ACS

◆ *Archaeological Consulting Services* ◆

Catherine Labadia
Connecticut State Historic Preservation Office
One Constitution Plaza, 2nd Floor
Hartford, CT 06103

RE: Fusion Solar Center, Sprague, CT

July 28, 2015

Dear Cathy,

We submit this letter in order to revise and refine our recommendations in our Phase I archaeological reconnaissance survey report, dated June, 2015. In our original report, we recommended that the southwest portion of the Rainville Lot remain wooded and undeveloped below the 340-foot contour line. This contour line was chosen as an easily recognizable and identifiable boundary to accommodate both the stone piles in that area as well as the viewshed of the house at 85 Potash Hill Road. If you recall, that house is not on the project property, but is a nearby structure that could be eligible for the National Register of Historic Places.

At the time of our survey, we did not have specific site plans showing the layout of the proposed development. We have attached a proposed specific site plan that shows the solar array contained in an area above the 340-foot contour line, although the tree clearing needed to accommodate the array would breach that contour line slightly, to as low as the 330-foot contour line. This clearing comes close to the stone piles recommended for conservation, although project engineers indicate a commitment to leaving the stone piles in place. Further, in the cursory viewshed analysis conducted by architectural historian Janice Cunningham, the critical factor in protecting the viewshed of the house was maintaining a wooded buffer zone to within 250 feet of the structure, which would still be the case. Additionally, there would still be a 500-foot wooded buffer zone to a distance of approximately 750 feet or more to the proposed tree line.

Given current site plans and a commitment to preserve the stone pile features in the southwest part of the Rainville Lot, ACS therefore recommends that the proposed project is in keeping with the spirit and intent of the original recommendations of our survey report. ACS seeks a confirmation of our revised recommendations from your office in advance of a Connecticut Siting Council hearing in connection with a petition for a declaratory ruling for the project. Thanks in advance for your consideration,

Greg F. Walwer

Gregory F. Walwer
ACS Director

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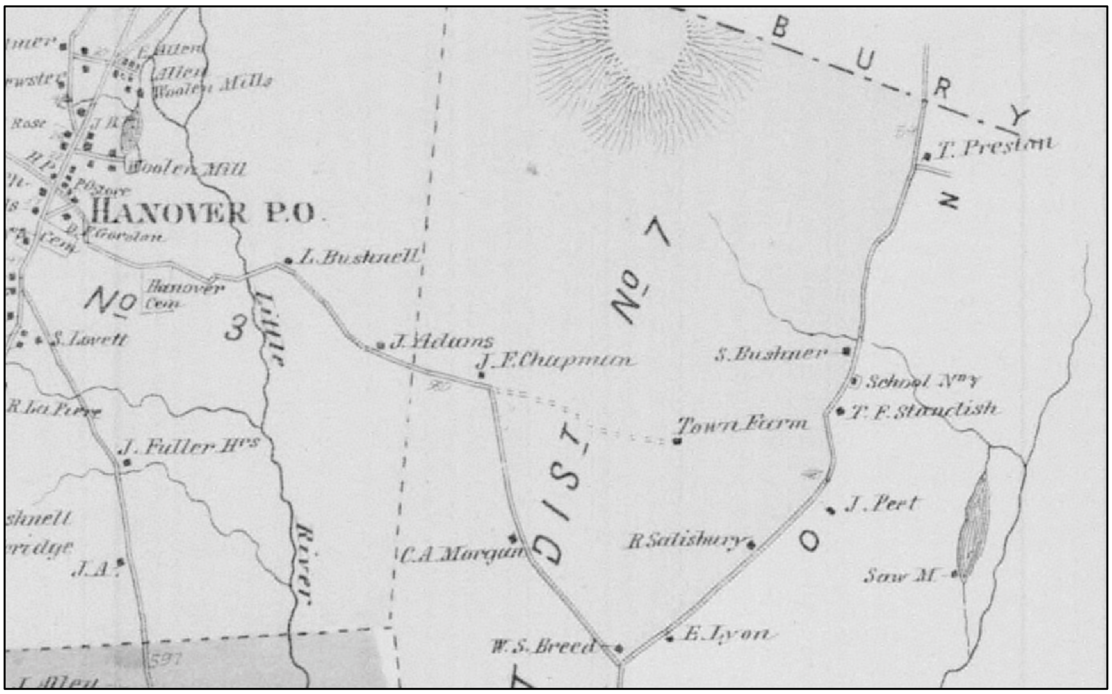
Phase I Archaeological Reconnaissance Survey
Fusion Solar Center
Town of Sprague, Connecticut

June, 2015



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Phase I Archaeological Reconnaissance Survey
Fusion Solar Center
Town of Sprague, Connecticut

by

Gregory F. Walwer, Ph.D.
and
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of

ACS

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June, 2015

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Abstract

This report contains the results of a Phase I archaeological reconnaissance survey conducted by ACS (Archaeological Consulting Services) during the months of April and May, 2015. The project calls for an evaluation of cultural resources to be affected by the proposed development of a solar energy facility on three main parcels of land in the northern part of Sprague, Connecticut. The three main parcels measure approximately 360 acres, with an additional 20 acre supplemental parcel being considered for development. The proposed development would consist of an array of solar panels to generate electricity for the 20 MW photovoltaic renewable energy facility.

ACS was contacted to perform the archaeological survey by Coronal Development Services, a solar project development firm based in Charlottesville, Virginia. Coronal is the parent company to Fusion Solar Center, LLC, which owns the assets of Fusion Solar Center. Coronal indicated the survey was requested based on requirements of the Connecticut Siting Council and the Connecticut State Historic Preservation Office (SHPO). ACS performed a reconnaissance survey of the property that included an initial assessment survey to evaluate prehistoric and historic sensitivity in the project area.

According to a statistical prehistoric landscape sensitivity model developed and utilized by ACS, the entire project area scores no higher than 13.3 out of a possible 100.0, and therefore within the low sensitivity range (0-20). The highest scoring areas tended to be in the open fields where less rocky soils were in close proximity to intermittent streams, although the general rockiness of soils, high water table, and small size of drainages rendered very low sensitivity scores throughout the property.

The project area bears a higher sensitivity with respect to potential historic cultural resources. Historic maps and land records reveal that the existing house at 111 Potash Hill Road was owned by the Bishop family in the 19th Century, although a cursory architectural history analysis of the structure reveals that the house likely dates to the late 18th Century. The house to the west at 85 Potash Hill Road lies just off the property, although it is likely eligible for the National Register of Historic Places (NRHP) and was subject to a cursory visual impact analysis.

A pedestrian surface survey of the property revealed no historic structural features or remains other than alignments of stone walls and some stone piles that likely reflect historic field clearing activity. Some of the better formed stone piles lie in the southwest corner of the Rainville lot that the development firm has agreed to leave undeveloped so as to provide adequate screening for the historic house at 85 Potash Hill Road.

There were 469 stratified-systematic subsurface shovel tests plotted for the survey in standard 50-foot intervals, mostly in the open fields of the Rainville and Nadeau lots, but also some tests placed in the vicinity of two vernal pools on the property and in the vicinity of a 20th Century trash dump site. There were no definitive prehistoric artifacts or identifiable traces of prehistoric activity, although eight additional judgmental shovel tests were placed in the vicinity of two tests in the open Rainville lot where possible quartz or quartzite debitage had been recorded. Historic artifacts on the property were mostly recovered in very light densities throughout the open Rainville lot, consisting of structural and domestic materials such as wrought, cut and wire nails; window and bottle glass; redware, creamware, pearlware, whiteware, ironstone china, and stoneware ceramic fragments; slag and coal; and one domestic mammal bone fragment. None of the materials were concentrated or found in subsurface cultural feature contexts, with the exception of one area in the northern part of the open Rainville lot where a depression in the field had been infilled, and in the vicinity of the 20th century trash dump site to the north in the wooded part of the Rainville lot. Materials at the surface in the latter site included paint cans, glass jars and bottles, oxidized sheet metal, and traces of metal milk jugs with registration tags indicative of the consolidation of the milk industry in the late 19th through early 20th centuries.

Given the lack of definitive prehistoric artifacts or feature contexts, ACS is recommending no further archaeological conservation efforts for potential prehistoric cultural resources. ACS is also recommending no further archaeological conservation efforts for historic cultural resources given the light density of scattered material in the open Rainville lot representing incidental discard and the scattering effects of plowing and/or other agricultural activity, and lack of substantial informative value or contextual setting of the 20th Century trash dump site. Some of the better formed stone piles will be preserved in the Rainville lot, as will some of the stone wall alignments lining the fields, although their salient information from mapping that could offer information regarding historic agricultural lot sizes and orientation are sufficient, thus no further conservation efforts are warranted for these resources. Adequate screening is assured to accommodate the NRHP eligible house at 85 Potash Hill Road, and ACS recommends that screening or state-level architectural history documentation be provided for the house at 111 Potash Hill Road despite its lack of eligibility for the NRHP.

Project Summary

Project Name: Fusion Solar Center, Sprague, Connecticut.

Project Purpose: To investigate possible cultural resources which may be impacted by the proposed development of a solar energy facility in compliance with requirements of the Connecticut Siting Council and the Connecticut State Historic Preservation Office.

Project Funding: Fusion Solar Center, LLC, Charlottesville, Virginia.

Project Location: Potash Hill Road and Westminister Road, Sprague, Connecticut.

Project Size: Approximately 360 acres; possible additional 20 acre parcel.

Investigation Type: Phase I archaeological reconnaissance survey.

Investigation Methods: Background research, pedestrian surface survey, 469 stratified systematic subsurface shovel tests, eight (8) judgmental subsurface shovel tests.

Dates of Investigation: December, 2014 (assessment survey); March to May, 2015 (reconnaissance survey).

Performed by: ACS (Archaeological Consulting Services), 10 Stonewall Lane, Guilford, Connecticut 06437-2949, (203) 458-0550 (telephone), (203) 672-2442 (fax), acsinfo@yahoo.com.

Principal Investigators: Gregory F. Walwer, Ph.D. and Dorothy N. Walwer, M.A.

Reviewing Agency:

Connecticut State Historic Preservation Office (Catherine Labadia, Staff Archaeologist), One Constitution Plaza, 2nd Floor, Hartford, CT 06103, (860) 256-2764.

Submitted to:

Fusion Solar Center, LLC (Ben Combs, Senior Project Engineer), 321 East Main Street, Suite 300, Charlottesville, VA 22902, (434) 446-1459.

Connecticut Office of State Archaeology (Dr. Brian Jones, State Archaeologist), Connecticut State Museum of Natural History, University of Connecticut, 2019 Hillside Road, U-1023, Storrs, CT 06269-1023, (860) 486-5248.

Curation:

Artifact bags labelled with project code (SGHS), block letter or area (e.g. A), 50-foot interval and cardinal direction from datum point (e.g. 4S-3W), layer by Roman numeral (e.g. II).

Artifacts to be submitted to Connecticut Office of State Archaeology, Storrs, Connecticut.

Recommendations: No definitive traces of prehistoric cultural resources. Historic archaeological resources limited to stone wall alignments and stone piles likely originating from field clearing, 20th Century trash dump site, scattered traces of structural and domestic materials in open fields. No further archaeological conservation efforts required. Southwest corner of Rainville lot recommended to be left undeveloped to provide screening for historic house at 85 Potash Hill Road and to retain better formed examples of stone piles of unconfirmed origin. The historic house at 111 Potash Hill Road is not eligible for the National Register of Historic Places, although it bears historic value and should be accommodated by state-level architectural history documentation or screening.

Acknowledgements

ACS is indebted to the following people whose assistance helped to make the execution of this project more accessible and thorough:

Catherine Labadia, Staff Archaeologist for the State Historic Preservation Office, Connecticut State Historic Preservation Office in Hartford, Connecticut. ACS thanks Catherine Labadia for her help in procuring prehistoric and historic sources pertaining to the region surrounding the project property.

Dr. Brian Jones, State Archaeologist at the Connecticut Office of State Archaeology in Storrs, Connecticut. ACS thanks the Office of State Archaeology for directing ACS towards helpful background research sources relating to the prehistory and history of the region.

Mr. Ben Combs, Senior Project Engineer for Coronal Development Services of Charlottesville, Virginia, the parent company for Fusion Solar Center, LLC. ACS thanks Mr. Combs for coordinating the project and providing maps and other helpful background information and resources.

Mr. Alan Rainville, Jr. and Mr. Alan Rainville, Sr., land owners. ACS thanks the Rainville family for providing vehicle storage and access to the project area, as well as late historic land use information.

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CHAPTER 1: INTRODUCTION

Project Description

This report regards a Phase I archaeological reconnaissance survey conducted for the proposed construction of a 20 MW photovoltaic renewable energy facility on three parcels of land in the Town of Sprague, New London County, Connecticut. The project area lies in northeast Sprague, bound by Potash Hill Road on the south, Westminister Road and the Lisbon town line on the east, and the Canterbury town line on the north. The three main parcels measure approximately 360 acres, with an additional 20 acres possibly to be added to the northwest part of the project area. The anticipated project impact area is approximately 200 acres, although it is uncertain at this time how the 200-acre facility will be distributed on the property.

ACS was contacted by Fusion Solar Center, LLC of Charlottesville, Virginia to submit a research design for conducting a Phase I archaeological reconnaissance survey of the project area, following a recent correspondence from the Connecticut State Historic Preservation Office (SHPO) that a professional cultural resources assessment and reconnaissance survey was required given the jurisdiction of the project under the Connecticut Siting Council. In its evaluation of potential cultural resource sensitivity, SHPO noted,

> "...the project parcels are situated within a gently rolling rural section of Lisbon comprised of historic farmsteads. SHPO also notes that the majority of the project area is on level to very gently sloping terrain in close proximity to perennial sources of water. This type of environmental setting is associated with precontact Native American settlement. It is SHPO's opinion that intact and relatively well-drained soils within the Area of Potential Effect have an elevated potential to contain significant archaeological resources... The survey should consider both the direct and indirect effects of the proposed project on above ground and below ground cultural resources. The survey should take into consideration potential viewshed impacts on structures older than fifty years that may be eligible for listing on the National Register of Historic Places. In addition, subsurface testing should assess all areas of anticipated ground disturbance that are considered to have moderate / high sensitivity for containing significant archaeological deposits, unless sufficient research or fieldwork documents that this level of effort is unwarranted..."

In a correspondence from Fuss & O'Neill requesting the SHPO review, it is noted that the engineering firm of Manchester, Connecticut was preparing a petition on behalf of the project for the "Connecticut Siting Council for a Declaratory Ruling for Renewable Energy Facility under Connecticut General Statutes 16-50k(a)." The correspondence also notes that the project will use existing farm roads without grading where possible, that the facility will be surrounded by a six-foot barbed wire fence, and that a preliminary site walk of the property revealed no historic structural remains other than stone walls.

A Phase Ia archaeological assessment survey was initially conducted by ACS, including a thorough background research effort and pedestrian surface survey to evaluate the potential sensitivity of the project property for any prehistoric and/or historic cultural resources. The Phase Ia survey allowed for a refined scope of work for subsurface testing in the required Phase Ib archaeological reconnaissance survey. The research and field methods conducted for the surveys by ACS are in conformance with requirements of Section 106 of the National Historic Preservation Act (NHPA) and the Connecticut State Historic Preservation Office (SHPO), particularly the *Environmental Review Primer for Connecticut's Archaeological Resources.* As part of the Connecticut Siting Council process, the survey is subject to review and comment by SHPO.

Background

The project area lies at the boundary of the Northeast Hills (III-C) and Southeast Hills (IV-C) ecoregions. Underlying bedrock mostly consists of a unit of Tatnic Hill gneiss and schist (Ota), an upper Ordovician formation on the order of 450 million years old. The project area is largely contained within a hillslope setting, although the north-central lot contains thick glacial moraine till deposits. There are many soil types within the project area, although dominant series include those of well drained Charlton (CcB), Paxton (PdB, PdC), and Woodbridge (WxB, WyB, WyC) fine sandy loams, as well as moderately well drained Sutton fine sandy loam units (SwB) along some of the streams, and poorly drained Ridgebury, Leicester, and Whitman soils (Rn) within many of the drainages and depressions of the property. Some minor streams course from north to south through the project area, and are part of the larger Little River drainage basin (#3805). The Little River is a prominent body of water that flows south to the west of the project property, and forms a confluence with the Shetucket River a couple of miles further south. Much of the property is wooded, although there are some cleared farm fields, particularly in the south-central and northeast sections of the project area.

A statistical prehistoric landscape sensitivity model developed and utilized by ACS indicates that most of the project area bears a low sensitivity with respect to the potential presence of significant prehistoric sites. According to the model, the highest scoring areas are the farm fields that bear non-rocky Woodbridge fine sandy loam units (WxB) in the northeast and south-central portions of the project area, with a score of 13.3 out of a possible 100.0, and therefore within the low (0-20) sensitivity range. All other sections of the property score lower given their rocky soil contexts, steeper slopes, and/or greater distance to water, with typical scores of 5.6 out of a possible 100.0.

Records of the Connecticut Office of State Archaeology and the Connecticut State Historic Preservation Office indicate a very low density of prehistoric sites previously recorded in the area, likely related to a combination of factors. There has been a low density of development and associated cultural resource management surveys in the rural parts of Sprague and surrounding towns, and the headlands position of the project property would have made it less conducive to intensive prehistoric occupation. The closest previously recorded prehistoric site is poorly documented (133-3), and is located about one-half mile to the west of the project area on Hanover Reservoir, which is part of the Little River drainage basin. Most other sites of the area are recorded in close proximity to the Shetucket River, which would have afforded a combination of habitable surface conditions on glacial meltwater landforms, as well as more abundant and diverse resources than in rockier uplands contexts.

During the Contact period, the project area would have been at the northern reaches of Mohegan-Pequot territory, which included hunting and gathering ranges up the Shetucket River drainage basin and major tributaries. As a part of the New London Colony, Sprague territory was originally within the larger township of Norwich until 1786, and then set off from Lisbon in 1861. Historically, the project area was in a very lightly settled part of what was formerly Lisbon. Historic maps of the mid-19th Century show no major developments in or adjacent to the project area, with the exception of several houses along Potash Hill Road, including those of the Bishop and then Chapman families in the vicinity of the south-central lot.

Land records offer details regarding property ownership through time. The central lot is currently owned by the Rainville family. The property and its dwelling house were owned by the Babbitt family for the bulk of the 20th Century, and by the Chapman family in the latter third of the 19th Century. An 1865 deed from Nathan P. Bishop to Josiah F. Chapman refers to the property as the "Home Farm," then measuring 150 acres and bordering the "Adams Farm" to the west. An 1856 deed from Roger A. Bishop to Nathan P. Bishop refers to improvements made by the Bishop family over the prior ten years, possibly including the improvement of the existing house which is listed in the town's tax assessor records as having been built in 1860. The Bishops acquired much land in the area during the late 18th through early 19th centuries. The house was documented for the Connecticut Historical Commission (now SHPO) as part of a larger town-wide survey, and is described as a two-story New England Farmhouse-style frame dwelling with cut stone foundation and twin central chimneys, the original structure of which could date to 1790.

The northwest lot of the project property is part of a larger 145-acre tract owned by Estelle Houle and Gale Boardman. The 145-acre parcel has been transferred many times over the last one and one-half centuries in tact, originating with Nathan P. Bishop who sold the tract to Martin Obinaur in 1854. At that time, the lot is described as being delineated by various stone wall alignments, with a combination of wood lots and pasture lots in the area. While land records refer to buildings on the land, they were likely in the part of the parcel that is not part of the project area, and likely located along Potash Hill Road to the west.

The northeast parcel is owned by Lawrence Nadeau Construction, which acquired it through bankruptcy proceedings from the Norwich Historic Preservation Trust. The parcel was part of much larger 100 and 200-acre tracts collectively known as the "Stone Barn Farm," owned by various parties since the mid-19th Century when sold by the Perkins family. The same Perkins family owned much land in the area in the late 18th Century, and is the same family who owned the existing house at the intersection of Potash Hill Road and Westminister Road about one-half mile to the south of the project area. That house is listed with the National Register of Historic Places (NRHP), and is known as "Ashlawn," or the "Joshua Perkins House." The late 18th Century Georgian two-story central-hall farmhouse also contains twin central chimneys, although they are more pronounced than those of the Rainville house, and the facade features the original projecting pavilion, while the rear of the house features an ell that is thought to date to about 1740.

The Perkins family also likely built the house at 85 Potash Hill Road to the west of the Rainville house. The latter house has not been listed with the NRHP, although it is determined to be eligible by the town-wide architectural history survey which found the structure to date to the first half of the 18th Century. The Saltbox style home features a single large central chimney, and was later owned by the Adams family members who were farming neighbors to the Chapmans, Bishops, and Perkins family farms. A cluster of historic homes also lies about one-half mile to one mile west of the project area in the village of Hanover, with the town-wide architectural history survey of Sprague also recommending that this district be included in the NRHP. The closest historic district listed with the NRHP is the Baltic Historic District, located a couple of miles to the southwest of the project area.

Phase Ia Field Results

There was no subsurface testing conducted for the Phase Ia archaeological assessment survey. A pedestrian surface survey was conducted by two people for the project during the middle of December, 2014. Field conditions were relatively wet from recent heavy rains, and slightly warmer than typical. The surface survey focused on four principal areas: the open farm field at 111 Potash Hill Road and herein described as the Rainville lot; the wooded lots to the north, including the section that was a part of 57 Potash Hill Road and herein described as the Houle lot; and the Nadeau lot next to the east that contains four open farm fields and borders Westminister Road to the east.

Despite the large size of the project property, there is a general uniformity in the landscape with respect to geology, surficial materials, soils, and other environmental aspects. The surface of the entire project property generally dips gently to the south - likely an important criterion in site selection for the proposed development. The entire property also bears a veneer of glacial till to variable depths, with a variability of rockiness at the surface ranging from sparse to none in the open farm fields, to extremely rocky - particularly near the several intermittent in the wooded lots. The property is in a headlands environment of the Little River drainage basin, thus there is a lack of deeply incised streams, with the most prominent stream channels located between the Houle and Nadeau lots. Deciduous hardwood trees dominate, with a generous leaf cover generally obscuring surface conditions, and minor stands of mountain laurel and cedar occurring in the wooded lots.

The main cultural feature attributable to all lots of the project area is the ubiquitous presence of stone wall alignments. The condition and quality of the walls varies throughout, ranging from intermittent alignments that are barely discernable, to those that are well stacked and reach as high as four to five feet tall. Some contain very large boulders that would have required substantial horse or oxen teams or even modern heavy equipment to clear from fields. Stone walls surround the majority of cleared fields, but also occur within wooded lots and suggest lot delineations that represent former pasture lots. The stone walls are constructed of locally available granitic gneiss rock, and are likely on the order of 200 years old in many cases.

Various stone pile features were also recorded during the surface survey. The ten recorded features vary in terms of function and purposeful construction, including a couple of well formed property boundary markers, as well as several dumped piles near edges of farm fields. Stone Pile #10 in the eastern part of the southeast field of the Nadeau lot is a late historic to modern massive heap of stone that was likely formed by heavy equipment. The best formed piles occur in the southwest part of the wooded part of the Rainville lot, particularly three neatly stacked piles on immovable boulders. These too were likely formed as part of farm field clearing activities over the last 200 years, although some recognized tribes of the area have interpreted similar features as being Native American in origin. In prior archaeological surveys of the region, ACS has determined that in the absence of direct evidence for either interpretation, ethnohistoric literature, ecological evidence, and statistical applications demonstrate that the piles are all likely historic Euroamerican in origin.

There were no prehistoric structures, features, or artifacts encountered during the surface survey. There are some minor ledge or rock outcrops in the very northern sections of the property, but none that were substantial enough to have served as rockshelter contexts, nor were any prehistoric artifacts observed in the field or reported by local informants, including Mr. Alan Rainville whose family has owned the central lot and farmhouse for about 30 years. Historic artifacts were limited mostly to some dumped early to mid-20th Century material along the path that courses north from the open Rainville farm field into the northern wooded section of the lot. Here, dumped materials include enameled tinware, such as buckets, as well as metal milk jugs with identifying tags. These materials reflect the consolidation of dairy farming in the early to mid-20th Century when local farms shipped their product to regional dairy processing facilities. Other dumped late historic materials in this vicinity include tires, 40-gallon steel drums, paint cans, kerosene containers, and liquor bottles. Isolated finds of the Nadeau lot include an abandoned car door near Westminister Road, 40-gallon steel drums full of late historic broken glass or other debris further to the west, dumped modern brick in the southern part of the western open field, a box wire fenced area with garden supplies in the northwest part of the northern open field, and a shotgun shell casing near the southwest corner of the southern open field.

The shotgun shell casing represents modern hunting activity in the area, which is confirmed by Mr. Rainville who hunts on his own property, as well as the occasional hunting blinds observed in the field. Other modern cultural activities include the harvesting of hay in the open field in the Rainville lot, logging in some of the wooded lots, and there are numerous percolation tests located throughout the project area related to a former proposed development. A thick grass cover at the time of the pedestrian surface survey precluded good surface visibility on the open Rainville field, while the fields of the northeast lot have started to become overgrown with scrub growth that also limited visibility. The greatest visibility was provided in the western field and part of the southern field of the Nadeau lot, which are being used as staging areas for logging and where the surface has been largely stripped of vegetation. Overall, there was very limited evidence of subsurface disturbance throughout the project area.

Architectural History Analysis

In mid-January, 2015, a cursory architectural history analysis was conducted for the houses at 85 Potash Hill Road (off property) and 111 Potash Hill Road (on property), both with respect to potential visual impact by the pending project. The Perkins House at 85 Potash Hill Road is a well preserved Colonial saltbox from the mid-18th Century. It lies on the north side of the road with a substantial wooded slope to the rear. The house is architecturally significant with respect to integrity of form and materials, and its association with the Perkins family and their early settlement of Hanover village. When taking into account various topographic data of the surrounding landscape, including a maximum elevation of solar panel installation, horizontal distance to the house, and approximate 40-foot height of existing trees to the north and east of the house, there would be a lack of visual impact to the house by the proposed project if a tree line is maintained within 250 feet of the house to at least 500 feet from the house.

The Babbitt House at 111 Potash Hill Road also lies on the north side of the road, although at the bend in the road where the house is surrounded by a large cleared field. This is a two-story, five-bay, timber framed structure with a rear kitchen ell. Both major sections rest on stone foundations, although the foundations have been altered and partially parged with cement. Vinyl siding and a replacement front porch are noticeable alterations to the house. The house has a typical Colonial form, although there are twin interior chimneys which are distinctive features for the region for the late 18th Century. Given its setting in close proximity to the planned location of solar panels, there will be a substantial visual impact on the structure, but because of substantial alterations to the house, it is not eligible for the National Register of Historic Places (NRHP).

Phase Ib Field Results

Given the extensive nature of the proposed development and documented historic and potential prehistoric sensitivity of the project area, the Phase Ia archaeological assessment study recommended a Phase Ib archaeological reconnaissance survey for evaluating subsurface cultural resources on the project property. Regarding prehistoric sensitivity, there were no previously recorded resources identified on or near the project area. But based on various environmental characteristics, SHPO determined that there was a potential for prehistoric cultural resources to be located on the project property. The statistical prehistoric landscape sensitivity model developed by ACS for Connecticut indicates a low sensitivity for the entire project area for significant site contexts such as burials sites and multi-component village occupations, although smaller intermittent camp sites have been recorded in similar environmental contexts, particularly in less rocky soil contexts in close proximity to wetlands. Within the current project area, the highest scoring areas are those of the cleared farm fields, which feature the less rocky Woodbridge fine sandy loam units. It was therefore recommended that the Phase Ib archaeological reconnaissance evaluation for potential prehistoric sites be highly stratified - limited to the open farm fields and several isolated areas of the rockier wooded lots that featured unique conditions possibly targeted by prehistoric occupants - including areas near two vernal pools along the streams that divide the Houle and Nadeau lots. ACS did not recommend subsurface testing for the rest of the project area based on rocky soil contexts, moderate slopes, and/or substantial distance to water, with these areas typically scoring no higher than 5.6 out of a possible 100.0 according to the statistical prehistoric landscape sensitivity model.

With respect to historic sensitivity, a review of historic maps and land records revealed that the historic use of the project area was largely limited to cultivation, pasturing, and procurement of timber. Intensive historic occupation was concentrated on surrounding roadway corridors, particularly Potash Hill Road, with no known historic structures on the west side of Westminister Road near the project area. Along Potash Hill Road, main occupations to consider include the existing Rainville House that dates to the late 18th Century, as well as the adjacent early 18th Century Perkins / Adams House that lies to the west of the property. As the single historic occupation within the project area is surrounded by the open farm field recommended for subsurface testing in the evaluation of prehistoric resources, the potential subsurface resources related to the historic occupation of the property were adequately covered by the same testing distribution.

There were 477 subsurface shovel tests excavated for the Phase I reconnaissance survey. There were 469 systematic tests placed at standard 50-foot intervals in five principal areas, including 247 tests in the open field of the Rainville lot and 152 tests in the open fields of the Nadeau lot. There were also 12 tests placed in the vicinity of the 20th Century trash dump area, and two sets of 28 to 30 tests each near two vernal pools documented to the north and east of the dump area, respectively. There were also eight judgmental shovel tests placed at 25-foot intervals surrounding two systematic tests in the northern part of the Rainville open field that yielded possible prehistoric lithic material. Soil conditions were typically as expected, including a fine sandy loam topsoil layer that was thicker in the open Rainville lot, possibly owing to historic plowing, and a fine sandy loam subsoil to variable depths. Rockiness was typically light to moderate, although deep subsoil or substratum layers typically contained a fair amount of gravel. Because of the early spring timing of the survey and slow drainage qualities of the soil, many tests closest to wetlands featured wet testing conditions or even standing water at one and one-half to two feet below the surface. Most tests were undisturbed, although infilling of low spots in the open fields was apparent, particularly near the existing wetland boundaries. No substantial subsurface features were recorded, either prehistoric or historic, although traces of a former stone wall coursing east-west through the Rainville lot were confirmed based on relative rockiness of shovel tests, information from the landowner, and visible topography in the field.

There were no definite traces of prehistoric activity recorded on the project property, although several tests in the northern part of the Rainville open field did contain artifacts that could be prehistoric in origin. Two tests contained quartz or quartzite fragments that could represent partial flake fragments from the manufacture of stone tools, although surrounding judgmental shovel tests did not reveal further prehistoric material, and the quartzite fragments were additionally found in direct association with late historic material in what appeared to be an infilled depression. The one fragment of quahog shell found in the Rainville lot could also be prehistoric in origin, although this was a common 19th Century food source, and the piece was found relatively close to the historic house on the Rainville property. Finally, charcoal was recovered in small amounts at various locations, and could derive from either prehistoric, historic, or even natural causes, and was not found in identifiable feature contexts.

Historic artifacts were largely limited to 20th Century materials in the one dump area to the north of the open field in the Rainville lot, and light scatters of materials deposited by incidental discard and plowing or other agricultural activities throughout the open fields, particularly on the Rainville lot and likely in association with the existing house. The range of materials recovered include metal hardware, household ceramic fragments, window and bottle glass, and modern materials such as plastic. Metal hardware items mostly consisted of oxidized cut nail fragments dating from the 19th or 20th centuries and some late historic wire nails, as well as one hand-wrought nail from the open field on the Rainville lot that likely predates the early 19th Century. Late 18th to early 19th Century ceramics include several fragments of creamware and pearlware, with several other fragments representing the early 19th to early 20th centuries including stoneware, ironstone china, and whiteware. Bottle glass tended to be clear in color and non-patinated, thus not early historic in origin, while an amethyst-tinted jar from the 20th Century trash dump area bears a patent date of 1903 that likely represents the early end of the date range for that site. The window glass found also tend to be non-patinated, and therefore late historic in origin, while some pieces are safety glass fragments and thus are relatively recent. One non-human bone fragment was recovered from the Rainville lot, and is an indeterminate epiphysis of a large domesticated mammal, while surface finds of both recently slaughtered wild deer and macerated cow were found at the vernal pool area to the north of the 20th Century dump site in the Houle lot. Other historic artifacts recovered from the open fields in small amounts during the survey include coal, slag, pressed glass vessel fragment, an oxidized apparel trimming, and a horseshoe with plastic insert.

Recommendations

There were no definitive traces of prehistoric activity recorded on the project property in terms of potential rockshelter structures, subsurface feature contexts, or artifacts. The possible prehistoric lithic materials from two tests in the northern part of the Rainville lot more likely result from natural and/or historic processes, with judgmental tests revealing no further associated prehistoric materials. Scattered and isolated fragments of quahog shell and charcoal on the Rainville lot also likely represent natural or historic cultural processes. Despite the initial assessment by SHPO that the area could be sensitive for prehistoric cultural resources, the statistical prehistoric landscape model developed and utilized by ACS found the entire project property to bear a low sensitivity rating for the potential presence of prehistoric site contexts. It is therefore recommended that no further conservation efforts are warranted for potential prehistoric cultural resources on the project property.

Historic features identified on the project property are limited to above ground stone walls and stone piles documented during the preceding assessment survey. Several of the better formed stone piles are being preserved in the southwest wooded part of the Rainville lot, although stone piles and markers throughout the rest of the property are not being recommended for further conservation as they are common historic features of the landscape. Many of the stone wall alignments are also historic, but equally common and well documented on submitted site plans so that their salient information of historic lot size and orientation is still preserved. With the exception of a filled in depression in the northern part of the open field in the Rainville lot and the 20th Century dump site to the north, none of the historic artifacts were found in clustered contexts and likely represent the scattering effects of plowing and other agricultural activities over time. The 20th Century dump site is an *in situ* context as a surface site, although it is relatively late historic, and shovel tests revealed no substantial subsurface site context. It is therefore recommended that there are no subsurface historic archaeological contexts within the limits of the project impact areas warranting further conservation.

Recommendations for this survey also relate to potential visual impacts on above-ground resources or structures eligible for, or listed with, the National Register of Historic Places.

Historic districts such as those recommended previously for Hanover or currently listed in Baltic are too far from the project area to be adversely affected, as is the Perkins House located about one-half mile south of the project area. Other surrounding historic structures include the early 18th Century house at 30 Westminister Road in Lisbon, which is also too far to be visually impacted, as well as 636 Water Street in Canterbury and 114 Sullivan Road in Lisbon near the northeast corner of the project area, with the latter houses dating to the early 20th Century and not likely eligible for the NRHP. The latter houses are additionally visually separated from the project area by intervening mid to late 20th Century properties. Of relevant concern, however, is the potential visual impact of the proposed project on the historic structures at 85 and 111 Potash Hill Road.

The first house of concern for visual impact is actually off the project property at 85 Potash Hill Road, but lies near the southwest corner of the wooded part of the Rainville lot. The architectural history survey of Sprague indicates that the property is eligible for the NRHP, and therefore it should be accommodated by the project. The survey identifies the structure as the "Perkins House," which bears the same name as the previously described NRHP structure at the intersection of Potash Hill Road and Westminister Road about one-half mile to the south of the project area. Based on the maturity of trees behind the house in its own lot and the adjacent Rainville lot, it should be possible to provide sufficient screening in the southwest part of the Rainville lot to protect the visual integrity of the Perkins House property. In the cursory viewshed analysis prepared by ACS, it was determined that a wooded buffer zone between 250 and 500 feet from the house would be sufficient to prevent a visual impact of the proposed project on the house. The existing tree line on the property of 85 Potash Hill Road is well within the lower 250-foot limit, while ACS recommends ensuring the upper 500 foot limit by leaving the southwest corner of the Rainville Lot wooded for all elevations below the 340-foot contour line. The resulting area of undeveloped land would also accommodate the preservation of the several well formed stone piles in the southwest part of the Rainville lot that could be potentially cited by Native American groups as ceremonial in nature.

The second house (Babbitt House) of concern for visual impact at 111 Potash Hill Road is on the Rainville lot, and would almost certainly be impacted visually by the proposed development. Here it is recommended that the substantially altered structure is not eligible for the NRHP, although its retention of a regionally distinctive adaptation of the Colonial form that occurs elsewhere within the surrounding rural landscape generates historic value. Given the potential visual impacts to the house and the limited amount of architectural and historical information previously available, a state-level documentation is recommended for the house. The preparation of a Historic Resource Inventory for the property will provide a detailed description and photographic documentation of the current condition of the exterior and interior of the house and an evaluation of its historic importance, and will further serve as sufficient mitigation in light of proposed visual impacts by the pending project. Alternatively, vegetation screening sufficient to visually screen the solar array and associated infrastructure in the vicinity of the house at 111 Potash Hill Road would offer a suitable form of mitigating potential visual impact by the pending project on this resource.

CHAPTER 2: BACKGROUND

Environmental Setting

Location

The project area is located in the town of Sprague, New London County, Connecticut (Figure 1). The project setting is at the boundary of the Southeast Hills (IV-C) and Northeast Hills (III-C) ecoregions (Figure 2). The general project location is in the northeast part of Sprague, just east of the village of Hanover. The project area is bordered by Potash Hill Road on the south and the Canterbury town line on the north, with two access drives on the east leading to Westminister Road that is also the town boundary with Lisbon (Figure 3). There are three main lots comprising the project property: 1) Rainville Lot at 111 Potash Hill Road (central lot - 83.4 acres, Tax Map 21, Block 2, Lot 2); 2) Nadeau Lot off Westminister Road (northeast lot - 193.62 acres, Tax Map 22, Block 1, Lot 10); and 3) Houle Lot to the north of the Rainville lot and west of the Nadeau lot as part of 57 Potash Hill Road (northwest lot - part of 142.3 acres, Tax Map 16, Block 6, Lot 18), for a total of about 360 acres (Figure 4). The project may ultimately include an additional 20-acre section of property on the west flank of the Houle Lot. Finalized site plans showing the specific layout of the proposed development have yet to be submitted. The boundaries of the project area are irregular, with UTM coordinates for major landmarks in the vicinity (easting/northing) at approximately: 745,940 / 4613,450 (house at 111 Potash Hill Road); 745,570 / 4614,640 (395-foot peak near the northwest corner of the project property); and 747,280 / 4614,390 (intersection of Sullivan and Westminster Roads near the northeast corner of the project property) (Zone 18), respectively (Figure 5).

Climate

The climate of the Southeast Hills and Northeast Hills ecoregions of Connecticut is influenced by their proximity to the Long Island Sound and Atlantic Ocean (Kirk 1939; Brumbach 1965; Dowhan and Craig 1976; Crouch 1983). The project region typically experiences 47 inches (~119 cm) of precipitation per year. Average annual snowfall is about 39 inches (~99 cm). Precipitation amounts are rather evenly distributed throughout the year. Principal storm tracks include the Colorado and South Atlantic lows, and the Plateau and Rocky Mountain, Alberta, and Hudson Bay highs. While the predominant winds are from the southwest, northwest winds are frequent during winter. Normal temperatures vary between approximately 28 F (-2 C) in winter (19 F (-7 C) normal minimum) to 70 F (21 C) in summer (82 F (28 C) normal maximum), with an average year round temperature at about 49 F (9 C). Average relative humidity for the area is about 55-70 percent. These conditions result in a relatively humid environment throughout the year with considerable seasonality in terms of temperature. This limits the growing season for most crops in the region between the end of April and the middle of October (about 160 days), the average times for last and first killing frosts. The temperate climate in general provides for an abundance of resources that are rather evenly distributed given the moderate topographic relief of the region, but which also vary cyclically based on a marked seasonality. Seasonality is known to have had a greater bearing than large scale spatial factors on prehistoric and early historic resource procurement strategies in regions with evenly distributed resources (Butzer 1982).

Figure 1: Map of Connecticut

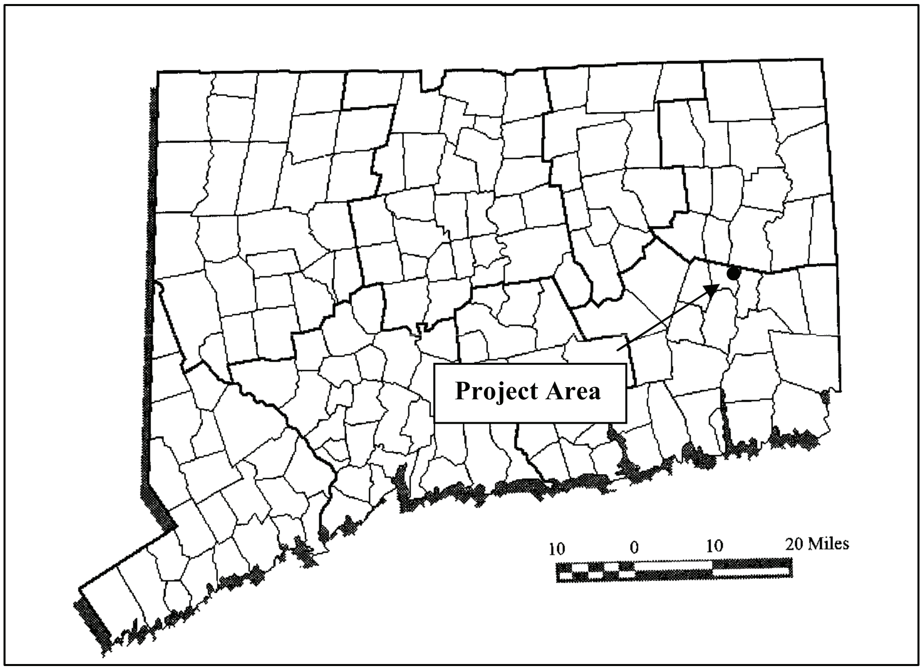


Figure 1: Map of Connecticut showing New London County and the project location.

Figure 2: Ecoregions of Connecticut

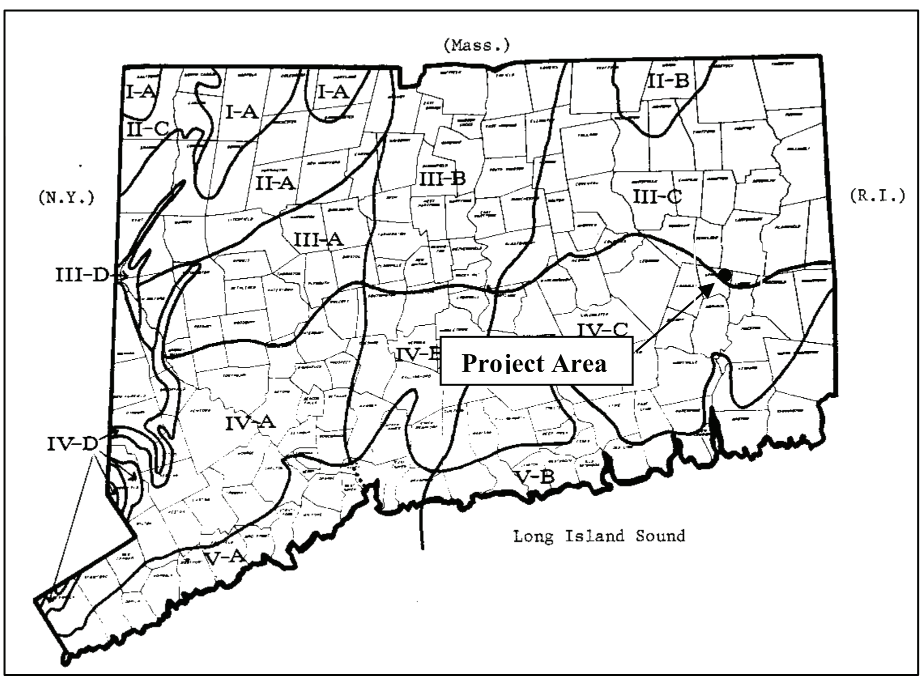


Figure 2: Project area is located in the Northeast Hills ecoregion (III-C) of Connecticut. From Dowhan and Craig 1976:26.

