EXHIBIT CD-1

Phase I Archaeological Identification Survey for the Proposed Invenergy, LLC, Clear River Energy Center, Burrillville, Providence County, Rhode Island AND Phase II Archaeological Site Examination of the Iron Mine Brook Dune Site (RI 2757)

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

June 9, 2016

Lead Agency:
Rhode Island Energy Facilities Siting Board

Prepared for:
ESS Group, Inc.
10 Hemingway Drive
East Providence, Rhode Island 02915

Prepared by:
Gray & Pape, Inc.
60 Valley Street
Suite 103
Providence, Rhode Island 02909

Gray & Pape Project No. 15-69901.001/16-69901.001

GRAY & PAPE
INC.
CULTURAL RESOURCES CONSULTANTS

Project No. 15-69901.001 and 16-69901.001

Phase I Archaeological Identification Survey for the Proposed Invenergy, LLC, Clear River Energy Center, Burrillville, Providence County, Rhode Island
AND
Phase II Archaeological Site Examination of the Iron Mine Brook Dune Site (RI 2757)

Lead Agency: Rhode Island Energy Facilities Siting Board

Prepared for:
ESS Group, Inc.
10 Hemingway Drive
East Providence, Rhode Island 02915

Prepared by:
Kimberly Smith, M.A., RPA
Christopher Donta, Ph.D.

Gray & Pape, Inc.
60 Valley Street
Suite 103
Providence, RI 02909
(401) 273-9900

_____

Christopher Donta
Senior Principal Investigator
June 9, 2016

ABSTRACT

A Phase I archaeological identification survey was conducted for the proposed Clear River Energy Center project in Burrillville, Providence County, Rhode Island. The project location is rural and primarily wooded. Subsurface testing was recommended for the project area due to the presence of known nearby Native American sites and the potential for intact, unidentified Native American and historical archaeological sites. In total, the area of potential effects included sixteen survey areas, which resulted in the excavation of 620 shovel tests. These areas have changed since this survey was conducted, for example, a substation will no longer be constructed. However, for the sake of this report of survey findings, the original area of potential effects is described in this report. Seven areas of archaeological interest were identified and include a historical structure located in the 345 kV line (2,500 feet), a lithic scatter located in the northeastern portion of the Power Block survey area, a historical artifact scatter located in the southeastern portion of the Power Block survey area, a lithic scatter located in the Southeastern Workspace/Area 4 survey area, a historical structure in the northeastern portion of the 137-meter (450-foot) Frontage Survey Area, historical artifacts recovered from ST K-3 in the Frontage Survey Area, and from numerous STs in the PUD Well Site Survey Area. The scatters identified in the Power Block do not appear to retain context and, therefore, no further archaeological work is recommended for these two locations. The ephemeral structure location found in the 345 kV line (2,500 feet) has the potential to aid in understanding nineteenth century settlement in this region of Rhode Island. As such, avoidance is recommended within the structural location and surrounding 15-meter (50-foot) radius, or additional archaeological investigations if avoidance is not possible. The Iron Mine Brook Dune Site (RI 2757), identified in the Southeastern Workspace/Area 4, has been identified within dune, or dune like deposits, similar to many early Native American sites in New England. Given the location of these deposits, the site is possibly in its original context and may have the potential to aid in understanding Native American settlement in this region of Rhode Island. Avoidance was recommended for this site, or additional archaeological investigations if avoidance was not possible. This site has since been subjected to a Phase II archaeological site examination, the results of which are located in Appendix B. The historical structure foundation, likely a barn, identified in the Frontage survey area should be better documented prior to disturbance. As such, Gay & Pape recommends avoiding it and an associated 20-meter (66-foot) radius or, if avoidance is not possible, Gray & Pape recommends additional archaeological investigations.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF PLATES

LIST OF TABLES

1.0 INTRODUCTION

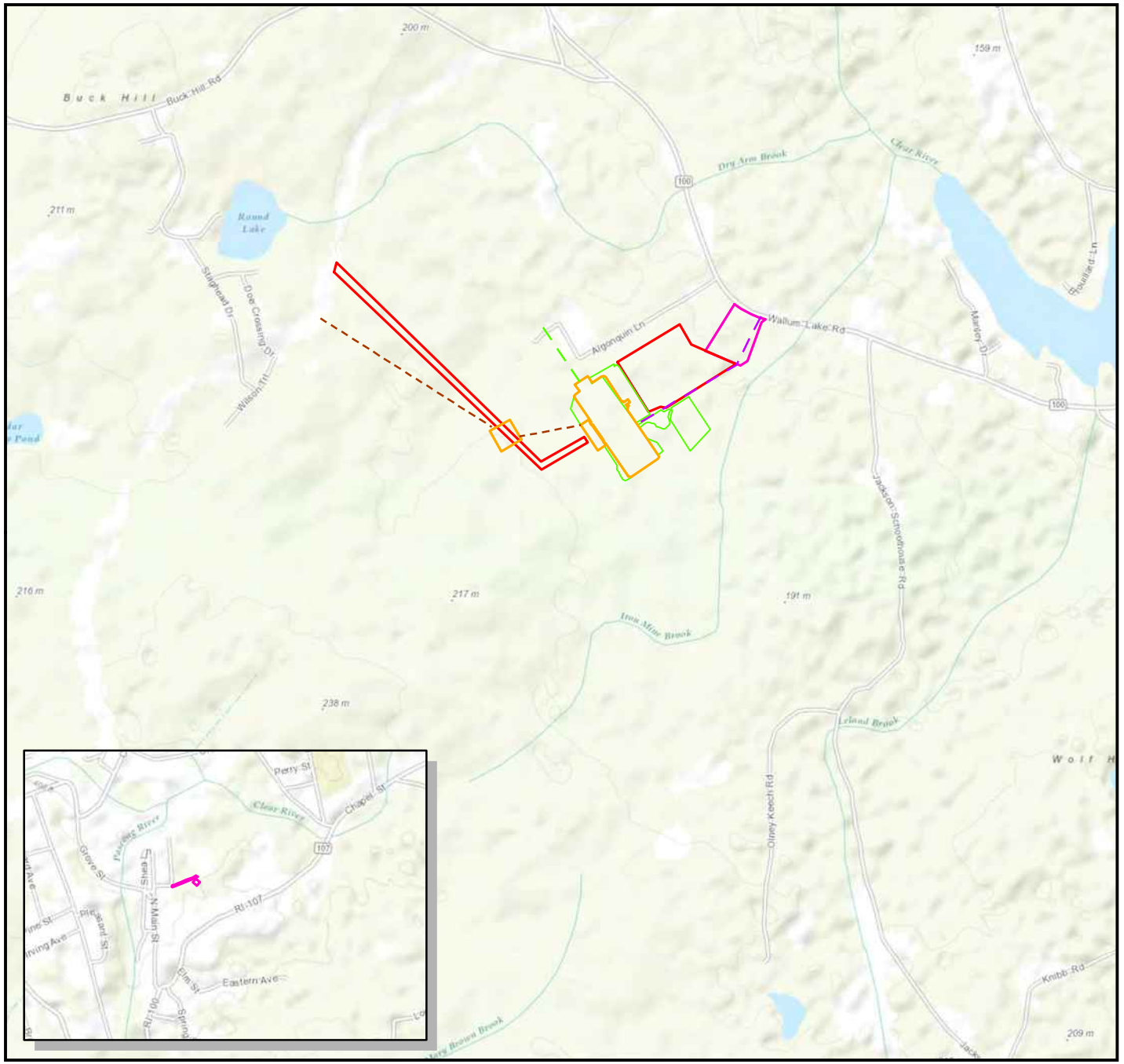
Gray & Pape, Inc. (Gray & Pape), was retained by ESS Group, Inc. (ESS), East Providence, Rhode Island, on behalf of Invenergy, LLC, of Chicago, Illinois, to conduct a Phase I archaeological identification survey for the proposed Invenergy, LLC. Clear River Energy Center project in Burrillville, Providence County, Rhode Island (Figure 1). The proposed project consists of construction footprints, access road impacts, and utility line rights-of-way within a 12.1-hectare (ha) (30-acre [ac.]) parcel located in the west-central portion of the town of Burrillville, on the west side of Wallum Lake Road (State Route 100).

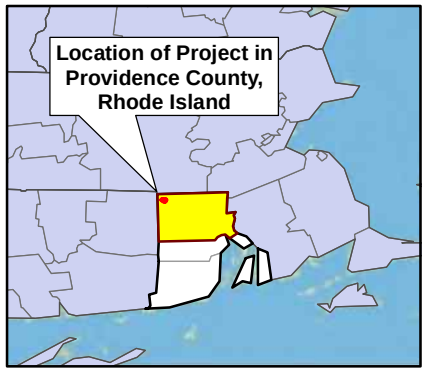
1.1 Authority

The lead agency for this project is the Rhode Island Energy Facility Siting Board. The project is being reviewed under Rhode Island General Laws 42-45, with the Rhode Island Historical Preservation and Heritage Commission (RIHPHC) acting as the state historic preservation office for Rhode Island reviewing the project.

Gray & Pape completed initial scoping for the project in April, 2015. A Phase I archaeological identification survey was recommended. A permit application was submitted to RIHPHC on August 3, 2015, to complete the Phase I archaeological identification survey. The RIHPHC granted Permit #15-13 on August 5, 2015. The project area was modified in late September, and this permit was modified on September 28, 2015. Gray & Pape submitted the results of the Phase I archaeological identification survey on September 14, 2015; the modification addendum on October 14, 2015; a second modification in February 2016; and a third modification to the permit in late March 2016.

Gray & Pape conducts archaeological investigations in accordance with Federal and State legislation. Procedures are in compliance with legislation and regulations concerning the impact to archaeological properties from federally funded or permitted activities. These laws and guidelines include the National Historic Preservation Act of 1966 (PL 89-665, 16 USC 470 as amended); the National Environmental Policy Act of 1969 (PL 91-990, 42 USC 4321); Executive Order 11593, 1971 (16 USC 470); Procedures for the Protection of Historic and Cultural Properties (36 CFR VIII, 800); Guidelines for the Recovery of Scientific, Prehistoric, Historic, and Archaeological Data: Methods, Standards, and Reporting Requirements (36 CFR 66); and the Archaeological and Historic Preservation Act of 1974 (PL 93-291 as amended). State legislation dealing with the protection of historic and archaeological resources is covered under Rhode Island General Laws 42–45. All tasks associated with this project were undertaken in accordance with the standards outlined in the Secretary of the Interior's Standards and Guideline for Archaeology and Historic Preservation (48 FR 44716 1983) and the RIHPHC Performance Standards and Guidelines for Archaeology in Rhode Island (RIHPHC 2015).





LEGEND

- Access Road
- New 345 KV Line
- New Gas Line
- August 2015 Survey Areas
- Addendum 2015 Survey Areas
- February 2016 Survey Areas
- March 2016 Survey Areas

0 300 600 Meters

0 1000 2000 Feet

N W E S

Location of the
Clear River Energy Center Project Area
Burrillville, Providence County,
Rhode Island

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 1

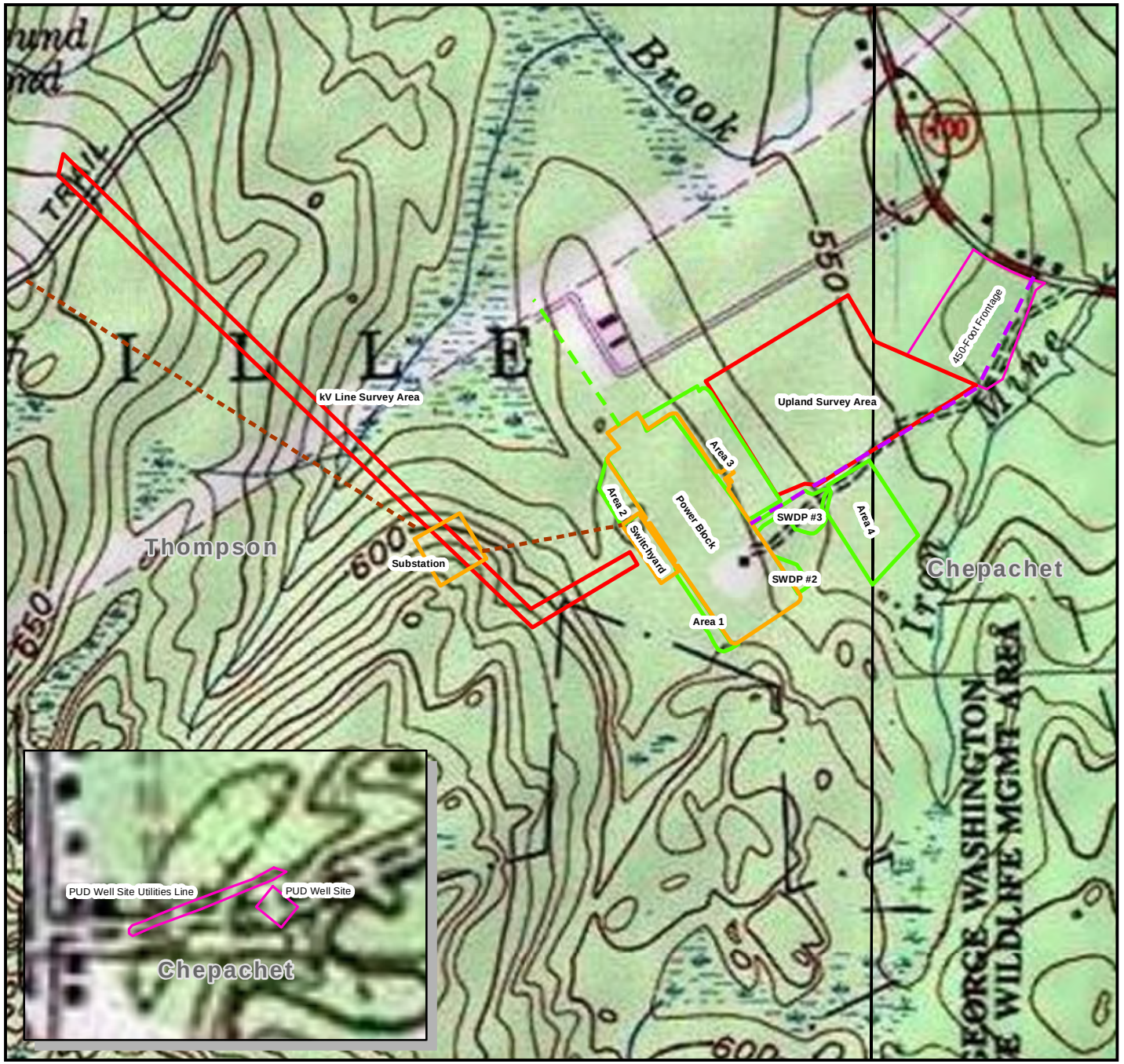
6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\15-69901_Figure1_LocationMap_CombinedSurvey.mxd Gray & Pape Project 15-69901.001

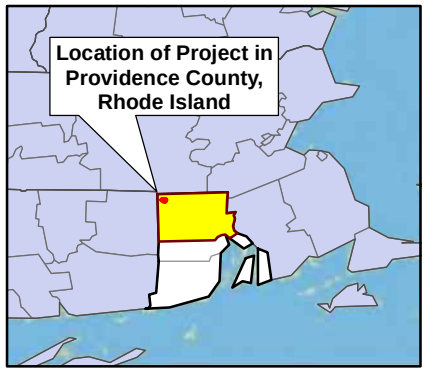
1.2 Project Area Description

The proposed project consists of construction footprints, access road impacts, utility line rights-of-way, and laydown areas where the proposed power plant will be constructed and the Pascoag Utility District (PUD) well site will be relocated. The proposed power plant will be located in the west-central portion of the town of Burrillville, on the west side of Wallum Lake Road (State Route 100). The PUD well site is located in the village of Pascoag (located within the town of Burrillville) immediately east of Silver Lake Avenue. Archaeological surveys were conducted specifically within proposed impact locations, or the Area of Potential Effects (APE) (Figures 2 and 3). Specifically, the APE totals approximately 21.07 ha (52.07 ac.) in area and approximately 3,465 m (11,368 ft.) of linear survey associated with kV lines, access roads, and additional utility lines. Each APE survey area is listed below with their relative dimensions:

- August 2015 Survey Areas:
    - Access Road - 682 m (2,238 ft.) in length
    - Gas Line - 266 m (873 ft.) in length
    - 345 kV Line - 244 m (800 ft.) in length
    - 345 kV Line - 762 m (2,500 ft.) in length
    - Substation - 0.8 ha (2.1 ac.)
    - Switchyard - 0.4 ha (1.1 ac.)
    - Power Block- 6.2 ha (15.4 ac.)
- Addendum 2015 Survey Areas
    - Three separate expansion areas of the central Switchyard/Power Block area:
        - Area 1- 0.28 ha (0.68 ac.)
        - Area 2- 0.40 ha (0.98 ac.)
        - Area 3- 1.93 ha (4.78 ac.)
    - Storm Water Detention Pond #2- 0.16 ha (0.40 ac.)
    - Storm Water Detention Pond #3- 0.52 ha (1.28 ac.)
    - Area 4 east of Storm Water Detention Pond #3- 1.92 ha (4.75 ac.)
- February 2016 Survey Areas:
    - Upland Survey Area - 8.3 ha (20.5 ac.)
    - kV Line Survey Area - 1,400 m (4,593 ft.) in length
- March 2016 Survey Areas:
    - 137-m (450-ft.) Frontage Survey Area
    - PUD Well Site - 0.04 ha (0.10 ac.)
    - PUD Well Site Utilities Line - 111 m (365 ft.) in length

Preliminary research into the published and unpublished literature regarding archaeological projects near the proposed Clear River Energy Center by Gray & Pape staff suggested the project area had the potential to contain Native American archaeological sites. Specifically, previous archaeological surveys at the adjacent extant Spectra Burrillville Compressor Station identified one Native American site to the southwest of the existing facility (the Algonquin Lane Native American site, RI 2568), and a second site was identified adjacent to the access road to the compressor station (the Wallum Lake Road site, RI 2569). The proposed project was determined to have the potential to impact unrecorded archaeological resources within the project area.





LEGEND

- Access Road
- New 345 KV Line
- New Gas Line
- August 2015 Survey Areas
- Addendum 2015 Survey Areas
- February 2016 Survey Areas
- March 2016 Survey Areas
- USGS 24k Topo Map Boundaries

0 100 200 Meters

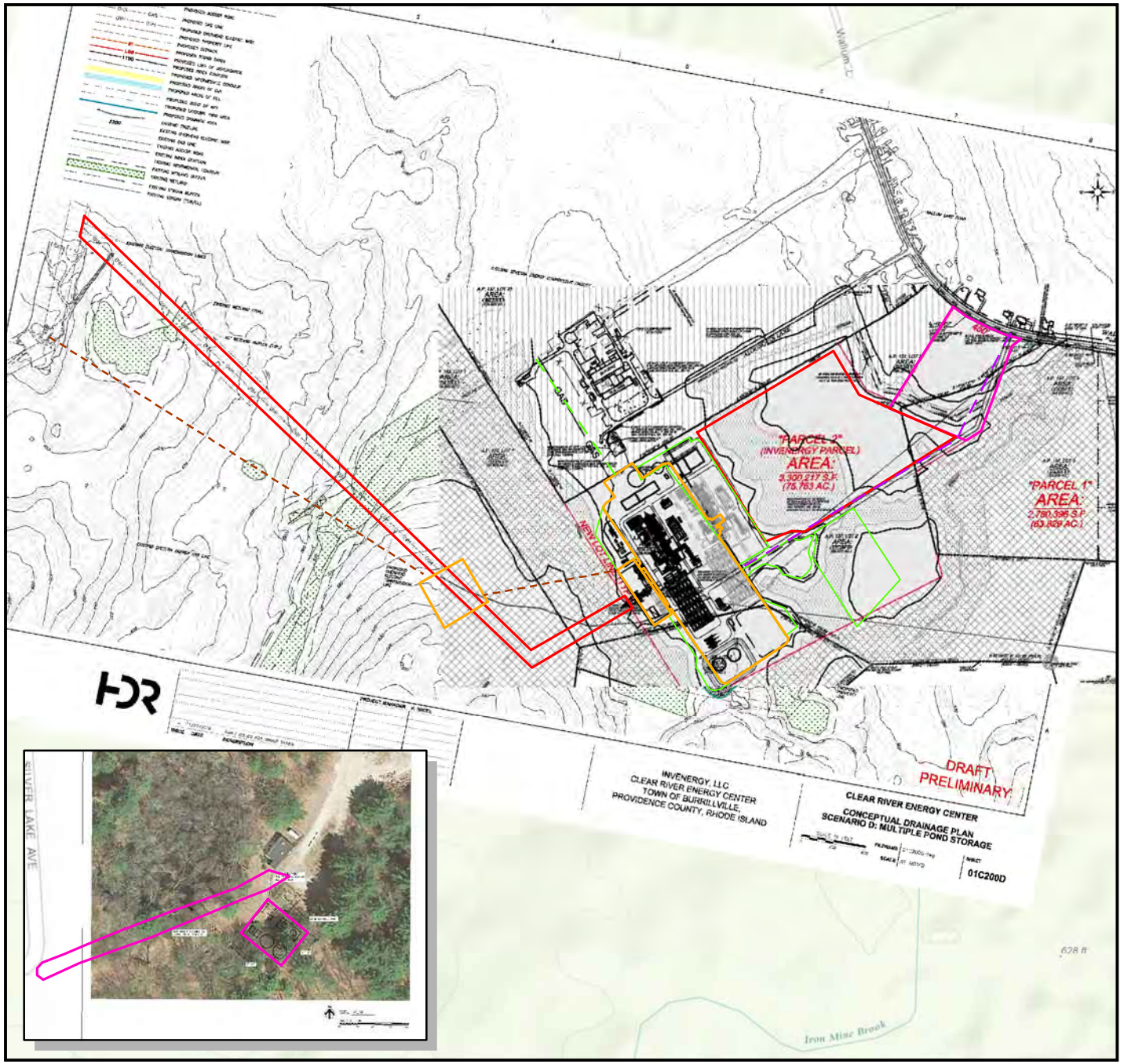
0 200 400 Feet

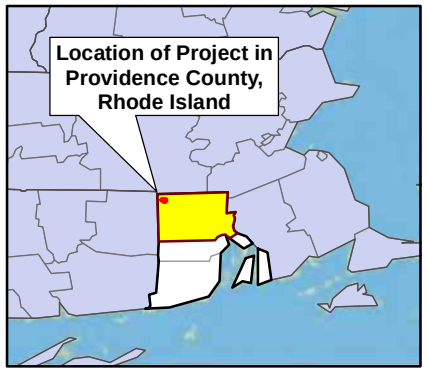
N W E S

Clear River Energy Center Project Area, Area of Potential Effect Survey Areas, Burrillville, Providence County, Rhode Island

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 2





LEGEND

- Access Road
- New 345 KV Line
- New Gas Line
- August 2015 Survey Areas
- Addendum 2015 Survey Areas
- February 2016 Survey Areas
- March 2016 Survey Areas

0 100 200 Meters

0 500 1000 Feet

N W E S

Clear River Energy Center Project Area on the Engineer Drawings, Burrillville, Providence County, Rhode Island

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 3

1.3 Personnel

The Phase I archaeological identification survey was conducted from August 18–27, 2015, October 4–9, 2015, February 1–4, 2016, and March 28 through April 1, 2016. The Field Director for the project was Kimberly Smith, M.A., with Principal Investigator Christopher Donta, Ph.D. supervising. Field technicians for the testing were Albert Armstrong, Rhea Fuller, Jessica Jay, Ian Miller, Michelle Pope, Samantha Savory, Erin Sullivan, Charlie Rose, Andrew Nelson, Jonathan Wiener, Danielle Lynch, Emilio Santiago, Darrell Geisler, and Catalina Suarez.

Kimberly Smith wrote the field results for the Phase I site identification survey and prepared the report. Christopher Donta provided input and internal review of the report. The artifacts were processed and analyzed by Kimberly Smith (historical) and Nathan Scholl (Native American). Mapping and graphics were prepared by Kimberly Smith and Carly Meyer. Sarah E. Holland, Ph.D., edited the report and oversaw its production.

1.4 Acknowledgements

The authors would like to thank the following individuals for their assistance and guidance during completion of background research and field survey: Charlotte Taylor, Archaeologist, RIHPHC; Linda Rivet, Jesse. M. Smith Memorial Library; Louise Phaneuf, Burrillville Town Clerk; Betty Mencucci, Burrillville Historical and Preservation Society; Jay Waller, Public Archaeology Laboratory, Inc.

2.0 ENVIRONMENTAL CONTEXT

2.1 Rhode Island Physiography

Rhode Island and Providence County are split between the New England Upland and Seaboard Lowland sections of the New England physiographic province (Fenneman 1938). The New England Upland section consists of a plateau or upraised peneplain that is divided by narrow valleys and also harbors occasional monadnocks. The upland is typically about 300– 335 m (1,000–1,100 ft.) in elevation, with some higher peaks of exceptionally hard rock. The upland thus consists of an eroded plateau, formerly consisting of more irregular terrain, but worn by many hundreds of millions of years of geological forces. The Seaboard Lowland section to the east, and the Connecticut Valley section to the west, form the borders of this central uplands, both lying for the most part at elevations of less than 60 m (200 ft.). The Seaboard Lowland section is both lower and smoother than the adjacent uplands, with occasional monadnocks, such as Great Blue Hill. The highest point in Burrillville is Benson Mountain, at an elevation of 230 m (753 ft.).

The Rhode Island Historical Preservation Commission demarcated six zones of physiography specific to Rhode Island (RIHPC 1986). These zones are based on Native American land use patterns corresponding to discrete geophysical zones within the state. Almost all of Burrillville, and all of the present project area, lies within the Upland Interior physiographic context. The Upland Interior context is demarcated by a line of northern hardwood forests above a 90 m (300 ft.) elevation contour, which corresponds with the expectation for Native American hunting camps.

The project area lies within the lower reaches of the New England Upland section, at elevations of between 168–198 m (550–650 ft.), within the Upland Interior physiographic context.

2.2 Hydrology

The project area lies within the Narragansett Bay Basin, which drains most of Rhode Island into the bay. This basin is comprised of three main drainages: the Taunton, Blackstone, and Pawtuxet Rivers. The Blackstone originates to the north, on the Worcester plateau, and drains south into Providence. It is fed by several major streams, including the Branch River, which is formed by the junction of the Clear River, located approximately 990 km (1 mi.) to the east of the project area, and the Chepachet River in the village of Oakland. Several small bodies of water are located in close proximity to the project area and include: Dry Arm Brook, which bisects the north end of the project area; Iron Mine Brook, located immediately south of the project area; and remnants of the historical Cedar Swamp bisect the project area in the southern and western regions.

2.3 Geology

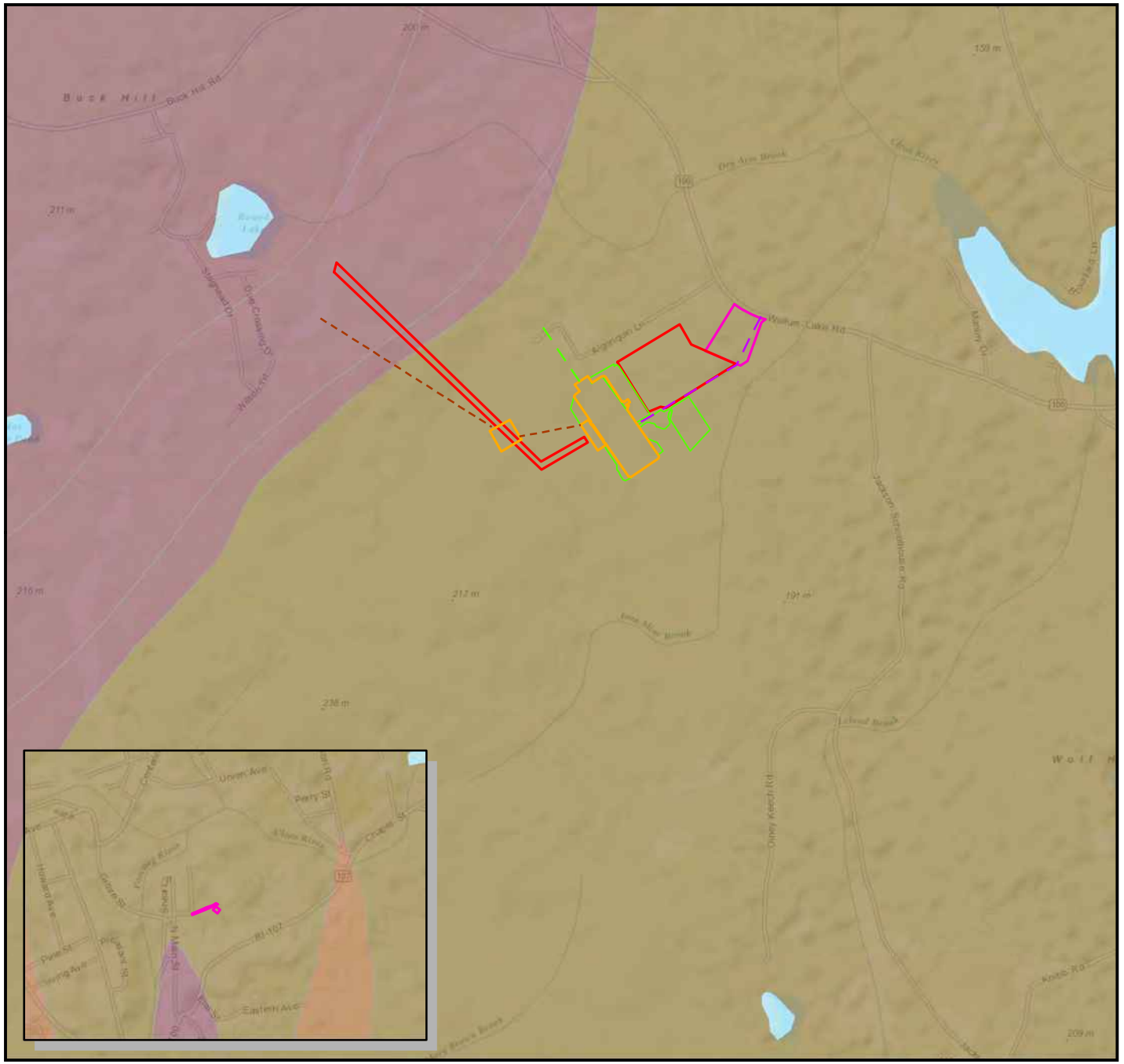
Bedrock underlying the ground surface across Rhode Island has been the subject of study for well over a century (as summarized in Quinn 1971: 5). Based on this research, rocks in Rhode Island are divided into six major groups. In the present project area, this includes older plutonic

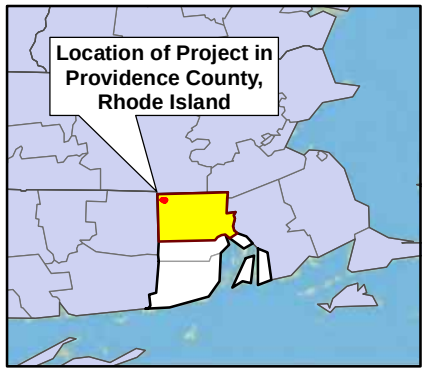
rocks and older metamorphic rocks (Quinn 1971: 7). The eastern portion of the project area is underlain by augen gneiss, part of the older plutonic series. The western portion of the project area is underlain by granitic gneiss (Figure 4) (Quinn 1967). These rock types were not particularly useful to Native American residents of the area. For much of the temporal sequence of habitation, preferred rock types consisted of imported materials, such as high quality cherts, or fine-grained quartzites and rhyolites. Some regional sources are known for these rock types, but no specific sources have been identified in the immediate project area. In addition, quartz and argillite cobbles found in streambeds or on boulders were sometimes also used, if the material was high enough quality to be worked.

Surficial geology in the New England Uplands and Upland Interior areas is largely the product of glacial and fluvial forces acting on the land surface over the last 2.5 to 3.0 million years. A series of glacial advances and retreats continued until the last maximum around 20,000 years ago, scraping away all prior land surfaces. During the last retreat, as the Laurentide ice sheet melted, a thick blanket of mixed sands, gravels, stones, and boulders, collectively known as glacial till, was deposited across the entire region. These deposits formed into hills along the leading edge of the ice sheet, known as moraines, and in areas where drainages formed, were sometimes levelled into outwash plains. All of Burrillville lies within areas that are comprised of upland till plains, underlying the interior forests that became established as the glacier retreated (Rector 1981: 2). The location of this area away from coastal forces has kept the glacial plains largely intact.

2.4 Soils

Soils in the project area have formed as the result of geological forces acting on the ground surface, in combination with vegetative growth on those same surfaces. The underlying till throughout most of the area forms the basis of the soil, which has been affected by drainage patterns. The USDA Natural Resources Conservation Service (USDA-NRCS) includes seven soil types within the project area (Figure 5; Table 1) (USDA-NCRS 2015). These soils are mostly moderately well-drained, to well-drained soils, with exception to the Ridgebury soils which are poorly drained and mapped in the locations where wetlands were noted. Native American sites are most often found on dry soil formations (well-drained to excessively well-drained), on level landforms, and in close proximity to fresh water.





LEGEND

- Access Road
- New 345 KV Line
- New Gas Line
- August 2015 Survey Areas
- Addendum 2015 Survey Areas
- February 2016 Survey Areas
- March 2016 Survey Areas

Bedrock Geology

- Augen gneiss
- Granitic gneiss
- Tonalite
- Water

0 300 600 Meters

0 1000 2000 Feet

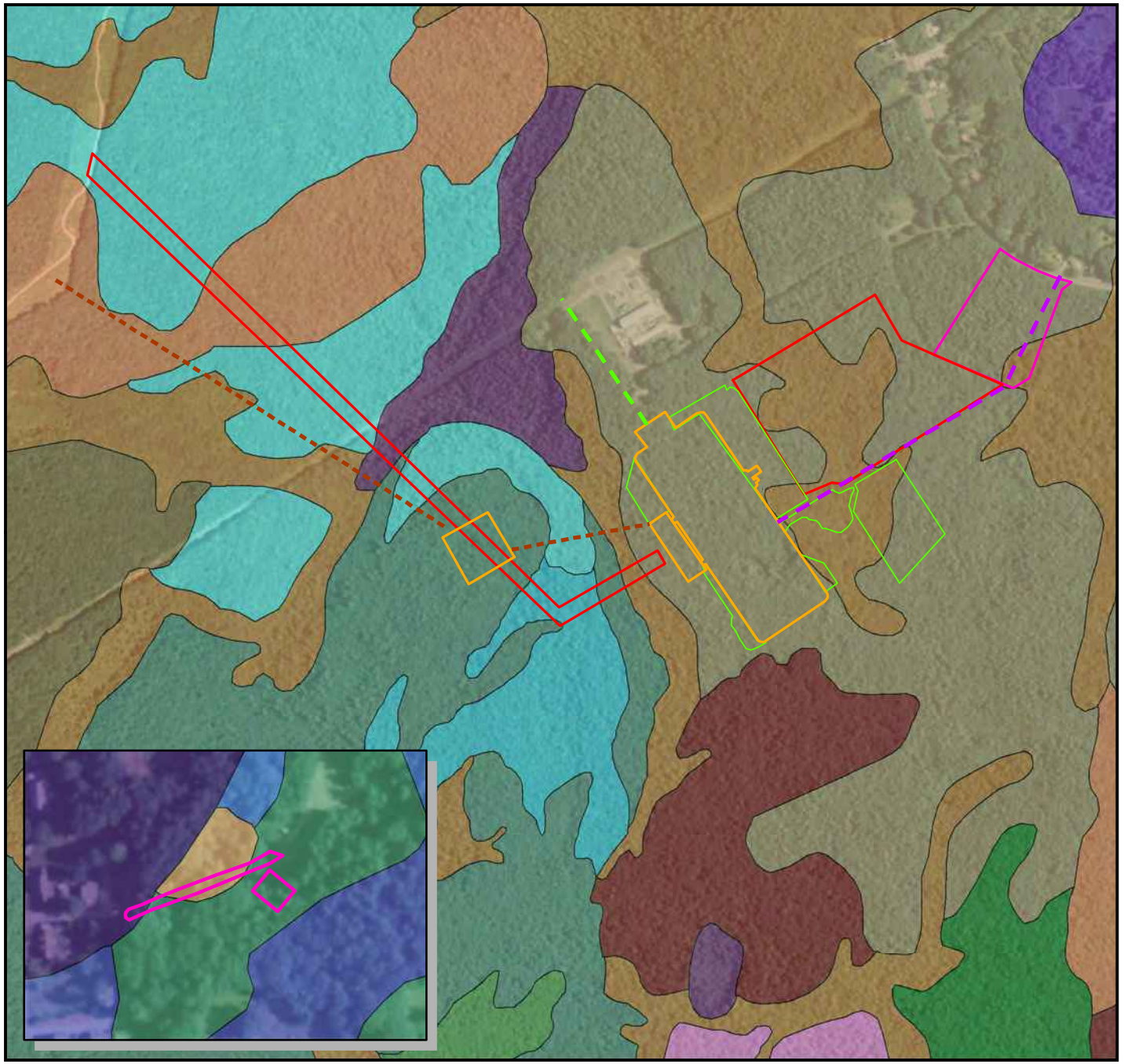
N W E S

Bedrock Geology Underlying the Clear River Energy Center Project Area, Burrillville, Providence County, Rhode Island

(Quinn 1967)

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 4



Soils within the
Clear River Energy Center Project Area,
Burrillville, Providence County,
Rhode Island

(USDA-NRCS 2015)

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 5

Table 1. Mapped Soils Located within the Archaeological Survey Area

Map Units	Soil Code	Soil	% Slope	Description	Setting	Origins
Canton	CrC	Fine sandy loam	3–15	Well-drained	Side slopes and crests of bedrock-controlled glacial upland hills and ridges	Melt-out till
Canton	CrD	Fine sandy loam, rocky	15–35	Well-drained	Side slopes and crests of bedrock-controlled glacial upland hills and ridges	Melt-out till
Ridgebury, Leicester, and Whitman	Rf	Fine sandy loam, extremely stony	0–8	Poorly drained	Base slope depressions	Eolian on glacial till
Woodbridge	WoB	Fine sandy loam, very stony	0–8	Moderately well-drained	Back and side slopes of hills	Eolian on glacial till
Sutton	SuB	Very stony fine sandy loam	0–8	Moderately well-drained	Depressions, drainage ways	Melt-out till
Sudbury	Ss	Sandy loam	0–3	Moderately well-drained	Terraces, outwash plains	Glaciofluvial
Canton and Charlton	CeC	Fine sandy loam, very rocky	3–15	Well-drained	Hills	Melt-out till
Canton and Charlton	ChB	Very stony fine sandy loam	3–8	Well-drained	Hills	Melt-out till

2.5 Existing Conditions

The general project area is located on a terrace-like ridge, which is situated between the flood plains of Iron Mine Brook and Dry Arm Brook (Figure 1). However, the eastern, southern, and western boundaries of the project APE are delineated as wetlands, the boundaries of which have likely increased and decreased at different periods of time in the past. The project area is located mostly within an upland setting, though its boundaries are generally found to be sloping. The project area in general has been heavily logged, as evidenced by many small to large push-piles and ditches created via these activities. Though the project area is located within and adjacent to wetland areas, the general project area's location adjacent to previously identified Native American sites, and its proximity to the historically settled village of Pascoag, Burrillville, Rhode Island, suggested the area had a high potential to yield Native American and historical cultural materials. Each survey area is discussed below pertaining to the number of shovel test (STs) excavated and materials recovered.

3.0 CULTURAL CONTEXT

The following sections provide a brief, regional overview of the Native American and Historical period cultural contexts for the project area. The following information provides a context in which newly discovered architectural/historical resources and archaeological sites can be evaluated. Based on past research, this context serves as a framework for understanding the land use history of the project vicinity, and for predicting archaeological resources that might be encountered.

Southern New England has been home to humans for approximately 13,000 years. Only the last four centuries of these millennia are documented through written records. The history of the previous years can be constructed only through Native American oral traditions and the study of material remains of human behavior (archaeology). The following brief narrative of culture history focuses on the general vicinity of southeastern New England (Table 2). This overview of culture history uses many of the chronological periods generally employed by archaeologists in the Northeast (e.g., Dincauze 1990; Funk 1976; Ritchie 1980; Snow 1980).

3.1 Native American Context of Southern New England

3.1.1 Paleoindian Period (13,000–10,000 B.P.)

As is the case throughout the Northeast, evidence for the earliest period of human occupation in southern New England, the Paleoindian Period (13,000–10,000 B.P.), is extremely rare. Most sites of this period have been identified from isolated diagnostic artifact types in the collections of amateur archaeologists, with excavations of Paleoindian sites limited to only a handful of locations in the region. Material thought to be of this age has been recovered from only a single site in the northern part of the state, the Twin Rivers site in Lincoln (Fowler 1952). This includes the hallmark Paleoindian artifact type, the fluted point. Settlement patterns are difficult to assess, as the river system habitats of the area have been extremely dynamic over the past 15,000 years. Other important sites of this time period in the region include the Wapanucket site in Middleboro, Massachusetts, and the Neponset site in Canton, Massachusetts.

Evidence from the greater Northeast indicates that Paleoindians first settled in the area not long following the retreat of the Wisconsin glacier, which vacated New England by around 13,000 years ago. Recent calibration of radiocarbon dates based on ice cores, marine and lake varves, and sea coral indicate that the fluted point settlers of North America, also known as Clovis, came from Beringia ca. 13,400–13,000 B.P. in the West, Midwest, and Southeast (Fiedel 1999). First settlement in the Northeast appears to be slightly later than in the western part of North America (Haynes et al. 1984), but certainly by 12,500 years ago. Substantial evidence exists that Clovis was preceded by an as of yet not well-described people who hunted large game in the northern Plains as early as 17,000–18,000 B.P. (Johnson 2007; Joyce 2006), as well as southward to Texas at the Friedkin site (Waters et al. 2011), and inhabited Paisley Caves in Oregon (Jenkins et al. 2012). Claims for other sites preceding Clovis, such as the Meadowcroft Rockshelter in western Pennsylvania (Adovasio et al. 1978, 1980), are being sorted out from claims for much earlier inhabitation (Lynch 1990; Meltzer 1989). In any case, no evidence has been documented of any pre-Clovis inhabitation of New England.

