor. The front door has a five-paned light above it, and a small classical Doric porch shelters the door. The house was constructed in the late eighteenth century; however, it is unique in that it is covered with a truncated hip roof with two chimneys and two dormers. The residence was listed on the NRHP on November 20, 1975. It is located within the bounds of the Main Street Historic District, and it is located well enough away that it will not be impacted by the proposed construction.

Main Street Historic District

A Historic District Ordinance Referendum was passed in Durham by electors on June 25, 1973. The referendum created a Historic District and a Historic District Commission for the Town of Durham and became effective on July 17, 1973. The Main Street Historic District was then listed on the National Register of Historic Places in 1986 (Figure 11). As its name suggests, Main Street is the principal street in the district; however, several parallel streets located on the other side of Main Street also lie within the historic district. These include Brick Lane and Cherry Lane on the east and Maple Avenue and Town House Road on the west. The latter street borders the Town Green in the southern portion of the district. Portions of several cross streets, including Talcott Lane, Maiden Lane, Wallingford Road, and Fowler Avenue, are also included within the district. According to the National Register of Historic Places nomination form, this area contains 135 buildings, of which 112 and were built between 1708-1935. The remaining 23 buildings were built after 1935 and are non-contributing elements.

The District contains numerous examples of eighteenth century colonial period houses and public buildings erected in the Greek Revival style also represent the development of the town through its more than 200-year history. Also notable is the cross section of social classes and occupations represented in the Historic District. These include the more elaborate homes built by the descendants of

the original European settlers, but also includes the more-simple dwellings of craftsmen, farmers, and housing built to accommodate laborers in the town's various industries. Also included are examples of stores, shops, hotels, and taverns. The Main Street Historic District is considered significant because it displays an exceptional degree of architectural integrity and craftsmanship. "Of particular note is the unusual number of well-preserved eighteenth-century houses, as well as the quality of the public buildings erected in the Greek Revival style." The Main Street Historic District is located approximately 600 meters (1,969 feet) to the south of the project parcel; it is unlikely to be impacted by the proposed construction due to intervening vegetation.

Summary and Interpretations

The review of previously completed research in the vicinity of the project area and the analysis of cultural resources recorded nearby, indicates that the larger project region contains precontact Native American deposits. Archaeological sites occupied within the study region date from as early as the Late Archaic Period (ca., 4,500 years ago), suggesting that additional archaeological sites may be situated within the vicinity of the project area. In addition, post-European Contact period residences from the Colonial Period and later also exist in the project region. Therefore, additional post-European Contact period cultural resources may be located in the project area.

CHAPTER VI

METHODS

Introduction

This chapter describes the research design and field methods used to complete the Phase IB cultural survey of the Sensitivity Area SA-1 within the proposed project area in Durham, Connecticut. In addition, the location and point-of-contact for the facility at which all cultural material, drawings, maps, photographs, and field notes generated during survey will be curated is provided below.

Research Design

The current Phase IB cultural resources reconnaissance survey was designed to identify any precontact era and post-European Contact period cultural resources located within Sensitivity Area SA-1, including the previously identified Gastler Site (38-2). Fieldwork for the survey was comprehensive in nature and project planning considered the distribution of previously recorded archaeological sites located near the Facility area, as well as an assessment of the natural qualities of the project parcel. The methods used to complete this investigation were designed to provide complete and thorough coverage of all portions of Sensitivity Areas SA-1. This undertaking entailed pedestrian survey, systematic subsurface testing, detailed mapping, and photo-documentation.

Field Methods

Following the completion of all background research, Sensitivity Area SA-1 and the Site 38-2 area were subjected to a Phase IB cultural resources reconnaissance survey utilizing pedestrian survey, photo-documentation, GPS recordation, and systematic shovel testing. The field strategy was designed such that the entirety of the sensitivity area, including that portion of which it wherein Site 38-2 was identified was examined visually and photographed. The pedestrian survey portion of this investigation included visual reconnaissance of all of Sensitivity Area SA-1. The subsurface surface effort consisted of a systematic shovel testing regime that consisted of the excavation of shovel tests at 20 meter (65.6 foot) intervals along survey transects positioned 20 meters (65.6 feet) apart throughout Sensitivity Area SA-1 and the area containing Site 38-2). Each shovel test measured 50 x 50 cm (19.7 x 19.7 in) in size, and each was excavated until glacially derived C-Horizon or immovable objects (e.g., boulders, large tree roots) were encountered. Each shovel test was excavated in 10 cm (3.9 in) arbitrary levels within natural strata, and the fill from each level was screened separately. All shovel test fill was screened through 0.635-centimeter (0.25 in) hardware cloth. Soil characteristics were recorded in the field using Munsell Soil Color Charts and standard soils nomenclature. Each shovel test was backfilled after it was fully documented.

Archaeological Site Delineation

Archaeological resources identified during the Phase IB cultural resources reconnaissance survey of the moderate/high sensitivity areas, if any, will be examined preliminarily to ascertain their nature, size, depth, integrity, age, and cultural affiliation. Site delineation will also be used to assess the stratigraphic placement, density, and research potential of each identified site. In addition, information will be gathered to assist in the subsequent assessment of whether a site is considered not significant, potentially significant, or significant applying the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). Archaeological recordation will include the following: (1) establishment of a site datum; (2) surface reconnaissance of the site area; (3) excavation of tightly spaced shovel tests (10 m [32.8 ft]) along rays emanating from datum to delineate the site's boundaries, size, and configuration;

and (4) mapping and photographing of the site area. Color digital photographs of the site area(s) will also be taken.

Laboratory Analysis

Laboratory analysis of cultural material recovered during subsurface testing of the Project APE, which consisted of precontact era and post-European Contact period cultural material, followed established archeological protocols. To begin the laboratory analysis process, field specimen bag proveniences were first crosschecked against the field notes and the specimen inventories for accuracy and completeness. Following this quality-control process, all recovered material was washed by hand, air-dried, and sorted into basic material categories.

The nature and structure of the laboratory analysis was determined by the goals of the project. The artifact analysis consisted of making and recording a series of observations for each recovered specimen. The observations were chosen to provide the most significant information about each specimen. A database was employed to store, organize, and manipulate the data generated by the analytical process. This database was designed specifically for the analysis of the recovered artifacts. The analytical protocols applied to the recovered artifacts are discussed in detail below.

Post-European Contact Period Cultural Material Analysis

The analysis of the post-European Contact period cultural material recovered during the Phase II Intensive Archaeological Survey was organized by class, functional group type, and subtype. The first level, class, represented the material category, e.g., ceramic, glass, metal. The second level, functional group, e.g., architecture, kitchen, or personal was based on standard classifications. The third and fourth levels, type and subtype, described the temporally and/or functionally diagnostic artifact attributes. The identification of artifacts was aided by consulting standard reference works.

Precontact Era Lithic Material Analysis

The lithic analysis protocol used during completion of the Phase II Intensive Archaeological Survey effort was a “technological” or “functional” one designed to identify precontact reduction trajectories and lithic industries. The protocol, therefore, focused on recording technological characteristics of the recovered lithic artifacts. The lithic artifact database was organized by lithic material group, type, and subtype. The first level described the raw material type of the artifact. Lithic materials were identified utilizing recognized geological descriptions and terminology and were placed into distinct categories based on three factors: texture, color, and translucence. The second analysis level, type, was used to define the general class (e.g., unmodified flake, core, or perform) of lithic artifact, while the last level, subtype, was employed to specify placement within the reduction sequence (e.g., primary, secondary, and tertiary). These levels followed classifications outlined by such authors as Callahan (1979) and Crabtree (1972), among others.

Curation

Following the completion and acceptance of the Final Report of Investigations, all cultural material, drawings, maps, photographs, and field notes will be curated with:

Dr. Sarah Sportman
Office of Connecticut State Archaeology
Box U-1023
University of Connecticut
Storrs, Connecticut 06269

CHAPTER VII

RESULTS OF THE INVESTIGATION & MANAGEMENT RECOMMENDATIONS

Introduction

This chapter presents the results of the Phase IB cultural resources reconnaissance survey of Sensitivity Areas SA-1, as well as previously identified Site 38-2, associated with the proposed Facility along Middlefield Road in Durham, Connecticut (Figure 11; Sheets 1 and 2 and Photos 1 through 30). As discussed in Chapters I and IV, Phase IB survey included pedestrian survey, augmented by systematic shovel testing, site delineation, and photo-documentation of the project area (Figure 12). The results of the Phase IB survey effort are presented below.