Figure 3: Map of the Sprague Area, Connecticut

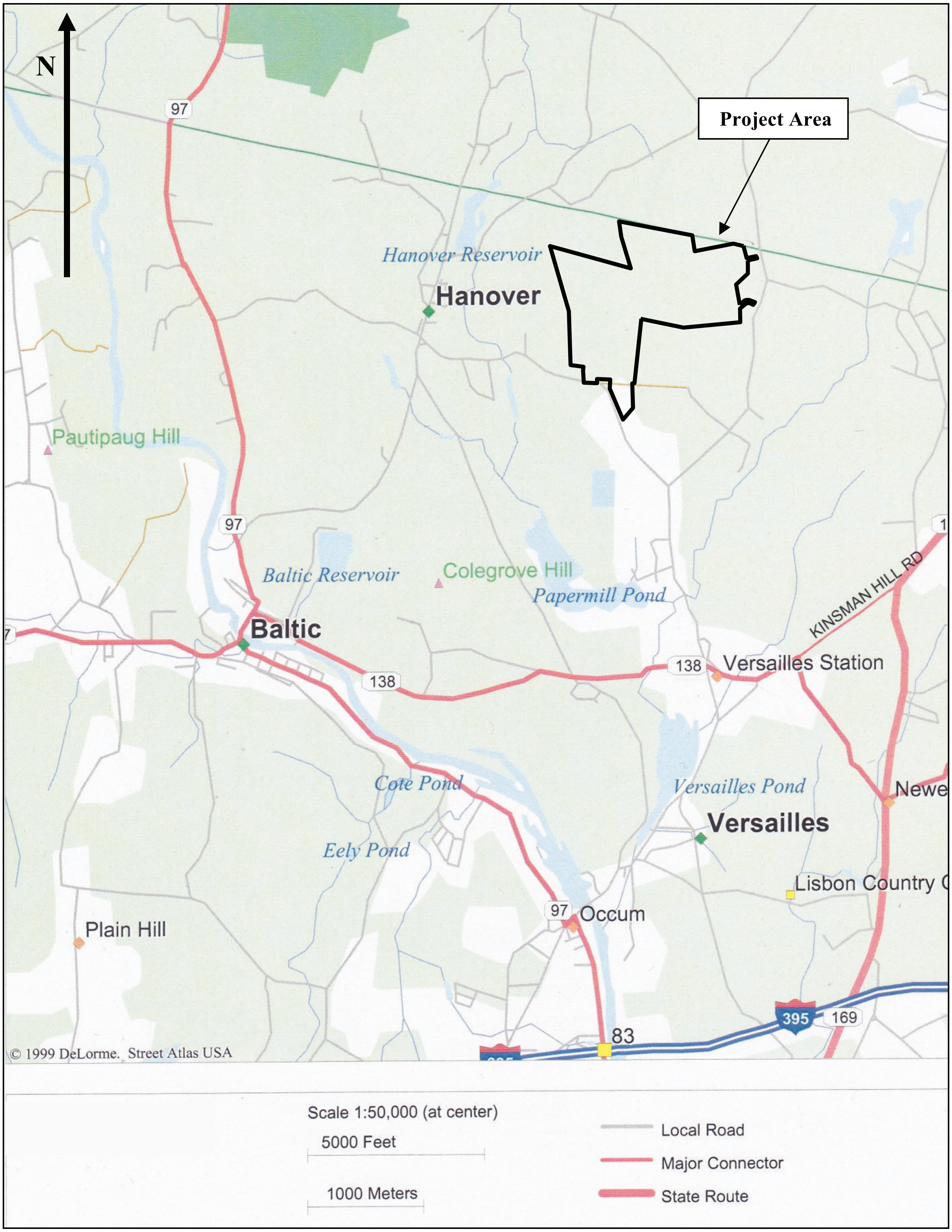


Figure 4a: Map of the Project Area

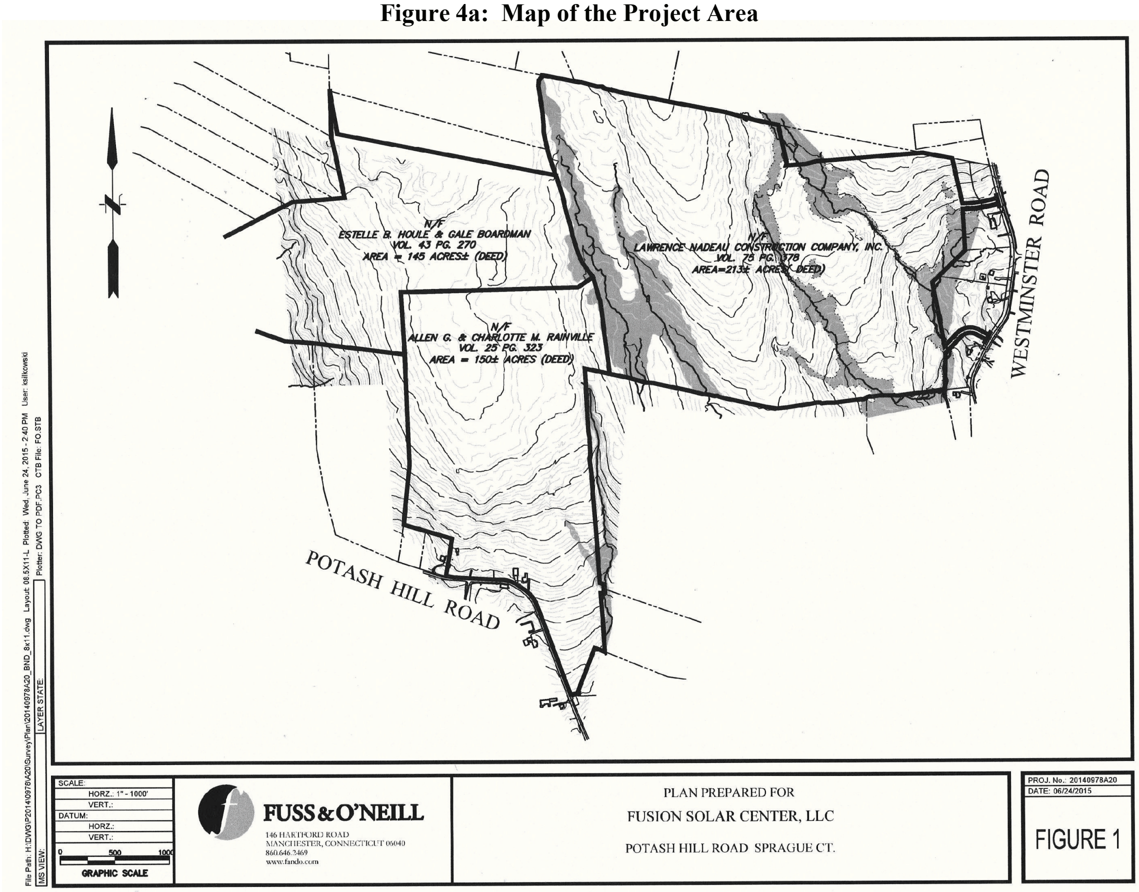


Figure 4a: Map of the overall project area, supplied by Fuss & O'Neill 2015. Scale: 1:8,000.

Figure 4b: Map of the Project Area – Southern Half

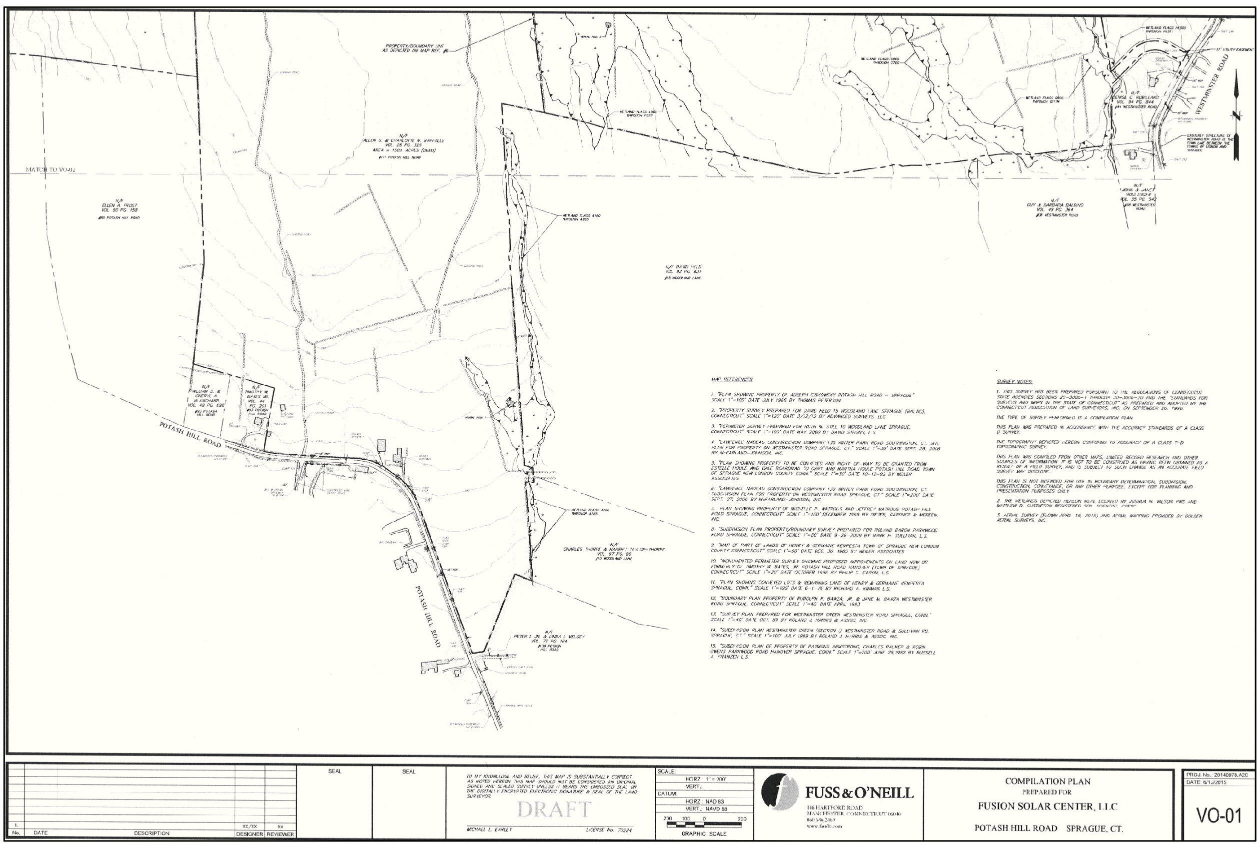


Figure 4b: Survey map of the southern half of the project area, supplied by Fuss & O'Neill 2015. Scale: 1" = 800'.

Figure 4c: Map of the Project Area – Northern Half

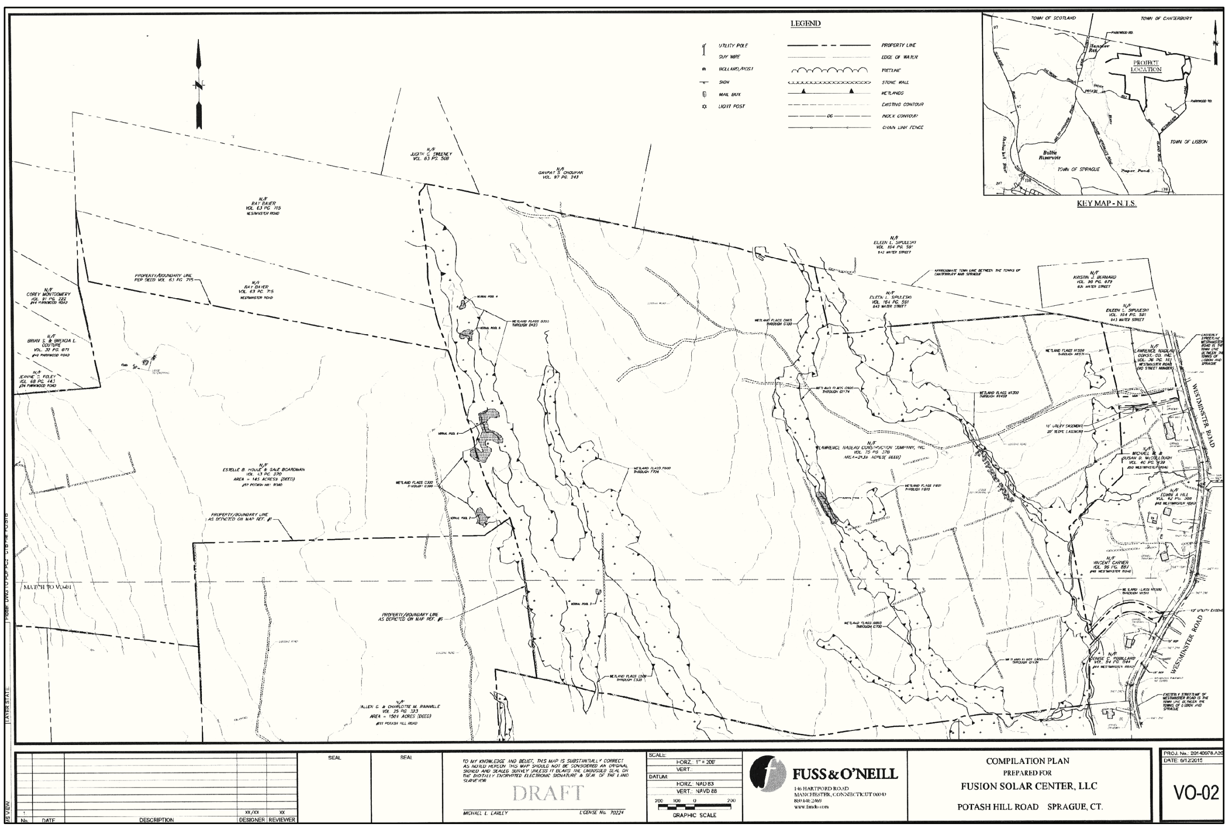


Figure 4c: Survey map of the northern half of the project area, supplied by Fuss & O'Neill 2015. Scale: 1" = 800'.

Figure 5: USGS 7.5' Topographic Map, Scotland Quadrangle

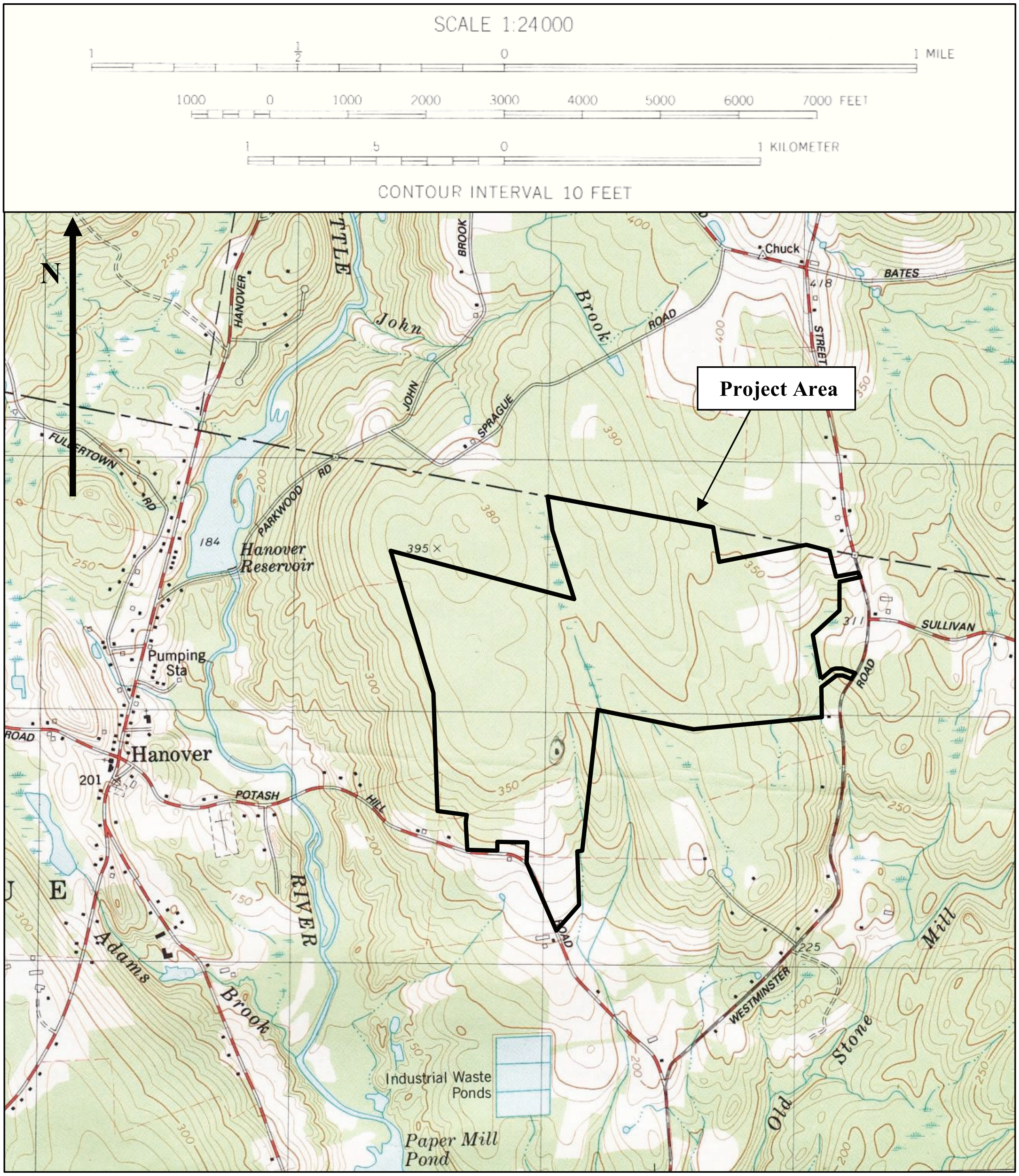


Figure 5: From USGS 1983.

Geology

The Sprague area lies in a geological setting known as the Merrimack Synclinorium of the Iapetos (Oceanic) Terrane in the Eastern Uplands of the state (Rodgers 1985). This geological region is separated from the Avalonian Continental Terrane (originally part of the African plate) by the Lake Char thrust fault line about five miles to the east of the project property. Reconstructed cross sections of the area show the upper formations to be synclinal (concave up) and disconformably separated from older, highly folded Proterozoic formations by the Lake Char fault, resulting from ancient contact between the two terranes at the major fault line. Bedrock formations in the vicinity of the project property dip to the northwest on the order of 25 to 50 degrees towards the center of the syncline.

More specifically, the bulk of the project property lies within a unit of the Tatnic Hill (Ota) formation, which is a metamorphic, gray to dark gray, medium-grained, interlayered gneiss and schist (Rodgers 1985). Tatnic Hill gneiss and schist is an Ordovician formation, on the order of 450 to 500 million years old. The formation includes a mineralogy of quartz, andesine, biotite, garnet, and sillimanite with local traces of kyanite, muscovite, and interlayered lenses of graphitic pyrrhotitic mica-schist, amphibolite, and calc-silicate rock. A light gray, medium-grained gneiss rich in calc-silicate rock (Fly Pond member - Otaf) is dominant in the vicinity of the open Rainville lot where bedding is more complex and variable, with folding resulting in a southwest dip for the Tatnic Hill unit forming the base of the hill in the Houle lot and western part of the Nadeau lot. Dixon and Shaw (1965) show a similar distribution of formations (tbm - Tatnic Hill; tfp - Fly Pond member), but also reveal substantial pegmatitic crystalline structure in the Tatnic Hill formation just east of the project property (Figure 6). Outcrops of the formations occur in various sections of the project property, although no significant overhangs or vertical faces which could have served to support a prehistoric rockshelter site. There are no prominent faults coursing through the project area, although minor faults associated with the Lake Char fault system lie a couple of miles to the south and east.

Geomorphology

Although the shape of the landscape in the region surrounding the project area is largely dictated by the faulting and metamorphic folding of bedrock formations, other aspects include glacial features and post-Pleistocene deposits. Various landscapes are created depending upon the distribution and density of rock and the shape and melting nature of the incorporating glacier (Tarbuck and Lutgens 1990), as evident in the region surrounding the project area which contains a wide variety of glacial till, moraine, and meltwater features. Most of the glacial geomorphology of the broader region surrounding the project area is characterized by thin glacial till deposits on hill ridges from the last or late Wisconsinan glaciation (Stone et al. 1992). Other prominent glacial landforms of the region include glacially deposited meltwater features such as those lying along the major river drainages of the area including the Little River to the west and south. These larger drainages also support narrow units of post-Pleistocene alluvial sediments.

The project property is contained within an area dominated by hill slope and ridge (Figure 7). Till deposits (t) on some of the more durable formations of the region tend to be thin as most till was derived from the bedrock formations which lay directly beneath them or a short distance north, and since steeper hills derived from more durable formations are more readily subject to surface erosion (Dixon and Shaw 1965; Stone et al. 1992). Most till deposits in the

Figure 6: USGS 7.5' Bedrock Geologic Map, Scotland Quadrangle

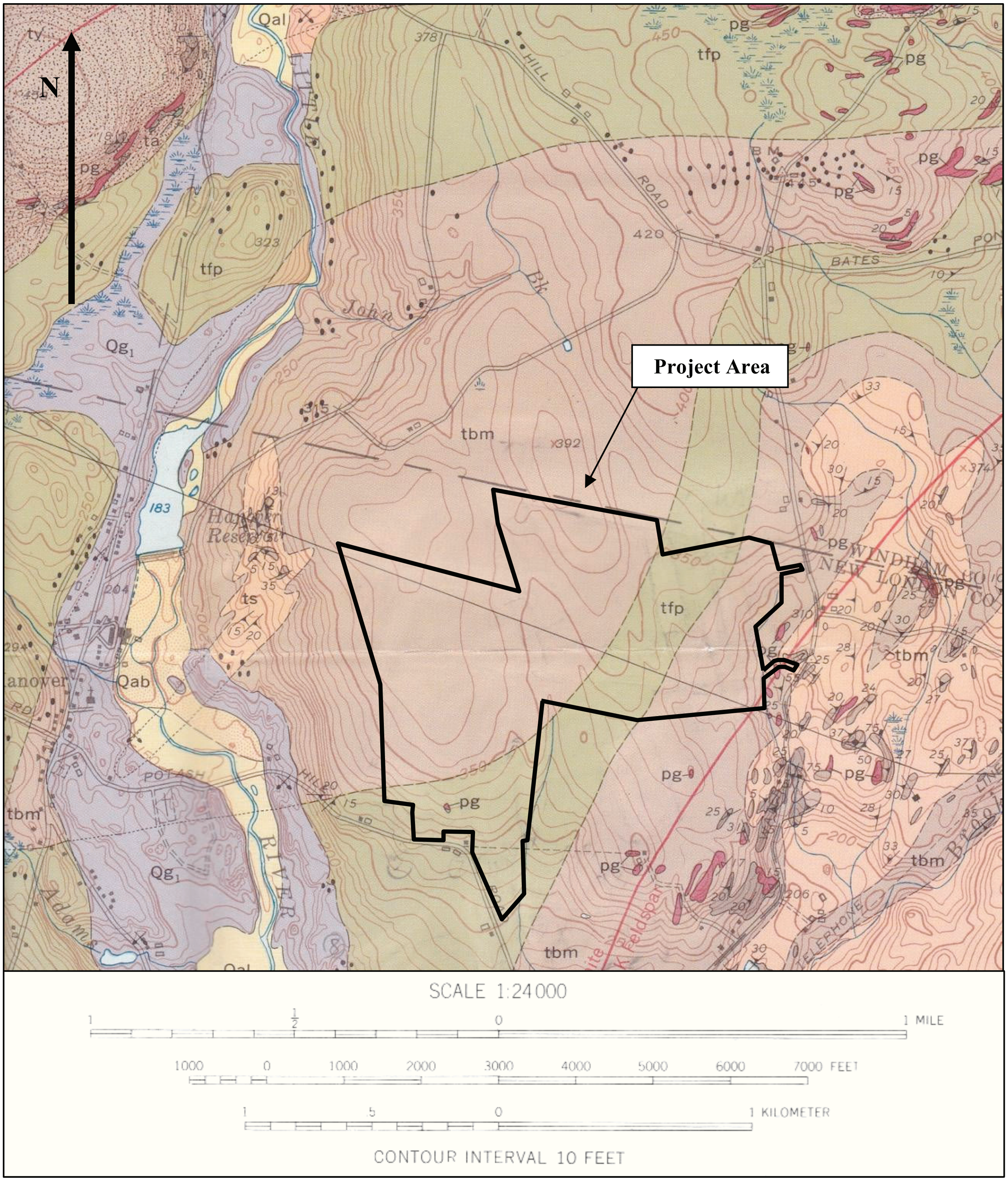


Figure 6: From Dixon and Shaw 1965.

Figure 7: CGNHS Surficial Materials Map of Connecticut

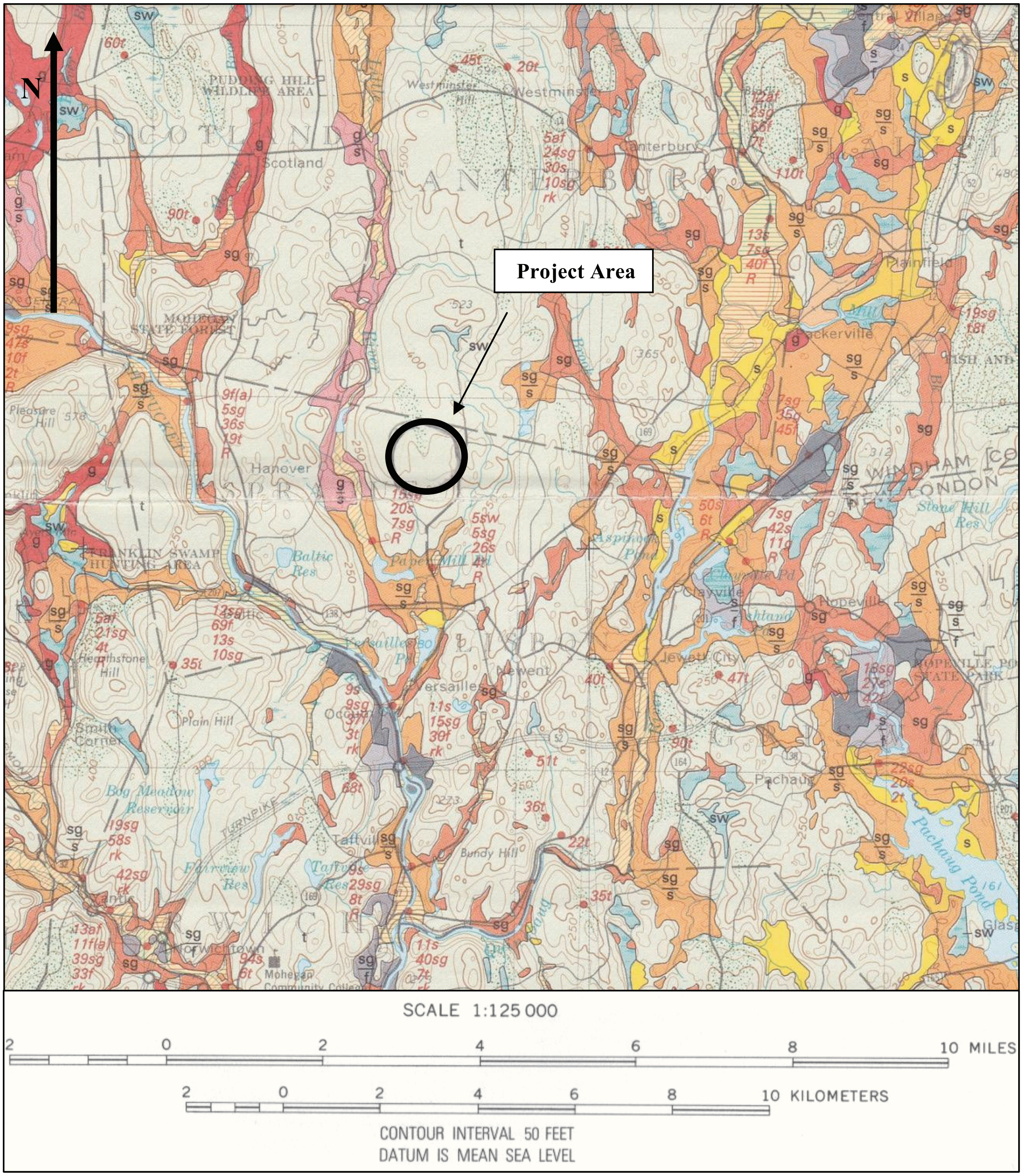


Figure 7: From Stone et al 1992.

area tend to be on the order of several feet thick, with thinner till deposits occupying upper portions of hill slopes and hill ridges, while deeper till deposits likely occupy lower portions of the project area. Till deposits in these settings are mostly subangular, indicating little transport distance before deposition. Thus unlike areas whose landscape is affected by glacial meltwater and post-glacial deposition, the bulk of the geomorphology of the project property has consistently retained its form in recent geological history with the common exception of minor traces of glacial till. The hill that forms the western half of the Nadeau lot may be an exception, where thicker till deposits overlying bedrock may be more formally described as a drumlin, with a north-northwest to south-southeast strike possibly reflecting a combination of bedrock erosion and glacial movement.

The project property generally dips gently to the south, an important aspect of site location for the current project. Elevations vary from over 390 feet above mean sea level (amsl) at the northwest corner of the project property at the Houle lot to just over 250 feet amsl at the southern corner of the open Rainville lot. While the hill slope setting of the project property has been statistically shown to have been occupied less extensively by prehistoric inhabitants of the region, these settings frequently served as hunting and gathering grounds and as locations for short-term, seasonally restricted occupations, particularly during winter. This would especially be the case for nearly level to gently sloping areas near wetlands and with less rocky soil contexts.

Pedology

The soils of the region can be broadly classified as Gray-Brown Podzolic. The project property is contained within an area dominated by the Woodbridge-Paxton-Montauk association (Crouch 1983). This association is characterized by nearly level to steep, well drained and moderately well drained loamy soils with a compact substratum on drumloidal glacial till uplands. More specifically, the property principally contains units of Canton and Charlton very stony fine sandy loam (CcB) in the northern part of the Houle lot; Paxton and Montauk very stony fine sandy loams (PdB, PdC) comprising the major wooded hill landforms of the Houle, Nadeau, and Rainville lots; and Woodbridge fine sandy loam (WxB) in the open fields of the Nadeau and Rainville lots, with rockier Woodbridge fine sandy loam units (WyB, WyC) in wooded areas surrounding the open fields (Figure 8). Lesser units of Sutton very stony fine sandy loam (SwB) line either side of the drainage dividing the Houle and Nadeau lots. Poorly drained Ridgebury, Leicester, and Whitman soils (Rn) occupy the drainages and depressions of the property.

Field testing mostly targeted the less rocky Woodbridge fine sandy loam units (WxB), which are moderately drained. The soil typically features a very dark brown fine sandy loam surface layer about nine inches thick, followed by a subsoil of dark yellowish brown, light olive brown, and grayish brown mottled fine sandy loam and sandy loam about 19 inches thick, and a substratum of very firm olive sandy loam to depths of five feet or more. The moderately well drained but rockier Woodbridge fine sandy loam units (WyB) near the open fields have a surface layer of very dark brown fine sandy loam about six inches thick, followed by a subsoil of yellowish brown, light olive brown, and grayish brown mottled fine sandy loam and sandy loam about 22 inches thick, and a substratum of very firm, brittle, olive sandy loam to five feet deep or more. Where the Sutton fine sandy loam units (SwB) line the intermittent streams, typical

Figure 8: USDA SCS Soil Map, New London County (Sheet #6 and #11)

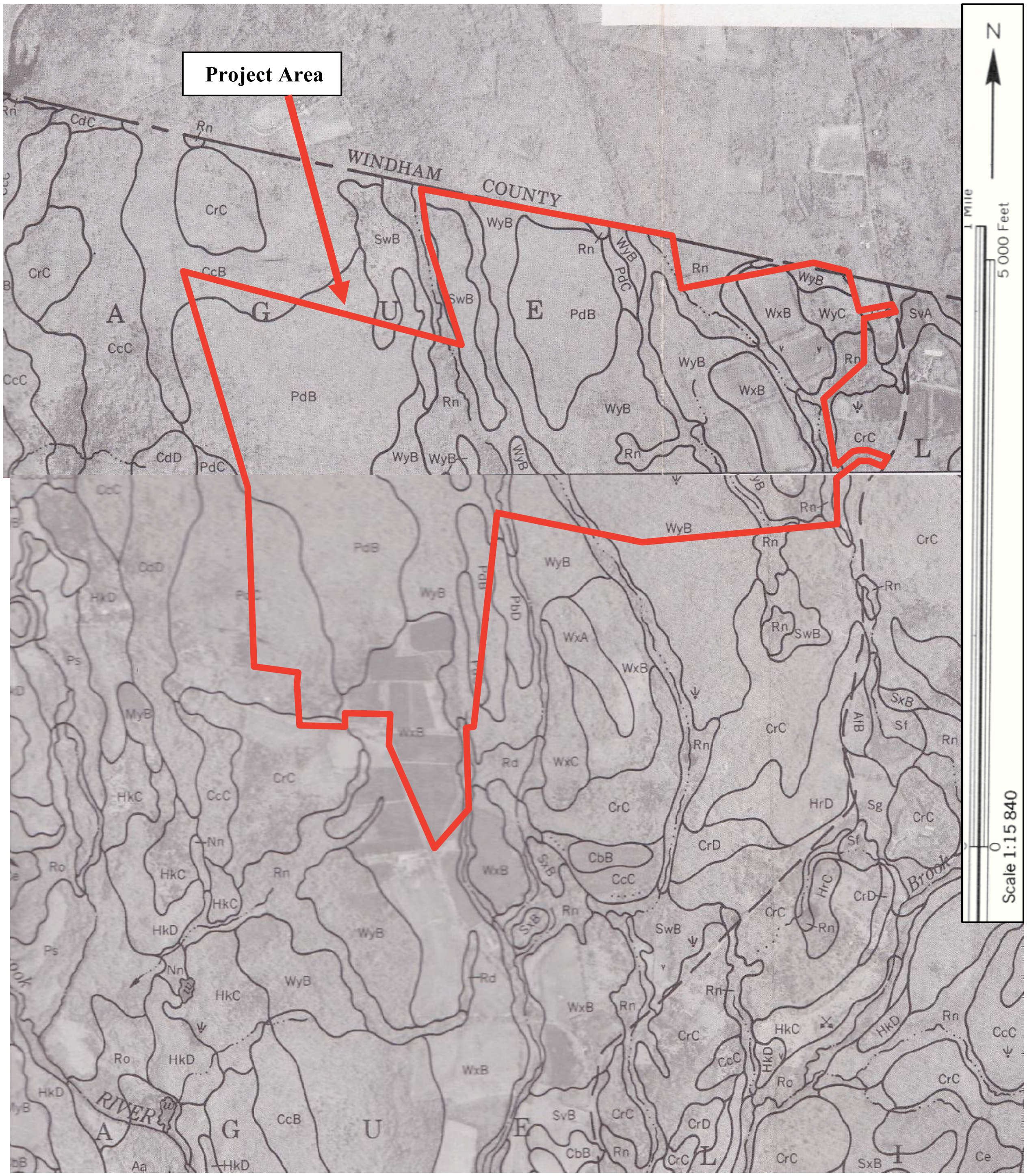


Figure 8: From Crouch 1983.

Figure 9: CGNHS Drainage Basin Map of Connecticut

Figure 9: From McElroy 1991.

profiles include a surface layer of very dark grayish brown fine sandy loam about four inches thick, followed by a subsoil of yellowish brown, dark yellowish brown, and dark brown mottled fine sandy loam and sandy loam 29 inches thick, and a substratum of olive brown, mottled sandy loam to five feet deep or more. While there is a variability of soil types represented on the project property, they tend to consist of moderately well drained to well drained rocky fine sandy loams not beneficial to agricultural pursuits with the exception of the non-rocky Woodbrige unit which is well suited for crops and trees, although it is noted that seasonal high water tables are common for the soil unit, and this could have affected prehistoric site selection.

Hydrology

The drainage patterns of Connecticut and the region encompassing the project property were mostly established before the onset of the last glaciation (Flint 1930). In the region surrounding the project area and on a larger scale, the trend of streams and rivers is towards the south and in line with bedrock formation orientations and major fault lines. This indicates that the glacial history of the area had little effect on the general drainage pattern. Instead, stream orientations appear to be largely dictated by the strike of the faults and folds of the bedrock formations exposed at the surface, with the formations being subject to differential weathering and erosion depending on the resilience of the constituent beds. Examples of this occur where sections of the nearby Shetucket and Quinebaug Rivers follow fault lines associated with the larger Lake Char fault to the east (see Rodgers 1985). On a smaller scale, however, the course of larger rivers is more clearly influenced by thick deposits of glacial meltwater and post-glacial alluvial sediments.

The project area lies within the lower part of the Little River drainage basin (#3805), about two miles north of where it empties into the larger Shetucket River(#3800) (Figure 9). The Little River flows south about one-half mile west of the project property where a dammed section forms the Hanover Reservoir, while a half mile to the south of the project property the Little River is dammed by the historic Papermill Pond. The project property contains several intermittent streams concentrated between the Rainville / Houle lots and the Nadeau lot, eventually feeding into the Little River to the south of Papermill Pond at Versailles Reservoir just north of the Shetucket confluence. There are also other minor wetlands located near the east end of the Nadeau lot and just west of Westminster Road. The drainages are minor, although several vernal pools have been located along them during current environmental evaluations, and could have served as attractive wetlands resource extraction points for prehistoric Native American groups.

Flora and Fauna

The Southeast Hills and Northeast Hills ecoregions generally support Central Hardwoods-Hemlock-White Pine woodlands, dominated by various oak (*Quercus* spp.) and hickory (*Carya* spp.) species, as well as tulip poplar (*Liriodendron tulipifera*), black birch (*Betula lenta*), white ash (*Fraxinus americana*), hemlock (*Tsuga canadensis*), and red cedar (*Juniperus virginiana*) (Dowhan and Craig 1976:34,38). Sandier soils frequently contain white pine (*Pinus strobus*), oaks, and pitch pine (*Pinus rigida*). Wetter areas frequently contain white cedar (*Chamaecyparis thyoides*). Disturbed or open areas commonly contain thick shrubs, vines, and briers. Most crops in the broader area are grown between late April and early October. The rockiness of soils throughout much of the project property would have been fairly prohibitive to growing crops, which would have been likely limited to the existing cleared fields of today that feature less rocky soils. Principal uses of the project property today include harvesting hay in the open Rainville lot and timbering in the Nadeau and Houle lots.

Common animals of the woodland and open areas of the region include deer (*Odocoileus virginianus*), cottontail rabbit (*Sylvilagus palustris*), red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), squirrels (Sciuridae), skunk (*Mephitis mephitis*), chipmunk (*Tamias striatus*), ruffed grouse (*Bonasa umbellus*), woodcock (*Philohela minor*), thrushes (Turdidae), woodpeckers (Picidae), bobwhite quail (*Colinus virginianus*), pheasant (*Phasianus colchicus*), meadowlark (*Sturnella magna*), crow (*Corvus brachyrhyncos*), field sparrow (*Spizella pusilla*) and other song birds, and migratory waterfowl (Dowhan and Craig 1976). Muskrat (*Ondatra zibethicus*), mink (*Mustela vison*), beaver (*Castor canadensis*), ducks and geese (Anatidae), and shore birds can be found in areas with larger bodies of water. The original wooded nature of the landscape for the project area would have made it highly conducive for the procurement of wild game, and in areas historically cleared, moderate to good drainage would have been suitable for pasturing livestock. During the pedestrian surface survey, deer droppings were commonly observed in the wooded sections, and the slaughtered remains of deer and fully emacerated cow skeleton were observed near the vernal pool located to the north of the open Rainville field.

Cultural Setting

Regional Prehistory

The prehistory of the project region and New England in general can be broadly divided into periods reflecting changes in environment, Native American subsistence and settlement patterns, and the material culture which is preserved in the archaeological record (Table 1). Although it remains controversial today, the conservative estimates for the first occupations of North America are about 18,000 to 15,000 years ago, just after the maximum extent of the last glaciation and the broadest extent of the Bering land bridge (Kehoe 1981:7; Parker 1987:4; Jennings 1989:52). Southern Connecticut itself remained glaciated until about 15,200 B.P. (Snow 1980:103; Gordon 1983:71; Parker 1987:5; McWeeney 1994:181, 1999:6).

Paleo-Indian

The Paleo-Indian period is documented in Connecticut after 12,000 years ago and extends to roughly 9,500 B.P. (Swigart 1974; Snow 1980:101; Lavin 1984:7; Moeller 1984, 1999). This was a period of climatic amelioration from full glacial conditions, and a rise in sea levels which fell short of inundating the continental shelf. It was during this time that tundra vegetation was replaced by patches of boreal forests dominated by spruce trees (Snow 1980:114; Parker 1987:5-6), and eventually white pine and several pioneering deciduous genera (McWeeney 1994:182, 1999:7). Early in the period, the environment was conducive to the existence of large herbivores and a low population density of humans who procured these animals as a major subsistence resource, although warming temperatures and denser forests contributed to the extinction of certain species. The projected human social and settlement patterns are those of small bands of semi-nomadic or restricted wandering people who hunted mammoth, mastodon, bison, elk, caribou, musk ox, and several smaller mammals (Ritchie 1969:10-11; Snow 1980:117-120). Episodes of sparse vegetation during this period encouraged the use of high lookout points over hollows and larger valleys by people in pursuit of large game. The southern part of New England had an earlier recovery from glacial conditions when compared to areas to the north, however, with a higher density of vegetation that might have precluded Paleo-Indians of Connecticut from focussing heavily on the larger mammals (McWeeney 1994:182).

The cultural material associated with this period includes large to medium-sized, fluted projectile points (cf. Clovis), in addition to knives, drills, pieces esquillees and gravers, scrapers, perforators, awls, abraders, spokeshaves, retouched pieces, utilized flakes, and hammerstones (Wilbur 1978:5; Snow 1980:122-127; Moeller 1980). Although numerous finds from this period have been found in Connecticut, only a few, small *in situ* sites exist throughout the state. Finds tend to be located near very large streams in the lower Connecticut River Valley, and in rockshelters of other regions (McBride 1981). A survey performed by the Connecticut Office of State Archaeology and the Archaeological Society of Connecticut resulted in the documentation of 53 Paleo-Indian "find spots" in Connecticut (Bellantoni and Jordan 1995)

Table 1: Regional Prehistoric Chronology

Paleo-Indian Period (12,000-9,500 B.P.)

Environment: Dry and very cold, tundra herbaceous plants and sparse spruce forests shifting to pine forests.

Settlement: Semi-nomadic, restricted wandering.

Subsistence: Very large grazing herbivores and smaller mammals.

Material: Large fluted points (cf. Clovis), knives, drills, scrapers, awls, abraders, perforators, spokeshaves, and hammerstones.

Ritual: Unknown.

Early Archaic Period (9,500-7,500 B.P.)

Environment: Cold, dense pine and deciduous forests.

Settlement: Central-based wandering.

Subsistence: Large foraging herbivores and smaller mammals.

Material: Atlatl, stemmed and bifurcated (Stanly, cf. Kanawha and Lecroy) points, choppers, anvil stones, and others from earlier periods.

Ritual: Unknown.

Middle Archaic Period (7,500-6,000 B.P.)

Environment: Cool, deciduous hardwoods and pine.

Settlement: Central-based, seasonally circulating.

Subsistence: Foraging mammals, fish, and shellfish.

Material: Contracting stemmed points (Neville, Stark, and Merrimac), semi-lunar groundstone knives, banner stones, net plummets, gouges, denticulates, grooved axes, percussed celts and adzes, and others from earlier periods.

Ritual: Unknown.

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

Environment: Moderate, deciduous hardwoods.

Settlement: Central-based or semi-sedentary, seasonally circulating and radiating.

Subsistence: Foraging mammals (deer), small mammals, turtles, birds, fish, shellfish, berries, nuts, seeds.

Material: Groundstone manos, mortars, pestles, and bowls, stone pipes, bone tools, perforated weights, decorative gorgets, corner-notched (Vosburg, Brewerton, and Vestal), side-notched (Otter Creek, Brewerton, and Normanskill), narrow-stemmed (Dustin, Lamoka, Squibnocket, and Wading River), and triangular points (Squibnocket, Brewerton, and Beekman), fish weirs and harpoons, and others from previous periods.

Ritual: Cremation burials with utilitarian funerary objects for limited groups, suggesting possible access to restricted resources (e.g. transportation routes).

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

Environment: Moderate, deciduous hardwoods.

Settlement: Semi-sedentary, short-term radiating, long-term seasonally circulating.

Subsistence: Foraging mammals (deer), small mammals, fish, shellfish, turtles, birds, berries, nuts, seeds.

Material: Susquehanna corner-notched points, side-notched and large stemmed points, steatite bowls, canoes, Vinette I pottery, and others from previous periods.

Ritual: Elaborate secondary cremation burials containing high proportions of highly stylized artifacts of non-local material in specialized cemetery sites for limited groups with access to restricted resources (e.g. steatite, transportation routes), suggesting a stratified society and semi-sedentism for some groups.

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

Environment: Cool, deciduous hardwood trees.

Settlement: Central-based, seasonally circulating.

Subsistence: Foraging mammals (deer), small mammals, fish, shellfish, turtles, birds.

Material: Bow and arrow, Early Windsor cord-marked and Linear Dentate ceramics, stemmed (Adena-Rossville) and side-notched (Meadowood and Fulton) points, Steubenville points, some exotic Adena material, others from past periods.

Ritual: Combination of cremation burials and primary inhumations, often in habitation settings, suggesting some latent retention of class distinctions during a period of declining ceremonialism and undifferentiated control over critical resources.

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

Environment: Moderate, deciduous hardwood trees.

Settlement: Semi-sedentary, short-term radiating, long-term seasonally circulating.

Subsistence: Agriculture (squash, beans, corn, sunflower, tobacco), foraging mammals (deer), small mammals, fish, shellfish, turtles, birds, berries, and nuts.

Material: Groundstone hoes, cylindrical pestles, many ceramic styles (Rocker Dentate, Windsor Brushed, Sebonac Stamped, Hollister Stamped, Selden Island, and Windsor Plain), projectile points (Snyders corner-notched, Long Bay and Port Maitland, Rossville stemmed, Greene), and others from previous periods.

Ritual: Unknown (not yet distinguished from the Late Woodland).

Late Woodland Period (1,000-1,600 A.D.)

Environment: Moderate, deciduous hardwood trees.

Settlement: Semi-sedentary, short-term radiating, long-term seasonally circulating.

Subsistence: Agriculture (squash, beans, corn, sunflower, tobacco, Jerusalem artichoke), foraging mammals (deer), small mammals, fish, shellfish, turtles, birds, berries, nuts, and tubers.

Material: Wigwam homes, Jack's Reef, and Madison and Levanna triangular points, Late Windsor and East River ceramics, and others from previous periods.

Ritual: Primary inhumations in habitation sites, suggesting egalitarian society.

Early Archaic

The Early Archaic period lasted from approximately 9,500 B.P. to 7,500 B.P. (Snow 1980:159; Lavin 1984:9; Moeller 1984). Sea levels and temperatures continued to rise during this period as denser stands of forests dominated by pine and various deciduous species replaced the vegetation of the former period (Davis 1969:418-419; Snow 1980:114; Parker 1987:9; McWeeney 1994:184-185, 1999:8-9). This environmental change was rapid and caused a major shift in the animals it supported, including deer, moose, other small to medium-sized mammals, migratory birds, fish, and shellfish. The material culture changed along with the environmental conditions to include the atlatl and smaller stemmed and bifurcated projectile points (Stanly, cf. Kanawha and Lecroy) for procuring smaller, faster game in more closed settings (Wilbur 1978:6-7). The expanded tool set included choppers and anvil stones. Settlement patterns were probably becoming more territorialized towards a central-based wandering character (Snow 1980:171; see also Forrest 1999). The Early Archaic period is poorly represented in Connecticut and the lower coastal river valleys, probably resulting from a combined effect of low population densities in response to rapidly changing environmental conditions, as well as site location and preservation factors (Snow 1980:168; McBride 1981; McBride and Dewar 1981:45; Lavin 1984:9; McWeeney 1986; see also Forrest 1999).

Middle Archaic

The Middle Archaic period extended from approximately 7,500 B.P. to 6,000 B.P. (Snow 1980:173; Lavin 1984:9; McBride 1984; Jones 1999). It was by the end of this period of increased warming that sea levels and coastal configurations had stabilized and approached their present conditions (Kehoe 1981:211; Gordon 1983:82; Parker 1987:9). The period is marked by the establishment of forests with increasing proportions of deciduous hardwoods in relation to the pine predecessors in Connecticut (Davis 1969; Snow 1980:114; McWeeney 1999:10). The material culture included square or contracting-stemmed points (Neville, Stark, and Merrimac), semi-lunar groundstone knives, ground and winged banner stones for atlatls, plummets for nets, gouges, denticulates, perforators, percussed celts and adzes and grooved axes for woodworking (Snow 1980:183-184), as well as tools used in previous periods. This more extensive range of material culture indicates a broader subsistence base than in previous periods, including greater fish and shellfish procurement (Wilbur 1978:8; Snow 1980:178-182) which was associated with the stabilization of sea levels towards the end of the period. The increased breadth of subsistence resources had the effect of increasing scheduling efforts and may have caused settlement patterns to take on more of a central-based or seasonally circulating pattern with bands joining and dispersing on a seasonal basis (Snow 1980:183). Sites found in the lower Connecticut River Valley region suggest that a wider range of environments and associated site types were exploited, including both large and special task sites in upland areas (McBride 1981, 1984:56). This regional pattern may confirm the suggested settlement pattern of central-based, seasonally circulating or restricted circulating groups of people supported by logistical procurement sites throughout the state. Middle Archaic sites are fairly rare in Connecticut, again a combined product of rising sea levels and poor site preservation (see Forrest 1999).