Table 2. Native American Cultural Chronology of Southern New England			
Period	**Dates**	**Diagnostic Artifacts**	**Cultural Traits**
Paleoindian	13,000–10,000 B.P.	Fluted points, unifacial scrapers	Few diffuse groups with extensive migratory pattern, following game. Sites are rare, and few have been excavated. Raw materials come from a few widely spaced sites.
Early Archaic	10,000–8000 B.P.	Bifurcate points	Sites poorly know, few are preserved, possibly due to changing environmental conditions. Raw materials more locally available.
Middle Archaic	8000–6000 B.P.	Neville, Stark, Merrimack points, first ground stone	Establishment of large camps along rivers, exploiting fish, part of a seasonally migratory system. Larger populations, with multiple site types. Burials include grave goods. Sites much better known than in previous times.
Late Archaic	6000–3000 B.P.	Otter Creek, Squibnocket, Small Stemmed, Brewerton, Susquehanna points, steatite	Multiple ethnic groups present in the area, with local raw materials becoming more important. Site types vary, and all ecological niches are exploited. Populations appear much larger, and coastal sites are common.
Early Woodland	3000–2000 B.P.	Small Stemmed, Orient Fishtail, Meadowood, Rossville points, steatite, pottery	Sites easily confused with those of the Late Archaic. Multiple site types and increased localization inferred. Mortuary influences visible from the Midwest. Pottery first utilized.
Middle Woodland	2000–1000 B.P.	Fox Creek, Jacks Reef points, pottery	Large settlements present within probable loose territorial affiliations. Extensive trade networks and the first use of cultigens such as corn, beans and squash in some areas.
Late Woodland	1000–500 B.P.	Levanna, Madison points, pottery	Establishment of modern ethnic identities such as the Nipmuc and Narragansett. Conflict and trade both apparent, while horticulture became more widespread. Numerous large settlements present, with smaller camp sites in other environments. Contact with Europeans following this period rapidly altered traditional lifeways.

A tundra environment succeeded the Wisconsin glacier, and was, in turn, replaced by a spruce-parkland community (Davis and Jacobsen 1985; Gaudreau 1986; Jacobsen et al. 1987). Paleoindians living in these postglacial ecological contexts have traditionally been characterized as hunters and gatherers who subsisted primarily on several large species of animals known to herd in the Northeast, including the mastodon and mammoth. Little evidence of human interaction with these "megafauna" has been forthcoming, however, more recent interpretations have focused on smaller species such as caribou and elk as primary food sources (Curran 1987; Curran and Dincauze 1977; Dincauze 1990; Dincauze and Curran 1984). This generalization may overemphasize the reliance placed on these herding species when a wider range of resources was almost certainly important to Paleoindian peoples.

Little has been confirmed concerning the social structures, family life, and religion among the Paleoindians. No house features, burials, or ceremonial objects have been recovered from Paleoindian sites in the Northeast. This lack of data is the product of 10,000 or more years of organic decay, geological forces, and urban development impacting the archaeological record.

All that remains of this period, in most cases, are stone tools. Projectile points with a distinctive basal flute can be identified as originating from this time, as this style occurs across North America in the Paleoindian era. Little else is ever found in addition to fluted points, making interpretation of Paleoindian lifeways difficult.

Based on ethnographic analogy, it is assumed that peoples of this period were seasonally nomadic, following the movement of game with the changing weather conditions of the year. Similarities in artifact forms among Paleoindians all across North America argue for a generalized character of adaptation, with few specializations to local conditions evident (Haynes 1980:119). A correlate of this fact is that population densities among Paleoindians were almost certainly low. Raw materials utilized by these first inhabitants come from only a few sources, often from relatively distant locations (Spiess and Wilson 1989). This may indicate a high degree of mobility, established trade networks, and/or a high frequency of interaction among units of population. Sites of this time are sometimes found on hilltops, possibly because of their vantage points, which would have been useful for locating game.

3.1.2 Archaic Period (10,000–3000 B.P.)

Early Archaic Period (10,000–8000 B.P)

The time period following Paleoindian occupation, but predating the use of pottery and horticulture, has been designated the Archaic Period by North American archaeologists. During the Early Archaic Period (10,000–8000 B.P.), profound environmental changes continued in New England, as the landscape adjusted to warmer postglacial conditions. Lasting effects of melting glaciers included rising sea levels that inundated low-lying coastal plain areas. The regional climate became warmer and drier, and a mixed pine-hardwood forest came to dominate the landscape.

Generally, in the Northeast region, archaeological sites from the Early Archaic Period are rare. The social and technological adaptations devised by the indigenous populations of New England at the time are not yet well understood for much of these 2,000 years. Research indicates that Early Archaic social groups moved within smaller territories than their Paleoindian ancestors, practicing an increasingly generalized subsistence strategy based on river and lake systems and particularly wetland mosaic physiographic zones. The megafauna of the late Pleistocene had disappeared, leaving smaller mammalian species such as moose and beaver. Deer were not likely to have been abundant until the end of this period as oak and other mast-producing trees became more numerous. Environmental conditions would have made seasonally available natural food resources somewhat more predictable and abundant than they had been during the Ice Age, allowing human populations to exploit a wider range of territories.

At present, no consensus exists as to how people of the Early Archaic Period were related to those of the preceding Paleoindian Period. Some researchers have argued that a discontinuity is present between Paleoindian and Early Archaic peoples, following some type of ecological overexploitation (Ritchie 1969:16; Snow 1980:157–159). Others see important technological similarities that are interpreted as evidence of continued occupation by Paleoindian descendants during the Archaic Period (Custer 1984). The present scarcity of data, whether

due to environmental degradation, urban development, or simple scarcity of sites, prevents firm conclusions either way, despite arguments to that effect.

The diagnostic artifacts most closely associated with the Early Archaic Period are the bifurcate based projectile points, and, less commonly, stemmed or corner-notched points of the Palmer and Kirk types. Evidence from the greater Northeast indicates that large hilltop sites, apparently an important location for Paleoindians, were no longer as useful as in the preceding period. In fact, sites produced by bifurcate point makers are generally smaller and more ephemeral, probably indicating that people were not organized in large bands. The extensive herds of game were apparently gone by this time, explaining the lesser importance of hilltop sites. By this time the tools of the bifurcate tradition were being more frequently made of regional materials, such as Boston Basin rhyolites (Braun and Braun 1994:29–31).

While bifurcate base projectile points are the traditional hallmark artifact of the Early Archaic Period in southern New England, it is now understood that most of these artifacts date to the end of this period. The distribution of surface finds of the bifurcate-base point type indicate that people associated with these Piedmont tradition tool types were present throughout New England primarily after about 8,500 radiocarbon years ago. Most of the major rivers must have been established near to their present courses by this time (Dincauze and Mulholland 1977).

Recent research suggests that an earlier cultural tradition of the Early Archaic featured a quartz cobble lithic industry, represented by steep-edged unifacial scrapers and a distinct lack of projectile points in artifact assemblages (Robinson and Petersen 1993). Ongoing research in southern New England continues to provide important new information concerning seasonal, complex habitation sites of the Early Archaic Period (Forrest 1999).

Excavations at sites such as Sandy Hill, in southeastern Connecticut (Forrest 1999; Jones and Forrest 2003), and the Whortleberry Hill site in Dracut (Dudek 2005), as well as new dates from the site of Wapanucket in southeastern Massachusetts (Robinson 1992), indicate the development of this local cultural tradition that predates the period of bifurcate point manufacture. Focused on the manufacture of simple unifacial tools from quartz, crude "chopping tools" of other local stone, and the development of ground stone technology, this early culture is referred to as the Gulf of Maine Archaic tradition based on its initial association with deeply-buried sites in Maine (Peterson and Putnam 1992). Robinson (1992) has documented a complex burial ceremonial aspect of this culture, while the Sandy Hill site provides evidence for long-term large habitation areas that included pit house dwellings. The economy of this group was focused largely on plant foods, including hazelnuts and a variety of wetland species such as cattail, water lily, and nutsedge.

The origins of this tradition remain obscure, but it appears to represent a widespread local adaptation to the resources of the postglacial wetland habitats of New England. Initial dates for the tradition fall primarily between 9,000 and 8,500 radiocarbon years ago, and thus predate the arrival of bifurcate makers in the region. The Gulf of Maine Archaic tradition continues to develop in northern Maine through the Middle Archaic Period, but elsewhere is displaced by Early and Middle Archaic Piedmont traditions, associated with groups from the mid-Atlantic region, who adapted hunting in the mast-forest environments that dominate the region after

8,000 years ago. The nearby Whortleberry Hill site in Dracut, with radiocarbon dates between 8,100 and 7,800 years ago is an example of a transitional Gulf of Maine Archaic site clearly influenced by contact with Piedmont tradition peoples (Dudek 2005).

Important sites in the Northeast that form the basis of generalizations on the Early Archaic are the Sandy Hill site (Jones and Forrest 2003); the Titicut site in Bridgewater (Robbins 1967); the Hollowell site on Staten Island, New York (Ritchie and Funk 1971); and the Weirs Beach site in New Hampshire (Bolian 1980). A bifurcate base point was recovered at the Mill River site in Mendon, along with other materials assumed to be of this age (Roop 1963:22). The Twin Rivers site in Lincoln contains Early Archaic materials (Fowler 1952). The largest sample of Early Archaic materials close to the present project area is located in the Chicopee drainage, where seven sites are documented (Johnson and Mahlstedt 1985:30).

Middle Archaic (8000–6000 B.P.)

During the Middle Archaic Period, environmental conditions in the area began to approach those of today. The deciduous forest became established, providing a diverse array of plant and animal foods (Dincauze 1976; Dincauze and Mulholland 1977). Sites of this time period are more numerous than those of the Early Archaic, but are still rare in comparison to subsequent stages. Archaeological materials from the area provide evidence of significant local populations by 7,000 years ago. Archaeological data from the greater southern New England area provide evidence that a substantial degree of population growth had occurred by the end of this period (Mulholland 1984).

A variety of site locations during the Middle Archaic indicates that a multi–site settlement system had become established. Supporting evidence for this rests in a variety of tool assemblages and recovered faunal material (Dincauze and Mulholland 1977; Barber 1979). It is likely that this seasonal settlement system had begun during the preceding Early Archaic period (Ritchie 1984), although the scant evidence for this period hinders attaching any degree of certainty to this interpretation. Sites of this time are sometimes large, appear to be reused, and include sizable midden dumps, as at the Neville site in New Hampshire (Dincauze 1976). All of this seems to indicate that the settlement system included permanent or semi–permanent base camps where social groups returned. Anadromous fish may have been an important resource, as is interpreted for the important Neville site in southeastern New Hampshire (Dincauze 1976). Also of note during this time is the indication of a gradual shift from the use of non-local to local lithic sources from the Early to Middle Archaic Period (Ritchie and Leveillee 1982). This may be a product of rising population levels and the establishment of more firm notions of territoriality.

The first evidence of religious beliefs becomes available at this time, although only from a few select sites. The most informative is L'Anse Amour, at the southeastern tip of Labrador. A Middle Archaic burial mound was excavated here, that included evidence of fire, the use of red ocher, and numerous grave goods (McGhee and Tuck 1975). This collection of materials may be interpreted as indicative of a belief in the afterlife. Closer to the survey area, cremated human remains of the Middle Archaic Period were found at Annasnappet Pond in southeastern Massachusetts (Doucette 2005). Projectile points, winged atlatls, red ocher, and other tools were found in association with the burnt bones, dated to 7570–150 B.P.

Presently three major projectile point styles are recognized as diagnostic of the Middle Archaic Period. Dincauze defined these in her excavations at the Neville site (Dincauze 1976). They are as follows: Neville and Neville Variant points, dating from approximately 8000–7000 B.P.; Stark, from around 7700–7200 B.P.; and Merrimack, from close to 7200 B.P. to the end of the period. Other artifacts used during this time include atlatls or throwing sticks, knives, perforators, axes, adzes, scrapers, abraders, ulus (semi–lunar ground stone knives), gouges, and harpoons.

Sites of the Middle Archaic are much more common in central Massachusetts and northern Rhode Island than in the previous time period. Site locations are known across every county in Rhode Island, and include the Twin Rivers site, the Oxford Pike site in North Smithfield, and the Ponagansett Rockshelter in Foster, all in Providence County.

Late Archaic Period (6000–3000 B.P.)

Late Archaic Period sites in New England are much more numerous than in previous periods. Peoples of southern New England at this time occupied a wide variety of environmental settings (Mulholland 1984:277–280), and a significant diversity in site type and function appears. Modern environmental conditions were present and the wild resources available were the same as those observed by the early European settlers and explorers. Three cultural traditions for the Late Archaic have been identified based on artifact materials: the Laurentian, Susquehanna, and Small-Stemmed, all of which are present in southern New England, although small stemmed materials are clearly the most common in this area. Along with the development of multiple traditions, increased specialization and the exploitation of a broad spectrum of resources are interpreted for this time period. Late Archaic sites are numerous in Worcester County, Massachusetts, deriving from over 80 known locations. Nearly half of these sites are located along the Chicopee drainage, while at least ten sites are known from along the Ware River (Johnson and Mahlstedt 1985:33–39).

The relationship between the three recognized Late Archaic traditions has been the subject of extensive debate over several decades (Ritchie 1971; Dincauze 1974, 1975). It was hypothesized that the three traditions represent different populations, with the Laurentian and Susquehanna consisting of intrusive groups that peacefully coexisted with the indigenous Small Stemmed population for possibly thousands of years (Dincauze 1974, 1975). However, after many years of research, no documentation of isolated Laurentian or Susquehanna sites has been found in New England, casting doubt that these tool types could, therefore, represent the existence of communities. It is rather more likely that these traditions represent the use of particular tool types, with technological precedents to the west for the Lake Forest tradition, and towards the southeastern United States for the Susquehanna. Small Stemmed, or Narrow Point tradition artifacts, are widely viewed as a pan-Northeastern phenomenon, probably deriving from the indigenous people of the northeastern Middle Archaic. Therefore, this characterization of the Late Archaic is undergoing a shift away from the idea of three cultural traditions, towards one Algonquian ancestral population of Small Stemmed peoples, with some technological borrowings from neighboring areas.

Late Archaic sites are much more common in southern New England than in previous periods. In fact, throughout the area, sites dating from the fifth and fourth millennia (5000–3000 B.P.) are the greatest in number of any time period (Mulholland 1984). However, the large representation for this time period may be somewhat overstated, due to the over-reliance on certain projectile point styles as temporal markers of the Late Archaic. Small Stemmed points are the most common artifact styles of this era, and they have traditionally been utilized as a diagnostic for the Late Archaic. However, closer examination of radiocarbon dates associated with this point style show a wider range, extending well past the 3000 B.P. end date for this period. It is likely that a substantial number of sites currently attributed to the Late Archaic actually post-date this period (Filios 1990).

It is thought that people of the Late Archaic period in southern New England developed a more locally focused subsistence economy than during previous times. This may be due to increasing population levels, requiring groups to remain in more confined territories to avoid encroaching on others. Some degree of sedentism is interpreted by at least the end of the period, based on changes in subsistence strategy. Shell middens begin to appear in some coastal locations, indicating increased use of shoreline resources (Bourque 1976). Extensive fish weirs have also been documented for this time, where large numbers of fish could be speared in an organized manner (Johnson 1949). Some limited experimenting with cultigens also occurred, the idea probably spreading from the southeastern and central part of the continent. Squash, gourds, and sunflowers grew wild in parts of the northeast, and a few Late Archaic people began to purposefully plant these species to supplement their diets.

More information on the ceremonial life of the Late Archaic period is in evidence. Burial sites are much more commonly encountered in excavations, providing a glimpse at the religious beliefs of the era. The “Red Paint People” of Northern New England and the Canadian Maritimes are one example. These people used large quantities of red ocher and included decorated tools and ornaments in the burials of some of their dead (Sanger 1973; Tuck 1976). Another burial site of note closer to the survey area is the Wapanucket site (Robbins 1980) that also included tools and red ocher. Cremation burials of the Susquehanna tradition are present across New England, featuring stone and bone artifacts and faunal remains (Dincauze 1968). Amateur archaeologists have excavated Susquehanna cremation burials on Cape Cod, at Orleans and Truro (Dincauze 1968:89; Mahlstedt 1987:31–32). Late Archaic sites are numerous across northern Rhode Island and in southern Worcester County.

3.1.3 Woodland Period (3000–500 B.P.)

The Woodland Period is the third major era before the period of Contact. This period originally was defined to include a broad area of the Northeast, encompassing new technologies such as ceramics, the bow and arrow, and horticulture involving exotics such as corn. As with the Archaic Period, archaeologists have divided the Woodland into three stages, used to demarcate changes in adaptation. Occupation dating to the Woodland Period is typically identified by the presence of pre-Contact Native American ceramics. Early and Middle Woodland materials, as is the case throughout much of southern New England, are not especially abundant in the local area. In contrast to the preceding Early and Middle period sites, Late Woodland sites are more numerous throughout most of the Northeast.

Early Woodland Period (3000–2000 B.P)

The Early Woodland Period has generally been considered a period of population decline following a sort of cultural florescence during the Late Archaic. Site numbers are lower, and site locations are more frequently restricted to coastal lowlands and river valleys. These characterizations, however, are based on the traditional association of several widespread forms of projectile points with only the Late Archaic Period. Recent research indicates that Small Stemmed and Susquehanna point styles are found to frequently postdate the 3000 B.P. end date for the Late Archaic (Filios 1989; Funk and Pfeiffer 1988). The likely interpretation to be gleaned from this information is that the Early Woodland is merely underrepresented in the existing corpus of site files, rather than in actual number of sites. Should a method of correcting this bias be established, it is probable that the Early Woodland would have to be re-characterized as continuing some trends of the Late Archaic, such as population increase, while new technologies became a part of life.

Some changes in subsistence strategy are apparent during this time, probably representing a continuation of the Late Archaic trend toward a more localized, semisedentary settlement system. The more permanent types of camps were established along the coast or inland watercourses, where waterfowl, fish, and sea mammals could be easily exploited. Shellfish were also taken, as at the Greenwich Cove site shell midden, although it seems that these were not a major dietary component until the Middle Woodland. Despite an increasingly localized focus of subsistence, the pattern remained one of hunting and gathering, particularly along water bodies where fish could be included in the daily fare. Technological changes are an important component of how archaeologists understand the Early Woodland Period. This millennium witnessed the first widespread use of ceramics across the Northeast. Traditionally, ceramics were thought to coincide with the appearance of horticultural practices, serving as a convenient means of storing the surplus foods obtained through purposeful planting. It is now known that in most of New England, cultigens were not a major part of most people's subsistence routine for at least 1,500 years after ceramics became established in the area.

The rich burial ceremonialism of the Late Archaic continued into the Early Woodland, with exotic artifacts such as gorgets, birdstones, pottery pipes, copper beads, and red ocher placed in graves with human remains (Ritchie 1965; Ritchie and Funk 1973; Spence and Fox 1986). The significance of these religious practices is not known, but they do not appear to reflect any kind of hierarchical social relationships. The presence of exotic goods in sites provides evidence of established trade routes that extend to the Midwestern portion of the continent, where the Adena complex was well established.

Much remains to be understood about this time period. Hindered by confusion with the Late Archaic period, sites of the Early Woodland often go unrecognized, or are misinterpreted. Early and Middle Woodland materials, as is the case throughout much of southern New England, are not especially abundant in the local area. One of the most important Early Woodland sites in the region is an Adena-related cemetery, located in the Chicopee drainage (Keith 1965).

Middle Woodland Period (2000–1000 B.P)

The Middle Woodland Period witnessed a continuation of trends of the Early Woodland. Again, however, technological innovations provide evidence of change. This part of the Woodland Period is differentiated from the preceding millennium by a change from simply decorated ceramics to widespread use of more elaborately decorated wares. No functional interpretation for this change appears accepted; rather, the increased decoration probably has to do more with style and ethnic identification, a traditional archaeological interpretation. Another new technology became important: the bow and arrow is thought to have become a part of regional technology at this time.

Subsistence trends of the Early Woodland continued. Large, semi-permanent, or perhaps even year-round settlements were utilized by this time (see McManamon 1984). These locations were supported by specialized subsistence foci, such as shellfish, fish, and sea mammals. The first large shell middens appear in the archaeological record at this time. The presence of shell middens may be related to the establishment of mature shellfish beds following the post-glacial stabilization in sea levels. Continued experimentation with horticulture using local cultigens is inferred for this time, although evidence for such activity is rarely preserved.

The sometimes elaborate burial ceremonialism of the Late Archaic and Early Woodland Periods is rarely seen during this millennium. The reasons for this are not clear. Interaction with neighboring groups are still thought to be important, as exotic lithics are frequently used throughout most of the Northeast. In fact, a significant amount of non-local lithic materials were utilized in the Middle Woodland, in contrast to the almost exclusive use of quartz and other local materials in the preceding period (Talmage 1982:27). This may indicate an expanding trade network.

Late Woodland Period (1000–500 B.P.)

It is during the Late Woodland Period and the preceding period that the pattern of settlement witnessed by the first European explorers became established. Also during this time, horticulture, including exotic domesticates such as corn and beans, became a widespread and occasionally important dietary element. More evidence of permanent settlements exists, or at least locations that were used for much of the year, especially on the coasts (Carlson 1986; Yesner 1988). It has traditionally been assumed, in part due to the early historic descriptions, that permanent settlement became widespread as a result of a dependence on corn. However, corn is infrequently found at sites in New England, despite all efforts to recover evidence for its use (Bumstead 1980; Thomas 1991). A more likely interpretation for the trend toward more permanent settlements is an increase in population, territoriality, and conflict.

In many parts of the Northeast, subsistence and settlement continued to be based on a hunting/gathering/fishing system with seasonally based camps. Corn remains are found at a number of Late Woodland sites, but in small amounts (as in Dunford 1992; Luedtke 1980). Deer, rabbit, birds, and sea mammals were hunted, while fish and shellfish were taken, and a wide variety of plants and vegetables were collected. The growing population levels may have in part prompted some to turn to horticulture to relieve a decreasing degree of flexibility in food sources. Other mechanisms adopted included using more marginal areas and expanding

the variety of foods to include what had previously been considered less desirable resources (Lightfoot 1985; Luedtke 1980).

Less is known about Late Woodland religious beliefs than in the earlier phases of this period. While burials are still found from this time, the ceremonialism attached to human remains seems to have waned by about 1,000 years ago. Burials are often unadorned, and sometimes include many individuals. Grave goods are not commonly found, but sometimes do occur in small numbers. The reason for the decrease in burial ceremonialism is unclear.

During the Late Woodland period, the ethnic identities encountered by European explorers came into full form. In New York State, the Iroquois and Mohawk established their territories and core areas of settlement, including some permanent villages. In southern New England, the Pawtucket, Nipmuc, Massachusett, Wampanoag, Pequot, Nehantic, Mahican, and other groups came into form, each group developing relationships with particular geographic areas. Most of these ethnic groups or nations were composed of smaller tribal entities that were based around a permanent meeting place or village. Trade routes and patterns of conflict between these groups also became established.

The end of the Woodland Period is designated by the arrival of Europeans in the Northeast, who recorded the first written or historical records. The end of the Woodland Period is thus somewhat varied, depending upon the exact area under consideration. European contacts with the area began at the end of the fifteenth century, with Italian, Portuguese, and French explorers reaching coastal locations by the year 1500. In some cases, interior areas of New England were not contacted directly for many years following this date.

3.1.4 Protohistoric and Historical Native American Occupation (A.D. 1500 to Present)

At the time of the first European arrival in the area, all of southern New England was occupied by a group of tribes known as the Eastern Algonquians (Salwen 1978). All Algonquians spoke related languages, which differed from the Iroquoian languages prevalent in New York State and southern Canada. Central Massachusetts, in what is now Worcester County, and portions of western Providence County, Rhode Island, were occupied by an Algonquian subgroup known as the Nipmuc. The Nipmuc were closely related to the Algonquian speakers of the Connecticut River valley in western Massachusetts known as the Pocumtuc. Both groups were referred to by the French as the Loup (Wolf), and spoke dialects of a language now known as Loup A (Goddard 1978). The Nipmuc also shared close ties with the Massachusett speakers of the eastern part of the state, which include the Pawtucket, Massachusett, and Wampanoag. South of the Nipmuc were the Narragansett and Pequot. Divisions among and between these groupings was fluid, and was not as clearly defined as is often represented in the division of New England Natives into formal “tribes.” The Pascoag Indians may have also been present in the Burrillville area, who seem to have been more closely related to the Narragansetts (Bayles 1891: 551), but some dispute exists as to whether or not they were a real entity (Rider 1904: 231–232).

The Nipmuc were composed of a number of subgroups, all of whom spoke a mutually intelligible language, although possibly with some dialectical differences. The boundaries of

the subgroups appear to have been indefinite, but were probably based on natural geographical boundaries (Connole 1976). Nipmuc subgroups documented historically include the Quaboag of Brookfield, Quinsigamond of Worcester, and Waushacum of Sterling (Gahan 1941).

Nipmuc subgroups were composed of a number of political units referred to by historical sources as sachemships. This comes from the word sachem, which was a standardization of the various dialectical versions (*sontim*, *sachim*, *saunchem*, *sagamore*) of the Proto-Algonquian *sakimawa*, meaning chief (Goddard and Bragdon 1988:2). The sachemship consisted of the sachem and his family; the chief men, who formed a council, and their high-ranking families; common people; and others about which little is known (Bragdon 1996:140–143). The sachem was usually male, and a member of a privileged family or lineage. Early sources stress that social status was inherited, and the position of sachem was passed down along male lines, although not necessarily directly from father to son (Simmons and Aubin 1975:24). Personal ability certainly must have influenced the pattern of leadership, perhaps deciding to whom the title would pass among male family members. Chief men and their families also inherited their positions, which required them to advise the sachem, who in turn needed their consent to make his wishes binding (Goddard and Bragdon 1988:3). Common people also inherited their membership in the sachemship, naturally owing allegiance to their respective leaders, who represented their land and their ancestors, and who would make decisions affecting their descendants. The consent of the people was needed by the council and sachem regarding important matters, such as warfare and matters of the land (Simmons 1986:13). However, some elements of Nipmuc society are not clearly understood. Slaves and servants were reportedly a part of the culture, but little is known about these people (Mayhew 1694:9; Williams 1936:5). Some specialized roles have also been identified, such as military leaders (Trumbull 1903:67) and tribute collectors (Winslow 1624:55, 57), but nothing is known of these positions (Bragdon 1981:124).

Sachemships were associated with specific geographic locations, known to all area sachems and their followers, for which the individual sachemships were often named. The fluid nature of the Nipmuc territory and political leadership—as was the case with all Algonquian peoples—undoubtedly exacerbated by the radical changes impacting Native communities in the seventeenth century, is the main source of confusion in the historic descriptions of Native society and territories. Further, the fact that none of the Native political units conformed to the European concepts of bounded village lands, made understanding of these units difficult.

The Nipmuc were mobile farmers, who relied mainly on wild plants and game, but supplemented their diets with cultigens such as corn, beans, squash, and wetland plants like chenopodium (Chilton 1999, 2005). Families lived in circular houses known as wigwams, constructed with poles bound inward and covered with bark or mats. People slept on platforms or on mats, blankets, or furs on the ground, next to the fire. Little in the way of historical reports exist to indicate when and where families spent the seasons of the year. However, likely important activities would have included harvesting maple and birch syrup, catching fish, and preparing the horticultural fields in the spring; planting and weeding, continued fishing and hunting, and picking berries during the summer; harvesting, drying, and storing of the crops in the fall; and a less intense routine in the winter. Trade was well established along ancient

routes, in manufactured goods such as steatite vessels and pipes, wooden bowls and spoons, clothing, and raw materials like shell and copper (Bragdon 1996:80–98).

Native groups in the area were already experiencing dramatic changes in their traditional ways of life by the late sixteenth century. Epidemics of smallpox and other diseases in many parts of New England in 1615–1619 and 1634–1635, and possibly earlier, cut local population sizes by 90 percent (Carlson et al. 1992; Spiess and Spiess 1987), altering traditional practices and social life. It is estimated that, prior to the influx of European diseases, the total Nipmuc population probably numbered in the several thousands. No pre-Contact estimates are available, and even the earliest estimates are confusing, as it is not clear whether other tribal groups are included in the definitions of who was actually Nipmuc. Praying towns were established in eastern and central Massachusetts in order to assimilate Native Americans into European religion and other aspects of culture (Carlson 1986).

3.2 Native American Research Overview

3.2.1 Previous Work

Interest in Native American sites probably existed throughout the early history of southern New England, and is documented in town histories of the nineteenth century, such as Emerson's *History of the Town of Douglas, Massachusetts* (Emerson 1879), and Keach's *Burrillville: As it Was, and As It Is* (Keach 1856). Although these sources described Native American sites and sometimes illustrated artifacts, the information contained in these documents is limited and usually of uncertain derivation (Johnson and Mahlstedt 1985:21).

The first archaeological excavations in the southern New England vicinity also took place in the late nineteenth century. Unfortunately, little archaeology had been conducted in the United States, and professional standards of excavation and publication were not established, rendering most work of this early time of limited use to later archaeologists. Subsequent attempts to salvage information from this work has had mixed success (as in Bullen 1940). More common was the work of amateur archaeologists and relic hunters, who assembled collections of Native American artifacts from fields locally known to contain sites. Most of these collections are also of little value, as the importance of maintaining provenience information was not often recognized.

During the early part of the twentieth century, the Massachusetts Archaeological Society was established, and with it the first systematic recording of sites (Robbins 1939). In Worcester County, the Nipmuc Chapter was established by Elmer Ekblaw, Ripley Bullen, Karl Dodge, Laurence Gahan, and C.C. Ferguson (Ekblaw 1949). The chapter began organizing information, documenting excavations, and initiating more research in the region (Bullen 1940, 1949; Dodge 1967; Ferguson 1947; Fowler 1952). Unfortunately, even this work was often not fully documented, as most early reports were not particularly detailed (Johnson and Mahlstedt 1985:23). Research continued into the 1950s and 1960s, documenting a soapstone quarry in Millbury (Fowler 1966), a Paleoindian site in Mendon (Roop 1963), and large sites in the Brookfield area (Dodge 1967; Keith 1965).

The 1970s saw the beginning of cultural resource management archaeology, and a substantial increase in the amount of research. Most of this work consisted of small areas proposed for development, and the documentation of individual sites, but some exceptions focused on regional integration of information (Anthony 1978). This work continued and grew in the 1980s through 2000s, but still consisted of small-scale areas of focus, with the occasional synthesis (Johnson and Mahlstedt 1985). Artifact collections from the region have also been documented, identifying the types of resources expected from the local area (Johnson and Mahlstedt 1982, 1984a, 1984b).

Archaeological research within the southern Worcester County and Providence County area can be seen primarily in the context of the cultural research management work of the 1980s through 2000s. Burrillville has seen surveys for a number of different types of projects, most recently related to pipeline infrastructure (Waller 2013, 2014).

While contributing to knowledge of regional artifact distributions and the location of sites across the landscape, cultural resource management projects have, in general, provided little insight into the greater questions of culture change and ethnicity. Research projects designed specifically to address such questions are rare, and none have been conducted in the Burrillville area.

3.2.2 Native American Site Sensitivity

The likelihood for the project area to contain Native American archaeological sites was determined on the basis of multiple criteria. These include previous historical disturbances, proximity to previously recorded Native American sites, the type and condition of soils, surficial geology, degree of slope, slope orientation, proximity to fresh water sources and wetlands, and proximity to useful resources or raw materials. Only small, specific portions of the six project towns have been professionally surveyed. The locations of these projects are not directly related to where Native American sites are most likely to be found, but rather were located at the sites of proposed construction impacts.

Archaeological projects that have been conducted in the region have shown that well-drained areas near a water source have a high potential to contain Native American sites. Soils in the survey area consist of alluvium adjacent to the Iron Mine Brook and Dry Arm Brook. The soils, available freshwater, presence of recorded Native American archaeological sites within the vicinity, and undisturbed ground surface led to the evaluation that portions of the survey area were considered to have a high potential to contain Native American sites. Frequently, these sites are eligible for inclusion in the NRHP and State Register of Historic Places.

It is expected that sites in Burrillville will generally be small, hunting camp locations, typical of inland, upland locations. Some resource extraction sites might also be expected, around wetland locations or outcrops of useful lithic sources for tool manufacturing. Sites are most likely to be found dating to the last 3,000–4,500 years in age across many parts of the town. Sites earlier in time are even more rare, and tend to be located along major drainage terraces.

3.3 Historical Period Context of Burrillville

Burrillville is located in Providence County, Rhode Island. The town is bounded on the east by North Smithfield, and on the south by Glocester, Rhode Island. It is bordered on the west by Thompson and Putnam, Connecticut, and on the north by Douglas and Uxbridge, Massachusetts. The northwestern portion of Rhode Island was originally included within a large area referred to as "the Outlands" or "the Providence Woods." Initially a part of Glocester, which was itself a plantation of Providence, Burrillville was incorporated as a separate community in 1806.

3.3.1 Contact and Colonial Settlement

As stated above, the Town of Burrillville lies within Nipmuc homelands, with a probably somewhat fluid border with the Narragansetts located somewhere in the area. Native American sites have been identified in Burrillville, which extend back several millennia. The Pascoag band were noted in the area (Keach 1856; Perry 1886), after which the village in the south-central part of the town was named.

European settlement of Rhode Island began in 1636, with Roger Williams' acquisition of lands around Narragansett Bay. Settlement was confined to the headwaters of the bay for several decades, with only sparse occupation in more remote, interior areas. The first European settler in the area was probably John Smith, who reportedly moved to the Tarkiln area in 1674, and brought additional friends and family to the southeastern part of the town into the early eighteenth century (Bayles 1891: 551).

The time period shortly after Smith's arrival was one of troubled Native American-European relations, with the beginning of King Philip's War in June of 1675. The war lasted for over a year, and devastated numerous European pioneer villages across southern New England. The war also ravaged the already depleted Native American population, which had suffered terrible losses from European induced epidemic diseases throughout the seventeenth century.

Following the war, many areas previously occupied by the Nipmuc were effectively abandoned, as the Native population retracted into a few, small settlements. However, Native Americans remained present and active across the region, despite much lower numbers.

3.3.2 Federal and Industrial Periods

The eighteenth century was a period of extensive growth in the population of colonial settlers throughout Rhode Island. Most residents were farmers, with agriculture representing the predominant way of life. Farmsteads were scattered across the landscape, with locations most frequently determined by proximity to roads and freshwater sources. Houses were constructed of fieldstone and timber, with stone or brick chimneys. Settlements also included some outbuildings for the protection of livestock, root cellars for food storage, and sheds for equipment. Field clearing resulted in piles of stone, which were often turned into fences, to mark field boundaries or property lines, or to line roadways. Other features found on the landscape from this time period include trash middens, usually on slopes or in pits or

depressions, privies, wells, and small family cemeteries. Few houses from the seventeenth century have survived in the area, and none are present in Burrillville.

As populations grew, the network or roads spread, and included some improvement of the most central routes. These roads usually emanated from hamlet or village centers, which grew up around community features, such as family clusters and stores. The earliest village in the Burrillville area was Pascoag, followed by later settlement in Wallum Lake and Glendale.

The Putnam Pike (now Route 44) was laid out between Providence and Woodstock, Connecticut, in 1733, running through the largest village in Glocester, Chepachet, south of what is now Burrillville. One of the earliest roads in Burrillville ran between Chepachet and Pascoag, what is now Main Street, or Route 100.

During the late eighteenth century and throughout the nineteenth century, river power was harnessed for industrial activities, and a variety of water-powered mills were erected. Most of these earliest mills were built for sawing wood and for grinding grain. For example, the Granite Mill, a saw and gristmill, was constructed in nearby Pascoag circa 1740. Iron works were also constructed using hydro power. Mills became community focal points, where villages were then established. Later mills also included machine works and textiles, and were located in the villages of Pascoag, Harrisville, Bridgeton, Nasonville, Mapleville, and Oakland.

As the nineteenth century evolved, the percentage of the population working in agriculture declined, and that working in industry increased. By mid-century, manufacturing had supplanted agricultural as the most important economic activity (RIHPC 1982:7). As mills grew, job opportunities opened for new workers, and an influx of first Irish, and then French-Canadians, moved into the area. House forms evolved to include compact structures for mill-workers, including duplexes, and large, elaborate buildings for the businessmen that owned the mills (RIHPC 1982:11).

The nineteenth century also saw the development of civic institutions, such as schools and churches. By 1819, the town included ten schools, two churches, and five stores (RIHPC 1982: 8). The number of these institutions increased as the population rose, with new locations opening near mills and worker housing. In the later nineteenth century, town institutions also included a town asylum and poor farm (Bayles 1891:551).

By the mid-nineteenth century, railroad service was being established across the region. However, rail service was generally limited to the larger cities in the region, such as Providence and Woonsocket. At the turn of the century, railroad expansion started to reach smaller communities, and included a line running from Woonsocket to Harrisville.

3.3.3 Modern Developments

By the end of the nineteenth century, many farms in Burrillville had been abandoned, as larger western farms outcompeted the small, New England ventures. Railroads made larger-scale transportation of goods an economic reality, adding to the decline of what had been the mainstay of eastern lifeways. The late nineteenth century was the apex of mill-based manufacturing, but mill work continued to be in high demand for the early decades of the

twentieth century. A continued influx of French-Canadian immigrants throughout the Blackstone Valley during this time has left a legacy of Quebecois ethnicity in the area (RIHPC 1982).

As the automobile became an increasingly chosen method of transportation beginning in the 1920s, local road and bridge infrastructure became a focus of construction. Victory Highway was constructed following World War I, from Nasonville through Glendale, Oakland, and Mapleville to Chepachet, among other roads. The development of the individual use of automobiles resulted in the large-scale abandonment of rail transportation, except in the largest urban centers.

Mill work remained strong until after World War II. But after the war, competition from textile manufacturing in other parts of the country led to a sharp decline in manufacturing jobs. Some of the remaining industrial buildings were converted to other, non-hydro powered uses, such as plastics manufacturing (RIHPC 1982).

Population levels continued to rise across the region in the twentieth century, resulting in substantial new housing construction. In combination with access to paved roads, even in rural communities, movement over larger distances for work became a reality for a significant segment of the population. New residential developments filled in formerly undeveloped woodlands and abandoned farmlands, resulting in a more dispersed settlement pattern. Larger populations supported development of larger commercial centers, providing specialized goods to those using the now extensive road network.

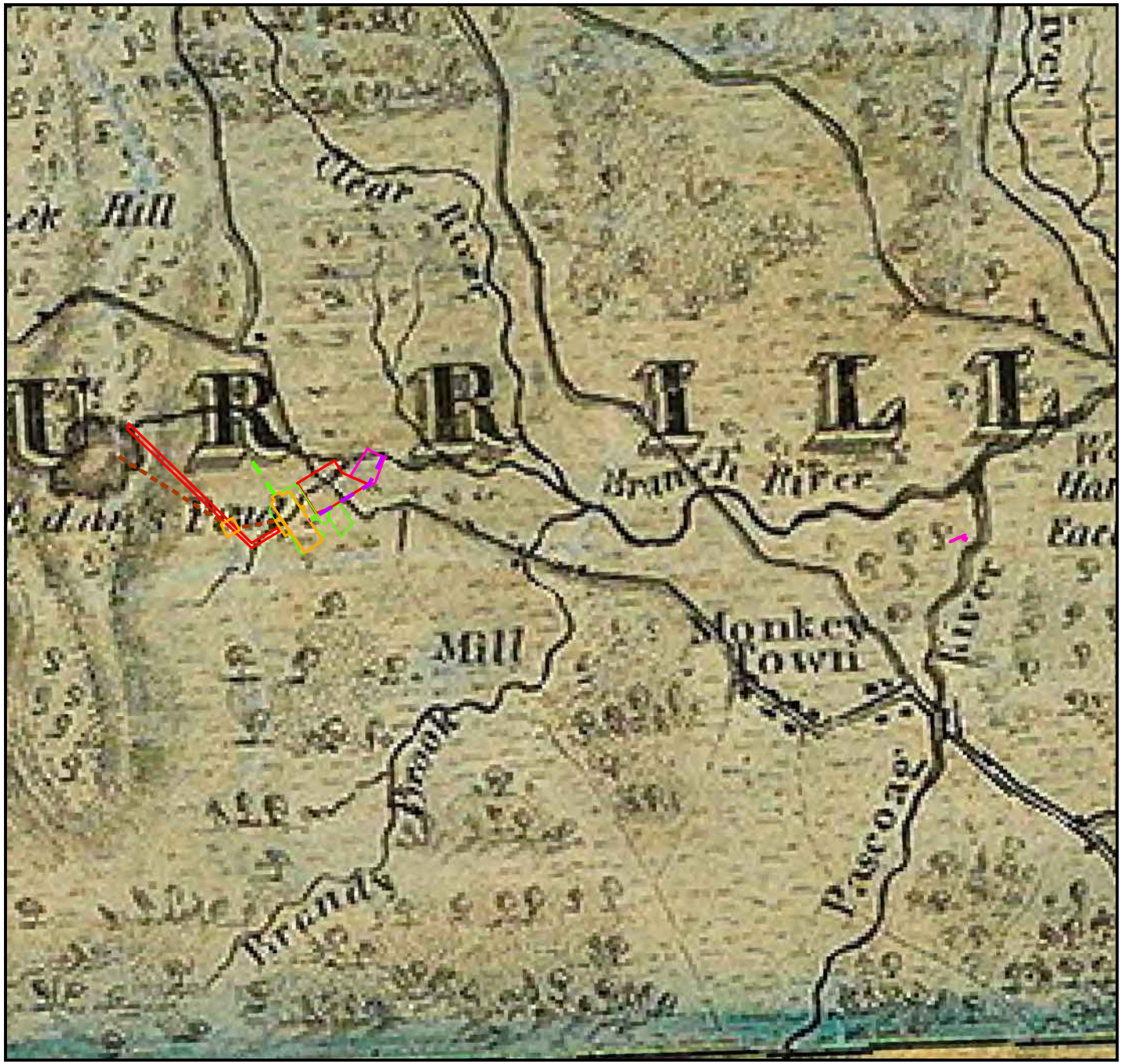
During the twentieth century, housing infrastructure was supported by the construction of the electrical network and water lines. The electrical system was based primarily on hydro and coal-fired power plants early on, but has since been supplanted by more oil and gas-fired plants. Power from the plants is distributed by above-ground trunk lines and distribution lines, which are tapped for individual residences, and commercial and civic buildings. Water lines are located under streets in village centers, while more rural locations use individual wells.

At the end of the twentieth century, Burrillville, like many other rural New England communities, continued to show population growth as a suburban bedroom community for urban centers, such as Providence and Worcester. Automobile transportation allowed for residents to have a variety of occupations located in nearby or even distant towns and cities. Meanwhile, a limited number of manufacturing and farming enterprises still operated within the town. The development of computer networking and wireless technology during the late twentieth and early twenty-first century has allowed for some additional work opportunities within the town run from individual residences.