Results of Phase IB Cultural Resources Reconnaissance Survey

As stated earlier, the proposed Facility area encompasses 17.8 acres of land bounded by residential, commercial, and wooded areas. The Facility area is situated at elevations ranging from approximately 60 to 113 meters (197 to 371 feet) NGVD. The previous Phase IA cultural assessment survey located a previously identified precontact era archaeological site along the southern boundary of the Facility area. Site 38-2 The results of the Phase IB survey are discussed below.

Sensitivity Area SA-1

Sensitivity Area SA-1 encompasses the entirety of the 17.8 acre APE, which is divided into two sections: the Northern Field and the Southern Field. At the time of survey, the Northern Field was characterized by gently sloping south sloping topography that consisted of heavily overgrown secondary vegetation and manicured grass along the edges of the area (Photos 1 and 2). As seen in Photo 3, there are also examples of past disturbance in the Northern Field; it was likely caused by heavy machinery and previous clearing of the land. The Southern Field is also characterized by gently sloping topography but was largely cleared of brush; it consists of manicured lawns and sparse deciduous tree cover in its southern portion. In addition, modern trailers and historical period farming equipment were found along the edges of the Southern Field (Photos 4 through 6). A total of 166 of 180 (92 percent) planned shovel tests, as well as 12 radial test pits, were excavated throughout the two fields during the Phase IN survey (Table 2). The planned test pits were positioned at 20 meter (65.6 foot) intervals along 21 parallel transects spaced 20 meters (65.6 feet) apart (Figure 11; Sheets 1 and 2). The 14 planned but unexcavated shovel test pits fell within large piles of brush, on stonewalls, in large log piles, and within wetland areas (Photos 7 through 10).

Table 2. Overview of Phase IB SA-1 Shovel testing results.

Transect	Planned	Excavated	Not Excavated	Negative	Positive	STPS Yielding Precontact Era Cultural Material	STPS Yielding Multiple Components of Cultural Material	STPs Yielding Ecofacts	Post-European Contact Cultural Material
1	9	8	1	7	1	-	-	1	-
2	10	10	-	10	-	-	-	-	-
3	9	8	1	7	1	-	-	-	1
4	8	8	-	8	-	-	-	-	-

Table 2. Overview of Phase IB SA-1 Shovel testing results, cont'd.

Transect	Planned	Excavated	Not Excavated	Negative	Positive	STPS Yielding Precontact Era Cultural Material	STPS Yielding Multiple Components of Cultural Material	STPs Yielding Ecofacts	Post-European Contact Cultural Material
5	8	7	1	7	-	-	-	-	-
6	7	7	-	7	-	-	-	-	-
7	7	7	-	6	1	1	-	-	-
8	7	5	2	5	-	-	-	-	-
9	6	6	-	6	-	-	-	-	-
10	5	5	-	5	-	-	-	-	-
11	4	4	-	4	-	-	-	-	-
12	9	9	-	9	-	-	-	-	-
13	11	11	-	9	2	-	-	-	2
14	11	11	-	11	-	-	-	-	-
15	11	11	-	7	4	-	1	-	3
16	11	11	-	9	2	-	-	-	2
17	11	10	1	10	-	-	-	-	-
18	11	8	3	8	-	-	-	-	-
19	12	10	2	5	5	4	-	-	1
20	9	7	2	4	3	1	1	-	1
21	4	3	1	2	1	-	-	-	1
Radial s	-	12	-	10	2	2	-	-	-
Total	180	178	14	156	22	8	2	1	11

Due to disturbance within the APE, there were two typical soil profiles identified, those with Fill and those capped by plowed soils with underlying intact horizons. A typical test pit containing plowed soils with intact subsoil horizons exhibited at most four soil horizons and reached an average depth of 75 centimeters below surface (cmbs) (29.5 inches below surface [inbs]). Shovel tests that did not reach this depth were impeded by the presence of hydric soils, extremely compact soils, and dense deposits of rocks and roots that occurred anywhere between 30 and 90 cmbs (11.8 and 35.4 inbs). The uppermost layer of shovel tests in plowed soils with intact horizons consisted of an organic Ao-Horizon (duff) layer that extended from 0 to 7 cmbs (0 to 2.8 inbs). The underlying Ap-Horizon (plowzone) was described as a layer of dark grayish brown (10YR 4/2) silty loam that reached from 7 to 34 cmbs (2.8 to 13.4 inbs). The B-Horizon consisted of a deposit of dark brown (10YR 3/3) silty medium sand with cobbles and extended from 34 to 57 cmbs (13.4 to 22.4 inbs). In cases where the fourth soil deposit was encountered, it was described as a glacially-derived C-Horizon that consisted of dark gray (2.5Y 3/1) coarse sand. This deposit was generally encountered at 57 cmbs (22.4 inbs) and continued to the base of the shovel tests at a depth of approximately 75 cmbs (29.5 inbs) (Figure 12). This was the most common shovel test pit profile encountered throughout the APE.

A typical test pit containing fill soils exhibited three soil horizons and reached an average depth of 100 cmbs (39.4 inbs). The uppermost layer of shovel tests in fill soils consisted of a layer of fill that was described as a deposit of dark grayish brown (10YR 4/2) silty fine sand; it was designated as Fill 1 and appeared to have been transported to the project area sometime in the past. The subsequent layer was also described as fill and consisted of a deposit of brown (10YR 4/3) medium-to-coarse sand. This layer was designated as Fill 2. The final horizon classified as layer of a very dark brown (10YR 2/2) sandy silt

that continued to the base of the shovel tests at 100 cmbs (39.4 inbs); its origin was unknown (Figure 13). This shovel test profile was mostly encountered in the Southern Field.

Of the 178 shovel test pits excavated within Sensitivity Area SA-1, 11 yielded post-European Contact period artifacts, eight produced precontact era artifacts, two contained both post-European Contact period and precontact era materials, and a single test pit yielding an ecofact (shell fragment) that could not be assigned to either the precontact era of the post-European Contact period reliably. The recovered artifact assemblage consisted of 21 post-European Contact objects, 17 items dating from the precontact era, and a single ecofact (the shell referenced above) that could not be assigned a temporal designation. The post-European Contact period assemblage included examples of ceramics sherds (i.e., creamware, whiteware, and redware), glass shards (i.e., curved glass and unidentified bottle glass), a single machine-cut and unidentified nail, and an unidentified zinc alloy metal fragment. These artifacts have a general date range of the late-eighteenth century through the nineteenth century (Table 3; Photo 11). They were recovered in low densities from predominantly disturbed fill soils and plowzone horizons from shovel tests spread throughout both the Northern and Southern fields. Examples of early twentieth century and modern farm equipment were also identified along the edges of the parcel (see Photos 4 and 6). In addition, a single shell fragment was recovered that could not be assigned a temporal affiliation (Photo 12) Due to the post-European Contact period material not being recovered in significant concentrations or in association with either above or below ground cultural features, this material, as well as the single shell fragment, was characterized as field scatter. The post-European Contact period artifacts lack research potential and the qualities of significance applying the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). No additional examination of them is recommended prior to the solar development.

Table 3. Overview of Post-European Contact Period Material Recovered From SA-1 During the Phase IB Survey.

Sensitivity Area	Soil Horizon	Artifact Class	Artifact Type	Description	Total	
SA-1	A	Glass	Indeterminate Manufacture	Curved Glass	1	
		Metal	Iron	Machine-Cut Nail	1	
	A Total				4	
	Ap	Ceramic		Creamware	Undecorated	1
				Whiteware	Undecorated	1
				Redware	Lead Glazed	2
				Unglazed	1	
		Glass	Indeterminate Manufacture	Indeterminate Bottle	2	
		Metal		Iron	Indeterminate Nail	1
			Zinc Alloy	Indeterminate	1	
	Ap Total				9	
	Buried A	Glass	Indeterminate Manufacture	Curved Glass	1	
	Buried A Total				1	
	Fill	Ceramic	Redware	Black Lead Glazed	4	
	Fill Total				4	
	Fill 1	Glass	Indeterminate Manufacture	Curved Glass	2	
	Fill 1 Total				2	
	Fill 2	Ceramic	Redware	Unglazed	1	
		Glass	Indeterminate Manufacture	Curved Glass	2	
	Fill 2 Total				3	
SA-1 Total				21		

Isolated Find ISO-1

The precontact era artifact assemblage identified during the Phase IB survey originated from three areas throughout the parcel. They were designated as previously identified archaeological Site 38-2, Isolated Find ISO-1, and Locus 1 (see Figures 11; Sheets 1 and 2). Excavation of ISO-1 resulted in the collection of a single quartz flake distal fragment that was recovered from the B-Horizon (Figure 11; Sheet 1). It was found in association with a single redware ceramic sherd, suggesting that they represented intrusive finds (Photos 13 and 14). A total of four delineation pits were excavated surrounding the find spot; none of these yielded additional cultural material or evidence of buried cultural features. Therefore, it is the professional opinion of Heritage that due to a lack of depositional integrity and association with previously identified archaeological sites or cultural features, Isolated Find ISO-1 does not retain research potential or the qualities of significance for listing the National Register of Historic Places applying the criteria for evaluation (36 CFR 60.4[a-d]). No additional archaeological examination of Isolated Find ISO-1 is recommended prior to development.