Late Archaic

The Late Archaic period ranged from approximately 6,000 B.P. to 3,700 B.P. (Snow 1980:187; Lavin 1984:11; McBride 1984; Pfeiffer 1984; Cassedy 1999). This period is marked by a warm-dry maximum evident from pollen cores in the region (Davis 1969:414; Ogden 1977). Hardwood, oak-dominated forests very similar in character to ones established today covered most of Connecticut by the Late Archaic (Parker 1987:10). The Late Archaic in Connecticut has been divided into two traditions: the Laurentian and the Narrow Point (Lavin 1984:11), with the former perhaps being distributed more in the interior. The Laurentian tradition is defined by wider-bladed, notched and eared triangular points, and ground slate points and ulus, while the Narrow Point tradition includes smaller, thicker, and narrower points. The tool kit and general material culture became even more expanded during this period, with the advent of ground stone manos, nut mortars, pestles, and bowls, as well as stone pipes, bone tools, corner-notched (Vosburg, Brewerton, and Vestal), side-notched (Otter Creek, Brewerton, Normanskill), smaller narrow-stemmed (Dustin, Lamoka, Squibnocket, and Wading River), and triangular points (Squibnocket, Brewerton, and Beekman), grooved and perforated weights, fish weirs and harpoons, and decorative gorgets (Wilbur 1978:15-24; Snow 1980:228-231). The groundstone material has been inferred as being associated with an increased vegetable diet that consisted of berries, nuts, and seeds (Snow 1980:231; Lavin 1984:13), including acorn, butternut, chestnut, walnut, hickory, bayberry, blackberry, goose foot, cranberry, partridge berry, service berry, strawberry, and swamp current (Cruson 1991:29). Deer continued to be the predominant meat source, although animal remains recovered from archaeological sites in the region include black bear, raccoon, woodchuck, rabbit, otter, gray squirrel, red fox, gray fox, wolf, wild turkey, grouse, pigeon, migratory fowl, and anadromous and freshwater fish and shellfish (Cruson 1991:28-29). Various sea mammals and fish were procured along the coast.

The increasing breadth of the subsistence base and material culture was in turn associated with a central-based settlement pattern in which a restricted range of seasonally scheduled and used areas were exploited in a more semi-sedentary fashion than previously (Lavin 1984:13; Dincauze 1990:25). Sites in the lower Connecticut River Valley suggest that the larger rivers served more as long-term bases within a central-based circulating system than in the Middle Archaic (McBride 1981; McBride and Dewar 1981:48). The interior uplands of Connecticut may have supported a relatively independent set of seasonally circulating groups which used larger wetlands as long-term bases (Wadleigh 1981). Mortuary practices of the time suggest some sedentism for certain groups of people who were buried in specialized secondary cremation cemeteries and who may have had some control over restricted resources (e.g. riparian transportation routes) (Walwer 1996). Although the cremation sites largely include utilitarian funerary objects, some contain non-local materials which suggest trade association with cultures to the west of Connecticut (Walwer 1996).

Terminal Archaic

The Terminal Archaic period extended from approximately 3,700 B.P. to 2,700 B.P., as defined by the Susquehanna and Small-Stemmed traditions (Swigart 1974; Snow 1980:235; Lavin 1984:14; Pfeiffer 1984; Pagoulatos 1988; Cruson 1991; Cassedy 1999). Steatite, or soapstone, was a frequently used material by this time, and could be fashioned into bowls and other objects. The mass, permanency, and labor intensiveness of creating these heavy items have led to the inference of more sedentary base camps, especially on large rivers where the development of a canoe technology had become fully established and increased the effective catchment area within which groups of people were gathering resources on a continuous basis. The material culture of the period was very similar to the Late Archaic, with a proliferation of stemmed projectile point types including Snook Kill, Bare Island and Poplar Island stemmed points, Orient Fishtail points, Sylvan and Vestal side-notched points, and Susquehanna corner-notched points. The resource base continued to consist of deer and small mammals, nuts, shellfish, turtles, and birds (Snow 1980:249). The first signs of ceramics (Vinette I pottery) tempered with steatite fragments appeared during this period (Lavin 1984:15; Lavin and Kra 1994:37; see also Cassedy 1999:131), and archaeological evidence of trade with other regions becomes more substantial for this time (Pfeiffer 1984:84).

The distribution of sites and site types in the lower Connecticut River Valley during this period suggests that there was a change in settlement to one with fewer, yet larger sites in riverine settings, and associated satellite task-specific sites in the uplands (McBride 1981; McBride and Dewar 1981:49). The implications are less foraging-strategy residential movement and more task-oriented collection activities within a radiating settlement pattern, but probably one in which some degree of seasonal circulation of settlement took place. Pagoulatos (1988) has shown that while sites associated with the Small-Stemmed tradition tend to suggest a more mobile settlement pattern in the interior uplands, sites of the Susquehanna tradition indicate a semi-sedentary collector strategy in major riverine and estuarine environments. At least certain groups exhibited semi-sedentism and some control over restricted resources, as indicated by the elaborate burials of the Terminal Archaic (Walwer 1996). Mortuary practices from the period include secondary cremation interments in formalized cemetery areas, with individual pits containing fragmented utilitarian material from communal cremation areas, as well as highly stylized funerary objects from non-local material (Walwer 1996). The lack of other, less formalized burial types evident in the archaeological record may be a matter of poor preservation, in which case it has been proposed that the cremation cemeteries are representative of a stratified society in which a portion of the people (of the Susquehanna "tradition") were able to generate a surplus economy that supported a semi-sedentary settlement pattern. This surplus may have been generated by the procurement and control over the transportation of steatite from various areas in Connecticut and surrounding territory.

Early Woodland

The Early Woodland period in Connecticut extended from about 2,700 B.P. to 2,000 B.P. (Lavin 1984:17; Juli and McBride 1984; Cruson 1991; Juli 1999). A cooling trend during the Early Woodland (Davis 1969:414; Parker 1987:10; McWeeney 1999:11) is thought to have reduced population sizes and regional ethnic distinction as the hickory nut portion of the resource base was significantly decreased, although the apparent decline in populations may possibly be related to other factors such as the inability to confidently distinguish Early Woodland sites from those of other periods (Filios 1989; Concannon 1993). Climatic deterioration and depopulation are in turn thought to have inhibited the progression towards, and association with, more complex social structures and networks that were developing further to the west and south

(Kehoe 1981:215). A proliferation of tobacco pipes may indicate the beginnings of agricultural efforts in the northeast. The Early Woodland of this region, however, exhibits no direct traces of subsistence crop remains, indicating continuity with previous periods in terms of subsistence practices (Lavin 1984:18).

Materially, the period is marked by a substantial development of a ceramic technology, with the Early Windsor tradition of pottery being dominant in the Early Woodland of Connecticut (Rouse 1980:68; Lavin 1984:17, 1987). Both Early Windsor cord-marked and Linear Dentate ceramic forms were being produced at this time. Diagnostic projectile points can be developmentally traced to indigenous points of previous periods, consisting of many stemmed forms in addition to Meadowood and Fulton side-notched points, Steubenville points, and Adena-Rossville types, but now may have been used in conjunction with the bow and arrow (Lavin 1984:18). Adena-like boatstones are also found in this period. Although rare contact with the Adena culture is evident throughout assemblages of the period, the Early Woodland in southern New England remained a very gradual transitional period (Snow 1980:279,287; Lavin 1984:19).

A heightened use of ceramics has been erroneously promoted as an automatic indication of increased sedentism in many areas. Instead, central-based camps with restricted seasonal encampments appear to be the dominant settlement pattern (Snow 1980:287). Minimal archaeological evidence from the lower Connecticut River Valley appears to suggest a similar settlement pattern to the Terminal Archaic in which large riverine sites served as central bases with upland seasonal dispersal or specific task sites (McBride 1981; McBride and Dewar 1981:49), but with a lesser degree of sedentism. Interior uplands populations also decreased during the Woodland era, perhaps related to the intensification of agricultural resources along major riverine and coastal areas (Wadleigh 1981:83). The trend towards greater mobility may in part be attributed to the decline in the use of steatite that no longer gave certain groups control over critical and restricted resources, as indicated by the declining ceremonialism of burial sites at the time which were more often located in habitation sites and exhibited combinations of secondary cremation features and primary inhumations (Walwer 1996). This transition in the socio-economics of the region was brought about by the decrease in importance of steatite as ceramics obscured its value for producing durable containers. Partially preserved primary inhumations appear for the first time in the region based on preservation considerations.

Middle Woodland

The Middle Woodland period lasted from about 2,000 B.P. to 1,000 B.P. (Lavin 1984:19; Juli and McBride 1984; Cruson 1991; Juli 1999). The climate was returning to the conditions basically witnessed today (Davis 1969:420; McWeeney 1999:11). It is a period which exhibited considerable continuity with previous periods in terms of both subsistence and material culture. Cylindrical pestles and groundstone hoes are tools diagnostic of the period and reflect developing agricultural efforts, including the cultivation of squash, corn, and beans on a seasonally tended basis (Snow 1980:279). Direct evidence for agriculture in the form of preserved vegetal remains, however, does not generally appear until the early Late Woodland (Lavin 1984:21) when corn is thought to have been introduced into the Connecticut River Valley from the upper Susquehanna and Delaware River Valleys (Bendremer and Dewar 1993:386). Projectile point forms from the period include Snyders corner-notched, LongBay and Port Maitland side-notched, Rossville stemmed, and Greene lanceolate types. A proliferation of ceramic styles was witnessed during the Middle Woodland (Rouse 1980; Lavin 1984:19-20, 1987; Lavin and Kra 1984:37), including Rocker Dentate, Windsor Brushed, Sebonac Stamped, Hollister Stamped, Selden Island, and Windsor Plain types that were all also produced in the Late Woodland, with the exception of the Rocker Dentate. Ceramic forms from the Early Woodland were still being produced as well. Minor traces of the Hopewell cultures to the west are also present in the archaeological record of this period. Site types and distributions in the lower Connecticut River Valley imply that a moderate increase of sedentism with aspects of a radiating settlement pattern took place on large rivers, supported by differentiated upland task sites (McBride 1981; McBride and Dewar 1981:49). This trend may have been supported by the expansion of tidal marshes up larger rivers (McBride 1992:14).

Late Woodland

The Late Woodland period extended from approximately 1,000 B.P. to 1600 A.D., the time of widespread European contact in the broader region (Snow 1980:307; Kehoe 1981:231; Lavin 1984:21; Feder 1984, 1999). A warmer climate and increased employment of large scale agriculture for subsistence in New England were associated with increased population densities, more sedentary settlements, and more permanent living structures and facilities in larger villages. Settlements in Connecticut, however, tended to remain smaller with only small scale agricultural efforts, and as part of a seasonal round in which smaller post-harvest hunting and task-specific settlements were established in fall, and protected settlements occupied in winter (Guillette 1979:CI5-6; McBride and Bellantoni 1982; Lavin 1984:23; Starna 1990:36-37). Instead of maintaining permanent villages near agricultural plots, aboriginal populations engaged in the slashing and burning new plots and let old plots lie fallow periodically (Salwen 1983:89). In this area, domestic resources included corn, beans, squash, Jerusalem artichoke, and tobacco (Guillette 1979:CI5; Starna 1990:35). Agriculture was largely maintained by women, with the exception of tobacco (Salwen 1983:89; Starna 1990:36). Deer, small mammals, fish and shellfish, migratory birds, nuts and berries, and other wild foods continued to contribute significantly to the diet (Waters 1965:10-11; Russell 1980). Many of the foods produced were dried and/or smoked and stored in baskets and subterranean holes or trenches.

The increasing diversity of wild estuary resources may have served to increase sedentism in the coastal ecoregions of Connecticut (Lavin 1988:110; Bragdon 1996:67), while agriculture and sedentism may have been even more prominent along the larger river bottoms (Bragdon 1996:71). Late Woodland settlement patterns of groups in the uplands interior ecozones of Connecticut may have included the highest degree of mobility, while many sites from the central lowlands represent task-specific sites associated with larger settlements along the Connecticut River (McBride 1992:16). House structures consisted of wigwams or dome-shaped wooden pole frameworks lashed and covered with hides or woven mats, and clothing was made from animal hides (Guillette 1979:CI7-8; Starna 1990:37-38). Pottery for the period is defined as the Late Windsor tradition in Connecticut (Rouse 1980:68; Lavin 1984:22, 1987). Most of the ceramic forms of the Middle Woodland were still being produced, in addition to the newer Niantic Stamped and Hackney Pond forms. Ceramics of the East River tradition also appear in the area during the Late Woodland, having originated and been concentrated in the New York area

(Rouse 1980; Wiegand 1987; Lavin 1987). The period exhibits some continuity in terms of projectile point forms, although the Jack's Reef, Madison triangular, and Levanna points are considered diagnostic for the period. As likely with earlier periods, the material culture included various textile products such as baskets and mats, and wooden utensils such as bowls, cups, and spoons (Willoughby 1935; Russell 1980:56).

Unlike groups of the Mississippi valley, the overall cultural pattern for the entire Connecticut Woodland era exhibits considerable continuity. Interregional contact increased during this period, however, with non-local lithic materials increasing from as low as 10% to as high as 90% from the early Middle Woodland to the Late Woodland (McBride and Bellantoni 1982:54; Feder 1984:105), although most trade appears to have been done between neighboring groups rather than initiated through long-distance forays (Salwen 1983:94). The lack of enormous agricultural surpluses for the time is indicated by the low density of small storage features in habitation sites, as well as the ubiquitous primary inhumation of people without a select portion of graves exhibiting special treatment that would require high energy expenditure (Walwer 1996). As confirmed by early ethnohistoric accounts, this suggests a largely egalitarian and relatively mobile society for the Late Woodland despite the fact that this period marks the highest development of food production (i.e. agriculture) during the course of prehistory in the region. Corn was undoubtedly important, however, as a disproportionate amount of the simple, flexed burials were oriented towards the southwest which was the aboriginally acknowledged direction for the origins of corn and the Spirit Land.

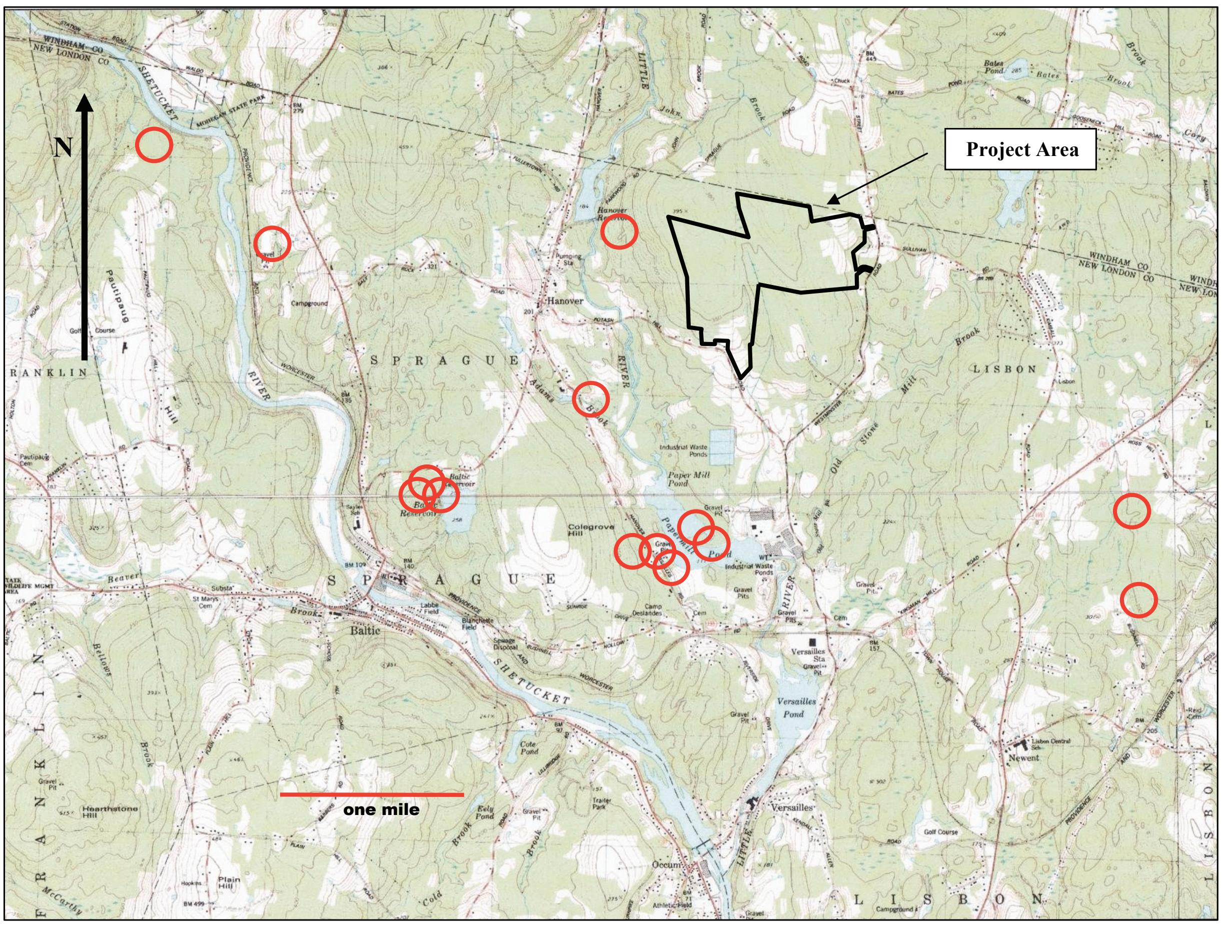
Local Sites and Surveys

A limited number of prehistoric sites has been reported for the area, largely based on a low density of historic developments which frequently expose sites (Figure 10). A professional survey of a lot bordering a tributary of Blissville Brook a couple of miles to the southeast of the project property in Lisbon revealed two unspecified sites (73-002/003) with quartz, quartzite, and chert debitage, calcined bone, and quartz biface fragments (McBride 1988).

Surface finds from amateur collections about a mile to the southwest of the project area on the other side of Papermill Pond included projectile point and/or lithic knife fragments of chert, quartzite, and other materials at two sites (Edge of Occum East and West - 133-6; 132-7). Just to the south, the Zinavage Site (133-12) yielded more debitage and projectile point fragments from a variety of lithic material, but also one fragment of aboriginal ceramic that indicates a Woodland era occupation. Two more sites (Peninsula North and Peninsula South - 133-10; 133-11) on the east side of Papermill pond revealed more lithic knife and/or projectile point fragments, including points appearing to belong to the Brewerton eared and Meadowood types, thus spanning a date range of the Late Archaic through Early Woodland periods. Further up the Little River drainage on Adams Brook at another site (Ozga - 133-9) more quartz, chert, and quartzite projectile point fragments and lithic debitage were recorded, along with quartz scrapers.

Three more sites were found to the west on the Baltic Reservoir about two miles southwest of the project area. Baltic Reservoir East (133-13) revealed a number of quartzite flakes and preform, as well as a basalt groundstone gouge and quartz projectile points or fragments that include the base of a Brewerton base, indicating a Late Archaic occupation. Baltic Reservoir West (133-14) was reported to contain scrapers and projectile points of numerous

Figure 10: Prehistoric Sites of the Region



materials, with a Kanawha base fragment and bifurcate point indicating occupation as early as the Early Archaic period, and aboriginal ceramic fragments from the site indicating occupation extending into the Woodland era. Baltic Reservoir North (133-15) revealed two quartzite Neville points that place site occupation as early as the Middle Archaic period, with the site also yielding quartz scrapers and chert debitage.

Other sites (133-2, 133-4) found several miles to the west of the project area along the Shetucket River on glacial meltwater terraces have no information recorded other than site location. Many other possible sites have been identified in the area according to Connecticut State Historic Preservation Office site files (CT SHPO 2014), although appropriate forms have yet to be submitted and their reported existence may stem from questionable evidence. The closest of these is Site 133-3, reportedly located within one-half mile to the west of the project area on the east side of Hanover Reservoir in the Little River drainage.

Summary

There has been a general lack of prehistoric sites recorded by professional archaeological surveys in the Sprague area, although some site information is available through amateur collection and reporting efforts. Most of the sites tend to be located on glacial meltwater sedimentary landforms in major drainages such as the Little River and Shetucket River, although larger upland wetland settings such as that originally forming the basis of Baltic Reservoir also attracted settlement and use. Much of the prehistoric era is already represented in the area, extending at least from the Early Archaic through Early Woodland periods. A lack of Late Woodland sites may reflect greater concentration of agricultural activity in the larger drainage systems of the region.

Historic Background

Contact Period

The Contact period is designated here as the time ranging from the first substantial contact between European explorers and Native American inhabitants of Connecticut to the time of intensive occupation by European settlers, roughly 1600 to 1700 (Table 2). Initial contact in the broader region occurred in 1524 when Verrazano reached the coast of New England (Terry 1917:16). Others followed in the first decade of the 1600s (Salwen 1983), and in 1614 Dutch explorers reached the Connecticut River (DeForest 1852:70; DeLaet 1909 [1625-1640]). The Dutch were met by the Quinnipiacs at New Haven Harbor in 1625 (Brusic 1986:9) when they initiated fur trading relationships with several local tribes. The trade relationship between local tribes and the Dutch was short-lived, however, coming to an abrupt end by the mid 1630s (Guillette 1979:WP2) when substantial English settlements were being established in the area. DeForest (1852:48) estimates about 6,000 to 7,000 Native Americans in pre-epidemic Connecticut (early 1630s), while others consider the aboriginal population to have been as high as 16,000 to 20,000 or more (Trumbull 1818:40; Gookin 1970 [1674]; Cook 1976; Snow 1980:35; Bragdon 1996:25).

The spatial configuration of tribal territories at the time of initial contact is fairly well known, although boundaries are also known to have fluctuated significantly, as did the political alliances by which the tribes could be defined (Thomas 1985:138). Three major divisions of Algonkian speaking groups can be delineated in eastern Connecticut, and their original territories conform well to present ecozone distributions (see Dowhan and Craig 1976:26 and Speck 1928:Plate 20). Centralized in East Windsor and South Windsor (Trumbull 1818:40; DeForest 1852:54-55; Spiess 1933), the Podunks occupied that part of the Connecticut River drainage basin which constitutes the North-Central Lowlands east of the river. Linguistically, the Podunks were part of the Wappinger or Mattabesec Confederacy of tribes that extended west of the Connecticut River and onto Long Island (Speck 1928). The validity of the Wappinger-Mattabesec Confederacy as a cultural entity has been challenged (Salwen 1983:108-109), however, with many smaller and somewhat independent tribes known to occupy much of the western half of the state. In the northeast part of the state, the Nipmucs occupied areas covering the Northeast Uplands and Northeast Hills ecoregions, but were centrally based in Massachusetts (Gookin 1970 [1674]; Van Dusen 1975:21; DeForest 1852:57). Blanketing the Southeast Hills and Eastern Coastal regions east of the Connecticut River, the territory of the Pequots lay adjacent to the Narragansetts of Rhode Island to the east (Speck 1928).

Several cultural distinctions can be made at a higher level of resolution within these three broad divisions. For instance, the Western Nehantics were concentrated just east of the Connecticut River on the coast, while the Eastern Nehantics occupied the southeast corner of the state and part of Rhode Island (Speck 1928: Plate 20; Swanton 1952:31 and map insert). Although considered to be two separate cultural groups, the Nehantics may have been historically divided by an incursion of the Mohegan-Pequots. The Western Nehantics are frequently cited as confederates of the Pequots (Guillette 1979:WP2), while the Eastern Nehantics may have been more aligned with the Narragansetts of Rhode Island (Caulkins 1895:20).

Table 2: Local Historic Chronology

Contact (17th Century)

Various European explorations near coastal Connecticut in the early 1600s.
Adrian Block makes direct contact along the coast in 1614.
Dutch trade relationships established until 1635.
Severe disease epidemics in 1616-1619 and 1633 reduce aboriginal populations.
English colony settlements along the coast and major drainages.
Pequot War of 1637 decimates Pequots, Mohegan territory expands.
Uncas deeds Norwich area to Major Mason in 1659.
Euroamerican encroachments on tribal territory, reservations established for tribal groups.
New London County formed in 1666, King Philip's War of 1675.

18th Century

Reaffirming deeds from Mohegans.
Self-subsistence farming and early mills form basis of Sprague economy.
Native American presence largely diminished through land sales.
Continued Euroamerican encroachments and settlement make aboriginal adaptations in the region impossible, Euroamerican acculturation increases steadily.
House at 85 Potash Hill Road built in 1720.
Perkins family owns most of project property.
Newent (with Hanover) formed as 3rd Ecclesiastical Society of Norwich in 1723.
Great Awakening of 1740s.
Village of Hanover set off in 1761.
The Brothertown movement to New York reduces indigenous populations.
Franklin and Lisbon (including Newent and Hanover) incorporated in 1786.
House at 111 Potash Hill Road built around 1790.

19th Century

Bishop family farms "Old Farm" at Rainville lot, "Adams Farm" lies to the west.
Nadeau lot part of larger "Stone Barn Farm."
Sprague / Lisbon area remains largely agricultural.
Small textile and paper milling operations located along Shetucket, Quinebaug, and Little River drainages.
Irish immigrants build railroad lines.
Hartford, Providence & Fishkill Railroad line built through Sprague territory in 1854.
William Sprague III of Rhode Island builds Baltic village on Shetucket for large mill facility.
French Canadian immigrants work in local mills.
Sprague incorporated in 1861.
Project property is combination of pasture and wood lots.

20th Century+

Sprague economy still dominated by agriculture.
Utilities and trolley lines at Baltic village.
Babbitt family farms Rainville lot
Social organizations emerge.
Great Depression affects Sprague.
Decline in agriculture, increase of suburbanization after World War II.
Decline in mills after World War II.
Rainvilles purchase their lot in 1984, bury stone wall lining road to adjacent former town farm.
Nadeau Construction acquires its lot through bankruptcy of Norwich Historic Preservation Trust
Project property proposed for solar farm development.

There is considerable debate as to the origins of the Pequots, or Mohegan-Pequots who would eventually split into two distinct tribes. Many authors believe that they originated in the Hudson Valley or upstate New York (Caulkins 1895:21; Learned 1903:52; Speck 1909:184; Tantaquidgeon 1972:65; Fawcett 1995:10), with cultural and traditional knowledge links to the Lenni Lenape (Delaware) of the Pennsylvania region who have stories of their wolf clan having moved to the northeast, later migrating to southeastern Connecticut during the late 16th to early 17th Century. Others cite archaeological and linguistic evidence to support the idea that they developed *in situ* (Salwen 1969, 1983:107; Rouse 1980). The Pequots may have received their name from an Algonkian word for "destroyers" (Salwen 1969:81; Guillette 1979:WP1) or "powerful ones" (Avery 1901:254) or "invaders" (Fawcett 1995:10). Alternatively, it may have derived from the informal name of several Pequot Sachems shortly before the arrival of Europeans, including Wopiguand (Wo-pequoit or Wo-pequand or Pekoath) (Caulkins 1895:21) or Tamaquashad (Pekoath or Pequot) (Guillette 1979:WP1).

Most early historic accounts describe the Pequots as an invading tribe which had forcibly entered southeast Connecticut, although it is not clear what their motivation for migration might have been. While the Pequots were concentrated near the southern coast between the Thames River and the Pawcatuck or Wecapaug River (Guillette 1979:WP2), Pequot political control was more extensive, in the form of tributes exacted on aboriginal populations on parts of Long Island and some of the "river" tribes to the west. Narragansetts were principal rivals of the Pequots, for they were most able to resist Pequot aggression (Guillette 1979:WP2). Tribes who were subject to Pequot power approached Dutch traders and English colonists in Massachusetts with offers of attractive settlement areas in order to help defend against Pequot domination (DeForest 1852).

The fluctuating nature of tribal territory boundaries can be partly attributed to aspects of mobility and subsistence. Ethnohistoric sources offer descriptions of terminal Woodland and early Contact subsistence-settlement strategies of the area (McBride and Bellantoni 1982; Starna 1990:36-37). Spring settlements were located to take advantage of anadromous fish runs in larger drainages and along the coast. By late spring, attention was focussed on tending corn fields on alluvial terraces and glacial meltwater features along perennial streams and rivers. Semi-sedentary settlements near these fields were supported by task-specific hunting and gathering sites. Dispersal in the late fall and winter brought smaller groups into protected, upland or interior valleys where hunting and gathering continued. This model is confirmed by an archaeological survey of the lower Connecticut River Valley (McBride and Dewar 1981:49-50) in which large, early Contact period villages were found to be a part of a central-based circulating settlement pattern. Family units were clustered in major villages on a seasonal basis. The dispersal phase had a longer duration in the Contact period than the Late Woodland, and consisted of smaller subsistence units (single families).

The fortification of some larger villages in the early Contact period was likely a response to intertribal and intercultural political conflicts resulting from increased economic pressures induced by Euroamerican trade relationships (Salwen 1983:94; McBride 1990:101; but see Thomas 1985:136). The fortified villages are representative of the trend towards increasing sedentism and territoriality during the Contact period. Eventually, Native American populations became dispersed and afflicted by disease, warfare, and intertribal conflict to the point that small, scattered reservations served as the final restricted territories for some indigenous populations.

The economic base for Native Americans in eastern Connecticut continued to consist of hunting deer and small mammals, gathering berries, nuts, and roots, and procuring shellfish and fish on larger drainages and along the coast (Waters 1965:7; Salwen 1970:5). This basic subsistence strategy was supported by various horticultural products, including corn as a staple, squash, beans, Jerusalem artichoke, and tobacco (Guillette 1979:CI5; Starna 1990:35). The importance of corn is evident in historic descriptions of ritual activities, including variations of the Green Corn Festival that extended with various groups, including the Mohegans, into the present day (Speck 1909:194; Speck 1928:255; Tantaquidgeon 1972:81; Fawcett 1995:54-57). Elderly women possessed extensive knowledge of wild plants which provided a host of medicines and treatments (Russell 1980:35-37).

The material culture included a mix of aboriginal forms and European goods such as metal kettles and implements (e.g. knives and projectile points), cloth, glass beads, and kaolin pipes (Salwen 1966, 1983:94-96). Wigwams continued to serve as the principal form of housing, in some cases well into the 18th Century (Sturtevant 1975). Unlike the Late Woodland, Contact aboriginal lithic products were predominantly manufactured from local quartz sources (McBride and Bellantoni 1982:54). Dugout canoes may have continued to provide a major form of transportation in larger drainages (Salwen 1983:91). Late Contact period Euroamerican trade goods included various metal tools, glass bottles, ceramic vessels, kaolin clay pipes, and nails (McBride and Grumet 1992).

Wampum (shell beads) served as an important item for exchange by Native Americans with European traders, but their original use was in the form of belts as symbolic signs of allegiance or reciprocity between tribes, and as sacred markers or tokens of honor for individuals (Guillette 1979:CI8; Ceci 1990:58-59; Salisbury 1990:87; Fawcett 1995:59). With European metal drill bits, tribes along the coast were now mass producing wampum for trade with the Dutch and English, who in turn used the shell beads to trade with other tribes farther inland (Salwen 1983:96; Ceci 1990:58). Control of wampum production along the eastern Connecticut coast may have contributed to Pequot dominance over other tribes at this time. Although wampum was initially traded for Euroamerican goods, it was eventually used to pay fines imposed by colony governments on the tribes for "illegal" acts. While colonization brought new material goods to Native Americans in the area in exchange for fur, land, and services, the indigenous inhabitants became increasingly subject to legislative economic restrictions by the colonists (Salisbury 1990:83).

Sachems and councils of leading males formed the basic political unit for groups of villages (Gookin 1970 [1674]; Simmons 1986:12). The authoritative roles of clan mothers had diminished as a result of a strong European leadership bias towards males in trade relationships (Fawcett pers. comm. 1996). Tributes paid to sachems were generally used as reserves for the tribe at large. Although sachems were generally assigned by hereditary lineage, this was not always the case (Bragdon 1996:140-141). Additionally, authority was usually enforced by persuasion of a council. Shamans were "magico-religious" specialists of the tribes who also had a considerable role in leadership and decision-making (Speck 1909:195-196; Simmons 1986:43; Starna 1990:42-43). Other special status roles included warriors and persons who had visions, thus social status was largely based on achievement and recognition. Rules of obligation and reciprocity operated on all levels of tribal-wide decision-making (Bragdon 1996:131-134), serving to diffuse centralized authority. While the assignment of lineality (i.e. matrilineal vs. patrilineal) for the area tribes is still debated (Bragdon 1996:157), the well established practice of bride-pricing and traditional accounts support the contention of a patrilineal social organization (Speck 1909:193; Salwen 1983:97). Post-marital residence appears to have been ambilocal.

On a larger scale, more powerful tribes demanded tributes from smaller ones, often resulting in loose alliances between the latter. This process created a dynamic political environment that prompted intertribal conflict, especially after contact with Euroamericans (Guillette 1979; Bragdon 1996). The European settlers of the Contact period used this embedded rivalry system to their advantage in trade relationships and the procurement of land. The colonists were placed at a further political advantage because of the severe reduction in aboriginal populations as a result of disease (Starna 1992). Major epidemics occurred between 1616 and 1619, and more severely around 1633 (Snow and Lanphear 1988; Starna 1990:45; Snow and Starna 1989). Diseases introduced into the Americas included chicken pox, cholera, diphtheria, malaria, measles, oncercerosis, poliomyelitis, scarlet fever, smallpox, tapeworms, trachoma, trichinosis, typhoid fever, whooping cough, and yellow fever (Newman 1976:671).

The Pequot Sachem Wopiguand was killed in the early 1630s by the Dutch over trade disagreements (DeForest 1852:73), essentially ending the Dutch-Pequot trade relationship and initiating a pattern of increased hostilities between Euroamericans and Native Americans of the region (Hauptman 1990). Political turmoil ensued within the Pequot tribe as to who should succeed Wopiguand and how best to engage the Europeans. The choice of Sassacus to lead the tribe and subsequent disputes as to tribal policy with respect to the Europeans prompted Uncas and his supporters to defect as the Mohegan tribe (DeForest 1852:84; Fawcett 1995:11). The Mohegan base of settlement was situated at the confluences of the Shetucket, Quinebaug, and Yantic Rivers, and along the Thames River in Montville (Baker 1896:10; Speck 1909:185). The Mohegans were, however, still largely under the control of the Pequots, as were the southern groups of Nipmucs (i.e. Quinebaugs) who occupied northeast Connecticut (Gookin 1970 [1674]:7).

When the Plymouth Colony began to make plans for settlement in Connecticut in the early 1630s, the Dutch resisted the idea because of their perceived proprietorship over the area by "right of discovery" (Guillette 1979:WP3). The Dutch responded by creating a trading post in Hartford, while the English followed with a fortified post in Windsor. In 1635, English colonists of the Massachusetts Bay Colony established other settlements on the Connecticut River (Hauptman 1990:71). Isolation of the Dutch was completed that year when Winthrop built a settlement at the mouth of the river in Saybrook (Guillette 1979:WP4). Conflicts in the trade relationship between the Pequots, neighboring tribes, Dutch traders, and English colonists heightened in the mid 1630s. In response to these tensions, the Pequots maintained fortified villages at Pequot Hill in Groton, and later Fort Hill near Noank. Further conflicts resulted in several skirmishes between the Pequots and English colonists, culminating in the "Pequot War" (DeForest 1852:96).

In 1637, a contingent of soldiers from the Connecticut colonies was joined by the Mohegan sachem Uncas, who led his newly divergent tribe and some Narragansetts on a campaign against the Pequots (Hauptman 1990:73). Most of the latter were massacred at Mystic Fort, the survivors of which were forced to scatter widely. The Mohegan acceptance of some of the conquered Pequots into its tribe caused hostilities to emerge between the Narragansett sachem Miantonomo and Uncas. The defeat of the Pequots and the emergent hostilities between the Mohegans and Narragansetts led to the Tripartite Treaty of 1638, which in theory allied the Mohegans and Narragansetts, forbade any reorganizing attempts by the Pequots, redistributed Pequot prisoners between the Mohegans and Narragansetts, and provided ownership of Pequot territory to the Connecticut colonists (DeForest 1852:159,181). Some young male Pequots were sold into slavery in the West Indies (Salwen 1983:108; Campisi 1990:118), while many of the Pequots held by the Narragansetts left to be with or near the Mohegans, causing further hostilities between the latter two tribes. The English colonists granted Uncas territory that had not been part of the Tripartite Treaty, heightening the antagonism between the Narragansetts and Mohegans which would continue into the 1640s (Fawcett 1995:14-15). Speck (1909:186) cites several Mohegan forts which were built partly in response to heightened intertribal warfare, including the one on Fort Hill, one on Uncas Hill, and the nationally registered Fort Shantok.

The Connecticut English favored alliances with the Mohegans because of proximity and a greater role in the subjugation of the Pequots (Guillette 1979:M6). After numerous skirmishes between the two sachems, the Connecticut government effectively sanctioned the execution of Miantonomo by Uncas (DeForest 1852:195). The Mohegans and the Connecticut colonists continued to exhibit mutual support in King Philip's War of 1675, when they defeated attempts of the Wampanoags of Massachusetts, the Nipmucs, and some Podunks, to thwart the expansion of Euroamerican settlement (Gookin 1836 [1677]; Barber 1838:20-21; DeForest 1852:288). This war effectively ended any military threat or potential resistance to full fledged settlement of southern New England by the Europeans (Fawcett 1995:16).

The Pequot War set a trend of English control over, and arbitration between, native groups (Twitchell 1899; Hauptman 1990:69). Most of the tribes looked favorably on this situation at first, for it had relieved them of control by the Pequots. This control, however, was merely shifted to the English colonists who demanded shell bead payments in return for protection and as penalties for "crimes" (Ceci 1990:61). Eventually, demand for wampum decreased as the fur trade was diminished following the widespread depletion of commercially targeted animals (Salisbury 1990:90). The colonists then turned to land as the principal aboriginal resource to be tapped through "fines." Native American subsistence patterns were becoming increasingly hindered by English settlement, and closure of the surrounding land further prevented adequate use of hunting ranges. Colonist encroachments on "unused" portions of reservations occurred without reasonable chance of recourse by legal means (McBride 1990:107; Campisi 1990).

Pequot populations were reduced from at least several thousand to less than a thousand towards the end of the 17th Century (Cook 1976:52), while almost all land had been lost following the war. Uncas and the Mohegans fared better at first, gaining territory in various areas of Connecticut through marriages and alliances with tribes such as the Podunks. But Mohegan territories also dwindled through ambiguous land transactions with the Euroamerican colonists (DeForest 1852:292). Various tracts sold by Uncas and his son Owaneco, for example, had overlapping boundaries (Guillette 1979:M13). By the time Uncas died in 1682, Mohegan land was reduced to tracts on the west side of the Thames between New London and Norwich as the main focus of Mohegan populations, an area just north of Lyme, and the "Mohegan Hunting

Grounds" which included an area between Norwich, Lebanon, Lyme, Haddam, Middletown, and Colchester (DeForest 1852:297,311; Guillette 1979:M14,16). The trend of land divestiture witnessed by the Pequots and the Mohegans similarly affected the Quinebaug (southern Nipmucs) and Western Nehantics (DeForest 1852:376,385).

By 1659, Uncas had deeded Major Mason of the Connecticut Colony nine square miles of the Norwich area which included Sprague, while 300 acres were deeded back to Uncas' son Owaneco near the confluence of the Shetucket and Quinebaug Rivers (Woodward 1868:45-46; Caulkins 1878:57-59; Delaney 1986:4; Delaney 1997:1). New London County was organized in 1666, with the New London area having been settled by Europeans as early as 1646 (Caulkins 1878:87; Baker 1896:71). Euroamerican settlement spread from there up the Thames River and along the coast.

18th Century

Estimates for the Mohegan population in the region are as low as 750 for the beginning of the 18th Century (Speck 1909:185), while Pequot reservation populations dropped from approximately 1,500 to less than 200 between 1674 and 1731 (Speck 1928:213). Early attempts to convert aboriginal populations to Christianity met with little success (Gookin 1836 [1677]:435; DeForest 1852:179,252). Because it tended to cause rifts in the tribes, Uncas and other sachems came to oppose what they initially thought were harmless teachings (Guillette 1979:M11). Efforts to convert and assimilate local aboriginal populations gained momentum during the 18th Century, however. A schoolhouse for educational and "moral" instruction was ordered to be built in 1726 for the Mohegans (Guillette 1979:M18). By the 1740s, the Great Awakening period of increased Christianity among Euroamericans also started to gain support among the Mohegans, Pequots, and Quinebaugs (DeForest 1852:380,430; Simmons 1990:148). The movement was incorporated by many Mohegans with the conversion of Samson Occum, a highly visible and active member of the tribe who was a founder of Moore's Indian Charity School in Lebanon (Guillette 1979:M21). Christianity among Native Americans was on the decline by the end of the century, however, as Occum and many others left the region.

Euroamerican efforts to assimilate Native American populations included attempts to create privately owned land within tribal territories that could then be sold. Encroachment by Euroamerican settlers on Pequot and Mohegan lands continued through various other means during the 18th Century (DeForest 1852; Campisi 1990). Intratribal political strife developed as different factions encouraged opposing approaches to land transactions with Euroamerican settlers. In 1769, the Mohegan Sachemship and its political structure was effectively outlawed by the Connecticut Colony as a result of the failure of the tribe to support a colony-endorsed sachem (Fawcett 1995:17-18). Such tribal rifts were perpetuated as a result of excessive land sales by English-backed sachems (Simmons 1986:32). Ironically, many Mohegans and Pequots served on the side of the English in the French and Indian War of the 1750s, as well as the Revolutionary War in the late 1770s and others to follow.

In 1725, much of the land of Norwich, at that time including the territory of Lisbon and Sprague (then a part of Lisbon), was assigned in a redundant and reaffirming deed to a group of Euroamerican settlers that included Captain Jabey Perkins, Samuel Bishop, Joseph Perkins, John Saffen, and others from Norwich with the provision that local aboriginal inhabitants be able to continue to utilize the land (Bishop 1903:13; Fitch and Kanahan 1976:2; LBC 1986:2). The first bridge in Lisbon (Lathrop's Bridge) was constructed seven years earlier, located at the confluence of the Shetucket and Quinebaug Rivers (Fitch and Kanahan 1976:44; LBC 1986:21), and allowed for the formation of the first Lisbon settlement, the "Norwich Northeast Society", which was later renamed "Newent" (Bishop 1903:9-11; Fitch and Kanahan 1976:2-4; LBC 1986:3), and located about two miles southeast of the project area. Hanover was the early village of what is now Sprague, located about one-half mile to the west of the project area, and originally part of Newent as the 3rd ecclesiastical society of Norwich established in 1723 (SCC 1961; Delaney 1986:4,53; Delaney 1997:1). This followed the 2nd ecclesiastical society, known as "West Farms," that was established in 1718 and included what is now Franklin to the west and the village of Baltic to the south (Delaney 1986:4; Delaney 1997:1). Settlers from Norwich were motivated to settle Lisbon territory based on population pressures in more developed areas of the region (Fitch and Kanahan 1976:10).

The area church in Norwich remained the main focus of religious and civic activity for the broader region until 1722 when Newent's own Congregational Church was built (Bishop 1903:12,31; Fitch and Kanahan 1976:2,4; LBC 1986:3,5). The town's first school was established in 1736, with seven official districts by 1764 and the first schoolhouse built in Newent center by 1777 (Fitch and Kanahan 1976:13; LBC 1986:10). By 1745, the sale of aboriginal lands was complete, forcing aboriginal adaptations to end and remaining native populations to assimilate into Euroamerican practices including sedentary agriculture (Bishop 1903:13,17-18; Fitch and Kanahan 1976:2; LBC 1986:2). A Separatist movement was initiated during the "Great Awakening" of the 1740s, leading to the construction of its own church in 1750 (Bishop 1903:16; Fitch and Kanahan 1976:5; LBC 1986:4).

Lisbon remained a self-subsistence farming community throughout the 18th Century, with a focus on pork, beef, corn, and other grain, and some products shipped to Maine in exchange for timber as local forests were quickly reduced (Bishop 1903:39; Fitch and Kanahan 1976:6; LBC 1986:5). Anadromous fish procured from larger rivers included salmon and shad, while orchard trees (e.g. apple) provided a supplement to the broader agricultural base (Bishop 1903:39; LBC 1986:8). Other cottage or small industrial concerns included grist, saw, paper, and woolen mills, a tannery, and jewelry makers (Fitch and Kanahan 1976:11).

In 1761, the northwest part of Newent, or Hanover was offset by 14 families (Bishop 1903:14,18-19,35-38; SCC 1961; Fitch and Kanahan 1976:10; LBC 1986:9-10) as the 7th Society (Delaney 1986:4; Delaney 1997:2), and a separate meeting house for Hanover was built by 1766 (Fitch 1973; Delaney 1997:3). A weekly stagecoach was running between Norwich and Providence through Lisbon by 1768 (Bishop 1903:41; Fitch and Kanahan 1976:21). Early inns of the area included Captain Burnham's old tavern on Route 169, as well as the Colonel Ebeneezer Tracy Inn built in 1740 (later the Geist home), located on Route 12 in a section that would be later converted into the Connecticut Turnpike resulting in the removal of the structure to Meriden (Fitch and Kanahan 1976:21-22; LBC 1986:13). A census from 1774 showed that Hanover had a population of 323 people, with 53 families and 44 dwellings (Delaney 1997:3).

While Lisbon was spared any direct conflicts during the Revolutionary War, the town contributed men to the war effort, as well as supplies and funds to support the troops (Bishop 1903:9,20; LBC 1986:14-15). The town also witnessed a number of campaign marches through the area. The density of agricultural settlements in Lisbon grew to the point that a town pound had to be created in 1787 in order to tend to loose livestock (Fitch and Kanahan 1976:22-23). Lisbon was incorporated in 1786 (including both Newent and Hanover), receiving its name as a result of the Perkins family trade with Portugal (Bishop 1903:9,21,39; Fitch and Kanahan 1976:10; LBC 1986:6; Delaney 1997:3). Populations spread throughout Lisbon and Sprague by the end of the 18th Century (Fitch and Kanahan 1976:48; LBC 1986:23).

The Perkins family owned much of the project area property during the 18th Century. 18th Century houses in the area belonging to the Perkins family include the Saltbox colonial built in 1720 at 85 Potash Hill Road just west of the project area, and the late 18th Century farmhouse with two central chimneys to the south of the project area on Potash Hill Road (Delaney 1997). Joshua Perkins was a well known and distinguished resident of the Hanover section of what was then Lisbon, served as Selectman of Lisbon in 1786/87 (Delaney 1997:4), and was elected as State Representative for Lisbon in 1790 (Delaney 1986:40).