3.3.4 Historical Period Site Sensitivity

Rural locations in Burrillville may contain evidence of abandoned farmsteads, including cellar holes, outbuildings, and stone fences. Many of these predate historical mapping of the area, and exist in completely undocumented states. Locations adjacent to active stream drainages may contain evidence of mill technology, dating as early as the eighteenth century. This may include mill buildings, water technology, canals, and associated stone or brick construction.

Sites dating to the second half of the nineteenth century are most common. Evidence of transportation networks may also be present, including abandoned roads and railroad lines. Late nineteenth and early twentieth century trash dumps may also be found adjacent to residential or commercial locations, or along the edges of transportation lines. Historical mapping of the area shows little development, beyond the layout of roadways (Figures 6–9) (Stevens 1831: Walling 1851; Walling 1855; and D.G. Beers & Co. 1870;).



LEGEND

- Access Road
- New 345 KV Line
- New Gas Line
- August 2015 Survey Areas
- Addendum 2015 Survey Areas
- February 2016 Survey Areas
- March 2016 Survey Areas

0 400 800 Meters

0 1500 3000 Feet

N W E S

Location of the
Clear River Energy Center Project Area
on the 1831 Topographic Map
(Stevens 1831)

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 6

LEGEND

- Access Road
- New 345 KV Line
- New Gas Line
- August 2015 Survey Areas
- Addendum 2015 Survey Areas
- February 2016 Survey Areas
- March 2016 Survey Areas

0 400 800 Meters

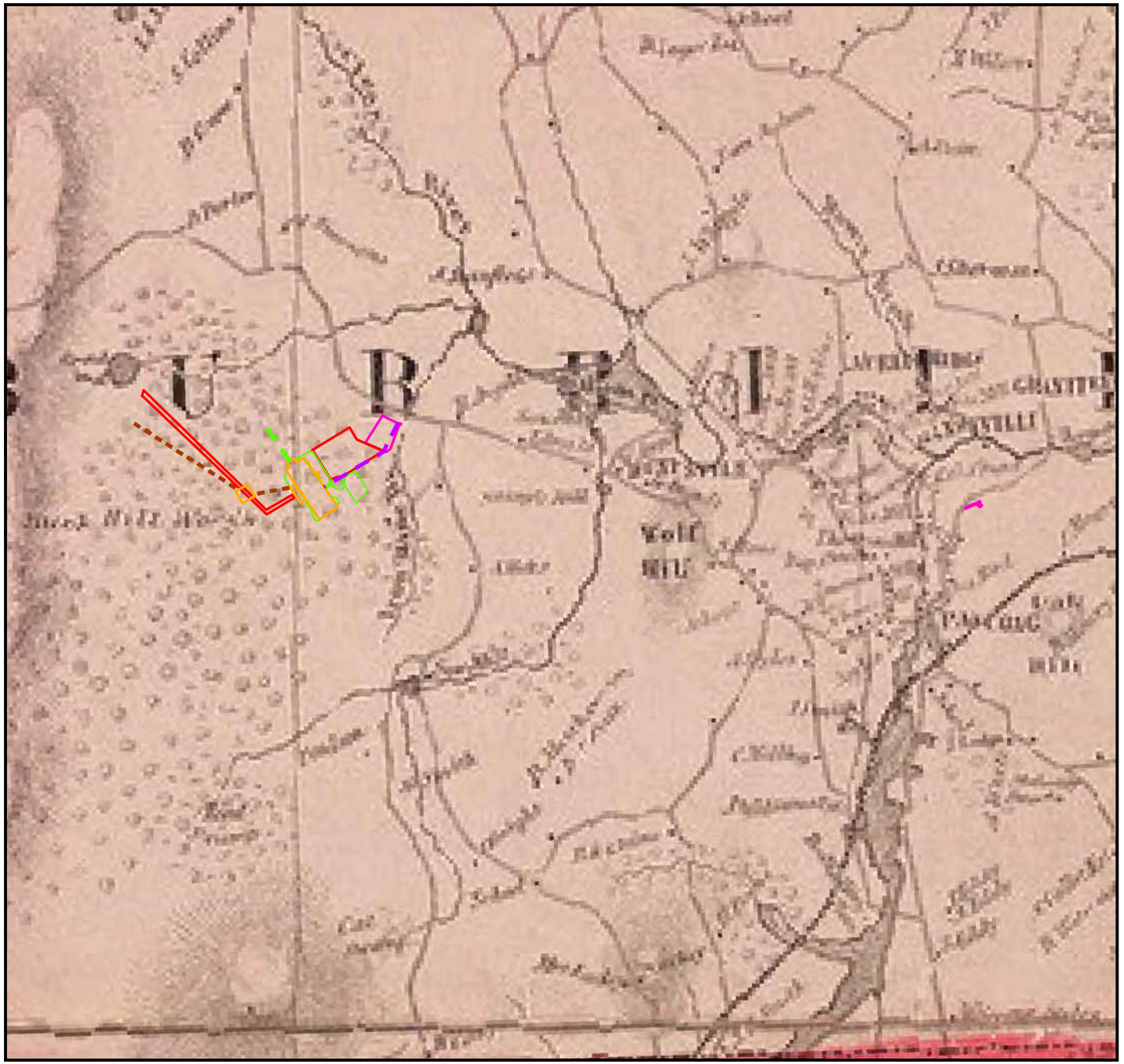
0 1500 3000 Feet

N W E S

Location of the
Clear River Energy Center Project Area
on the 1851 Topographic Map
(Walling 1851)

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 7



LEGEND

- Access Road
- New 345 KV Line
- New Gas Line
- August 2015 Survey Areas
- Addendum 2015 Survey Areas
- February 2016 Survey Areas
- March 2016 Survey Areas

0 400 800 Meters

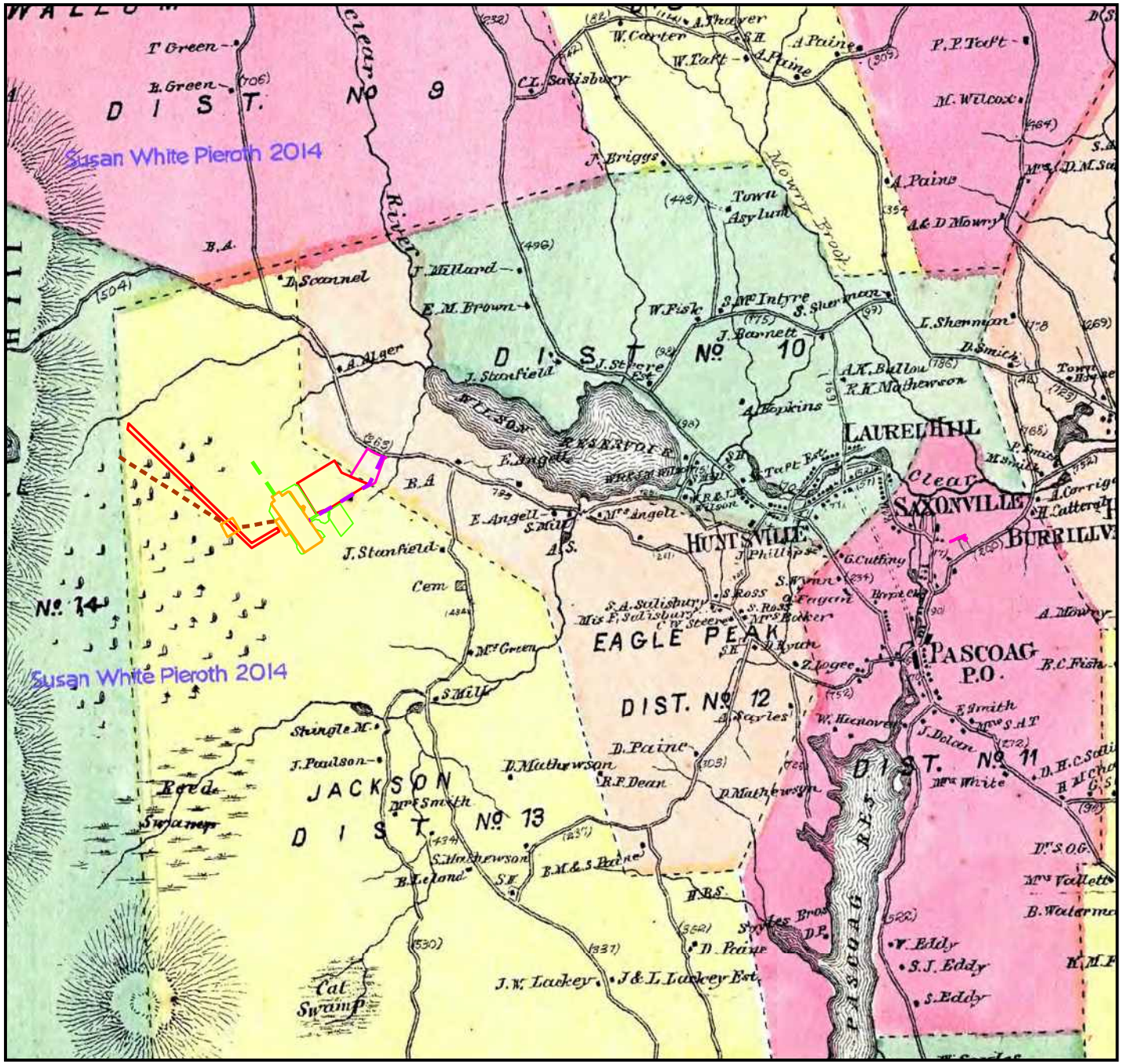
0 1500 3000 Feet

N W E S

Location of the
Clear River Energy Center Project Area
on the 1855 Topographic Map
(Walling 1855)

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 8



LEGEND

- Access Road
- New 345 KV Line
- New Gas Line
- August 2015 Survey Areas
- Addendum 2015 Survey Areas
- February 2016 Survey Areas
- March 2016 Survey Areas

0 400 800 Meters

0 1500 3000 Feet

N W E S

Location of the
Clear River Energy Center Project Area
on the 1870 Topographic Map
(D.G. Beers & Co.1870)

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 9

4.0 PROJECT METHODS

4.1 Literature Review and Background Research Methods

The literature review and background research for this project were completed in August 2015 in preparation for an archaeological permit application. The desktop analysis identified documented archaeological sites and architectural resources within the defined project APE. Identifying the presence of documented resources and the extent of previous surveys and investigations provided ESS, Invenergy, LLC., and review agencies with information regarding the presence of previously recorded sites, including those listed on the NRHP and State Register of Historic Places, within or adjacent to the project APE. The scope of the project was limited to previous research and existing databases. Based on the assessment, recommendations for additional research and survey were made.

The project included a review of the RIHPHC site files for archaeological sites and architectural resources. The RIHPHC maintains a record of all known archaeological sites, as well as previous survey locations, cemeteries, and standing structures. Records were searched for the town of Burrillville for archaeological and architectural resources for the project area and copies were made of all archaeological site forms. In addition, historical maps and town histories for Burrillville were reviewed. Gray & Pape identified all previously surveyed architectural resources within, or immediately adjacent to, the project APE.

4.2 Archaeological Field Methods

General field testing methods consisted of the excavation of Shovel Tests (STs) at 10.0-m (32.8-ft.) intervals. A 10.0-m (32.8-ft.) arbitrary grid was established over each of the survey areas. Shovel tests measured 50 by 50 centimeters (cm) (20 by 20 inches [in.]) square. They were excavated 10 cm (3.9 in.) into the C horizon, typically no greater than 80 cm (32 in.) below ground surface. All soil was screened through ¼-inch hardware cloth to assure the recovery of artifacts. The stratigraphy observed was recorded using the Gray & Pape field recordation system. Photographs of representative STs and general view photographs of the project area were taken to document the stratigraphy and current land use.

4.3 Laboratory Methods

All artifacts collected were washed (unless detrimental to the item) and sorted by artifact type and provenience (Appendix A). The analyses were conducted using the Gray & Pape computerized artifact inventory system, which allows for accurate assessments of artifact densities, cultural affiliations, and site dates. Gray & Pape uses Microsoft Access for data management system to maintain and synthesize aspects of project information.

Analyses of Native American cultural materials was conducted with the following objectives: (1) identification of artifacts recognized as diagnostic of specific cultures or time periods; (2) identification of reduction sequences represented by the lithic debitage; (3) identification of utilized and/or retouched debitage; (4) identification of raw materials represented among the tools and debitage; and (5) identification of recovered ceramic types. Identification of diagnostic artifacts was made by consulting existing comparative collections and available

literature regarding artifact types.

Identification of lithic reduction sequences was made by examining specific attributes of the individual pieces of debitage. *Ad hoc* utilization of pieces of debitage constitutes the "expedient tool" category. Nearly any type of debitage may have served as a tool in this manner. These implements were identified by examining each piece of debitage with a binocular microscope for evidence of use-wear and/or retouch scars. Identification of raw materials represented in the lithic sub-assemblage was made by microscopic examination of each individual piece and comparison to existing raw material type collections and/or literature regarding available raw materials within the general region.

Native American ceramic materials were examined and the following attributes recorded for all sherds: (1) the kind and relative coarseness of temper; (2) surface treatment; (3) vessel portion; and (4) the color of the paste both on the surface and in the interior. Where possible, an identification was made of the type of vessel from which the sherd derived. Data obtained from these identifications was applied to determine site cultural affiliations, overall site function, and specific activities conducted at the site.

4.3.1 Historical Classification Criteria and Analysis

Historical artifacts were analyzed according to parallel classificatory schemes: a descriptive classification and a functional classification. The descriptive classification requires the analyst to make increasingly restrictive decisions concerning the attributes of a particular artifact, or group of artifacts. Although varying levels of information are required for different artifacts, these are arranged in tabular form, permitting the presentation of data for all material and artifact types in a single table. The attributes and their organization are biased towards the most commonly recovered artifacts, particularly ceramics and glass. It is important to bear in mind that this is a generalized system and is not intended to provide information necessary for detailed analysis of particular artifact types.

The first attribute is material. In order to keep like attributes together in subsequent levels of the analysis and to limit the levels within the database, material must be broken down beyond simply ceramic versus glass. The following material categories are used: bone, ivory, shell, and horn; botanical; ceramic, vessel; ceramic, brick; ceramic, other; glass, flat; glass, vessel; glass, tableware; glass, other; faunal; metal; mineral; synthetics; textiles; wood; and other.

The second descriptive level is form (e.g. aglet, carafe, chamberpot, pipkin). The forms that are included in the classification are based on descriptions provided by various sources, most prominently including: Aultman et al. (2003), Gurcke (1987), Jones and Sullivan (1989), Lindsey (2006), Nelson (1968), Noël Hume (1970), and Rock (1987). Whenever possible, these were based on forms established in the expert literature cited above.

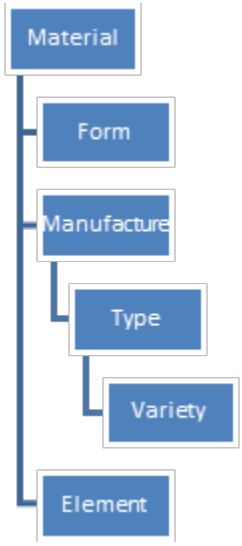
For some artifact types, such as an aglet or a battery rod, this may be the limit of the descriptive classification, in which case the artifacts would be listed as: Metal, aglet and Mineral, battery rod. In other cases, such as with ceramics, additional data is necessary. The subsequent categories are manufacture, type, and variety. It must be stated here that the use of the terms

type and variety are for convenience only, and their use should not be construed as meaning that this classification is a type-variety classification as described by Gifford (1960).

The term manufacture has a slightly different meaning depending upon the material type being analyzed. In ceramic vessels, manufacture refers to paste (coarse earthenware, refined earthenware, stoneware), in glass it refers to true manufacture (free-blown versus mold-blown). For cans, the term manufacture refers to the shape of the can (rectangular, cone top, cylindrical). Terms used under the heading manufacture are based on established references, including Aultman et al. (2003), Gurcke (1987), Jones and Sullivan (1989), Nelson (1968), Rock (1987), and Stelle (2001).

The terms type and variety are likewise used to refer to various attributes of different material types. For ceramics, type refers to ware type (whiteware, pearlware, redware), for glass and for cans, it refers to closure. Variety is the least used term. For ceramics, variety refers to decoration and surface treatment. The term also is used for buttons, in which case variety refers to the method of attachment. The final descriptive term applied in the classification is element, which refers to the portion of a whole artifact represented by a broken artifact.

As the above discussion indicates, a hierarchical relationship is present among these categories, as certain of these categories are subgroups of other categories. These hierarchical relationships vary depending upon the artifact type in question; however, the general relationships can be expressed as follows:



Ten broad functional groups, loosely based on South (1977), were utilized in order to address questions of site function and intra-site use patterns. These groups are Activities, Architecture, Clothing, Firearms, Food Remains, Fuel/Energy, Furnishing, Kitchen, Personal, and Transportation. An eleventh group, Miscellaneous, was used for all artifacts that could not be assigned to a specific functional group. These artifacts include items with more than one possible function, items (e.g., cask hoop, as it may pertain to the storage of food or hardware amongst many other things), items with indeterminate form (e.g., metal can fragments), or

those lacking clear evidence of human alteration, such as unmodified natural resources (e.g., coal). Many artifacts assigned to this category likely represent domestic debris; however, their fragmentary nature prevented identification of vessel type or function and thus made it impossible to assign these items to the domestic group. Although several fragments were indeterminate, in general container glass was assigned to the Kitchen group for this assemblage.

The artifact types assigned to each of the ten functional groups are discussed below.

Activities Group: Activities group artifacts include those with elements centered on work and leisure. Work-related activities include aspects of farming, blacksmithing, woodworking, machine parts, and coal, etc. Fishing and fishing-related artifacts are examples of leisure activity that can be included in this group.

Architectural Group: Architectural group artifacts are identified as those elements directly associated with the building environment, specifically associated with the construction and maintenance of structures. Not included in this group are those elements used to enhance the building environment. Typical included artifacts are brick, mortar, nails, window glass, building hardware, cementing agents, shingles, etc. A total of 822 architecture group items were recovered. Window manufacturing dates were ascertained based on flat glass thickness (Moir 1987). Nail chronological attributes determined by Nelson (1968) were utilized to provide general dates.

Clothing Group: Clothing group artifacts include those directly associated with clothing, such as buttons, snaps, etc.; accessory clothing items, such as belt buckles, shoe hooks, and shoes; and those items used in the construction and repair of clothing, such as needles, pins, scissors, and thimbles.

Firearms Group: Arms group artifacts include all items associated with weaponry. This includes firearm parts, lead balls or bullets, cartridge casings, percussion caps, bullet molds, lead sprue, powder horn parts, bayonets, gunflints, etc.

Fuel/Energy Group: Fuel/Energy group artifacts encompass the elements associated with standard public utilities, such as electrical, gas, telephone, plumbing, and sewerage. Typical artifacts include pipe, electrical wire, electrical insulators, and valves.

Furnishing Group: Furnishing group artifacts are those associated with the enhancement of the building environment. These include furnishings and household fixtures, as well as flower pots, mirror glass, figurines, and other miscellaneous decorative household items.

Kitchen Group: Kitchen group artifacts include those directly associated with food preparation, storage, consumption, and service. Elements of this group include container glass, ceramics, glass tableware, utensils, and food cans. Ceramics are chronologically diagnostic and functionally specific. Prolific works by Lofstrom (1976), Majewski and O'Brien (1987), Miller (1980, 1993), and Miller and Earls (1997) were utilized to ascertain ceramic form and function for this assemblage.

Food Remains Group: Food remains artifacts include bones, cobs, nuts, seeds, pits and shells (e.g., oyster shells).

Personal Group: Personal group artifacts include those elements that are directly associated with an individual or with individual use. This group includes tobacco related artifacts, coins, watches, gaming pieces, toys, jewelry, items of cosmetic and personal hygiene use (e.g., combs and brushes) and all writing materials.

Transportation Group: Transportation group artifacts include elements associated with the various modes of transportation, such as stable (wagon and/or horse), automobile, train, and airplane. Typical artifacts include items such as horseshoes, horseshoe nails, harness and wagon parts, car parts, license plates, and railroad spikes.

4.4 Curation

Upon completion of the analysis and report, artifacts and samples collected will be curated at the Mashantucket Pequot Museum, Mashantucket, Connecticut. Gray & Pape will provide the RIHPHC with a copy of the transmittal documentation when the archaeological collection is transferred to the Mashantucket Pequot Museum.

Gray & Pape maintains digital records of all project materials. Digital and paper copies of records will accompany the project materials to the permanent curation facility. The digital data will be provided to the curation facility on CD, and long-term contact information is provided for questions and as a failsafe should any degrading of the digital data occur. In addition, duplicate copies of the paper and digital project records are maintained at the Providence, Rhode Island, office, supported by an automatic server backup procedure. Further, duplicate records of all Providence records are backed up at the Gray & Pape corporate headquarters in Cincinnati, Ohio.

5.0 RESULTS OF THE LITERATURE REVIEW

5.1.1 Native American Sites

The project included a review of the RIHPHC site files for Native American archaeological sites. Specifically, known or documented archaeological sites within a 0.8-km (0.5-mi.) study radius were identified. Three Native American sites were previously identified adjacent to the project area during the survey of the Burrillville Compressor Station project (Waller 2013). These include RI 2568, RI 2569, and the AL Find Spot.

RI 2568, also known as the Algonquin Lane site, was located immediately west of the present compressor station. It yielded an indeterminate age Native American site that yielded lithic materials from 10 positive STs. In total, 45 pieces of lithic debitage were recovered. A single, subsurface cultural feature was also identified (Waller 2013). This site is not within the current project area, but is immediately north of it.

RI 2569, also known as the Wallum Lake Road site, was identified immediately north of Algonquin Lane and west of Wallum Lake Road. It yielded two quartzite flakes from two positive STs (Waller 2013). This site is approximately 400 m (1,312 ft.) northeast of the current project area.

The AL Find Spot yielded a single quartzite flake. This flake was recovered from the A/Ap horizon and, therefore, disturbed context. No other material was recovered. This find location is immediately east of the compressor station and immediately north of the current project area.

Though no previously recorded Native American archaeological sites were identified within the current project area, two are immediately north of it and have the potential to extend into the project area.

5.1.2 Historical Period Sites

No historical archaeological sites have been previously recorded at the RIHPHC within the project area or surrounding 0.8-km (0.5-mi.) study radius. The nearest historical archaeological features are RI 771, which features rock piles located approximately 1.07 km (0.66 mi.) southeast of the project area.

5.1.3 Architectural Resources

The proposed project consists of construction footprints, access road impacts, and utility line rights-of-way within a 12.1-ha (30-ac.) parcel located in the west-central portion of the town of Burrillville, on the west side of Wallum Lake Road (State Route 100). The APE is flanked by woods, which largely shield it from public view. A review of RIHPHC files and maps did not identify any NRHP-eligible, or NRHP-listed, architectural resource within, or immediately adjacent to, the APE. Documented structures within the study radius include that of A. Alger located between Dry Arm Brook and Iron Mine Brook on the east side of Wallum Lake Road, opposite of Algonquin Lane. No additional resources were identified within the study radius or the project area.

5.2 Sensitivity Assessment

Following the collection of previously recorded site data, a sensitivity model of the APE and surrounding study area was developed. Documentary evidence of Native American sites rarely exists. Therefore, the likelihood of encountering Native American sites is predicted on the basis of an environmental model that uses geological, soil, and climatic data; known site locations in the southern New England region; and expected Native American site locational behavior.

Studies of foraging peoples in many parts of the world have shown that, at a general level, populations tend to adopt a least-effort strategy in the procurement of resources. The assumption is that they tend to choose the most energy-efficient means of procuring the maximum resource yield, without sacrificing group well-being. One of many ways to reduce energy expenditure is to minimize the distance between the place where a given resource is available and the locale where it is to be consumed. Consequently, one may predict that sites located with resource proximity in mind would be situated in those areas that are within the range of acceptability for human comfort and are also close to the resource being exploited.

The most important micro-climatic factors adversely affecting human physical comfort in New England are excessive moisture and cold temperature. Dry, well-drained, and level areas with the warmest available exposure would, therefore, meet the major criteria in the aboriginal site selection process. One can predict that level areas with well-drained soils and level to slightly-sloping areas with a southern exposure would contain the highest aboriginal site density. Well-drained, workable soils were also important site selection factors for both Native American and later horticulturists. Perhaps the most critical resource to be considered, regardless of site function, is water and its proximity. In inland situations, sites are likely to be located near a source of fresh water, such as a spring, a lake, or a stream. Lakes and streams also provide access to fish, waterfowl, and other game.

In order to stratify the proposed project area effectively, topographic maps compiled by the U.S. Geological Survey and soil data compiled by the Soil Conservation Service were used to delineate all areas with well-drained soils and minimal slope. Level, well-drained soils in close proximity to water sources were considered to be areas of high sensitivity, and had a high potential to contain Native American sites. Those farther from a water source are considered to have lower potential. It was thus possible to stratify the project area into zones of high, moderate, and low potential to contain archaeological properties, according to soil matrix and distance to water, as follows:

- Areas less than 300 m (1,000 ft.) from water (or potential ancient water sources), on undisturbed, level (0–8 percent slopes), dry, well-drained soil (especially near a second water source) were considered areas of *high potential*. Within this stratum, areas within 75 m (250 ft.) of water have the highest potential. Areas with the highest potential to contain sites are expected to be located along the brooks and river, near stream confluences, and abandoned stream channels. Some areas have high potential because of their strategic vantage points or proximity to sources of raw materials (e.g., lithic sources, such as rhyolites, quartz, quartzite, and steatite).

- Areas that are more than 300 m (1,000 ft.) but less than 600 m (2,000 ft.) from a water source, but are on undisturbed, level to slightly sloping, dry, well-drained soil are considered areas of *moderate potential*. In addition, areas within 300 m (1,000 ft.) from water, on dry soils, but on slopes of 8–15 percent are classified as moderate potential.
- Areas that are poorly drained, are on steep slopes, or that have been significantly disturbed, are considered to have *low potential*.

Similarly, for historical period sites, the project area was ranked for potential, but based primarily on documentary information. Because a variety of historical evidence exists concerning historical land use, an environmental model was not used in stratifying the project area for its potential to contain historical sites. Identification of important time periods in local history, and recognition of places and people who were significant on the local, regional, or national scales, help to identify the kinds of archaeological resources expected during fieldwork. Census figures provide an indication of the patterns of population change, often reflecting periods of economic growth, decline, or stability. These patterns identify time periods in local history when significant events are likely to have occurred and to have left archaeological evidence.

Map research frequently identifies the infrastructure that developed historically within a project area, and the types of land use which occurred over time. Since map-making methods have improved continuously over the centuries, and the level of detail on maps consequently increased, information from earlier maps is used with caution. Prior to 1850, structures, rivers and boundaries often were depicted schematically. Nonetheless, maps indicate the relative importance of a project area to transportation networks, and suggest its relationship to centers of commerce, manufacturing, and habitation.

The model for the historical period is based upon background research concerning the project area, found in written histories, historical maps, and interviews with local residents. Predictive assessments of the types of archaeological information likely to be encountered are drawn from such information. The historical period model is based much more heavily on local documentary resources than is the Native American model, and is based on a larger set of shared assumptions about the timing and significance of events in the past. Based on these factors, the project area was stratified, and high sensitivity locations were identified for subsurface investigation, in order to assess sites already recorded, and/or to test areas of high sensitivity that had not been previously documented as containing archaeological sites. The parameters for historical site potential are as follows:

- Areas less than 100 m (328 ft.) from a historical site, property, or community center, are considered of *high potential*. In addition, areas within 50 m (164 ft.) of historical roads and railroads, or running streams are also considered of high potential.
- Areas within 50–100 m (164–328 ft.) of roads or railroads or streams are considered of *moderate potential*.
- Areas well away (100 m [328 ft.] or more) from any type of historical features or streams are considered of *low potential*.

6.0 RESULTS OF THE IDENTIFICATION SURVEY

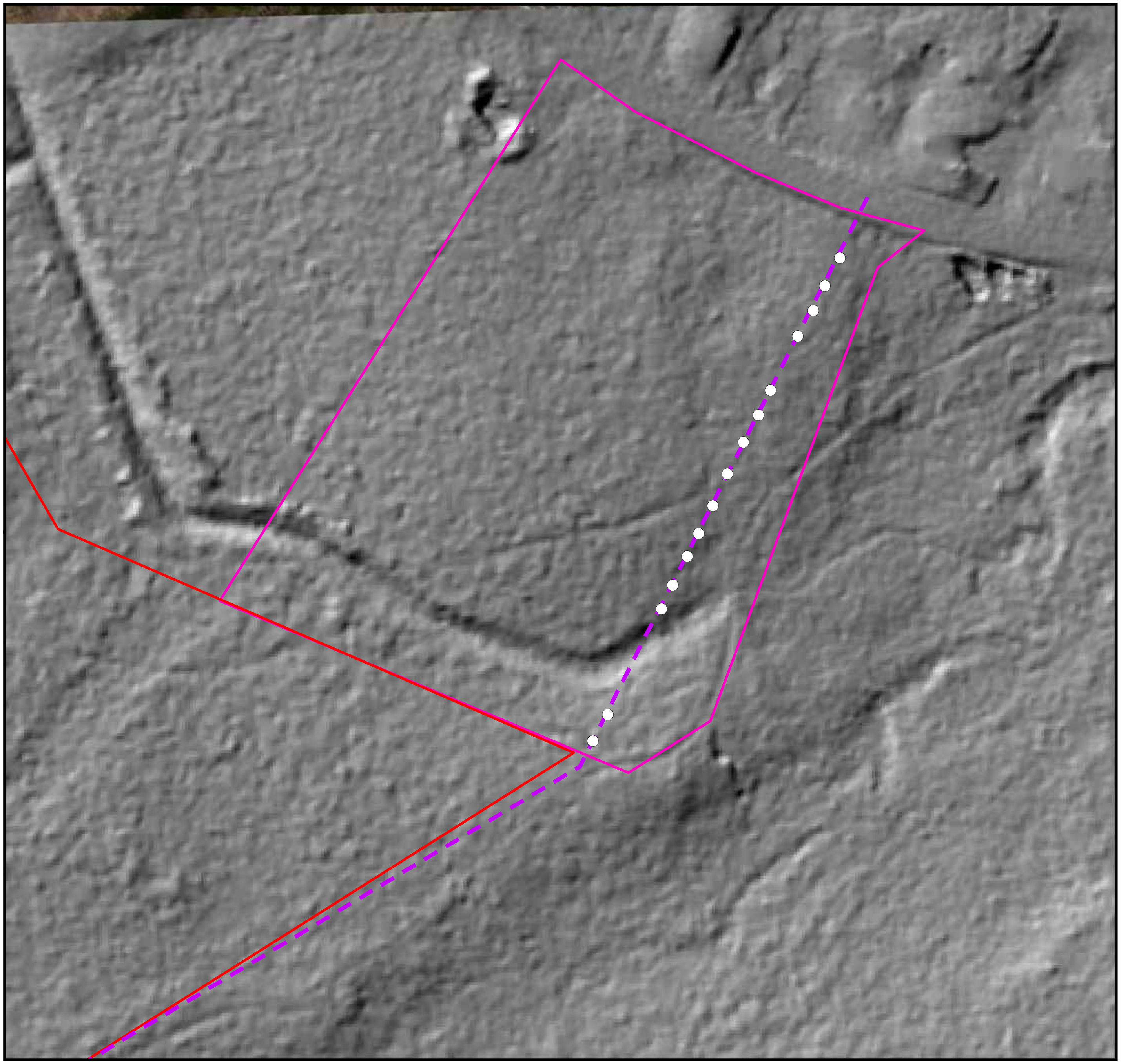
As mentioned in the introduction of this report, the APE totals approximately (52.07 ac.) in area and approximately 3,465 m (ft.) of linear survey associated with kV lines, access roads, and additional utility lines. Each APE survey area is listed below with their relative dimensions:

- August 2015 Survey Areas:
  - Access Road - 682 m (2,238 ft.) in length
  - Gas Line - 266 m (873 ft.) in length
  - 345 kV Line - 244 m (800 ft.) in length
  - 345 kV Line - 762 m (2,500 ft.) in length
  - Substation - 0.8 ha (2.1 ac.)
  - Switchyard - 0.4 ha (1.1 ac.)
  - Power Block - 6.2 ha (15.4 ac.)
- Addendum 2015 Survey Areas
  - Three separate expansion areas of the central Switchyard/Power Block area:
    - Area 1- 0.28 ha (0.68 ac.)
    - Area 2- 0.40 ha (0.98 ac.)
    - Area 3- 1.93 ha (4.78 ac.)
  - Storm Water Detention Pond (SWDP) #2- 0.16 ha (0.40 ac.)
  - Storm Water Detention Pond (SWDP) #3- 0.52 ha (1.28 ac.)
  - Area 4 east of Storm Water Detention Pond #3- 1.92 ha (4.75 ac.)
- February 2016 Survey Areas:
  - Upland Survey Area - 8.3 ha (20.5 ac.)
  - kV Line Survey Area - 1,400 m (4,593 ft.) in length
- March 2016 Survey Areas:
  - 137-m (450-ft.) Frontage Survey Area
  - PUD Well Site - 0.04 ha (0.10 ac.)
  - PUD Well Site Utilities Line - 111 m (365 ft.) in length

Each APE survey area is discussed below in detail pertaining to the number of STs excavated, soils identified, and cultural resources identified therein.

6.1 Access Road

The proposed access road is located immediately adjacent to Wallum Lake Road, and generally follows an existing gravel and earth road. This survey area measures approximately 682 m (2,238 ft.) in length and 15 m (50 ft.) in width. The far eastern portion of the proposed access road does not follow the existing one, and as a result, 16 STs were excavated in this portion (STs A-1 through A-16), four more than originally proposed (Figures 10–11). The ST soil profiles exhibited an eroded or modified Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony soil series. Specifically, the A horizon consisted of a very dark grayish brown (10YR 3/2) fine sandy loam extending to approximately 8 cm (3 in.) below ground surface.



LEGEND

- ST- Negative
- Access Road
- February 2016 Survey Areas
- March 2016 Survey Areas

LiDAR Data

High : 254

Low : 4

0 20 40 Meters

0 50 100 Feet

N E S W

Results of the Access Road Survey Area on LiDAR

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 10

LEGEND

- ST- Negative
- Access Road
- February 2016 Survey Areas
- March 2016 Survey Areas

0 20 40 Meters

0 50 100 Feet

N W E S

Results of the
Access Road Survey Area

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 11

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\15-69901_Figure11_AR.mxd Gray & Pape Project 15-69901.001

This A horizon overlaid a Bw1 comprised of a dark yellowish brown (10YR 4/4) fine sandy loam that extended no greater than 17 cm (7 in.) below ground surface. This Bw1 overlaid a Bw2, also a dark yellowish brown (10YR 4/4) that extended between 30 and 50 cm (12 and 20 in.) below ground surface and overlaid the C horizon. The C horizon was comprised of a light olive brown (2.5Y 5/4) gravelly fine sandy loam. Excavation halted 10 cm (4 in.) into the C horizon. No Native American or historical cultural deposits were identified within the proposed access road. No further survey is recommended.

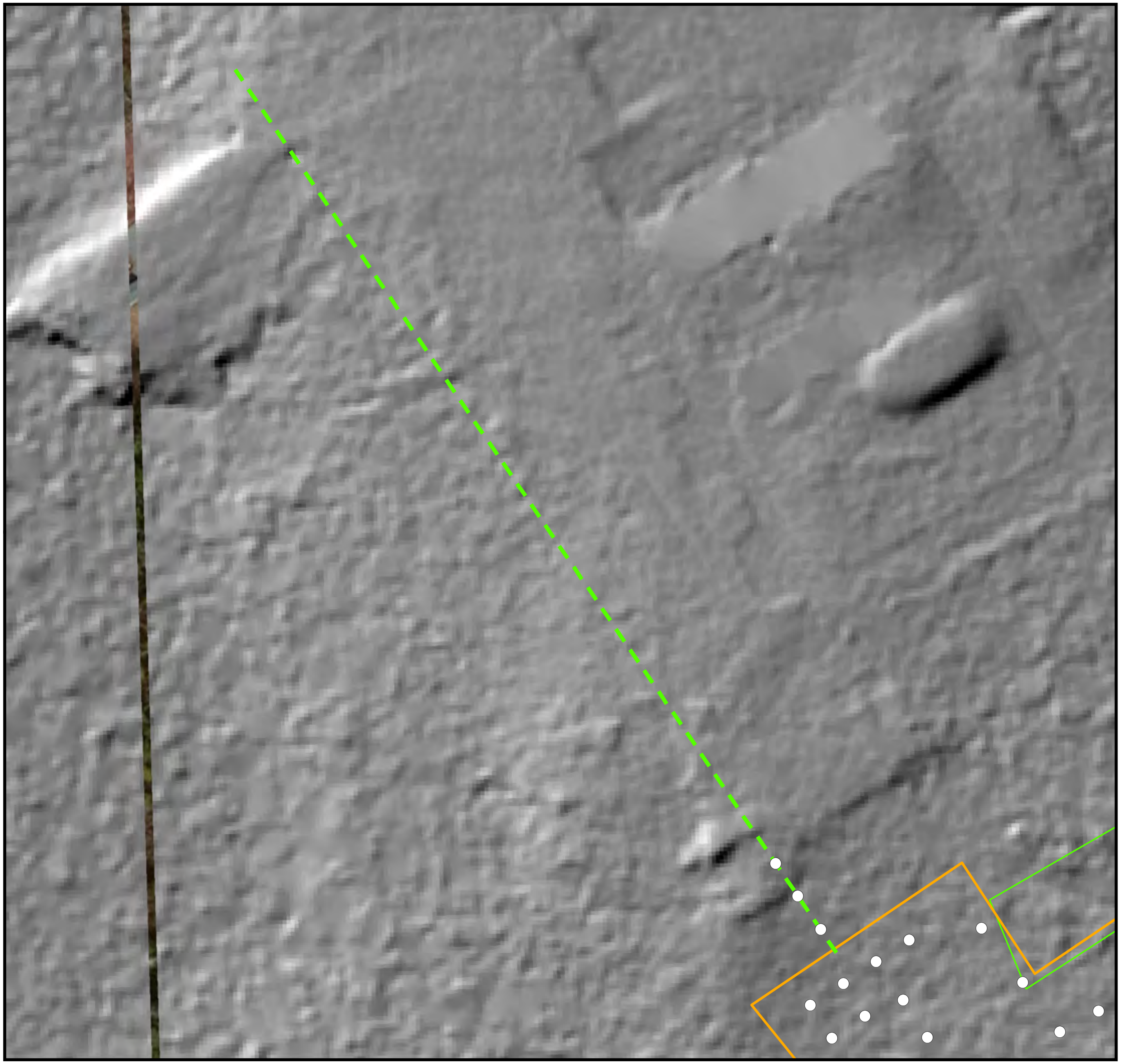
6.2 Gas Line

The proposed gas line is located immediately north of the power block survey area and immediately south of the existing Burrillville Compressor Station. This survey area measures approximately 266 m (873 ft.) in length and 15 m (50 ft.) in width. The northern portion of the proposed gas line extended into a fenced off area that has recently been heavily disturbed by the construction of a gravel lot (Plate 1). As a result, a total of three STs were excavated (STs A-1 through A-3), 12 less than originally proposed (Figures 12–13). The ST soil profiles exhibited an eroded or modified Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony soil series. Specifically, the A horizon consisted of a very dark grayish brown (10YR 3/2) fine sandy loam extending to approximately 8 cm (3 in.) below ground surface. This A horizon overlaid a Bw1 comprised of a dark yellowish brown (10YR 4/4) fine sandy loam that extended no greater than 13 cm (5 in.) below ground surface. This Bw1 overlaid a Bw2, also a dark yellowish brown (10YR 4/4), that extended between 39 and 64 cm (15 and 25 in.) below ground surface and overlaid the C horizon. The C horizon was comprised of a light olive brown (2.5Y 5/4) gravelly fine sandy loam. Excavation halted 10 cm (4 in.) into the C horizon. No Native American or historical cultural deposits were identified within the proposed gas line survey area. No further survey is recommended.

6.3 345 kV Line (800 feet)

The survey area measures approximately 244 m (800 ft.) in length and 15 m (50 ft.) in width. This proposed kV Line connects the substation survey area to the west and the switchyard survey area to the east and is generally sloping upwards to the west. Given the progressive slope of the survey area, four STs were excavated (A-1 through A-4), the same as was originally proposed (Figures 14–15). The ST soil profiles exhibited soils consistent with the Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony; Sutton fine sandy loam, 0 to 3 percent slopes; and Canton fine sandy loam, 3 to 15 percent slopes, rocky. Shovel Tests A-2, A-3, and A-4 exhibited soils similar to the Canton soils and consisted of black (10YR 2/1) sandy loam A horizon that extended to approximately 9 cm (4 in.) below ground surface. It overlaid a yellowish brown (10YR 5/6) fine sandy loam Bw horizon that extended to 16 cm (6 in.) below ground surface. This Bw horizon overlaid a light olive gray (5Y 6/2) gravelly sandy loam C horizon. Excavation halted 10 cm (4 in.) into the C horizon.

Plate 1. Fenced in area and gravel lot within the proposed gas line survey area.