Locus 1

Locus 1 was identified on the eastern edge of the Northern Field. It initially produced a single quartz distal flake fragment from the Ao-Horizon (duff) (Figure 11; Sheet 1). Delineation of the locus area through the excavation of four delineation test pits led to the recovery of an additional piece of quartz primary reduction debris within the disturbed plowzone layer (Photos 15 and 16). Neither artifact was found in association with cultural features or intact soils. Therefore, it is the professional opinion of Heritage that due to a lack of depositional integrity, substantial numbers of artifacts, and no association with previously identified archaeological sites or cultural features, Locus 1 does not retain research potential. Thus, it was considered not eligible for listing on the National Register of Historic Places applying the criteria for evaluation (36 CFR 60.4[a-d]). No additional archaeological examination of Locus 1 is recommended prior to development.

Site 38-2 (Gastler Site)

The Phase IB survey involved the investigation of the Southern Field also resulted in the relocation of Site 38-2, which was previously identified by CAS in 1979 during a surface collection survey. The site falls within the southern limit of the current APE. The precontact era artifact assemblage recovered from Site 38-2 by CAS included a single flint side-notched projectile point, quartz scrapers, and untyped flint projectile points. The current survey revealed that the site is located on gently southern sloping topography and is situated within close proximity to an unnamed tributary of the Cogenchaug River. The vegetation throughout the site area was characterized by sparse deciduous tree cover and manicured lawn. Phase IB shovel testing of Site 38-2 by Heritage personnel indicated that the site boundary extends approximately 210 meters (689 feet) in a west-east direction by 50 meters (164 feet) in a north-south direction; however, this boundary may extend further to the east, west, and south outside the project area. No shovel testing was completed outside the project area.

The Phase IB shovel testing of the area containing Site 38-2 resulted in the collect of 13 of the 17 (76 percent) precontact era artifact from across the project area. They originated from the subsoil horizon (n=5), the plowzone (n=6) horizon, the duff (n=1) and from disturbed fill layers (n=1). Of these artifacts, 10 were characterized as lithic debitage that included consisted of 6 secondary thinning flakes (5 quartz and 1 chert), 2 primary reduction flakes of an unidentifiable material, a single quartz biface reduction flake, and a single piece of quartz angular debris. The two remaining lithic artifacts were identified as a quartz biface tip fragment and a quartz utilized flake. The final collected object was a fragment of an unidentified bivalve shell (Photos 17 and 18). While Site 38-2 has been subjected to limited previous disturbance, cultural material was recovered from B subsoils, indicating the presence of intact cultural

deposits within an area measuring approximately 210 meters (689 feet) in a west-east direction by 40 meters (131.2 feet) in a north-south direction in size. Thus, Site 38-2 was assessed as potentially significant applying the National Register of Historic Places criteria for evaluation (36 CFR 60.4[a-d]). However, project-related ground disturbance within the site area will be limited to minor tree clearing. As long as the tree stumps are left in place and no stump grinding occurs, no impacts to Site 38-1 are anticipated. As a result, no additional archaeological examination of the site area is recommended prior to project construction.

Stonewalls and Capped Well

In addition, the pedestrian survey portion of the Phase IB survey resulted in the identification of three dry-laid stonewalls that defined portions the project parcel boundaries, as well as a capped well (Figure 11; Sheets 1 and 2). Stonewall 1 lines the eastern boundary of the southern field and extends approximately 120 meters (393.7 feet) on a north-south axis. It measures approximately 70 centimeters (2.3 feet) in width and 91 centimeters (3 feet) in height and remains in good condition (Photos 5 and 19). Stonewall 2 consists of four segments that outline the northern, western, and eastern boundaries of the northern field, as well as the northern boundary of the southern field. Similarly, these segments measure approximately 70 centimeters (2.3 feet) in width and 91 centimeters (3 feet) in height and remain in fair condition, although sections of them are overgrown. Segment 1 of Stonewall 2 lines the northern boundary of the Southern Field and extends 217 meters (711.9 feet) (Photo 20). The eastern end of the segment intersects with Segment 2 of Stonewall 2, which is 217 meters (711.9 feet) long and lies on a north-south axis (Photos 21 through 23). Segment 3 of Stonewall 2 is situated along the northern border of the Northern field and measures 239 meters (784.1 feet) and likely extends further east past the vicinity of the APE; portions of this segment have been affected by push piles (Photos 23 through 25). Segment 4 of Stonewall 2 intersects with Segment 3 of Stonewall 2 and extends 94 meters (308.4 feet) on a north-south axis and likely continues further; however, due to overgrowth of vegetation it is difficult to delineate its total path (Photo 26).

The final stonewall, Stonewall 3, follows the southern boundary of the southern field; it measures approximately 147 meters (482.3 feet) along an east-west axis (Photos 27 and 28). The wall is 61 centimeters (2 feet) tall and 76 centimeters (2.5 feet) wide. Finally, a capped stone well is situated to the west of Stonewall 1 and directly north of a creek that bisects the wall. It has a diameter of approximately 1.3 meters (4.5 feet) and is surrounded by large rocks (Photos 29 and 30). It is recommended that, to the extent practicable, the above-referenced stonewalls and the capped stone well be left in place. It is also recommended that they be included on construction maps and marked with high visibility fencing in the field so that they are not impacted during construction.

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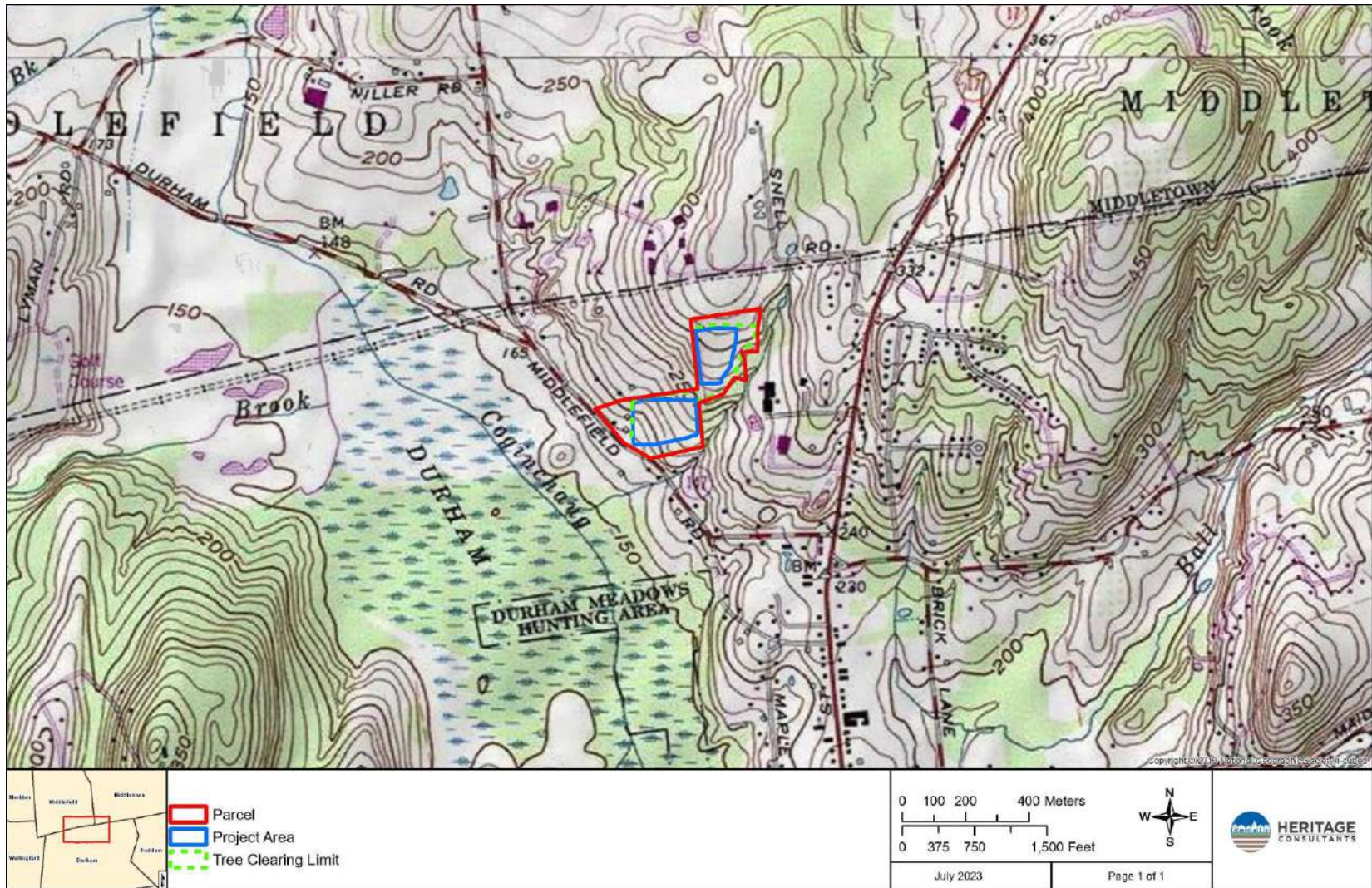
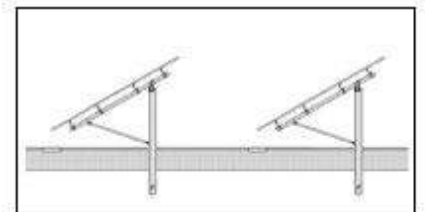