19th Century

By the early 19th Century, the large land holdings of the Perkins family was being subdivided and sold to other families (Table 3). The Bishop family occupied the house at 111 Potash Hill Road on the project property, and at some point owned the farm to the west at 57 Potash Hill Road that was occupied by the Adams family according to historic maps (Figures 11 and 12) and land records. Recall that the homestead of the Adams family farm was built in 1720 by the Perkins family, which still owned houses and land to the south and to the east along Westminister Road and the current Lisbon town boundary. Land records suggest the land was used as a combination of wood lots and pasture lots, as they are today.

The Norwich & Worcester Railroad Company was organized in 1832 (Fitch and Kanahan 1976:41). A railroad bridge spanning the Shetucket was built in 1836 at the site of the town's first bridge (Fitch and Kanahan 1976:44; LBC 1986:21), and would also have to be rebuilt several times subsequently. By 1837, a 300-foot tunnel had been excavated in Lisbon along the Quinebaug several miles to the south of the project area, representing the nation's first railroad tunnel (Fitch and Kanahan 1976:41; LBC 1986:14,25). The railroad was finally completed through Lisbon in 1840 (LBC 1986:14,26). Another line, the Hartford, Providence & Fishkill Railroad, would later be placed through southern Sprague and central Lisbon from west to east by 1854 (Beers 1868; SCC 1961; Delaney 1986:6,17; Delaney 1997:6).

The Blissville Mill was built on what is now lower Blissville Road below the dam in 1848, and was used in the production of dyed silks and yarns (Fitch and Kanahan 1976:46-47; LBC 1986:22). Small manufacturers located on the Quinebaug and Shetucket Rivers included those manufacturing paper and textile products, with many located in Baltic Village of what would become the town of Sprague (Bishop 1903:42-43; SCC 1961). Much of the village of Baltic (also known as Lord's Bridge) was built in a very short period of time by mill magnate William Sprague III, who had also served as Governor of Rhode Island and President of the Hartford, Providence & Fishkill Railroad (SCC 1961; Roth et al. 1986; Delaney 1997:6-7). The mill village included not only the mill facility, but worker housing, a school, and a church (SCC 1961; Roth et al. 1986). The growth of industry and commerce in the broader area led to the establishment of the Jewett City Savings Bank in 1873 (LBC 1986:10). Hanover also had a substantial milling facility established by Ethan Allen in the Little River drainage, with another

Figure 11: Historic Sites of the Area (1854 Map)

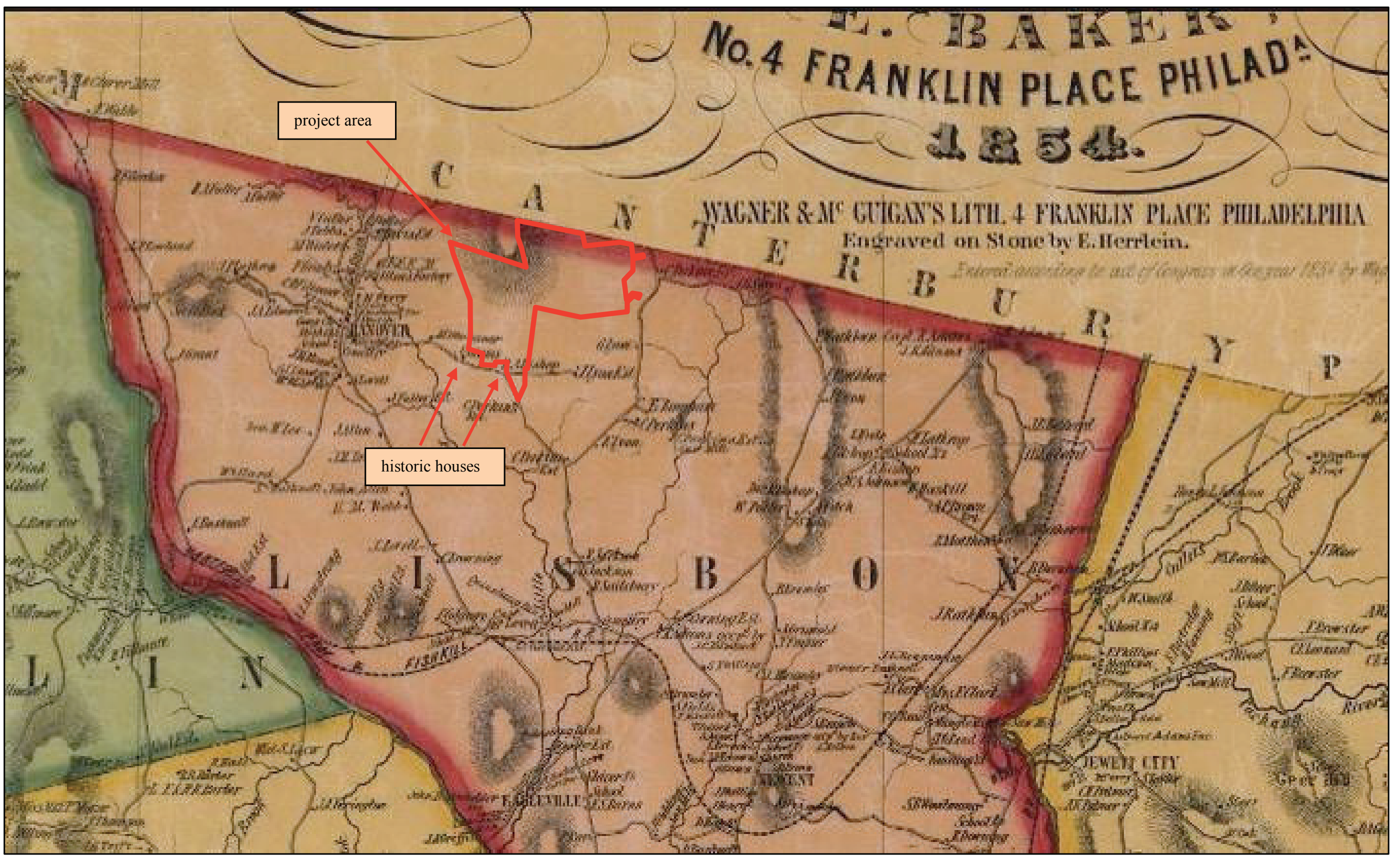


Figure 11: From Walling 1854.

Figure 12: Historic Sites of the Area (1868 Map)

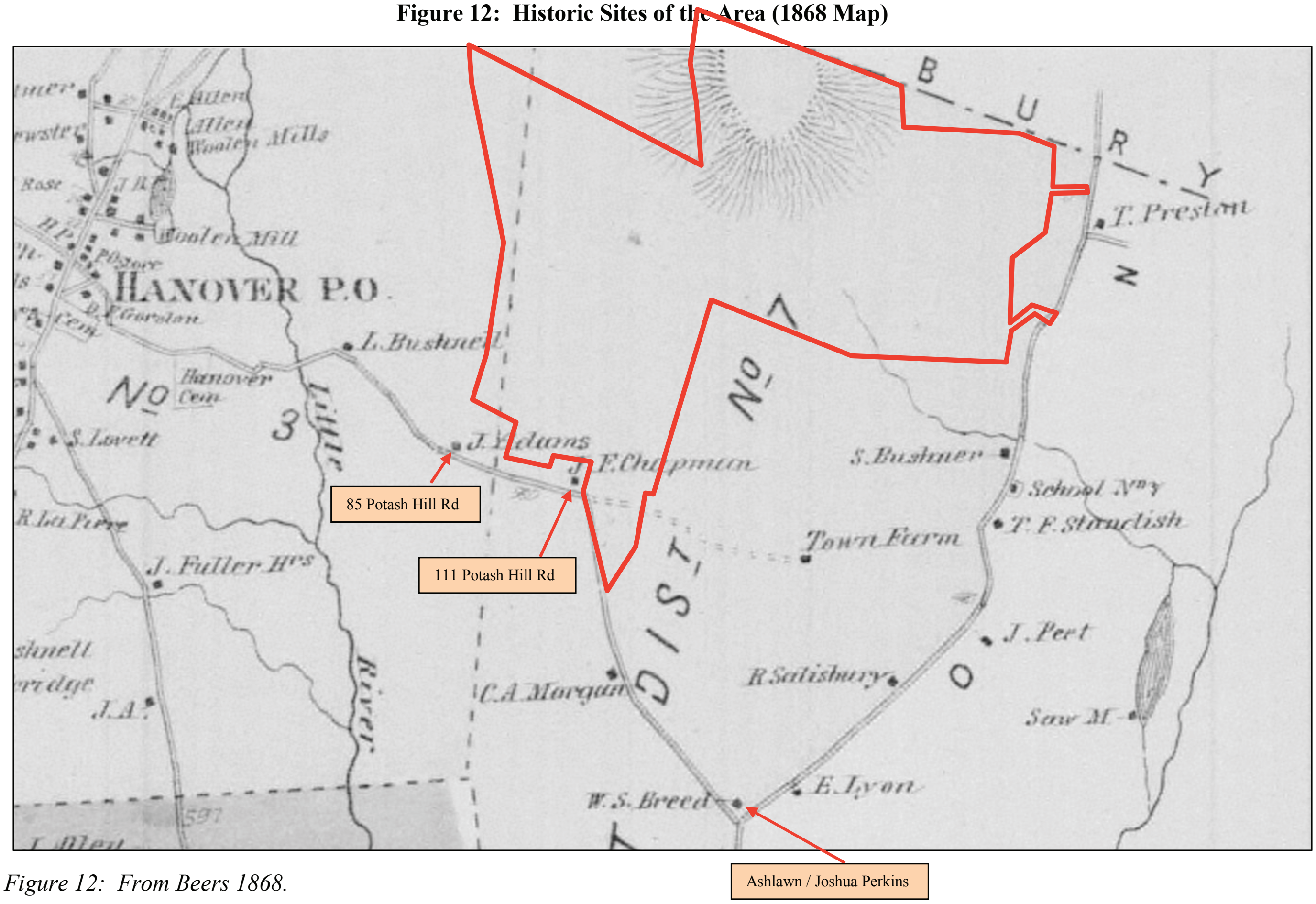


Figure 12: From Beers 1868.

Table 3: Principal Transfers of Property Title

Rainville Lot: 111 Potash Hill Road, Map 21, Block 2, Lot 2; 83.4 acres

Sprague Land Records

1984	Vol. 25, pg. 323	Elizabeth Babbitt to Allen G. and Charlotte Rainville, 150 acres with buildings (right-of-way lane east to "Fox Place")
1925	Vol. I, pg. 326	Edgar B. Mulford to William E. Babbitt
1907	Vol. G, pg. 72	William S. Lee to Edgar B. Mulford
1905	Vol. G, pg. 29	Charles K. Chapman to William S. Lee
1898	Vol. E, pg. 153	Josiah F. Chapman (estate) to Charles K. Chapman ("Home Farm" or "Adams Farm")
1865	Vol. A, pg. 302	N.P. Bishop to J. Fuller Chapman, 150 acres

Lisbon Land Records

1856	Vol. 7, pg. 452	R.A. Bishop to N.P. Bishop, 147 acres with buildings (farm improved by R.A. Bishop for prior 10 years)
1852	Vol. 6, pg. 601	Lucy Bishop et al. (quit claim) to Roger A. Bishop (Bazellan Bishop estate)
1829	Vol. 4, pg. 170	Joshua and Wealthy Bishop to Bazellan (son) (land transferred in various parcels from Mary Bishop in late 18th to early 19th centuries)

Houle Lot: 57 Potash Hill Road, Map 16, Block 6, Lot 18; 142.3 acres (eastern section only)

Sprague Land Records

1991	Vol. 43, pg. 270	Beatrice Czikowsky to Estelle B. Houle and Gale Boardman, 145 acres
1961	Vol. 18, pg. 521	Mark Lubchen (estate) to Adolph and Beatrice Czikowsky, 145 acres with buildings
1933	Vol. 11, pg. 309	Eva Lubchen (quit claim) to Mark Lubchen
1920	Vol. G, pg. 408	Arthur and Martha R. Lucy to Mark Lubchen et al.
1912	Vol. G, pg. 145	Frank A. Minard to Arthur and Martha R. Lucy, 145 acres
1909	Vol. E, pg. 472	James A.F. and Elizabeth D. Fellows to Frank A. Minard, farm of 145 acres with bldgs.
1908	Vol. E, pg. 438	John Adams to James A.F. and Elizabeth D. Fellows, farm of 145 acres with buildings
1881	Vol. C, pg. 216	Mary Bardsley to John Adams
1875	Vol. C, pg. 103	John H. Atwood to Mary Bardsley, 145 acres with buildings
1874	Vol. C, pg. 64	Clancy C.K. Bushnell to John H. Atwood

Lisbon Land Records

1857	Vol. 7, pg. 474	Martin Obinaur to Clancy C.K. Bushnell, 160 acres
1854	Vol. 7, pg. 183	Nathan P. Bishop to Martin Obinaur, 145 acres with pasture and wood lots (stone walls flanking Adams and Perkins lots)

Nadeau Lot: Westminister Road, Map 22, Block 1, Lot 10; 193.6 acres

2005	Vol. 75, pg. 378	Norwich Historic Preservation Trust to Lawrence Nadeau Construction Company (bankruptcy)
2003	Vol. 67, pg. 193	St. Germain Group, LLC (quit claim) to Norwich Historic Preservation Trust, 213 acres
1970	Survey map indicates property of Phillip Blaustein to be conveyed to William Hernstadt	
1949	Vol. 19, pg. 408	Abbie G. Wade to Philip and Issie Blaustein (2 tracts: 1st tract 200 ac, 2nd tract 100 ac)

Table 3: Principal Transfers of Property Title, continued

Nadeau Lot: Westminister Road, Map 22, Block 1, Lot 10; 193.6 acres

1st Tract (Sprague Land Records)

	Vol. D, pg. 503	James Wade to Abbie Wade, 300 acres
1909	Vol. H, pg. 66	Ira C. Wheeler (mortgage) to James Wade, 300 acres
1901	Vol. D, pg. 447	Jewett City Savings Bank (foreclosure) to Ira C. Wheeler, Stone Barn Farm, 400 acres
1900	Vol. D, pg. 441	John D. Sullivan (foreclosure) to Jewett City Savings Bank

1st Tract (Lisbon Land Records)

1882	Vol. 6, pg. 202	George S. Sullivan to John D. Sullivan, 400 acres with dwelling and other buildings (land in 3 towns, probably from Perkins family)

2nd Tract (Sprague Land Records)

1947	Vol. 13, pg. 471	James Wade (quit claim) to Abbie G. Wade, part of "Stone Barn Farm"
1928	Vol. 10, pg. 146	Giovani Tambornini to James Wade
1925	Vol. 10, pg. 56	William Chenette to Giovani Tambornini
1913	Vol. G, pg. 292	Charles H. Phillips to Edward Proul and William Chenette
1907	Vol. G, pg. 66	Frank A. Rockwood to Charles H. Phillips
1899	Vol. D, pg. 299	Charles A. Brown et al. to Frank A. Rockwood

2nd Tract (Lisbon Land Records)

1861	Vol. 8, pg. 322	Betsey Perkins to Charles A. Brown, Stone Barn Farm, 300 acres (formerly owned by Charles Perkins who accumulates many parcels in early 19th Century)

prominent woolen mill at Versailles further down the same drainage system (SCC 1961). A major cattle disease in 1860 affected many of the livestock holdings of the area (Fitch and Kanahan 1976:23).

The population of Lisbon (including Sprague) grew in numbers and diversity during the 19th Century. Irish immigrants helped to construct many of the area's railroad lines during the middle of the century (SCC 1961; LBC 1986:14), and French Canadians came to work at the Versailles Woolen Mill (Roth et al. 1986; Delaney 1997:9). In 1861, Hanover and surrounding territory was once again offset from Lisbon, becoming the town of Sprague along with parts of Franklin (Bishop 1903:38; Delaney 1986:5; Delaney 1997:8). By 1874, there were 50 businesses operating in Sprague (Delaney 1997:13). During the 1880s, many more immigrants from Germany and neighboring European countries were brought in to help construct local mills (Fitch and Kanahan 1976:38; LBC 1986:18). Growth in population diversity was matched by a diversity of Christian denominations (Fitch and Kanahan 1976:48).

Ice was being cut from local impounded waters by the 1890s and transported to local market centers (Fitch and Kanahan 1976:37), and the J.B. Martin Company was manufacturing velvet in the area by 1899 (LBC 1986:18). Numerous social organizations were emerging in Lisbon and Sprague by the end of the century (Fitch and Kanahan 1976; LBC 1986). The numerous agriculturally oriented social organizations are indicative of the degree to which the area remained agrarian throughout the 19th Century.

The project area remained agricultural or wooded for the entire 19th Century, and much of it was owned by the Perkins family. The land directly to the south of the project area at Ashlawn was 400 acres at the time, and was cultivated for crops until 1862 when purchased by the Breed family which turned the property into a dairy farm (Zimmerman 1978). The same trend in agriculture was seen for much of the region, and it is likely that this took place at the project property as well - particularly for the open Rainville lot. Historic maps (see Figures 11 and 12) and land records (see Table 3) indicate the central lot at 111 Potash Hill Road, known as the "Home Farm" in land records, was owned by the Roger and Nathan Bishop and then J. Chapman families during the 19th Century, with the Adams family continuing to own the "Adams Farm" and its wooded and pasture lots to the west and north through the end of the 19th Century. Land records of the Adams Farm indicate dwellings and/or other buildings, likely located on parcels now to the west along Potash Hill Road. The mid-19th Century land record transferring title of the Rainville lot from Roger Bishop to Nathan Bishop indicates 10 years of improvements to the property that may have included structural renovations, and thus may be the source of the 1860 construction date in Sprague tax assessor records for the late 18th Century house. Lots to the north and east on both sides of what is now Westminister Road were owned predominantly by the George Sullivan family during the late 19th Century, with the road extending east from Westminister Road into Lisbon currently named after his family. The current Nadeau lot is on the west side of the road, while the larger farmstead was known as the "Stone Barn Farm" in land records. The land just east of the Rainville lot at 111 Potash Hill Road is depicted on a late 19th Century map as being a town farm, formerly owned by the Lyon family that owned a house and more land to the north on the west side of Westminister Road, directly south of the current Nadeau lot. W.S. Breed owned the Ashlawn property of the Perkins family to the south at the intersection of Westminister and Potash Hill Roads at the end of the century.

20th Century+

The project property continued to be a mix of wooded and pasture lots into the early 20th Century (Figure 13). The Rainville lot was owned by a number of parties during the 20th Century, but mostly by the Babbitt family after whom the existing house is known (see Table 3). More frequent turnovers or transfers in property title occurred for the other parts of the project property, possibly reflecting the increased difficulty of profiting from farm land during the 20th Century.

While the project property and much of the town of Sprague remained largely agricultural in the early 20th Century, the village of Baltic was incorporating utilities such as electricity and water lines to fire hydrants at the turn of the century, and a trolley line was also built at this time (Delaney 1997:16-17). Since the prior century, periodic fires plagued the mill village, although larger buildings and more substantial worker housing followed in the early 20th Century, while on a smaller scale, ice was harvested from local ponds in more rural settings of Sprague (SCC 1961; Roth et al. 1986; Delaney 1997:16-22). In 1911, a town hall was built, reflecting a culmination of development associated with the growing milling industry (SCC 1961; Roth et al. 1986).

By World War II, the milling village of Baltic was still producing textile products, including khaki cloth for the army; cotton cloth for military gear such as barrage balloons (i.e.

Figure 13: Historic Sites of the Area (1934)

Figure 13: From Fairchild 1934: 01873.

blimps), flotation gear, parachute flares, and special uniform equipment; and surgical dressings (Delaney 1997:23). Paper also continued to be manufactured in Baltic, with a consolidation of paper milling operations at this time (Delaney 1997:24). Mill operations in Baltic declined after the war - in 1966 the town purchased the old Grist Mill site on Main Street that now houses the public library and historical society, and the Baltic Mills Company closed their mills and ceased operations in 1967 (Delaney 1997:28).

The latter half of the 20th Century witnessed the formation of many social organizations and clubs, including little league baseball and the historical society in 1968 (Delaney 1997:28-29). Major infrastructure improvements for the town include the development of a sewer system in 1970 that serviced the villages of Hanover and Baltic (Delaney 1997:30). Over the last several decades, improvements and renovations in the village of Baltic have been devoted to an increase in retail business rather than manufacturing, and the town has most recently suffered the closing of a major paper company.

The late 20th Century witnessed a suburbanization and expansion of population typical for small towns in the area (Delaney 1986). The Connecticut Turnpike (now Interstate 395) was built just south of Sprague in 1956 (Fitch and Kanahan 1976: 22). Farming was declining as a principal economic focus of Sprague after World War II, although the project area continued to be used as a mix of pastured lots and timbered woodlands. The Rainvilles bought their lot from the Babbitts in 1984, and at that time there was still a right-of-way in land records referring to the former road that ran east through the lot from Potash Hill Road to the former town farm. Mr. Allen Rainville, Sr. indicated that he had filled in and buried a stone wall that used to line the unpaved road there. Estelle Houle and Gale Boardman purchased their lot in 1991, with the portion in the current project property remaining wooded. The Lawrence Nadeau Construction Company acquired its parcel in 2005, resulting from a bankruptcy of the Norwich Historic Preservation Trust.

Local Sites and Surveys

There have been few historic archaeological sites reported within several miles of the project area. A professional archaeological survey was conducted for a large subdivision project about two miles to the southeast of the project area on Route 169 in Lisbon where 18th to 20th Century artifacts were found in scattered contexts near an existing 19th Century home and outbuilding foundation (McBride 1988). Recovered artifacts include amethyst-tinted bottle glass, charcoal, brick fragments, window glass, and fragments of a variety of household ceramics including whiteware, redware, stoneware, creamware, and pearlware.

The Elderkin Baltic Mill Site (133-5) is located in the village of Baltic a couple of miles southwest of the project area , consisting of an 18th to 19th Century mill site represented by stone foundations and representing the first industrial mill built in Sprague in 1763 (SCC 1961; Delaney 1997:2). An archaeological survey of the Versailles Woolen Mill site was conducted about two miles south of the project area on the Little River where the remains of a mill complex include a crescent-shaped dam, headrace, and tailrace that remain after the removal of mill structures in the 1980s (CAS 1989). The remains of two less well documented sites are located on a small stream and tributary of the Little River about one-half mile to the southeast of the project area (CT SHPO 2014).

Some of the archaeological sites in northern New London County consist of poorly documented burial grounds, including some that could contain Native American burials. The Old Lovett-Perkins Cemetery site was reported on the south side of Papermill Pond about a mile to the south of the project area, where 13+ graves were formerly represented by grave stones found scattered in a field during the WPA survey of Connecticut cemeteries (Hale 1934).

Located less than two miles south-southeast of the project area, the Kinsman Road Extension bridge is the best documented structure recorded on the state's historic bridge inventory in the area (Roth and Clouette 1990). It was built around 1850, and was built from stone as an arch tunnel only about 14 feet in length for a railroad line belonging to the Hartford, Providence, and Fishkill Railroad. It is significant as one of the region's earliest surviving railroad related structures.

A couple of historic houses in the immediate vicinity of the project area have been recorded in local historic and architectural resource surveys sponsored by the Connecticut Historical Commission. Located on the project property at 111 Potash Hill Road, the William Babbitt House is a two-chimney frame farmhouse, set on a stone foundation but now bearing aluminum siding with a large single story ell at the rear of the structure (Rosanno 2002). Historic sources indicate the structure was built in 1790 (Delaney 1986:51). The house at 85 Potash Hill Road is an earlier Saltbox style home, originally built by the Perkins family, with a large central chimney and many other original features that make it eligible for the National Register of Historic Places (NRHP) (Rosanno 2002). The house was later occupied by the Button family, and is cited as having been built in 1720 (Delaney 1986:51; Delaney 1997:4). More historic homes lie within a mile to the west of the project area in the village of Hanover, which is potentially eligible for the NRHP as a district given their concentration and integrity (Rosanno 2002). At 30 Westminster Road to the southeast of the project area, an early to mid 18th Century cape style home resides on the Lisbon border, bearing a central chimney and single story shed-roofed extension at the rear of the house (Rosanno 2001).

There is a low density of individual properties listed with the NRHP in the area. The closest is located just a quarter mile to the south of the project area at the intersection of Potash Hill Road and Westminister Road (Zimmerman 1978). The Joshua Perkins House, also known as Ashlawn, is a late 18th Century central-hall frame farmhouse. The Georgian style home features broken-base pediments at both the front door and at the second-story roof line, as well as two central chimneys. The house was later occupied by the Breed family. Like the house at 111 Potash Hill on the project property, this structure is cited as having been built in 1790 (Delaney 1986:51; Delaney 1997:4). Ashlawn had the dubious distinction of having had a "dungeon" and whipping posts related to slave ownership at the property, but was later distinguished as a station in the underground railroad of the Civil War era (SCC 1961).

At about one mile west of the project area, the William Park House is also registered with the NRHP (Cunningham 2006). The house was built in 1913 in the Craftsman and Four Square styles. The Parks were prominent mill operators in the area, and the house provides a good example of the Arts and Crafts Movement in American domestic architecture in the early 20th Century.

The John Palmer House lies a couple of miles east of the project area (Cunningham 2004). The structure dates to 1790 when the center-chimney cape style home was built. Palmer was a well known Separatist leader from the time of the Great Awakening in the 1740s until his death at the end of the 18th Century. The house represents a well preserved example of the cape style home.

The Edward Waldo House is located several miles northwest of the project area on Waldo Road (Brown 1977). The structure is a vernacular farmhouse dating to about 1715, featuring a central chimney and additions attached to a saltbox-shaped main section. Waldo family members who occupied the house include Samuel Lovett Waldo who was a portraitist and founder of the National Academy of Design, and Daniel Waldo who was a chaplain for Congress before the Civil War.

The Baltic Historic District a couple of miles southwest of the project area is the nearest district formally nominated for the NRHP (Roth et al. 1986). This district includes a substantial number of 19th Century industrial buildings related to the textile industry of the region. There are over 200 contributing structures, which include a number of related worker's housing, commercial buildings, civic buildings, and other structures. Many date to the mid-19th Century when the Sprague family of Cranston, Rhode Island essentially created the entire village to support their industrial concerns, and the district is significant in its retention of integrity and relatively low proportion of non-contributing structures.

Summary

Sprague was part of the upper reaches of Mohegan territory along the Shetucket and Quinnebaug drainages during the Contact period. First granted to Euroamericans by deed in 1659, territory of the greater Norwich area was steadily acquired by various settlers through reaffirming deeds of Native Americans whose populations, tribal territory, and ability to engage in aboriginal lifeways dwindled into the 18th Century. The Perkins family of Hanover village owned much land in the vicinity of the project area early in the 18th Century, and built the Saltbox colonial house immediately to the west in 1720. The farmhouse with two central chimneys was built later in the 18th Century on the project property, and a similar house built by the Perkins family is located about one-quarter mile to the south of the project property and is listed with the National Register of Historic Places. While milling operations became considerable in other parts of town, the project property appears to have remained a combination of wooded and pastured lots, although there were likely some cultivated lots in the 18th Century. Open lots on the land are still used for harvesting hay, and wooded lots still used for timbering. The land is now proposed to be used for a solar farm.

CHAPTER 3: METHODOLOGY

Research Methodology

Background

Establishing background information is critical in constructing a research design that is problem oriented. Here the problem is assessment of cultural resources, including traces of both prehistoric and historic activity. Background information provides an understanding as to which parts of a survey area are likely to be culturally sensitive. It may also dictate the nature of the excavation and distribution or density of testing. Finally, all data must be related to an historic and ecological context if they are to provide meaningful information.

The background research in this study is basically aligned along the sections already covered. Primary environmental information was procured from USGS quadrangle 7.5' series topographic and bedrock geology maps; CGNHS bedrock geology, surficial materials, and drainage basin maps of Connecticut; the USDA SCS soil book for New London County and the NRCS website for soils (*http://websoilsurvey.nrcs.usda.gov/app*); preliminary site plans; and various bulletins published by the Connecticut State Geological and Natural History Survey. Secondary sources such as general texts and various guides useful for interpreting what plant and animal life is and may have been relevant to the cultural use of the area were also consulted.

Establishing the present and any past environmental information for an area is critical as cultural behavior is highly integrated with and founded upon resource procurement, while resources are in turn highly integrated with the conditions of the environment (Jochim 1979; Butzer 1982). This relationship is especially greater as one considers earlier groups of people whose technological and social networks may not have provided for the mesh of buffers intervening between humans and the environment that is evident in today's modern industrial settings. Once the past and/or present environmental conditions for a project area have been assessed, they can be related to what is known about land-use as indicated by other sites and surveys in the region for predicting archaeological sensitivity across space (Kohler and Parker 1986; Kvamme 1990; Walwer and Pagoulatos 1990; Walwer 1996).

Several types of sources are critical for gathering background cultural information. Prehistoric cultural data must be procured via past archaeological surveys and excavations. These studies often rely upon rational application, ethnographic analogy, or less frequently, ethnohistoric, experimental, and folklore studies to provide behavioral interpretations of data derived from the archaeological record. Nevertheless, an abundance of independent sources for a region may provide fruitful information in relation to prehistoric cultural behavior. Sources consulted in this study include information from books on Native Americans in the northeast, articles from publications such as the *Bulletin of the Archaeological Society of Connecticut* and *Man in the Northeast* (*Northeast Anthropology*), existing archaeological surveys of the area, and Connecticut State Historic Preservation Office (CT SHPO) site files which give valuable summary information for individual sites in the region. Professional and avocational archaeologists as well as landowners, municipal historians, and project engineers are typically consulted as to knowledge of significant remains in the project area or surrounding region.

For the historic component of the background research, there are records which can be consulted. For this study, primary documents such as historic maps and land records were reviewed, as were secondary documents in the form of local histories and registers of historic places. As with prehistoric background research, local informants, historians, and project officials can also be important sources of historic cultural resource information. The combined research of these types of sources helps to indicate the potential sensitivity for historic cultural remains within a project setting.

Various institutions were approached for information concerning the environmental and cultural background of the area. The State Historic Preservation Office (SHPO) in Hartford yielded the information on past archaeological and historic architecture surveys in the area, as well as site files which yield detailed information about individual prehistoric and historic sites of the region. The Town Hall of Sprague has land records for the project property and town dating back to the mid-19th Century, and the Town of Hall of Lisbon was consulted for earlier land records. Libraries consulted for environmental and cultural history sources include the Sprague Public Library and various libraries at Yale University in New Haven, such as Sterling Memorial, Kline Science, Henry S. Graves Forestry, Geology, Mudd, and Cross Campus. Informants include land owners, especially Mr. Alan Rainville, Sr. and Mr. Alan Rainville, Jr., project engineers, and members of the Sprague Historical Society.

Methodology and Analysis

Research for methodology is based on a combination of past experience and formal training. Part of the formal training for the directors of ACS includes lectures and text books which cover methodological issues such as research design and excavation. Research for analysis of the archaeological record is also based upon formal training and published identification guide books. With respect to artifacts, analysis is segmented according to time (prehistoric and historic), and material types (i.e. wooden, metal, lithic, ceramic, etc.), while structures and features are analyzed by comparing case studies. Coordinating the information into a summary and meaningful form is based on knowledge gleaned from both theoretical and practical lectures, articles, and texts.

Field Methodology

Testing Design

In the face of temporal and monetary constraints when considering cultural resource management, sampling design is critical. In this process, a portion or sample of the entire sample frame or population of sample units is selected which will ideally represent the nature of what is to be described (Binford 1964; Ragir 1967; Thomas 1986). A sample strategy that employs the whim of the investigator to position subsurface testing has been shown to be subject to severe biases and results in invalid statements when statistically extrapolating sample data to a whole area or site. Judgmental testing, however, can be fruitful in cases where something is known about the history of a project area, or if prior work has yielded results which require further clarification. Random sampling achieves validity, but may result in large areas remaining untested despite an adequate sample fraction. Where certain portions of an area to be tested have been statistically shown to be more sensitive or prone to the incorporation of cultural material, it may be appropriate to stratify or partition an area into sections which receive differential proportions of testing. For the current survey, ACS utilized a highly stratified systematic subsurface testing strategy that focussed on areas of moderate to high sensitivity for bearing either prehistoric or historic cultural resources, while eliminating the least sensitive areas and those areas that would remain undeveloped (Figure 14).

A statistical model has been developed and tested by ACS for prehistoric sites in Connecticut (Walwer 1996), and was used to assess the sensitivity of the project area with respect to the potential to contain sites. Qualitatively, the most sensitive areas tend to be those on nearly level, well drained soils overlying glacial meltwater features and alluvial terraces in close proximity to major waterways. Project areas are typically partitioned according to areas scoring between 0 and 100 in increments of 10, with a score of more than 20 representing a moderate to high likelihood of containing prehistoric sites. In this case, the entire project property scored less than 20.0 out of a possible 100, and therefore within the low sensitivity range (0-20). The highest prehistoric sensitivity scores were attained in the current and previous cleared fields closest to the mapped streams on the property, at a high of 13.3. In rockier wooded contexts and further from water, typical scores were as low as 5.6 out of a possible 100. The low scores in general can be attributed to rocky soil contexts and minor drainage setting. There were no previously recorded prehistoric sites on or in the immediate vicinity of the project area, with the closest sites located about a mile away to the west and south on more substantial ponds and streams.

Given the variable distribution of prehistoric sensitivity scores across the project property by soil type and distance to water, blocks of systematic tests were loaded in the open fields of the Rainville and Nadeau lots in standard 50-foot intervals from selected datum points. The southeast corner of the Rainville house was used as datum for the open field, and the south face of the house was used as a zero bearing for the grid. The four fields of the Nadeau lot in the northeast corner of the project area were assigned Block letters A through D, with datums selected at stone wall intersections and zero bearings along the east-west access path. There were 247 tests plotted and excavated for the Rainville lot, and 152 tests excavated in the Nadeau fields. Eight (8) more judgmental tests were placed in the Rainville lot at 25-foot intervals to test two areas where standard systematic tests revealed possible prehistoric quartz or quartzite flakes. There were also two areas near the Houle / Nadeau lot boundary and an intervening stream that were selected for systematic testing in the rockier soil units given their relative gentle slopes in close proximity to vernal pools, labelled as Block P (30 tests) for the one in the Houle lot, and Block S (28 tests) for the area in the western part of the Nadeau lot. Here again, stone wall alignments were used as datum points and zero bearings for the test grids. No additional tests were set exclusively for historic cultural resources other than 12 systematic tests (Block 20C) set on the east side of a wooded path to the north of the Rainville open fields where some 20th Century dumped materials were observed during the assessment survey. There was a total of 477 total shovel tests excavated for the Phase Ib reconnaissance survey (Figure 15).

Background research revealed a higher sensitivity for historic cultural resources over potential prehistoric cultural resources due to the historic occupations on Potash Hill Road -

Figure 14: Cultural Resource and Testing Map

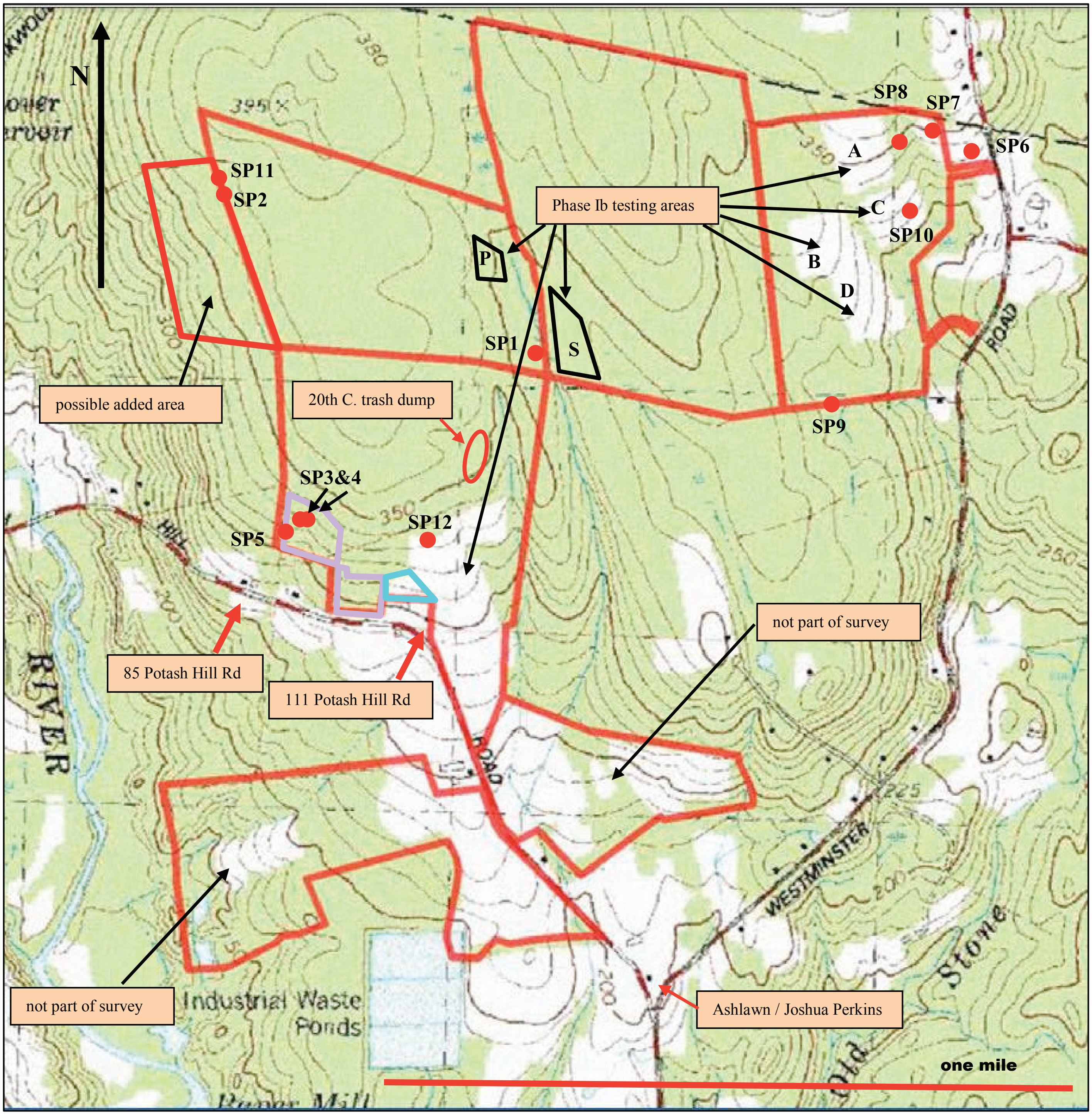


Figure 14:

Blocks of test areas shows (A, B, C, D, P, S, 20C).
Red scale bar 1000' (ca. 1000' between 85 Potash Hill Road and 111 Potash Hill Road).
Purple areas to remain wooded and undeveloped; blue open area to remain undeveloped.
2 southern lots outlined in red have been abandoned as current project areas.
There should be 500' or more of woods between 85 Potash Hill Road and any visual impact.
Solar panels will be between 6 and 10 feet high - no higher developments.
8' chain link fence will surround development.
Stone pile locations (SP#) represented by red dots.

Figure 15a: Subsurface Testing Pattern – Rainville Lot

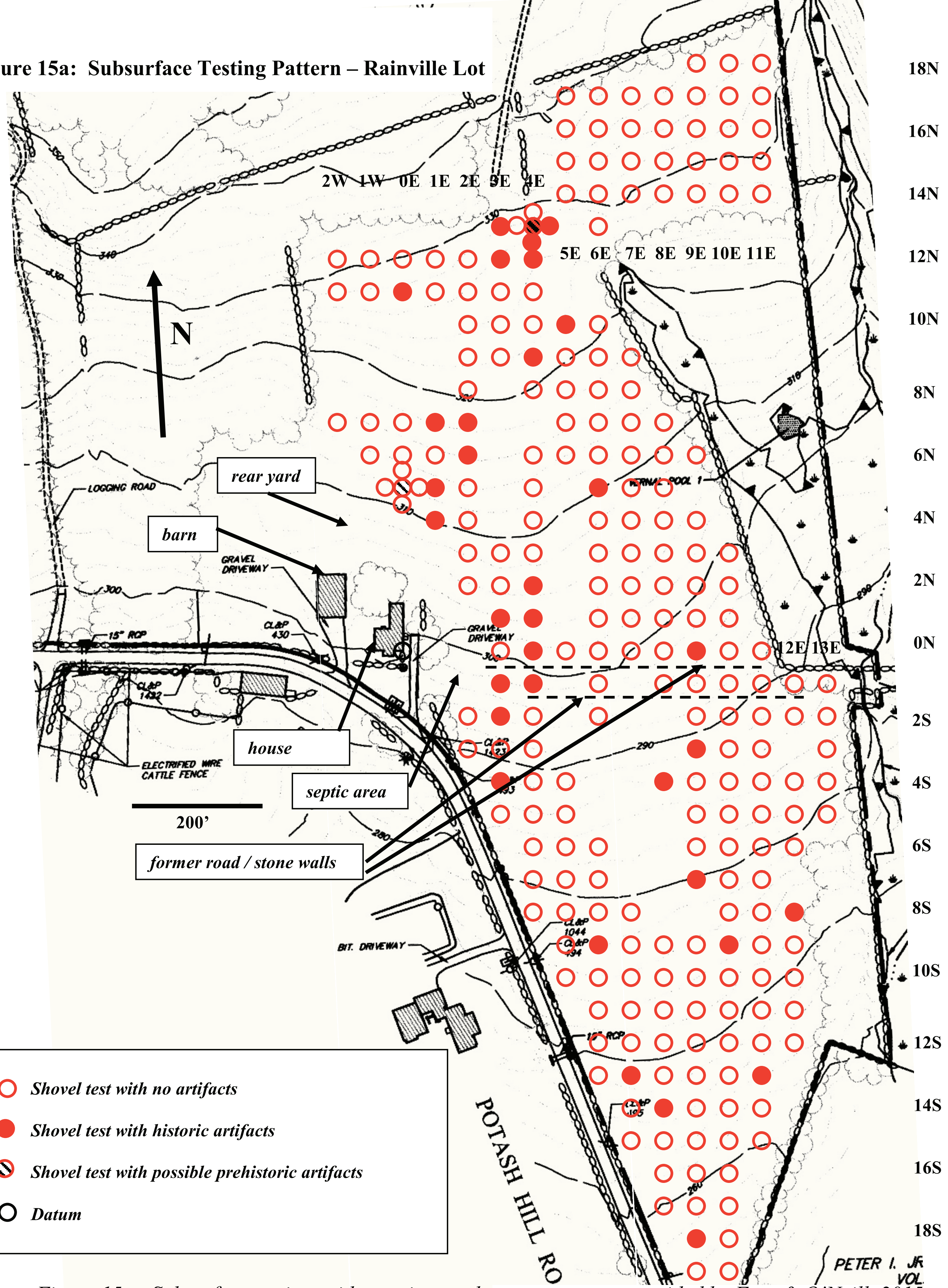


Figure 15a: Subsurface testing grid superimposed on survey maps provided by Fuss & O’Neill, 2015. Systematic subsurface tests placed at standard 50-foot intervals. One inch = 200’.

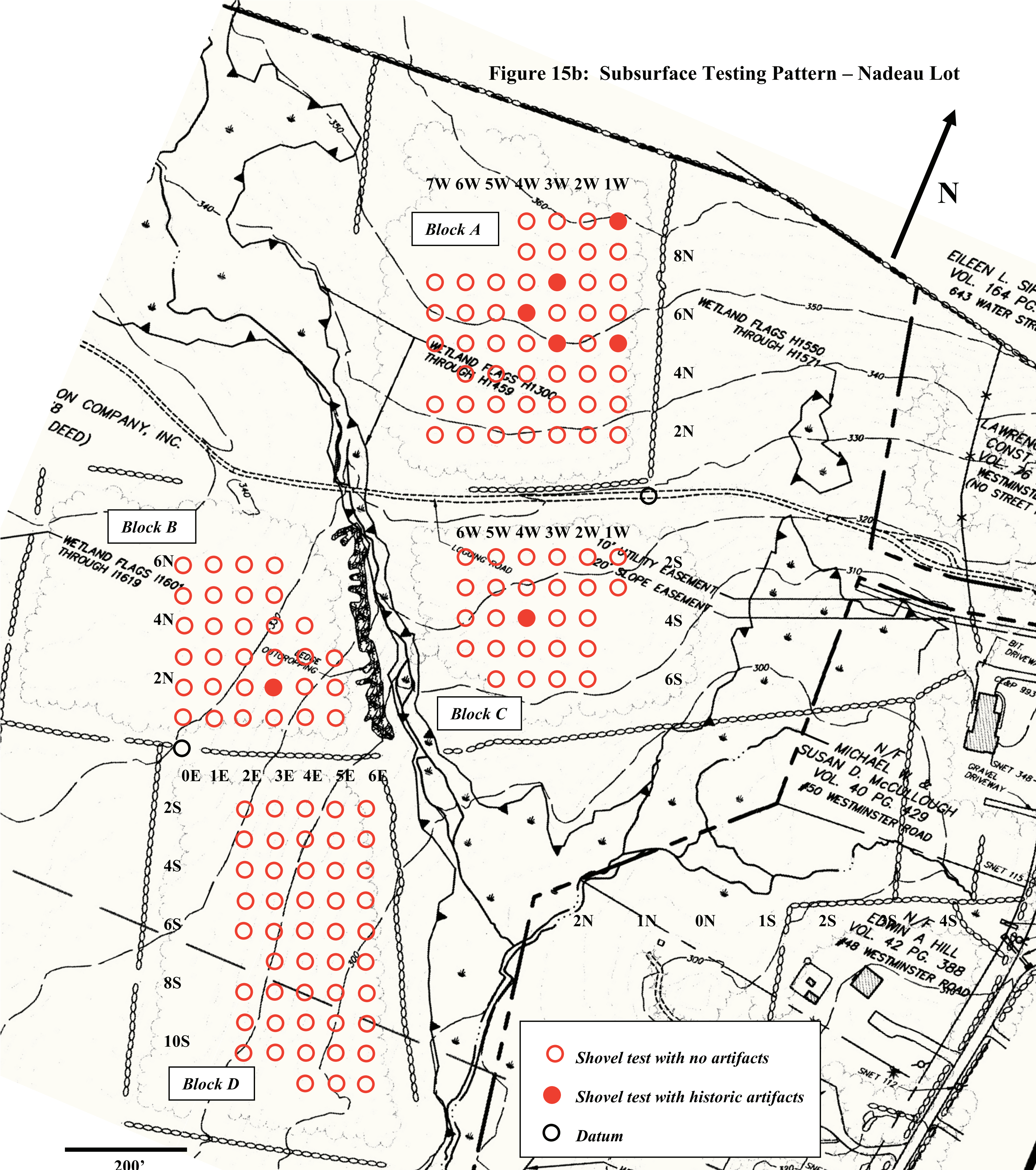


Figure 15b: Subsurface testing grid superimposed on survey maps provided by Fuss & O'Neill, 2015. Systematic subsurface tests placed at standard 50-foot intervals. One inch = 200'.