LEGEND

- ST- Negative
- New Gas Line
- August 2015 Survey Areas
- Addendum 2015 Survey Areas

LiDAR Data

High : 254

Low : 4

0 10 20 Meters

0 50 100 Feet

N
W E
S

Results of the
Gas Line Survey Area on LiDAR

GRAY & PAPE, INC.
ARCHAEOLOGY - HISTORY - HISTORIC PRESERVATION

Figure 12

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\15-69901_Figure12_GasLine_LiDAR.mxd

Gray & Pape Project 15-69901.001

LEGEND

- ○ ST- Negative
- New Gas Line
- August 2015 Survey Areas
- Addendum 2015 Survey Areas

0 10 20 Meters

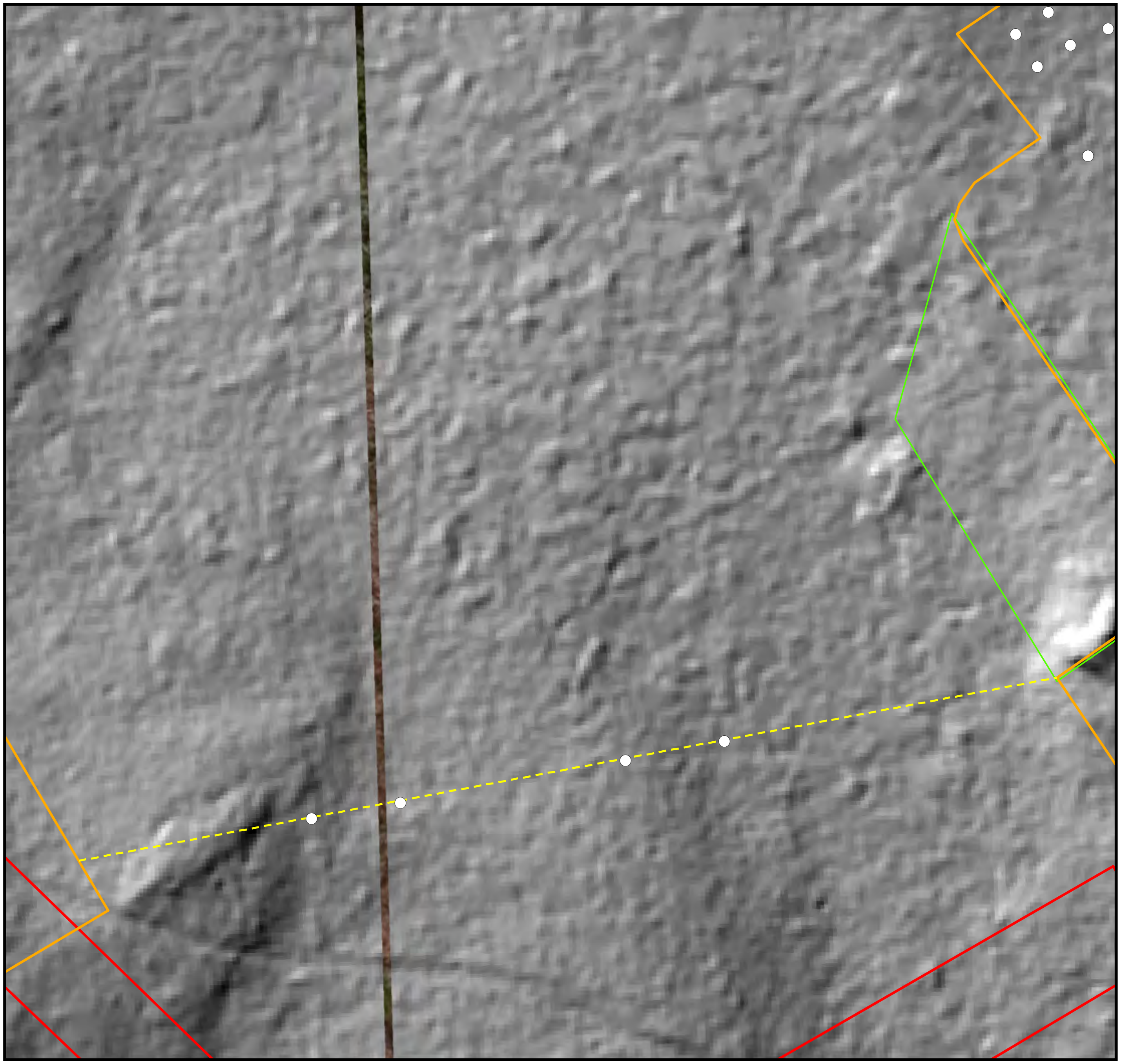
0 50 100 Feet

N W E S

Results of the Gas Line Survey Area

GRAY & PAPE, INC.
ARCHAEOLOGY - HISTORY - HISTORIC PRESERVATION

Figure 13



Results of the 345 kV Line
(800 feet) Survey Area
on LiDAR

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 14

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\15-69901_Figure14_345kV_800ft_LiDAR.mxd

Gray & Pape Project 15-69901.001

LEGEND

- ST- Negative
- New 345 KV Line
- August 2015 Survey Areas
- Addendum 2015 Survey Areas
- February 2016 Survey Areas

0 10 20 Meters

0 50 100 Feet

N W E S

Results of the 345 kV Line (800 feet) Survey Area

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 15

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\15-69901_Figure15_345kV_800ft.mxd

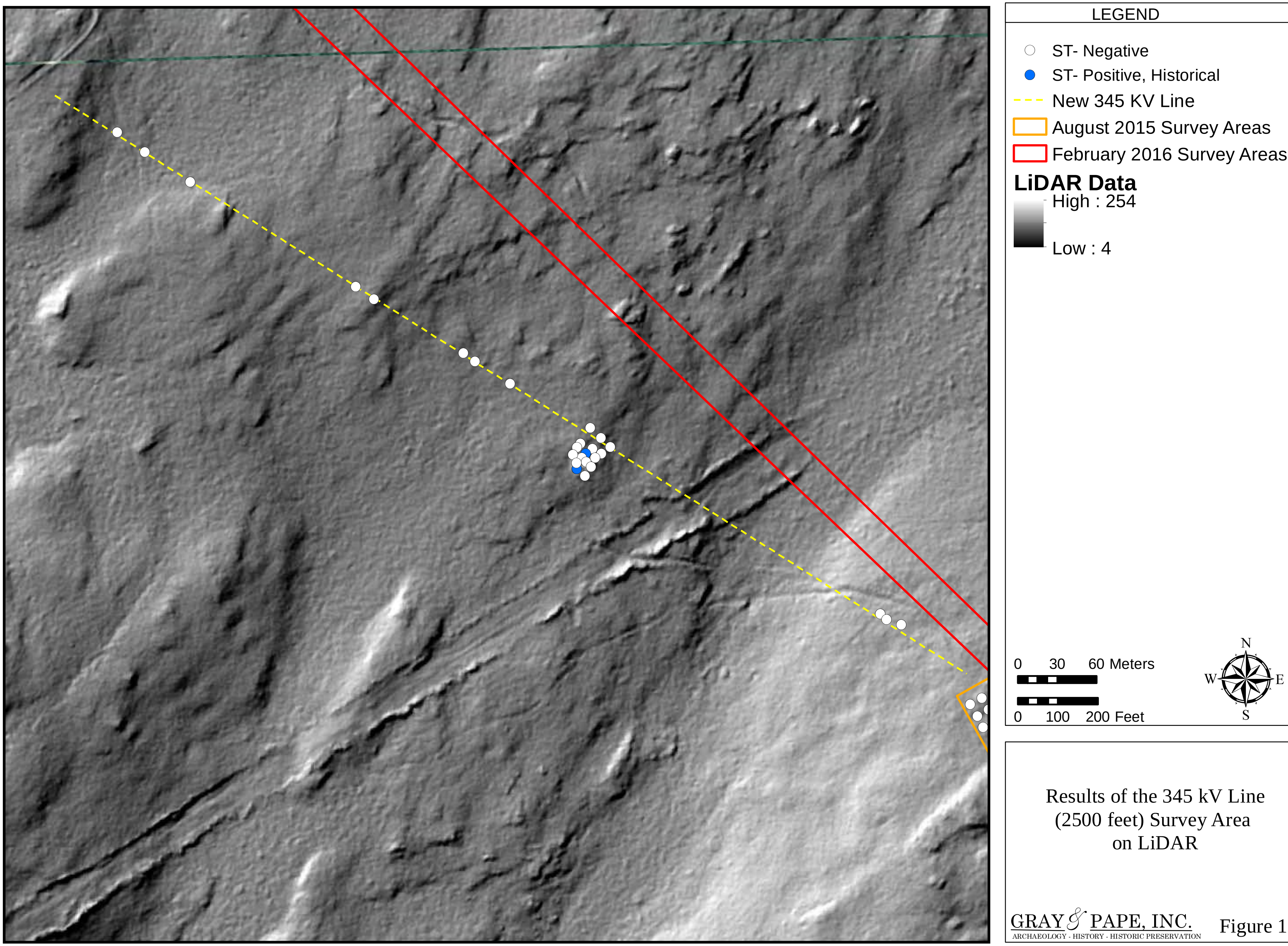
Gray & Pape Project 15-69901.001

Shovel Test Pit A-1 exhibited soils consistent with the Ridgebury Series. The A horizon was a black (10YR 2/1) fine sandy loam that extended to approximately 10 cm (4 in.) below ground surface. It overlaid a brown (10YR 4/3) sandy loam Bw horizon that extended to approximately 44 cm (17 in.) below ground surface. This overlaid a gray (5Y 5/1) gravelly sandy loam C horizon. Excavation halted 10 cm (4 in.) into the C horizon. No Native American or historical cultural deposits were identified within the proposed 345 kV line survey area. No further survey is recommended. This survey area is no longer part of the proposed project/undertaking, as a substation will no longer be constructed. It is, however, being reported upon as it was surveyed as part of this project originally.

6.4 345 kV Line (2500 feet)

The proposed 345 kV Line is located immediately west of the substation survey area and extends to the National Grid transmission line to the west, along Wilson Trail. This survey area measures approximately 762 m (2,500 ft.) in length and 15 m (50 ft.) in width. This proposed kV line spans wetlands and upland areas, starting with steep slope in the eastern portion, which stops in a wetland area near Dry Ann Brook, then continues westward gently running up slope towards the transmission line. STs were not excavated in areas of slope, wetlands or standing ground surface water, modern disturbances (e.g., transmission line or extant gas line running south of the extant compressor station), and areas of bedrock at surface. As a result, a total of 31 STs (A-1 through A-15 and Structure STs A-1 through A-3, B-1 through B-3, C-1 through C-3, D-1, D-2, and Judgmentals 1–4) were excavated within or immediately adjacent to this survey area, 12 more than originally proposed (Figures 16–19). The ST soil profiles exhibited soils consistent with the Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony. The soil profiles typically consisted of very dark grayish brown (10YR 3/2) to black (10YR 2/1) fine sandy loam A horizon that extended to approximately 10 cm (4 in.) below ground surface. This overlaid a brown (10YR 4/3) extremely gravelly sandy loam Bw horizon that extended to approximately 35 cm (14 in.) below ground surface. This B horizon overlaid a gray (5Y 5/1) gravelly sandy loam C horizon. Excavation halted 10 cm (4 in.) into the C horizon. Several STs were identified where excavation was halted in the B horizon due to a great number of rocks and impenetrable rocky soil.

The original transect of STs A-1 through A-15 did not yield cultural material. However, upon the identification of structural foundation remains immediately west of the proposed 345 kV Line, additional STs were excavated (Figure 20), two of which yielded historical cultural material. The soil profiles in the structural STs were similar to the A transect soil profiles, with exception to the STs nearest to the foundation remains, which exhibited an overburden of B horizon on top of the intact A horizon. This overburden is due to the excavated soils from within the foundation having been placed on top of the ground adjacent to it.



Results of the 345 kV Line (2500 feet) Survey Area on LiDAR

GRAY & PAPE, INC.
ARCHAEOLOGY - HISTORY - HISTORIC PRESERVATION

Figure 16

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\15-69901_Figure16_345kV_2500ft_LiDAR.mxd

Gray & Pape Project 15-69901.001

LEGEND

- ST- Negative
- New 345 KV Line
- August 2015 Survey Areas
- February 2016 Survey Areas

0 10 20 Meters

0 50 100 Feet

N
W E
S

Results of the 345 kV Line
(2500 feet) Survey Area

(East 1/3)

GRAY & PAPE, INC.
ARCHAEOLOGY - HISTORY - HISTORIC PRESERVATION

Figure 17

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\15-69901_Figure17_345kV_2500ft_Easthird.mxd

Gray & Pape Project 15-69901.001

LEGEND

- ST- Negative
- ST- Positive, Historical
- Road - Possible Drive
- New 345 KV Line
- February 2016 Survey Areas
- Structural Foundation

0 10 20 Meters

0 50 100 Feet

N W E S

Results of the 345 kV Line (2500 feet) Survey Area

(Middle 1/3)

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 18

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\15-69901_Figure18_345kV_2500ft_Middlethird.mxd Gray & Pape Project 15-69901.001

LEGEND

○ ST- Negative
New 345 KV Line
February 2016 Survey Areas

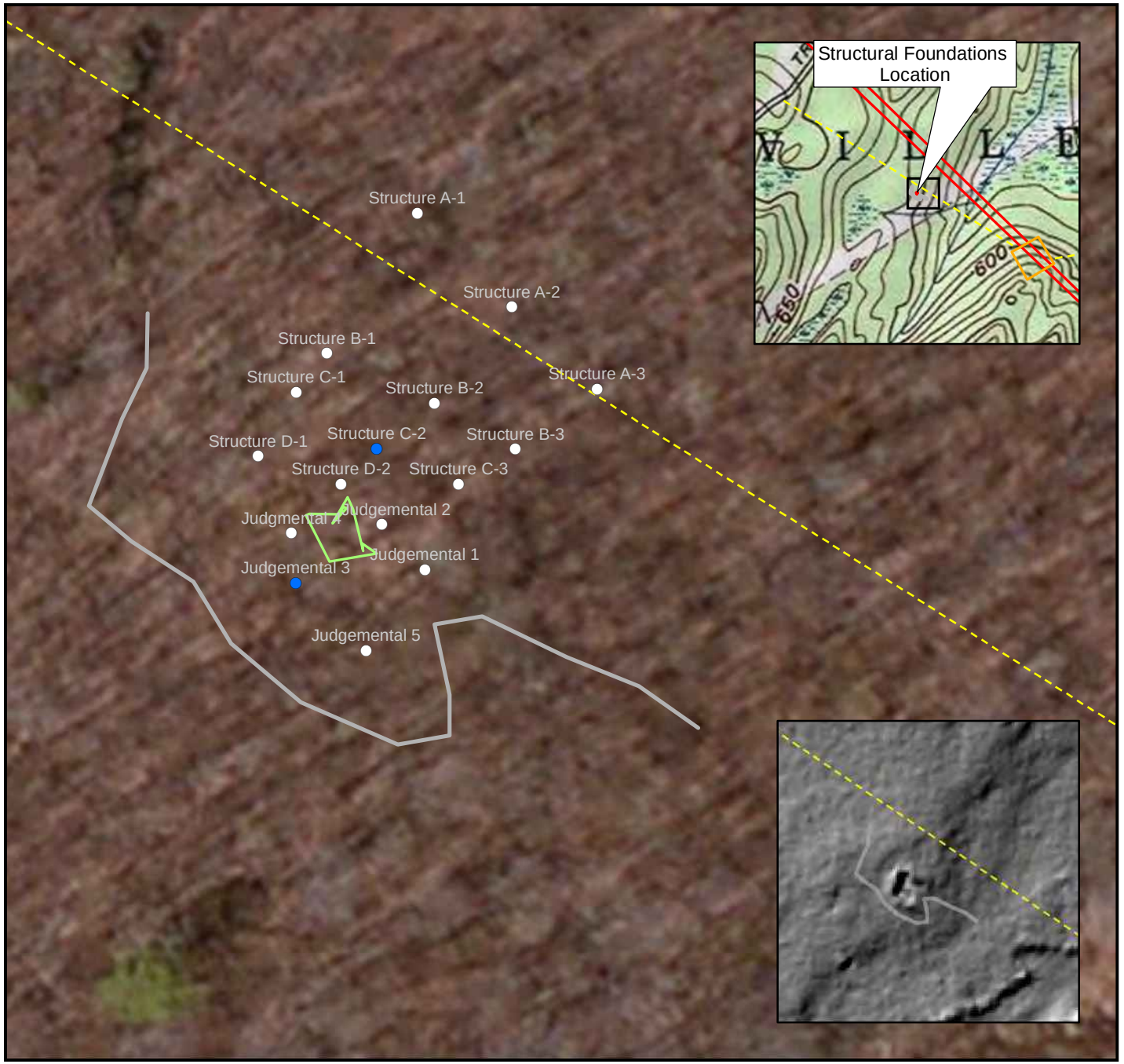
0 10 20 Meters
0 50 100 Feet
N
W E
S

Results of the 345 kV Line
(2500 feet) Survey Area

(West 1/3)

GRAY & PAPE, INC.
ARCHAEOLOGY - HISTORY - HISTORIC PRESERVATION

Figure 19



LEGEND

- ST- Negative
- ST- Positive, Historical
- Road - Possible Drive
- Structural Foundation
- New 345 KV Line

0 5 10 Meters

0 20 40 Feet

N W E S

Results of the
Structural Foundations Location

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 20

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\15-69901_Figure20_StructuralLocation.mxd

Gray & Pape Project 15-69901.001

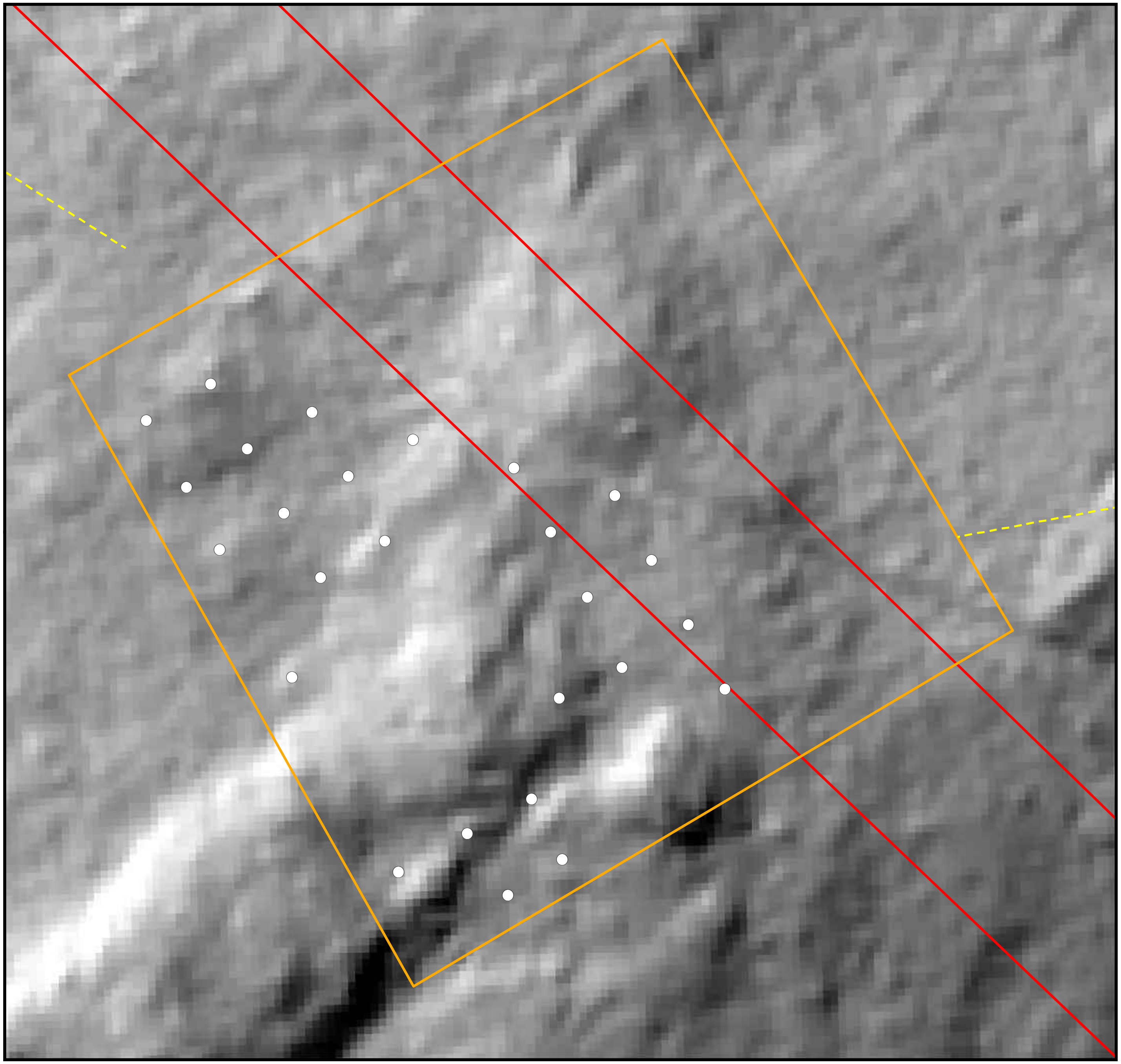
The foundation remains identified consist of a dry-laid, stacked stone foundation measuring approximately 3- by 3-m (15- by 15-ft.) square (Plate 2). Several cut stone stairs were identified in the southwest corner of the foundation. A cut stone lintel (likely a front door step) was located on the north wall in the center portion at ground surface. Parts of an Eddy & Corse cast iron stove were present on the ground surface immediately east of the foundation (Plate 3). This particular stove appears to have been made between 1869 and 1876. Nearby ST C-2 yielded three clinched late-cut nails, and ST Judgmental 3, located immediately west of the stone foundation and within a dug out earthen bermed area, yielded more than 50 fragments of miscellaneous metal. Based upon initial research, the structure does not appear to be mapped on any available historical plat maps of the area. The architectural remains, including nails, and the wood stove fragments suggest it may be the remains of an ephemeral cabin site constructed in the mid-nineteenth century. Given the presence of the structure and the lack of full investigations concerning the site, Gray & Pape recommends further work or avoidance of the cabin site location and a surrounding 15-m (50-ft.) buffer area. The remaining portion of the proposed 345 kV Line yielded no cultural material and no further survey is recommended. This survey area has since been relocated due to the presence of the historical foundation, and will be surveyed in the near future for archaeological deposits.

6.5 Substation

The proposed substation is located in the northwest portion of the 12.1-ha (30-ac.) parcel. It is immediately south of the 345 kV Line (2,500 ft.) and north of the 345 kV Line (800 ft.). The substation is located in an upland setting with the northeastern and eastern portions heavily sloping to the east towards Dry Ann Brook and associated wetlands. The central portion of the survey area exhibited glacial erratics and bedrock at ground surface, prohibiting testing in these areas. The substation survey area measures approximately 0.8 ha (2.1 ac.). In total, 26 STs were excavated within the substation survey area, six more than originally proposed (Figures 21–22). The ST soil profiles were consistent with the mapped Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony. The soil profiles typically consisted of very dark grayish brown (10YR 3/2) to black (10YR 2/1) fine sandy loam A horizon that extended to approximately 10 cm (4 in.) below ground surface. This overlaid a brown (10YR 4/3) extremely gravelly sandy loam Bw horizon that extended to approximately 35 cm (14 in.) below ground surface. This B horizon overlaid a gray (5Y 5/1) gravelly sandy loam C horizon. Excavation halted 10 cm (4 in.) into the C horizon. Several STs were identified where excavation was halted in the B horizon due to the great number of rocks and impenetrable rocky soil. No Native American or historical cultural deposits were identified within the proposed substation survey area. No further survey is recommended. This area of potential effects is no longer part of the proposed project/undertaking.

Plate 2. Dry-laid, stacked, stone foundation found along 345 kV line (2,500 feet).

Plate 3. Eddy & Corse, cast iron stove door part, dating between circa 1869 and 1876.



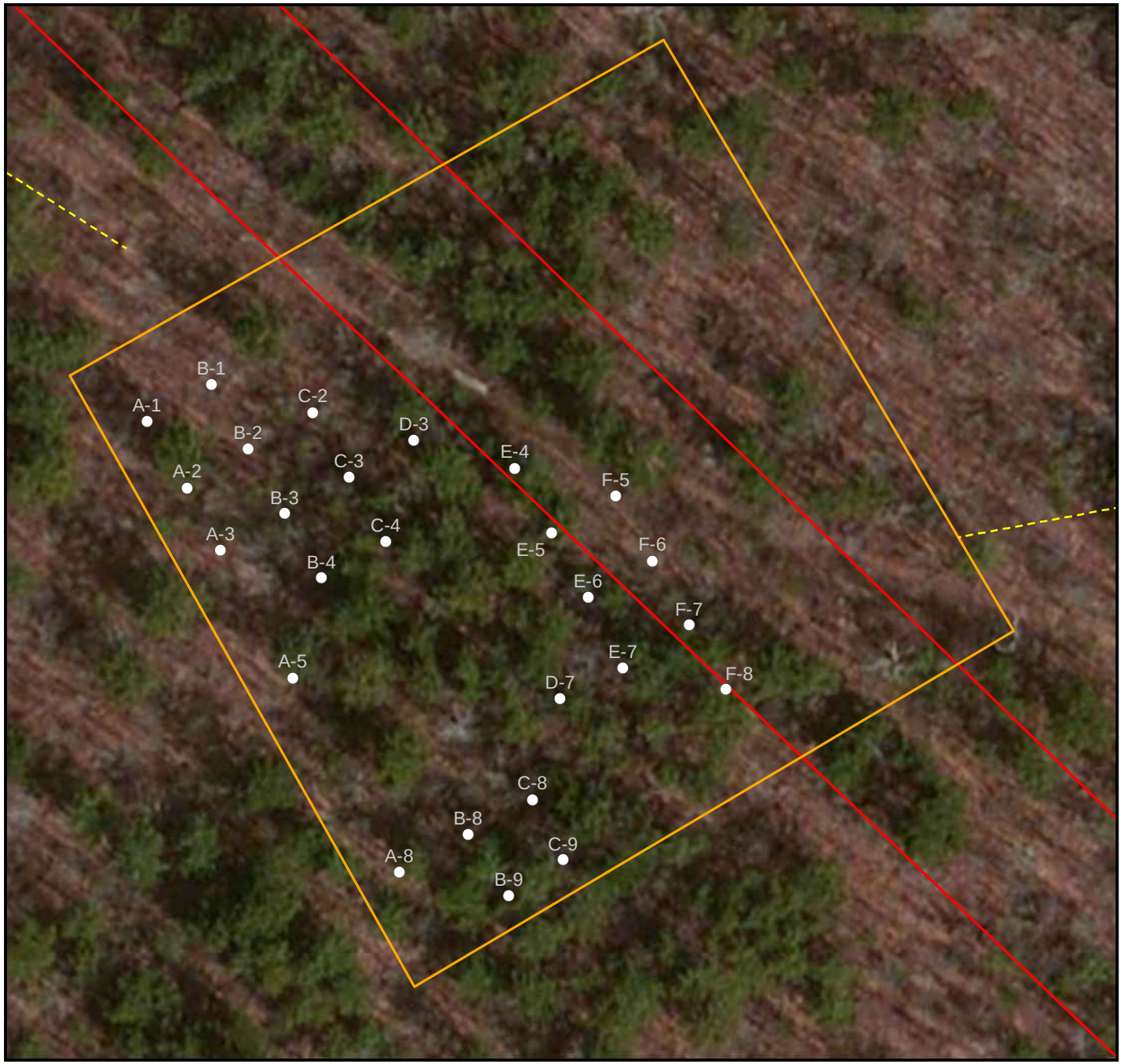
Results of the Substation Survey Area on LiDAR

GRAY & PAPE, INC.
ARCHAEOLOGY - HISTORY - HISTORIC PRESERVATION

Figure 21

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\15-69901_Figure21_Substation_LiDAR.mxd

Gray & Pape Project 15-69901.001



LEGEND

- ST- Negative
- New 345 KV Line
- August 2015 Survey Areas
- February 2016 Survey Areas

0 5 10 Meters

0 20 40 Feet

N W E S

Results of the Substation Survey Area

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 22

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\15-69901_Figure22_Substation.mxd Gray & Pape Project 15-69901.001

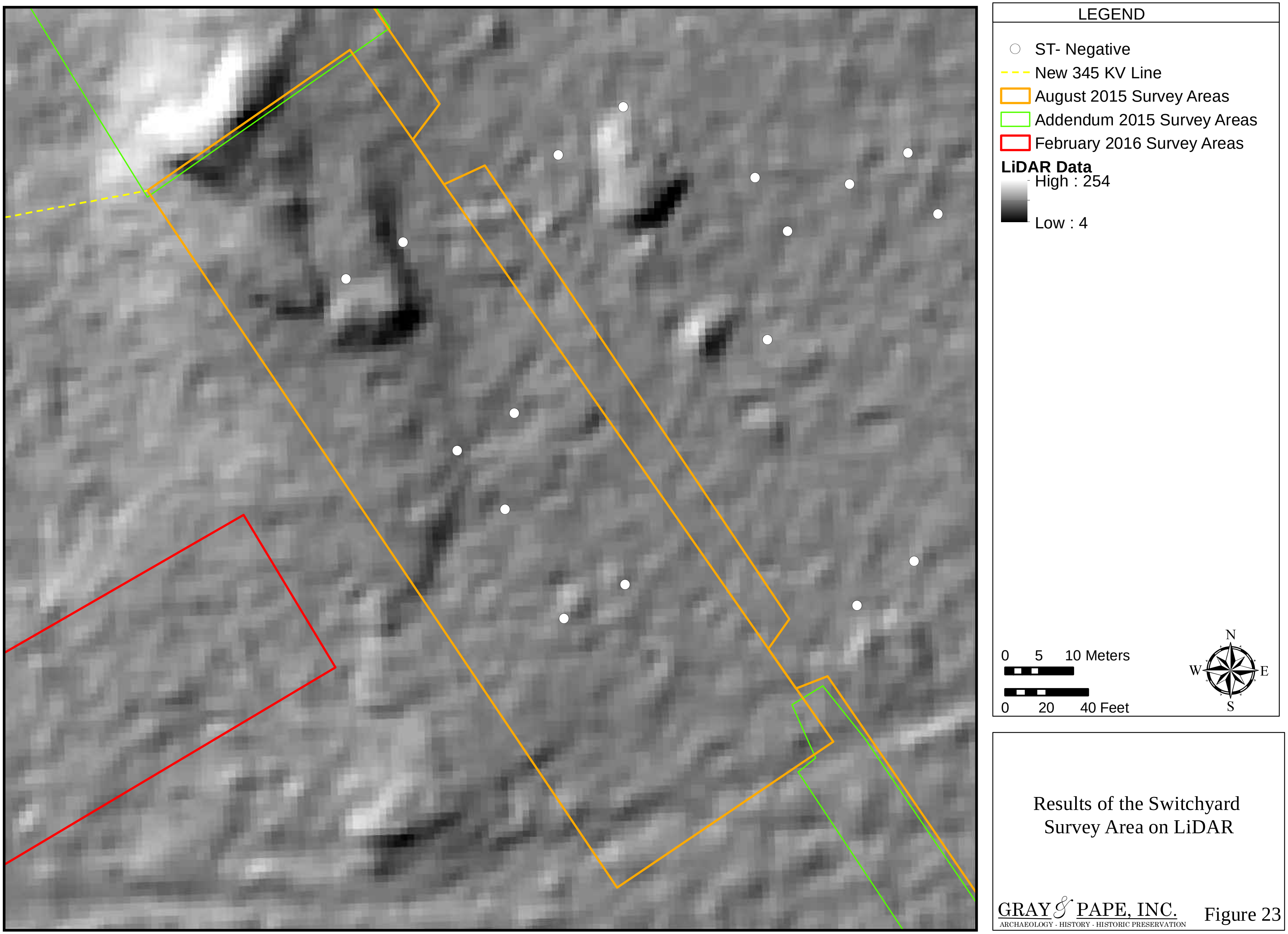
6.6 Switchyard

The proposed switchyard is located in the central portion of the 12.1-ha (30-ac.) parcel. It is immediately west of the power block survey area and measures approximately 0.4 ha (1.1 ac.). It spans a wetland area in the southern portion to an upland setting with large glacial erratics and bedrock outcrops in the northern portion. In total, seven STs were excavated within the switchyard survey area, the same as was originally proposed (Figures 23–24). The ST soil profiles exhibited an eroded or modified Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony soil series. Specifically, the A horizon consisted of a very dark grayish brown (10YR 3/2) fine sandy loam extending to approximately 8 cm (3 in.) below ground surface. This A horizon overlaid a Bw1 comprised of a dark yellowish brown (10YR 4/4) fine sandy loam that extended no greater than 22 cm (9 in.) below ground surface. This Bw1 overlaid a Bw2, also a dark yellowish brown (10YR 4/4) that extended between 32 and 44 cm (13 and 17 in.) below ground surface and overlaid the C horizon. The C horizon was comprised of a light olive brown (2.5Y 5/4) gravelly fine sandy loam. Excavation halted 10 cm (4 in.) into the C horizon. No Native American or historical cultural deposits were identified within the proposed switchyard survey area. No further survey is recommended.

6.7 Power Block

The proposed power block is located in the central portion of the 12.1-ha (30-ac.) parcel. It is immediately east of the switchyard survey area and measures approximately 0.4 ha (1.1 ac.). It spans a wetland area in the southern portion to an upland setting with large glacial erratics and bedrock outcrops in the northern portion. In total, 147 STs were excavated within the power block survey area, 18 STs less than was originally proposed (Figures 25–28). The ST soil profiles exhibited an eroded or modified Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony soil series. Specifically, the A horizon consisted of a very dark grayish brown (10YR 3/2) fine sandy loam extending to approximately 8 cm (3 in.) below ground surface. This A horizon overlaid a Bw1 comprised of a dark yellowish brown (10YR 4/4) fine sandy loam that extended no greater than 22 cm (9 in.) below ground surface. This Bw1 overlaid a Bw2, also a dark yellowish brown (10YR 4/4) that extended between 32 and 44 cm (13 and 17 in.) below ground surface and overlaid the C horizon. The C horizon was comprised of a light olive brown (2.5Y 5/4) gravelly fine sandy loam. Excavation halted 10 cm (4 in.) into the C horizon. A single Native American artifact, a fragment of quartzite shatter, was recovered from ST D-35 in the northeastern portion of the power block survey area. Additional radial STs were excavated at 5-m (16-ft.) intervals in each cardinal direction around the positive ST (Plate 4). These were all negative. Therefore, this is considered an isolated find.

STs C-11 and D-8, located in the central eastern portion of the power block survey area also yielded cultural material; however, these were historical artifacts. Shovel Test Pit C-11 yielded a fragment of table glass, light aqua in color. ST D-8 yielded three fragments of window glass measuring between 2.36 and 2.44 mm in thickness. According to Moir (1983) these likely date between 1910 and 1920. Though surrounding STs yielded no cultural material, fragments of metal buckets, car doors dating to the mid nineteenth century, and miscellaneous metal was visible on the ground surface in this area (Plate 5).



Results of the Switchyard Survey Area on LiDAR

GRAY & PAPE, INC. ARCHAEOLOGY - HISTORY - HISTORIC PRESERVATION

Figure 23

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\15-69901_Figure23_Switchyard_LiDAR.mxd

Gray & Pape Project 15-69901.001

LEGEND

- ST- Negative
- New 345 KV Line
- August 2015 Survey Areas
- Addendum 2015 Survey Areas
- February 2016 Survey Areas

0 5 10 Meters

0 20 40 Feet

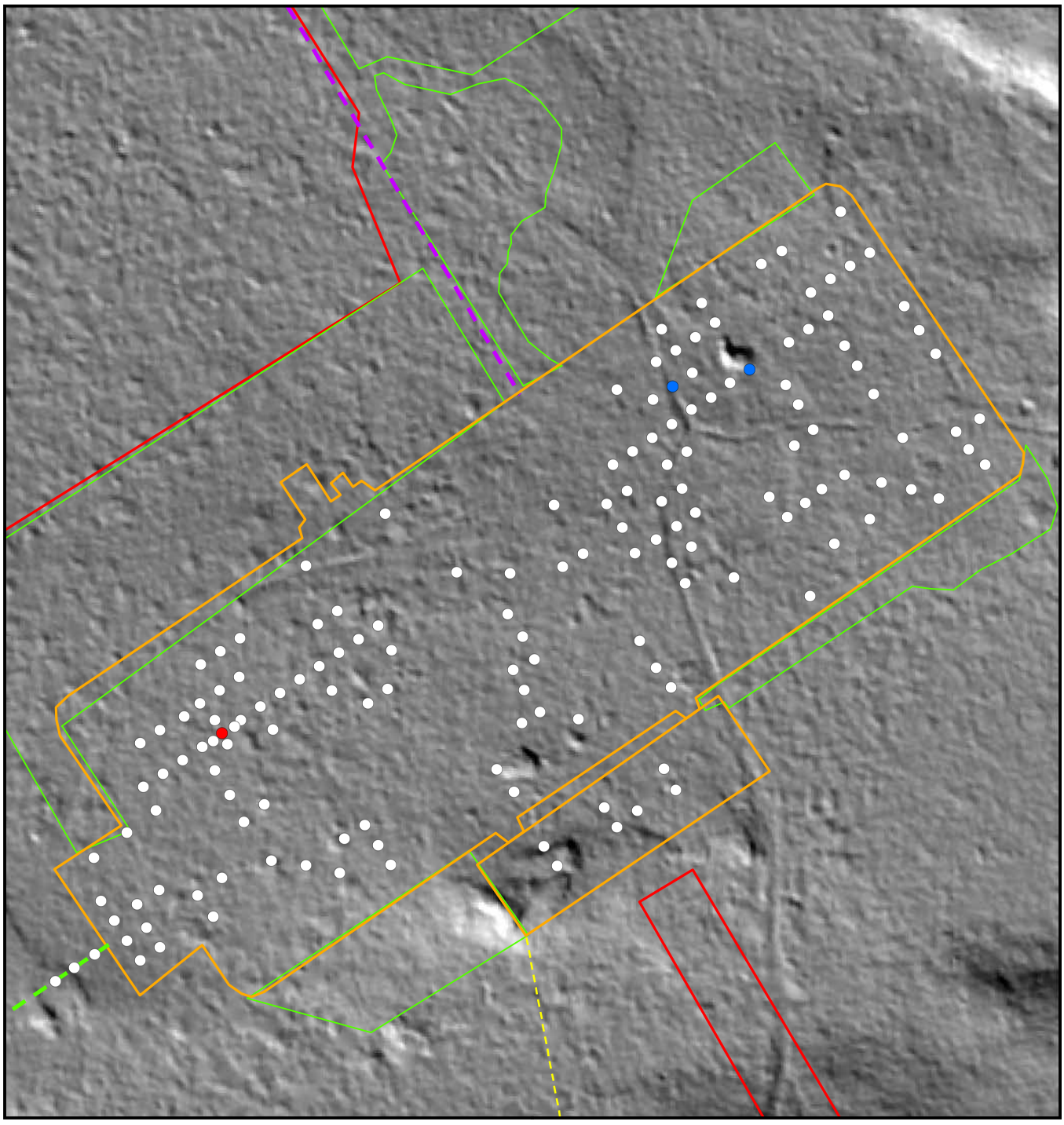
N W E S

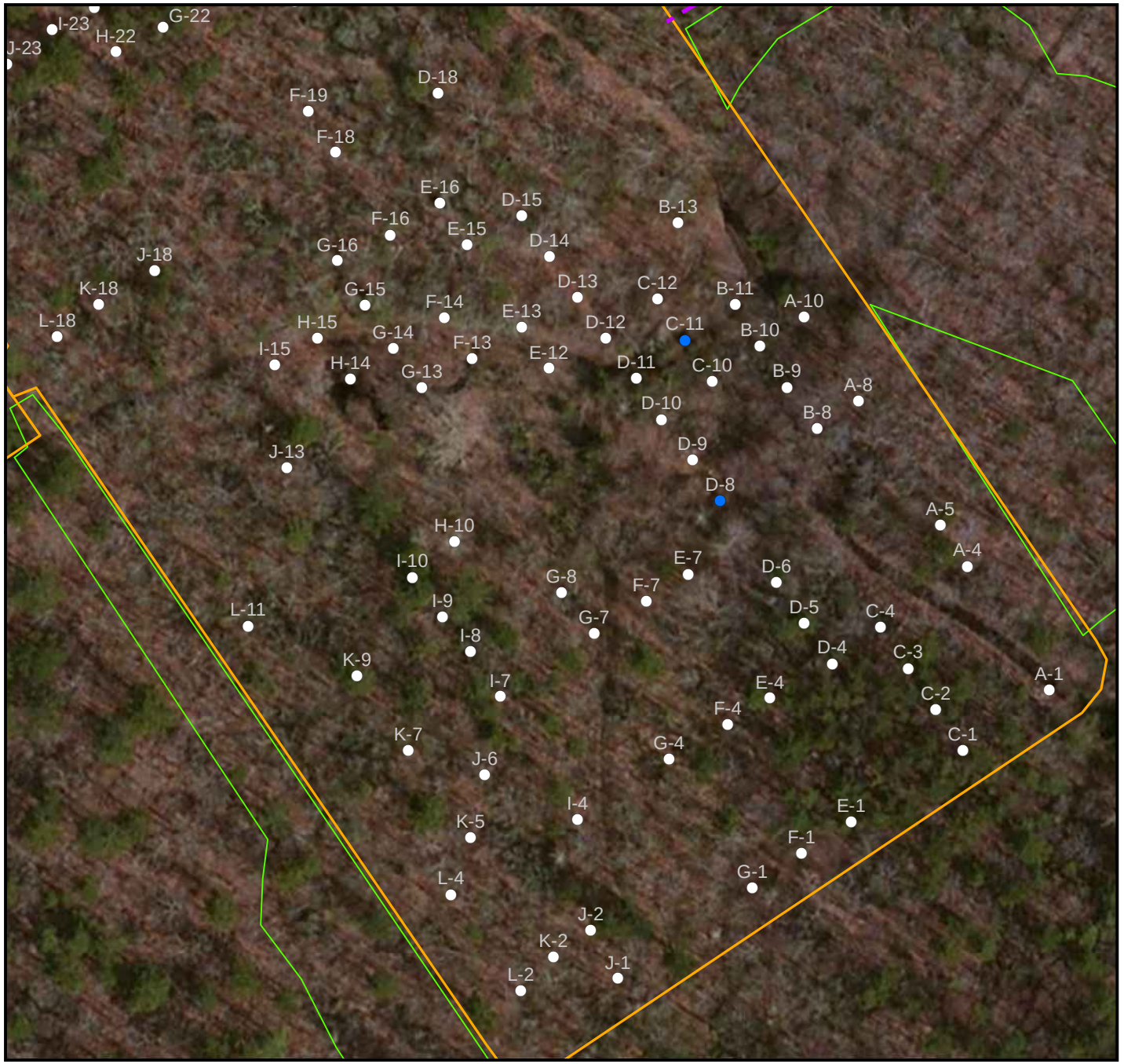
Results of the Switchyard Survey Area

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 24

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\15-69901_Figure24_Switchyard.mxd Gray & Pape Project 15-69901.001


LEGEND
ST- Negative
ST- Positive, Native American
ST- Positive, Historical
Access Road
New 345 KV Line
New Gas Line
August 2015 Survey Areas
Addendum 2015 Survey Areas
February 2016 Survey Areas
March 2016 Survey Areas
LiDAR Data
High : 254
Low : 4
N
E
S
W
0 20 40 Meters
0 100 200 Feet
Results of the Power Block
Survey Area on LiDAR
GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION
Figure 25



LEGEND

- ST- Negative
- ST- Positive, Native American
- ST- Positive, Historical
- Access Road
- New 345 KV Line
- New Gas Line
- August 2015 Survey Areas
- Addendum 2015 Survey Areas
- February 2016 Survey Areas
- March 2016 Survey Areas

0 10 20 Meters

0 40 80 Feet

N W E S

Results of the Power Block Survey Area

(South 1/3)

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 26

LEGEND

- ST- Negative
- ST- Positive, Native American
- ST- Positive, Historical
- Access Road
- New 345 KV Line
- New Gas Line
- August 2015 Survey Areas
- Addendum 2015 Survey Areas
- February 2016 Survey Areas
- March 2016 Survey Areas

0 10 20 Meters

0 40 80 Feet

N W E S

Results of the Power Block Survey Area

(Middle 1/3)

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 27

LEGEND

- ST- Negative
- ST- Positive, Native American
- ST- Positive, Historical
- Access Road
- New 345 KV Line
- New Gas Line
- August 2015 Survey Areas
- Addendum 2015 Survey Areas
- February 2016 Survey Areas
- March 2016 Survey Areas

0 10 20 Meters

0 40 80 Feet

N W E S

Results of the Power Block Survey Area

(North 1/3)

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 28

Plate 4. Area near ST D-35, view to the west.