Figure 1. Excerpt from a USGS 7.5' series topographic quadrangle image showing the location of the Facility area in Durham, Connecticut.



SYSTEM INFORMATION	
SYSTEM SIZE (DC)	4154.02 KW
SYSTEM SIZE (AC)	3025 KW
PANEL SIZE	HELIENE 144HC M10 535W* / HELIENE 144HC 450W*
PANEL QUANTITY	3172 / 5480
PANEL TILT	20°
PANEL AZIMUTH	0°
ROW SPACING	13'
INVERTER SIZE	(17) SOLECTRIA XGI 1500 125kW* (8) SOLECTRIA XGI 1500 150kW*
ESTIMATED ANNUAL PRODUCTION	5555.2 MWh

*Preliminary equipment selection, equivalent alternative may be used in actual installation



RACKING CROSS-SECTION (NOT TO SCALE)

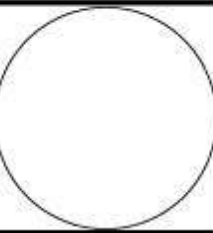


PROGRESS SET
NOT FOR CONSTRUCTION

Greenskies
180 Johnson Street
Middletown, CT 06457
PH - 860.398.5408
FAX - 860.398.5423

REVISIONS:		
NO.	DATE	DESCRIPTION

PROPOSED SITE PLAN
PV SOLAR ARRAY
MIDDLEFIELD ROAD
DURHAM, CT 06422



BATCH NO.:	PROPOSAL
DRAWN BY:	ZS
SCALE:	AS NOTED
DATE:	20 APR 2023

PV.01

Figure 2. Proposed project plans for the solar facility along Middlefield Road in Durham, Connecticut.

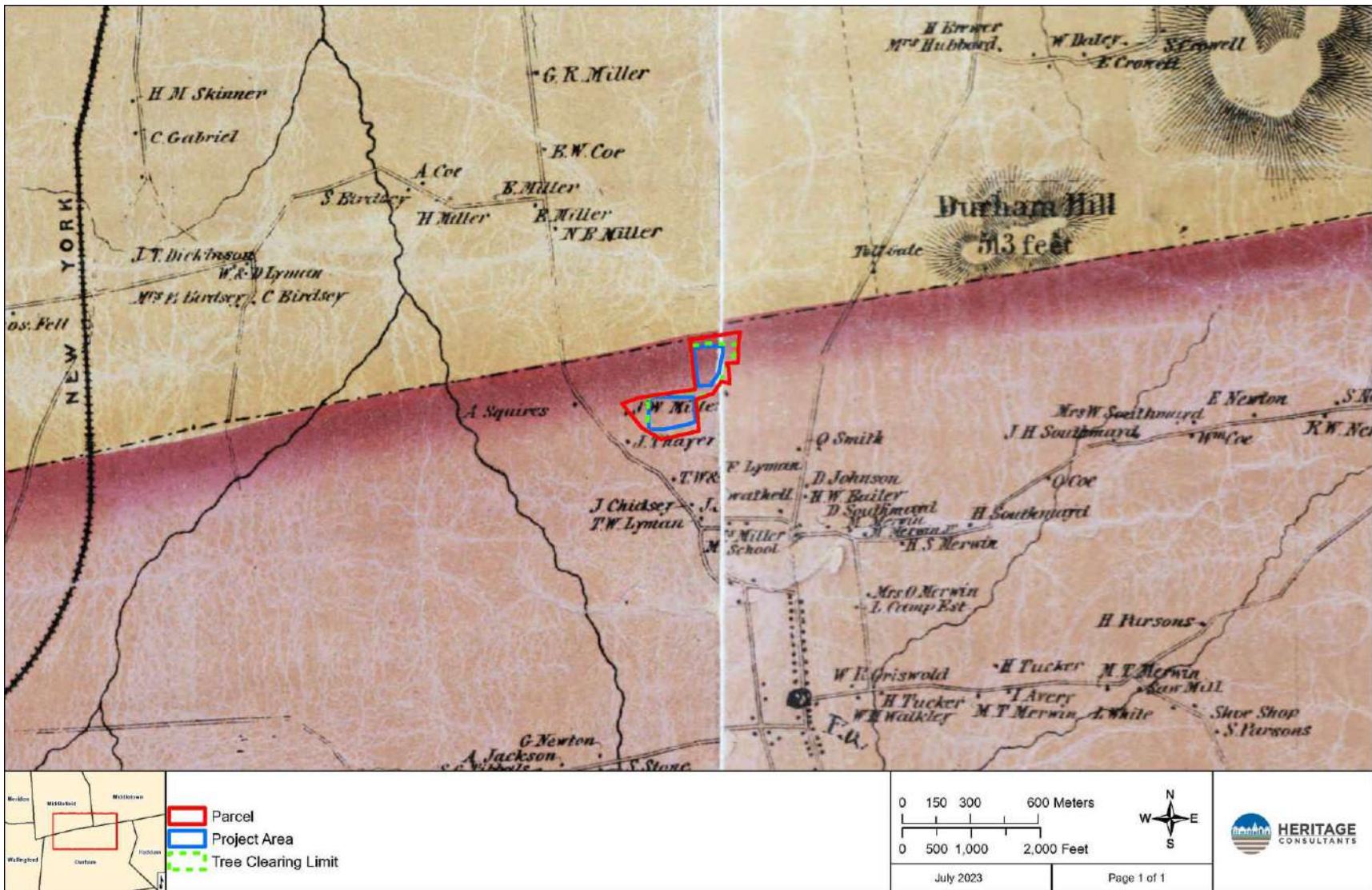


Figure 3. Excerpt from an 1859 map showing the location of the Facility area in Durham, Connecticut.