Figure 15c: Subsurface Testing Pattern – Wooded Areas

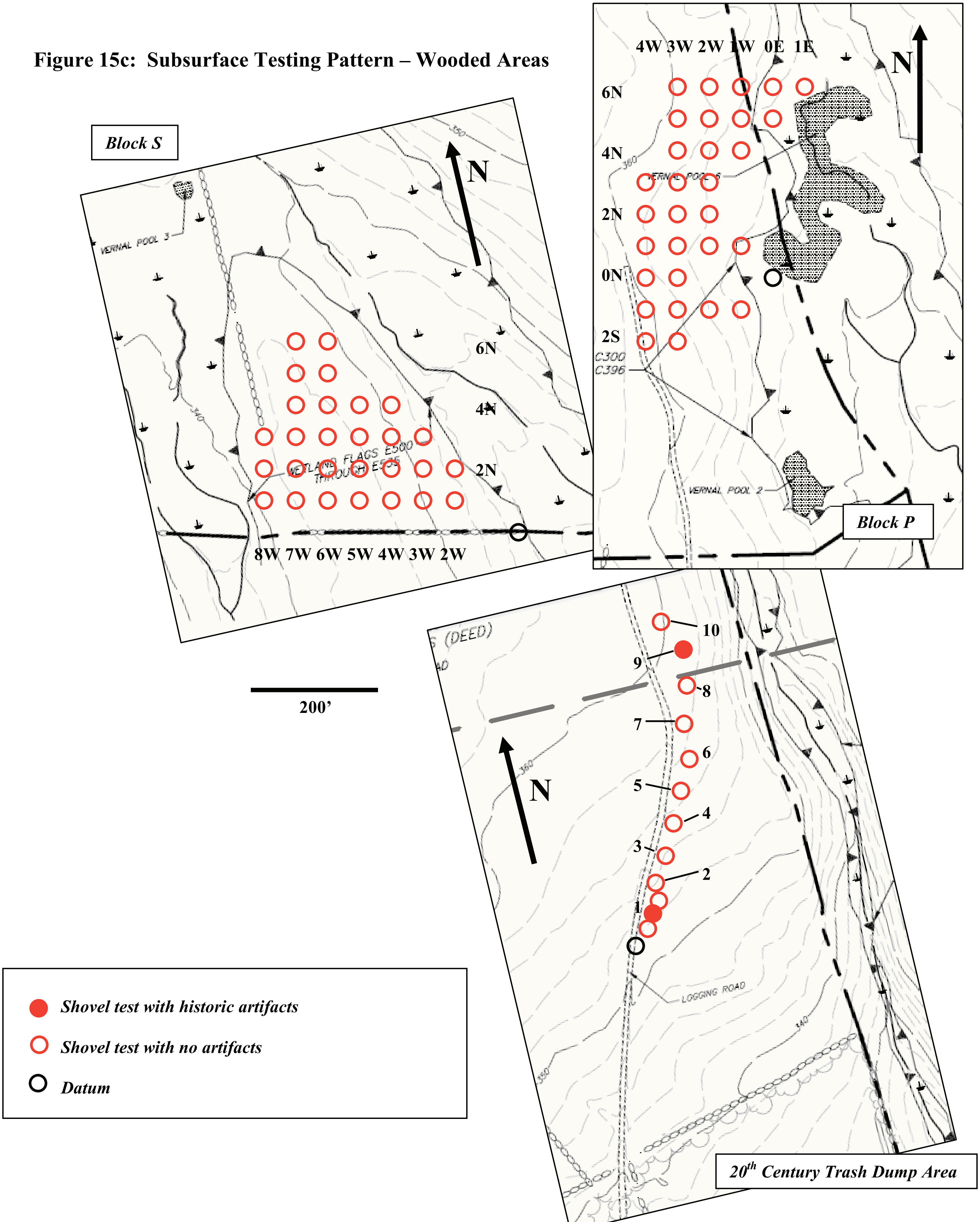


Figure 15c: Subsurface testing grid superimposed on survey maps provided by Fuss & O'Neill, 2015. Systematic subsurface tests placed at standard 50-foot intervals. One inch = 200'.

particularly the existing home at 111 Potash Hill Road that is within the Rainville lot, as well as 85 Potash Hill Road just to the west. However, impact areas close to the Rainville house are already included within areas tested for prehistoric cultural resources, and the closest area to the house at 85 Potash Hill Road is being set aside for conservation of several stone piles identified during the assessment survey of the project area. Historic maps and land records reveal no other substantial historic developments on or near the project area, with the exception of a historic path or road that cut across the Rainville lot, and a historic occupation of the Sullivan family across the road from an area between the two access paths to the Nadeau fields. The rear yard immediately to the north of the Rainville house will be left undeveloped, as will the area immediately to the west of the Rainville house along the north side of Potash Hill Road. Therefore, all areas with the greatest likelihood to reveal historic cultural resources within project impact areas are subsumed within the broader areas covered by testing for prehistoric sites.

Easy access to the project area allowed for a complete pedestrian surface survey. This is an important technique in cases where historic features such as foundations leave depressions in the landscape, and often with signs of disturbance or differentiation in vegetation type. Additionally, prehistoric features and artifacts may be identified in areas where erosion out-paces soil development or deposition of leaf cover, or where historic agricultural activity often brings materials from buried archaeological contexts to the surface. The deep sedimentary and soil contexts of the project area, and most of this part of the country, however, requires that subsurface testing be employed as well. This is generally true in cases where thick vegetation or maintained grass and/or a relative lack of erosion encourage deep sedimentary and soil profiles. The grass in the open Rainville lot, for instance, is intentionally maintained thick and used for harvesting hay, while the fields of the Nadeau lot appear to have been in an overgrown state for several years, thus surface visibility was reduced in these areas, while a thick leaf cover throughout the rest of the project property also served to obscure surface visibility.

Test Execution

The pedestrian surface survey was performed by two people for the project. Pedestrian traverses were made along all 50-foot subsurface testing grid intervals for areas to be subsurface-tested, and along the property boundaries, and streams and wetlands of the project area. Notes were taken as to any remnant features or structures, with the possibility that judgmental subsurface testing be applied in response to the results of the pedestrian survey. Any recovered artifacts which are clearly in excess of 50 years in age are bagged and provenienced according to the nearest subsurface test location within areas subjected to the traverses, or to the nearest group of tests and/or major landscape area otherwise. Based on lack of significance, ACS did not surface collect artifacts from the 20th Century trash dump site.

Round shovel tests measuring 1.5 feet in diameter were excavated according to natural or cultural layers, with the use of round-point shovels, trowels, and trench spades. Augers were used at the end of each test to confirm aspects of stratigraphy. Surface conditions were noted for each test prior to excavation, including any signs of natural or cultural disturbance. Standardized shovel test forms were used to record information such as soil types encountered, their depths, any bags for soil samples or artifacts collected, closing depth and reason for test termination, and any comments pertaining to unique conditions encountered. Extracted soil was screened and any artifacts retained. Hand screens consisted of wood frames with 1/4" mesh through which soil was passed for the recovery of artifacts. Recovered artifacts were provenienced according to test block, number, and layer, and placed in labelled zip-lock bags for laboratory processing. Material that could be positively identified as modern debris was merely noted and left in place.

All test units were generally excavated to a depth which confidently exhausts any possibility of cultural resources being present, as often indicated by bedrock or Pleistocene gravels and sand that comprise the "C" horizon of soil units in the project area. North American archaeologists have the advantage of knowledge that humans were present in the New World only after the end of the Pleistocene, thus Pleistocene sediments are an extremely useful indication for unit termination. Tarps were used to retain shovel test backfill piles, which were returned to the test units subsequent to complete excavation and recording.

Laboratory Procedures

Processing

Processing procedures include those involving cleaning, labelling, conservation, and documentation, as mandated by the Connecticut Office of State Archaeology (OSA) and the Connecticut State Historic Preservation Office (CT SHPO) (Poirier 1987). A daily record of soil sample and artifact bags retrieved from the field was maintained in the laboratory. Cleaning procedures depend upon material type. Ceramics, glass, lithic artifacts, and well preserved bone and shell are washed in warm water and scrubbed with plastic brushes. Heavily rusted artifacts are dry-brushed lightly with a soft wire brush. Non-rusted metal artifacts, wood, and poorly preserved bone and shell are cleaned with a dry, soft plastic brush. Charcoal or burnt wood is separated and dry-brushed if necessary. Artifacts cleaned with water are dried on plastic trays, while those processed dry are bagged immediately. All artifacts are given new zip-lock bags, fresh tags, and significant artifacts are bagged separately according to material type. In the case of this study, labelled bags are given abbreviated codes for project area (SGHS), Block letter for areas other than the Rainville lot (e.g. "A"), test number according to 50-foot interval from principal datum by cardinal grid directions (e.g. 3N-2W), and layer below surface by Roman numeral (e.g. II). Highly significant artifacts are additionally labelled with India ink covered by an acetate solvent nail-polish, or given a separate labelled bag if labelling jeopardizes the integrity of the material or its potential to be studied in the future. Labelled artifacts bear an abbreviated indication of provenience. At the end of the project, all artifacts are scheduled to be submitted to the Laboratory of Archaeology and Museum of Natural History (LAMNH) at the University of Connecticut (UCONN) in Storrs, Connecticut.

Analysis

Analysis of artifacts in terms of individual identification are performed with the use of identification guide books, type collections (where possible), past experience, and standardized forms. The artifacts are separated by material type, with each material analyzed for designated variables. The variables selected for each material type reflect their significance in terms of identifying chronological and cultural demarcations, as well as variables which may ultimately shed light on the dynamics of the cultural behavior with which they were associated.

ACS has generated standardized data forms for lithic materials, faunal remains, and ceramics. This obviously does not exhaust the potential range of material types, however it covers those which are most often preserved or which show the greatest degree of variability through time and across space. Variables assessed for all materials include those of material type, horizontal and vertical provenience, and for those other than modern debris, shell, or metal - weight, color, and condition or portion present. Lithic artifacts are analyzed for variables of raw material type and texture, manufacturing method, stage in the reduction sequence (including tool type where applicable), presence of heat treatment, indications of use and curation efforts, as well as those involving metric dimensions (size and weight). Ceramic materials are analyzed for variables of raw material or ware type, inclusions or tempering, manufacturing method, firing method, surface treatment, thickness, rim and vessel diameters, container volume, decoration, and maker's marks. Shell is analyzed for species and weight. Finally, bone is analyzed for taxonomic classification, element, age, sex, seasonality, human modification, exposure to heat, and possible use as tools. Weight measurements of all artifacts are made to the nearest 0.1 gram using an Acculab V-1200 electronic balance. Metric measurements are made with the use of electronic calipers.

Soil samples are analyzed for standard variables of color, texture, and pH. Color is measured along the variables of hue or color, value or shade, and chroma or degree of saturation. The standardized Munsell charts also provide names of colors which may be universally recognized. Texture is assessed based on behavior in hand samples as indicated by standard soil science manuals.

Architectural features and sites are documented in standardized forms published by the Connecticut State Historic Preservation Office (SHPO). For purposes of the general report, architectural features and prehistoric sites as a whole are analyzed in terms of their capacity to explain cultural and historic phenomena, and tend to involve a less standardized procedure based on examining similar case studies. Analysis of artifacts and features will frequently involve factors such as the spatial distribution, density, and association of artifacts within a site. Copies of all field records and copies of the final report are sent to LAMNH along with the processed artifacts. In addition, analysis raw data sheets and a CD with the raw data stored in standard Excel format are sent to the LAMNH in cases where large databases are generated, or upon request.

Expectations

Prehistoric

Prehistoric site locations have been shown to be fairly consistent in terms of landscape setting, as were the resources being procured and the environmental setting in which people operated. According to a model developed and utilized by ACS, the prehistoric landscape sensitivity for the project property is entirely contained within the low sensitivity range (0-20 out of a possible 100), with scores ranging from 5.6 in the rockier wooded areas furthest from nearest water source, to just 13.3 in the less rocky open fields in closer proximity to water. The low sensitivity of the project area derives from its sloping, rocky soil contexts and minor stream drainages. No prehistoric sites have been recorded in the direct vicinity of the project area, with sites of the area mostly found on glacial meltwater sedimentary landforms and alluvial terraces in closer proximity to major streams and/or large ponds that have been converted into reservoirs. There is no potential for prehistoric rockshelter sites being present in the project area. It is projected that while no major prehistoric sites will be identified, that several short-term camp sites will be identified in close proximity to wetlands, particularly any of the vernal pools on the property.

Historic

Assessment of historic sensitivity was based on a compilation of documents such as historic maps, land records, and local histories. Land records and historic maps indicate that the project area was part of two principal farmsteads - the "Home Farm" of the Bishops, whose late 18th Century farmhouse now stands on the Rainville lot at 111 Potash Hill Road, and whose land also included the Houle lot; and the "Stone Barn Farm," whose homestead was located on the east side of the road in what is now Lisbon. The "Adams Farm" was immediately to the west of the Home Farm, and contained the Saltbox Colonial house that still stands at 85 Potash Hill Road. Archaeologically, the historic sensitivity of the project impact area is limited to the fields immediately east of the Rainville house where there was also a former road or path leading to the town farm to the east, and possibly also in the southwest corner of the wooded section of the Rainville lot where there were some well formed stone piles observed. The former area is subsumed within the area already being tested for potential prehistoric cultural resources, while the latter area is being preserved to also eliminate potential visual impact to the house at 85 Potash Hill Road. The historic house at 111 Potash Hill Road is also subject to visual impact considerations. Without any known historic developments on the project property other than the existing house at 111 Potash Hill Road, no substantial historic site contexts are expected, with a scattering of late 18th to 20th Century artifacts predicted for the open fields, especially near the Rainville house, and possible traces of the former road / path that once coursed through the Rainville lot.

CHAPTER 4: RESULTS

Field Conditions and Test Summary

ACS performed the fieldwork for the survey during the months of December, 2014 and March through May, 2015. The pedestrian surface survey of the assessment survey phase took place in mid-December, after the leaf fall but during relatively mild conditions. Recent heavy rains resulted in relatively wet field conditions, and it was apparent that much of the soil context is only moderately well drained. Broadly, the entire project property slopes gently from north to south - a feature certainly related to site selection for the proposed project. Field conditions are relatively uniform with a few exceptions, dominated by a mix of mostly deciduous and some interspersed coniferous trees, and an understory dominated by mountain laurel in the rockiest of areas.

Surface rock of mostly gneiss is visible at the surface in light densities, except in the cleared fields at 111 Potash Hill Road (Rainville lot) (Figure 16) and in the Nadeau lot (Figure 17) in the northeast part of the project area. These fields are lined by substantial stone walls, which are also present in wooded sections of the property. The Rainville lot is actively maintained as a hay field, which had already been harvested prior to the surface survey, and which was about to be fertilized at the end of the reconnaissance survey (Rainville pers. comm. 2015). The field is bound by Potash Hill Road to the south and west, and the lot contains the historic house at 111 Potash Hill Road. The area immediately to the west of the house is wooded, with a path leading north from Potash Hill Road into the wooded section of the lot.

The Nadeau lot contains four tightly configured open fields that have not been used in several years, with a generous scrub growth generally knee to chest high throughout, with the exception of some cleared portions of the west and south fields that were being used as logging staging areas. These open fields are accessed by an unpaved road or driveway leading west off of Westminister Road that also forms the boundary between Lisbon to the east and Sprague to the west. There is also another unpaved access to the south of the open fields of the Nadeau lot. To the west of the open fields, there was very active selective logging occurring during the surveys.

The Houle lot of the northwest part of the project property is the least altered. A hunting blind near the northwest corner of the lot reveals recreational hunting use of the land, and there are also some very minor rock outcrops / ledges in the northwest part of the lot. Other hunting blinds are located in the northern, wooded part of the Rainville lot, and deer droppings / and butchered remains were observed near vernal pools on both lots.

Two closely spaced streams roughly split the project property in half, originating near the Canterbury town line and northern boundary of the Nadeau lot, and coursing south along the eastern boundary of the Houle lot and the Rainville lot to the south. There are several vernal pools located along these streams according to a recent field study by Fuss & O'Neill (Combs pers. comm. 2015).

The pedestrian surface survey of the property revealed very few instances of major disturbances. Some recent geological testing resulted in some subsurface impacts, and there appeared to be some excavation attempt exposing a very large subsurface boulder to the west of the house at 111 Potash Hill Road. A small garden plot enclosed by wire fencing was located in the northern open field of the Nadeau lot, with some abandoned gardening supplies and the plot

Figure 16: Open Field – Rainville Lot

Figure 16: North view of the open field of the Rainville Lot at 111 Potash Hill Road. This is the eastern end of the field – the historic house is left and out of view. Note the well formed stone wall alignment at the edge of the field. A vernal pool / wetlands area lies on the east side of the stone wall.

Figure 17: Open Field – Nadeau Lot

Figure 17: North view of Block B, or the western of four open fields on the Nadeau Lot. Note the felled logs piled at the edge of an area stripped of vegetation. Portions of the Nadeau fields are overgrown with scrub growth knee to chest high, as in foreground.

now in overgrown condition. Other modern materials observed at the surface in this area include an abandoned car door near Westminister Road, 40-gallon steel drums full of late historic broken glass or other debris further to the west, dumped modern brick in the southern part of the western open field of the Nadeau lot, and a shotgun shell casing near the southwest corner of the southern field of the Nadeau lot.

There were 469 systematic subsurface shovel tests performed for the survey at standard 50-foot intervals (Appendix A; see Figures 14 and 15). Just over half, or 247 tests, as well as eight judgmental shovel tests, were placed in the open field of the Rainville lot. Another 152 systematic tests were placed in the four open fields of the Nadeau lot. Recall that all of the open fields are within units of Woodbridge fine sandy loam (WxB), described previously as having typical soil profiles with a surface layer of very dark brown fine sandy loam about nine inches thick, followed by a subsoil of dark yellowish brown, light olive brown, and grayish brown mottled fine sandy loam and sandy loam about 19 inches thick, and a substratum of very firm olive sandy loam to depths of five feet or more. Tests in the field were similar to that projected, typically revealing a topsoil of dark brown to dark grayish brown fine sandy loam to about ten inches deep. Variability of topsoil depth appeared to occur in relation to filling and smoothing in the agricultural fields. Upper subsoil tended to be a yellowish brown fine sandy loam to nearly two feet deep, followed by a lower subsoil or substratum of pale brown to light yellowish brown loamy fine sand. A compact layer of light gray to pale brown loamy fine sand likely represents the true substratum in these fields. The lower subsoil and substrata frequently contained generous amounts of gravel.

Early in the reconnaissance survey after the snow melt, water was often encountered at somewhere between one and two feet deep. Tests were also rockier than expected, possibly indicating that the true original soil types for these areas were more in line with the rockier Woodbridge units (WyB). This is particularly evident based on the substantial stone wall alignments that line the fields, with some in the Nadeau lot including very large boulders. Subsurface disturbance was generally rare, although it is likely that the open fields were plowed in the past, and some cutting and filling is evident in tests near field boundaries and at the edges of wetlands in the open fields. pH levels of soils in the open fields were nearly neutral in this otherwise acidic environment, particularly in tests throughout the open Rainville lot (Appendix B), confirming agricultural treatment of the soil.

The 30 tests located near the middle of three vernal pools in the southwest corner of the Nadeau lot (Block S) and the 12 tests located in the vicinity of a 20th Century trash dumping area to the north of the open field in the Rainville lot (Block 20C) were placed in areas projected as containing the rockier Woodbridge fine sandy loam units (WyB). Recall from background research that these soils are similar to their less rocky counterparts, with a surface layer of very dark brown fine sandy loam about six inches thick, followed by a subsoil of yellowish brown, light olive brown, and grayish brown mottled fine sandy loam and sandy loam about 22 inches thick, and a substratum of very firm, brittle, olive sandy loam to five feet deep or more. Tests in these two areas generally conformed to the projected types, with the largest difference from the open lots being a thinner topsoil typically measuring about six or seven inches deep. Water was generally encountered deeper in these two areas than the open fields, although that was likely due to being excavated later in the survey after the snow melt.

The 28 tests near the northern vernal pool in the Houle lot were placed in the vicinity of a unit of Sutton fine sandy loam soil (SwB). Recall from the background research section that this soil typically features a surface layer of very dark grayish brown fine sandy loam about four inches thick, followed by a subsoil of yellowish brown, dark yellowish brown, and dark brown mottled fine sandy loam and sandy loam 29 inches thick, and a substratum of olive brown, mottled sandy loam to five feet deep or more. However, tests in the field tended to exhibit more in common with the Woodbridge units, with a thicker surface layer and narrower subsoil, although there was a higher frequency of greater reddishness in the upper subsoils.

Architectural History

In consultation with the Connecticut State Historic Preservation Office (SHPO), a cursory architectural history analysis was performed for the structures at 85 Potash Hill Road (Figure 18) and 111 Potash Hill Road (Figure 19). The purpose of the assessment in each case was different. The house at 85 Potash Hill Road is just off the property, but is clearly eligible for the National Register of Historic Places (NRHP), and therefore the study included a viewshed analysis to determine whether or not the current project would create an adverse visual impact on the property. Alternatively, while historic, it was not clear that the historic house on the property at 111 Potash Hill Road would be eligible for the NRHP, so the analysis was devoted to this determination and any appropriate mitigation measures from the project that would visually impact the property. The cursory analysis was conducted by architectural historian Janice Cunningham, and her independent report is included in its entirety in the rest of this section:

Project Description:

This preliminary historic resource assessment survey report addresses the potential impact of the proposed construction of a 20 MW photovoltaic energy facility on two adjacent historic architectural properties located on Potash Hill Road. It supplements the Interim Report, Phase Ia, Archaeological Assessment Survey, prepared by Archaeological Consulting Services (ACS) in December 2014. Note: The field work for the historic resource assessments, conducted on January 21, 2015, was limited to building exteriors; interiors were not observed or documented.

The 300-acre project development area is roughly bounded on the north by the Canterbury town line, on the east by the Town of Lisbon and Westminster Road, and on the south by Potash Hill Road. While most of the area is forested, it does include open fields associated with the historic farms in this rural neighborhood. Although open fields will be utilized for the project, most of the wooded areas will be clear cut to accommodate the multiple arrays of solar panels required for the proposed 200-acre installation.

Historical Background:

Hanover is one of several mill villages in the Shetucket-Still River watershed. Once part of the northernmost tier of settlements in the Norwich bounds (the nine-square miles purchased from Uncas, the Mohegan sachem in 1659), Hanover became a separate church society in 1760. After the Revolution, when many outlying parishes evolved into townships, the Hanover society was divided between the Lisbon and Franklin and later reunited when the Town of Sprague was incorporated in 1861.

Figure 18: 85 Potash Hill Road

Figure 18: Northwest view of the historic house at 85 Potash Hill Road, just west of the Rainville Lot and off the project property. Built by the Perkins family in the early 18th Century, this is a very well preserved Saltbox Colonial home and is eligible for the National Register of Historic Places. Its inclusion in this study was based on evaluating potential for visual impact.

Figure 19: 111 Potash Hill Road

Figure 19: North view of the historic house at 111 Potash Hill Road. The house lies on the Rainville Lot, although the immediate grounds surrounding the house and to the rear are not subject to development. The late 18th Century farmhouse features a pair of central chimneys, although the structure has been altered through time.

Perkins House, 85 Potash Hill Road:

This well-preserved mid-18th century Colonial saltbox, which was recommended for National Register study in 2002, is architecturally significant for its exceptional integrity of form and materials. It is also historically important for its association with the Perkins family, early settlers of Hanover. See also the Joshua Perkins House, a Georgian Colonial located at the foot of Potash Hill Road (National Register, 1979).

A field survey and viewshed analysis was carried out on January 21, 2015 to determine the visual impact of the solar development on the house and its rural setting. While it was readily apparent that the visual impact was minimal even in winter when trees are bare, data was collected at the site to substantiate this initial impression. Approximate distances and elevations were derived and generally confirmed from an annotated aerial view and topographic map of the development area provided by ACS as follows:

800 ft - Highest point of the solar panel installation to the NE above the house.

1100 ft - Distance from this high point to the house.

40 ft - Estimated maximum height of trees in the wooded buffer zone to the NE.

Triangulation based upon these spatial dimensions show a 36 degree angle at the base line, which indicates that the view of the solar facility at the summit is blocked when the tree line is less than 250 feet from the house. The start of the designated woodland buffer zone is well within this distance.

Conclusion: There is no visual impact on 85 Potash Hill Road if the designated buffer zone remains wooded and undeveloped.

William Babbit House, 111 Potash Hill Road

The Babbit House is located on the north side of the road where it bends and turns to the west to continue on to the Village of Hanover. The house, which faces south, is sited on a shallow rise with a stone retaining wall about 25 feet back from the road. Extensive open fields to the north and east are bordered by woodland. Outbuildings include the early 20th century, gambrel-roofed barn across the road and a modern barn/garage northwest of the house. Classified as a New England Farmhouse in the 2002 survey, the Babbit House has a two-story, five-bay, timber-framed main block and an original rear kitchen ell. Both sections rest on cut-stone foundations, now partially parged with cement. Other exterior changes over time include vinyl siding, and a replacement front porch. Although it retains a typical colonial form and orientation, the Babbit House displays twin interior chimneys, a distinctive regional feature since the eighteenth century. Notable examples in Hanover that incorporate this vernacular element include the c. 1750 Lisbon Inn in the village center, and the 1790 Joshua Perkins House, referenced earlier.

The development of solar power here has direct and indirect consequences. Obviously, the proximity of solar panel arrays in the adjacent fields will have a substantial visual impact on the property and the historic neighborhood as a whole. Demolition of the house is also a potential threat, given the totality of the environmental impact on the surrounding historic environment, which is compounded by the extent of the proposed clear cut timbering.

Recommendation: Given the circumstances and potential threat to the house, as well as the limited amount of architectural and historical information previously available, state-level documentation is recommended for 111 Potash Hill Road. The preparation of a Historic Resource Inventory for the property will provide a detailed description and photographic documentation of the current condition of the exterior and interior of the house and an evaluation of its historical importance.

Historic Archaeological Resources

Features

There were no prehistoric features or artifacts identified during the survey. There are some rock outcroppings on the property, particularly some ledges in the northwest part of the Houle lot, although none are substantial enough to have served as prehistoric rockshelter sites. Historic features were limited to various stone wall alignments, stone piles, and a 20th Century trash dumping area. Traces of a former stone wall appear as a linear topographic dip running east-west through the Rainville lot, with property owners indicating the wall had been buried in the mid to late 20th Century (Rainville pers. comm. 2015). The standing stone walls of the project property typically line the open fields of the Rainville and Nadeau lots, although they are also found along property boundaries and within wooded interior portions of the lots - particularly in the wooded central part of the Rainville lot (Figures 20 and 21). These latter alignments may reflect former agricultural clearing or designated wood lots on the order of 200 years old or more. Other alignments, particularly those around the open fields in the Nadeau lot, may be substantially younger, particularly as the latter walls include some very large boulders that were likely moved by heavy equipment. The stone walls are variable in size and quality of construction, although they are typically on the order of two to three feet high and made of locally available gneiss and schist field stone.

Independent stone pile features can also be viewed in various parts of the property, some of which are clearly property boundary markers. Other stone piles are free standing and most likely represent former field clearing activities, although in the absence of positive evidence these features have been variably interpreted as prehistoric or historic Native American in origin. Some particularly well formed piles occur in the southwest part of the wooded section of the Rainville lot (Figures 22 and 23).

A 20th Century trash dumping area was identified on the east side of a path leading north from the open field of the Rainville lot, measuring about 600 feet long and at undefined short distances to the east of the path. Thinly dispersed artifacts observed at the surface in this area include oxidized metal containers - particularly milk jugs with numbered metal registration tags - glass bottles, machinery and parts, steel drums, kerosene containers, tires, and empty paint cans (Figure 24). The trash dump feature clearly post-dates the start of the 20th Century, and its termination of use may reflect the onset of modern trash disposal service in the area.

Artifacts

With the exception of several possible quartz and quartzite flake fragments, all of the material recovered during the survey consists of historic artifacts (see Appendix C). A single possible quartz flake was recovered from the first layer of test 5N-0E with no other associated materials, while two possible quartzite flakes were recovered from the first layer of test 13N-4E in mixed contexts with late historic fill deposits. These materials could represent the waste material from the manufacture of stone tools, although their identification as cultural rather than natural must be ultimately based on its associated presence with other debitage that exhibits some

Figure 20: Stone Wall

Figure 20: North view of one of the better formed stone wall alignments in the wooded portions of the project property. Constructed from locally available gneiss, the stone walls are likely on the order of 200 years old and delineated former property boundaries and/or interior agricultural lots.

Figure 21: Stone Wall – Loosely Formed

Figure 21: North view of a stone wall alignment at the edge of one of the open fields in the Nadeau Lot. Note the large size of some of the boulders that would have required the assistance of heavy equipment, and thus these more loosely formed stone wall alignments are likely younger than others on the property.

Figure 22: Stone Piles

Figure 22: Northwest view of Stone Piles #3 and #4 in the southwest part of the wooded section of the Rainville Lot. These are some of the better formed piles on the property. These features likely represent historic agricultural clearing efforts, although some have variably interpreted them as prehistoric Native American in origin. Backpack is 2 feet tall.

Figure 23: Stone Piles with Boulders

Figure 23: Northeast view of Stone Pile #10 in Block C, or the eastern of four open fields in the Nadeau Lot. The large stone pile lacks organized structure and contains boulders that would have required the assistance of heavy machinery, thus late historic in origin.

Figure 24: 20th Century Trash Dump Site

Figure 24: North view of the 20th Century trash dump site, located on the east side of the wooded path leading north from the open field of the Rainville Lot to the vernal pool in the Houle Lot. Visible items at the surface include tin milk jugs with register tags, tin pails, and kerosene containers, all likely related to the waning dairy industry of the early to mid-20th Century.

of the more classic landmarks of intentional reduction, including lips and bulbs of percussion, prepared platforms, single inverse faces, and multi-facetted negative obverse facets that are not clearly represented on the recovered pieces. Four judgmental subsurface shovel tests placed at 25-foot intervals around each of these tests failed to reveal any positive traces of prehistoric activity.

The historic materials were recovered from 44 of the 477 subsurface shovel tests conducted for the survey. The inventory of historic materials collected during the survey has been segmented into several broad classes of artifacts, and more detailed artifact categories within these classes. Broad artifact classes include structural materials (n=56 / 45.9%), household ceramics (n=21 / 17.2%), household glass items (n=14 / 11.5%), fuel related items (n=23 / 18.9), faunal remains (n=2 / 1.6%), and personal items (n=6 / 4.9%), for a total of 122 historic artifacts collected.

Despite the intensive collection of materials, it must be noted that the relative count of artifacts is severely affected by the integrity of individual artifact classes and categories. For instance, glass bottle fragments constituted significant proportions of the assemblage, with the material being highly fragmented through time and likely at a higher rate than other materials (e.g. nails) based on proportions of refitting pieces. Also, some categories of materials may be severely under or over-represented due to the irretrievability of highly fragmented items, including charcoal which was in several cases represented only by small flecks too fine to collect from the soil context using normal screening methods. In some cases where a single material was found at a location in relatively large quantities or in highly fragmented conditions (e.g. oxidized sheet metal, late historic to modern bottle glass), only samples were taken as noted in Appendix C. Finally, clearly modern debris such as plastic was generally noted and discarded in place. Within each major material class, mutually exclusive individual categories were devised on the basis of frequency, material, and function as described below.

There was one brick fragment recovered from a layer of fill at 13N-4E. The brick fragment is likely late 18th to 19th Century in origin, lacking holes or embossed characters and bearing wavering edges and corners indicative of earlier manufacturing, although the size, with a thickness under 2-1/2 inches, suggests it is not early historic. While existing size guidelines to chronological assessment can be regarded as rough estimates at best, dating sites by brick content is further hampered by the tendency of historic recycling of structural materials through time (Noel-Hume 1970:81-82).

There was a variable frequency of wrought nails, cut nails, and wire nails found on the property, all from the open field of the Rainville lot. The nails likely relate to the construction and maintenance of houses and outbuildings through time. Of 18 nail fragments recovered during the survey, one is a wrought nail from the first layer of 2N-4E, identifiable from its nearly square cross-section and pyramidal hammered head that pre-dates the introduction of cut nails by the beginning of the 19th Century (Mercer 1976:3). The wrought nail is about 45mm in length and 5mm thick for the shaft beneath the head. Note that there were also several other nail fragments too oxidized for further identification, and some of these may have been wrought nails as well or represented other types of nails.

Cut nails were positively represented by six specimens recovered during the survey, and are identifiable by their flattened cross sections that do not substantially taper with their length. Some of the cut nails bear machine-stamped heads, thus post-dating 1825 (Mercer 1976:10). These types of nails replaced the cut nails with tacked or hammered heads that were typically manufactured between 1800 and 1825 (Mercer 1976:6-8). Cut nail sizes range from about 35mm to 70mm in length. There were also 11 positively identified wire nails recovered, mostly from 13N-3E, which post-date 1850 when these types of nails started to be produced, although it was well after this time that they became widely used (Noel-Hume 1970:253-254). The wire nails from this test were in three sizes, ranging from 62.5 to 100mm shaft length, and 3.5 to 4.5mm shaft diameter.

Window glass accounts for nine artifacts, again all found in the open field of the Rainville lot. The window glass fragments consist of clear to aqua-tinted fragments that are on the order of two or three millimeters thick, with none bearing substantial traces of patination. The lack of more extensive patination is due in part to the acidity of soils in the area which serves to neutralize weathering effects on silicate materials. Most likely date to after 1832, however, when the more modern broad glass or "sheet" manufacturing processes resulted in window glass that was relatively uniform with a lack of substantial imperfections such as sand, stress lines, and air bubbles found in older forms of window glass (Noel Hume 1970:234-235).

Other structural items recovered from shovel tests include a threaded rod from A-5N-3W in one of the open fields of the Nadeau lot, and a fragment of sheet metal and 20 fragments of hard rubber and/or organic material drainage pipe from 13N-4E and a nearby judgmental test in the Rainville lot. The rod is heavily oxidized and is threaded on both ends, likely having served as part of some sort of late historic to modern machinery. The fragment of sheet metal bears a machine-rolled edge, and is therefore likely mid-19th Century or later in origin, and could be related to either machinery or food containers. The drainage pipe fragments were recovered from a fill context, and are uniquely constructed of an organic material consisting of wood fiber and coal tar with the appearance of being similar to hardened black rubber. Three large pieces of the pipe were recovered from judgmental 13N-4.5E, while some of 17 smaller fragments of material from 13N-4E may include hardened rubber fragments of tires. For a relatively brief period of time following World War II, the Orangeburg pipes were made to accommodate a rapidly expanding housing boom in North America, although overall poor quality and tendency to warp, as well as the appearance of PVC piping, resulted in its lack of use by the 1970s (see *www.sewerhistory.org*).

There were 21 recovered fragments of household ceramics, mostly representing table service pieces but also some utilitarian forms. Three fragments of redware from 5N-6E, 13S-7E, and A-5N-3W are relatively indistinct without traces of decoration, with the first likely representing a section of a flower pot. The creamwares are represented by three more fragments from 0N-4E, 9S-6E, and A-6N-4W, all undecorated and fairly light in appearance, thus they likely post-date 1775 and pre-date 1820 when whitewares quickly became dominant (South 1977:212). Two other interior fragments of refined earthenware ceramic were recovered from 4N-1E and bear a buff-colored paste, possibly deriving from creamware vessels. Pearlware vessels are represented by yet another three pieces from 10N-5E (Layer II), 2S-3E, and 4S-3E, again all undecorated with the exception of the tiny fragment from 10N-5E that bears traces of a dark blue underglaze transfer-printed decoration common between 1795 and 1830, with a broader date range of 1782 to about 1840 for pearlware in general (Noel-Hume 1970:130; South 1977:212). The four undecorated white earthenware sherds recovered from 1N-3E, 4S-3E, 7S-9E, and 13S-7E represent vessels produced after 1820 (Noel-Hume 1970:130) as potters began to perfect the whitening of the glaze which had been targeted for many years by those seeking to imitate the appearance of china. Semi-vitreous ironstone china was also present on the project property, represented by three fragments from the fill context of 13N-4E and another from A-5N-1W, some bearing embossed decoration and likely manufactured from about 1813 to 1900 or later (Noel-Hume 1970:131; South 1977:211), with a peak of popularity between 1840 and 1890. Two 19th Century utilitarian stoneware fragments include a fragment of gray salt-glazed stoneware with interior Albany slip from the fill context at 13N-4E and a buff salt-glazed stoneware fragment from a nearby judgmental test at 12.5N-4E.

Household glass items account for 14 pieces or just over ten percent of the historic assemblage. Even this relatively low number may be artificially inflated given the likely presence of modern bottle glass, as well as a tendency for a high degree of fracturing for glass. A whole bottle at the 20th Century trash dump site bears embossed decoration on the body and a machine-made finish with vertical mold seams extending through the lip, indicating manufacture after 1903 (Yount 1971:100; Miller and Sullivan 1984:85). Clear glass bottle fragments were recovered from shovel tests throughout the project property. Federal laws applied to medicinal and consumed products prohibited the use of dark bottle colors to disguise contents after 1880 (Yount 1971:6), thus most of the represented clear bottles likely post-date that time. Bottle fragments bearing air bubbles and other imperfections, such as the fragment from B-2N-2E in one of the open fields of the Nadeau lot, likely predate 1920 (Yount 1971:5).

An amethyst-tinted jar was recovered from the surface of the 20th Century trash dump site at test 20C-1N, with this type of discoloration of clear glass typically representing nearly one hundred years of exposure to sun-light, and the base of the jar bearing a patent date of 1903, thus having an approximate date range of 1903-1915 (Yount 1971:117). Another amethyst-tinted glass bottle fragment was recovered from test C-4S-4W in one of the open fields of the Nadeau lot. Other amethyst-tinted glass items found during the survey include two pressed glass decorative pieces from 12N-4E and 13N-4E, while two thin clear curved glass fragments from 13N-4E could represent light fixtures.

Fuel-related items recovered during the survey include 14 fragments of charcoal, eight fragments of coal, and one fragment of slag, all from the open field of the Rainville lot. The charcoal could conceivably be related to prehistoric site use, although none was found in feature contexts, and the minor amounts found were either in association with historic material including the fill of 13N-4E, or in isolation in the upper parts of subsoil at 9S-10E and A-7N-3W, and most likely represent either past natural fires or early historic agricultural clearing efforts. Seven fragments of coal from 1S-3E and one fragment from 4S-8E (Layer II) represent a material that is definitively fuel-related, having been imported into the region in bulk after the mid to late 19th Century with the advent of the railroad for home and industrial use. Slag was also recovered from test 13S-11E, and typically represents the glassy residue remaining from the burning of coal as a fuel, but it is also known from blacksmithing contexts.

There was only one fragment of bone and one fragment of shell recovered from shovel tests. The single bone fragment is a large, worn, indeterminate mammal epiphysis, or articular end of a bone probably from a large domestic mammal such as cow or horse, recovered from 1S-4E in the Rainville lot. The shell fragment is a northern quahog (*Mercenaria mercenaria*) from 4N-1E, also in the Rainville lot. The quahog naturally occurs in sand or mud in bays or inlets, from intertidal flats to water as much as 50 feet deep (Amos and Amos 1985:402). As a regionally shipped common food source, quahogs were also being mass collected and regionally shipped since the middle of the 19th Century, and have also been found as an acid neutralizer in historic agricultural contexts, thus they are encountered in a wide variety of historic site contexts and chronological settings. As noted earlier, the recent butchered remains of a white-tailed deer (*Odocoileus virginianus*) were located near the northern vernal pool in the Houle lot, where there was also some remains of a more fully macerated cow (*Bos taurus*) skeleton that included a skull, pelvis, long bones, and vertebrae.

The personal items category of artifacts is designed to reflect those materials that were typically utilized by individuals and those that could effectively be considered portable as articles of clothing or other personal possessions. For the present surveys, the six personal items broadly include four refitting fragments of an apparel trimming from 6N-2E, one horseshoe from 9N-4E, and a mirror fragment from 13N-4E. The four fragments of apparel trimming are metal, likely an oxidized brass, and are refitting pieces of what appears to be an item that articulates with a strap and laces. The horseshoe fragment bears a plastic insert and was thus last utilized in a modern setting, and still has articulated shoe nails. The mirror fragment may be more appropriately considered structural in nature, depending on the source, being a flat glass piece with a preserved backing.

CHAPTER 5: CONCLUSION

Cultural Resource Summary

In conclusion, there were no positive traces of prehistoric activity identified within the project area. There are no rock outcrops which could have served as prehistoric rockshelters, with minor outcroppings and exposed ledge in the northwest part of the property not sufficient to have provided protective cover or floor space. No positively identified artifacts of prehistoric origin were collected. Several possible quartz and quartzite flake fragments were recovered from two systematic shovel tests in the open field of the Rainville lot, although judgmental shovel tests in these areas did not yield associated prehistoric materials or feature contexts. Minor traces of charcoal and one fragment of quahog clam (*Mercenaria mercenaria*) shell were also recovered from various locations on the property, although none in feature contexts and all likely representing past natural fires or historic agricultural activity.

Historic cultural resources identified on the project property include historic structures, features, and artifacts. The historic house on the property is located at 111 Potash Hill Road in the Rainville lot, and is known from a local historic architectural study as the William Babbitt House. The farmhouse features two central chimneys and was likely built in the late 18th Century, although the structure was clearly modified through time. The house was likely built by the Bishop family, then was in the possession of the Chapman family for the latter half of the 19th Century before being transferred to the Babbitts early in the 20th Century. Known as the "Home Farm," the land containing the Babbitt House was located adjacent to the "Adams Farm" to the west, which contained the existing historic house at 85 Potash Hill Road - an early 18th Century saltbox Colonial structure built by the Perkins family.

Historic features of the property are limited to numerous stone wall alignments and several stone piles including property markers. The stone wall alignments are variable in quality, constructed from locally available gneiss and schist rock. The walls are typically several feet high and wide at the surface, and include both property delineations and internal lot boundaries. They are likely on the order of 200 years old, although some walls contain very large boulders whose presence likely reflects clearing by heavy equipment in the 20th Century. In one open fields of the Nadeau lot, an enormous boulder is the site of a large stone pile and was evidently too large to be practically moved by even heavy machinery. Property owners indicate that one stone wall that lined a former unpaved road through the Rainville lot was buried in the existing open field. In some of the presently wooded sections of lots near the open fields, independent stone piles occur and likely represent former agricultural clearing efforts of fields now replaced by secondary forest. Their variable interpretation as Native American or Euroamerican historic in origin has been debated in the archaeological literature, although majority consensus in the absence of positive evidence for either interpretation favors a determination of Euroamerican construction. The only above ground concentration of historic artifacts occurs to the north of the open field in the Rainville lot on the east side of a wooded path where materials include tires, paint cans, glass bottles, kerosene containers, abandoned machinery, and perhaps most significantly, enameled tin pails and metal milk jugs with register tags reflecting former dairy operations in the vicinity.

There were 122 artifacts recovered during the reconnaissance survey, mostly from the first layer of tests in the open field of the Rainville lot. One concentration of artifacts was located in the northern part of the open field in the Rainville lot where some late historic filling activity occurred, while the rest of the assemblage likely resulted from incidental discard and the scattering effects of plowing and other agricultural activity through time. The artifacts range in age from the late 18th Century to the present, and reflect the full range of occupation at the historic house located on the Rainville lot. Structural artifacts include a brick fragment; threaded rod; Orangeburg pipe; window glass; and wrought, cut, and wire nails. Domestic household ceramic fragments include those of late 18th to early 20th Century redware, creamware, pearlware, whiteware, and ironstone china vessels, as well as a couple of stoneware varieties. Glass items include early to late 20th Century bottles and jars, as well as some fragments of decorative pressed glass pieces. Fuel-related items include some coal fragments and one fragment of slag. Just a single non-human domesticated mammal fragment was recovered from subsurface shovel tests. Personal items recovered during the survey include a fragment of mirror glass, a horseshoe with plastic insert, and four fragments of an apparel trimming.

Recommendations

The Phase I survey revealed no positive traces of prehistoric activity on the project property. There were several possible prehistoric lithic flakes recovered from two systematic shovel tests in the open field of the Rainville lot, although in one case quartzite fragments were found in association with late historic fill, and in the other case there were no other associated artifacts or feature contexts. There were also no traces of prehistoric features or artifacts in surrounding judgmental subsurface shovel tests. The absence of substantial site contexts conforms well with background research which indicated a lack of prehistoric sites in the uplands drainage settings of Sprague, but also the results of the statistical prehistoric landscape sensitivity model developed and utilized by ACS that found low sensitivity scores for the entire project property. Site files of the Connecticut State Historic Preservation Office (SHPO) and Office of State Archaeology (OSA) reveal that sites tend to be located on glacial meltwater landforms in close proximity to larger bodies of water, although it is rare for a property of this size to not contain evidence of less substantial sites such as temporary camp sites or wetlands-related resource extraction activity. Yet it is also rare to have such a large tract of land with relative uniformity with respect to slope and lack of major drainage features - criteria which undoubtedly served in site selection for the proposed project. ACS targeted a relatively saturated systematic testing pattern within all of the non-rocky Woodbridge soil units that corresponded with the open fields of the project property, as well as areas closest to the vernal pools of the small drainages dividing the Nadeau and Houle lots. In the absence of any direct evidence for prehistoric activity through the reconnaissance survey, ACS recommends no further archaeological conservation efforts with respect to potential prehistoric cultural resources.

Historic cultural resources to consider include existing structures, above-ground structural features, and subsurface artifact remains. A determination of significance for cultural resources is based on guidelines set forth by the U.S. Department of the Interior, National Park Service in the *National Register Bulletin* 16A (see pages 35-51). These guidelines consist of criteria for a determination of eligibility for a site or structure nomination to the National Register of Historic Places (NRHP), and broadly relate to demonstrated: A) association with events that have made a significant contribution to the broad patterns of our history;
B) association with the lives of persons significant in our past; C) embodiment of the distinctive characteristics of a type, period, or method of construction; and D) its potential to yield information important in prehistory of history. The last criterion is the one most applicable to the majority of register-protected archaeological sites, and relates to potentially valuable and unique cultural information. The sites or structures must also bear good integrity to warrant a determination of eligibility and significance.

With respect to existing structures, the William Babbitt House at 111 Potash Hill Road is the only standing historic structure on the project property. Built in the late 18th Century, the house was mentioned in the town-wide historic architectural survey of Sprague, and was also subject to a cursory historic architectural analysis in the present study. The prior survey indicates its late 18th Century origin, and also its similarity in some design aspects to the Perkins / Ashlawn House further south on Potash Hill Road which is in fact listed with the National Register of Historic Places (NRHP). However, the town-wide survey does not include the house in its recommended list for NRHP consideration, and the analysis in the present study finds that substantial alterations to the house prohibit its eligibility for the NRHP. In consultation with SHPO, however, ACS has determined that the site bears valuable historic information in line with Criterion C - embodiment of the distinctive characteristics of a type, period, or method of construction, and that in the face of considerable potential visual impact by the pending project, the structure should be either visually shielded by vegetative screening as approved by SHPO, or it should be subject to a state-level historic architectural evaluation so that its salient features are recorded and interpreted in a historic context.