Plate 5. Area near ST C-11 and D-8, view to the west. (Note the metal objects on the ground surface.)

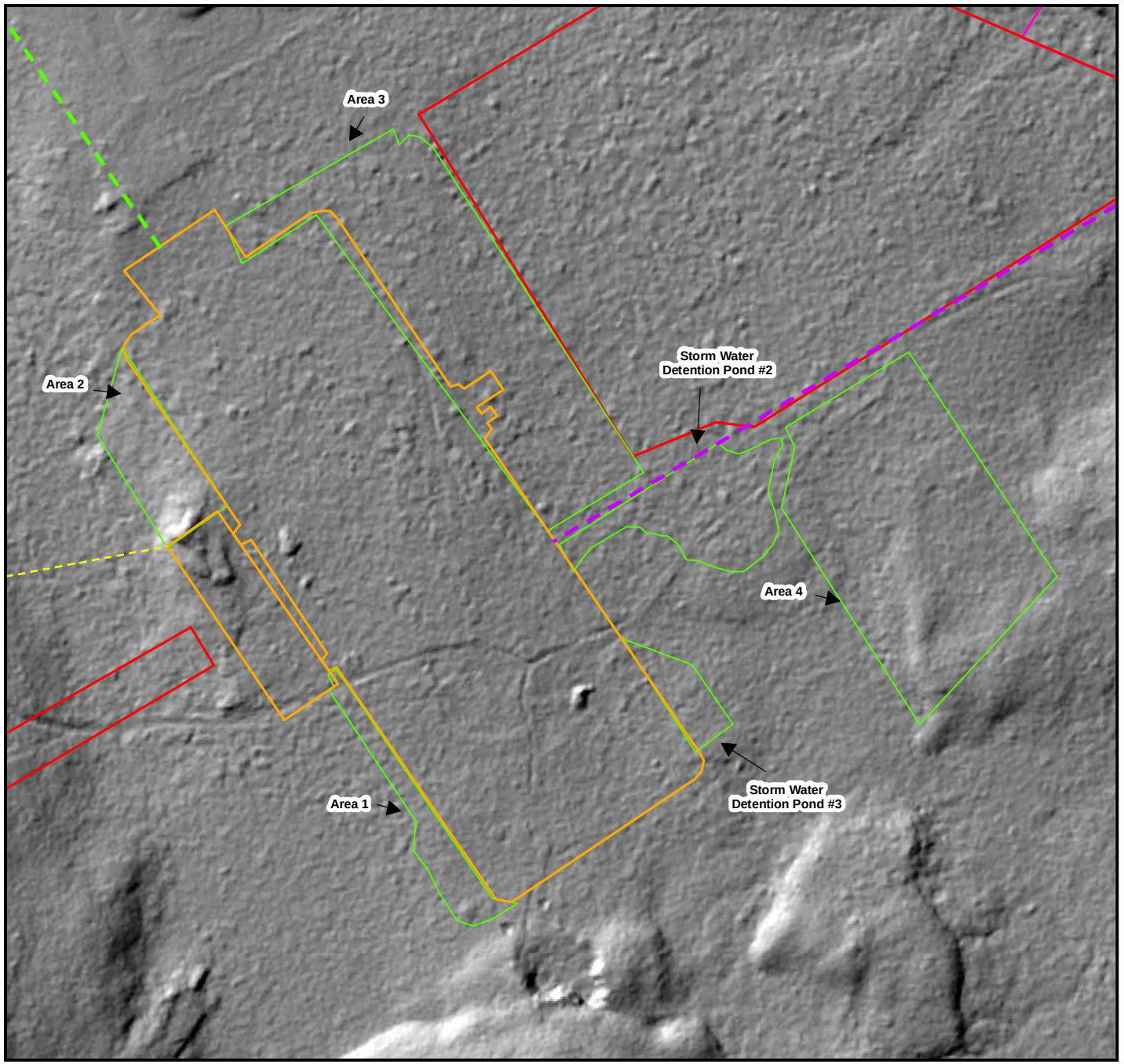
A structure is mapped in this location on the 1870 D. G. Beers map of Rhode Island, though a property owner is not listed (Figure 9). Though Native American material was recovered in ST D-35, the paucity and the lack of diagnostic materials suggests this isolated find lacks the ability to provide significant information pertaining to the Native American settlement or use of this area of Rhode Island. The historical materials recovered in ST C-11 and D-8 provide little information on the historical occupation of the site area. The general site location near these two STs appears to have been heavily disturbed by flooding events and possible razing and grading of the property. The paucity of materials and lack of intact structural remains suggest this site does not have the potential to aid in our understanding of historical settlement of the area. As such, no further survey is recommended for the power block survey area.

6.8 Switchyard/Power Block Expansion Areas

The proposed switchyard/power block area is located in the central portion of the 12.1-ha (30-ac.) parcel. It spans a wetland area in the southern portion to an upland setting with large glacial erratics and bedrock outcrops in the northern portion. The three expanded areas (Areas 1, 2 and 3) encompassed 2.61 ha (6.45 ac.). A total of 74 STs were excavated within the three expansion areas (Figures 29–32). The ST soil profiles exhibited an eroded or modified Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony soil series. Specifically, the A horizon consisted of a very dark grayish brown (10YR 3/2) fine sandy loam extending to approximately 10 cm (4 in.) below ground surface. This A horizon overlaid a Bw1 comprised of a dark yellowish brown (10YR 4/4) fine sandy loam that extended no greater than 30 cm (12 in.) below ground surface. This Bw1 underlain by a Bw2, also a dark yellowish brown (10YR 4/6) that extended between 30 and 64 cm (12 and 25 in.) below ground surface and overlaid the C horizon. The C horizon was comprised of a light olive brown (2.5Y 5/4) gravelly fine sandy loam. Excavation halted 10 cm (4 in.) into the C horizon or if an impasses created by rocks or roots was encountered. No Native American or historical cultural deposits were identified within the proposed switchyard survey area. No further survey is recommended.

6.9 Storm Water Detention Pond #2 Extension

The proposed switchyard is located in the southern portion of the 12.1-ha (30-ac.) parcel (Figure 33). It is immediately south of the switchyard/power block area and measures approximately 0.16 ha (0.40 ac.). It is directly bordered on the east and south by active wetland areas. The eastern part of this area slopes into these wetlands. A visual inspection of this area proved it to be heavily disturbed, as evidenced by the many push-piles observed. While disturbed soils were confirmed, no STs were excavated in this area. No Native American or historical cultural deposits were identified within the proposed switchyard survey area. No further survey is recommended.



LEGEND

- Access Road
- New 345 KV Line
- New Gas Line
- August 2015 Survey Areas
- Addendum 2015 Survey Areas
- February 2016 Survey Areas
- March 2016 Survey Areas

LiDAR Data

High : 254

Low : 4

0 20 40 Meters

0 100 200 Feet

N W E S

Results of Areas 1 through 4 on LiDAR

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 29

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\15-69901_Figure29_Areas1through4_LiDAR.mxd Gray & Pape Project 15-69901.001

LEGEND

- ST - Positive - Historical
- ST- Negative
- August 2015 Survey Areas
- Addendum 2015 Survey Areas

0 5 10 Meters

0 20 40 Feet

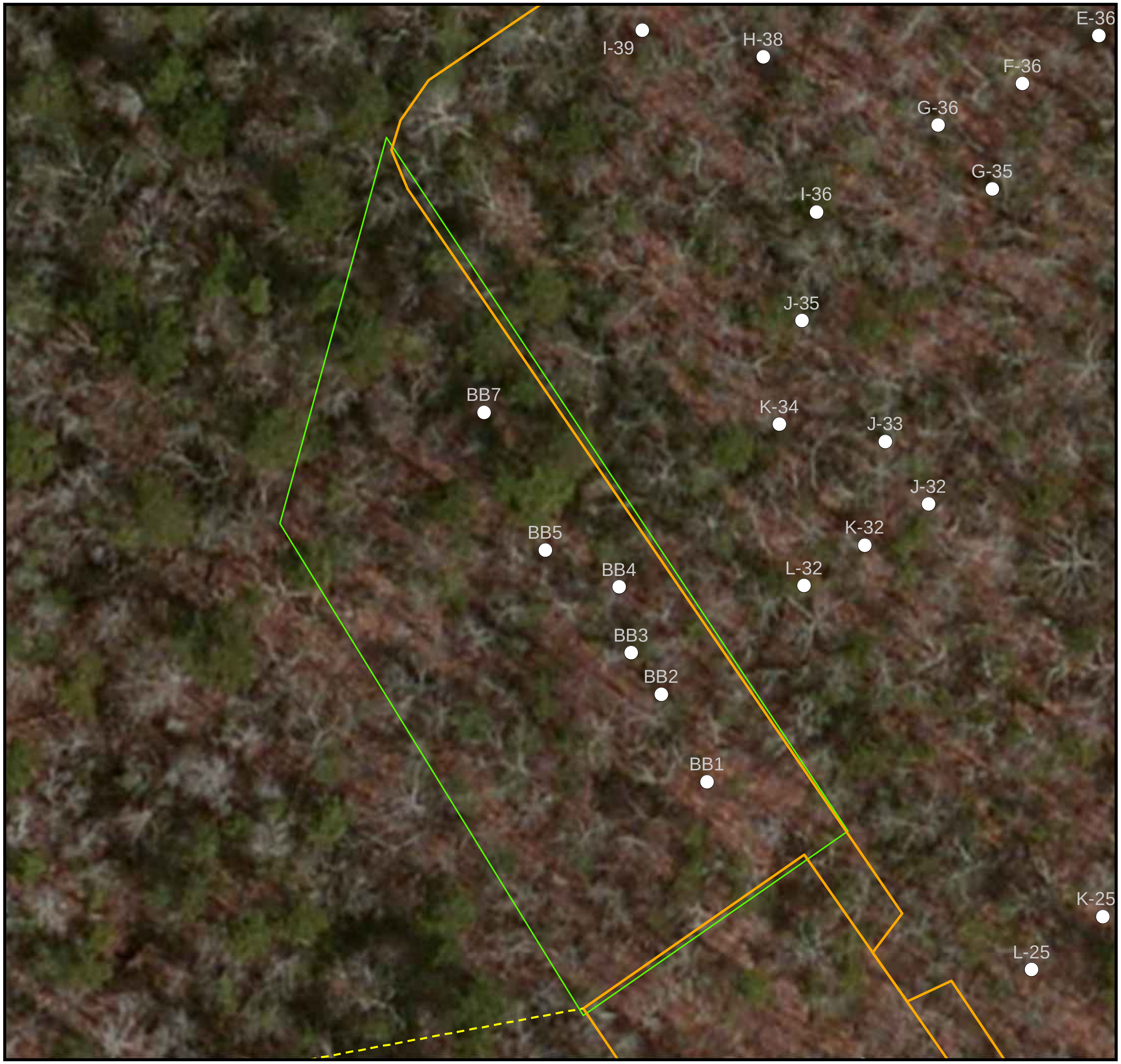
N W E S

Results of Area 1 Survey Area

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 30

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\15-69901_Figure30_Area1.mxd Gray & Pape Project 15-69901.001



LEGEND

- ST- Negative
- New 345 KV Line
- August 2015 Survey Areas
- Addendum 2015 Survey Areas

0 5 10 Meters

0 20 40 Feet

N W E S

Results of Area 2 Survey Area

GRAY & PAPE, INC.
ARCHAEOLOGY - HISTORY - HISTORIC PRESERVATION

Figure 31

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\15-69901_Figure31_Area2.mxd

Gray & Pape Project 15-69901.001

LEGEND

- ST - Positive - Native American
- ST- Negative
- Access Road
- August 2015 Survey Areas
- Addendum 2015 Survey Areas
- February 2016 Survey Areas

0 10 20 Meters

0 50 100 Feet

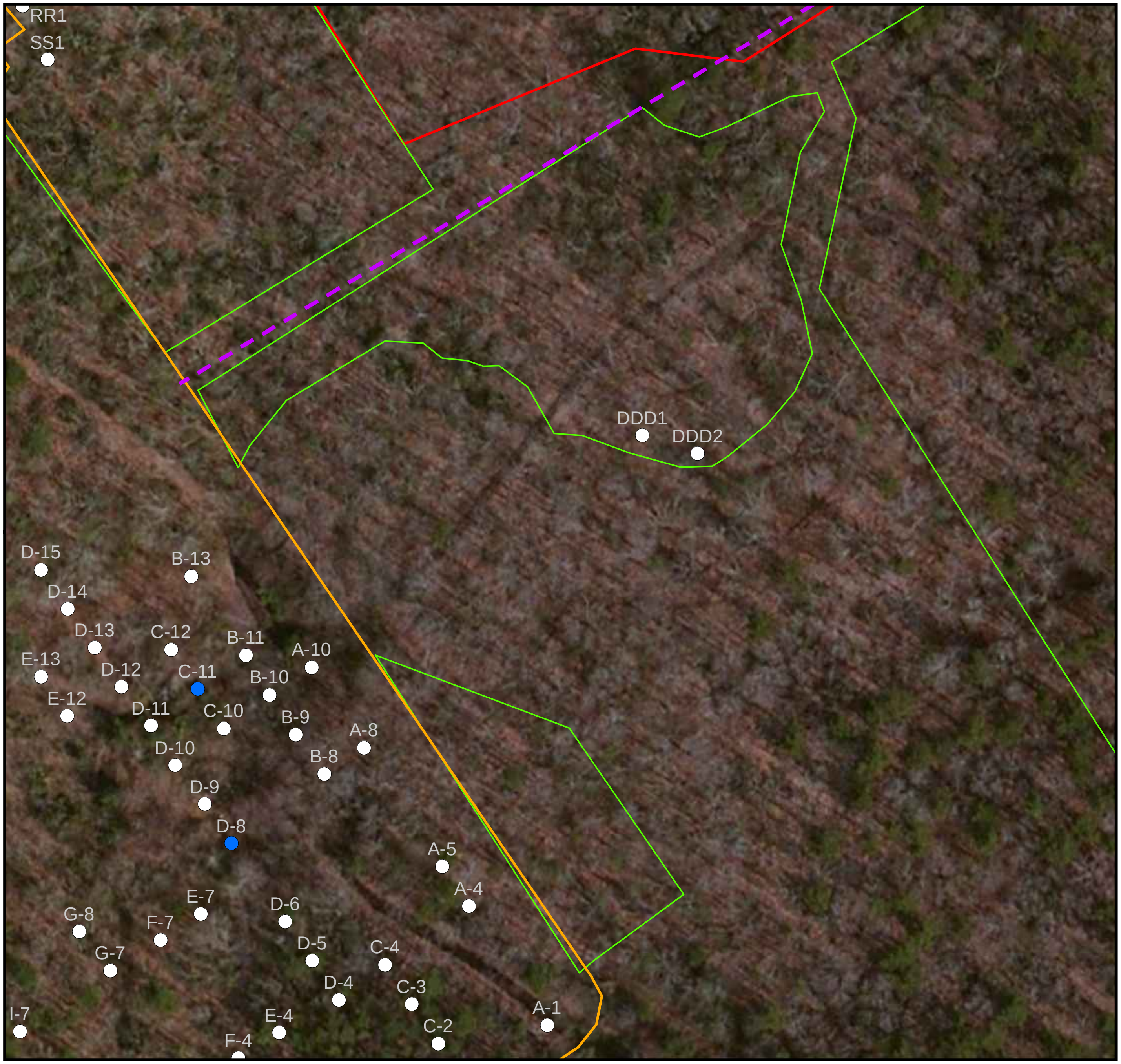
N W E S

Results of Area 3 Survey Area

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 32

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\15-69901_Figure32_Area3.mxd Gray & Pape Project 15-69901.001



LEGEND

- ST - Positive - Historical
- ST- Negative
- Access Road
- August 2015 Survey Areas
- Addendum 2015 Survey Areas
- February 2016 Survey Areas

0 10 20 Meters

0 50 100 Feet

N W E S

Results of Storm Water Detention Ponds #2 and #3 Survey

GRAY & PAPE, INC.
ARCHAEOLOGY - HISTORY - HISTORIC PRESERVATION

Figure 33

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\15-69901_Figure33_StormWater.mxd

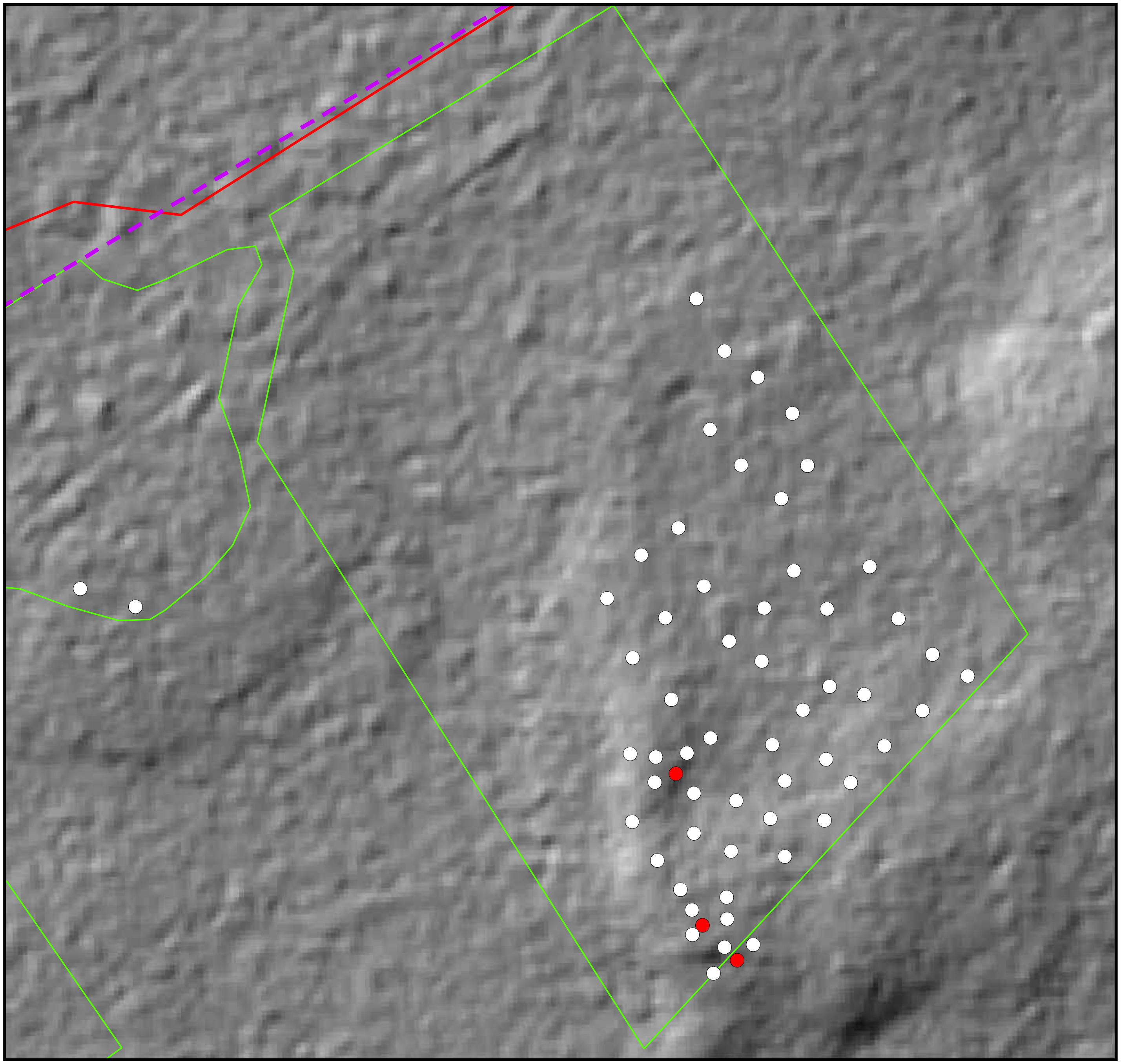
Gray & Pape Project 15-69901.001

6.10 Storm Water Detention Pond #3

This storm water pond is located in the southeastern portion of the 12.1-ha (30-ac.) parcel. It is south of the switchyard/power block area and measures approximately 0.52 ha (1.28 ac.). It is directly bordered on the north, east, and south by active wetland areas. A visual inspection of this area proved it to be heavily disturbed as evidenced by the many push-piles and ditches observed. A total of two STs were excavated within the storm water detention pond #3 survey area (Figure 33). as only a small section of the survey area appeared relatively undisturbed; only one of these exhibited an undisturbed profile. The ST soil profiles exhibited an eroded or heavily modified Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony soil series. Specifically, the A horizon consisted of a very dark grayish brown (10YR 3/2) fine sandy loam extending to approximately 12 cm (5 in.) below ground surface. This A horizon overlaid a Bw1 comprised of a dark yellowish brown (10YR 4/4) fine sandy loam that extended no greater than 22 cm (9 in.) below ground surface. This Bw1 overlaid a Bw2, also a dark yellowish brown (10YR 4/6), a loamy sand that at deepest extended to 53 cm (21 in.) below ground surface and overlaid the C horizon. The C horizon was comprised of a light gray (10YR 7/1) gravelly fine sand. Excavation halted 10 cm (4 in.) into the C horizon. No Native American or historical cultural deposits were identified within the proposed switchyard survey area. No further survey is recommended.

6.11 Southeastern Workspace/ Area 4

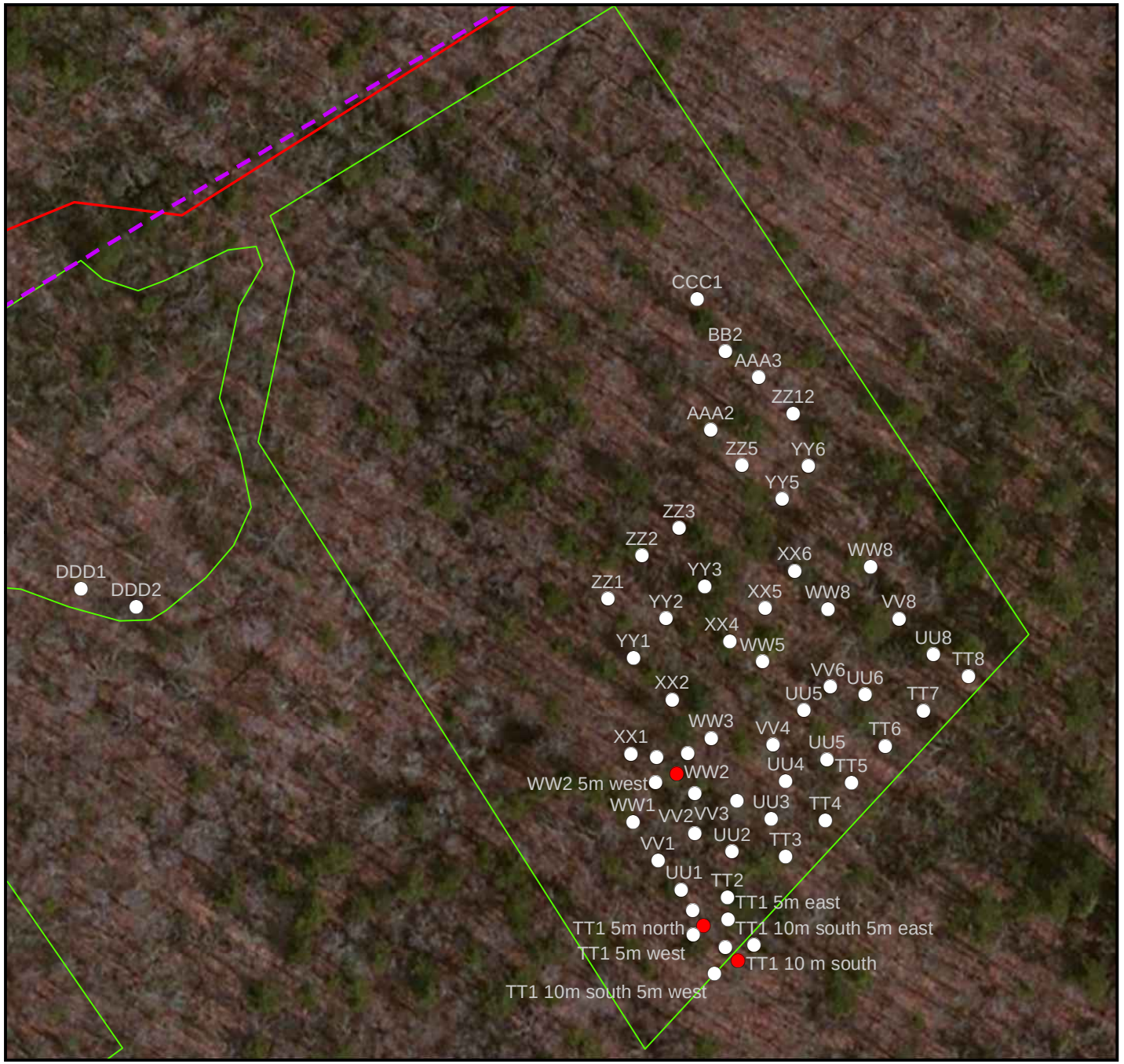
The Area 4 workspace is located in the southeastern portion of the 12.1-ha (30-ac.) parcel. It is south of the switchyard/power block area and measures approximately 1.92 ha (4.75 ac.). It is directly bordered on the north, east, south, and west by active wetland areas. Approximately the northern half of this survey areas was located in an active wetland. The eastern border of this area falls into a wetlands drainage head. A visual inspection of this area proved it to be minimally disturbed by logging activities as evidenced by relatively few push-piles. A total of 58 STs were excavated within this workspace survey area (Figures 34–35). The ST soil profiles exhibited a sometimes eroded or modified Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony soil series. Specifically, the A horizon consisted of a very dark grayish brown (10YR 3/2) fine sandy loam extending to approximately 12 cm (5 in.) below ground surface. This A horizon overlaid a Bw1 comprised of a dark yellowish brown (10YR 4/4) fine sandy loam that extended no greater than 33 cm (13 in.) below ground surface. This Bw1 overlaid a Bw2, also a dark yellowish brown (10YR 4/6), a loamy sand that extended at its greatest depth to 75 cm (30 in.) below ground surface and overlaid the C horizon. The C horizon was comprised of a light gray (10YR 7/1) gravelly fine sand. Excavation halted 10 cm (4 in.) into the C horizon.



Results of the Area 4 Survey Area on LiDAR

GRAY & PAPE, INC.
ARCHAEOLOGY - HISTORY - HISTORIC PRESERVATION

Figure 34



LEGEND

- ST - Positive - Native American
- ST- Negative
- Access Road
- Addendum 2015 Survey Areas
- February 2016 Survey Areas

0 10 20 Meters

0 50 100 Feet

N W E S

Result of Area 4 Survey Area

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 35

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\15-69901_Figure35_Area4.mxd

Gray & Pape Project 15-69901.001

Shovel tests ST TT-1 and ST WW-2 in the southwestern portion of the workspace survey area produced Native American artifacts (Figure 36). Additional radial STs were excavated at 5-m (16-ft.) and 10-m (32-ft.) intervals around the positive STs. ST TT-1 radial 10 m south proved to be positive for Native American artifacts as well. A total of six Native American artifacts, all lithic debitage, or the waste products of making or reworking stone tools, were recovered from this survey area (Table 3). This site is located on a higher surface than the surrounding landform, which is located just east of an active wetland area. The landform appears to be a remnant dune, which likely formed shortly after the last glacial period. This site was designated the Iron Mine Brook Dune site (RI 2757) (Plate 6).

Table 3. Native American Artifacts Recovered from the Iron Mine Brook Dune Site (RI 2757) Phase I archaeological identification survey

Shovel Test	Stratum/ Soil	Depth (cm below surface)	Artifact Class	Artifact Type	Raw Material	Count
ST TT-1	Stratum II/ B horizon	20–30	Debitage	Biface Thinning Flake	Rhyolite	2
		30–40	Debitage	Flake Fragment	Rhyolite	1
			Debitage	Biface Finishing Flake	Rhyolite	1
ST TT-1 10 Meters South	Stratum III/ B horizon	16–26	Debitage	Chip	Quartz	1
ST WW-2	Stratum II/ B horizon	10–20	Debitage	Flake Fragment	Quartzite	1
Total						**6**

Based on the original Phase I identification survey, little could be inferred about the Iron Mine Brook Dune site (RI 2757) other than that it was a location where stone tools were worked and possibly used. No diagnostic cultural material was recovered to provide dates of occupation or use. However, due to the limited scope of a Phase I archaeological identification survey and the potential to aid in understanding Native American occupation in Burrillville and northwestern Rhode Island, Gray & Pape recommended avoidance or additional archaeological investigations. Iron Mine Brook Dune site (RI 2757) was subjected to a Phase II archaeological site examination, the results of which are presented in Appendix B.

LEGEND

- ST - Positive - Native American
- ST- Negative
- Iron Mine Brook Dune Site Phase I Boundary
- Addendum 2015 Survey Areas

0 2 4 Meters

0 10 20 Feet

N
W E
S

Iron Mine Brook Dune Site

GRAY & PAPE, INC.
ARCHAEOLOGY - HISTORY - HISTORIC PRESERVATION

Figure 36

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\15-69901_Figure36_Site.mxd

Gray & Pape Project 15-69901.001

Plate 6. Iron Mine Brook Dune Site, view to the southwest.

6.12 Upland Survey Area

The Upland Survey Area measures approximately 8.3 ha (20.5 ac.). A wetland bisects this survey area through the middle. The Project site plan map estimates this wetland as approximately 3.2 ha (8.0 ac.); however, archaeologically, the soils located in the northeastern portion of the survey area were hydric-like, showing signs of redoximorphic features. Additionally, much of the area had visible water on the ground surface. It may be that the winter season is a more wet season; however, the presence of wetland-like soils suggests this was not a prime area for settlement both historically or during the pre-Contact period. The area has also been heavily disturbed by logging activities as presented by an undulating ground surface with pushpiles (Plate 7).

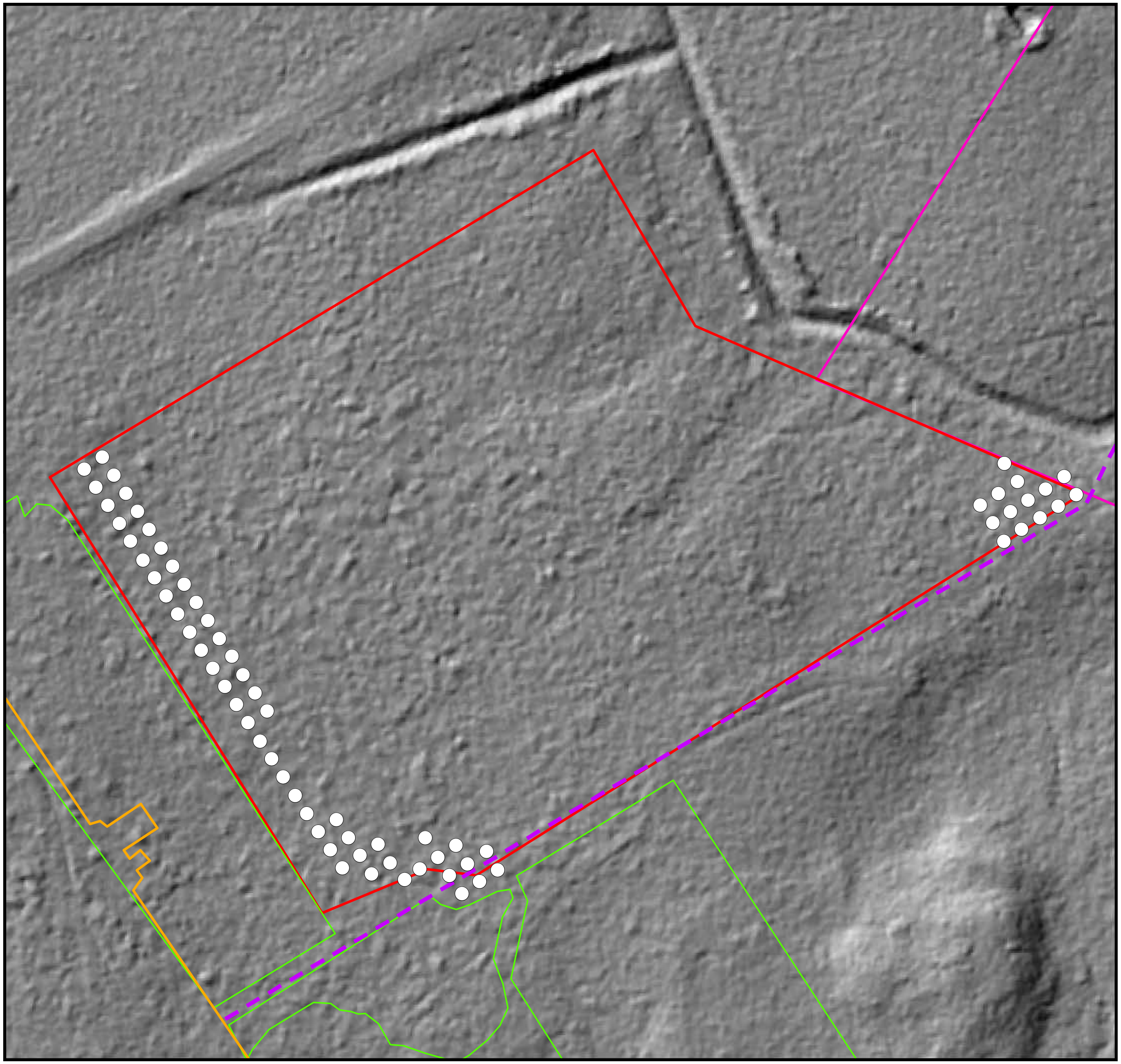
In total, 70 STs were excavated within the Upland Survey Area (Figures 37–38). The ST soil profiles that did not consist of wetland like soils exhibited modified Ridgebury, Leicester, and Whitman soils, 0–8 percent slopes, extremely stony soil series (Plate 8). Specifically, the A horizon consisted of a black (10YR 2/1) fine sandy loam extending to approximately 13 cm (5 in.) below ground surface. This A horizon overlaid a Bw horizon comprised of brown (10YR 4/3) sandy loam that extended no greater than 37 cm (15 in.) below ground surface. This Bw horizon was underlain by a Bg horizon comprised of a dark gray (10YR 4/1) gravelly sandy loam. It extended on average to approximately 55 cm (22 in.) below ground surface. This overlaid the C horizon, which consisted of a gray (5Y 5/1) gravelly sandy loam. Excavation halted 10 cm (4 in.) into the C horizon or if an impasses created by rocks or roots was encountered. Shovel Test soil profiles exhibiting wetland-like soils typically consisted of a gray (10YR 6/1) sand mottled with a brownish yellow (10YR 6/6), yellowish brown (10YR 5/6), and dark yellowish brown (10YR 4/4) sand (Plate 9). These soils were often wet at the time of excavation. No Native American or historical cultural deposits were identified within the proposed Upland Survey Area. No further survey is recommended.

6.13 kV Line Survey Area

The kV Line Survey Area is located to the west of the Upland Survey Area and measures approximately 1.4 km (0.8 mi.) in length (Figures 39–40). The survey included a single transect down the center of the line, where the proposed structures would be. The northwest portion of the line is generally sloping to the south and southeast. A large wetland is located both northwest and southeast of, as well as within the extant Spectra Energy Gas Line (Plates 10–11).

In total, 15 STs were excavated along the proposed kV Line Survey Area. The ST soil profiles that did not consist of wetland like soils exhibited modified Canton and Charlton fine sandy loams, very rocky, 3–15 percent slopes (Plate 12). Specifically, the STs typically exhibited an O-A-Bw1-Bw2-C horizon matrix. The O horizon was comprised of a black (10YR 2/1) sandy loam that extended approximately 4 cm (2 in.) below ground surface. It overlaid a dark brown (10YR 3/3) fine sandy loam A horizon. The A horizon typically extended to approximately 10 cm (4 in.) below ground surface. The Bw1 was comprised of a yellowish (10YR 5/6) fine sandy loam that extended to approximately 18 cm (7 in.) below ground surface. The Bw2 was a light olive brown (2.5Y 5/4) gravelly fine sandy loam that was approximately 40 cm (16 in.) thick.

Plate 7. Upland Survey Area, general view.



LEGEND

- ST - Negative
- Access Road
- August 2015 Survey Areas
- Addendum 2015 Survey Areas
- February 2016 Survey Areas
- March 2016 Survey Areas

LiDAR Data

High : 254

Low : 4

0 20 40 Meters

0 100 200 Feet

N E S W

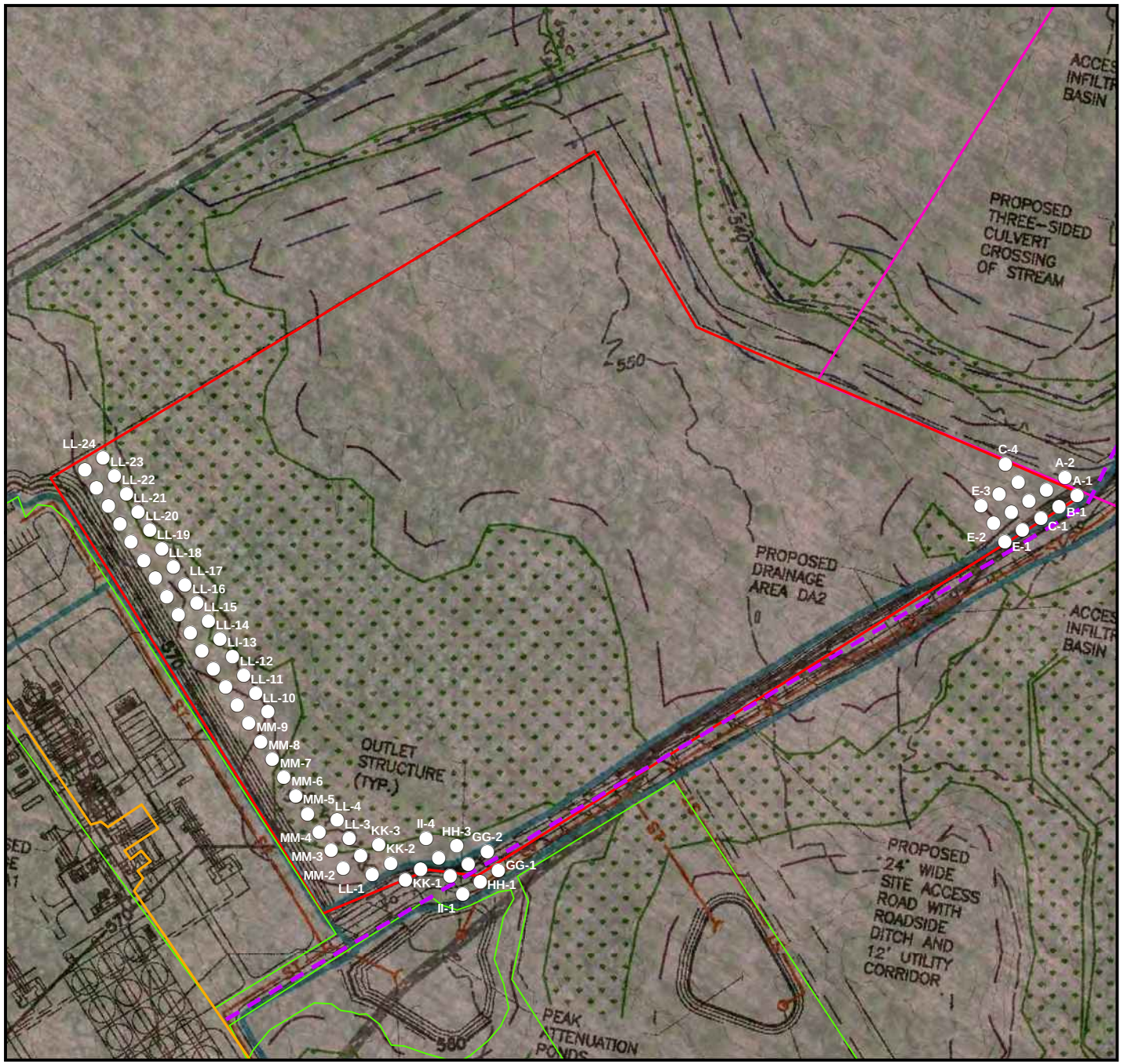
Results of Upland Survey Area on LiDAR

GRAY & PAPE, INC.
ARCHAEOLOGY - HISTORY - HISTORIC PRESERVATION

Figure 37

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\15-69901_Figure37_Upland_Survey_Area_LiDAR.mxd

Gray & Pape Project 15-69901.001



LEGEND

- ST - Negative
- Access Road
- August 2015 Survey Areas
- Addendum 2015 Survey Areas
- February 2016 Survey Areas
- March 2016 Survey Areas

0 20 40 Meters

0 100 200 Feet

N W E S

Results of Upland Survey Area

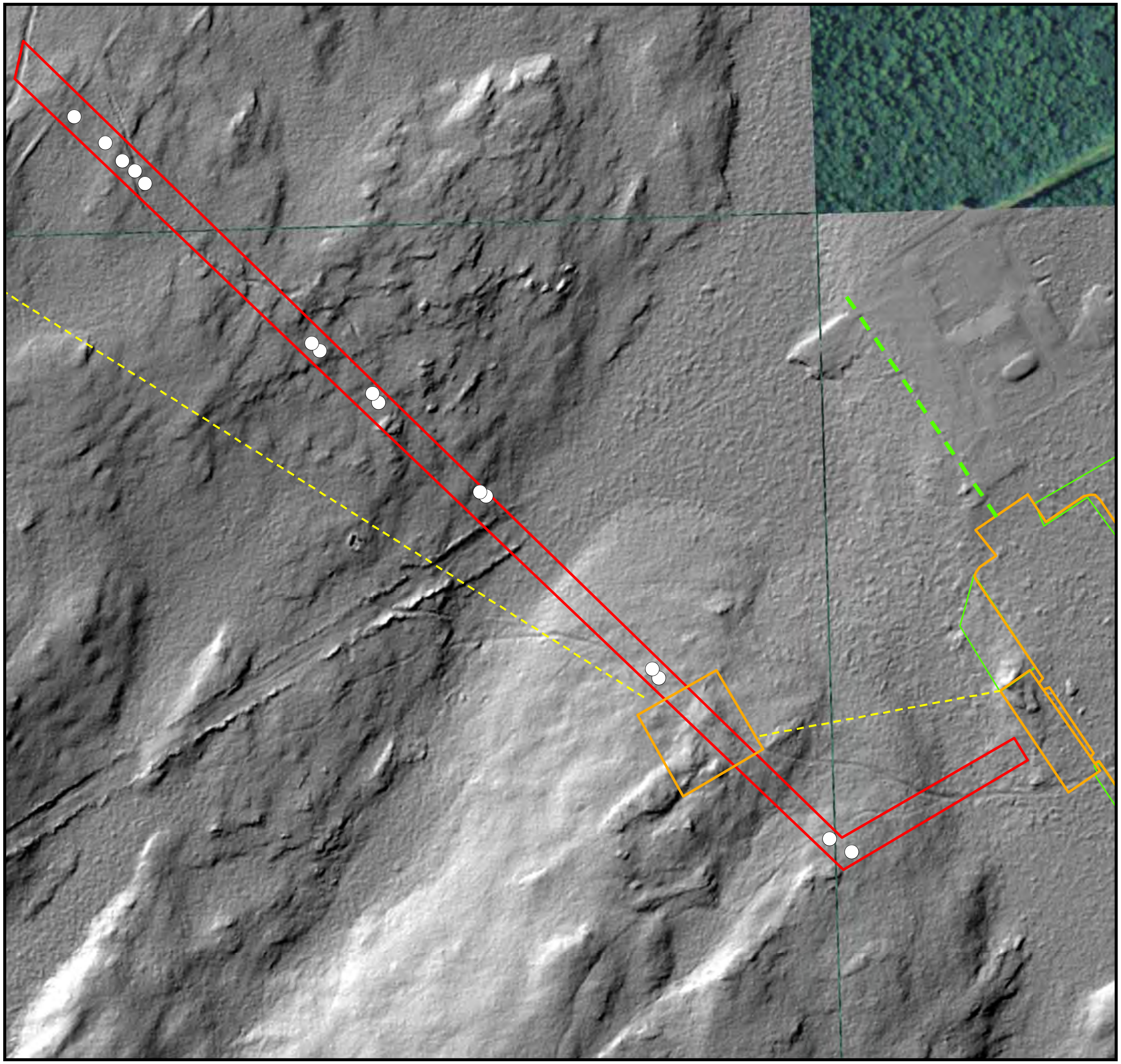
GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 38

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\15-69901_Figure38_Upland_Survey_Area.mxd Gray & Pape Project 15-69901.001

Plate 8. Upland Survey Area, Shovel Test AA-1, located in the southeastern portion of the survey area. (Note the Ridgebury soil profile.)