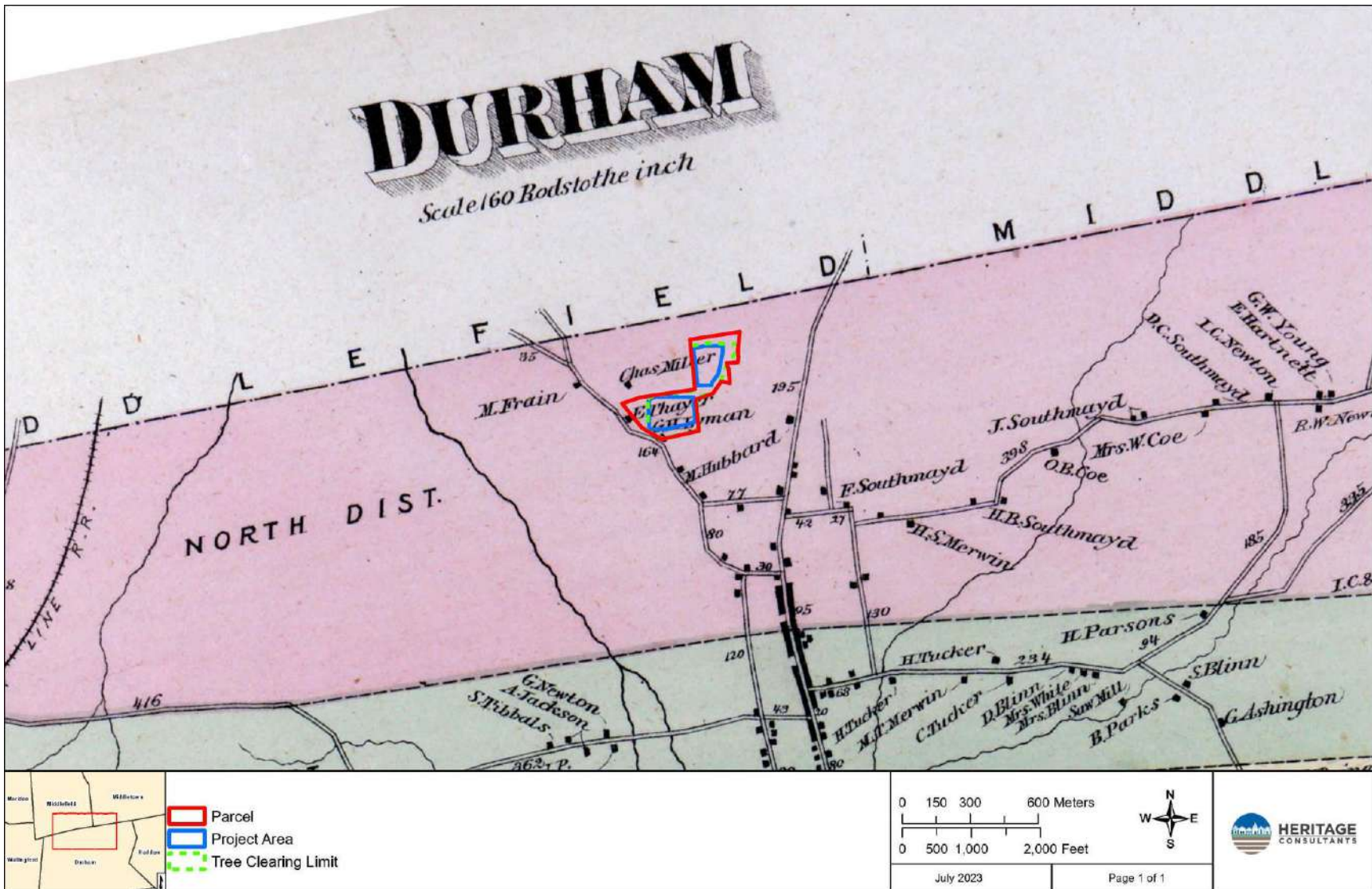


Figure 4. Excerpt from an 1874 map showing the location of the Facility area in Durham, Connecticut.



Figure 5. Excerpt from a 1934 aerial photograph showing the location of the Facility area in Durham, Connecticut.



Figure 6. Excerpt from a 1951 aerial photograph showing the location of the Facility area in Durham, Connecticut.

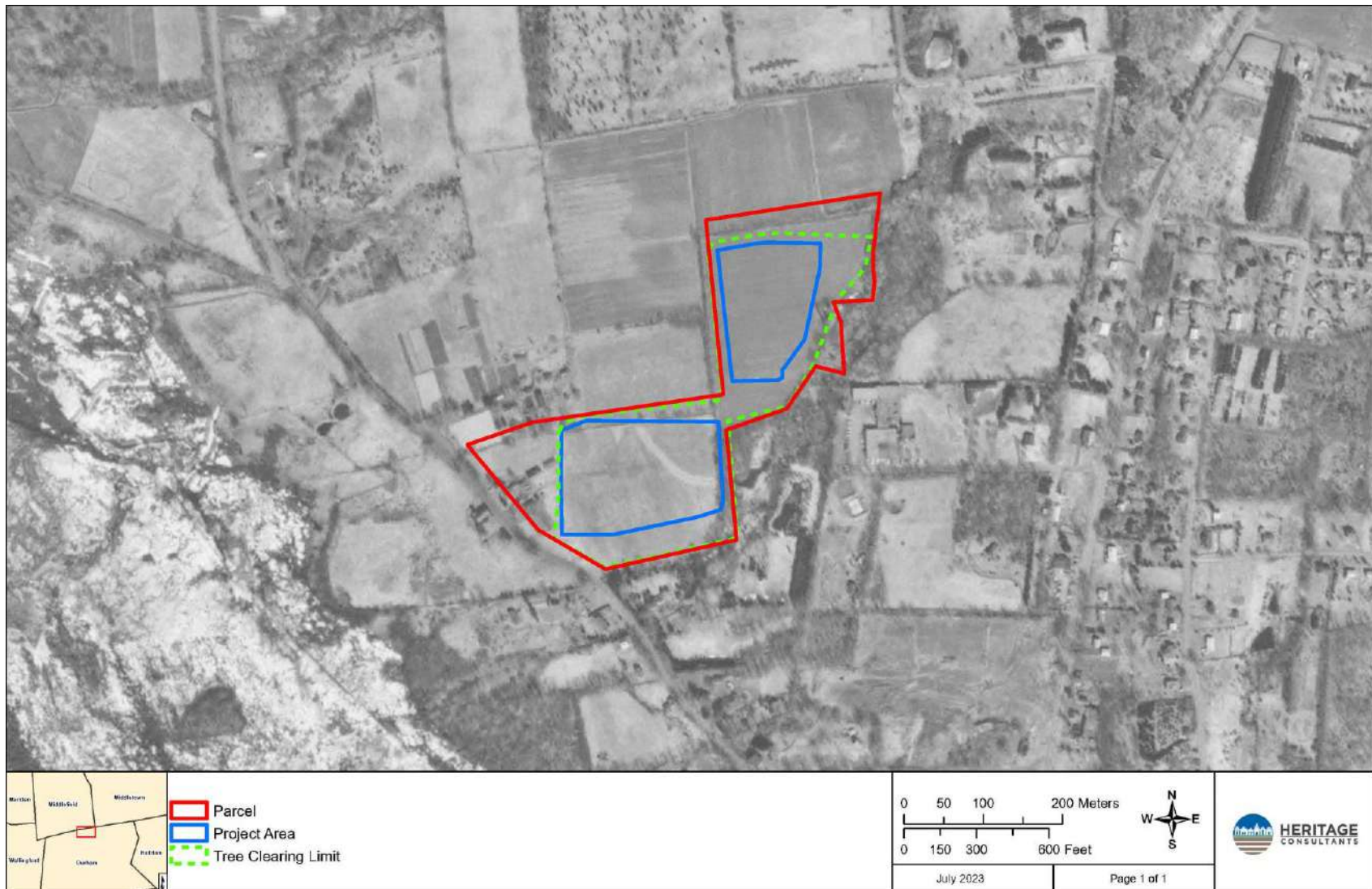


Figure 7. Excerpt of a 1970 aerial photograph showing the location of the Facility area in Durham, Connecticut.