Other historic structures located in nearby locations off the property, particularly the Perkins / Ashlawn House at the southern end of Potash Hill Road, are listed or eligible for the NRHP but will not be visually affected by the pending development project. The closest eligible house is the Perkins house located just west of the Rainville lot at 85 Potash Hill Road. This early 18th Century saltbox Colonial structure more clearly qualifies for NRHP listing based on Criterion C, and additionally bears the integrity necessary for eligibility. The relevance for the current survey is on the basis of potential visual impact by the pending development project. The house lies to the west and south of the Rainville lot. To the north, the house is visually shielded by generous stands of deciduous and coniferous vegetation, and to the east there are intervening houses and vegetative barriers, but to the northeast the house could be potentially visually impacted by the project if it were to include the very southwest portion of the wooded section of the Rainville lot where visibility from the house could extend some distance up a moderate slope. It was therefore determined, in consultation with SHPO, that if the southwest corner of the Rainville lot were to remain undeveloped, up to the 340-foot contour line, a sufficient vegetative barrier would be provided to protect the visual integrity of the Perkins House at 85 Potash Hill Road.

The southwest corner of the wooded section of the Rainville lot below the 340-foot contour line also contains some of the better formed stone pile features. While ACS has determined that these common features of the landscape are late historic in origin and do not bear a significance requiring further conservation, in the absence of evidence to positively establish an origin that some cite as being Native American ritualistic, their preservation within this area accommodates both the better formed stone pile features as well as the visual integrity of the house at 85 Potash Hill Road. ACS does not recommend formal conservation efforts for any of the other stone piles of the project property. ACS also does not recommend formal conservation efforts for any of the stone wall alignments of the project property as these features are relatively common features of the landscape in the region, and their inclusion on current survey maps serves to record salient information regarding historic lot orientations and size. However, as features of historic interest, ACS recommends that where site plans do not require their destruction, some representative stone wall alignments be left in place, particularly along property boundaries.

For subsurface historic archaeological remains, Phase I recommendations are based on a number of considerations, including proposed development and extent of impact from construction and future use of the property, site integrity, material density and distribution, the potential ability of sites to add new information to the archaeological record of the region, and the relative amount of information already provided through prior testing and documentation. With the exception of the southwest corner of the wooded section of the Rainville lot and the area immediately surrounding the Babbitt House on the Rainville lot, it is assumed that the rest of the project property could be subject to impact by the pending project. However, despite the recovery of historic artifacts, none were contained within clear site contexts. A deposit or concentration was noted in one test in the northern part of the open field of the Rainville lot, although this appeared to represent a late historic filling of a depression in the open field. There was also a concentration of artifacts to the north in the wooded section of the Rainville lot, although these materials appeared to represent 20th Century dumped material mostly contained at the surface. Otherwise, the material density was relatively light across the Rainville lot, reflecting past incidental discard and the scattering effects of plowing and/or other agricultural activities, and almost non-existent in other parts of the property. None of the artifact locations or concentration areas appear capable of offering substantial new information to the archaeological record of the region, although the abandoned late historic milk jugs in the 20th Century trash dump area are of interest in their reflection of a declining dairy industry in the area. No further amount of archaeological evaluation or testing is likely to yield further significant information on the historic use of the property, thus ACS recommends no further archaeological conservation efforts on the project property for the pending development.

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Appendix A: Field Test Summary

Test #	Layer I Color	Layer I Texture	Layer I Depth"	Layer II Color	Layer II Texture	Layer II Depth"	Layer III Color	Layer III Texture	Layer III Depth"	Auger"	Close Reason	Comments
A-2N-1W	10YR4/2	fsl	10	10YR6/4	fsl	15	10YR6/3	lfs	21	23	arb	Lay IV 10YR7/2 lfs 27"; Test offset 1' N due to root; Rocky Lay II and III
A-2N-2W	10YR4/2	fsl	10	10YR6/4	fsl	16	10YR6/3	lfs	29	28	rck	Rocky Lay II and III
A-2N-3W	10YR4/2	fsl	11	10YR6/4	fsl	19	10YR6/3	lfs	26	28	arb	Test offset 1' N; Rocky Lay II and III
A-2N-4W	10YR4/2	fsl	10	10YR6/4	fsl	16	10YR6/3	lfs	25	27	arb	Lay IV 10YR7/2 lfs 29"; Rocky Lay III
A-2N-5W	10YR4/2	fsl	10	10YR6/4	fsl	17	10YR6/3	fsl	25	27	arb	Test offset 2' N; Lay IV 10YR7/2 lfs 34"; Rocky Lay II and III
A-2N-6W	10YR4/2	fsl	12	10YR6/4	fsl	23	10YR6/3	lfs	26	27	arb	Lay IV 10YR7/2 lfs 32"; Rocky Lay II and III
A-2N-7W	10YR4/2	fsl	11	10YR6/4	fsl	16	10YR6/3	lfs	23	26	arb	Lay IV 10YR7/2 lfs 32"; Rocky Lay II and IIII
A-3N-1W	10YR4/2	fsl	10	10YR6/4	fsl	14	10YR6/3	lfs	28	29	arb	Lay IV 10YR7/2 lfs 33"; Test offset 2' W due to tree; Rocky Lay II and III
A-3N-2W	10YR4/2	fsl	10	10YR6/4	fsl	14	10YR6/3	lfs	21	23	arb	Lay IV 10YR7/2 lfs 28"; rocky Lay II and III
A-3N-3W	10YR4/2	fsl	12	10YR6/4	fsl	17	10YR6/3	lfs	23	24	arb	Lay IV 10YR7/2 lfs 28"; rocky Lay II and III
A-3N-4W	10YR4/2	fsl	10	10YR6/4	fsl	14	10YR6/3	lfs	26	28	arb	Lay IV 10YR7/2 lfs 32"; rocky Lay II
A-3N-5W	10YR4/2	fsl	11	10YR6/4	fsl	22	10YR6/3	lfs	34	29	arb	rocky Lay II
A-3N-6W	10YR4/2	fsl	10	10YR6/4	fsl	18	10YR6/3	lfs	26	28	arb	Lay IV 10YR7/2 lfs 35"; rocky Lay II and III
A-3N-7W	10YR4/2	fsl	14	10YR6/4	fsl	20	10YR6/3	lfs	24	26	arb	Lay IV 10YR7/2 lfs 30"
A-4N-1W	10YR4/2	fsl	12	10YR5/3	fsl	25	10YR6/3	sl	38	20	arb	rocky Lay I and II
A-4N-2W	10YR4/2	fsl	11	10YR5/4	fsl	14	10YR6/3	lfs	30	32	arb	Lay IV 2.5Y6/2 flsand 38"
A-4N-3W	10YR4/2	fsl	12	10YR5/4	fsl	16	10YR6/3	lfs	24	25	arb	Layer IV 2.5Y6/2 flsand 29"; Heavy rock in Lay II; rocky Lay III
A-4N-4W	10YR4/2	fsl	13	10YR5/4	fsl	17	10YR6/3	lfs	25	27	arb	Lay IV 2.5Y6/2 flsand 32"
A-4N-5W	10YR4/2	fsl	9	10YR5/4	fsl	14	10YR6/3	lfs	30	25	arb	
A-4N-6W	10YR4/2	fsl	12	10YR5/4	fsl	24	10YR6/3	lfs	33	34	arb	Lay IV 2.5Y6/2 flsand 41"
A-5N-1W	10YR4/2	fsl	8	10YR5/4	fsl	14	10YR6/3	lfs	25	27	arb	Layer IV 2.5Y6/2 flsand 32"; Rocky Layer II and III
A-5N-2W	10YR4/2	fsl	13	10YR5/4	fsl	13	10YR6/3	lfs	20	21	arb	Test offset 3'W; Layer IV 2.5Y6/2 flsand 27"; Rocky Layer II + III
A-5N-3W	10YR3/4	fsl	9	10YR5/4	fsl	22	2.5Y6/3sl	lfs	29	22	arb	gravel in Lay III
A-5N-4W	10YR3/3	fsl	10	10YR5/4	fsl	19	10YR5/4	lfs	30	22	water	standing water at 26"
A-5N-5W	10YR3/3	fsl	8	10YR5/6	fsl	30				20	water	standing water at 17"
A-5N-6W	10YR3/4	fsl	8	10YR5/6	fsl	21					rck	rocky throughout
A-5N-7W	10YR3/4	fsl	8	10YR5/6	fsl	26	10YR6/2	lsand	31	23	arb	
A-6N-1W	10YR3/2	fsl	11	10YR5/4	fsl	25	10YR6/3	lfs	30	24	arb	rocky Lay II
A-6N-2W	10YR3/2	fsl	14	10YR5/4	fsl	20	10YR6/3	lfs	30	23	arb	
A-6N-3W	10YR3/2	fsl	12	2.5Y6/3	lfs	37				26	arb	water at 36"
A-6N-4W	10YR3/2	fsl	13	10YR5/4	fsl	25	5Y6/2	lfs	29	22	water	water at 17"; test is in a natural depression; rocky Lay II
A-6N-5W	10YR3/2	fsl	12	10YR5/4	fsl	20				15	rck/water	rock throughout; water at 16"
A-6N-6W	10YR3/2	fsl	13	10YR5/4	fsl	22	5Y6/2	fsl	32	25	arb	water at 26"
A-6N-7W	10YR3/2	fsl	12	10YR5/4	fsl	26	5Y6/2	fsl	33	26	arb	gravel in Lay I; rocky Lay II
A-7N-1W	10YR4/2	fsl	10	10YR5/4	fsl	24	10YR6/3	sl	29	21	arb	grevel in Lya I and II
A-7N-2W	10YR4/2	fsl	9	10YR5/3	fsl	20	10YR6/1	fsl	25	15	rck	rocky Lay I; gravel in Lay II and III
A-7N-3W	10YR4/2	fsl	10	10YR5/4	fsl	21	10YR6/2	sl	31	18	rck	rocky Lay I ; gravel in Lay II and III
A-7N-4W	10YR3/3	fsl	9	10YR5/4	fsl	25				17	water	water at 15"; rocky Lay I
A-7N-5W	10YR4/2	fsl	10	10YR4/4	fsl	23				16	water	water at 15"; rocky in Lay I
A-7N-6W	10YR4/3	fsl	11	10YR5/6	fsl	25	10YR6/2	sl	33	21	rck	water at 28"; rocky Lay I and II
A-7N-7W	10YR3/3	fsl	15	10YR5/3	fsl	23	10YR6/1	sl	32	21	rck	water at 27"; rocky Lay I and II

Appendix A: Field Test Summary, continued

Test #	Layer I Color	Layer I Texture	Layer I Depth"	Layer II Color	Layer II Texture	Layer II Depth"	Layer III Color	Layer III Texture	Layer III Depth"	Auger"	Close Reason	Comments
A-8N-1W	10YR4/3	fsl	7	10YR5/6	fsl	20	10YR5/4	sl	24	21	grv	gravelly Lay II
A-8N-2W	10YR4/3	fsl	10	10YR5/6	fsl	20	2.5Y6/3	lfs	32	24	arb	gravelly Lay II
A-8N-3W	10YR3/3	fsl	9	10YR5/6	fsl	29	10YR6/2	lsand	33	24	arb	Test offset 2' NW of bush roots; gravelly Lay II
A-8N-4W	10YR3/3	fsl	10	V5/6	fsl	27				18	water	rocky Lay I
A-9N-1W	10YR3/2	fsl	12	10YR5/4	fsl	24	10YR6/3	fsl	30	25	arb	gravel in Lay I and II
A-9N-2W	10YR3/2	fsl	12	10YR5/4	fsl	15					rck	rocks in Lay I and II
A-9N-3W	10YR3/2	fsl	13	10YR5/4	fsl	20	10YR6/3	lfs	28	21	arb	water at 20"; rocky Lay I and II
A-9N-4W	10YR3/2	fsl	12	10YR5/4	fsl	18				11	water/rck	water at 12"; rocky Lay I and II
B-1N-0E	10YR3/3	fsl	9	10YR6/6	fsl	16	10YR6/3	sl	28	21	arb	Rocky Lay I; grv in Lay II and III; Soil in Lay I and II very compact
B-1N-1E	10YR3/3	fsl	10	10YR6/6	fsl	18	10YR5/4	sl	23	25	arb	Test offset 3' W; Lay IV 10YR6/3 slaom; rocky Lay I; Grv in Lay II and III
B-1N-2E	10YR3/3	fsl	9	10YR6/6	fsl	16	10YR5/4	sl	22	22	com	Lay IV 10YR6/3 sloam 27"; Grv in Lay I and II; rocky Lay IV
B-1N-3E	10YR3/3	fsl	9	10YR6/6	fsl	15	10YR5/4	sl	20	22	arb	Lay IV 10YR6/3 sloam 27"; rocky Lay I; Grv in Lay II
B-1N-4E	10YR3/3	fsl	9	10YR6/6	fsl	15	10YR5/4	sl	21	21	com	Test offset 3' E; Lay IV 10YR6/3 lsand 25"; rocky Lay I; Grv in Lay II and III; water seepage in Lay IV
B-1N-5E	10YR3/3	fsl	9	10YR6/6	fsl	16	10YR5/4	fsl	22	23	arb	Lay IV 10YR6/3 lsand 28"; Rocky Lay I and II; wet in Lay III and IV; Oxidization in Lay IV
B-2N-0E	10YR4/2	fsl	6	10YR5/4	fsl	14	10YR6/3	lfs	19	23	arb	Test on Tractor tracks; Lay IV 10YR7/2 lfs 27"; Lay III and IV compact
B-2N-1E	10YR4/2	fsl	11	10YR5/4	fsl	16	10YR6/3	lfs	28	26	com	Test offset 3' E; rocks in Lay II and III; Compact Lay III
B-2N-2E	10YR4/2	fsl	10	10YR5/4	fsl	23	10YR7/2	sfl	30	27	arb	Rocky Lay II; compact Lay III
B-2N-3E	10YR3/2	fsl	9	10YR5/4	fsl	18	10YR6/3	fls	24	26	arb	Lay IV 10YR6/3 fls 32"; Lay IV very compact/wet/with oxidation; water at 25"
B-2N-4E	10YR3/2	fsl	11	10YR5/4	fsl	17	10YR6/3	lfs	23	26	arb	Lay IV 10YR7/2 lfs with oxidation 29"; Rocky Lay II and III; Water at 26"
B-2N-5E	10YR3/2	fsl	10	10YR5/4	fsl	16	10YR6/3	lfs	24	26	arb	Lay IV 10YR7/2 lfs with oxidation 30"; rocky Lay II and III; Lay IV compact
B-3N-0E	10YR4/2	fsl	8	10YR5/4	fsl	15	10YR6/3	lfs	23	24	arb	Lay IV 10YR7/2 lfs with oxidation 28"; Lay IV compact; rocks in Lay II and III; Test on tractor tracks
B-3N-1E	10YR4/2	fsl	12	10YR5/4	fsl	20	10YR6/3	fsl	27	27	arb	Lay IV 10YR7/2 lfs with oxidation 31"; compact; rocks in Lay III
B-3N-3E	10YR3/2	fsl	11	10YR5/4	fsl	21	10YR7/2	lfs	29	23	arb	Lay II mottled with 10YR7/2 and 10YR6/3 fsl; Oxidation in Lay III; Lay II is B-C horizon backfill
B-3N-4E	10YR3/2	fsl	12	10YR4/2	fsl	26	10YR7/2	lfs	31	28	arb	Lay II mottled with 10YR7/2 with oxidation and rocks; Lay III with oxidation; Lay II is backfill
B-3N-5E	10YR3/2	fsl	11	10YR4/2	fsl	25	10YR7/2	lfs	27		rck	Lay II mottled with 10YR5/4, 10YR7/2 fsl; rocky Lay II; heavy oxidation in Lay III; Lay II is wetland backfill
B-4N-0E	10YR3/2	fsl	13	10YR5/4	fsl	21	10YR6/2	lfs	27	29	arb	Lay IV 10YR7/2 w/ oxidation; rocky Lay III and IV; rocky Lay II and III; compact throughout
B-4N-1E	10YR3/3	fsl	10	10YR6/6	fsl	15	10YR5/4	sl	22	23	arb	Lay IV 10YR6/3 sl 27"; rocky Lay I; grv in Lay II, III, and IV
B-4N-2E	10YR3/3	fsl	11	10YR6/6	fsl	17	10YR5/4	sl	21	23	com	Lay IV 10YR6/3 sl 28"; rocky Lay I; grv in Lay II, III, and IV
B-4N-3E	10YR3/3	fsl	11	10YR6/6	fsl	16	10YR6/4	lsand	22	27	arb	Lay IV 10YR6/2 lsand 31"; rocky Lay I
B-4N-4E	10YR3/3	fsl	12	10YR6/3	fsl	22	10YR7/1	lsand	30	24	arb	Test offset 2' S; rocky Lay I
B-5N-0E	10YR3/2	fsl	11	10YR5/4	fsl	19	10YR6/2	lfs	25	28	arb	Lay IV 10YR7/2 w/ oxidation 31"; compact throughout; rocky Lay II and III
B-5N-1E	10YR3/2	fsl	10	10YR5/4	fsl	18	10YR7/2	lfs	27	25	arb	Compact throughout; oxidation in Lay III
B-5N-2E	10YR4/2	fsl	9	10YR5/4	fsl	18	10YR6/3	lfs	25		arb	Lay IV 10YR7/2 lfs with oxidation; rocky Lay II and III

Appendix A: Field Test Summary, continued

Test #	Layer I Color	Layer I Texture	Layer I Depth"	Layer II Color	Layer II Texture	Layer II Depth"	Layer III Color	Layer III Texture	Layer III Depth"	Auger"	Close Reason	Comments
B-5N-3E	10YR4/2	fsl	10	10YR5/4	fsl	14	10YR6/3	lfs	19	20	com	Test offset 3' N; Lay IV 10YR7/2 lfs with oxidation 22"; compact
B-6N-0E	10YR4/2	fsl	12	2.5YR5/6	fsl	15	7.5YR5/4	scl	20	21	rck	Lay IV 7.5YR6/3 scl 23"; compact
B-6N-1E	10YR4/2	fsl	10	10YR5/4	fsl	17					rck	compact throughout; rocky Lay II; tractor tracks
B-6N-2E	10YR4/2	fsl	11	10YR5/4	fsl	18	10YR6/2	lsand	27	22	arb	Compact
B-6N-3E	10YR4/2	fsl	10	10YR5/4	fsl	18	10YR6/2	lsand	27		rck	
C-2S-1W	10YR4/2	fsl	10	10YR5/4	fsl	16	10YR6/4	lfs	26	28	arb	Lay IV 10YR6/2 lsand with oxidation 32"
C-2S-2W	10YR4/2	fsl	10	10YR5/4	fsl	19	10YR6/4	lfs	27	29	arb	Lay IV 10YR6/2 lfs 34"; Mottled with B + C horizons fsl and lfs; rocky Lay II
C-2S-3W	10YR4/2	fsl	10	10YR5/4	fsl	17	10YR6/4	lfs	26		rck	
C-2S-4W	10YR4/2	fsl	10	10YR5/4	fsl	21	10YR6/4	lfs	30		rck	Test offset 2' S
C-2S-5W	10YR4/2	fsl	12	10YR5/4	fsl	19	10YR6/4	lfs	28		rck	Test offset 4' SW
C-2S-6W	10YR4/2	fsl	10	10YR5/4	fsl	14					rck	Test offset 3" W
C-3S-1W	10YR4/2	fsl	11	10YR5/4	fsl	17					rck	
C-3S-2W	10YR4/2	fsl	10	10YR5/4	fsl	16	10YR6/4	lfs	29	26	rck	Lay IV 10YR6/2 lsand 32"; Rocky Lay II
C-3S-3W	10YR4/2	fsl	8	10YR5/4	fsl	15	10YR6/4	lfs	26	30	srb	Lay IV 10YR5/2 lfs 30"; Rocks in Lay II and III
C-3S-4W	10YR4/2	fsl	10	10YR5/4	fsl	13					rck	
C-3S-5W	10YR4/2	fsl	10	10YR5/4	fsl	21	10YR6/4	lfs	28	30	arb	Lay IV 10YR6/2 with oxidation 35"; Rocky Lay II and III
C-3S-6W	10YR4/2	fsl	11								rck	
C-4S-2W	10YR4/2	fsl	11	V5/4	fsl	16					rck	
C-4S-3W	10YR4/2	fsl	10	10YR5/4	fsl	17	10YR6/4	lfs	27	28	arb	Lay IV 10YR6/2 sand 34"
C-4S-4W	10YR4/2	fsl	11	10YR5/4	fsl	13					rck	
C-4S-5W	10YR4/2	fsl	10	10YR5/4	fsl	12					rck	
C-4S-6W	10YR4/2	fsl	9	10YR5/4	fsl	17	10YR6/4	lfs	25		rck	Lay IV 10YR6/2 lfs 28"; Rocky Lay II and III
C-5S-2W	10YR4/2	fsl	8	10YR5/4	fsl	14					rck	Heavy rock, compact throughout
C-5S-3W	10YR4/2	fs;	10	10YR7/3	fsl	21	10YR6/4	lfs	27	30	arb	Lay IV 10YR6/3 lfs; Rocky Lay II
C-5S-4W	10YR4/2	fsl	8	10YR7/3	fsl	16	10YR6/4	lfs	28	25	rck	Lay IV 10YR6/3 lfs 31"; rocky Lay II
C-5S-5W	10YR4/2	fsl	10	10YR5/4	fsl	13					rck	
C-5S-6W	10YR4/2	fsl	10	10YR5/4	fsl	18				13	rck	
C-6S-2W	10YR4/2	fsl	9	10YR5/4	fsl	12					rck	
C-6S-3W	10YR4/2	fsl	9	10YR5/4	fsl	21	10YR6/4	fsl	30	28	arb	Lay IV 10YR6/2 lsand 33"
C-6S-4W	10YR4/2	fsl	9	10YR5/4	fsl	18					rck	
C-6S-5W	10YR4/2	fsl	9	10YR5/4	fsl						rck	
D-2S-2E	10YR4/2	fsl	11	10YR4/6	fsl	25	10YR5/3	sl	30	23	arb	rocky Lay I, gravel in Lay II
D-2S-3E	10YR4/2	fsl	11	10YR4/6	fsl	20	10YR5/3	sl	27	20	arb	rocky Lay I and II
D-2S-4E	10YR4/2	fsl	11	10YR4/6	fsl	19	10YR6/2	lfs	27	21	arb	rocky Lay I; gravel in Lay II and III
D-2S-5E	10YR4/2	fsl	10	10YR4/6	fsl	19	10YR6/2	fsl	31	20	arb	rocky in Lay I; gravel in Lay II and III
D-2S-6E	10YR4/2	fsl	15							13	rck	very rocky
D-3S-2E	10YR4/2	fsl	7	10YR5/4	fsl	11	10YR6/3	lfs	23	25	arb	Lay IV 7.5YR2/2 lfs 31"
D-3S-3E	10YR4/2	fsl	15	10YR5/4	fsl	24	10YR6/3	lfs	32	34	arb	Lay IV 7.5YR7/2 lfs 40"; water at 39"; rocks in Lay II and III
D-3S-4E	10YR4/2	fsl	15	10YR5/4	fsl	20	10YR6/3	lfs	33	28	arb	Lay IV 7.5YR7/2 lfs 36"; rocks in Lay II and III
D-3S-5E	10YR4/2	fsl	11	10YR5/4	fsl	24	10YR6/3	lfs	30	28	rck	Rocks in Lay II and III

Appendix A: Field Test Summary, continued

Test #	Layer I Color	Layer I Texture	Layer I Depth"	Layer II Color	Layer II Texture	Layer II Depth"	Layer III Color	Layer III Texture	Layer III Depth"	Auger"	Close Reason	Comments
D-3S-6E	10YR4/2	fsl	28	7.5YR6/2	lfs	31				29	arb	Lay II contained oxidation and is backfilled wetlands; subsoil stripped
D-4S-2E	10YR4/2	fsl	14	10YR5/4	fsl	28					rck	rock throughout
D-4S-3E	10YR4/2	fsl	11	10YR5/4	fsl	17	10YR6/3	fsl	26	26	arb	Lay IV 7.5YR7/3 lfs 29”
D-4S-4E	10YR4/2	fsl	14	10YR5/4	fsl	21	10YR6/3	lfs	44	35	arb	
D-4S-5E	10YR4/2	fsl	13	10YR5/4	fsl	22	10YR5/3	fsl	33	33	arb	Lay IV 7.5YR7/2 lfs 37”; rocks in Lay II and III
D-4S-6E	10YR4/2	fsl	11	10YR5/4	fsl	14	10YR6/3	lfs	20	25	rck	Lay IV 7.5YR7/2 lfs 29”; rock throughout
D-5S-2E	10YR3/1	fsl	9	10YR6/4	lfs	15	10YR6/3	lfs	20	21	arb	Lay IV 10YR6/2 lsand 26”; Rocky Lay II and III
D-5S-3E	10YR4/2	fsl	10	10YR4/6	fsl	20	10YR5/3	sl	30	27	arb	Lay IV 7.5YR7/2 lfs 38”; rocky Lay I and II
D-5S-4E	10YR4/2	fsl	9	10YR4/6	fsl	21	10YR5/3	sl	28	23	arb	Lay IV 7.5YR7/2 lfs 34”
D-5S-5E	10YR4/2	fsl	12	10YR6/3	fsl	25	10YR7/2	lfs	32	23	rck	Test offset 2’ W due to roots; rock throughout
D-5S-6E	10YR4/2	fsl	10	10YR5/4	fsl	22	10YR6/3	fsl	28	25	arb	Lay IV 7.5YR7/2 lfs 31”; rocks in Lay II and III
D-6S-2E	10YR4/2	fsl	11	10YR4/6	fsl	18	10YR5/2	sl	26	20	arb	rocky Lay I and II, gravel in Lay III
D-6S-3E	10YR3/1	fsl	13	10YR6/4	lfs	17	10YR6/3	lfs	23	25	arb	Test offset 4’ W; Lay IV 10YR6/2 lsand 29”; Rocky Lay II and III
D-6S-4E	10YR3/1	fsl	11	10YR6/4	lfs	18	10YR6/3	lfs	25	27	arb	Lay IV 10YR6/2 lsand 31”; Rocky Lay I, II, III; Gravel In Lay III and IV
D-6S-5E	10YR3/1	fsl	13	10YR6/4	lfs	21	10YR6/3	lfs	25	27	arb	Lay IV 10YR6/2 lsand 30”; Rocky Lay II
D-6S-6E	10YR3/1	fsl	11	10YR6/4	lfs	20	10YR6/3	lfs	25	26	arb	Lay IV 10YR6/2 lfs 30”;, Rocky Lay II and III
D-7S-3E	10YR4/3	fsl	9	10YR5/4	fsk	16	10YR5/2	lsand	23	24	arb	Test offset 1’ S; Lay IV 10YR7/2 lfs 31”; Rocky Lay I and II
D-7S-4E	10YR4/3	fsl	7	10YR5/4	fsl	16	10YR5/2	lfs	24	26	arb	Lay IV 10YR7/2 lfs 33”; Rocky Lay I, II, III; Grv in Lay IV
D-7S-5E	10YR4/3	fsl	10	10YR5/4	fsl	20	10YR5/3	lsand	26	28	arb	Lay IV 10YR5/1 lfs 31”; Rcok in Lay I and II; Grv in Lay III and IV
D-7S-6E	10YR4/3	fsl	10	10YR5/4	fsl	19	10YR5/2	scl	24	25	arb	Lay IV 10YR6/3 scl 30”; Lay III and IV very compact
D-8S-2E	10YR3/1	fsl	10	10YR6/4	lfs	16	10YR6/3	lfs	19	20	arb	Lay IV 10YR6/2 lsand 25”; Rocks/gravel in Lay II and III
D-8S-3E	10YR3/1	fsl	9	10YR6/4	lfs	17	10YR6/3	lfs	20	22	arb	Lay IV 10YR6/2 loamysilt 27”; Rocky Lay III
D-8S-4E	10YR3/1	fsl	9	10YR6/4	lfs	17	10YR6/3	lfs	23	24	arb	Lay IV 10YR6/2 lsand 28”
D-8S-5E	10YR3/1	fsl	9	10YR6/4	lfs	16	10YR6/3	lfs	19	20	arb	Lay IV 10YR6/2 lsnad 28”
D-8S-6E	10YR3/1	fsl	9	10YR6/4	lfs	17	10YR6/3	lfs	20		rck	Rocky Lay III
D-9S-2E	10YR4/2	fsl	10	10YR5/2	lfs	16	10YR6/2	lsand	32	25	arb	Rock/grv in Lay II and III
D-9S-3E	10YR3/2	fsl	11	7.5YR5/4	fsl	24	10YR6/2	lsand	31	27	arb	Rock/grv in Lay II and III
D-9S-4E	10YR3/1	fsl	10	10YR6/4	lfs	18	10YR6/3	lfs	26	27	arb	Lay IV 10YR6/2 lsand 30”; Rock/grv in Lay II and III
D-9S-5E	10YR3/1	fsl	11	10YR6/4	lfs	16	10YR6/3	lfs	31	36	arb	Lay IV 10YR6/2 lsand 42”; Rock/grv in Lay II and III
D-9S-6E	10YR3/1	fsl	9	10YR6/4	lfs	15	10YR6/3	lfs	27	27	arb	Lay IV 10YR6/2 siltyloam 31”; Rocky Lay II and III
D-10S-2E	10YR4/2	fsl	9	10YR5/6	fsl	15	10YR5/4	sl	21	22	arb	Lay IV 10YR6/2 lsand 27”; Rocky Lay I and II
D-10S-3E	10YR4/2	fsl	9	10YR5/6	fsl	17	10YR5/4	sl	22	23	arb	Lay IV 10YR6/2 lsand 29”; Rocky Lay I and II; Grv in Lay III and IV
D-10S-4E	10YR4/2	fsl	9	10YR5/6	fsl	16	10YR6/2	sl	24	20	grv	Extremely rocky throughout
D-10S-5E	10YR4/3	fsl	9	7.5YR5/6	fsl	15	10YR6/4	lfs	19	20	arb	Lay IV 10YR6/3 lfs 25”; rocky Lay I and II; grv in Lay iii and Iv
D-10S-6E	10YR4/3	fsk	8	10YR5/6	fsl	16	10YR6/4	lfs	27	28	arb	Lay IV 10YR6/2 lfs 35”
D-11S-4E	10YR4/2	fsl	11	10YR6/4	fsl	22	10YR6/3	fsl	29	30	arb	Lay IV 10YR6/2 lsand; Rocky Lay II and III
D-11S-5E	10YR3/1	fsl	7	10YR6/4	lfs	13	10YR6/3	lfs	22	23	arb	Lay IV 10YR6/2 sl; Rocky Lay II and III
D-11S-6E	10YR4/2	fsl	8	10YR5/6	fsl	12	10YR5/4	lfs	19	22	rck	Lay IV 10YR6/4 fsl 25”; Rocky Lay II and III
P-0N-3W	10YR3/2	fsl	9	10YR5/4	fsl	14	10YR6/4	sl	29	20	arb	grv in Lay I
P-0N-4W	10YR3/2	fsl	9								rck	Offset six times; Large boulder atleast 20” diam under Lay I

Appendix A: Field Test Summary, continued

Test #	Layer I Color	Layer I Texture	Layer I Depth"	Layer II Color	Layer II Texture	Layer II Depth"	Layer III Color	Layer III Texture	Layer III Depth"	Auger"	Close Reason	Comments
P-1N-1W	10YR4/3	fsl	6	7.5YR4/4	fsl	18	10YR6/3	lfs	29	22	arb	Test Offset 4' N due to tree; Lay IV 10YR7/2 scl 32"; Roots throughout Lay I; Heavy rock throughout Lay II, III, IV
P-1N-2W	10YR3/2	fsl	9	7.5YR5/6	fsl	17	10YR6/6	lsand	24	19	rck	rock throughout; large rocks in SW and SE side walls
P-1N-3W	10YR3/2	fsl	9	7.5YR5/6	fsl	14	10YR6/4	lsand	22	18	com	rocky Lay I and II; grv in Lay III
P-1N-4W	10YR4/2	fsl	8	10YR5/4	fsl	14	10YR6/3	fsl	25	25	arb	Lay IV 10YR7/2 lfs 27"; rocky Lay I and II
P-1S-1W	10YR3/2	fsl	7	10YR5/4	fsl	15	10YR6/3	fsl	27	27	arb	Lay IV 10YR7/4 lfs; heavy rocky Lay I and II
P-1S-2W	10YR3/2	fsl	7	10YR5/4	fsl	14	10YR6/3	lfs	27	27	arb	Lay IV 10YR7/2 lfs 32"; rocks/roots in Lay II and III
P-1S-3W	10YR3/2	fsl	8	10YR5/4	fsl	16	10YR6/4	sl	22	17	arb	Rocky Lay I and II
P-1S-4W	10YR3/2	fsl	13	10YR5/4	fsl	25	10YR6/2	lfs	29	23	arb	test is 3' from cow pelvis and other bones; rocky Lay II
P-2N-2W	10YR4/3	fsl	6	7.5YR4/4	fsl	15					rck	Heavy rock content throughout test
P-2N-3W	10YR3/2	fsl	13	7.5YR5/6	fsl	24	10YR6/4	lsand	31	21	com	Extremely rocky throughout
P-2N-4W	10YR4/2	fsl	7	7.5YR5/4	fsl	12	10YR6/3	lfs	27	28	arb	Lay IV 10YR7/2 scl 30"
P-2S-3W	10YR3/2	fsl	8	7.5YR5/6	fsl	17	10YR6/4	sl	28	18	arb	Test is 10' from cow skull; Rocky Lay I and II
P-2S-4W	10YR3/2	fsl	9	10YR6/4	fsl	23					root	rock throughout; Water at 22"
P-3N-2W	10YR3/2	fsl	7	7.5YR5/4	fsl	16	10YR5/4	fsl	25	27	arb	Lay IV 10YR6/3 lfs 31"
P-3N-3W	10YR2/3	fsl	3	10YR4/3	fsl	8	7.5YR4/4	fsl	14		rck	Test offset 5' N; Lay I mottled with 10YR3/3 fsl; large rocky Lay II
P-3N-4W	10YR4/2	fsl	6	7.5YR5/4	fsl	14	10YR6/3	lfs	24	21	root	Lay IV 10YR7/2 scl 27"
P-4N-1W	10YR4/3	fsl	5	7.5YR4/4	fsl	20	10YR6/6	scl	13	23	rck	Test offset 3'E due to log
P-4N-2W	10YR3/2	fsl	8	7.5YR5/6	fsl	17	10YR6/4	lsand	24	19	com	rock and gravel throughout
P-4N-3W	10YR4/3	fsl	6	7.5YR4/4	fsl	12	10YR6/3	scl	19	22	arb	Lay IV 10YR7/2 scl 28"; Lay I contains top I" layer of 10YR2/2 on surface; rocky Lay II
P-5N-0E	10YR4/3	fsl	7	7.5YR4/4	fsl	15					rck	Rock throughout tet
P-5N-1W	10YR3/2	fsl	7	7.5YR5/4	fsl	20					rck	Test offset 3' W due to tree
P-5N-2W	10YR4/2	fsl	6	10YR5/4	fsl	15	10YR6/3	lfs	25	20	root	Lay IV 10YR7/2 scl 26"
P-5N-3W	10YR4/3	fsl	5	7.5YR4/4	fsl	16					rck	Test offset 8' E
P-6N-0E	10YR3/2	fsl	6	10YR5/4	fsl	14	10YR6/3	sfl	22	16	rck	
P-6N-1E	10YR4/3	fsl	6	7.5YR4/4	fsl	15	10YR6/3	lfs	27	24	arb	Lay IV 10YR7/2 scl 30"
P-6N-1W	10YR3/2	fsl	6	10YR5/4	fsl	12	10YR6/3	sfl	28	23	com	rocky Lay II and III
P-6N-2W	10YR4/2	fsl	7	7.5YR5/4	fsl	15	10YR5/4	fsl	25	24	root	Lay IV 10YR6/3 lfs 29"
P-6N-3W	10YR4/3	fsl	6	7.5YR4/4	fsl	10	10YR5/4	fsl	20		rck	Lay IV 10YR6/3 lfs 23"; Test offset 5' N; rocky Lay II
S-1N-2W	10YR4/2	fsl	8	10YR5/4	fsl	16	10YR6/4	lfs	26		rck	root/rock in Lay III at 23"; Water at 24"
S-1N-3W	10YR4/2	fsl	9	10YR5/4	fsl	15	10YR6/3	lfs	24	26	arb	Test offset 3' SW due to tree/rock pile; Lay IV 10YR7/2 lsand 29"; Heavy oxidation in Lay IV; Water at 28"
S-1N-4W	10YR4/2	fsl	9	10YR5/4	fsl	18	10YR6/3	lfs	26	28	arb	Lay IV 10YR7/2 lsand 34"; Heavy oxidation in Lay IV; Water at 33"
S-1N-5W	10YR4/2	fsl	7	10YR5/4	fsl	16	10YR6/3	fsl	24	24	arb	Lay IV 10YR7/2 lsand 28"; rocky Lay I, II, III
S-1N-6W	10YR4/2	fsl	8	10YR5/4	fsl	14	10YR6/4	lsand	27	21	arb	Rocky Lay I and II; Grv in Lay III
S-1N-7W	10YR3/2	fsl	7	10YR5/4	fsl	14	10YR6/4	scl	27	24	arb	Lay II mottled with 10YR4/2; Lay IV 10YR7/2 lsand 29"; compact Lay IV; Rocky Lay II and III
S-1N-8W	10YR4/2	fsl	4	10YR5/4	fsl	11	10YR6/4	sloam	11	20	com	Lay IV 10YR7/2 lsand; Test offset 3' E; Rocky Lay I; Grv in Lay II and III; Lay II mottled with 10YR4/2
S-2N-2W	10YR2/1	fsl	15								water	Water at 12"; Test 5' W of wetland boundary

Appendix A: Field Test Summary, continued

Test #	Layer I Color	Layer I Texture	Layer I Depth"	Layer II Color	Layer II Texture	Layer II Depth"	Layer III Color	Layer III Texture	Layer III Depth"	Auger"	Close Reason	Comments
S-2N-3W	10YR4/2	fsl	6	10YR5/4	fsl	17	10YR6/4	sl	25	20	arb	
S-2N-4W	10YR4/2	fsl	8	10YR5/4	fsl	17	10YR6/3	fsl	25	26	arb	Lay IV 10YR7/2 lsand 32"; Heavy oxidation in Lay IV; Water at 30"
S-2N-5W	10YR4/2	fsl	9	10YR5/4	fsl	16	10YR6/3	lfs	29	32	arb	Lay IV 10YR7/2 lsand 37"; heavy oxidation in Lay IV; Water at 37"
S-2N-6W	10YR4/2	fsl	6	10YR5/4	fsl	16	10YR6/3	fsl	30	26	arb	Lay IV 10YR7/2 lsand 32"; Lay IV wet
S-2N-7W	10YR3/2	fsl	7	10YR5/4	fsl	14	10YR6/4	scl	26	24	rck	Lay II mottled with 10YR4/2 fsl 30"; Rocky Lay II and III; Compact Lay IV; standing water at 30"
S-2N-8W	10YR4/2	fsl	5	10YR5/4	fsl	12	10YR6/4	sloam	17	20	com	Lay IV 10YR7/2 lsand 25"; Test offset 2' S; Rocky Lay I ; Grv in Lay II; Lay II mottled with 10YR4/2
S-3N-3W	10YR4/2	fsl	6	10YR5/4	fsl	9	10YR6/4	sloam	13	23	arb	Lay IV 10YR7/2 lsand 28"; Water seepage at bottom
S-3N-4W	10YR4/2	fsl	6	10YR5/4	fsl	16					rck	Test offset 3' W; extremely rocky; Rocky Lay I and II; Large rocks in N and S sidewall
S-3N-5W	10YR4/2	fsl	6	10YR5/4	fsl	18	10YR6/4	lsand	25	20	arb	Rocky Lay I and II; Compact Lay II; Grv in Lay III; Water seepage at bottom of test
S-3N-6W	10YR4/2	fsl	7	10YR4/2	fsl	13	10YR6/3	fsl	20	22	arb	Lay IV 10YR 7/2 lsand 26"; Lay II mottled 10YR5/4 and 10YR6/3 fsl; compact Lay III; oxidation in and very compact Lay IV
S-3N-7W	10YR3/2	fsl	8	10YR5/4	fsl	12	10YR6/4	scl	31	32	arb	Lay IV lsand 34"; Lay IV compact; Lay II mottled with 10YR 4/2 fsl; Rocky Lay II and III; Water at 32"
S-3N-8W	10YR4/2	fsl	5	10YR5/4	fsl	11	10YR6/4	fsl	22		rck	Gravel and rock throughout; Test offset 1' W due to rock
S-4N-4W	10YR4/2	fsl	7	10YR5/4	fsl	17	10YR6/3	lfs	25	26	arb	Lay IV 10YR7/2 lsand 30"; rocky Lay III; heavy oxidation in Lay IV; Water at 29"
S-4N-5W	10YR4/2	fsl	11	10YR5/4	fsl	19	10YR6/3	lfs	24	20	rck	Test offset 3'S; Lay IV 10YR7/2 lsand 30"; rck in Lay II and III; Oxidation in Lay IV
S-4N-6W	10YR4/2	fsl	6	10YR5/4	fsl	18	10YR6/4	lsand	29	24	arb	Rocky Lay I; Grv in :ay II; Rusted oxidation in Lay III
S-4N-7W	10YR3/2	fsl	7	10YR6/4	fsl	14	10YR6/3	lfs	27	23	arb	Lay IV 10YR7/2 lsand 28"; rock and root in Lay II; Wet rocks in Lay III
S-5N-6W	10YR4/2	fsl	6	10YR4/2	fsl	16	10YR7/2	lsand	23	19	arb	Test offset 3' SW; Lay II mottled with 10YR5/4 and 10YR6/3 fsl; oxidation , very wet, very compact in Lay III
S-5N-7W	10YR3/2	fsl	5	10YR5/4	fsl	12	10YR6/3	fsl	31	26	water	Lay II mottled with 10YR4/2 fsl; Lay III wet and very compact; Water at 26"
S-6N-6W	10YR4/2	fsl	7	10YR5/4	fsl	13	10YR6/4	fsl	26	21	com	Rocky Lay I; Water at 24"
S-6N-7W	10YR3/2	fsl	7	10YR5/4	fsl	13	10YR6/3	fsl	26	24	water	Lay II mottled with 10YR4/2 fsl; Lay IV 10YR7/2 lsand 29"; water throughout test
0N-3E	10YR3/3	fsl	10	7.5YR5/4	fsl	24	7.5YR6/4	lsand	34	24	water	gravel throughout; water at 34"
0N-4E	10YR4/3	fsl	12	7.5YR5/5	fsl	34						
0N-5E	10YR3/3	fsl	11	10YR5/4	fsl	17	10YR6/4	sl	23	18	grv	rocky Lay I; gravel in Lay II and III
0N-6E	10YR3/3	fsl	10	10YR5/4	fsl	18	10YR6/2	sl	27	21	arb	rocky Lay I and II; gravel in Lay III
0N-7E	10YR3/2	fsl	12	10YR3/2	fsl	25	10YR7/2	fsl	32	28	arb	Lay II is redeposited A/B Horizon; Lay II mottled with 10YR5/4, 10YR7/2, and 10YR6/4 with rock
0N-8E	10YR3/2	fsl	16	10YR5/4	fsl	22	10YR6/3	fls	28	29	arb	Grv in Lay III
0N-9E	10YR4/3	fsl	16	7.5YR5/4	fsl	26	7.5YR6/4	lfs	38	28	grv	gravel throughout
0N-10E	10YR4/3	fsl	13	7.5YR5/5	fsl	34				31	root	Layer of roots between I and II
0N-11E	10YR3/4	fsl	25	10YR4/4	fsl	30			23		rck	