Plate 9. Upland Survey Area, Shovel Test GG-3, located in the southwestern portion of the survey area. (Note the wetland-like soils.)



Results of kV Line Survey Area on LiDAR

GRAY & PAPE, INC.
ARCHAEOLOGY - HISTORY - HISTORIC PRESERVATION

Figure 39

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\15-69901_Figure39_kV_SurveyLine_LiDAR.mxd

Gray & Pape Project 15-69901.001

LEGEND

- ST - Negative
- New 345 KV Line
- New Gas Line
- August 2015 Survey Areas
- Addendum 2015 Survey Areas
- February 2016 Survey Areas

0 50 100 Meters

0 200 400 Feet

N W E S

Results of kV Line Survey Area

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 40

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\15-69901_Figure40_KV_SurveyLine.mxd Gray & Pape Project 15-69901.001

Plate 10. kV Line Survey Area at the Spectra Energy Gas Line, general view.

Plate 11. kV Line Survey Area approximately 40 meters (131 feet) north of the Spectra Energy Gas Line, general view.

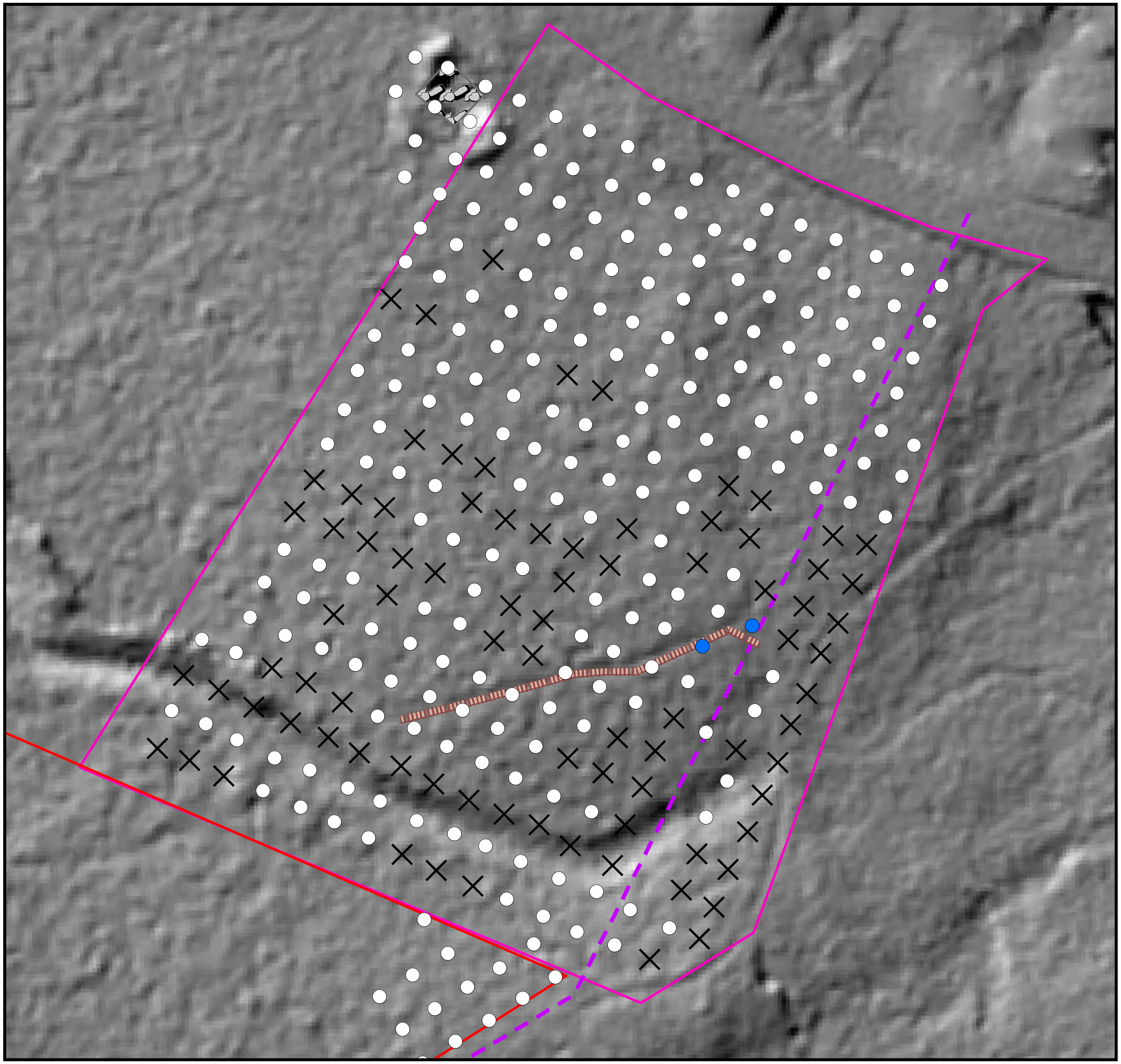
Plate 12. kV Line Survey Area, Shovel Test B-10, located approximately 268 meters (880 feet) northwest of the Spectra Energy Gas Line. (Note the Charlton soil profile.)

It overlaid the C horizon, a grayish brown (2.5Y 5/2) gravelly sandy loam. Excavation halted 10 cm (4 in.) into the C horizon or if an impasse created by rocks or roots was encountered. Shovel test soil profiles exhibiting wetland-like soils typically consisted of a gray (10YR 6/1) sand mottled with a brownish yellow (10YR 6/6), yellowish brown (10YR 5/6), and dark yellowish brown (10YR 4/4) sand. These soils were often wet at the time of excavation. No Native American or historical cultural deposits were identified within the proposed Upland Survey Area. No further survey is recommended.

6.14 137-meter (450-foot) Frontage Survey Area

The 137-m (450-ft.) Frontage Survey Area is immediately south by southwest of Wallum Lake Road and approximately 127 m (418 ft.) south by southeast of Algonquin Lane. The survey area measures approximately 3.2 ha (8.0 ac.) in size. A delineated wetland bisects this survey area towards the western edge (Figures 41–42). The Project site plan map maps this wetland as approximately 0.4 ha (1.0 ac.); however, archaeologically, the soils located in the western portion of the survey area, immediately east of the unnamed tributary to Iron Mine Brook were hydric like, showing signs of redoximorphic features. Additionally, much of the survey area encountered the water table between 30 and 50 cm (12 and 20 in.) below ground surface. It may be that the archaeological survey was completed in a wet season; however, the presence of wetland-like soils suggests this was not a prime area for settlement both historically or prehistorically. The area has also been heavily disturbed by logging activities as presented by an undulating ground surface with pushpiles (Plate 13).

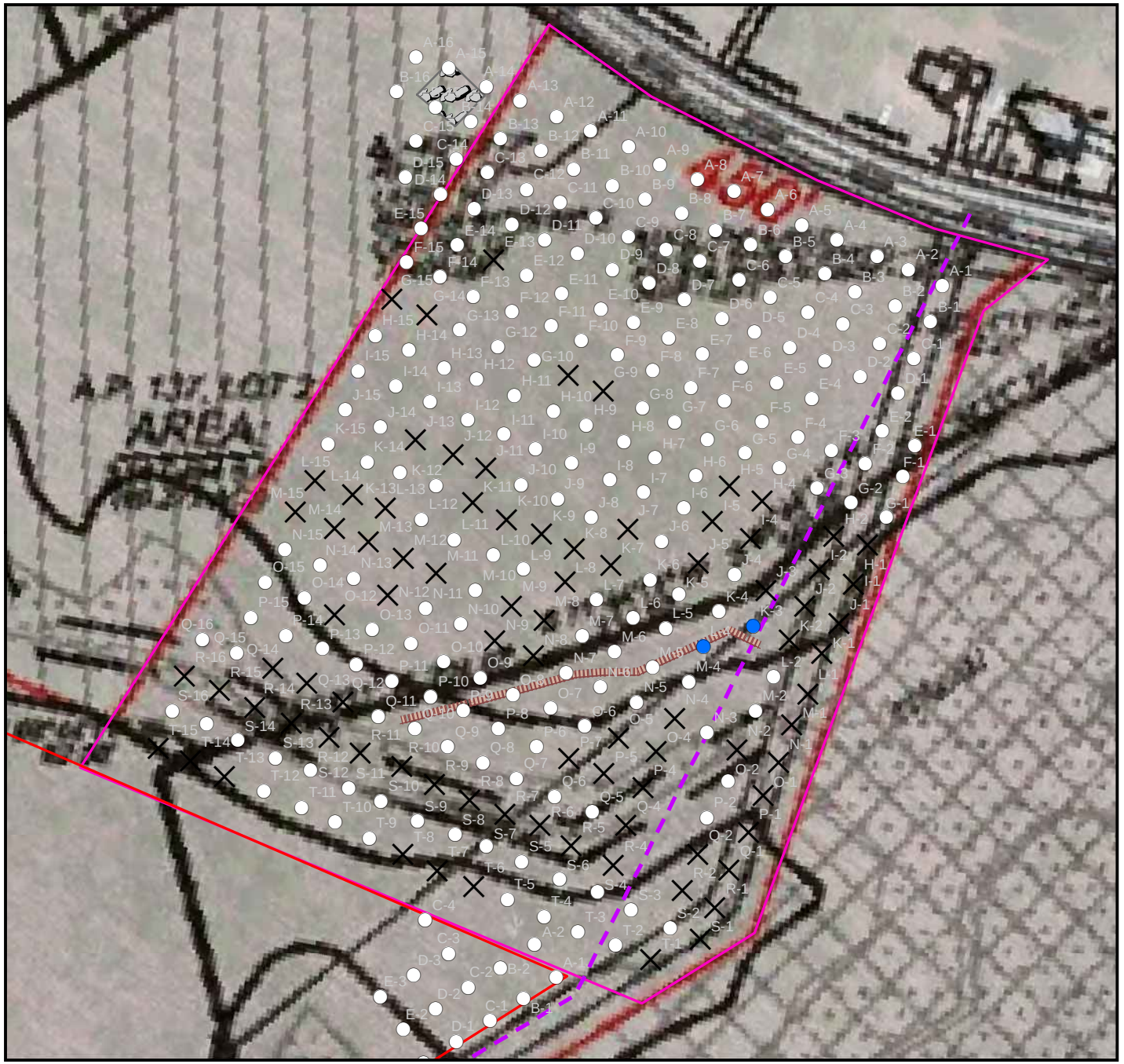
In total, 208, out of a possible 292, STs were excavated within the Frontage Survey Area (Figure 43). The ST soil profiles that did not consist of wetland like soils exhibited modified Woodbridge soils. These soils were comprised of an A-B1-B2-C soil horizon matrix. The A horizon consisted of a very dark grayish brown (10YR 3/2) fine sandy loam. Typically, the A horizon extended between 7 and 17 cm (3 and 7 in.) below ground surface. The B1 horizon extended on average to approximately 46 cm (18 in.) below ground surface. This B1 horizon was comprised of dark yellowish brown (10YR 4/4) fine sandy loam. The B2 horizon, comprised of light olive brown (2.5Y 5/4) fine sandy loam, extended on average to approximately 57-67 cm (22-26 in.) below ground surface. The C horizon was excavated to a maximum depth of 78 cm (31 in.) below ground surface and consisted of a light olive brown (2.5Y 5/4) gravelly sandy loam. The soils immediately adjacent to the unnamed tributary, as well as in the northern portion of the survey area were typically wet and encountered ground water between 2 and 40 cm (0.8 and 16 in.) below ground surface.



Results of 137-Meter (450-Foot) Frontage Survey Area on LiDAR

GRAY & PAPE, INC.
ARCHAEOLOGY - HISTORY - HISTORIC PRESERVATION

Figure 41



Results of 137-Meter (450-Foot) Frontage Survey Area on the Engineer Drawing

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 42

Plate 13. Frontage Survey Area (137 meters [450 feet]), general view. (Note the disturbances and likely logging activity disturbance in the form of an undulating ground surface.)

Results of 137-Meter (450-Foot) Frontage Survey Area

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 43

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\15-69901_Figure43_Frontage_SurveyArea.mxd

Gray & Pape Project 15-69901.001

No Native American cultural deposits were identified within the 137-m (450-ft.) Frontage Survey Area. Two positive ST, K-3 and L-4 were excavated within this survey area. Shovel Test K-3 yielded two small fragments of flat glass, likely window glass, which based upon their thickness date to approximately 1889–1890 (Moir 1987). The ST is located immediately adjacent to an old road. The artifacts were recovered from the A horizon and do not appear to be associated with structural remains. Shovel Test L-4 yielded a small fragment of slag. Given their association with an old road and lack of intact structural remains, Gray & Pape recommends no further archaeological survey or investigation in this area. An earthen berm and stone foundation, and associated concrete caisson well, were identified at the northeastern terminus of the 137-m (450-ft.) Frontage Survey Area. No artifacts were identified on the surface surrounding these foundation remains or within the 11 excavated STs immediately adjacent to the foundations. The stone foundation is comprised of mostly dry-laid stacked stone that does not appear to have been worked in order to construct (e.g., no shaping of the stone) (Plates 14–15). Evidence is present of the use of mortar in the southeast corner of the remnant foundation, but nowhere else. The earthen berm surrounds the entire structure (Plate 16). Based on the excavated STs located within the earthen berm, the berm is comprised of soils that have been excavated from the location of the structural foundation that have since been tossed to the side to create an earthen berm (e.g. the soils are reversed/upside down). Shovel tests revealed a reverse stratigraphy on the earthen berm, with a B-B-A-A-B-C soil horizon matrix. Concrete caisson wells typically indicate a late nineteenth or early twentieth century construction, however, it is unknown if the well was built contemporaneously with the foundation or post-dates it. Gray & Pape recommends to avoid the structural location and an approximately 30-m (99-ft.) radius buffer area. If this area cannot be avoided, Gray & Pape recommends additional archaeological investigations. No further survey is recommended for the remaining portions of the Frontage Survey Area.

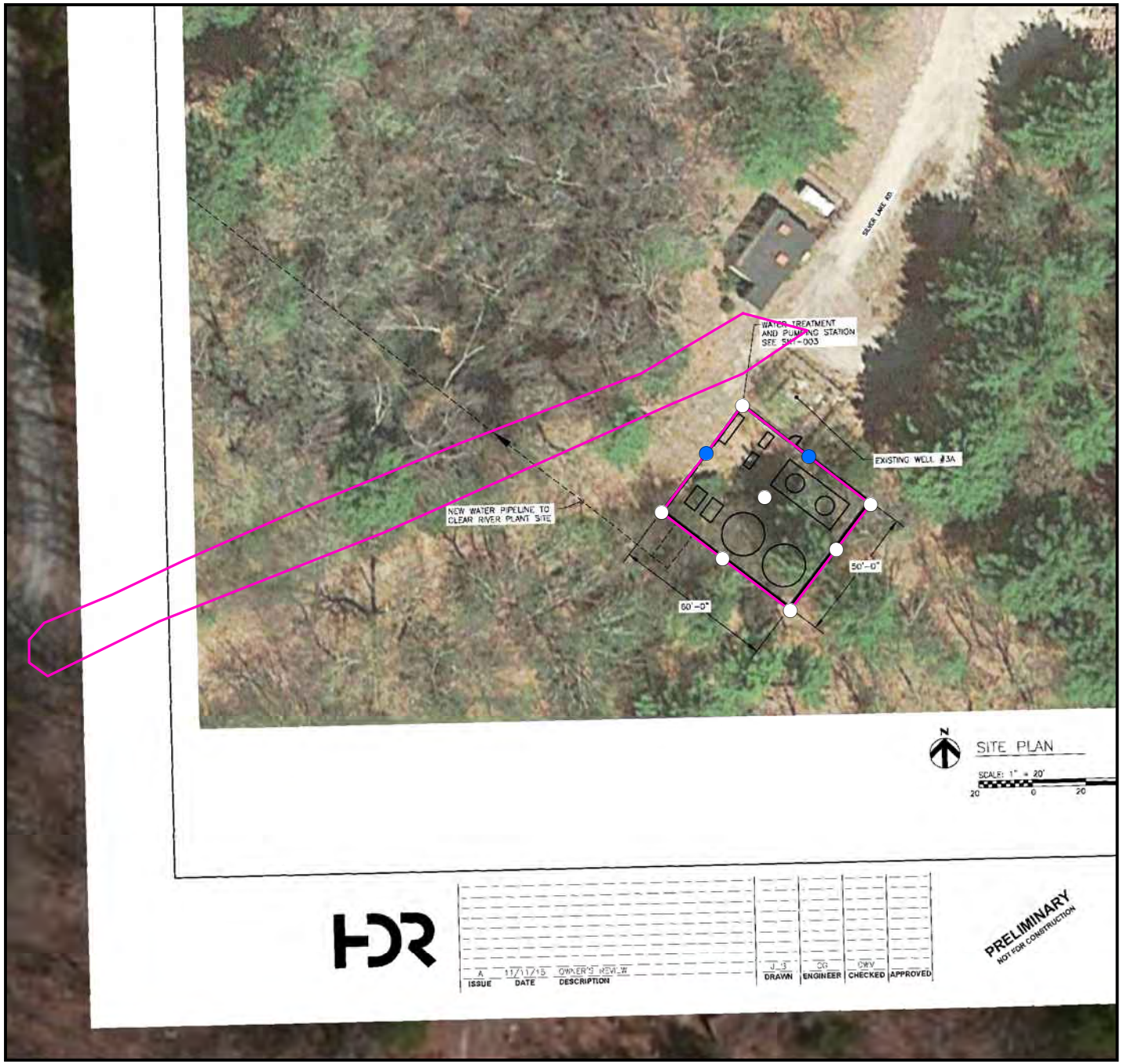
6.15 PUD Well Site and PUD Well Site Utilities Line

The PUD Well Site and Well Site Utilities line survey area is located immediately east of Silver Lake Avenue, immediately north of the Pascoag Cemetery, and immediately southwest of the extant PUD well site in the village of Pascoag (Figures 44–45). The well site location measures approximately 0.04 ha (0.10 ac.) in size while the utilities line measures approximately 111 m (365 ft.) in length. The well site itself is situated on two landforms. The lower landform includes the western half of the well site and the utilities line survey area and is situated in a terrace of the Pascoag River, which is approximately 250 m (810 ft.) northwest (Plate 17). The eastern half is situated on an upland landform (Plate 18). The area has been heavily disturbed historically and during modern times. Specifically, an extant well, utilities/pump house, and access road are located adjacent to the survey area, and their construction has heavily affected the property. Historically, an old road bisects the survey area in the upland setting. According to town historians (Betty Mencucci, personal communication) a no longer extant trolley line also existed in this location around the turn of the twentieth century. Evidence of this was recovered in the form of railroad bolts found along the flattened rail bed (Plate 19). In general, this property was located immediately adjacent to historical North Main Street and the cemetery and the survey area exhibits a century of trash dumping due to nearby historical structures.

Plate 14. Dry-laid stone foundation identified in the northeastern portion of the Frontage Survey Area, view to the northeast.

Plate 15. Dry-laid stone foundation identified in the northeastern portion of the Frontage Survey Area, view to the southeast.

Plate 16. Earthen berm that surrounds the dry-laid stone foundation identified in the northeastern portion of the Frontage Survey Area, view to the north.



LEGEND

- Positive - Historical
- Negative
- March 2016 Survey Areas

0 10 20 Meters

0 50 100 Feet

N W E S

Results of the PUD Well Site and Utilities Line Survey Area on the Engineering Drawing

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure 44

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\15-69901_Figure44_PUD_WellSite_onEngineering.mxd Gray & Pape Project 15-69901.001

Results of the PUD Well Site and Utilities Line Survey Area

GRAY & PAPE, INC.
ARCHAEOLOGY - HISTORY - HISTORIC PRESERVATION

Figure 45

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\15-69901_Figure45_PUD_WellSite.mxd

Gray & Pape Project 15-69901.001

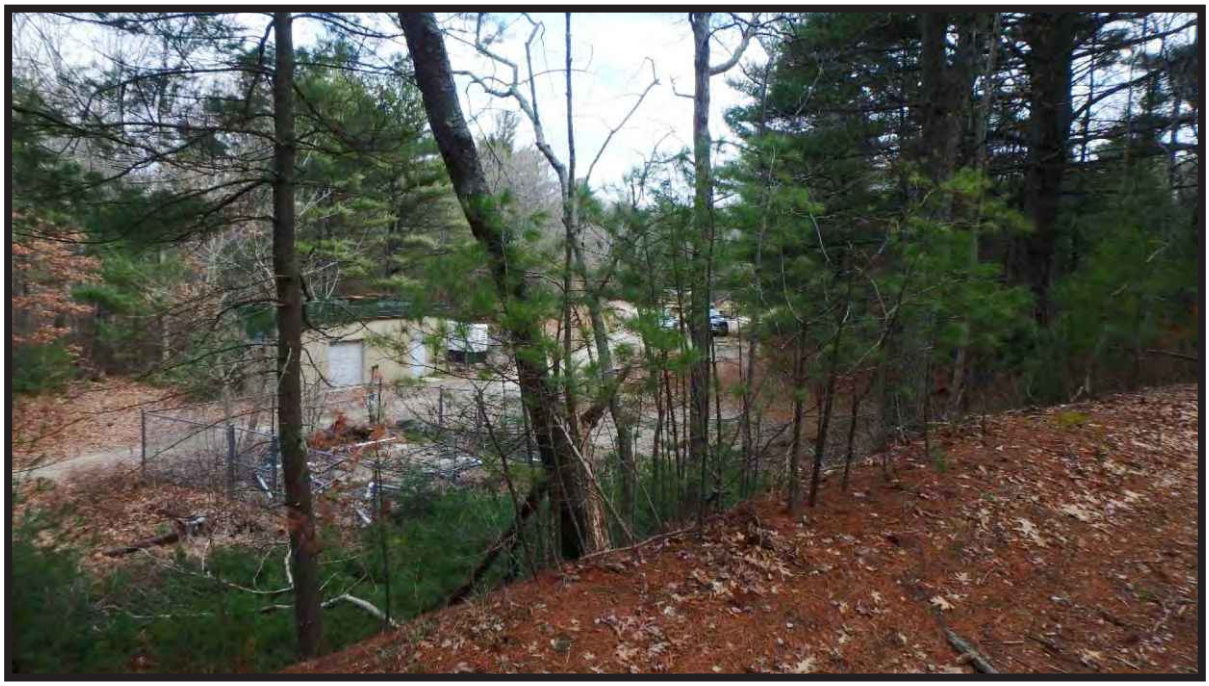


Plate 17. Lower landform for the PUD Well Site, view to the northwest.

Plate 18. Upper landform for the PUD Well Site, view to the east.
Note the cemetery in the far reaches of the photograph.)

Plate 19. Photograph showing the no longer extant trolley line adjacent to the cemetery and on the upland landform of the PUD Well Site.

In total, nine, out of a possible nine, STs were excavated within the PUD Well Site Survey Area, and zero out of 10 were excavated for the PUD Well Site Utilities Line Survey Area (Figure 45). The USDA maps the soils at the PUD Well site and Utilities line as largely comprised of pits and gravels. The excavated STs confirmed this. The survey area, as mentioned above, has been heavily disturbed. Multiple layers of fill were identified in each of the excavated nine STs. The excavated depths ranged between 59 and 80 cm (22 and 31 in.) below ground surface with a range of soil horizon matrices identified (e.g., A1-A2-A3-B1-B2-C, A-B1-B2-C, and A-B-C).

Shovel Tests A-2 and B-1 yielded a higher density of cultural material which was collected (Table 4), but nearly every other ST excavated in this survey area also yielded modern bottle glass, coal, or miscellaneous metal fragments. The majority of the material recovered is not diagnostic, though several fragments are which indicated refuse discarding in this location from the mid-nineteenth century to present.

Table 4. Artifacts Recovered from STs at the PUD Well Site Survey Area

Shovel Test	Stratum/ Soil	Depth (cm below surface)	Functional Group	Material/ Type	Variety/Form	Count
A-2	Stratum II/ A horizon	20–45	Kitchen	Ceramic	Whiteware, undecorated body fragments	3
					Whiteware, undecorated base fragment	1
					Whiteware, medium blue transfer print rim fragment	1
				Glass	Bottle/Jar, amber molded base fragment "…D April 19 189…" embossed on base (Old Vinol medicine bottle)	1
					Unidentified, aqua body fragments	2
					Unidentified, colorless body fragments	4
					Plate/Cup, turn-or-paste-molded, colorless rim fragment	1

Table 4. Artifacts Recovered from STs at the PUD Well Site Survey Area						
Shovel Test	**Stratum/ Soil**	**Depth (cm below surface)**	**Functional Group**	**Material/ Type**	**Variety/Form**	**Count**
					Bottle/Jar, colorless, wide mouthed threaded jar opening	1
					Bottle/Jar, colorless paneled body fragments	2
					Bottle/Jar, colorless, molded base fragment	1
			Furniture	Glass	Lamp chimney glass fragment	1
ST A-2 Total						18
B-1	Stratum III/ A horizon	23–55	Military	Metal	Bullet	1
			Kitchen	Ceramic	Whiteware, undecorated body fragments	2
				Glass	Unidentified aqua body fragments	4
					Unidentified, frosted, colorless body fragments	6
					Unidentified, solarized amethyst, body fragments	2
					Unidentified, dark aqua body fragments	2
					Unidentified, colorless body fragments	6
					Bottle/Jar, colorless, neck fragment	1
					Bottle/Jar, molded separate base part, colorless base fragment "V & S" embossed on base	1
					Bottle/Jar, machine-made base	1
ST B-1 Total						26
Total						44

No Native American cultural deposits were identified within the PUD Well Site and Utilities Line Survey Area. The historical artifacts recovered were from a fill context and not associated

with structural remains. As such, Gray & Pape recommends no further survey is recommended for the PUD Well Site and PUD Well Utilities Line Survey Area.

6.16 Summary of Archaeological Identification Survey

Sixteen survey areas were subjected to a Phase I archaeological identification survey as part of this project, during which 620 STs were excavated. Of these sixteen survey areas, only five yielded historical and Native American cultural materials. Gray & Pape recommends no further survey for the survey areas that did not recover cultural material. The five survey areas that yielded cultural material includes the power block, the 345 kV line (2,500 ft.), Area 4, the 137-m (450-ft.) Frontage Survey Area, and the PUD Well Site Survey Areas. A single piece of quartzite shatter was recovered from ST D-35 in the northeastern portion of the power block survey area and a small historical artifact scatter comprised of glass fragments and metal was identified in the southeast portion of the power block near STs C-11 and D-8. Gray & Pape recommends no further work at either of these site locales due to the paucity of materials and lack of diagnostic materials.

The 345 kV line (2,500 ft.) survey area yielded historical structural remains likely associated with an ephemeral cabin dating to the mid-nineteenth century. Limited testing has been conducted within this site locale due to portions of it being outside the boundaries of the survey area. Gray & Pape recommends additional testing within a 15-m (50-ft.) buffer of this site, or avoidance, given the site's potential to aid in understanding nineteenth century settlement in this region of Rhode Island.

The unnamed southeastern workspace, Area 4, also yielded Native American cultural materials. Gray & Pape recommends avoidance of the Iron Mine Brook Dune site (RI 2757). This site was originally to be avoided by the project/undertaking; however, in March 2016, it was determined that the area was needed for construction laydown and the archaeological site was subjected to a Phase II archaeological site examination. These results are presented below in Appendix B.

The 137-m (450-ft.) Frontage Survey Area identified two historical concentration areas. The first is located near ST K-3, where two small fragments of window glass were recovered. This ST is located immediately adjacent to an old road and the artifacts do not appear to be associated with structural remains. As such, Gray & Pape recommends no further work. The second location is an earthen berm and stone foundation and associated concrete caisson well, identified at the northeastern terminus of the 137-m (450-ft.) Frontage Survey Area. The well structure construction methods suggest a late nineteenth to early twentieth century construction, but the overall age of the structure remains unknown. Though no artifacts were recovered in associatation with these structural remains, Gray & Pape recommends avoidance of the structural location and an approximately 30-m (99-ft.) radius buffer area. If this area cannot be avoided, Gray & Pape recommends additional archaeological investigations and documentation of the structure.

The PUD Well Site yielded historical refuse dating to the mid- to late nineteenth century. This includes bottles/jars, ceramics, metal, coal, and miscellaneous glass artifacts. These materials

were recovered from numerous fill episodes and lack context. Gray & Pape recommends no further archaeological survey or investigations of this area.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Gray & Pape conducted a Phase I archaeological identification survey for the proposed Clear River Energy Center project in Burrillville, Providence County, Rhode Island. The proposed project consists of construction footprints, access road impacts, utility line rights-of-way, and laydown areas where the proposed power plant will be constructed and the PUD well site will be relocated. The proposed power plant will be located in the west-central portion of the town of Burrillville, on the west side of Wallum Lake Road (State Route 100). The PUD well site is located in the village of Pascoag (located within the town of Burrillville) immediately east of Silver Lake Avenue. The APE totals approximately 21 ha (52.07 ac.) in area and approximately 3,465 m (11,368 ft.) of linear survey associated with kV lines, access roads, and additional utility lines and includes:

- August 2015 Survey Areas:
    - Access Road - 682 m (2,238 ft.) in length
    - Gas Line - 266 m (873 ft.) in length
    - 345 kV Line - 244 m (800 ft.) in length
    - 345 kV Line - 762 m (2,500 ft.) in length
    - Substation - 0.8 ha (2.1 ac.)
    - Switchyard - 0.4 ha (1.1 ac.)
    - Power Block - 6.2 ha (15.4 ac.)
- Addendum 2015 Survey Areas
    - Three separate expansion areas of the central Switchyard/Power Block area:
        - Area 1- 0.28 ha (0.68 ac.)
        - Area 2- 0.40 ha (0.98 ac.)
        - Area 3- 1.93 ha (4.78 ac.)
    - Storm Water Detention Pond #2- 0.16 ha (0.40 ac.)
    - Storm Water Detention Pond #3- 0.52 ha (1.28 ac.)
    - Area 4 east of Storm Water Detention Pond #3- 1.92 ha (4.75 ac.)
- February 2016 Survey Areas:
    - Upland Survey Area - 8.3 ha (20.5 ac.)
    - kV Line Survey Area - 1,400 m (4,593 ft.) in length
- March 2016 Survey Areas:
    - 137-m (450-ft.) Frontage Survey Area
    - PUD Well Site - 0.04 ha (0.10 ac.)
    - PUD Well Site Utilities Line - 111 m (365 ft.) in length

Gray & Pape conducted this archaeological investigation in accordance with Federal and State legislation. Investigations included subsurface testing of the thirteen survey areas, resulting in a total of 620 STs excavated. Seven areas of archaeological interest were identified and include a historical structure located in the 345 kV line (2,500 ft.), a lithic scatter located in the northeastern portion of the Power Block survey area, a historical artifact scatter located in the southeastern portion of the Power Block survey area, a lithic scatter located in the Area 4 survey area, a historical structure in the northeastern portion of the 137-m (450-ft.) Frontage Survey Area, historical artifacts recovered from ST K-3 in the Frontage Survey Area, and from numerous STs in the PUD Well Site Survey Area. The historical and Native American scatters identified in the Power Block do not appear to retain context and, therefore, no further

archaeological work is recommended for these two locations. The ephemeral structure location found in the 345 kV line (2,500 ft.). has the potential to aid in understanding nineteenth century settlement in this region of Rhode Island. As such, Gray & Pape recommends avoidance. Invenergy has since confirmed that they will reroute the line around this site. The Iron Mine Brook Dune site (RI 2757), identified in Area 4, has been identified within dune or dune-like deposits similar to many early Native American sites in New England. Given these deposits, the site is possibly in its original context and may have the potential to aid in understanding Native American settlement in this region of Rhode Island. Gray & Pape recommends avoidance of the Iron Mine Brook Dune site (RI 2757), and Invenergy has since agreed to avoid this location. The historical artifacts scatters identified in the Frontage and PUD Well Site Survey Areas do not appear to retain context and, therefore, no further archaeological work is recommended for these two locations. The historical structure foundation, likely a barn, identified in the Frontage survey area should be better documented prior to disturbance. As such, Gay & Pape recommends avoiding it and an associated 20-m (66-ft.) radius or, if avoidance is not possible, Gray & Pape recommends additional archaeological investigations.

8.0 REFERENCES CITED

Adovasio, J.M., J.D. Gunn, J. Donahue, and R. Stuckenrath
1978 Meadowcroft Rockshelter, 1977: An Overview. *American Antiquity* 43:632–651.

Adovasio, J.M., J.D. Gunn, J. Donahue, R. Stuckenrath, J.E. Guilday, and K. Volman
1980 Yes Virginia, It Really Is That Old: A Reply to Haynes and Mead. *American Antiquity* 45:588–595.

Anthony, D.
1978 The Archaeology of Worcester County: An Information Survey. Institute for Conservation Archaeology Report 21. Peabody Museum, Harvard University, Cambridge.

Aultman, Jennifer, Kate Grillo, and Nick Bon-Harper
2015 DAACS Cataloging Manual: Ceramics. Thomas Jefferson Foundation, Charlottesville. http://www.daacs.org/wp-content/uploads/2015/06/Ceramics.pdf Accessed September 2015.

Barber, R.J.
1979 A Summary and Analysis of Cultural Resource Information on the Continental Shelf from the Bay of Fundy to Cape Hatteras. Vol. II: Archaeology and Paleontology. Institute for Conservation Archaeology, Peabody Museum, Harvard.

Bayles, Richard M.
1891 *History of Providence County, Rhode Island*. W.W. Preston, New York.

Bolian, C.E.
1980 The Early and Middle Archaic of the Lakes Region, New Hampshire. In *Early and Middle Archaic Cultures in the Northeast*. Edited by D. R. Starbuck and C. E. Bolian. Occasional Publications in Northeastern Anthropology 7.

Bourque, B.J.
1976 The Turner Farm Site: A Preliminary Report. *Man in the Northeast* 22:21–30.

Bragdon, K.J.
1981 Another Tongue Brought In: An Ethnohistorical Study of Native Writings in Massachusetts. PhD. dissertation, Department of Anthropology, Brown University.

1996 Native Peoples of Southern New England, 1500–1650. University of Oklahoma Press, Norman, Oklahoma.

Braun, E., and D. Braun
1994 *First Peoples of the Northeast*. Lincoln Historical Society, Lincoln, Massachusetts.

Bullen, R.P.
1940 The Dolly Bond Steatite Quarry. Bulletin of the Massachusetts Archaeological Society 2(1):14–23.

1949 *Excavations in Northeastern Massachusetts*. Papers of the R.S. Peabody Foundation for Archaeology Vol. 1. No. 3, Andover MA.

Bumstead, M.P.
1980 VT-CH-94: Vermont's Earliest Known Agricultural Experiment Station. *Man in the Northeast* 19:73–82.

Carlson, C.C.
1986 Archival and Archaeological Research Report on the Configuration of the Seven Original 17th Century Praying Indian Towns of the Massachusetts Bay Colony. University of Massachusetts Archaeological Services, Amherst. Report on file with the Massachusetts Historical Commission, Office of the Secretary of State, Boston.

Carlson, C.C., G.J. Armelagos, and A.L. Magennis
1992 Impact of Disease on the Precontact and Early Historic Populations of New England and the Maritimes. In *Disease and Demography in the Americas*, pp. 141–153. Edited by J. W. Verano and D. H. Ubelaker. Smithsonian, Washington.

Chilton, Elizabeth S.
1999 Mobile farmers of pre-contact southern New England: the Archaeological and Ethnohistoric evidence. In *Current Northeast Paleoethnobotany*, Vol. 494, pp. 157–176.

2005 Farming and Social Complexity in the Northeast. In *North American Archaeology*, pp. 138–160. Edited by T. R. Pauketat and D. DiPaolo Loren. Blackwell, Malden, Massachusetts.

Connole, D.A.
1976 Land Occupied by the Nipmuck Indians of Central New England. *Bulletin of the Massachusetts Archaeological Society* 38:14–20.

Curran, M.L.
1987 *The Spatial Organization of Paleoindian Populations in the Late Pleistocene of the Northeast*. Ph.D. dissertation, Department of Anthropology, University of Massachusetts, Amherst.

Curran, M.L., and D.F. Dincauze
1977 Paleo-Indians and Paleo-Lakes: New Data from the Connecticut Drainage. *Annals of the New York Academy of Sciences* 288:333–348.

Custer, J.
1984 Delaware Prehistoric Archaeology: An Ecological Approach. University of Delaware, Newark.

Davis, R., and G. Jacobsen, Jr.
1985 Late Glacial and Early Holocene Landscapes in Northern New England and Adjacent Areas of Canada. *Quaternary Research* 23:341–368.

D.G. Beers & Co.
1870 Atlas of the State of Rhode Island Providence Plantations, 1870. D.G. Beers, Philadelphia.

Dincauze, Dena F.
1968 Cremation Cemeteries in Eastern Massachusetts. *Papers of the Peabody Museum of Archaeology and Ethnology* 59(1).

1974 An Introduction to Archaeology in the Greater Boston Area. *Archaeology of Eastern North America* 2:39–67.

1975 The Late Archaic Period in Southern New England. *Arctic Anthropology* 12(2):23–34.

1976 *The Neville Site: 8,000 Years at Amoskeag*. Peabody Museum Monographs No. 4. Harvard University, Cambridge.

1990 A Capsule Prehistory of Southern New England. In *The Pequots in Southern New England: The Fall and Rise of an American Indian Nation*, L. M. Hauptman and J. D. Wherry, eds., pp. 19–32 University of Oklahoma Press, Norman, Oklahoma, and London.

Dincauze, Dena F., and M.L. Curran
1984 Paleoindians as Flexible Generalists: An Ecological Perspective. Paper presented at the 24th Annual Meeting of the Eastern States Archaeological Federation, Hartford, Connecticut.

Dincauze, Dena F., and M.T. Mulholland
1977 Early and Middle Archaic Site Distributions and Habitats in Southern New England. In *Amerinds and Their Paleoenvironments in Northeastern North America*. Annals of the New York Academy of Sciences 288:439–456.

Dodge, K.S.
1967 The Oakholm Site: A Preliminary Report. *Bulletin of the Massachusetts Archaeological Society* 28(2):24–27.

Doucette, Diana
2005 Reflections of the Middle Archaic: A View from Annasnappet Pond. *Bulletin of the Massachusetts Archaeological Society* 66:22–33.

Dudek, Martin G.
2012 The Whortleberry Hill Site: An Early Holocene Camp in Dracut, MA. *Bulletin of the Massachusetts Archaeological Society* 66:12–21.

Dunford, Frederick .J.
1992 Archaeological Investigations at the Dividing Place. *The Cape Naturalist* 20:56–60.

Ekblaw, W.E.
1949 The Nipmuc Chapter. *Bulletin of the Massachusetts Archaeological Society* 10(3): 54–56.

Emerson, William Andres
1879 History of the Town of Douglas, Massachusetts. Frank W. Bird, Boston, Massachusetts.

Fenneman, N.M.
1938 *Physiography of Eastern United States*. McGraw-Hill, New York.

Ferguson, C.C.
1947 A West Brookfield Indian Burial. *Bulletin of the Massachusetts Archaeological Society* 9(1):16.

Fiedel, Stuart J.
1999 Older Than We Thought: Implications of Corrected Dates for Paleoindians. *American Antiquity* 64:95–115.

Filios, Elena L.
1989 The End of the Beginning or the Beginning of the End: The Third Millennium B.P. in Southern New England. *Man in the Northeast* 38:79–93.

1990 *Thresholds to Group Mobility Among Hunter-Gatherers: An Archaeological Example from Southern New England*. Ph.D. dissertation, Department of Anthropology, University of Massachusetts, Amherst. University Microfilms, Ann Arbor.

Fowler, William S.
1952 Twin Rivers: Four Culture Sequence at a Rhode Island Site. *Bulletin of the Massachusetts Archaeological Society* 14(1):1–2.