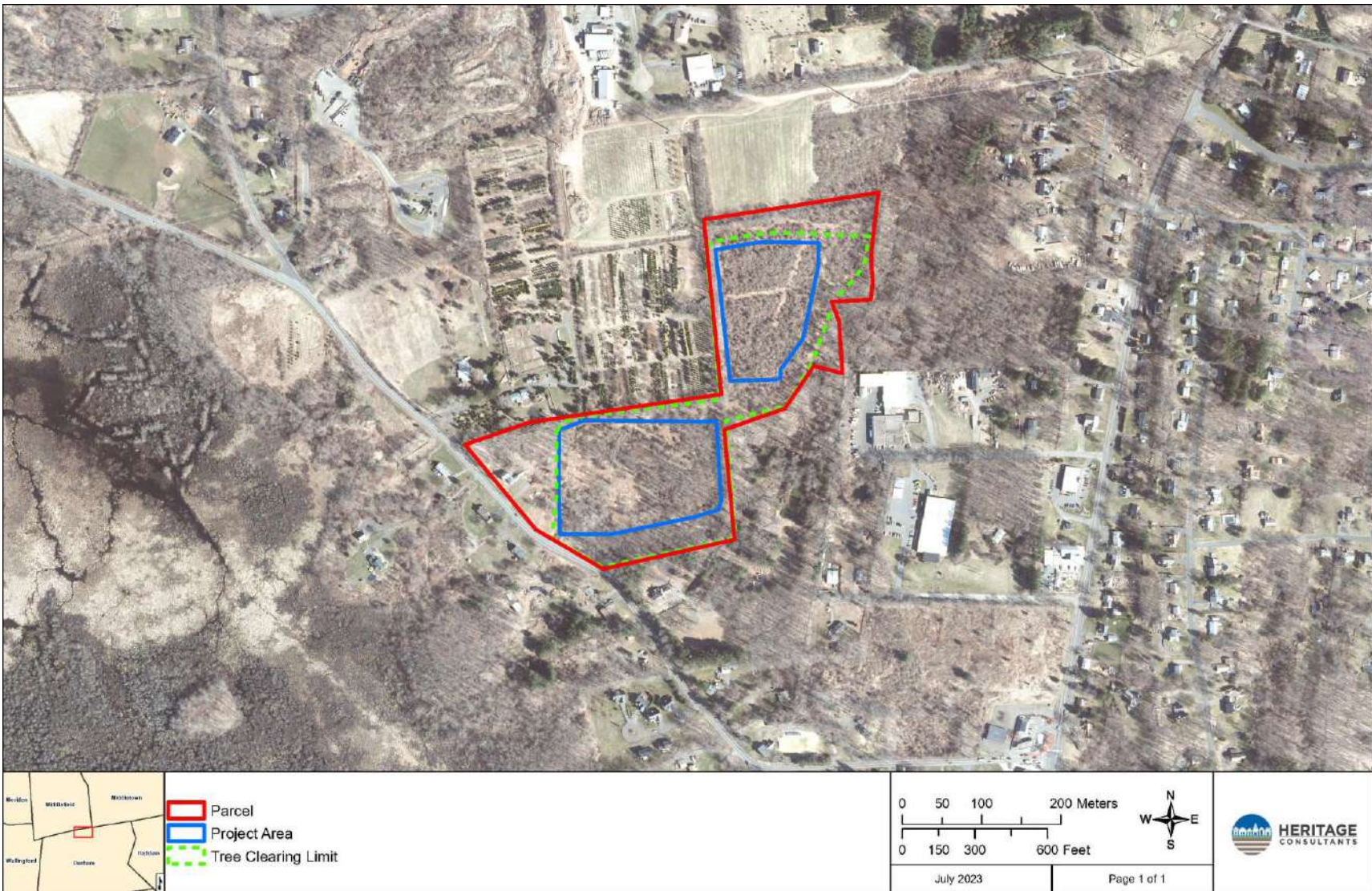


Figure 8. Excerpt of a 2019 aerial photograph showing the location of the Facility area in Durham, Connecticut.

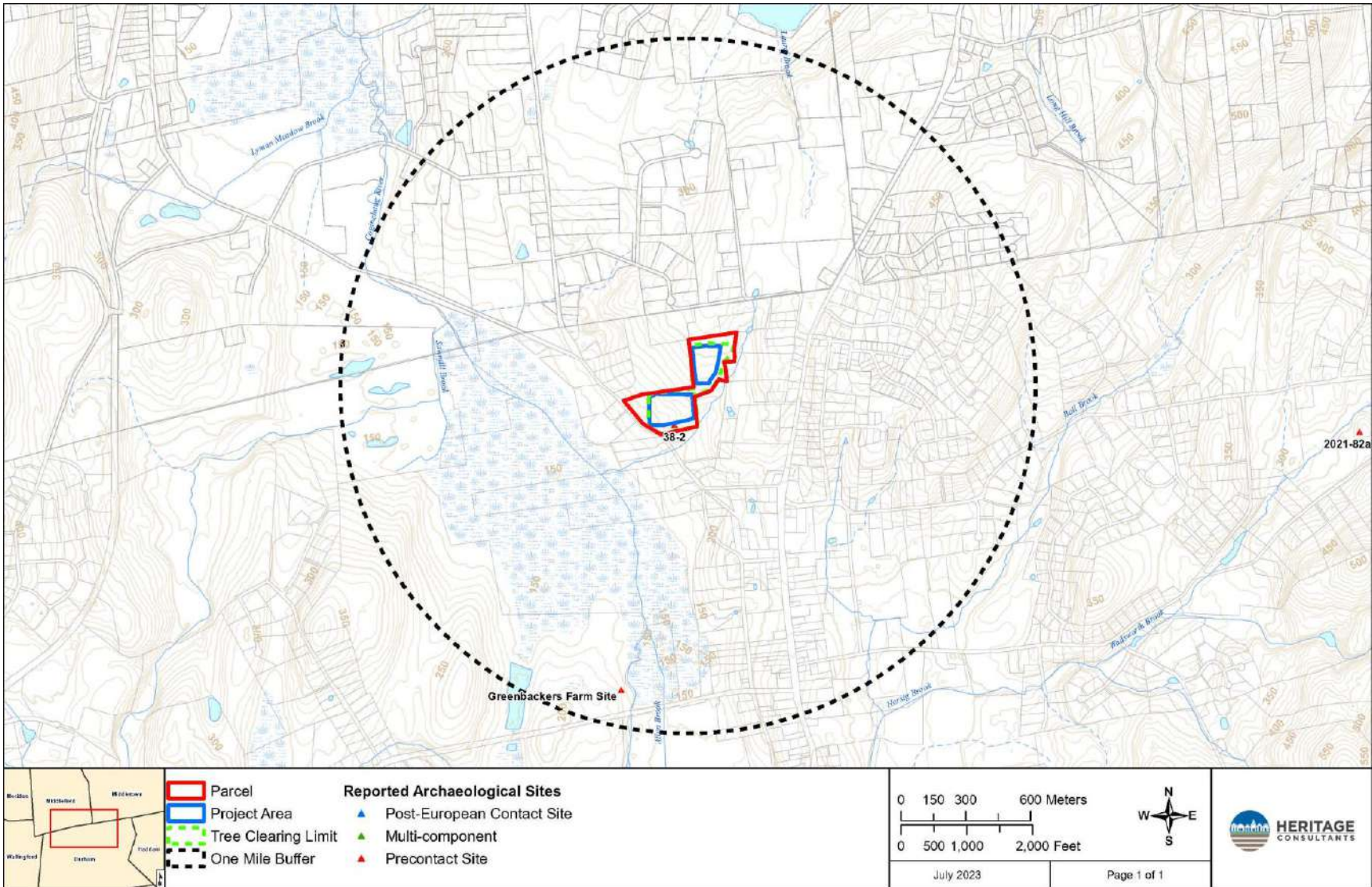


Figure 9. Digital map depicting the locations of the previously identified archaeological sites in the vicinity of the Facility area in Durham, Connecticut.