Appendix A: Field Test Summary, continued

Test #	Layer I Color	Layer I Texture	Layer I Depth"	Layer II Color	Layer II Texture	Layer II Depth"	Layer III Color	Layer III Texture	Layer III Depth"	Auger"	Close Reason	Comments
1N-3E	10YR3/2	fsl	9	10YR5/3	fsl	21				13	water	standing water at 15"
1N-4E	10YR3/2	fsl	11	10YR5/3	fsl	21	10YR6/2	sl	31	23	grv	standing water at bottom of test; rocky Lay I; gravel in in Lay III
1N-6E	10YR3/2	fsl	9	10YR5/4	fsl	20	10YR6/3	sl	25	20	grv	rocky Lay I; gravel in Lay II and III
1N-7E	10YR4/2	fsl	12	10YR5/4	fsl	18	2.5Y6/3	lfs	30	24	water	water at 22"
1N-8E	10YR4/2	fsl	11	10YR5/4	fsl	23	2.5Y6/3	lfs	31	25	water	water at 25"; moderate rocky Lay II and III
1N-9E	10YR6/3	fsl	10	10YR5/3	fsl	20	10YR4/3	fsl/sl	27	21	grv	rocky Lay I and II; gravel in Lay III
1N-10E	10YR4/2	fsl	11	10YR5/4	fsl	15	10YR6/3	sl	23	16	water	Standing water at 16"; rocky Lay I
1S-3E	10YR3/3	fsl	8	7.5YR5/4	lsand	21					rck	gravel throughout; very compact Lay II
1S-4E	10YR4/3	fsl	10	10YR4/5	fsl	19					rck	rock and compact
1S-6E	10YR3/3	fsl	7	10YR6/4	lfs	15				13	com	extremely rocky; possible stonewall
1S-8E	10YR4/2	fsl	6	10YR5/3	lfs	11					rck	Redeposited soil for Lay II
1S-9E	10YR4/3	fsl	7	7.5YR5/4	fsl	17	7.5YR6/4	lsnad	27	24	rck	Lay II mottled with 10YR4/3 sl; gravel/rock/dense throughout
1S-10E	10YR4/3	fsl	15	7.5YR5/5	fsl	22					rck	rocks throughout; Pile of large rocks on surface ~10' NE
1S-11E	10YR3/3	fsl	7	10YR4/4	fsl	15	10YR5/2	lfs	18	14	rck	test located in depression; very rocky
1S-12E	10YR3/2	fsl	9	10YR5/4	fsl	20	10YR6/3	fsl	29	22	arb	test is in N-S depression
1S-13E	10YR2/3	fsl	9	10YR6/6	fsl	18					rck	Large rock in E, W, S sidewalls; rocky Lay I
2N-2E	10YR3/3	fsl	10	10YR5/4	fsl	19	10YR6/3	sl	29	22	arb	standing water at 28"; rocky Lay I and II; gravel in Lay III
2N-3E	10YR3/3	fsl	13	10YR5/4	fsl	24	10YR6/3	sl	30	23	arb	rocky Lay I and II; grave in Lay III
2N-4E	10YR3/2	fsl	15	10YR5/4	fsl	28	10YR5/3	sl	33	23	arb	standing water at bottom of test; bottom layer I slightly disturbed
2N-6E	10YR3/2	fsl	7	10YR5/4	fsl	19	10YR6/3	sl	28	22	grv	rocky Lay I and II; gravel in Lay III
2N-7E	10YR5/3	fsl	11	10YR3/3	fsl	26				19	water	standing waer at 17"; rock throughout
2N-8E	10YR4/2	fsl	10	10YR5/3	fsl	28				21	arb	standing water at 18"; rock throughout
2N-9E	10YR4/2	fsl	11	10YR5/4	fsl	19	2.5Y6/3	lfs	29	22	water	water at 20"
2N-10E	10YR3/2	fsl	10	10YR5/4	fsl	21	10YR7/2	lsand	29	22	water	Water at 18"
2S-2E	10YR3/2	fsl	10	10YR5/4	fsl	18	10YR6/3	lfs	25	20	arb	standing water at 24"; very gravelly Lay II; very compact Lay III
2S-3E	10YR4/3	fsl	12	7.5YR5/4	fsl	22	7.5YR6/4	lsand	34	24	com	gravel throughout
2S-4E	10YR4/3	fsl	12	10YR4/5	fsl	40				31	rck	rocky Lay II
2S-6E	10YR3/3	fsl	12	10YR6/4	fsl	18	10YR5/3	sl	24	21	grv	rocky Lay I; gravel in Lay III
2S-9E	10YR4/3	fsl	11	7.5YR5/4	fsl	27	7.5YR6/4	lsand	41	27	rck	gravel throughout
2S-10E	10YR4/3	fsl	9	7.5YR5/5	fsl	30					water	
2S-11E	10YR3/3	fsl	10	7.5YR4/4	fsl	21	10YR6/2	sl	23	20	rck	standing water at 21"; rocky Lay I , gravel in Lay II
2S-12E	10YR3/2	fsl	11	10YR5/4	fsl	25				16	water	water at 14"
2S-13E	10YR4/2	fsl	10	10YR5/4	fsl	24	10YR7/2	lfs	31	25	arb	Water st 30"; Lay II mottled with 10YR7/2 wetland backfill
3N-2E	10YR6/2	fsl	9	10YR5/4	fsl	24	2.5Y6/3	lfs	35	26	arb	
3N-3E	10YR4/2	fsl	9	10YR4/2	fsl	17	2.5Y6/3	lfs	25	21	arb	Lay II mottled with 10YR5/3 (plow zone); compact Lay III
3N-4E	10YR4/2	fsl	16	10YR5/	fsl	24	2.5Y6/3	lfs	36	28	arb	compact at 32"
3N-6E	10YR4/3	fsl	13	10YR4/6	fsl	20	10YR6/3	fsl	27	23	arb	rocky Lay I and II; gravel in Lay III
3N-7E	10YR4/2	fsl	10	10YR5/3	fsl	18	2.5Y6/3	lfs	32	20	water	water at 24"
3N-8E	10YR4/2	fsl	11	10YR5/4	fsl	18	2.5Y6/3	lfs	26	20	water	water at 21" heavy gravel in Lay III
3N-9E	10YR4/2	fsl	12	10YR5/3	fsl	19	2.5Y6/3	lfs	29	20	water	water at 20"

Appendix A: Field Test Summary, continued

Test #	Layer I Color	Layer I Texture	Layer I Depth"	Layer II Color	Layer II Texture	Layer II Depth"	Layer III Color	Layer III Texture	Layer III Depth"	Auger"	Close Reason	Comments
3N-10E	10YR3/2	fsl	10	10YR5/4	fsl	15	10YR6/3	lfs	26	22	rck	Lay IV 10YR6/4 scl 33"; water at 22"; heavy rock/wet in Lay II and III; Lay IV wetland C
3S-2E	10YR3/2	fsl	11	10YR5/4	fsl	23	10YR6/3	lfs	28	24	arb	rocky Lay II
3S-3E	10YR4/3	fsl	10	7.5YR5/4	fsl	22	7.5YR6/4	lsand	33	24	rck	gravel throughout
3S-4E	10YR4/3	fsl	10	10YR4/5	fsl	23					rck	Lay II rocky and compact
3S-9E	10YR3/3	fsl	9	7.5YR5/4	fsl	20					water	gravel throughout; water at 20"
3S-10E	10YR4/3	fsl	9	10YR4/5	fsl	24					water	
3S-11E	10YR3/3	fsl	9	10YR4/4	sl	25				20	water	standing water at 16"
3S-13E	10YR3/2	fsl	7	10YR5/4	lfs	20	10YR7/2	lfs	25	26	water	Water at 23"; Lay II mottled with 10YR7/2; Lay III mottled with 5YR5/4
4N-1E	10YR4/2	fsl	10	10YR5/3	fsl	16	10YR5/2	sl	26	17	arb	rocky Lay I and II; gravel in Lay III
4N-2E	10YR4/2	fsl	10	10YR5/3	fsl	22	10YR5/2	sl	29	199	rck	rock throughout
4N-4E	10YR3/2	fsl	6	10YR6/4	fsl	22	10YR6/3	sl	24	21	grv	rocky Lay II; grvel in Lay III
4N-6E	10YR4/2	fsl	13	10YR5/4	fsl	25	10YR5/3	sl	32	20	rck/water	massively rocky and wet throughout; standing water at 24"
4N-7E	10YR3/3	fsl	10	10YR5/4	fsl	19	2.5YR6/3	sl	30	20	arb	standing water at 26"; rocky Lay I and II
4N-8E	10YR3/2	fsl	11	10YR5/4	fsl	16	10YR6/3	lfs	20	22	water	Lay IV 10YR7/2 lfs; water at 20"
4N-9E	10YR3/2	fsl	11	10YR5/4	fsl	16	10YR6/3	lfs	20	22	water	Lay IV 10YR7/2 lfs 26"; water at 20"
4S-3E	10YR4/3	fsl	10	7.5YR5/4	fsl	26	7.5YR6/4	lsand	40	24	rck/water	gravel/rocks throughout; water at 40"
4S-4E	10YR4/3	fsl	10	10YR4/5	fsl	28					water	rocky and wet Lay II
4S-5E	10YR4/2	fsl	12	10YR5/4	fsl	18	10YR6/3	lfs	28	23	arb	water at 26"; rocks in Lay II
4S-8E	10YR3/2	fsl	10	10YR5/4	fsl	19				15	water	water at 13"
4S-9E	10YR3/2	fsl	11	10YR5/4	fsl	17	10YR6/3	lfs	28	20	water	water at 17"
4S-10E	10YR3/2	fsl	10	10YR5/4	fsl	23	10YR6/4	lfs	30	19	water	water at 17"
4S-11E	10YR3/3	fsl	10	10YR4/4	fsl	20				15	rck	standing water at 18"; rock throughout
4S-12E	10YR3/2	fsl	11	10YR5/4	fsl	23	10YR6/3	lfs	28	24	arb	water at 23"
4S-13E	10YR3/2	fsl	8	10YR5/4	lfs	20	10YR7/2	lfs	24	27	water	Lay IV 10YR7/2 lfs 34"; Lay II mottled with 10YR7/2 with rock; Lay III mottled with 5YR5/4 with rock
4.5N-0E	10YR4/2	fsl	6	10YR5/4	fsl	14	10YR6/3	lfs	17		rck	Rock and grv in Lay II; Compact with grv in Lay III
5N-0E	10YR3/3	fsl	6	10YR5/4	fsl	23	2.5Y6/3	sl/lsand	31	22	arb	rocky Lay I and II; gravel in Lay III
5N-0.5E	10YR4/2	fsl	7	10YR5/4	fsl	12	10YR6/3	lfs	16		rck	Rock and grvl in Lay II; compact Lay III
5N-0.5W	10YR4/2	fsl	11	10YR5/4	fsl	16	10YR6/3	lfs	20		arb	Lay IV 10YR7/2 lfs 22"; Rocky Lay III; Compact Lay IV
5N-1E	10YR3/3	fsl	11	10YR5/6	fsl	18	2.5Y6/3	sl	32	24	arb	
5N-2E	10YR3/3	fsl	9	10YR5/4	fsl	20	10YR6/3	sl	28	21	grv	gravel in Lay III
5N-4E	10YR3/3	fsl	6	10YR5/4	fsl/sl	17					rck	
5N-6E	10YR3/3	fsl	10	10YR5/4	fsl	19	10YR6/3	sl	30	25	arb	
5N-7E	10YR3/3	fsl	12	10YR5/6	fsl	20	2.5Y6/3	sl	27	23	arb	rocky Lay I
5N-8E	10YR3/2	fsl	11	10YR5/4	fsl	15	10YR6/3	lfs	24		rck	Water at 19"
5S-3E	10YR4/3	fsl	10	7.5YR5/4	fsl	23					water	gravel throughout; water at 23"
5S-4E	10YR4/3	fsl	13	10YR4/5	fsl	26					water	gravel in Lay I
5S-5E	10YR4/2	fsl	11	10YR5/4	fsl	18	10YR6/3	lfs	27	20	arb	water at 25"; rocks in Lay II and III
5S-9E	10YR3/2	fsl	10	10YR5/9	fsl	21	10YR7/2	lsand	22		water	
5S-10E	10YR3/2	fsl	10	10YR5/4	fsl	15	10YR6/3	lfs		20	water	Water at 18"

Appendix A: Field Test Summary, continued

Test #	Layer I Color	Layer I Texture	Layer I Depth"	Layer II Color	Layer II Texture	Layer II Depth"	Layer III Color	Layer III Texture	Layer III Depth"	Auger"	Close Reason	Comments
5S-11E	10YR3/3	fsl	11	10YR4/4	fsl	22	10YR5/2	lfs	27	21	arb	rocky Lay I; gravel in Lay II and III
5S-12E	10YR4/2	fsl	12	10YR4/2	fsl	26	10YR6/3	lfs	33	28	arb	Lay II mottled with 10YR5/4 fsl with rocks; II and III are heavily mottled
5S-13E	10YR3/2	fsl	9	10YR5/4	lfs	19	10YR7/2	lfs	28	26	water	Water at 24"; Lay II mottled with 10YR7/2 with rock; Lay III 5YR5/4 with rock
5.5N-0E	10YR3/2	fsl	7	10YR5/4	fsl	12					rck	
6N-0E	10YR4/2	fsl	7	2.5Y6/3	lfs	23			20		rock	moderate rock throughout
6N-1E	10YR4/2	fsl	11	10YR6/4	fsl	20	2.5YR6/2	lfs	31	24	arb	Lay II min rocks
6N-1W	10YR4/2	fsl	12	2.5Y6/3	fsl	23	5Y5/2	lfs	31	27	arb	tree root or burrow stain in SW corner; Moderate rocky Lay II and III
6N-2E	10YR3/2	fsl	12	10YR5/4	fsl	20	10YR6/3	lfs	29	27	com	rocky Lay II (APZ); very compact/wet Lay IV
6N-4E	10YR3/2	fsl	7	10YR5/4	fsl	18	10YR5/3	sl	24	18	grv	large rock at 18"
6N-5E	10YR4/2	fsl	11	10YR6/4	fsl	22	2.5Y6/2	lfs	30	24	arb	very compact III
6N-6E	10YR4/2	fsl	11	10YR6/4	fsl	19	2.5Y6/2	lfs	30	26	arb	minimal rock
6N-7E	10YR4/2	fsl	12	10YR6/4	fsl	25	2.5Y6/2	lfs	27		arb	Moderate rock in Lay II; compact Lay III
6N-8E	10YR3/2	fsl	12	10YR5/4	fsl	15	10YR6/3	lfs	19	24	arb	Lay IV 10YR7/2 lfs 29"; rocky Lay II; compact Lay IV
6N-9E	10YR3/2	fsl	10	10YR5/4	fsl	13	10YR6/3	lfs	20	22	arb	Lay IV 10YR7/2 lfs; water at 19"
6S-4E	10YR4/2	fsl	11	10YR6/4	fsl	26					rck/water	water at 24"
6S-5E	10YR4/2	fsl	12	10YR5/4	fsl	16					water	water and rock at 15"
6S-6E	10YR4/2	fsl	10	10YR6/3	fsl	24				20	rck	water at 23"; rocky Lay II
6S-9E	10YR3/3	fsl	8	10YR4/4	fsl	15	10YR6/4	sl	22	18	com	Two large rocks in W + E sides; rock throughout
6S-10E	10YR3/3	fsl	13	10YR5/3	fsl	18	10YR4/4	sl	19	21	com	Water seepage at bottom; rocky Ly I and II; gravel in Lay III
6S-11E	10YR3/3	fsl	10	10YR5/4	fsl	15	10YR6/2	sl	16	17	com	Lay II much lighter; rocky Lay I and II; gravel in Lay III
6S-12E	10YR4/2	fsl	8	10YR5/4	fsl	18					rck	test located in vicinity of former rock wall located 12' E of test; heavy rock and large root in Lay II
7N-0E	10YR4/2	fsl	7	2.5Y5/4	lfs	18				13	arb	Lay II is heavily compacted fill
7N-1E	10YR4/2	fsl	13	2.5Y5/4	lfs	26	10YR7/2	lsand	31	32	arb	
7N-1W	10YR4/2	fsl	7	2.5Y5/4	lfs	39				26	arb	
7N-2E	10YR3/2	fsl	12	10YR5/4	fsl	23	10YR6/3	lfs	33	29	com	very compact Lay III
7N-2W	10YR4/2	fsl	8	2.5Y5/4	lfs	29				23	arb	Lay II is fill
7N-5E	10YR4/2	fsl	12	10YR6/4	23	fsl	10YR6/3	sl	26	23	com	
7N-6E	10YR3/2	fsl	9	10YR5/4	fsl	14	10YR6/3	lfs	21	24	arb	Lay IV 10YR7/2 lfs 32"
7N-7E	10YR3/2	fsl	13	10YR5/4	fsl	20	10YR6/3	lfs	26	25	arb	Lay IV 10YR7/2 lfs 28"
7N-8E	10YR3/2	fsl	12	10YR5/4	fsl	15	10YR6/3	lfs	24	26	arb	Lay IV 10YR7/2 lfs 32"; rocky Lay III; water at 32"
7S-4E	10YR3/2	fsl	9	10YR5/6	fsl	25	10YR6/4	lfs	31	23	water	standing water at 25"
7S-5E	10YR3/3	fsl	9	10YR4/4	fsl	19	10YR5/4	sl	25	16	arb	rocky Lay I; gravel in Lay II and III
7S-6E	10YR3/2	fsl	9	10YR5/6	fsl	16	10YR6/3	fsl	28	20	water	standing water at 23"
7S-9E	10YR3/2	fsl	11	10YR3/2	fsl	19	10YR6/3	lsand	26	35	wet	Lay II mottled with 10YR5/4 fsl; oxidation in Lay III
7S-10E	10YR3/2	fsl	10	10YR3/2	fsl	19	10YR7/3	lsand	32	25	arb	Lay II mottled with 10YR5/4 (plow zone); oxidation in Lay III; rocks in Lay II
7S-11E	10YR3/2	fsl	10	10YR5/4	fsl	17	10YR4/4	fsl	22	24	arb	Lay IV 10YR7/2 lsand 30"; water at 20"; rocky Lay II and III
8N-2E	10YR4/2	fsl	10	10YR5/4	fsl	15	10YR6/3	fsl	19	23	arb	Lay IV 10YR7/2 lfs 27"
8N-4E	10YR3/3	fsl	10	10YR5/4	fsl	20	10YR6/3	sl	29	22	arb	large rock in Lay II north wall; wet at bottom

Appendix A: Field Test Summary, continued

Test #	Layer I Color	Layer I Texture	Layer I Depth"	Layer II Color	Layer II Texture	Layer II Depth"	Layer III Color	Layer III Texture	Layer III Depth"	Auger"	Close Reason	Comments
8N-5E	10YR3/2	fsl	12	10YR5/4	fsl	18	10YR6/3	lfs	22	22	arb	Lay IV 10YR 7/2 lfs 30"; water at 22"
8N-6E	10YR3/2	fsl	12	10YR5/4	fsl	19	10YR6/3	lfs	24	25	arb	Lay IV 10YR7/2 lfs 32"; standing water at 25"
8N-7E	10YR3/2	fsl	11	10YR5/4	fsl	14	10YR6/3	lfs	19	20	arb	Lay IV 10YR7/2 lfs 27"; water at 18"
8S-4E	10YR4/2	fsl	11	10YR5/4	fsl	30	10YR6/2	sl	34	28	arb	rock in Lay I; gravel in Lay II
8S-5E	10YR3/3	fsl	11	10YR4/4	fsl	21	10YR5/4	sl	30	30	arb	rocky Lay I and gravel in Lay II and III
8S-6E	10YR4/2	fsl	10	10YR5/4	fsl	24	10YR6/2	sl	30	23	arb	rocky Lay I and II
8S-7E	10YR4/2	fsl	10	10YR5/4	fsl	20	10YR6/2	sl	28	22	arb	rocky Lay I; gravel in Lay II and III
8S-10E	10YR3/2	fsl	9	10YR6/4	fsl	15	10YR6/3	lfs	28	21	water	water at 20"
8S-11E	10YR3/2	fsl	10	10YR5/4	fsl	18	10YR6/3	lfs	25	28	arb	Lay IV 10YR7/2 lfs with heavy oxidation; water at 26"
8S-12E	10YR3/2	fsl	7	10YR5/4	fsl	14	10YR7/2	lfs	21	18	arb	water at 18"
9N-2E	10YR4/2	fsl	10	10YR5/4	fsl	16	10YR6/2	lfs	22		com	Lay IV 10YR6/2 lfs 25"; heavy gravel and very compact Lay IV
9N-3E	10YR4/2	fsl	10	10YR6/4	fsl	20	2.5Y6/2	lfs	23	16	water	water at 15"
9N-4E	10YR4/2	fsl	10	10YR6/4	fsl	21	2.5Y6/2	lfs	32	16	water	water at 14"
9N-5E	10YR3/3	fsl	11	10YR5/4	fsl	20	10YR6/3	sl	27	20	water	water at 23"
9N-6E	10YR3/3	fsl	7	10YR5/4	fsl	19	10YR6/3	sl	22	18	arb	gravel in Lay III; standing water at 16"
9N-7E	10YR3/3	fsl	7	10YR5/3	fsl	20	10YR6/3	sl	28	20	grv	standing water at 15"; test is ~15' W of stone wall
9S-5E	10YR4/2	fsl	10	10YR5/4	fsl	15	10YR6/2	fsl	33	28	arb	Lay IV 10YR7/2 lfs 34"; water at 30"
9S-6E	10YR4/2	fsl	10	10YR5/4	fsl	18	10YR6/3	fsl	31	27	arb	very compact c horizon
9S-7E	10YR4/2	fsl	9	10YR5/4	fsl	15	10YR6/3	fsl	20	25	arb	Lay IV 10YR7/2 lfs 31"; water at 27"
9S-8E	10YR4/2	fsl	9	10YR5/4	fsl	19	10YR6/3	fsl	32	26	water	water at 24"
9S-9E	10YR4/2	fsl	10	10YR5/4	fsl	19	10YR6/3	fsl	30	26	water	water at 25"
9S-10E	10YR3/2	fsl	6	10YR5/4	fsl	11	10YR6/4	sl	24	17	water	standing water at 13"; charcoal fleck in north wall Lay II
9S-11E	10YR3/2	fsl	8	10YR6/4	fsl	17	10YR7/2	lfs	29	17	water	water at 15"; rocky Lay II
9S-12E	10YR3/2	fsl	8	10YR5/4	fsl	12	10YR6/4	lfs	21	16	water	standing water 14"
10N-2E	10YR3/2	fsl	9	10YR5/4	fsl	13	10YR6/4	lfs	21	22	water	standing water 19"
10N-3E	10YR3/3	fsl	9	10YR5/4	fsl	24				15	water	standing water at 18"
10N-4E	10YR4/2	fsl	10	2.5Y5/4	lfs	17	10YR7/2	lfs	26	20	arb	water at 23"
10N-5E	10YR3/2	fsl	10	10YR5/4	fsl	19	10YR6/2	lfs	31	21	water	
10N-6E	10YR3/2	fsl	12	10YR5/4	fsl	20	10YR7/2	lfs	29	21	water	standing water 17"
10S-5E	10YR3/3	fsl	9	10YR5/6	fsl	16	10YR6/4	sl	29	24	arb	standing water at 28"; rocky Lay II
10S-6E	10YR3/3	fsl	9	10YR5/6	fsl	17	10YR6/3	sl	27	18	arb	
10S-7E	10YR3/2	fsl	9	10YR5/4	fsl	22	10YR6/3	lsand	29	23	arb	moist Lay III
10S-8E	10YR3/3	fsl	8	10YR5/4	fsl	17	10YR6/3	sl	24	21	com	moist at bottom of test
10S-9E	10YR3/3	fsl	11	10YR5/6	fsl	21			17		water	Standing water art 15"; rocky Lay I and II
10S-10E	10YR3/3	fsl	9	10YR5/6	fsl	28			19		water	Standing water at 17"; rocky Lay I and II
10S-11E	10YR3/3	fsl	11	10YR5/6	fsl	23			16		water	Standing water at 13"; rocky Lay I and II
10S-12E	10YR3/3	fsl	9	10YR5/6	fsl	17	10YR6/2	sl	21	27	water	Standing water at 18"
11N-0E	10YR4/3	fsl	9	10YR5/4	fsl	13	10YR4/6	lfs	20	24	arb	Lay IV 10YR7/2 lsand
11N-1E	10YR4/2	fsl	9	10YR5/4	fsl	13	10YR6/4	lfs	17	20	arb	Lay IV 10YR7/2 lfs 27"
11N-1W	10YR4/2	fsl	10	10YR5/4	fsl	19	10YR7/2	lfs	29	23	arb	
11N-2E	10YR4/2	fsl	10	10YR5/4	fsl	15	10YR6/3	lfs	21	23	arb	Lay IV 10YR7/2 lsand 29"; rocky Lay II and III

Appendix A: Field Test Summary, continued

Test #	Layer I Color	Layer I Texture	Layer I Depth"	Layer II Color	Layer II Texture	Layer II Depth"	Layer III Color	Layer III Texture	Layer III Depth"	Auger"	Close Reason	Comments
11N-2W	10YR4/3	fsl	7	10YR5/4	fsl	13	10YR4/6	lfs	18	23	arb	Lay IV 10YR7/2 lsand 30"; rocks throughout
11N-3E	10YR4/2	fsl	8	10YR6/4	fsl	20	10YR6/3	sl	26	16	water	water at 20 '
11N-4E	10YR4/2	fsl	9	2.5Y5/4	lfs	26				20	water	
11S-6E	10YR4/2	fsl	10	10YR5/4	fsl	22	10YR6/2	sl	26	21	arb	rocky Lay I and II; gravel in Lay III
11S-7E	10YR4/2	fsl	11	10YR5/4	fsl	22	10YR6/2	sl	28	19	arb	standing water at 24"; rocky Lay I and II
11S-8E	10YR3/3	fsl	8	10YR5/4	fsl	18	10YR6/4	sl	25	20	com	rocky Lay I and II
11S-9E	10YR4/2	fsl	10	10YR5/4	fsl	23				18	water	standing water 15"; rocky Lay I
11S-10E	10YR4/2	fsl	11	10YR5/4	fsl	16	10YR6/4	sl	25	17	water	standing water at 14"; rocky Lay I and II; gravel in Lay III
11S-11E	10YR4/2	fsl	9	10YR5/4	fsl	19				12	water	standing water at 8"; rocky Lay I and II
11S-12E	10YR3/2	fsl	8	10YR5/4	fsl	17	10YR6/3	lfs	22	24	arb	Lay IV 10YR7/2 sl 26" with heavy oxidation and very compact; Water at 25"; Lay II mottled with 10YR3/2 and 10YR6/3 fsl
12N-0E	10YR3/4	fsl	6	10YR4/6	lfs	19					rck	rocky and compact Lay II
12N-1E	10YR4/2	fsl	8	10YR5/4	fsl	21	10YR7/2	lfs	31	25	arb	rocky Lay II
12N-1W	10YR4/2	fsl	12	10YR5/4	fsl	15	10YR6/4	lfs	20	22	arb	Lay IV 10YR7/2 lfs 29"
12N-2E	10YR4/3	fsl	7	10YR5/2	lfs	17					rck	very compact rock/fill Lay II
12N-2W	10YR4/3	fsl	8	10YR5/4	fsl	12	10YR4/6	lfs	16		rck	
12N-3E	10YR3/4	fsl	9	10YR4/6	lfs	18					rck	rocky and compact Lay II
12N-4E	10YR4/6	sl	12	10YR4/3	fsl	22					water	
12.5N-4E	10YR6/3	fsl	10	10YR4/2	fsl	18	10YR5/4	lfs	22	29	arb	Layer IV 10YR 6/3 lfs; Layer I fill; water at 33
12S-6E	10YR4/2	fsl	10	10YR5/4	fsl	14	10YR6/3	fsl	32	27	water	rocky Lay II; water at 27"
12S-7E	10YR3/2	fsl	12	10YR5/4	fsl	18	10YR6/3	lfs	32	29	water	Lay II also 10YR4/2 (plow zone) with rocks; water at 28"
12S-8E	10YR3/2	fsl	10	10YR5/4	fsl	25	2.5Y5/2	lfs	31	26	arb	water at 31"
12S-9E	10YR4/2	fsl	11	10YR5/4	fsl	19	2.5Y5/2	fsl	27	27	arb	Lay IV 10YR7/2 lfs 32"; rocky Lay II
12S-10E	10YR3/2	fsl	9	10YR5/4	fsl	18	10YR6/4	lfs	22	27	arb	Lay IV 10YR7/2 lfs 30"
12S-11E	10YR3/2	fsl	10	10YR5/4	fsl	18	10YR6/4	lfs	25	26	arb	Lay IV 10YR7/2 lfs 31"; rocky Lay II
12S-12E	10YR3/2	fsl	10	10YR5/4	fsl	22	10YR6/4	lfs	26	28	arb	Lay IV 10YR7/2 lfs 30"; rocky Lay II and III
13N-3E	10YR3/3	fsl	9	10YR4/6	sl	27					rck	Lay I is fill; dense/rock Lay II
13N-3.5E	10YR4/2	fsl	9	7.5YR5/4	fsl	14					rck	Rocky Lay II
13N-4E	10YR3/2	fsl	10	10YR4/3	fsl	14	10YR4/6	fsl	17		rck	Lay IV 10YR5/4 slaom 26"; Lay V 10YR6/4 lfs 28"; compact Lay IV; A and B horizon backfill over wetland; top 5" is a 10YR4/1
13N-4.5E	10YR4/2	fsl	14	10YR3/2	fsl	22	10YR5/4	fsl	31		rck	Lay I mottled with 10YR5/4 fsl; Lay II mottled with 10YR5/4 fsl; rocky Lay III; standing water at 33"; Lay IV 10YR6/4 lfs 35"
13.5N-4E	10YR4/2	fsl	8	7.5YR	fsl	12					rc	
13N-6E	10YR3/2	fsl	14	10YR4/6	fsl	21	10YR6/4	lfs	43	32	arb	top 5" is 10YR4/1; rocky Lay II and III
13S-6E	10YR3/3	fsl	10	10YR5/6	fsl	18	10YR6/4	sl	29	20	arb	standing water at 28"
13S-7E	10YR3/3	fsl	9	10YR5/4	fsl	28	10YR6/4	sl	32	24	com	standing water at 28"
13S-8E	10YR3/2	fsl	8	10YR5/6	fsl	15	10YR6/4	sl	26	20	com	
13S-9E	10YR3/3	fsl	7	10YR5/6	fsl	16	10YR6/4	sl	35	22	arb	wet at bottom of test
13S-10E	10YR3/2	fsl	11	10YR5/4	fsl	21	10YR6/4	lfs	25	26	arb	Lay IV 10YR7/2 lfs 30"
13S-11E	10YR3/2	fsl	12	10YR5/4	fsl	14					rck	
14N-5E	10YR4/2	fsl	9	10YR6/4	fsl	14					rck	moderate rock in Lay I and boulder in Lay II

Appendix A: Field Test Summary, continued

Test #	Layer I Color	Layer I Texture	Layer I Depth"	Layer II Color	Layer II Texture	Layer II Depth"	Layer III Color	Layer III Texture	Layer III Depth"	Auger"	Close Reason	Comments
14N-6E	10YR4/2	fsl	9	10YR6/4	fsl	19	10YR6/4	fsl	38	31	arb	Mottled 10YR6/4 and 2.5Y6/2
14N-7E	10YR4/2	fsl	8	10YR6/4	fsl	21	2.5Y6/2	lfs	35	28	arb	Minimal rock throughout; heavy oxidation in Lay III
14N-8E	10YR4/3	fsl	8	10YR5/4	fsl	13	10YR6/3	lfs	22	24	arb	Lay IV 10YR7/2 lfs 29"
14N-9E	10YR4/3	fsl	9	10YR5/4	fsl	15	10YR6/3	lfs	21	26	arb	Lay IV 10YR7/2 lfs 33"; rocks in Lay II and III
14N-10E	10YR4/3	fsl	9	10YR5/4	fsl	18	10YR6/3	lfs	30	23	arb	gravel in Lay II and III
14N-11E	10YR3/3	fsl	9	10YR5/6	fsl	16	10YR6/3	sl	28	21	arb	gravel in Lay II and III
14S-7E	10YR3/3	fsl	10	10YR5/4	fsl	19	10YR6/4	sl	28	21	com	rocky Lay I and II
14S-8E	10YR3/3	fsl	11	10YR5/4	fsl	19	10YR6/4	sl	28	21	arb	rocky Lay I
14S-9E	10YR3/3	fsl	11	10YR5/4	fsl	18	10YR6/4	sl	27	20	arb	rock throughout
14S-10E	10YR3/2	fsl	11	10YR5/4	fsl	21	10YR6/4	lfs	24	26	arb	Lay IV 10YR7/2 lfs 31"; rocks in Lay II
14S-11E	10YR3/2	fsl	9	10YR5/4	fsl	20	10YR6/4	lfs	24		rck	rocky throughout
15N-5E	10YR4/3	fsl	7	10YR6/4	lsand	15				13	rock	rocky Lay I; gravel in Lay II
15N-6E	10YR3/3	fsl	8	10YR5/6	fsl	28	10YR6/3	sl	34	26	arb	
15N-7E	10YR4/3	fsl	10	10YR6/6	fsl	20	10YR6/6	lsand	27	22	grv	Lay III mottled with 10YR7/2, wet
15N-8E	10YR4/3	fsl	9	10YR5/4	fsl	18	10YR7/2	lfs	25	20	arb	Lay II rocky
15N-9E	10YR3/3	fsl	8	10YR5/6	fsl	18	10YR6/3	sl	28	22	arb	gravel in Lay II
15N-10E	10YR3/3	fsl	8	10YR5/6	fsl	16	10YR5/6	lsand	24	21	arb	Lay IV 10YR6/3 lsand 34"; gravel in Lay III
15N-11E	10YR3/3	fsl	10	10YR5/6	fsl	19	10YR6/2	lsand	25	21	grv	gravel in Lay II and III
15S-7E	10YR3/2	fsl	14	10YR5/4	fsl	27	10YR6/3	sl	34	24	arb	14" rock south wall; rocky Lay I and II; water seepage at bottom of test
15S-8E	10YR3/2	fsl	9	10YR5/4	fsl	12	10YR6/4	lfs	26	28	arb	Llay IV 10YR7/2 lfs 31"
15S-9E	10YR3/2	fsl	10	10YR5/4	fsl	17	10YR6/4	lfs	24	26	arb	Lay IV 10YR7/2 lfs 32"; very rocky in Lay II and III
15S-10E	10YR3/2	fsl	9	10YR5/4	fsl	17	10YR6/4	lfs	22	26	arb	Lay IV 10YR7/2 lfs 30"; rocky Lay II and III
15S-11E	10YR3/2	fsl	13	10YR5/4	fsl	17					rck	heavy rocks throughout
16N-5E	10YR4/2	fsl	6	10YR5/3	sl	15	10YR6/3	sl	17	10	rck	rocky Lay I and II
16N-6E	10YR4/2	fsl	11	10YR5/2	fsl	15				10	rck	massively rocky
16N-7E	10YR3/3	fsl	12	10YR5/4	fsl	17	2.5YR6/3	sl/lsand	27		grv	gravel throughout
16N-8E	10YR4/3	fsl	8	10YR5/4	fsl	13	10YR6/3	lfs	19	21	arb	Lay IV 10YR7/2 lfs 23"
16N-9E	10YR4/3	fsl	8	10YR5/4	fsl	15	10YR6/3	lfs	24	26	arb	Lay IV 10YR7/2 lfs 32"
16N-10E	10YR4/3	fsl	8	10YR5/4	fsl	14	10YR6/3	lfs	19	21	arb	Lay IV 10YR7/2 lfs 26"
16N-11E	10YR4/3	fsl	11	10YR5/4	fsl	17	10YR6/3	lfs	21	22	arb	Lay IV 10YR7/2 lfs 28"
16S-8E	10YR4/2	fsl	11	10YR5/4	fsl	17	2.5Y5/2	lfs	34	27	arb	water at 32"; Lay II also contains 10YR4/2 (A plow zone)
16S-9E	10YR3/2	fsl	12	10YR5/4	fsl	20	10YR6/4	lfs	23	24	arb	Lay IV 10YR7/2 lfs 30"; rocky Lay II
16S-10E	10YR3/2	fsl	11	10YR5/4	fsl	20	10YR6/4	lfs	30	26	rck	Lay IV 10YR7/2 lfs 31"
17N-5E	10YR4/2	fsl	9	10YR5/4	fsl	15	10YR6/3	lfs	23	27	arb	Lay IV 10YR7/2 lfs 32"
17N-6E	10YR3/3	fsl	5	10YR5/4	fsl	18	10YR6/4	sl/lsand	22	19	rck	
17N-7E	10YR4/2	fsl	10	10YR5/4	fsl	17	10YR7/2	lfs	26	19	arb	No B horizon present (10YR6/3)
17N-8E	10YR3/3	fsl	8	10YR5/6	fsl	23	10YR6/2	lsand	28	23	grv	Mottled Lay III; large rock in Lay II South wall at 10"
17N-9E	10YR4/3	fsl	10	10YR7/2	lfs	23				18	arb	No B horizon
17N-10E	10YR3/3	fsl	6	10YR5/6	sl	18	10YR7/3	lsand	23	20	grv	rock and gravel in Lay II and III
17N-11E	10YR3/3	fsl	9	10YR5/4	fsl	19	10YR6/3	lsand	29	21	arb	gravel in Lay III

Appendix A: Field Test Summary, continued

Test #	Layer I Color	Layer I Texture	Layer I Depth"	Layer II Color	Layer II Texture	Layer II Depth"	Layer III Color	Layer III Texture	Layer III Depth"	Auger"	Close Reason	Comments
17S-8E	10YR3/2	fsl	11	10YR5/4	fsl	16	10YR6/4	lfs	22	22	arb	Lay IV 10YR7/2 lfs 32"; rocky Lay II; compact Lay III; standing water in Lay IV
17S-9E	10YR3/2	fsl	12	10YR5/4	fsl	19	10YR6/4	lfs	25	26	arb	Lay IV 10YR7/2 lfs 35"; rocky Lay II; standing water in Lay IV
17S-10E	10YR3/2	fsl	10	10YR5/4	fsl	21	10YR6/4	lfs	24	26	arb	Lay IV 10YR7/2 lfs 30"; rocky Lay II
18N-9E	10YR4/3	fsl	11								rck	
18N-10E	10YR4/3	fsl	11	10YR6/4	fsl	22	10YR7/2	lfs	32	25	arb	
18N-11E	10YR4/3	fsl	10	10YR5/4	fsl	14	10YR6/3	lfs	19	18	arb	Lay IV 10YR7/2 lfs 26"
18S-9E	10YR3/2	fsl	10	10YR5/4	fsl	22	10YR7/2	lfs	31	26	arb	heavy rock in Lay II; compact Lay III
18S-10E	10YR3/2	fsl	11	10YR5/4	fsl	21	10YR6/4	lfs	31	27	arb	Lay IV 10YR 7/2 lfs 33"; standing water at 31"; heavy rock in Lay II; compact Lay III
19S-9E	10YR4/2	fsl	10	10YR6/4	fsl	20	10YR7/3	lfs	30	25	arb	
19S-10E	10YR4/2	fsl	11	10YR5/4	fsl	23	10YR7/2	lfs	36	30	arb	
20C-0.5N	10YR5/3	fsl	10	10YR5/4	fsl	18				13	rck	Lay I mottled with 10YR4/2 fsl; Test is 25' S of debris pile
20C-1N	10YR5/3	fsl	10	10YR5/4	fsl	23				17	arb	Lay I mottled with 10YR4/2 fsl
20C-1.5N	10YR5/3	fsl	22	10YR6/3	fsl					26	arb	Lay I mottled with 10YR4/2 fsl
20C-2N	10YR5/3	fsl	22	10YR6/3	fsl	31				25	arb	Lay I mottled with 10YR4/2 fsl
20C-3N	10YR3/2	fsl	7	10YR5/4	fsl	14	10YR6/4	lsand	27	23	water	Water at 18"
20C-4N	10YR3/2	fsl	7	10YR5/4	fsl	28				21	water	water at 18"
20C-5N	10YR3/2	fsl	7	10YR5/4	fsl	29				22	water	water at 19"
20C-6N	10YR3/2	fsl	6	10YR5/4	fsl	37				26	water	water at 30"
20C-7N	10YR3/2	fsl	7	10YR5/4	fsl	16	10YR6/3	fsl	25	29	arb	Lay IV 2.5YR5/3 lfs 36"; Water at 33"
20C-8N	10YR3/2	fsl	6	10YR5/4	fsl	18				10	rck	
20C-9N	10YR3/2	fsl	6	10YR5/4	fsl	14	10YR6/3	fsl	22	24	arb	Lay IV 2.5YR5/3 lfs 30"; Water at 28"
20C-10N	10YR3/2	fsl	8	10YR5/4	fsl	16	10YR6/3	fsl	23	24	arb	Water at 30"

Abbreviations:

arb - arbitrary termination
com - termination due to compact soil; compact
fsand - fine sand
fsl - fine sandy loam
grv - termination due to dense gravel; gravel, gravelly
lfs - loamy fine sand
lo - lower
lsand - loamy sand
mtld - mottled
prof - profile
rck - termination due to rock; rock, rocky
scl - sandy clay loam
sl - sandy loam
sloam - silt loam
unc - termination due to unconsolidated sediments
wtr - termination due to water

Appendix B: Soil Samples

Test#	*Layer*	*pH*	*Sand Content*
A-8N-2W	I	5.5	
	II	6.5	
	III	6.5	
1N-4E	I	7.0	
	II	7.0	
	III	6.5	
7S-6E	I	6.5	
	II	6.0	
	III	6.5	
14N-6E	I	7.0	
	II	7.0	
	III	7.0	
15N-10E	I	6.0	
	II	6.5	
	III	7.0	
	IV	7.0	
17N-10E	I	7.0	
	II	6.5	
	III	6.5	poorly sorted, sub-round, very fine to very coarse (1/16-2mm), sphericity 0.7, roundness 0.4

Appendix C: Features and Artifacts by Test Unit

Test #	*Layer*	*Features and Artifacts*
0N-4E	I	1 fragment light creamware, 0.3g. (1775-1820)
0N-9E	I	1 fragment olive bottle glass, air bubbles, 2.9mm max. thickness, 3.9g. (<1920) 1 fragment aqua-tinted window glass, 1.5mm thick, 0.4g. 2 fragments heavily oxidized fasteners, probable cut nails, 5.1g.
1N-3E	I	1 fragment whiteware, 1.3g. (>1820)
1N-4E	I	1 fragment heavily oxidized cut nail, flooring nail, shaft length ~70mm, 10.6g. 3 fragments charcoal, 0.1g.
2N-4E	I	1 heavily oxidized wrought nail, shaft length ~45.0mm, shaft width ~5.0mm, 5.2g. (<1800)
4N-1E	I	2 fragments buff refined earthenware, 0.4g. 1 fragment northern quahog (*Mercenaria mercenaria*) shell, 2.5g.
5N-0E	I	1 fragment possible quartz flake, 3.9mm max. thickness, 1.0g.
5N-1E	I	1 fragment aqua-tinted window glass, 2.6mm thick, 4.3g. 1 fragment aqua-tinted window glass, 2.0mm thick, 1.7g. 1 fragment aqua-tinted window glass, 1.8mm thick, 1.1g. 1 fragment aqua-tinted window glass, 1.4mm thick, 1.2g. 1 heavily oxidized wire nail, shaft length ~58.0mm, shaft diameter ~4.0mm, 5.2g. (>1850)
5N-6E	I	1 fragment redware, unglazed – probable flower pot, 3.2mm max. thickness, 2.4g.
6N-2E	II	1 heavily oxidized cut nail with machine-stamped head, shaft length ~60mm, shaft width ~4.5x4.0mm, 4.5g. 4 fragments oxidized apparel trimming, 2.9g.
7N-1E	I	1 fragment heavily oxidized cut nail, 6.6g.
7N-2E	I	1 fragment heavily oxidized nail, 2.4g. 1 fragment heavily oxidized cut nail with machine-stamped head, 3.0g. (>1825)
9N-4E	Surface	1 oxidized horseshoe with plastic insert ("CASTLE PLASTICS") and articulated nails, 128.1mm long, 120.5mm wide, 5.2mm thick (shoe), 335.6g.
10N-5E	II	1 fragment pearlware with traces of dark blue underglaze transfer-printed decoration, 0.1g. (1795-1830)
11N-0E	I	1 heavily oxidized cut nail with machine-stamped head, shaft length ~35mm, shaft width ~5.5x4.0mm, 3.5g. (>1825)

Test #	*Layer*	*Features and Artifacts*
12N-3E	I	1 fragment clear bottle glass, 2.6mm max. thickness, 2.0g. 1 fragment heavily oxidized fastener, 3.3g. 1 heavily oxidized wire nail, shaft length ~70.0mm, shaft diameter ~3.3mm, 3.9g. (>1850)
12N-4E	I	1 fragment clear pressed glass vessel with embossed exterior decoration, 8.2g.
12.5N-4E	I	1 fragment buff salt-glazed stoneware, 8.1mm max. thickness, 22.4g.
13N-3E	I	3 heavily oxidized wire nails, shaft length ~100mm, shaft diameter ~4.5mm, 35.9g. (>1850) 2 heavily oxidized wire nails, shaft length ~72mm, shaft diameter ~3.9mm, 10.0g. (>1850) 4 heavily oxidized wire nails, shaft length ~62.5mm, shaft diameter ~3.5mm, 18.2g. (>1850)
13N-4E	I	1 fragment red brick, ~91mm wide (~3-5/8”), ~58mm thick (~2-3/8”), 548.6g. 3 fragments ironstone china, one with plain squared rim, one fragment with exterior embossed decoration, crackled glaze, 7.3mm max. thickness, 41.0g. (1813-1900+) 1 fragment gray salt-glazed stoneware with interior Albany slip, 2.6g. (1805-1900+) 1 fragment aqua-tinted window glass, 2.3mm thick, 4.7g. 1 fragment aqua-tinted window glass, 2.0mm thick, 1.2g. 1 fragment aqua-tinted flat glass with backing, possible mirror, 1.4mm thick, 0.4g. 1 fragment clear curved glass, 1.2mm max. thickness, 0.6g. 1 fragment clear curved glass, 0.6mm thick, 0.2g. 1 fragment amethyst-tinted bottle glass with traces of seam, 1.5g. (1880-1910) 1 fragment clear rectangular bottle with recessed panel, 1.7g. 1 fragment amethyst-tinted pressed glass vessel with exterior embossed dot decoration, mold seam, 8.0g. 1 heavily oxidized iron spike, shaft length ~180mm, 99.7g. 1 fragment heavily oxidized sheet metal, 2.4g. 17 fragments rubber, hardened, possible tire or Orangeburg pipe, 22.5g. 4 fragments charcoal, 1.4g. 2 fragments possible quartzite flakes, 6.1g.
13N-4.5E	I	3 fragments Orangeburg pipe, exterior diameter ~130mm (~5”), 10.6mm max. thickness, 193.6g. (1948-1972)
1S-3E	I	6 fragments coal, 5.0g. 1 fragment coal, burnt, 0.3g.
1S-4E	I	1 large mammal epiphysis, 11.7g.
2S-3E	I	1 fragment pearlware, 0.1g. (1782-1840)
3S-9E	I	1 fragment clear bottle glass, 2.6mm max. thickness, 0.3g.

Appendix C: Features and Artifacts by Test Unit, continued

Test #	***Layer***	***Features and Artifacts***
4S-3E	I	1 fragment whiteware, burnt, 0.6g. (>1820) 1 fragment pearlware, crackled glaze, <0.05g. (1782-1840)
4S-8E	II	1 fragment coal, partially spent, 12.2g.
7S-9E	I	1 fragment whiteware, 0.1g. (>1820)
8S-12E	I	1 fragment clear window glass, 2.0mm thick, 1.0g.
9S-6E	I	1 fragment light creamware, 0.2g. (1775-1820)
9S-10E	II	4 fragments charcoal, 0.9g.
13S-7E	I	1 fragment red earthenware, 0.6g. 1 fragment whiteware, crackled glaze, 0.6g. (>1820)
13S-11E	I	1 fragment slag, 1.2g.
14S-8E	I	1 fragment oxidized nail, possibly wrought or cut, 3.2g.
18S-9E	I	1 fragment heavily oxidized cut nail, 6.3g.
A-5N-1W	I	1 rim fragment ironstone china with debossed geometric decoration on interior border, plain rounded rim, 4.5mm max. thickness, 3.3g.
A-5N-3W	I	1 fragment redware, 1.4g. 1 heavily oxidized iron rod, threaded ends, 230mm long, diameter ~9.0mm, 261.3g.
A-6N-4W	I	1 fragment light creamware, 3.6mm max. thickness, 1.0g. (1775-1820)
A-7N-3W	II	3 fragments charcoal, 0.2g.
A-9N-1W	I	1 fragment clear window glass, 2.1mm thick, 0.4g.
B-2N-2E	I	1 fragment clear glass bottle, air bubbles, 2.6mm max. thickness, 1.1g. (1880-1920)
C-4S-4W	I	1 fragment amethyst-tinted glass bottle, 3.2mm max. thickness, 1.0g. (1880-1915) 1 fragment clear glass bottle, air bubbles, embossed characters, "FLA…," 3.3mm max. thickness, 5.7g. (1880-1920)
20C-1N	Surface	1 amethyst-tinted jar with collar, embossed characters on base, "PATENTED, JUN 9 03, JUNE 23 03," air bubbles, height 92.2mm, max. width (below rim) 69.9mm, width at base 61.0mm, 218.7g. (1903-1915)
20C-9N	I	1 clear round bottle with threaded lip, machine mold through lip, annular embossed rib decoration at base and shoulder, suction scar, cup bottom mold, embossed characters on base, "12 [loop and oval] 7, PEPSODENT ANTISEPTIC, 6," height 143.5mm, 55.2mm diameter, 115.4mm shoulder height, 29.5mm neck diameter, 205.7g. (>1903)

HISTORIC RESOURCES INVENTORY
HISTORIC ARCHAEOLOGICAL SITES
HIST-5 NEW 9/77

STATE OF CONNECTICUT
CONNECTICUT HISTORICAL COMMISSION
59 SOUTH PROSPECT STREET, HARTFORD, CONNECTICUT, 06106
Appendix D

FOR OFFICE USE ONLY
Town No.: 133 | Site No.:
UTM 1 8 7 4 6 0 5 0 4 6 1 3 8 5 0
QUAD: Scotland
NR: ☐ ACT ☐ ELIG. ☐ NO
SR: ☐ ACT ☐ ELIG. ☐ NO
DISTRICT ☐ Yes ☐ No
STATE SITE NO. | CAS NO.