1966 The Horne Hill Soapstone Quarry. *Bulletin of the Massachusetts Archaeological Society* 27(2):17–27.

Forrest, Daniel T.
1999 Beyond Presence and Absence: Establishing Diversity in Connecticut's Early Holocene Archaeological Record. *Bulletin of the Archaeological Society of Connecticut* 62:79–99.

Funk, Robert E.
1976 Recent Contributions to Hudson Valley Prehistory. *New York State Museum and Science Service Memoir* 22. Albany.

Funk, R.E., and J.E. Pfeiffer
1988 Archaeological and Paleoenvironmental Investigations on Fishers Island, New York: A Preliminary Report. *Bulletin of the Archaeological Society of Connecticut* 51:69–110.

Gahan, Laurence K.
1941 The Nipmucks and Their Territory. Bulletin of the Massachusetts Archaeological Society 2(4):2–6.

Gaudreau, D.
1986 Late-Quaternary Vegetational History of the Northeast: Paleoecological Implications of Topographic Patterns in Pollen Distributions. Ph.D. dissertation, Yale University. University Microfilms, Ann Arbor.

Gifford, James C.
1960 The Type-Variety Method of Ceramic Classification as an Indicator of Cultural Phenomena. *American Antiquity* 25(3):341–347.

Goddard, Ives
1978 Eastern Algonquian Languages. In *Handbook of North American Indians, Northeast*, Volume. 15. Edited by B. Trigger, pp. 70–77. Smithsonian, Washington, D. C.

Goddard, Ives, and K.J. Bragdon
1988 *Native Writings in Massachusetts*. American Philosophical Society, Philadelphia.

Gurcke, K.
1987 Bricks and Brickmaking: A Handbook for Historical Archaeology. University of Idaho Press, Moscow, Idaho.

Haynes, C.V.
1980 The Clovis Culture. *Canadian Journal of Anthropology* 1:115–121.

Haynes, C.V., D.J. Donahue, A.J.T. Jull, and T.H. Zabel
1984 Application of Accelerator Dating to Fluted Point Paleoindian Sites. *Archaeology of Eastern North America* 12:184–191.

Hume, Ivor Noel
1970 A Guide to Artifacts of Colonial America. Knopf, New York.

Jacobsen, G., T. Webb and E. Grimm
1987 Patterns and Rates of Vegetation Change During the Deglaciation of Eastern North America. In *North America and Adjacent Oceans During the Last Deglaciation*, pp. 277–288. Edited by W. Ruddiman and H. E. Wright, Jr. The Geology of North America, v. K-3, Geological Society of America.

Jenkins, Dennis L., Loren G. Davis, Thomas W. Stafford, Jr., Paula F. Campos, Bryan Hockett, George T. Jones, Linda Scott Cummings, Chad Yost, Thomas J. Connolly, Robert M. Yohe II, Summer C. Gibbons, Maanasa Raghavan, Morten Rasmussen, Johanna L.A. Pajimans, Michael Hofreiter,Brian M. Kemp, Jodi Lynn Barta, Cara Monroe, M. Thomas Gilbert, and Eske Willerslev
2012 Clovis Age Western Stemmed Projectile Points and Human Coprolites at the Paisley Caves. *Science* 337:223–228.

Johnson, Eileen
2007 Along the Ice Margin - The Cultural Taphonomy of Late Pleistocene Mammoth in Southeastern Wisconsin (USA). *Quaternary International* 169–170:64–83.

Johnson, Eric S. and Thomas F. Mahlstedt
1982 *The Ben Smith Archaeological Collection: A Preliminary Report and Assessment*. Massachusetts Historical Commission, Boston.

1984a Prehistoric Collections in Massachusetts: The Joseph Craig Collection, NewBraintree, Massachusetts. Massachusetts Historical Commission, Boston.

1984b Prehistoric Collections in Massachusetts: The William Ellsworth Collection, Petersham, Massachusetts. Massachusetts Historical Commission, Boston.

1985 Prehistoric Overview. In *Historic and Archaeological Resources of Central Massachusetts*, pp. 21–50. Massachusetts Historical Commission, Boston.

Johnson, F.
1949 *The Boylston Street Fishweir II*. Papers of the Robert S. Peabody Foundation for Archaeology No. 4, Andover, Massachusetts.

Jones, Brian and Daniel T. Forrest
2003 Life in a Postglacial Landscape: Settlement-Subsistence Change during the Pleistocene-Holocene Transition in Southern New England. In *Geoarchaeology of Landscapes in the Glaciated Northeast*, edited by D. L. Cremeens and J. P. Hart, pp. 75–89. New York State Museum Bulletin 497.

Jones, O. and C. Sullivan
1984 *Glass Glossary for the Description of Containers, Tableware, Flat Glass, and Closures.* Studies in Archaeology, Architecture, and History, National Historic Parks and Sites Branch, Parks Canada, Ottawa.

Joyce, Daniel J.
2006 Chronology and New Research on the Schaefer Mammoth (?*Mammuthus primigenius*) Site, Kenosha County, Wisconsin, USA. *Quaternary International* 142–143:44–57.

Keach, Horace A.
1856 *Burrillville: As It Was, and As It Is.* Knowles, Anthony & Co. Printers, Providence, Rhode Island.

Keith, B.D.
1965 An Adena–Connected Burial Site. *Bulletin of the Massachusetts Archaeological Society* 27(1):1–5.

Lightfoot, K.G.
1985 Shell Midden Diversity: A Case Example from Coastal New York. *North American Archaeologist* 6:289–324.

Lindsey, Bill
2006 Historic Glass Bottle Identification & Information. Historic Bottle Website - Homepage. http://www.sha.org/bottle/index.htm. Accessed September 2015.

Lofstrom, E. U.
1976 A Seriation of Historic Ceramics in the Midwest. Paper Presented at the Joint Plains-Midwest Anthropological Conference.

Luedtke, Barbara E.
1980 The Calf Island Site and the Late Prehistoric Period in Boston Harbor. *Man in the Northeast* 20:25–76.

Lynch, T.F.
1990 Glacial-Age Man in South America? A Critical Review. *American Antiquity* 55:12–36.

Mahlstedt, Thomas
1987 Prehistoric Overview. In *Historic and Archaeological Resources of Cape Cod and the Islands*, pp. 17–53. Massachusetts Historical Commission, Boston.

Majewski, T. and M. J. O'Brien
1987 The Use and Misuse of Nineteenth-Century English and American Ceramics in Archaeological Analysis. In *Advances in Archaeological Method and Theory*, edited by M. B. Schiffer, pp. 97-207. Academic Press, Inc., New York.

Mayhew, M.
1694 *A Brief Narrative of the Success which the Gospel hath had Among the Indians of Martha's Vineyard*. B. Green, Boston, Massachusetts.

McGhee, R., and J.A. Tuck
1975 *An Archaic Sequence from the Strait of Belle Isle, Labrador*. Archaeological Survey of Canada, Paper No. 34. National Museum of Man Mercury Series, Ottawa, Canada.

McManamon, F.P.
1984 Chapters in the *Archaeology of Cape Cod I: Results of the Cape Cod National Seashore Archaeological Survey 1979–1981*. National Park Service, Boston.

Meltzer, D.J.
1989 Why Don't We Know When the First People Came to North America? *American Antiquity* 54:471–490.

Miller, George L.
1980 Classification and Economic Scaling of Nineteenth-Century Ceramics. *Historic Archaeology* 14:1–40.

1993 Thoughts toward a User's Guide to Ceramic Assemblages: Part Four. Some Thoughts on Classification of White Earthenwares. Council for Northeast Historical Archaeology *Newsletter* 26:4–7.

Miller, George L. and A. Earls
1997 *Society for Historical Archaeology Ceramics Chronologies: Back to Basics Workshop*. Corpus Christi, Texas

Moir, R.W.
1987 Socioeconomic and Chronometric Patterning of Window Glass *in Historic Buildings, Material Culture, and People of the Prairie Margin*, edited by D. H. Jurney and R. W. Moir, pp. 73–81. Richland Creek Technical Series Vol. V. Southern Methodist University, Dallas Texas.

Mowchan, Denise, and Louis Sardelli
1987 *A Phase I Archaeological Survey of the Proposed Ocean State Power Plan Project Area, Burrillville, RI.* Public Archaeology Laboratory. RIHPHC Permit 86-38.

Mulholland, M.T.
1984 *Patterns of Change in Prehistoric Southern New England: A Regional Approach*. Ph.D. dissertation. Department of Anthropology, University of Massachusetts, Amherst.

Nelson, L. H.
1968 Nail Chronology as an Aid to Dating Old Buildings. *History News*19(2):2–27.

Petersen, James B., and D. E. Putnam
1992 Early Holocene Occupation in the Central Gulf of Maine Region. In *Early Holocene Occupation in Northern New England*, edited by B. S. Robinson and J. B. Petersen, pp. 63–116. Occasional Publications in Maine Archaeology, Number Nine. Maine Historic Preservation Commission, Augusta.

Quinn, Alonzo
1967 Bedrock Geology of the Chepachet Quadrangle, Providence County, Rhode Island. U.S. Geological Survey Bulletin 1241-G.

1971 Bedrock Geology of Rhode Island. *Geological Survey Bulletin* 1295. United States Government Printing Office, Washington, D. C.

Perry, Elizabeth A.
1886 *A Brief History of the Town of Glocester, Rhode Island.* Providence Press Company Printers, Providence, Rhode Island.

Recter, Dean D.
1981 Soil Survey of Rhode Island. U.S. Dept. of Agriculture, Soil Conservation Service.

Rhode Island Historical Preservation Commission (RIHPC)
1982 *Historic and Architectural Resources of Burrillville, Rhode Island: A Preliminary Report*. Rhode Island Historical Preservation Commission, Providence, Rhode Island.

1986 *The Rhode Island Historical Preservation Plan*. Rhode Island Historical Preservation Commission, Providence, Rhode Island.

Rhode Island Historical Preservation and Heritage Commission (RIHPHC)
2015 *Performance Standards and Guidelines for Archaeology in Rhode Island*. Rhode Island Historical Preservation and Heritage Commission, Providence, Rhode Island

Rider, Sidney B.
1904 The Lands of Rhode Island as the Great Sachems Knew Them. Providence, Rhode Island.

Ritchie, Duncan
1984 Musketaquid, 8,000 years B.P. Paper presented at the 24th Annual conference of the Northeastern Anthropological Association, Hartford.

Ritchie, Duncan and Alan Leveillee
1982 Multiple Strategies for the Analysis of Lithics from the I-495 Project. In *Methodological and Analytical Studies of the Prehistoric Sites in the I-495 Project*, edited by P. Thorbahn. Public Archaeology Laboratory, Providence.

Ritchie, W.A.
1965 The Small Stemmed Point in New England. *Pennsylvania Archaeologist* 35:134–138.

1969 *The Archaeology of Martha's Vineyard*. Second edition. Natural History Press, Garden City, New York.

1971 The Archaic in New York. New York State Archaeological Association Bulletin 52:2–12.

1980 *The Archaeology of New York State*. Second edition. Natural History Press, Garden City, New York.

Ritchie, W.A., and R.E. Funk
1971 Evidence for Early Archaic Occupations on Staten Island. *Pennsylvania Archaeologist* 41(3):45–59.

1973 *Aboriginal Settlement Patterns in the Northeast*. New York State Museum and Science Service Memoir 20.

Robbins, Maurice
1939 Our Survey (Indian Sites of Massachusetts). *Bulletin of the Massachusetts Archaeological Society* 1:7.

1967 The Titicut Site. Bulletin of the Massachusetts Archaeological Society 28(3+4):1–10.

1980 *Wapanucket*. Massachusetts Archaeological Society, Attleboro, Massachusetts.

Robinson, B.S
1992 Early and Middle Archaic Period Occupation in the Gulf of Maine region: Mortuary and Technological Patterning. In *Early Holocene Occupation in Northern New England*, edited by B. S. Robinson and J. B. Petersen, pp. 63–116. Occasional Publications in Maine Archaeology, Number Nine, Maine Historic Preservation Commission, Augusta.

Robinson, B.S., and J.B. Petersen
1993 Perceptions of Marginality: The Case of the Early Holocene in Northern New England. *Northeast Anthropology* 46:61–75.

Rock, Jim
1987 *A Brief Commentary on Cans*. Coyote Press, Salinas, California.

Roop, S. K.
1963 Mill River: An Archaic Upland Site. *Bulletin of the Massachusetts Archaeological Society* 24(2):21–25.

Salwen, Bert
1978 Indians of Southern New England and Long Island: Early Period. In *Handbook of North American Indians, Northeast,* Volume 15. Edited by B. Trigger, pp. 160–176. Smithsonian, Washington.

Sanger, D.
1973 *Cow Point: An Archaic Cemetery in New Brunswick*. Mercury Series, Archaeological Survey of Canada, No. 12. National Museums of Canada, Ottawa.

Simmons, W.S.
1986 Spirit of the New England Tribes: Indian History and Folklore, 1620–1984. University Press of New England, Hanover, New Hampshire.

Simmons, W.S., and G. Aubin
1975 Narragansett Kinship. *Man in the Northeast* 9:21–31.

Snow, D.
1980 *The Archaeology of New England*. Academic Press, New York.

South, Stanley A.
1977 Method and Theory in Historical Archeology. Academic Press, New York.

Spence, M.W., and W.A. Fox
1986 The Early Woodland Occupations of Southern Ontario. In *Early Woodland Archaeology*, Edited by K.B. Farnsworth and T.E. Emerson, pp. 4–46. Center for American Archaeology Press, Kampsville, Ohio.

Spiess, A.E., and B.D. Spiess
1987 New England Pandemic of 1616–1622: Cause and Archaeological Implication. *Man in the Northeast* 34:71–83.

Spiess, A.E., and D. Wilson
1989 Paleoindian Lithic Distribution in the New England-Maritimes Region. In *Eastern Paleoindian Lithic Resource Use*, pp. 75–97. Edited by C. J. Ellis and J. C. Lothrop. Westview Press, Boulder, Colorado.

Stelle, Lenville J.
2001 *An Archaeological Guide to Historic Artifacts of Central Illinois*. Archaeological Guide to Historic Artifacts of the Upper Sangamon Basin. http://virtual.parkland.edu/lstelle1/len/archguide/documents/arcguide.htm. Accessed September 2015.

Stevens, James
1831 Topographical Map of the State of Rhode Island and Providence Plantations. James Stevens, Newport, Rhode Island.

Talmage, Valerie
1982 Prehistoric Overview. In *Historic and Archaeological Resources of Southeast Massachusetts* pp. 1–32. Massachusetts Historical Commission, Boston.

Thomas, Peter A.
1991 *Vermont's Prehistoric Culture Heritage*. Vermont Historic Preservation Plan, State of Vermont. Division of Historic Preservation, Montpelier, Vermont.

Trumbull, J.H.
1903 *Natick Dictionary*. Bureau of American Ethnology Bulletin 25. Smithsonian Institution, Washington, D.C.

Tuck, J.A.
1976 *Newfoundland and Labrador Prehistory*. National Museums of Canada, Ottawa.

United States Department of Agriculture- Natural Resources Conservation Service (USDA-NRCS)
2015 Online Web Soil Survey. http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm. Accessed September 2015.

Waller, Joseph N.
2013 *Algonquin Incremental Market Project: Archaeological Identification (Phase I[c]) Survey, Burrillville Compressor Station, Burrillville, Rhode Island.* PAL Report submitted to Spectra Energy Partners, LP., Waltham, Massachusetts.

2014 *Phase II Archaeological Site Examination of the Algonquin Lane Site (RI 2568), Algonquin Incremental Market Project - Burrillville Compressor Station, Burrillville, Rhode Island.* PAL Report submitted to Spectra Energy Partners, LP., Waltham, Massachusetts.

Walling, H. F.
1851 Map of Providence County Rhode Island, with some of the adjacent Towns.

1855 Map of the State of Rhode Island and Providence Plantations.

Waters, Michael R., Steven L. Forman, Thomas A. Jennings, Lee C. North, Steven G. Driese, Joshua M. Fienberg, Joshua L. Keene, Jessi Halligan, Anna Lindquist, James Pierson, Charles T. Hallmark, Michael B. Collins, and James E. Wiedenhold
2011 The Buttermilk Creek Complex and the Origins of Clovis at the Debra L. Friedkin Site, Texas. *Science* 331:1599–1603.

Williams, R.
1936 [1643] *A Key into the Language of America.* Fifth Edition. The Rhode Island and Providence Plantations Tercentenary Commission, Providence.

Winslow, E.
1910 [1624] Relation. Reprinted in *Chronicles of the Pilgrim Fathers*, pp. 267–356. Edited by E. Rhys. J.M. Dent & Sons, London.

Yesner, D.R.
1988 Subsistence and Diet in North-Temperate Coastal Hunter-Gatherers: Evidence from the Moshier Island Burial Site, Southwestern Maine. In *Diet and Subsistence: Current Archaeological Perspectives*, edited by B. V. Kennedy and G. M. LeMoine, pp. 207–226. Proceedings of the 18th Annual Chacmool Conference, Department of Archaeology, University of Calgary.

APPENDIX A

PHASE I ARCHAEOLOGICAL IDENTIFICATION SURVEY ARTIFACT INVENTORY

Artifact Inventory for the Phase I Archaeological Identification Survey for the Proposed Invenergy, LLC, Clear River Energy Center, Burrillville, Providence County, Rhode Island

Native American Artifact Inventory for the Phase I Archaeological Identification Survey for the Proposed Invenergy, LLC, Clear River Energy Center, Burrillville, Providence County, Rhode Island

Project Survey Area	Unit	Stratum	Level	Depth (cmbs)	Class	Type	Material	Segment	Weight	Count
Power Block	ST D-35	II	1	15-25	Debitage	Flake Fragment	Quartz	Distal Frag.		1
Area 4	ST TT-1	II	2	20-30	Debitage	Class 4 - Biface thinning flake	Rhyolite	Complete	0.9	2
Area 4	ST TT-1	II	3	30-40	Debitage	Class 7 - Flake Fragment	Rhyolite	Proximal	0.1	1
Area 4	ST TT-1	II	3	30-40	Debitage	Class 5 - Biface finishing flake	Rhyolite	Complete	0.1	1
Area 4	ST TT-1 10m South	III	1	16-26	Debitage	Class 6 - Chip	Quartz	Complete	0.1	1
Area 4	ST WW-2	II	1	10-2	Debitage	Class 7 - Flake Fragment	Quartzite	Proximal	2.4	1

Historical Artifact Inventory for the Phase I Archaeological Identification Survey for the Proposed Invenergy, LLC, Clear River Energy Center, Burrillville, Providence County, Rhode Island

Project Survey Area	Unit	Stratum	Level	Depth (cmbs)	Material	Form	Manufacture	Element	Type	Functional Category	Count
Power Block	ST C-11	II	1	12-27	Glass, flat	non-silvered, window	unidentified	fragment	aqua, light	Architectural	1
Power Block	ST D-8	I	1	0-13	Glass, flat	non-silvered, window	unidentified	fragment	aqua, light	Architectural	3
Structure Location	ST C-2	II	1	9-18	Metal	nail	cut, late	complete	ferrous	Architectural	3
Structure Location	ST Judgemental 3	I	2	10-20	Metal	unidentifiable fragment	unknown	fragment	ferrous	Unknown	50
450-ft. Frontage Survey Area	ST K-3	I	1	0-15	Glass, flat	non-silvered, unidentified	unidentified	fragment	colorless	Architectural	2
PUD Well Site	ST A-2	II	1	20-40	Ceramic, vessel	unidentified	earthenware, refined	body sherd	whiteware	Kitchen	3
PUD Well Site	ST A-2	II	1	20-40	Ceramic, vessel	unidentified	earthenware, refined	base, partial	whiteware	Kitchen	1
PUD Well Site	ST A-2	II	1	20-40	Ceramic, vessel	unidentified	earthenware, refined	rim sherd	whiteware	Kitchen	1
PUD Well Site	ST A-2	II	1	20-40	Glass, vessel	unidentified	molded	base	amber	Kitchen	1
PUD Well Site	ST A-2	II	1	20-40	Glass, other	lamp chimney	unidentified	fragment	colorless	Furniture	1
PUD Well Site	ST A-2	II	1	20-40	Glass, vessel	unidentified	unidentified	body sherd	aqua	Kitchen	2
PUD Well Site	ST A-2	II	1	20-40	Glass, vessel	unidentified	unidentified	body sherd	colorless	Kitchen	4
PUD Well Site	ST A-2	II	1	20-40	Glass, tableware	plate/cup	turn-or-paste-molded	rim	colorless	Kitchen	1

Historical Artifact Inventory for the Phase I Archaeological Identification Survey for the Proposed Invenergy, LLC, Clear River Energy Center, Burrillville, Providence County, Rhode Island

Project Survey Area	Unit	Stratum	Level	Depth (cmbs)	Material	Form	Manufacture	Element	Type	Functional Category	Count
PUD Well Site	ST A-2	II	1	20-40	Glass, vessel	bottle/jar	unidentified	finish	colorless	Kitchen	1
PUD Well Site	ST A-2	II	1	20-40	Glass, vessel	bottle/jar	unidentified	body sherd	colorless	Kitchen	2
PUD Well Site	ST A-2	II	1	20-40	Glass, vessel	bottle/jar	molded	base	colorless	Kitchen	1
PUD Well Site	ST B-1	III	1	23-55	Bone/ivory/shell/horn	shell				Kitchen	1
PUD Well Site	ST B-1	III	1	23-55	Metal	bullet	unknown	partial	cupric	Military	
PUD Well Site	ST B-1	III	1	23-55	Ceramic, vessel	unidentified	earthenware, refined	rim/body sherd	whiteware	Kitchen	2
PUD Well Site	ST B-1	III	1	23-55	Glass, vessel	unidentified	unidentified	unidentifiable fragment	amber	Kitchen	4
PUD Well Site	ST B-1	III	1	23-55	Glass, other	unidentified	unidentified	fragment	colorless, frosted	Kitchen	6
PUD Well Site	ST B-1	III	1	23-55	Glass, vessel	unidentified	unidentifiable fragment	unidentifiable fragment	solarized amethyst	Kitchen	2
PUD Well Site	ST B-1	III	1	23-55	Glass, vessel	unidentified	unidentifiable fragment	unidentifiable fragment	aqua, dark	Kitchen	2
PUD Well Site	ST B-1	III	1	23-55	Glass, vessel	unidentified	unidentifiable fragment	unidentifiable fragment	colorless	Kitchen	6
PUD Well Site	ST B-1	III	1	23-55	Glass, vessel	bottle/jar	unidentified	neck, finish	colorless	Kitchen	1
PUD Well Site	ST B-1	III	1	23-55	Glass, vessel	bottle/jar	molded, separate base part	base	colorless	Kitchen	1
PUD Well Site	ST B-1	III	1	23-55	Glass, vessel	bottle/jar	machine-made	base	colorless	Kitchen	1

APPENDIX B

IRON MINE BROOK DUNE SITE PHASE II ARCHAEOLOGICAL SITE EXAMINATION

ABSTRACT

A Phase II archaeological site examination was conducted at the Iron Mine Brook Dune site (RI 2757) located within the proposed Clear River Energy Center project in Burrillville, Providence County, Rhode Island. The site was identified in the Southeastern Workspace/Area 4 during the Phase I archaeological site identification survey. It was identified within dune, or dune like deposits, similar to many early Native American sites in New England. Given the location of these deposits, the site was determined to possibly be in its original context and have the potential to aid in understanding Native American settlement in this region of Rhode Island. Avoidance was recommended for this site, or additional archaeological investigations if avoidance was not possible. This site has since been subjected to a Phase II archaeological site examination, as the site location is needed as a laydown area for the proposed project (the Clear River Energy Center).

The Phase II site examinations consisted of the excavation of 34 shovel tests and six excavation units. All excavation units were excavated as 1- by 1-meter (3- by 3-foot) units and were placed in areas were STs recovered Native American artifacts. Results of these excavations showed that, while the Iron Mine Brook Dune site was somewhat larger (0.2 hectares [0.4 acres]), it contained little additional information about Pre-Contact Native American lifeways. Based on diagnostic lithic projectile points recovered from this site, it appears that at least one occupation occurred here during the Middle Woodland cultural period. While cultural deposits seem relatively intact, no cultural features were located within this site. A scraper suggests the site was used for processing, while the majority of the artifacts recovered indicate the main activities at the site were for biface tool manufacture and maintenance. Overall, the Iron Mine Brook Dune site appears to represent a site where game hunters stopped to retool or maintain their lithic tools, while also taking advantage of the site's natural setting within the landscape near an active stream. No features, or artifacts that denote the presence of feature activity, were found within the site. This in turn likely indicates that, while the site may have been reused periodically over an unknown period of time, no long-term occupations occurred here. Based on the lack of diversity of artifacts and the absence of cultural features, this site lacks the ability to expand on the region's knowledge of Pre-Contact Native American peoples and, therefore, no further archaeological investigation is recommended for the Iron Mine Brook Dune site.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF PLATES

LIST OF TABLES

1.0 INTRODUCTION

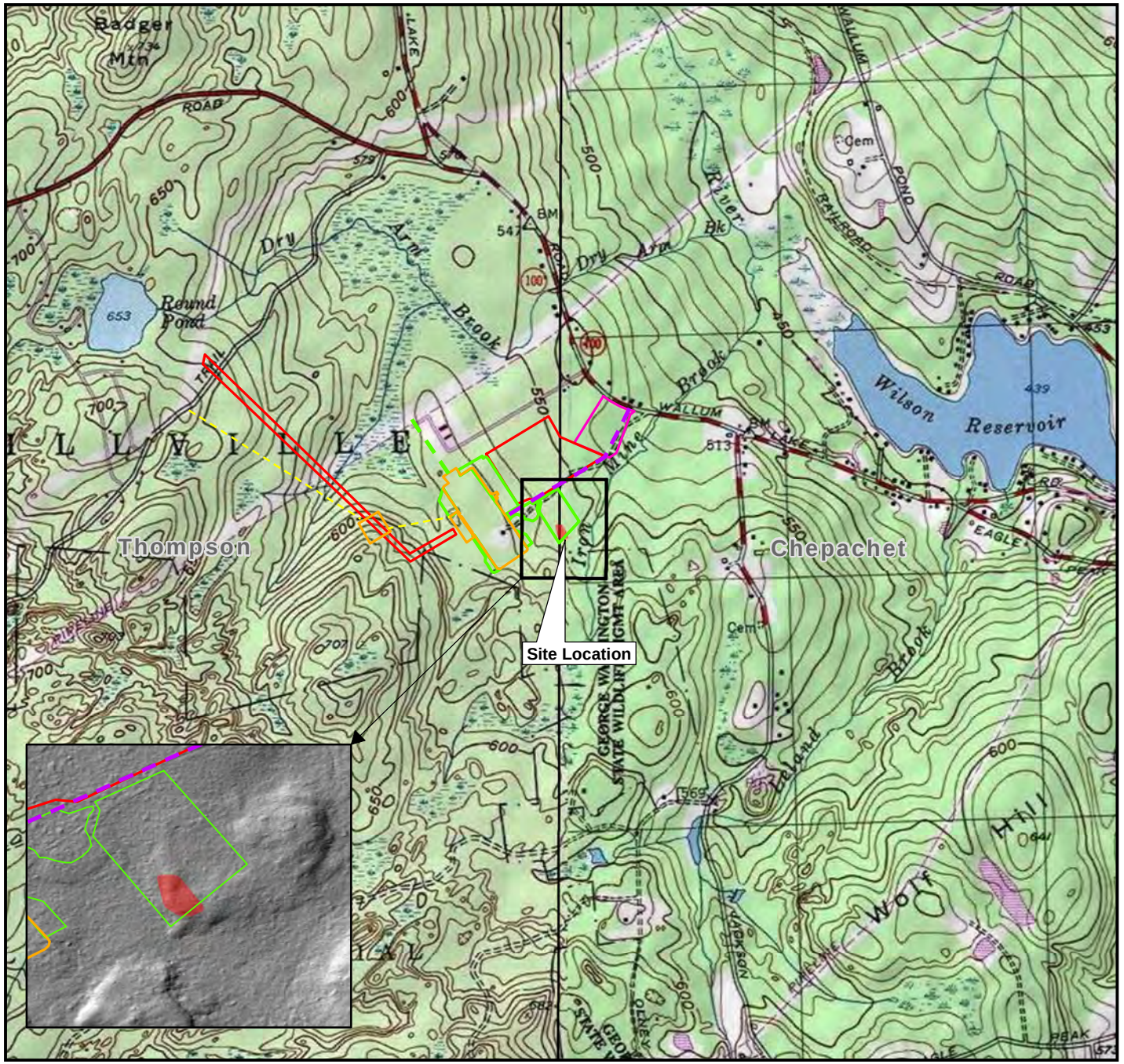
Gray & Pape was retained by ESS Group, Inc. (ESS), East Providence, Rhode Island, on behalf of Invenergy, LLC, of Chicago, Illinois, to conduct a Phase II archaeological site examination for the Iron Mine Brook Dune site (RI 2757) located within the proposed Invenergy, LLC. Clear River Energy Center project in Burrillville, Providence County, Rhode Island (Figure B-1). The proposed impacts to the site are its use as a laydown area for the proposed project, thus grading activities are likely to occur.

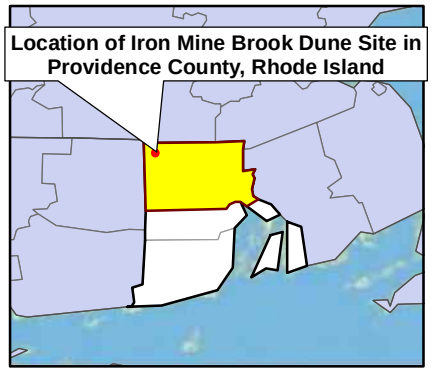
1.1 Authority

The lead agency for this project is the Rhode Island Energy Facility Siting Board. The project is being reviewed under Rhode Island General Laws 42–45, with the Rhode Island Historical Preservation and Heritage Commission (RIHPHC) acting as the state historic preservation office for Rhode Island reviewing the project.

Gray & Pape completed initial scoping for the project in April, 2015. A Phase I archaeological identification survey was recommended and completed between August 2015 and March 2016, under RIHPC Permit #15-13 and subsequent permit modification requests. The Phase II archaeological site examination was requested by Invenergy, LLC, in early March due to the need to utilize the area for construction laydown. A permit application was submitted to RIHPHC on February 23, 2016, to complete the Phase II archaeological site examination of the Iron Mine Brook Dune site (RI 2757). The RIHPHC granted Permit #16-04 on March 1, 2016.

Gray & Pape conducts archaeological investigations in accordance with Federal and State legislation. Procedures are in compliance with legislation and regulations concerning the impact to archaeological properties from federally funded or permitted activities. These laws and guidelines include the National Historic Preservation Act of 1966 (PL 89-665, 16 USC 470 as amended); the National Environmental Policy Act of 1969 (PL 91-990, 42 USC 4321); Executive Order 11593, 1971 (16 USC 470); Procedures for the Protection of Historic and Cultural Properties (36 CFR VIII, 800); Guidelines for the Recovery of Scientific, Prehistoric, Historic, and Archaeological Data: Methods, Standards, and Reporting Requirements (36 CFR 66); and the Archaeological and Historic Preservation Act of 1974 (PL 93-291 as amended). State legislation dealing with the protection of historic and archaeological resources is covered under Rhode Island General Laws 42-45. All tasks associated with this project were undertaken in accordance with the standards outlined in the Secretary of the Interior's Standards and Guideline for Archaeology and Historic Preservation (48 FR 44716 1983) and the RIHPHC Performance Standards and Guidelines for Archaeology in Rhode Island (RIHPHC 2015).





LEGEND

- Access Road
- New 345 KV Line
- New Gas Line
- August 2015 Survey Areas
- Addendum 2015 Survey Areas
- February 2016 Survey Areas
- March 2016 Survey Areas
- Iron Mine Brook Dune Site
- USGS 24k Topo Map Boundaries

0 200 400 Meters

0 500 1000 Feet

N W E S

Location of the Iron Mine Brook Dune Site (RI 2757) within the Proposed Clear River Energy Center Archaeological Survey Areas

GRAY & PAPE, INC. ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure B-1

1.2 Project Area and Site Description

The proposed project consists of construction footprints, access road impacts, utility line rights-of-way, and laydown areas where the proposed power plant will be constructed. The proposed power plant will be located in the west-central portion of the town of Burrillville, on the west side of Wallum Lake Road (State Route 100). A construction laydown area will have a direct impact on the previously identified Iron Mine Brook Dune site (RI 2757), located in the Southeastern Workspace/ Area 4 archaeological survey area, which was surveyed in October 2015 (Figure B-1).

The Iron Mine Brook Dune Native American site (RI 2757) lies southeast of the power block area and measures approximately 1.92 ha (4.75 ac.). It is directly bordered on the north, east, south, and west by active wetland areas. Approximately, the northern half of this survey area was located in an active wetland. The eastern border falls into a wetlands drainage head. A visual inspection of this area proved it to be minimally disturbed by logging activities, as evidenced by relatively few push-piles.

Within Southeastern Workspace/ Area 4, the Iron Mine Brook Dune site is located on a higher surface than the surrounding landform, which is located just east of an active wetland area. Iron Mine Brook lies approximately 145 m (476 ft.) to the east of the site (Plates B-1 through B-4). The landform appears to be a remnant dune, which likely formed shortly after the last glacial period, which lies at an elevation of 174 m (570 ft.) above sea level. The dune landform is a barchans, or parabolic dune, with its tails pointing generally northeast. The landform rises gradually to the southwest, then falls sharply into a tributary of the Iron Mine Brook. A wetland that feeds this tributary lies to the north of the site and the wetland associated directly with Iron Mine Brook lies to the south of the landform. West of the landform is generally dry, but it appears a tributary drainage may have once been present, based on the depressed area that is present. Soils at the site are sometimes eroded or modified Woodbridge fine sandy loam, 0–8 percent slopes, very stony soil series. The site is primarily wooded with a mix of soft and hardwoods, with a few low shrubs. Outside the limits of the dune landform is a mix of wetland plants and trees.

Background research did not identify any known archaeological sites in the immediate vicinity of the Iron Mine Brook Dune site. The Algonquin Lane Native American site, RI 2568, lies 465 m (1,530 ft.) to the northwest of the Iron Mine Brook Dune site, and the Wallum Lake Road site, RI 2569, lies 610 m (2,000 ft.) to the northeast.

The testing of the Southeastern Workspace/Area 4 survey location focused on the eastern and southern parts of the testing area, away from the wetlands. Transects of shovel tests (STs) were excavated parallel to the southeast boundary of the project area. Of the 58 STs excavated in Southeastern Workspace/Area 4, three contained Native American artifacts, which comprise the initial boundary delineation of the Iron Mine Brook Dune site.

Plate B-1. Iron Mine Brook located southwest of the Iron Mine Brook Dune Site, view to the southwest.

Plate B-2. Iron Mine Brook showing the landform in which Iron Mine Brook Dune Site is located, view to the northeast.

Plate B-3. Iron Mine Brook showing the landform in which Iron Mine Brook Dune site is located, view to the north.

Plate B-4. North end of the dune landform showing the landform in which Iron Mine Brook Dune site is located, view to the south.

2.0 ARCHAEOLOGICAL SITE EXAMINATION RESEARCH DESIGN

Data recovered during the Phase I archaeological identification survey suggested that this site may meet Criterion A and/or D for inclusion in the National Register of Historic Places (NRHP). The Iron Mine Brook Dune site cultural component was undetermined but, due to its landform location, suggested it could relate to an early regional occupation within the state of Rhode Island. Because the site will be impacted by the construction during the proposed construction of the Clear River Energy Center, it was recommended that a Phase II archaeological site examination be conducted in order to determine conclusively whether or not it is eligible for inclusion in the NRHP.

Additional testing was to allow for the definition of horizontal and vertical site boundaries, the determination of the integrity of the site and the potential for intact features within or below the topsoil (A horizon), and the clarification of the cultural and chronological affiliations of the site. Sufficient information to address these goals could not be derived from the Phase I intensive archaeological survey. The Phase II archaeological site examination was conducted in a manner that maximized the preservation of cultural resources. At the center of the research design is the placement of the historical cultural resources in the context of:

1) the succession of people who have lived in the general region of the project area;

2) the changing lifestyles practiced, and resource exploitation techniques utilized, by different groups in local environments;

3) the changing structures of spatial organization--transportation and communications networks, trade flows, hierarchies of urban centers--that have linked activities at different periods of time; and

4) the historic patterns of diffusion, from centers of innovation, of material artifacts and ideas as indicators of changes in lifestyles.

Within the framework of the research design, research questions and hypotheses were generated, and these were used to provide problem orientations for the sites and to structure the sampling design of the Phase II archaeological site examination. By investigating this Native American site at the site examination level, it was possible to determine the degree to which the site can provide data relevant to these research questions, and to determine whether or not the site has the potential to contribute additional archaeological data to the historical record. The degree to which the site may be able to contribute data related to these questions will be important in determining research potential, and evaluating the eligibility of the site for inclusion in the NRHP based on Criterion A and D (CFR 60.4). Using the criteria for eligibility for listing in the NRHP and regional research interests from within the field of archaeology, specific research questions were formulated that may be addressed during the site examination and include:

1. What is the size and layout of the site? Are there features associated with the site? Can activity areas be defined, or is the site comprised of a single area? Does the site reflect use of the adjacent large wetland?

2. Are there any faunal or floral remains at the site? Do these provide any indication of the seasonality of the site?

3. Does the site include multiple components, or is it confined to a single time period? Is there any evidence to indicate whether the site was a single occupation, or was used over a period of years or decades? Are there artifacts that indicate a distinct cultural period? Can features or carbons sample be located to help date the site?

4. What kinds of tools are present? Do these tools provide indications of the function of the site?

5. What types of lithic raw materials were used at the site? Are these raw materials primarily local in origin, or were they obtained from non-local sources? Do the raw materials in the debitage assemblage match those of certain tools, or the whole assemblage?

6. Are there any indications of how the site relates to any other the sites in the local region? How does this site fit in with the history of settlement of the region? Do the results of the Phase II site examination provide information to understand the relative position and significance of this site within the homelands of the ancestral Nipmuc or Narragansett people?

While it may not be possible to answer all of these questions in detail for the Iron Mine Brook Dune site as a result of the archaeological site examination, they will be addressed to the fullest extent possible given the archaeological information that is recovered. Answers will contribute to the greater understanding of the social and economic development of peoples in northern Rhode Island.

3.0 METHODOLOGY

3.1 Testing Recommendations for the Site Examination

The Phase II archaeological site examination was designed to accomplish several important goals in order to expedite the cultural resources compliance process. These goals were as follows: define the data potential of the site, define the site boundaries, locate potential features and activity areas, determine the cultural and temporal affiliations of the site, verify site integrity, and determine site function. This level of information could not be derived from the initial Phase I archaeological identification survey. The recommended Phase II archaeological site examination was designed to produce data necessary to determine the eligibility of the site for inclusion in the NRHP. The Phase II archaeological site examination conducted by Gray & Pape at the Iron Mine Brook Dune site involved the following tasks.

1) The placement and excavation of up to 35 STs at 5.0-m (16.4-ft.) intervals, primarily in the southwest corner of Southeastern Workspace/Area 4 and along the dune landform. This purpose of excavating these additional STs was to better define the archaeological site boundary and to provide a larger sample of artifacts to assess the age and nature of the site.

2) The excavation of six 1- by 1-m (3- by 3-ft.) excavation units (EUs) centered near artifact concentrations, cultural or temporally diagnostic artifacts, or cultural features. The purpose of these excavations was to gather any definitive data that would be disturbed during the construction activities of the proposed project. These units will be useful in defining features and site functions, as well as sampling artifacts.

The total area to be excavated during the Phase II archaeological site examination will amount to 14 m^2 (151 ft^2). Information from these excavations will pertain to artifact density, presence of subsurface features, and integrity of archaeological deposits. These categories of evidence are instrumental in determining the eligibility of the site for listing in the NRHP.

3.2 Archaeological Field Methods

The Phase II archaeological site examination of the Iron Mine Brook Dune site utilized the excavation of STs and the hand excavation of excavation units (EUs). Shovel tests measured 50 by 50 cm (20 by 20 in.) square. They were excavated 10 cm (3.9 in.) into the C horizon, typically no greater than 80 cm (32 in.) below ground surface. All soil was screened through ¼-inch hardware cloth to assure the recovery of artifacts. The stratigraphy observed was recorded using the Gray & Pape field recordation system. Photographs of representative STs and general view photographs of the project area were taken to document the stratigraphy and current land use.

The other form of field testing utilized was hand excavation of EUs. These hand excavations served as the primary means for recovering fine-scale vertical and horizontal archaeological data during site examination excavations. Within these EUs, deposits were removed by controlled shovel skimming and then dry screened through ¼-inch hardware mesh. Vertical and horizontal control of the unit excavations was maintained, and *in situ* temporally diagnostic artifacts, cultural features, and distinct artifact concentrations were recorded through the use of unit specific datums

tied to the site grid. Unit datums were routinely placed 10 cm (4 in.) grid south of the SW corner of the unit and 10 cm (4 in.) above ground surface, unless specific ground surface conditions required alternative placement and height.

Hand excavation consisted of the removal of 10-cm (4-in.) arbitrary levels from below the surface measurements, as taken from the unit datum, for each corner of each EU. This was done to preserve the natural contours of the site's stratigraphy. Soil horizon or other natural or cultural deposits were labeled with stratum numbers and each 10 cm (4 in.) level in a zone received a level number. When a new horizon was encountered, a new stratum was designated and level numbering began again from Level 1. Depth measurements were recorded for the surface of the new stratum and excavation then continued from the new surface measurements. The excavation of EUs ceased one or two levels (10–20 cm (4–8 in.) below the point at which culturally sterile subsoil was encountered for each EU to assure full recovery of artifacts. Alternatively, many EUs ended due to the having reached the underlying bedrock. Representative profiles were drawn and photographed of at least two separate adjoining walls for each EU to help maintain a complete stratigraphic record. The units were backfilled upon the completion of the investigation.

All artifacts recovered from within each level of each unit were placed in bags labeled with their associated provenience. An excavation unit/level summary form was used to record information, such as elevations, soil/artifact descriptions, and names of excavators, and to summarize the results of excavation. Temporally diagnostic artifacts, such as projectile points and ceramics, found *in situ*, were piece plotted and mapped, assigned a unique specimen number, and placed within a separate level bag.