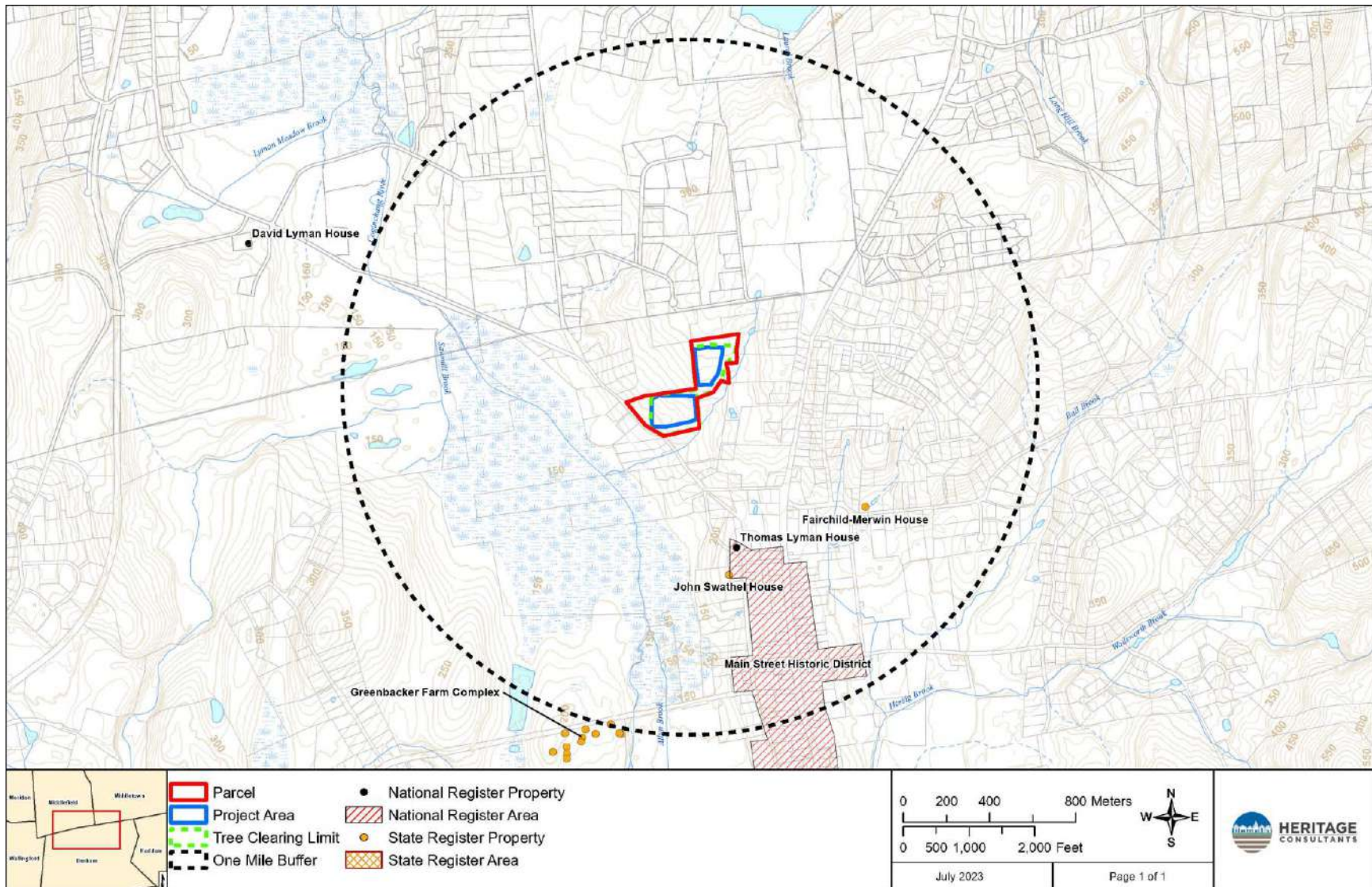


Figure 10. Digital map depicting the locations of the previously identified National Register of Historic Places and State Register of Historic Places properties in the vicinity of the Facility area in Durham, Connecticut.



Figure 11; Sheet 1. Excerpt from a 2019 aerial photograph showing transects and excavated Phase II shovel tests, units, and the current boundaries of Site 38-2, Locus 1, and ISO-1 in the solar facility area in Durham, Connecticut.

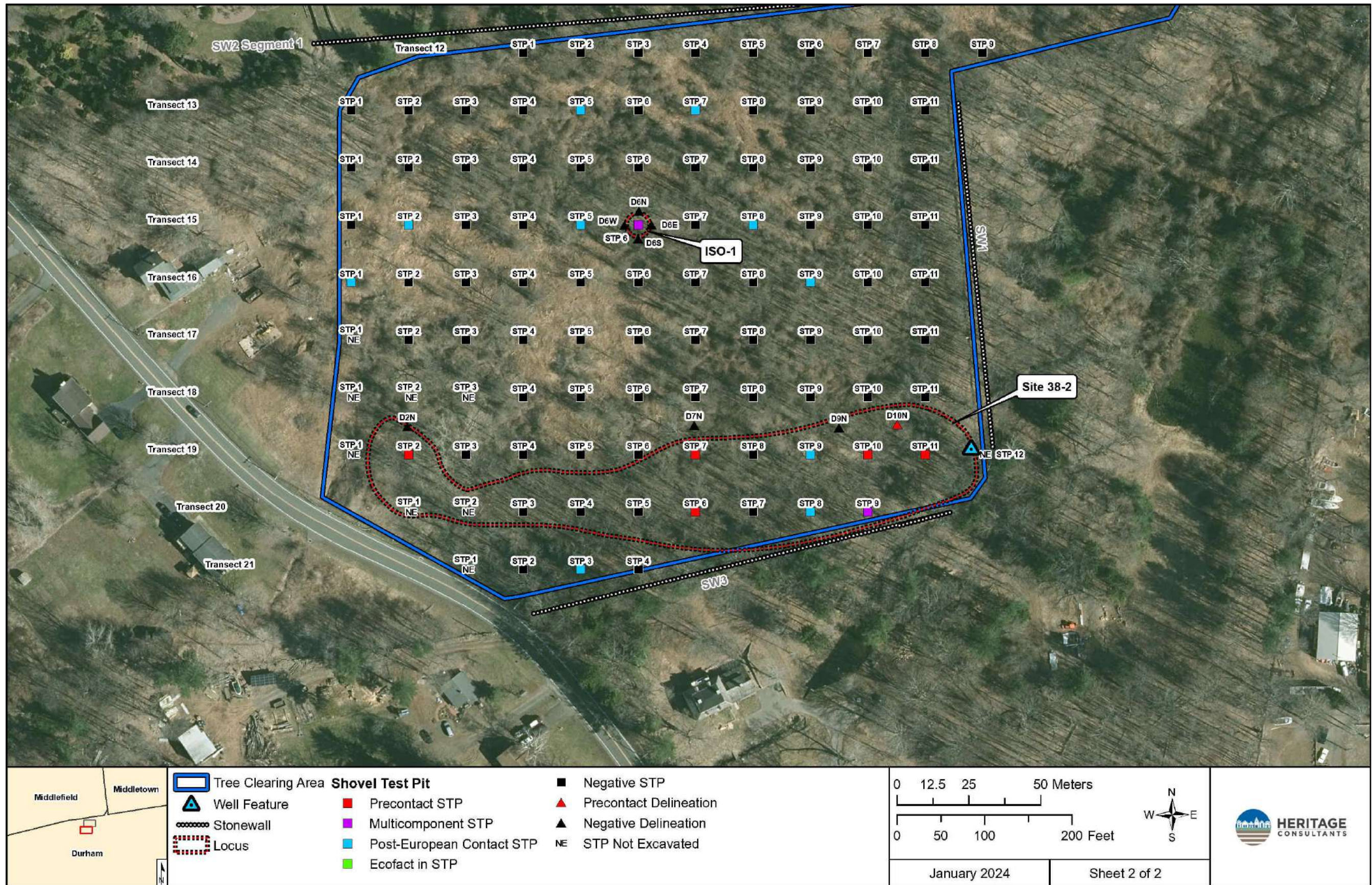


Figure 11; Sheet 2. Excerpt from a 2019 aerial photograph showing transects and excavated Phase II shovel tests, units, and the current boundaries of Site 38-2, Locus 1, and ISO-1 in the solar facility area in Durham, Connecticut.