IDENTIFICATION

1. SITE NAME: Rainville Lot 20th Century Trash Dump
2. TOWN/CITY: Sprague | VILLAGE: | COUNTY: New London
3. STREET AND NUMBER (and/or location): 111 Potash Hill Road, north of open fields in wooded part of lot, east side of unpaved path
4. OWNER(S): Alan Rainville ☐ Public [X] Private
5. ATTITUDE TOWARD EXCAVATION:
6. USE (Present): wooded | (Historic): wooded

DESCRIPTION

7A. PERIOD: ☐ Contact ☐ 17th C. ☐ 18th C. ☐ 19th C. [X] 20th C. ☐ Unknown ☐ Other (Specify)
7B. ESTIMATED OCCUPATION RANGE: 20th Century
8. DATING METHOD: DOCUMENTS: | COMPARATIVE MATERIALS: glass bottles, tin milk jugs | OTHER:
9. SITE TYPE: ☐ Contact ☐ Commercial [X] Rural ☐ Other (Specify) [X] Agrarian ☐ Industrial ☐ Urban ☐ Unknown
10. APPROXIMATE SIZE AND BOUNDARIES: Approximately 600 feet in length, from path to 25-50 feet east of path.
11. STRATIGRAPHY: ☐ No Visible evidence ☐ Standing ruins ☐ Stratified ☐ Not stratified ☐ Other (Specify) [X] Surface finds ☐ Cellar hole ☐ Plowed ☐ Major Disturbance

ENVIRONMENT

12. SOIL: USDA SOIL SERIES: WyB | CONTOUR ELEVATION: 350' | SLOPE %: ☐ 0–5 [X] 5–15 ☐ 15–25 ☐ over 25
TEXTURE: [X] sand ☐ clay ☐ Silt ☐ | OTHER (Specify): | ACIDITY: ☐ less than 4.5 ☐ 4.5-5.5 [X] 5.6-6.5 ☐ 6.6-7.3 ☐ 7.4-8.4
13. WATER: NEAREST WATER SOURCE: stream | SIZE AND SPEED: small, slow | DISTANCE FROM SITE: +200' | SEASONABLE AVAILABILITY: intermittent
14. VEGETATION: PRESENT: wooded | PAST: wooded

CONDITION

15. SITE INTEGRITY: ☐ Undisturbed [X] Good ☐ Fair ☐ Destroyed
16. THREATS TO SITE: ☐ None known ☐ Highways ☐ Vandalism [X] Developers ☐ Other (Specify) ☐ Renewal ☐ Private ☐ Deterioration ☐ Zoning ☐ Unknown
17. SURROUNDING ENVIRONMENT: ☐ Open Land [X] Woodland ☐ Residential ☐ Scattered Buildings visible from site. ☐ Commercial ☐ Industrial [X] Rural ☐ High building density ☐ Coastal ☐ Isolated
18. ACCESSIBILITY TO PUBLIC-VISIBLE FROM PUBLIC ROAD: ☐ Yes [X] No

(OVER)

RESEARCH POTENTIAL

19. PREVIOUS EXCAVATIONS

	BY WHOM/AFFILIATION	DATE
☐ Surface Collected		
☐ "Pot hunted"		
X Tested	ACS - Archaeological Consulting Services	Apr, 2015
☐ Excavation		

20. PRESENT LOCATION OF MATERIALS

UCONN - LAMNH

21. PUBLISHED REFERENCES

Walwer, G.W. & D.N. Walwer (2015) *Phase I Archaeological Reconnaissance Survey, Fusion Solar Center, Sprague, Connecticut.*

22. RECOVERED DATA (*Identify in DETAIL, incl. features, burials, faunal material, etc.*)

20th Century artifacts observed at the surface of a trash dump site in a wooded area to the north of the open field of the Rainville Lot at 111 Potash Hill Road. Shovel testing revealed that materials were mostly limited to the surface in light densities, including paint cans, kerosene canisters, abandoned machinery, glass jars and bottle, and tin milk jugs with registered tags.

SIGNIFICANCE

23. ARCHAEOLOGICAL OR HISTORICAL IMPORTANCE

Site is not significant, and probably represents brief episode of 20th Century trash dumping. Poorly preserved tin milk jugs are of historic interest as representing a period of decline in the dairy industry of the region during the early to mid-20th Century. Their registration tags reflect consolidation in the industry when individual farmers had their registered containers transported to regional plants.

PHOTOGRAPH

PHOTOGRAPHER

DATE

VIEW

NEGATIVE ON FILE

Place 35mm contact print here

ADD'L INFORMATION

REPORTED BY:

NAME	ADDRESS
Gregory F. Walwer	10 Stonewall Lane, Guilford, CT 06437-2949

ORGANIZATION	DATE
ACS - Archaeological Consulting Services	06-04-2015

FOR OFFICE USE ONLY

FIELD EVALUATION

COMMENTS

Appendix D: USGS 7.5' Topo Map, Scotland Quad, 20th C. Trash Dump Site

From USGS 1983.

Phase I Archaeological Reconnaissance Survey
Fusion Solar Center
Town of Sprague, Connecticut

Interim Report

by

ACS

◆ ***Archaeological Consulting Services*** ◆
10 Stonewall Lane
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May 4, 2015

Introduction and Project Description

This interim report regards a Phase I archaeological reconnaissance survey conducted for the proposed construction of a 20 MW photovoltaic renewable energy facility on three parcels of land in the Town of Sprague, New London County, Connecticut. The project area lies in northeast Sprague, bound by Potash Hill Road on the south, Westminster Road and the Lisbon town line on the east, and the Canterbury town line on the north. The three main parcels measure approximately 360 acres, with an additional 20 acres possibly to be added to the northwest part of the project area. The anticipated project impact area is approximately 200 acres, although it is uncertain at this time how the 200-acre facility will be distributed on the property.

ACS was contacted by Fusion Solar Center LLC of Charlottesville, Virginia to submit a research design for conducting a Phase I archaeological reconnaissance survey of the project area, following a recent correspondence from the Connecticut State Historic Preservation Office (SHPO) that a professional cultural resources assessment and reconnaissance survey was required given the jurisdiction of the project under the Connecticut Siting Council. In its evaluation of potential cultural resource sensitivity, SHPO noted,

> "…the project parcels are situated within a gently rolling rural section of Lisbon comprised of historic farmsteads. SHPO also notes that the majority of the project area is on level to very gently sloping terrain in close proximity to perennial sources of water. This type of environmental setting is associated with precontact Native American settlement. It is SHPO's opinion that intact and relatively well-drained soils within the Area of Potential Effect have an elevated potential to contain significant archaeological resources… The survey should consider both the direct and indirect effects of the proposed project on above ground and below ground cultural resources. The survey should take into consideration potential viewshed impacts on structures older than fifty years that may be eligible for listing on the National Register of Historic Places. In addition, subsurface testing should assess all areas of anticipated ground disturbance that are considered to have moderate / high sensitivity for containing significant archaeological deposits, unless sufficient research or fieldwork documents that this level of effort is unwarranted…"

In a correspondence from Fuss & O'Neill requesting the SHPO review, it is noted that the engineering firm of Manchester, Connecticut was preparing a petition on behalf of the project for the "Connecticut Siting Council for a Declaratory Ruling for Renewable Energy Facility under Connecticut General Statutes 16-50k(a)." The correspondence also notes that the project will use existing farm roads without grading where possible, that the facility will be surrounded by a six-foot barbed wire fence, and that a preliminary site walk of the property revealed no historic structural remains other than stone walls.

A Phase Ia archaeological assessment survey was initially conducted by ACS, including a thorough background research effort and pedestrian surface survey to evaluate the potential sensitivity of the project property for any prehistoric and/or historic cultural resources. The Phase Ia survey allowed for a refined scope of work for subsurface testing in the required Phase Ib archaeological reconnaissance survey. The research and field methods conducted for the surveys by ACS are in conformance with requirements of Section 106 of the National Historic Preservation Act (NHPA) and the Connecticut State Historic Preservation Office (SHPO), particularly the *Environmental Review Primer for Connecticut's Archaeological Resources.* As part of the Connecticut Siting Council process, the survey is subject to review and comment by SHPO. This interim report provides end of field work results and recommendations sufficient to allow for review by SHPO in lieu of a more extensive report to follow SHPO comment.

Background

The project area lies at the boundary of the Northeast Hills (III-C) and Southeast Hills (IV-C) ecoregions. Underlying bedrock mostly consists of a unit of Tatnic Hill gneiss and schist (Ota), an upper Ordovician formation on the order of 450 million years old. The project area is largely contained within a hillslope setting, although the north-central lot contains thick glacial moraine till deposits. There are many soil types within the project area, although dominant series include those of Charlton (CrC, CcB, CcC), Paxton (PdB, PdC), and Woodbridge (WxB, WxC, WyB, WyC) fine sandy loams, as well as moderately well drained Sutton fine sandy loam units (SwB, SxB) along some of the streams, and Ridgebury, Leicester, and Whitman soils (Rn) within many of the drainages and depressions of the property. Some minor streams course from north to south through the project area, and are part of the larger Little River drainage basin (#3805). The Little River is a prominent body of water that flows south to the west of the project property, and forms a confluence with the Shetucket River a couple of miles further south. Much of the property is wooded, although there are some cleared farm fields, particularly in the central and northeast sections of the project area.

A statistical prehistoric landscape sensitivity model developed and utilized by ACS indicates that most of the project area bears a low sensitivity with respect to the potential presence of significant prehistoric sites. According to the model, the highest scoring areas are the farm fields that bear non-rocky Woodbridge fine sandy loam units (WxB) in the northeast and central portions of the project area, with a score of 13.3 out of a possible 100.0, and therefore within the low (0-20) sensitivity range. All other sections of the property score lower given their rocky soil contexts, steeper slopes, and/or greater distance to water, with typical scores of 5.6 out of a possible 100.0.

Records of the Connecticut Office of State Archaeology and the Connecticut State Historic Preservation Office indicate a very low density of prehistoric sites previously recorded in the area, likely related to a combination of factors. There has also been a low density of development and associated cultural resource management surveys in the rural parts of Sprague and surrounding towns, and the headlands position of the project property would have made it less conducive to intensive prehistoric occupation. The closest previously recorded prehistoric site is poorly documented (133-3), and is located about one-half mile to the west of the project area on Hanover Reservoir, which is part of the Little River drainage basin. Most other sites of the area are recorded in close proximity to the Shetucket River, which would have afforded a combination of habitable surface conditions on glacial meltwater landforms, as well as more abundant and diverse resources than in rockier uplands contexts.

During the Contact period, the project area would have been at the northern reaches of Mohegan-Pequot territory, which included hunting and gathering ranges up the Shetucket River drainage basin and major tributaries. As a part of the New London Colony, Sprague territory was originally within the larger township of Norwich until 1786, and then set off from Lisbon in 1861. Historically, the project area was in a very lightly settled part of what was formerly Lisbon. Historic maps of the mid-19th Century show no major developments in or adjacent to the project area, with the exception of several houses along Potash Hill Road, including those of the Bishop and then Chapman families in the vicinity of the central lot.

Land records offer details regarding property ownership through time. The central lot is currently owned by the Rainville family. The property and its dwelling house were owned by the Babbitt family for the bulk of the 20th Century, and by the Chapman family in the latter third of the 19th Century. An 1865 deed from Nathan P. Bishop to Josiah F. Chapman refers to the property as the "Home Farm," then measuring 150 acres and bordering the "Adams Farm" to the west. An 1856 deed from Roger A. Bishop to Nathan P. Bishop refers to improvements made by the Bishop family over the prior ten years, possibly including the construction or improvement of the existing house which is listed in the town's tax assessor records as having been built in 1860. The Bishops acquired much land in the area during the late 18th through early 19th centuries. The house was documented for the Connecticut Historical Commission (now SHPO) as part of a larger town-wide survey, and is described as a two-story New England Farmhouse-style frame dwelling with cut stone foundation and twin central chimneys, the original structure of which could date to 1790.

The northwest lot of the project property is part of a larger 145-acre tract owned by Estelle Houle and Gale Boardman. The 145-acre parcel has been transferred many times over the last one and one-half centuries in tact, originating with Nathan P. Bishop who sold the tract to Martin Obinaur in 1854. At that time, the lot is described as being delineated by various stone wall alignments, with a combination of wood lots and pasture lots in the area. While land records refer to buildings on the land, they were likely in the part of the parcel that is not part of the project area, and likely located along Potash Hill Road to the west.

The northeast parcel is owned by Lawrence Nadeau Construction, which acquired it through bankruptcy proceedings from the Norwich Historic Preservation Trust. The parcel was part of much larger 100 and 200-acre tracts collectively known as the "Stone Barn Farm," owned by various parties since the mid-19th Century when sold by the Perkins family. The same Perkins family owned much land in the area in the late 18th Century, and is the same family who owned the existing house at the intersection of Potash Hill Road and Westminister Road about one-half mile to the south of the project area. That house is listed with the National Register of Historic Places (NRHP), and is known as "Ashlawn," or the "Joshua Perkins House." The late 18th Century Georgian two-story central-hall farmhouse also contains twin central chimneys, although they are more pronounced than those of the Rainville house, and the façade features the original projecting pavilion, while the rear of the house features an ell that is thought to date to about 1740. The Perkins family also likely built the house at 85 Potash Hill Road to the west of the Rainville house. The latter house has not been listed with the NRHP, although it is determined to be eligible by the town-wide architectural history survey which found the structure to date to the first half of the 18th Century. The Saltbox style home features a single large central chimney, and was later owned by the Adams family members who were farming neighbors to the Chapmans, Bishops, and Perkins family farms. A cluster of historic homes also lies about one-half mile to one mile west of the project area in the village of Hanover, with the town-wide architectural history survey of Sprague also recommending that this district be included in the NRHP. The closest historic district listed with the NRHP is the Baltic Historic District, located a couple of miles to the southwest of the project area.

Phase Ia Field Results

There was no subsurface testing conducted for the Phase Ia archaeological assessment survey. A pedestrian surface survey was conducted by two people for the project during the middle of December, 2014. Field conditions were relatively wet from recent heavy rains, and slightly warmer than typical. The surface survey focused on four principal areas: the open farm field at 111 Potash Hill Road and herein described as the central lot; the wooded lots to the north, including the section that was a part of 57 Potash Hill Road and herein described as the northwest lot; the wooded lot next to the east herein described as the north-central lot; and the northeast lot that contains four open farm fields and borders Westminister Road to the east.

Despite the large size of the project property, there is a general uniformity in the landscape with respect to geology, surficial materials, soils, and other environmental aspects. The surface of the entire project property generally dips gently to the south – likely an important criterion in site selection for the proposed development. The entire property also bears a veneer of glacial till to variable depths, with a variability of rockiness at the surface ranging from sparse to none in the open farm fields, to extremely rocky – particularly near the several intermittent drainages that occur in the wooded lots. The property is in a headlands environment of the Little River drainage basin, thus there is a lack of deeply incised streams, with the most prominent steam channel located in the southwest part of the northeast lot. Deciduous hardwood trees dominate, with a generous leaf cover generally obscuring surface conditions, and minor stands of mountain laurel and cedar occurring in the wooded lots.

The main cultural feature attributable to all lots of the project area is the ubiquitous presence of stone wall alignments. The condition and quality of the walls varies throughout, ranging from intermittent alignments that are barely discernable, to those that are well stacked and reach as high as four to five feet tall. Some contain very large boulders that would have required substantial horse or oxen teams to clear from fields. Stone walls surround the majority of cleared fields, but also occur within wooded lots and suggest lot delineations that likely represent former pasture lots. The stone walls are constructed of locally available granitic gneiss rock, and are likely on the order of 200 years old in many cases.

Various stone pile features were also recorded during the surface survey. The ten recorded features vary in terms of function and purposeful construction, including a couple of well formed property boundary markers, as well as several dumped piles near edges of farm fields. Stone Pile #10 in the eastern part of the southeast field of the northeast lot is a late historic to modern massive heap of stone that was likely formed by heavy equipment. The best formed piles occur in the southwest part of the wooded part of the Rainville lot, particularly three neatly stacked piles on immovable boulders. These too were likely formed as part of farm field clearing activities over the last 200 years, although some recognized tribes of the area have identified similar features as being Native American in origin. In prior archaeological surveys of the region, ACS has determined that in the absence of direct evidence for either interpretation, ethnohistoric literature, ecological evidence, and statistical applications demonstrate that the piles are all likely historic Euroamerican in origin.

There were no prehistoric structures, features, or artifacts encountered during the surface survey. There are some minor ledge or rock outcrops in the very northern sections of the property, but none that were substantial enough to have served as rockshelter contexts, nor were any prehistoric artifacts observed in the field or reported by local informants, including Mr. Alan Rainville whose family has owned the central lot and farmhouse for about 30 years. Historic artifacts were limited mostly to some dumped early to mid-20th Century material along the path that courses north from the open Rainville farm field into the northern wooded section of the lot. Here, dumped materials include enameled tinware, such as buckets as well as milk jugs with identifying tags. These materials reflect the consolidation of dairy farming in the early to mid-20th Century when local farms shipped their product to regional dairy processing facilities. Other dumped late historic materials in this vicinity include tires, 40-gallon steel drums, paint cans, kerosene containers, and liquor bottles. Isolated finds throughout the rest of the project area include an abandoned car door in the northeast part of the northeast lot near Westminister Road, 40-gallon steel drums full of late historic broken glass or other debris further to the west, dumped modern brick in the southern part of the western field in the northeast lot, a box wire fenced area with garden supplies in the northwest part of the northern field in the northeast lot, and a shotgun shell casing near the southwest corner of the southeast field in the northeast lot.

The shotgun shell casing represents modern hunting activity in the area, which is confirmed by Mr. Rainville who hunts on his own property, as well as the occasional hunting blinds observed in the field. Other modern cultural activities include the harvesting of hay in the open field in the Rainville lot, logging in some of the wooded lots, and there are numerous percolation tests located throughout the project area related to a former proposed development. A thick grass cover at the time of the pedestrian surface survey precluded good surface visibility on the open Rainville field, while the fields of the northeast lot have started to become overgrown with scrub growth that also limited visibility. The greatest visibility was provided in the western field and part of the southern field of the northeast parcel, which are being used as a staging area for logging and where the surface has been largely stripped of vegetation. Overall, there was very limited evidence of subsurface disturbance throughout the project area.

Architectural History Analysis

In mid-January, 2015, a cursory architectural history analysis was conducted for the houses at 85 Potash Hill Road (off property) and 111 Potash Hill Road (on property), both with respect to potential visual impact by the pending project. The Perkins House at 85 Potash Hill Road is a well preserved Colonial saltbox from the mid-18th Century. It lies on the north side of the road with a substantial wooded slope to the rear. The house is architecturally significant with respect to integrity of form and materials, and its association with the Perkins family and their early settlement of Hanover village. When taking into account various topographic data of the surrounding landscape, including a maximum elevation of solar panel installation, horizontal distance to the house, and approximate 40-foot height of existing trees to the north and east of the house, there would be a lack of visual impact to the house by the proposed project if a tree line is maintained within 250 feet of the house to at least 500 feet from the house.

The Babbitt House at 111 Potash Hill Road also lies on the north side of the road, although at the bend in the road where the house is surrounded by a large cleared field. This is a two-story, five-bay, timber framed structure with a rear kitchen ell. Both major sections rest on stone foundations, although the foundations have been altered and partially parged with cement. Vinyl siding and a replacement front porch are noticeable alterations to the house. The house has a typical Colonial form, although there are twin interior chimneys which are distinctive features for the region for the late 18th Century. Given its setting in close proximity to the planned location of solar panels, there will be a substantial visual impact on the structure, but because of substantial alterations to the house, it is not eligible for the National Register of Historic Places (NRHP).

Phase Ib Field Results

Given the extensive nature of the proposed development and documented historic and potential prehistoric sensitivity of the project area, the Phase Ia archaeological assessment study recommended a Phase Ib archaeological reconnaissance survey for evaluating subsurface cultural resources on the project property. Regarding prehistoric sensitivity, there were no previously recorded resource identified on or near the project area. But based on various environmental characteristics, SHPO determined that there was a potential for prehistoric cultural resources to be located on the project property. The statistical prehistoric landscape sensitivity model developed by ACS for Connecticut indicates a low sensitivity for the entire project area for significant site contexts such as burials sites and multi-component village occupations, although smaller intermittent camp sites have been recorded in similar environmental contexts, particularly in the less rocky soil contexts in close proximity to wetlands. Within the current project area, the highest scoring areas are those of the cleared farm fields, which feature the less rocky Woodbridge fine sandy loam units. It was therefore recommended that the Phase Ib archaeological reconnaissance evaluation for potential prehistoric sites be highly stratified – limited to the open farm fields and several isolated areas of the rockier wooded lots that featured unique conditions possibly targeted by prehistoric occupants – including a pond noted in the eastern part of the northwest lot, and a nearly level area in the southwest corner of the north-central lot located adjacent to the largest stream channel of the property. ACS did not recommend subsurface testing for the rest of the project area based on rocky soil contexts, moderate slopes, and/or substantial distance to water, with these areas typically scoring no higher than 5.6 out of a possible 100.0 according to the statistical prehistoric landscape sensitivity model.

With respect to historic sensitivity, a review of historic maps and land records revealed that the historic use of the project area was largely limited to cultivation, pasturing, and procurement of timber. Intensive historic occupation was concentrated on surrounding roadway corridors, particularly Potash Hill Road, with no known historic structures on the west side of Westminister Road near the project area. Along Potash Hill Road, main occupations to consider include the existing Rainville House that partially dates to the late 18th Century, as well as the adjacent Perkins / Adams House that lies to the west of the property. As the single historic occupation within the project area is surrounded by the open farm field recommended for subsurface testing in the evaluation of prehistoric resources, the potential subsurface resources related to the historic occupation of the property were adequately covered by the same testing distribution.

There were nearly 500 subsurface shovel tests excavated for the Phase I reconnaissance survey. About 480 systematic tests were placed at standard 50-foot intervals five principal areas, including more than 250 tests in open field of the Rainville lot and about 160 tests in the open fields of the Nadeau lot. There were also 12 tests placed in the vicinity of the 20th Century trash dump area, and two sets of 28 tests each near two vernal pools documented to the north and east of the dump area, respectively. There were also eight judgmental shovel tests placed at 25-foot intervals surrounding two systematic tests in the northern part of the Rainville open field that yielded possible prehistoric lithic material. Soil conditions were typically as expected, including a fine sandy loam topsoil layer that was thicker in the open Rainville lot, possibly owing to historic plowing, and a fine sandy loam subsoil to variable depths. Rockiness was typically light to moderate, although deep subsoil or substratum layers typically contained a fair amount of gravel. Because of the early spring timing of the survey and slow drainage qualities of the soil, many tests closest to wetlands featured wet testing conditions or even standing water at one and one-half to two feet below the surface. Most tests were undisturbed, although infilling of low spots in the open fields was apparent, particularly near the existing wetland boundaries. No substantial subsurface features were recorded, either prehistoric or historic, although traces of a former stone wall coursing east-west through the Rainville lot were confirmed based on relative rockiness of shovel tests, information from the landowner, and visible topography in the field.

There were no definite traces of prehistoric activity recorded on the project property, although several tests in the northern part of the Rainville open field did contain artifacts that could be prehistoric in origin. Two tests contained quartz or quartzite fragments that could represent partial flake fragments from the manufacture of stone tools, although surrounding judgmental shovel tests did not reveal further prehistoric material, and the quartzite fragments were additionally found in direct association with late historic material in what appeared to be an infilled depression. The one fragment of quahog shell found in the Rainville lot could also be prehistoric in origin, although this was a common 19th Century food source, and the piece was found relatively close to the historic house on the Rainville property. Finally, charcoal was recovered in small amounts at various locations, and could derive from either prehistoric, historic, or even natural causes, and was not found in identifiable feature contexts.

Historic artifacts were largely limited to 20th Century materials in the one dump area to the north of the open field in the Rainville lot, and represent light scatters of materials deposited by incidental discard and plowing throughout the open fields, particularly on the Rainville lot and likely in association with the existing house. The range of materials recovered include metal hardware, household ceramic fragments, window and bottle glass, and modern materials such as plastic. Metal hardware items mostly consisted of oxidized cut nail fragments dating from the 19th or 20th centuries, although some late historic wire nails were recovered, as well as one hand-wrought nail from the open field on the Rainville lot that likely predates the early 19th Century. Late 18th to early 19th Century ceramics include several fragments of creamware and pearlware, with several other fragments representing the early 19th to early 20th centuries including stoneware, ironstone china, and transfer-printed whiteware. Bottle glass tended to be clear in color and non-patinated, thus not early historic in origin, while an amethyst-tinted jar from the 20th Century bears a patent date of 1903 that likely represents the early end of the date range for the site. The window glass found also tended to be non-patinated, and therefore late historic in origin, while some pieces are safety glass fragments and thus are relatively recent. One non-human bone fragment was recovered from the Rainville lot, and is an indeterminate epiphysis of a large domesticated mammal, while surface finds of both recently slaughtered wild deer and emacerated cow were found at the vernal pool area to the north of the 20th Century dump site in the Houle lot. Other historic artifacts recovered from the open fields in small amounts during the survey include coal, slag, pressed glass vessel fragment, an oxidized apparel trimming, and a horseshoe with plastic insert.

Recommendations

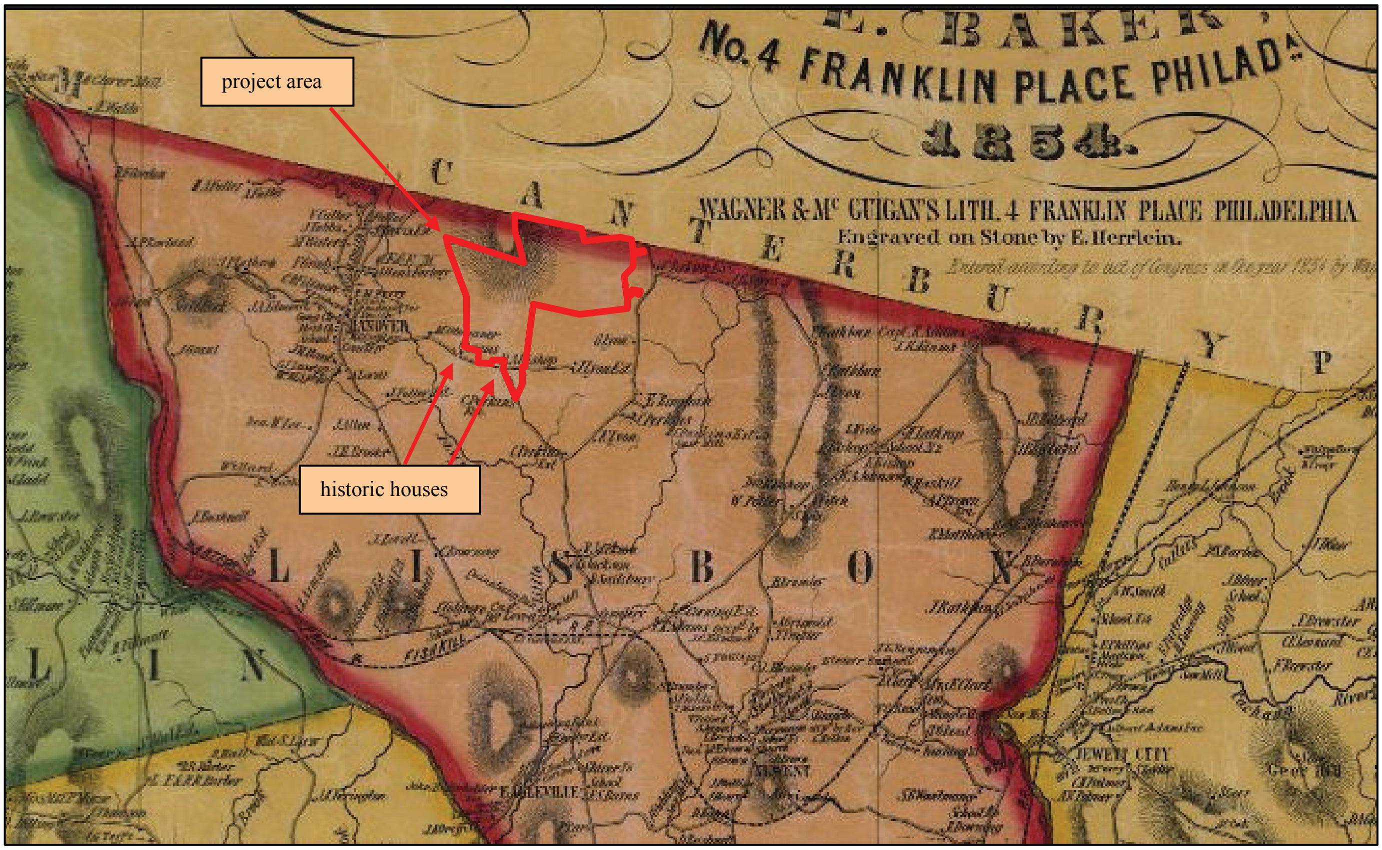
There were no definitive traces of prehistoric activity recorded on the project property in terms of potential rockshelter structures, subsurface feature contexts, or artifacts. The possible prehistoric lithic materials from two tests in the northern part of the Rainville lot more likely result from natural and/or historic processes, with judgmental tests revealing no further associated prehistoric materials. Scattered and isolated fragments of quahog shell and charcoal on the Rainville lot also likely represent natural or historic cultural processes. Despite the initial assessment by SHPO that the area could be sensitive for prehistoric cultural resources, the statistical prehistoric landscape model developed and utilized by ACS found the entire project property to bear a low sensitivity rating for the potential presence of prehistoric site contexts. It is therefore recommended that no further conservation efforts are warranted for potential prehistoric cultural resources on the project property.

Historic features identified on the project property are limited to above ground stone walls and stone piles documented during the preceding assessment survey. Several of the better formed stone piles are being preserved in the southwest wooded part of the Rainville lot, although stone piles and markers throughout the rest of the property are not being recommended for further conservation as they are common historic features of the landscape. Many of the stone wall alignments are also historic, but equally common and well documented on submitted site plans so that their salient information of historic lot size and orientation is still preserved. With the exception of a filled in depression in the northern part of the open field in the Rainville lot and the 20th Century dump site to the north, none of the historic artifacts were found in clustered contexts and likely represent the scattering effects of plowing and other agricultural activities over time. The 20th Century dump site is an *in situ* context as a surface site, although it is relatively late historic, and shovel tests revealed no substantial subsurface site context. It is therefore recommended that there are no subsurface historic archaeological contexts within the limits of the project impact areas warranting further conservation.

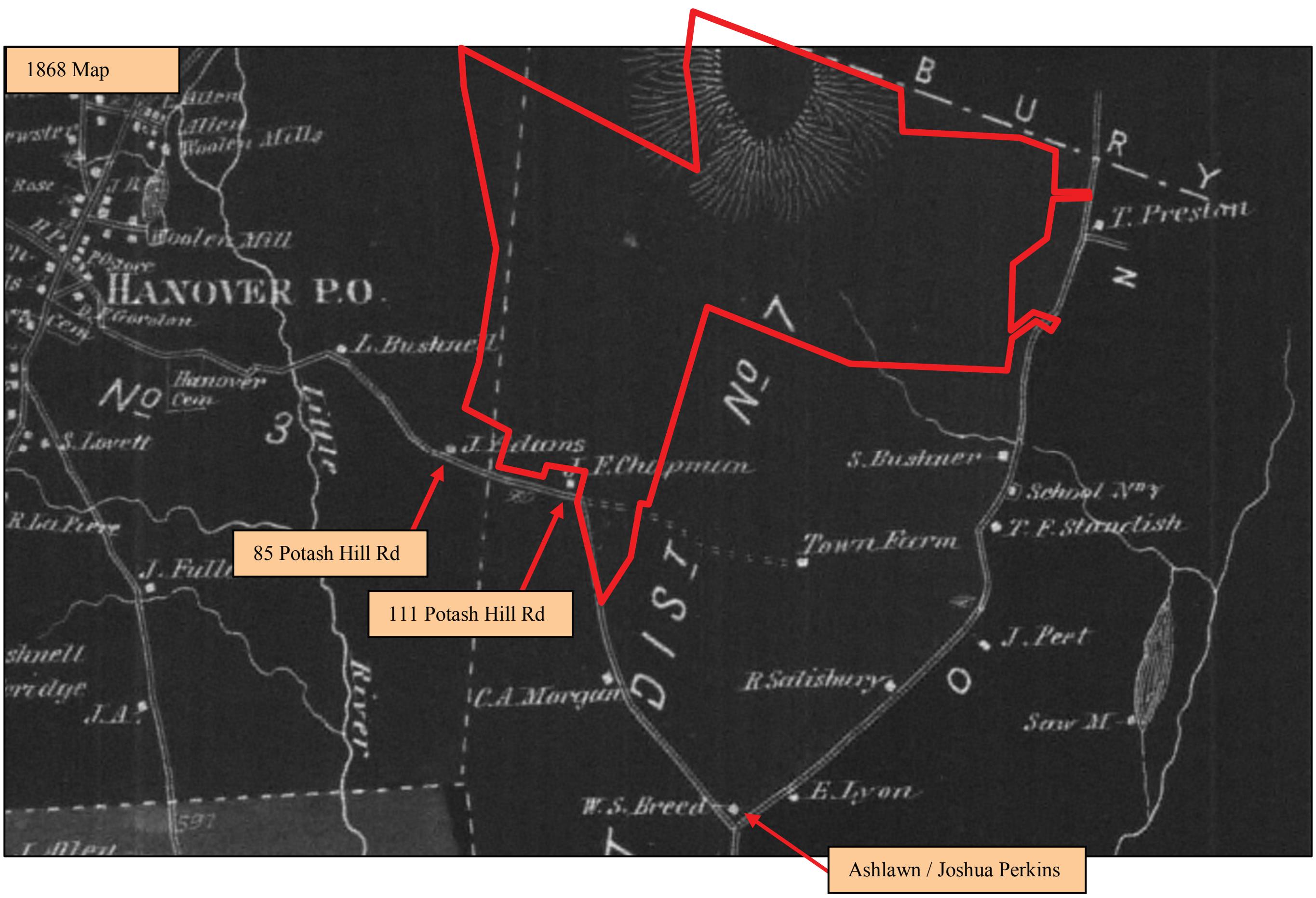
Recommendations for this survey also relate to potential visual impacts on above-ground resources or structures eligible for, or listed with, the National Register of Historic Places. Historic districts such as those recommended previously for Hanover or currently listed in Baltic are too far from the project area to be adversely affected, as is the Perkins House located about one-half mile south of the project area. Other surrounding historic structures include the early 18th Century house at 30 Westminister Road in Lisbon, which is also too far to be visually impacted, as well as 636 Water Street in Canterbury and 114 Sullivan Road in Lisbon near the northeast corner of the project area, with the latter houses dating to the early 20th Century and not likely eligible for the NRHP. The latter houses are additionally visually separated from the project area by intervening mid to late 20th Century properties. Of relevant concern, however, is the potential visual impact of the proposed project on the historic structures at 85 and 111 Potash Hill Road.

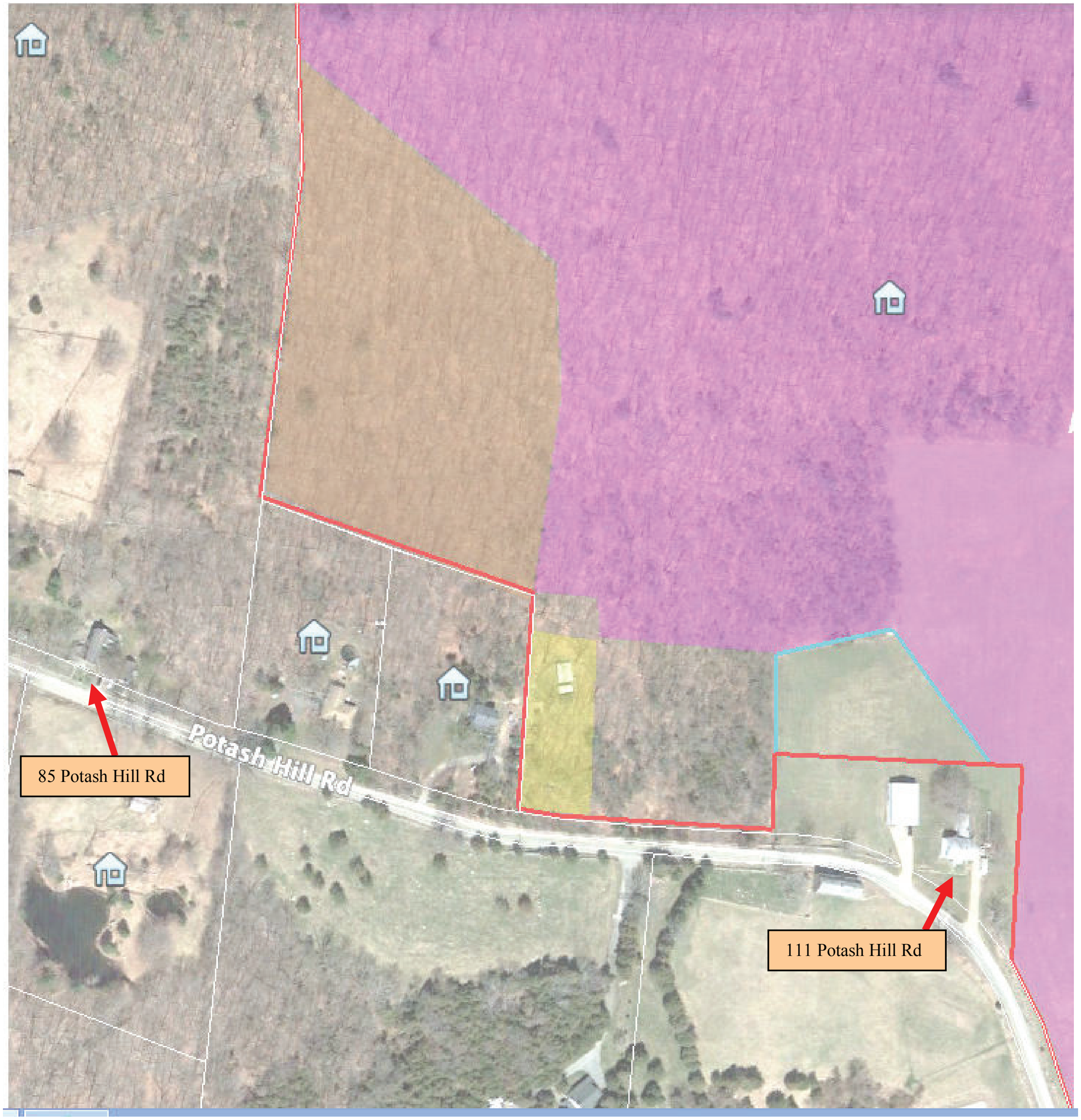
The first house of concern for visual impact is actually off the project property at 85 Potash Hill Road, but lies near the southwest corner of the wooded part of the Rainville lot. The architectural history survey of Sprague indicates that the property is eligible for the NRHP, and therefore it should be accommodated by the project. The survey identifies the structure as the "Perkins House," which bears the same name as the previously described NRHP structure at the intersection of Potash Hill Road and Westminister Road about one-half mile to the south of the project area. Based on the maturity of trees behind the house in its own lot and the adjacent Rainville lot, it should be possible to provide sufficient screening in the southwest part of the Rainville lot to protect the visual integrity of the Perkins House property. In the cursory viewshed analysis prepared by ACS, it was determined that a wooded buffer zone between 250 and 500 feet from the house would be sufficient to prevent a visual impact of the proposed project on the house. The existing tree line on the property of 85 Potash Hill Road is well within the lower 250-foot limit, while ACS recommends ensuring the upper 500 foot limit by leaving the southwest corner of the Rainville Lot wooded for all elevations below the 340-foot contour line. The resulting area of undeveloped land would also accommodate the preservation of the several well formed stone piles in the southwest part of the Rainville lot that could be potentially cited by Native American groups as ceremonial in nature.

The second house (Babbitt House) of concern for visual impact at 111 Potash Hill Road is on the Rainville lot, and would almost certainly be impacted visually by the proposed development. Here it is recommended that the substantially altered structure is not eligible for the NRHP, although it's retention of a regionally distinctive adaptation of the Colonial form that occurs elsewhere within the surrounding rural landscape generates historic value. Given the potential visual impacts to the house and the limited amount of architectural and historical information previously available, a state-level documentation is recommended for the house. The preparation of a Historic Resource Inventory for the property will provide a detailed description and photographic documentation of the current condition of the exterior and interior of the house and an evaluation of its historic importance, and will further serve as sufficient mitigation in light of proposed visual impacts by the pending project. Alternatively, vegetation screening sufficient to visually screen the solar array and associated infrastructure in the vicinity of the house at 111 Potash Hill Road would offer a suitable form of mitigating potential visual impact by the pending project on this resource.

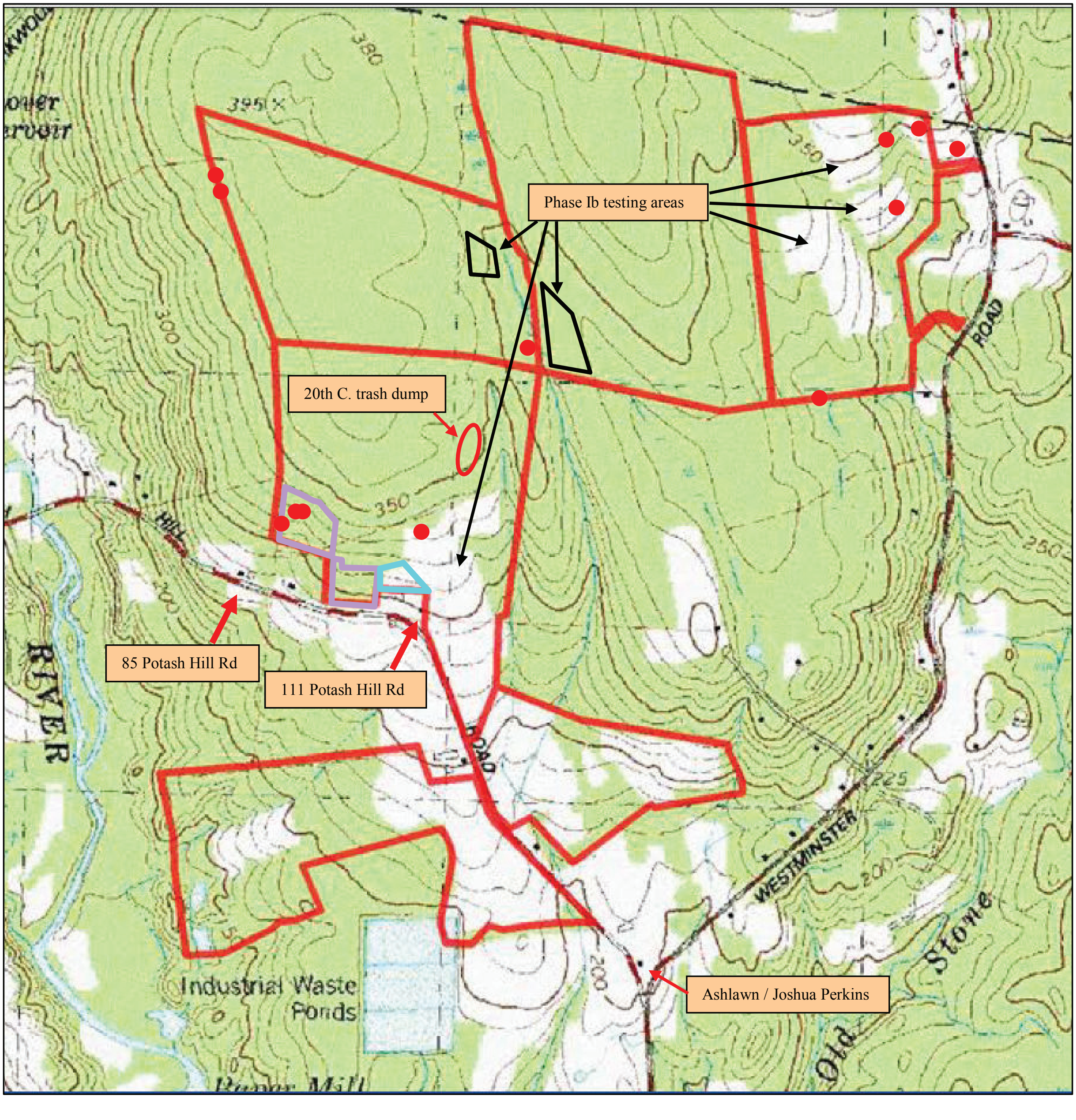


Preston, Bushner, Standish, Morgan, and School No. 7 houses no longer exist.
Distance between 85 / 111 Potash Hill Rd ca. 1,000 feet.





Purple shaded area subject to development.
Unshaded and olive shaded areas to remain undeveloped.
Distance between 85 / 111 Potash Hill Road houses approximately 1,000 feet.



Red scale bar 1000' (ca. 1000' between 85 Potash Hill Road and 111 Potash Hill Road).
Purple areas to remain wooded and undeveloped; blue open area to remain undeveloped.
2 southern lots outlined in red have been abandoned as current project areas.
There should be 500' or more of woods between 85 Potash Hill Road and any visual impact.
Solar panels will be between 6 and 10 feet high - no higher developments.
8' chain link fence will surround development.
Stone pile locations represented by red dots.

Some of the better formed stone piles on the property occur in the southwest part of the Rainville lot. Backpack used for scale - 2 feet high.

Northwest view of 85 Potash Hill Road

North view of 111 Potash Hill Road