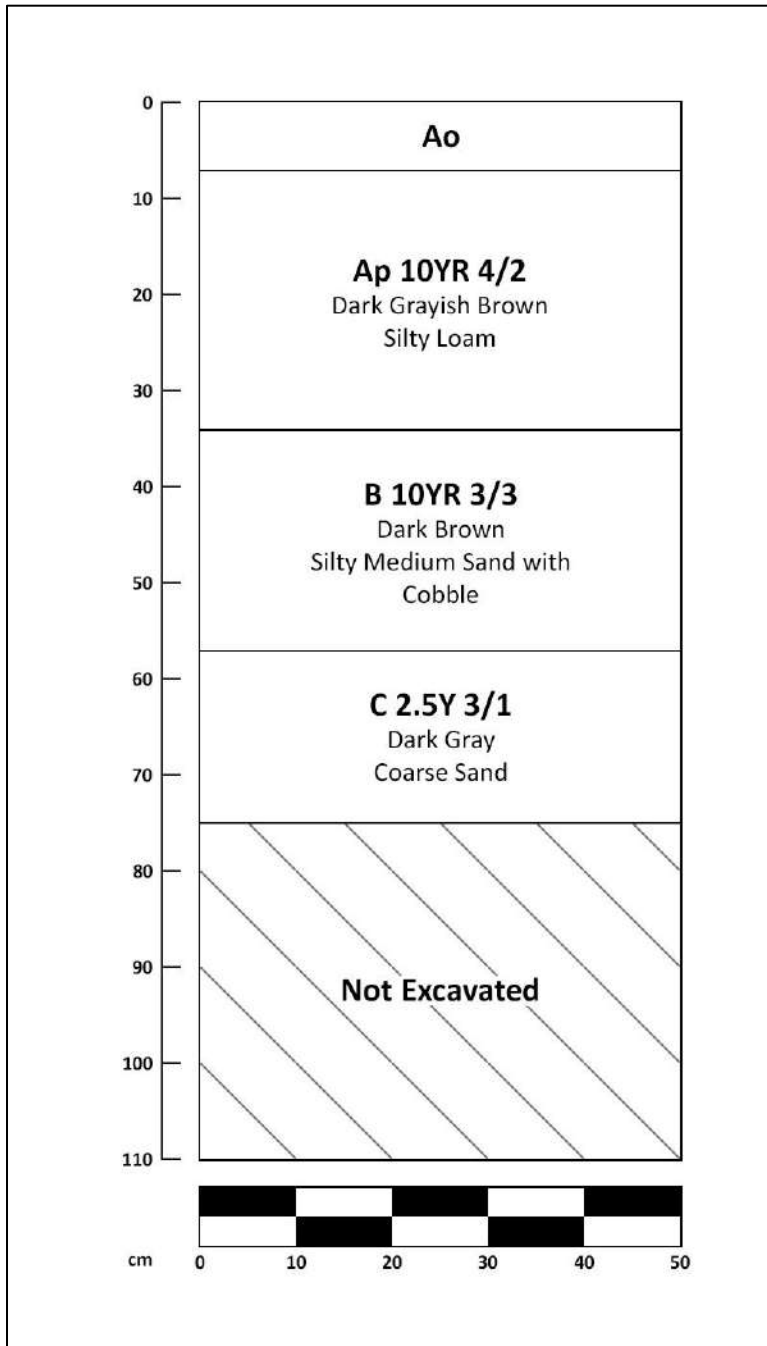


Figure 12. Digital representation of the east wall profile of Shovel Test T1 STP 6 from the solar Facility area.

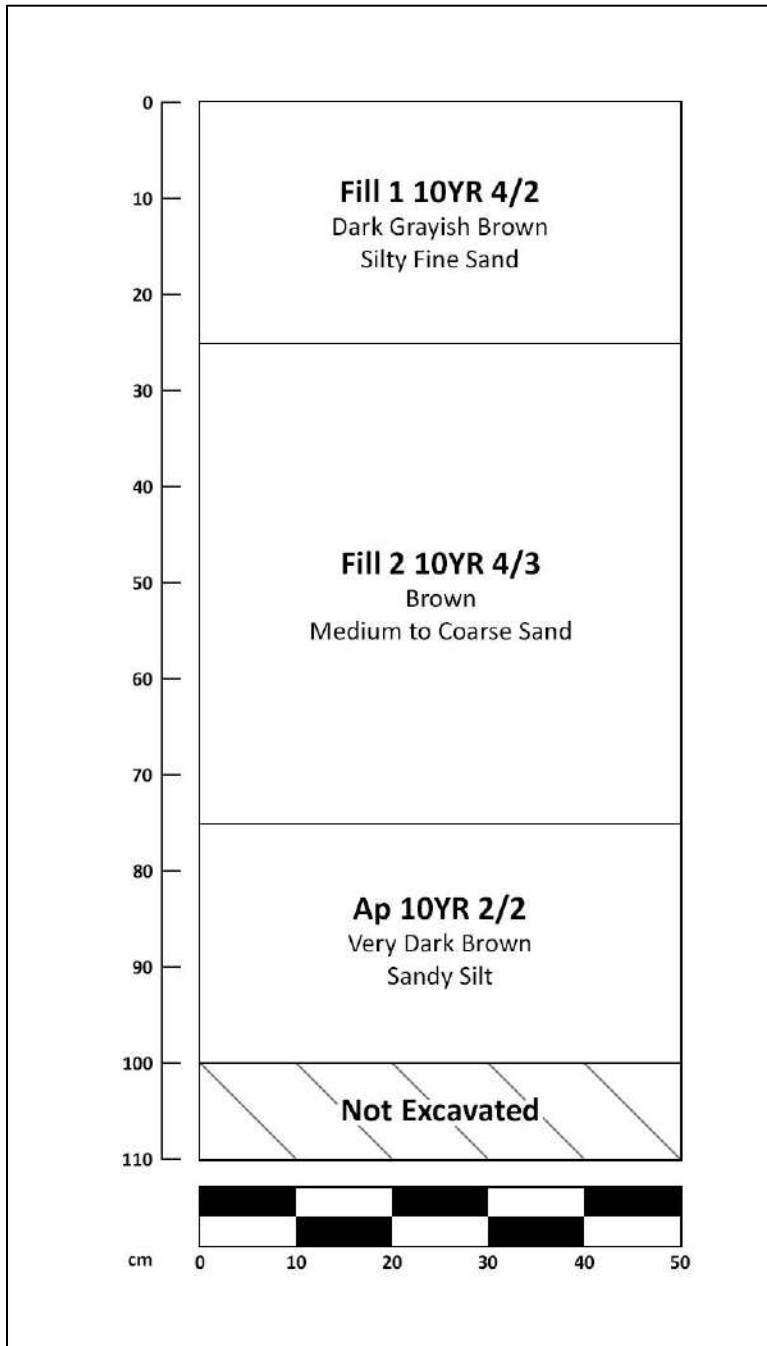


Figure 13. Digital representation of the soil profile of Shovel Test T16 STP 1 from the solar Facility area.

APPENDIX B

PHOTOS



Photo 1. Overview photo from northwestern corner of Northern Field. Photo taken facing southeast.



Photo 2. Overview photo from eastern boundary of the Northern Field. Photo taken facing west.



Photo 3. Previously excavated trenches identified along the eastern boundary of the Northern Field. Photo taken facing south.



Photo 4. Overview photo from northwest corner of southern field of the APE. Photo taken facing southeast.



Photo 5. Overview photo from southeast corner of southern field of project parcel, with Stonewall 1 in the background. Photo taken facing north.



Photo 6. Historic farm equipment located along the southern boundary of the Southern Field. Photo taken facing south.



Photo 7. Overview photo of dense brush impeding the excavation of T8P2. Photo taken facing northeast.



Photo 8. Overview photo of stonewall fragment impeding the excavation of T5P8. Photo taken facing northeast.



Photo 9. Overview of log pile impeding excavation of T17P1. Photo taken facing northeast.



Photo 10. Overview of wetland located in the southwestern corner of the Southern Field. Photo taken facing east.



Photo 11. Representative photo of post-European Contact period artifacts recovered from Sensitivity Area SA-1. A) Machine-cut nail; B) Creamware sherd; C) Black lead-glazed redware sherd.



Photo 12. A shell fragment dating from an indeterminate time period recovered from Sensitivity Area SA-1.



Photo 13. A quartz flake fragment recovered from ISO-1; Side A.



Photo 14. A quartz flake fragment recovered from ISO-1; Side B.



Photo 15. Precontact artifact assemblage recovered from Locus 1; Side A. A) Quartz flake fragment; B) two pieces of quartz angular debris.



Photo 16. Precontact artifact assemblage recovered from Locus 1; Side B. A) Quartz flake fragment; B) two pieces of quartz angular debris.



Photo 17. Representative photo of the precontact artifact assemblage of Site 38-2 Side A; A) Chert medial flake fragment; B) Quartz biface tip fragment; C) Quartz angular debris D) indeterminate shell fragment.



Photo 18. Representative photo of the precontact artifact assemblage of Site 38-2 Side B; A) Chert medial flake fragment; B) Quartz biface tip fragment; C) Quartz angular debris D) indeterminate shell fragment.



Photo 19. Overview of Stonewall 1. Photo taken facing to north.



Photo 20. Overview of Stonewall 2, Segment 1 with evidence of pushpiles. Photo taken facing to east.



Photo 21. Overview of the intersection of Stonewall 2, Segments 1 and 2. Photo taken facing to northwest.



Photo 22. Overview of Stonewall 2, Segment 2. Photo taken facing to south.



Photo 23. Overview of the intersection of Stonewall 2, Segments 2 and 3.
Photo taken facing to north.



Photo 24. Overview of Stonewall 2, Segment 3. Photo taken facing to west.



Photo 25. Overview of push pile against Stonewall 2, Segment 3. Photo taken facing to north.



Photo 26. Overview of Stonewall 2, Segment 4. Photo taken facing to west.



Photo 27. Overview of western end of Stonewall 3. Photo taken facing to south.



Photo 28. Overview of eastern end of Stonewall 3. Photo taken facing to west.



Photo 29. Overview of capped well and southern end of Stonewall 1. Photo taken facing to south.



Photo 30. Closeup of capped well. Photo taken facing to north.