3.3 Laboratory Methods

Artifacts found during the subsurface testing were cleaned, catalogued, and photographed, as appropriate. All artifacts were washed (unless detrimental to the item) and sorted by artifact type and provenience. The analyses were conducted using the Gray & Pape computerized artifact inventory system, which allows for accurate assessments of artifact densities, cultural affiliations, and site dates. Gray & Pape uses a Microsoft Access data management system to maintain and synthesize all aspects of artifact information.

Native American Cultural Material Analyses

Analyses of Native American cultural materials were conducted with the following objectives: (1) identification of artifacts recognized as diagnostic of specific cultures or time periods; (2) identification of reduction sequences represented by the lithic debitage; (3) identification of utilized and/or retouched debitage; (4) identification of raw materials represented among the tools and debitage; and (5) identification of recovered ceramic types. Identification of diagnostic artifacts were made by consulting existing comparative collections and available literature regarding artifact types. Identification of lithic reduction sequences will be made by examining specific attributes of the individual pieces of debitage.

Current approaches to the analysis of lithic artifacts include a study of the step-by-step procedures utilized by Native American knappers to make tools. This process is referred to as *chaîne opératoire* or reduction strategy (Sellet 1993). The production of any class of stone tools involves

a process that must begin with the selection of suitable raw materials. The basic requirements of any raw material to be used to make flaked stone artifacts include the following: (1) that it can be easily flaked into a desirable shape; and (2) that sharp, durable edges can be produced as a result of flaking.

Once a raw material is selected and an adequate source is located, the process of tool manufacture begins. Two different strategies can be utilized and these involve the reduction of a material block directly into a tool form, like a biface, or the production of a core. The second reduction process involves the preparation of a block of raw material so that flakes of a suitable shape and size can be detached. These debitage then are further reduced by percussion and/or pressure flaking into a variety of tool types including unifacial scrapers, bifacial knives, or projectile points.

Biface reduction can proceed along two different manufacturing trajectories, one of which involves the reduction of blocks of raw material, while the other involves the reduction of a flake blank. Experiments show that the former manufacturing strategy, involving a block of raw material, begins with the detachment of flakes with cortical or natural surfaces. Direct percussion flaking, usually involving a hard hammer (e.g., a quartzite cobble) that more effectively transmits the force of the blow through the outer surface, accomplishes this stage. After removal of a series of debitage, and thus creating suitable striking platforms, the knapper begins the thinning and shaping stage. The majority of the thinning and shaping knapping is done with a soft hammer, using marginal flaking. The pieces detached tend to be invasive, extending into the midsection of the biface. A later stage of thinning may follow, which consists of further platform preparation and the detachment of invasive flakes with progressively straighter profiles in order to obtain a flattened cross-section. By the end of this stage, the biface has achieved a lenticular or biconvex cross-section. Finally, the tool's edge is prepared by a combination of fine percussion work and pressure flaking, if desired. It should be noted that flakes deriving from biface reduction are sometimes selected for tool manufacture, as discussed above. Thus, the biface can, in some instances during the reduction cycle, be treated as a core.

The second manufacturing trajectory, utilizing a flake, begins with core reduction and the manufacture of a suitable flake blank. The advantages of utilizing a flake blank for biface reduction include the following:

1) flakes are generally lightweight and can be more easily transported in larger numbers than blocks of material; and

2) producing flakes to be used for later biface reduction allows the knapper to assess the quality of the material, avoiding transport of poorer-grade cherts.

The initial series of flakes detached from a flake blank may or may not bear cortex. However, they will display portions of the original dorsal or ventral surfaces of the flake from which they were struck. It should be noted that primary reduction flakes from this manufacturing sequence can be wholly non-cortical. Thus, the use of the presence of cortex alone to define initial reduction is of limited value. Biface reduction on a flake involves the preparation of the edges in order to create platforms for the thinning and shaping stages that follow. In most other respects, the reduction

stages are similar to those described above, except that a flake blank often needs additional thinning at the proximal or bulbar end of the piece to reduce the pronounced swelling.

The terms used to describe stone tools differ from region to region, as evidenced by the proliferation of type names for projectile points, quite often of similar or identical morphology. The terminology and accompanying definitions applied here are based on research by archaeologists in New and Old World contexts, and represent the most widely accepted nomenclature.

The categories used to describe biface reduction follow in a broad sense those proposed by Bradley and Sampson (1986), Callahan (1979), Newcomer (1971). It should be noted, however, that rigid schemes of reduction, such as those cited, which break up into stages a process that is in fact an unbroken continuum from raw material selection to the final abandonment of the tool, can only approximate the course of a manufacturing trajectory used by Native American knappers.

Native American artifacts are sorted by artifact type, for example projectile point, based on standard references such as Justice (1987). Specific descriptive terminology was based on Cambron and Hulse (1964) and Justice (1987). Debitage categories are based on classification schemes currently used by both Old and New World archaeologists (Bordes 1961; Frison 1974; Tixier et al. 1980). The first level of analysis involves separating flakes, cores, and fragments (shatter and "chunks" of raw material) and listing the presence or absence of features such as cortex. The flakes then are subdivided, as much as is possible, into groups that would more specifically identify the reduction sequence to which they belong. When subdivided and possible, raw material type is recorded. The following terminology has been applied to the classification of Native American artifacts.

Angular Shatter: Shatter can either be produced during the knapping process or through natural agents. Naturally occurring shatter is usually the result of a thermal action, shattering a block of chert. During debitage, shatter can result from an attempt to flake a piece of chert with internal flaws and fracture lines. For the purposes of the current undertaking, shatter is defined as a piece of chert that shows no evidence of being humanly struck, but might, nonetheless, be a waste product from a knapping episode. Generally, shatter is angular or blocky in form.

Blank: When a flake is detached from a block of raw material it may be regarded as waste, utilized without modification, or used as a "blank" to be retouched into a tool (e.g., a scraper or denticulate).

Flake Shatter: Quite often, the force of the hammer during debitage results in the breaking of the flake into two or more pieces. The result is proximal, mesial, or distal fragments of debitage that are not angular, and often show previous flake removal scars on their dorsal surface. These characteristics distinguish flake shatter from angular shatter. Flake shatter is a common occurrence in percussion debitage but can occur at any time in the knapping process.

Chip: This term, introduced by Newcomer and Karlin (1987), describes tiny flakes (<1 cm in length) that are detached during several different types of manufacturing trajectories. First, they can result from the preparation of a core or biface edge by abrasion, a procedure which

strengthens the platform prior to the blow of the hammer. During biface manufacture, chips are detached when the edge is "turned" and a platform is created in order to remove longer, more invasive flakes. Tiny flakes of this type also are removed during the manufacture of tools like end scrapers.

Core: A core is a block of raw material, other than a biface preform, from which flakes have been detached. Cores may be produced by careful preparation or may consist of a block of material from which only a few flakes have been detached.

Debitage: The French term "debitage" has two related meanings: (1) it refers to the act of intentionally flaking a block of raw material to obtain its products, and (2) it refers to those products themselves. Commonly, the term debitage is used by archaeologists to describe flakes that have not been modified by secondary retouch and made into tools.

Flake: A flake is a product of debitage. In this report there are two separate categories of flakes and the first is for those pieces to which a specific reduction sequence cannot be assigned. With these pieces it is impossible to tell whether they have been detached during simple core reduction or biface manufacture. For example, cortical flakes initially removed from a block of raw material can appear similar in both core and biface reduction. The second category is those debitage that can be assigned to the production of bifacial tools.

Initial Reduction Flakes: These debitage are typically thick, have cortex on the majority of their dorsal surfaces, and have large plain or simply faceted butts. Relatively few dorsal scars are present. Initial reduction flakes may show removals from the opposite edge of the biface.

Janus Flake: These are a debitage type produced during the initial reduction of a flake blank (Tixier et al. 1980). The removal of a flake from the ventral surface of a larger flake results in a flake the dorsal surface of which is completely or partially composed of the ventral surface of the larger flake blank.

Marginal and Non-marginal Flaking (c.f. Bradley and Sampson 1986)*:* These terms denote two techniques of delivering the force of the hammer to detach a flake from a core or biface. Marginal flaking involves the delivery of the blow of the percussor close to the edge of the piece being flaked. As the blow is close to the edge of the striking platform, the resulting flake has a small, narrow butt. Non-marginal flaking involves the delivery of the blow at a point some distance from the edge of the flaked piece. Debitage detached in this manner often have large, wide butts.

Microdebitage: Is small, < 5-mm debitage that is the result of platform abrasion or retouch (incidental and/or intentional). This debitage class often is not recovered on archaeological sites due to sampling biases; however, this debitage class can be produced in great quantities when manufacturing stone tools.

Percussion and Pressure Flaking: In the case of flintknapping, percussion flaking involves the use of a hammer or percussor to strike a piece of chert in order to detach a flake. This hammer can be of a relatively hard material, such as a quartzite hammerstone, or a softer organic

material such as a deer antler. Direct percussion is a flaking technique that involves the delivery of the blow directly on to the striking platform, while indirect percussion utilizes an intermediary or "punch." Pressure flaking, as suggested by the name, involves the chipping of stone by pressure. Flakes are "pressed off" with the use of a pointed tool such as a deer or elk antler tine.

Platform Abrasion: When the blow of the percussor is aimed close to the edge of the piece being flaked (marginal flaking), it is necessary to prepare and strengthen that edge. The edge usually is prepared by abrasion, which entails rubbing the striking platform area with a hammerstone and detaching a series of tiny flakes (chips) from the surface where the flake will be removed. Evidence of platform abrasion usually is clearly visible on biface thinning flakes at the intersection between the butt and dorsal surface.

Unspecified Reduction Flake: These flakes cannot be attributed to a specific reduction sequence and often have unidirectional or opposed dorsal scar patterns and often portions of cortical surface. It is impossible to discern if this debitage class is the result of core or bifacial reduction.

The group of flakes that is a direct result of biface reduction is described as follows:

Biface Initial Reduction Flakes: These debitage typically are thick, have cortex on part of their dorsal surfaces, and have large plain or simply faceted butts. Relatively few dorsal scars are present, but these may show removal from the opposite edge of the biface.

Biface Thinning Flakes. These debitage result from shaping the biface, while its thickness is reduced. These flakes generally lack cortex, are relatively thin, and have narrow, faceted butts, multidirectional dorsal scars, and curved profiles. Thinning flakes typically are produced by percussion flaking.

Biface Finishing Flakes. These debitage are produced during the preparation of the edge of the tool. These debitage are similar in some respects to biface thinning flakes, but are generally smaller and thinner and can be indistinguishable from tiny flakes resulting from other processes such as platform preparation. Biface finishing flakes may be detached by either percussion or pressure flaking.

Terminology utilized in this report in the discussion of retouched tools includes the following:

Biface: A biface is any retouched tool, partially completed or finished, which has been flaked by percussion or pressure flaking over both of its surfaces (see bifacial retouch).

Bipolarized or Splintered Piece: A splintered piece (French *piece esquillee*) is a roughly rectangular artifact, usually a broken flake or secondary source pebble, with bifacial battering on opposing edges. The battering typically takes the form of scalar flake removals that terminate in hinge fractures; these fractures are the result of percussive, "bipolar" blows delivered on an anvil.

Retouch: This term is taken from the French *retouchèè* and refers to the modification of a block of raw material (biface manufacture) or flake by a single removal or series of removals, thus transforming the piece into a tool. Retouch shapes the original blank and can take the form of invasive bifacially detached flakes on a projectile point, or small, tiny flakes on the edge of an end scraper. Retouch also may be caused unintentionally due to utilization; in this case, retouch forms as a result of an activity and not by a process of intentional modification before use. Utilization retouch is typically discontinuous along an edge. Retouch can be morphologically quite varied and the following terms describe the various types and positions of retouch. The description of retouch morphology on any given tool can, and often does, involve a combination of the terms discussed below.

Tool. For the purposes of typological description only, a tool is any flake that has been shaped and modified by secondary retouch. In the case of biface manufacture, a block of raw material may be transformed directly by retouch into a tool such as a knife or projectile point. The term tool, therefore, is used only for descriptive purposes to separate those artifacts that have been retouched from the debitage or unretouched pieces. Finally, it should be recognized that the latter group of objects may well have functioned as tools.

Uniface: A uniface is any retouched piece that displays retouch on only one side of the flake and for which a specific function cannot be inferred.

Uniface Endscraper: A uniface endscraper is a tool with a rounded, semi-circular or squared edge, located at the proximal or distal end of a flake, produced by retouch and presumably used for a scraping implement. A variation of this type is the so-called hafted scraper, which is made from a broken and rejuvenated projectile point that creates a semi-circular edge.

Uniface-Lamellar Bladelet: A uniface-lamellar bladelet refers to a tool consisting of a long, thin, flake, with a length at least two times its width with roughly parallel sides that was produced using a blade technique from a prepared blade core.

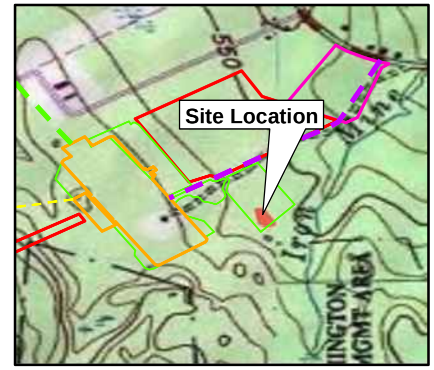
4.0 RESULTS OF THE PHASE I ARCHAEOLOGICAL IDENTIFICATION SURVEY

Artifacts were recovered from three of the shovel tests excavated in the Southeastern Workspace/Area 4 testing location (Figure B-2). A total of six Native American artifacts were recovered from this survey area (Table B-1). Artifacts were recovered from the subsurface Bw horizons of the dune landform. Native American artifacts recovered include: five pieces of lithic debitage and fragment of a bifacial tool.

Soils at this site were found to consist of somewhat modified upland soils. Specifically, the A horizon consisted of a very dark grayish brown (10YR 3/2) fine sandy loam extending to approximately 12 cm (5 in.) below ground surface. This A horizon overlaid a Bw1 comprised of a dark yellowish brown (10YR 4/4) fine sandy loam that extended no greater than 33 cm (13 in.) below ground surface. This Bw1 overlaid a Bw2, also a dark yellowish brown (10YR 4/6), a loamy sand that extended at its greatest depth to 75 cm (30 in.) below ground surface and overlaid the C horizon. The C horizon was comprised of a light gray (10YR 7/1) gravelly fine sand. Excavation halted 10 cm (4 in.) into the C horizon. Shovel tests ST TT-1 and ST WW-2 southwestern portion of the workspace survey area were positive for Native American artifacts. Additional radial STs were excavated at 5-m (16-ft.) intervals in each cardinal direction around the positive STP. Shovel Test TT-1 radial 10 m south proved to be positive for Native American artifacts as well.

Table B-1. Native American Artifacts Recovered from the Iron Mine Brook Dune Site (RI 2757)

Test Pit	Stratum/ Soil	Depth (cm below surface)	Artifact Class	Artifact Type	Raw Material	Count
ST TT-1	Stratum II/ Bw1 horizon	20–30	Debitage	Chip	Gray Brown Rhyolite	1
				Biface Thinning Flake	Gray Brown Rhyolite	1
ST TT-1	Stratum II/ Bw1 horizon	30–40	Debitage	Chip	Gray Brown Rhyolite	2
ST TT-1 Radial 10 m south	Stratum III/ Bw2 horizon	16–26	Debitage	Biface Fragment	Rock Crystal Quartz	1
ST WW-2	Stratum II/ Bw1 horizon	10–20	Debitage	Biface (Initial Reduction Flake	Tan Quartzite	1
Total:						**6**



LEGEND

- ST - Positive - Native American
- ST- Negative
- Addendum 2015 Survey Areas
- Iron Mine Brook Dune Site Phase I Boundary

0 2 4 Meters

0 10 20 Feet

N W E S

Results of Iron Mine Brook Dune Site Phase I Archaeological Site Identification Survey

GRAY & PAPE, INC.
ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure B-2

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\16-69901_ApenndixB_Figure2_SiteSurveyResults.mxd

Gray & Pape Project 15-69901.001

The nature of the site is presently not understood. The site contains a light density, artifact scatter of an unknown cultural period related to Native American occupation (Plate B-5). However, raised, well-drained landforms near wetlands, such as this dune landform, have been known to be favored by the earlier Native American inhabitants of the region (Spiess and Wilson 1987; Robbins 1980). The Native American component contains a variety of lithic raw materials and at least one biface tool. The site has the potential to contain numerous more artifacts and intact features that could provide information of value to the ancient history of Native American peoples of the region. The site's location and context are intriguing relative to the early settlement of the region. As such, this site was recommended for avoidance, if possible. However, because avoidance was deemed not possible, it was therefore recommended that additional survey be completed at the site to evaluate its significance and eligibility for inclusion in the NRHP.

Plate B-5. Native American artifacts recovered during the Phase I archaeological site identification survey. Left to right: chipped quartz from Shovel Test TT-1, 10 meters south; quartzite flake from Shovel Test WW-2; rhyolite flake fragment and rhyolite biface finishing flake from Shovel Test TT-1, Stratum II, Level 3; and rhyolite biface finishing flakes from Shovel Test TT-1, Stratum II, Level 2.

5.0 RESULTS OF THE PHASE II ARCHAEOLOGICAL SITE EXAMINATION SURVEY

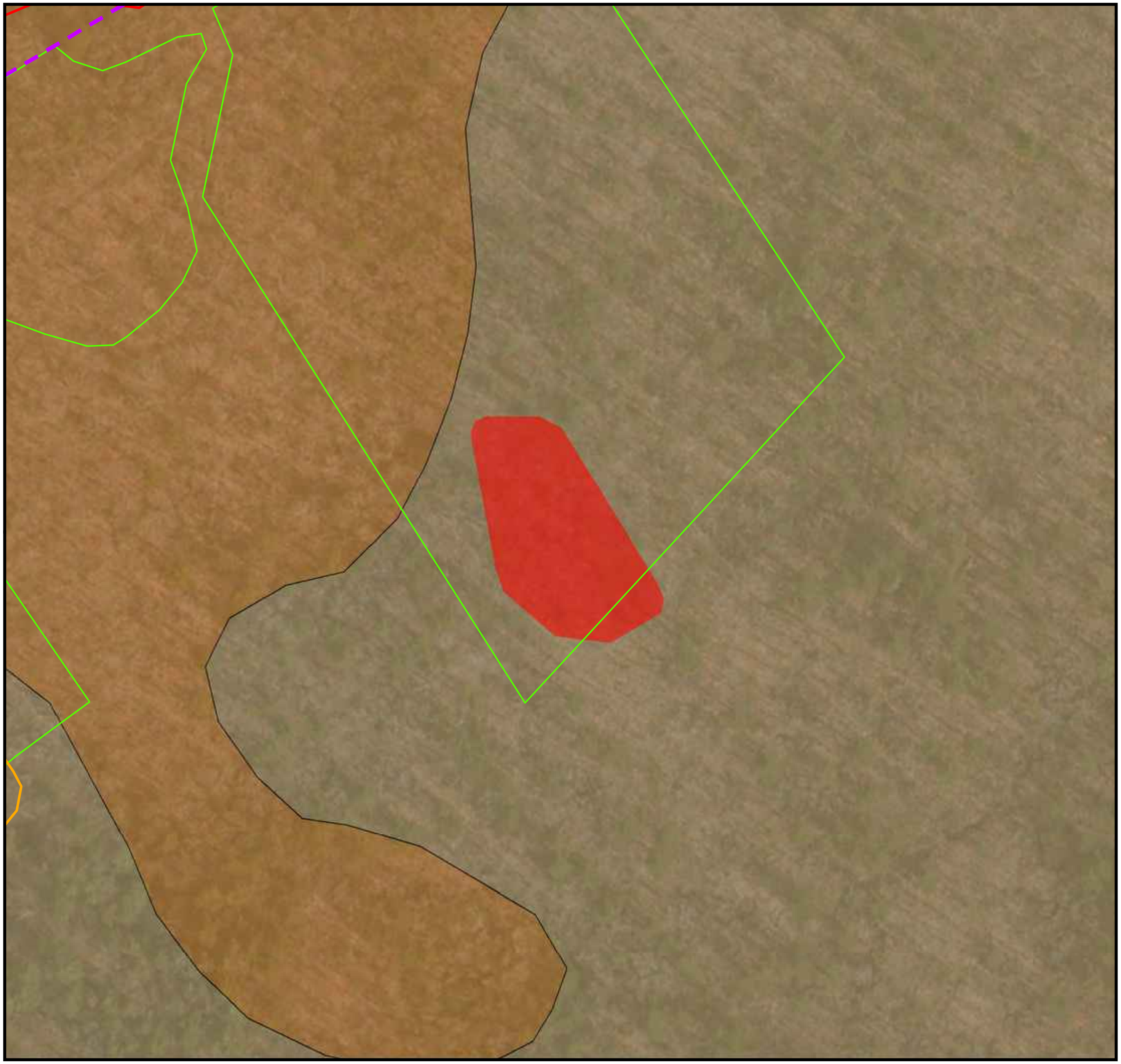
5.1 Soils and Stratigraphic Profiles of the Iron Mine Brook Dune Site

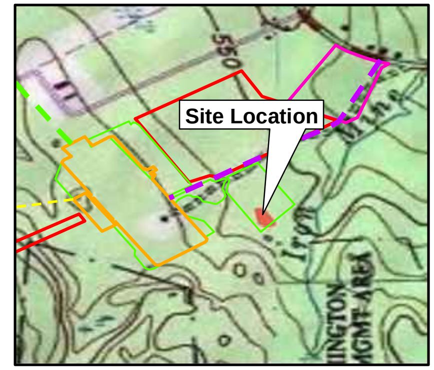
Soils at this site were found to consist of minimally modified Woodbridge fine sandy loam, 0–8 percent slopes, very stony soils (Figure B-3). The typical soil profile seen in the testing of this site was that of an A-Bw1-Bw2-C horizon sequence (Table B-2). This profile typically consisted of a dark brown (10YR 3/3) fine sandy loam A horizon, averaging 18 cm (7 in.) thick, over a dark yellowish brown (10YR 4/4) fine sandy loam Bw1 horizon with many coarse cobbles, averaging 10 cm (4 in.) in thickness. This Bw1 overlays a light olive brown (2.5Y 5/4) fine sandy loam Bw2 horizon that averages 20 cm (8 in.) in thickness. These layers are underlain by a light olive brown (2.5Y 5/4) gravelly fine sandy loam C horizon substratum recorded to at least 80 cm (31in.) below ground surface. This soil profile sequence is nearly the same as observed during the archaeological intensive (locational) survey.

Soil profiles across the site appeared consistent, both within the site itself and within the generalized known profiles of the surrounding upland area. For the majority of the site, the surface is composed of a single A horizon; the degree of disturbance to this horizon appeared minimal, likely limited to erosion, with no plowing evident, so it was not designated as a plowzone. The A horizon is followed by two B horizons (soil with color and structure development) down to the C horizon. Detailed descriptions of these horizons appear in Table B-2 below.

Table B-2. Soils Profile Description for the Iron Mine Brook Dune Site

Soil Horizon	Average Thickness (cm)	Physical Description
A	18	Dark brown (10YR 3/3); fine sandy loam; moderate medium granular structure; friable; many fine and medium roots; few very dark brown (10YR 2/2) earthworm casts; 5 percent gravel; moderately acid; abrupt wavy boundary
Bw1	10	Dark yellowish brown (10YR 4/4); fine sandy loam; weak medium subangular blocky structure; friable; common fine roots; few very dark brown (10YR 2/2) earthworm casts; 10 percent gravel; moderately acid; gradual wavy boundary
Bw2	20	Light olive brown (2.5Y 5/4) fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; 10 percent gravel; common medium prominent strong brown (7.5YR 5/6) masses of iron accumulation and light brownish gray (10YR 6/2) areas of iron depletion; moderately acid; clear wavy boundary
C	-	Light olive brown (2.5Y 5/4) gravelly fine sandy loam; weak thick plates of geogenic origin; very firm, brittle; 20 percent gravel; many medium prominent strong brown (7.5YR 5/8) masses of iron accumulation and light brownish gray (10YR 6/2) areas of iron depletion





LEGEND

Access Road

August 2015 Survey Areas

Addendum 2015 Survey Areas

February 2016 Survey Areas

Iron Mine Brook Dune Site

{NAN, <}

Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony

Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony

0 10 20 Meters

0 50 100 Feet

N W E S

Soils within the
Iron Mine Brook Dune Site

GRAY & PAPE, INC.
ARCHAEOLOGY - HISTORY - HISTORIC PRESERVATION

Figure B-3

6/8/2016 M:\00_Projects_Yearly\2015\15-69901\Working_GIS\00_Projects\001 March 2016 Report\16-69901_ApenndixB_Figure3_Soils.mxd

Gray & Pape Project 15-69901.001

Based on the soil series descriptions discussed in the Environmental Context (Section 2.4 above in the main report), the soils observed on the site are of the Woodbridge series. The soils here formed in lodgment till derived from gneiss, granite, and schist. They are moderately well drained and are very deep to moderately deep. No evidence is seen of past plowing at the site and the location of the site on a dune landform surrounded by wetland or wetland-like areas would have likely made the site area less than attractive for such agricultural activities. Erosion may have occurred here primarily due to the loss of forest cover from past logging episodes. As such, the site's natural profile is considered to be little disturbed. Artifacts recovered from the site are likely in or near their original context. The depth of archaeological deposits below surface across the site appears to indicate that little new sedimentation has occurred at the site since the glacial till was deposited. Artifacts are primarily clustered together near the surface of the site within the top 10 cm of the Bw subsoil, indicating that it is unlikely that they have been moved much by bioturbation since their original deposition.

5.2 Shovel Testing and Excavation Unit Results

5.2.1 Shovel Testing

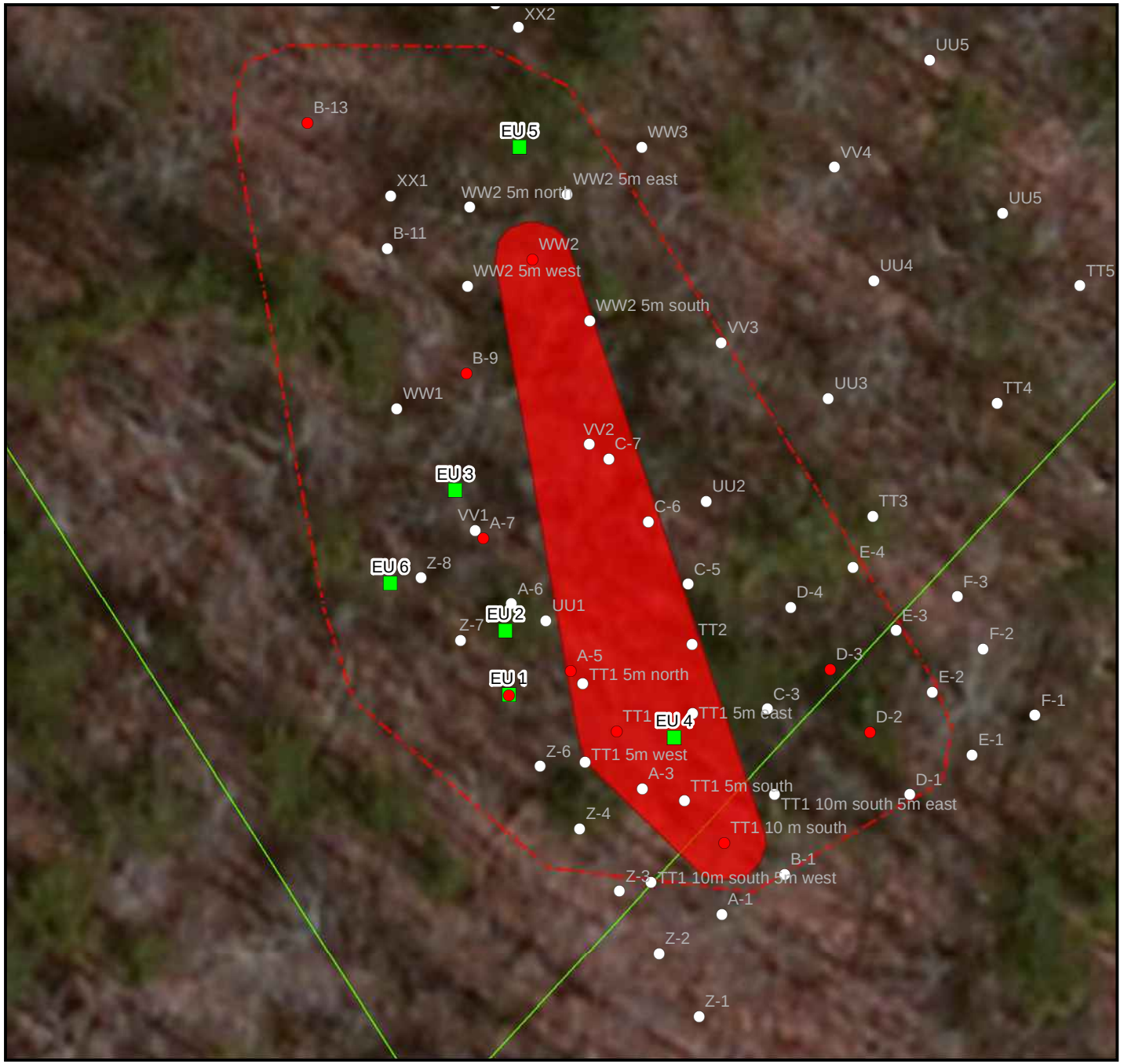
Site examination shovel testing (Figure B-4) consisted of a 5.0-m (16.4-ft) interval testing program, which was implemented on the same testing grid used for the Phase I archaeological identification survey. Fifty-eight STs were excavated during the intensive investigation, four of which included Native American artifacts. An additional 34 STs were excavated as part of the site examination, of which an additional seven produced artifacts. A summary of artifacts recovered from the site examination STs are found in Table B-3, but are discussed in more detail below.

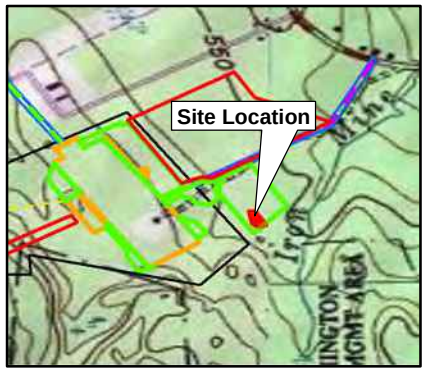
In total, 12 Native American artifacts were recovered from the site examination STs (Table B-3), including bifaces (n=1, 8 percent) and debitage (n=11, 92 percent). The lithic raw material was predominately a white quartz (n=7, 58 percent), followed by a tan (10Y 7/4) quartzite (n=5, 42 percent). Shovel tests expanded the previous boundaries of the site to the southeast and northwest (Figure B-4). The site appears to be constricted to the highest portion of the dune formation overlooking Iron Mine Brook.

Table B-3. Native American Artifacts Recovered from the Iron Mine Brook Dune Site (RI 2757)

Shovel Test	Stratum/ Soil	Depth (cm below surface)	Artifact Class	Artifact Type	Raw Material	Count
ST Z-5	Stratum II- B horizon	13–48	Debitage	Initial Reduction Flake	Quartzite	1
			Debitage	Flake Fragment	Quartzite	1
ST A-5	Stratum II- B horizon	20–80	Debitage	Angular Shatter	Quartz	1

Table B-3. Native American Artifacts Recovered from the Iron Mine Brook Dune Site (RI 2757)						
Shovel Test	**Stratum/ Soil**	**Depth (cm below surface)**	**Artifact Class**	**Artifact Type**	**Raw Material**	**Count**
ST A-7	Stratum II-B horizon	25–65	Debitage	Angular Shatter	Quartz	2
			Debitage	Initial Reduction Flake	Quartzite	1
			Projectile Point	Untyped Point Base	Quartzite	1
ST B-9	Stratum II- B horizon	20–30	Debitage	Flake (Unspecified Reduction Sequence)	Quartz	1
ST B-13	Stratum II- B horizon	29–38	Debitage	Chip	Quartz	1
ST D-2	Stratum II- B horizon	15–25	Debitage	Bifacial Thinning Flake	Quartz	1
			Debitage	Flake Fragment	Quartz	1
ST D-3	Stratum II- B horizon	9–16	Debitage	Chip	Quartz	1
Total						**12**





LEGEND

- ST - Negative
- ST - Positive
- Excavation Units
- Iron Mine Brook Dune Site Phase I Boundary
- Iron Mine Brook Dune Site Phase II Boundary
- Addendum Survey Areas

0 2 4 Meters

0 10 20 Feet

N W E S

Results of Iron Mine Brook Dune Site Archaeological Site Examination

GRAY & PAPE, INC. ARCHAEOLOGY · HISTORY · HISTORIC PRESERVATION

Figure B-4

5.2.2 Excavation Units

As mentioned above, six 1- by 1-m (3-by 3- ft.) EUs were excavated at the site (Figure B-4). Detailed descriptions of each of these EUs follow below. Included in these descriptions are profile photos of each unit, outlining the soil designations described during the excavation. For the most part, stratum designations were used to show generalized soil divisions, such as the separation of the surface soil from intact subsoil. Every effort was made to equate the zone designations to the natural soil horizons. Excavation levels are only applicable within the EU in which they originate and not across the entire site. Partial levels were excavated in cases where a zone/soil interface was encountered midway through a standard 10-cm (4-in.) level. More formal soil profile descriptions were made after the unit had been fully excavated.

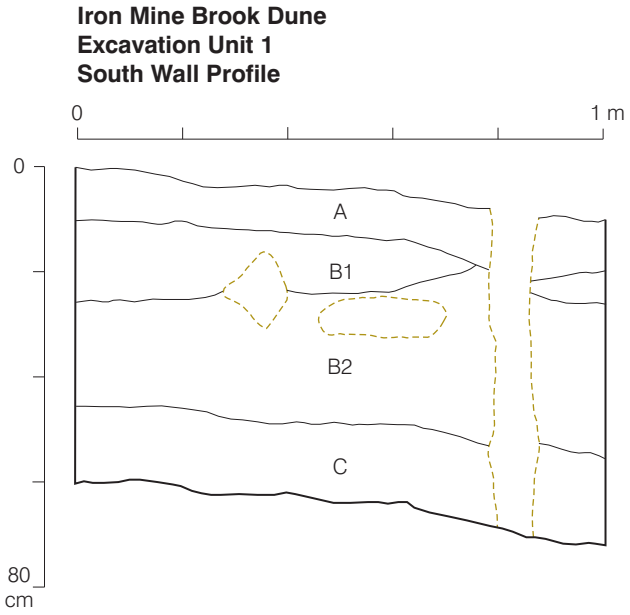
Excavation Unit 1

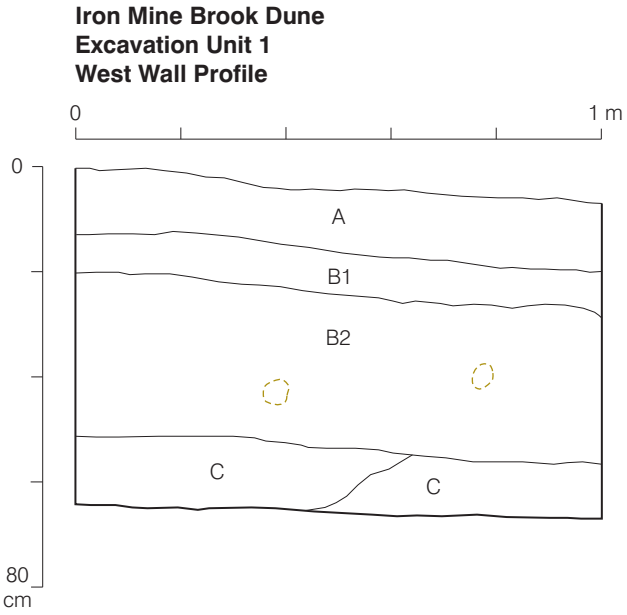
Excavation Unit 1 measured 1 by 1 m (3 by 3 ft.) and was located in the south eastern portion of the site (Figure B-4). The EU was placed here due to the recovery of cultural materials from ST Z-5. This EU consisted of six levels within four strata and was excavated to a maximum depth of 70 cmbd (28 in.) (50 cmbs [20 in]) (Figure B-5). Stratum I, the A horizon, was excavated within two levels, for a maximum thickness of 18 cm (7 in.). It consisted of a dark brown (10YR 3/3) fine sandy loam and was culturally sterile. Stratum II was excavated in a single arbitrary level, with a maximum thickness of 10 cm (8 in), and consisted of a dark yellowish brown (10YR 4/4) fine sandy loam Bw horizon. Stratum II was culturally sterile. Stratum III was excavated in two arbitrary levels to a maximum thickness of 20 cm (8 in.). It was comprised of light olive brown (2.5Y 5/4) fine sandy loam Bw horizon and was also culturally sterile. This stratum overlay Stratum IV, a C horizon. The C horizon was comprised of a light olive brown (2.5Y 5/4) gravelly fine sandy loam and was also culturally sterile. Zero artifacts were recovered from EU 1.

Excavation Unit 2

Excavation Unit 2 measured 1 by 1 m (3 by 3 ft.) and was located in the southeastern portion of the site and 5 m (16 ft.) north of EU 1 (Figure B-4). The EU was placed here due to the recovery of cultural materials from STs Z-5 and A-7. This EU consisted of seven levels within four strata and was excavated to a maximum depth of 80 cmbd (32 in.) (70 cmbs [28 in]) (Figure B-6). Stratum I, the A horizon, was excavated within one level, for a maximum thickness of 9 cm (4 in.). It consisted of a dark brown (10YR 3/3) fine sandy loam and yielded three pieces of debitage (Table B-4). Stratum II was excavated in a two arbitrary levels, with a maximum thickness of 20 cm (8 in), and consisted of a dark yellowish brown (10YR 4/4) fine sandy loam Bw horizon. The first level of Stratum II yielded eight pieces of debitage and one tool. The second level of Stratum II yielded a hammerstone and five pieces of debitage. In total, the Bw1 or Stratum II, yielded a total of 15 Native American artifacts. Stratum III was excavated in three arbitrary levels to a maximum thickness of 30 cm (12 in.). It was comprised of light olive brown (2.5Y 5/4) fine sandy loam Bw horizon and was culturally sterile. This stratum overlay Stratum IV, a C horizon. The C horizon was comprised of a light olive brown (2.5Y 5/4) gravelly fine sandy loam and was also culturally sterile.

South wall profile of Excavation Unit 1.



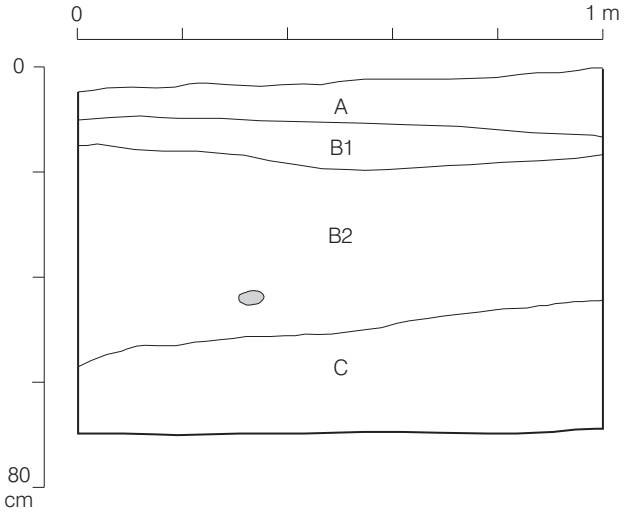


A	10YR 3/3 Dark Brown fine sandy loam
B1	10YR 4/4 Dark Yellowish Brown fine sandy loam
B2	2.5Y 5/4 Light Olive Brown fine sandy loam
C	2.5Y 5/4 Light Olive Brown gravelly fine sandy loam
◌	Root

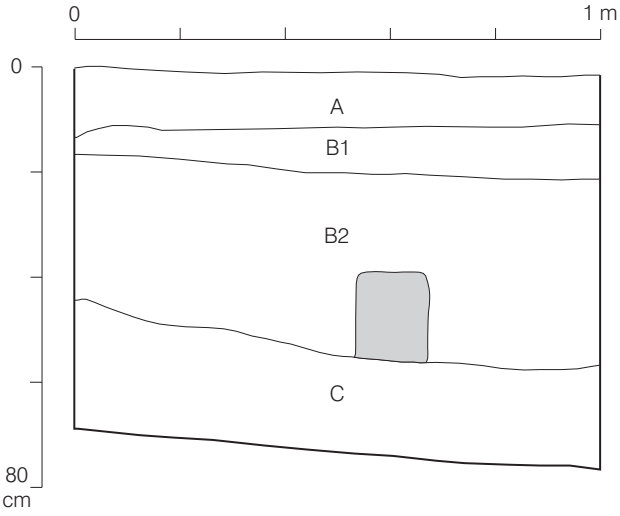
South and West Wall Profiles of Excavation Unit 1

South wall profile of Excavation Unit 2.

Iron Mine Brook Dune
Excavation Unit 2
South Wall Profile



Iron Mine Brook Dune
Excavation Unit 2
West Wall Profile



A	10YR 3/3 Dark Brown fine sandy loam
B1	10YR 4/4 Dark Yellowish Brown fine sandy loam
B2	2.5Y 5/4 Light Olive Brown fine sandy loam
C	2.5Y 5/4 Light Olive Brown gravelly fine sandy loam
⬭	Rock

South and West Wall Profiles of Excavtion Unit 2

Table B-4. Native American Artifacts Recovered from Excavation Unit 2						
Strat	**Level**	**Depth (cmbd)**	**Artifact Class**	**Artifact Type**	**Raw Material**	**Count**
I	1	10–20	Debitage	Biface Thinning Flake	Quartz	1
			Debitage	Flake Fragment	Quartzite	1
			Debitage	Biface Initial Reduction Flake	Quartzite	1
II	1	20–30	Debitage	Biface Thinning Flake	Quartzite	3
			Debitage	Flake Fragment - Lateral	Quartzite	1
			Debitage	Flake Fragment	Quartzite	1
			Debitage	Biface Initial Reduction Flake	Quartzite	1
			Debitage	Biface Thinning Flake	Quartz	1
			Debitage	Flake Fragment- Distal	Quartz	1
			Biface	Scraper	Quartzite	1
II	2	30–40	Ground/ Pecked/ Battered Stone	Hammerstone	Granite	1
			Debitage	Flake Fragment- Lateral	Quartz	1
			Debitage	Biface Thinning Flake	Quartzite	2
			Debitage	Flake (Unspecified Reduction Sequence)	Quartzite	1
			Debitage	Angular Shatter	Schist (possible)	1
Total						**18**

Excavation Unit 2 yielded a total of 18 Native American artifacts, three (17 percent) recovered from Stratum I; nine (50 percent) from Stratum II, Level 1; and the remaining six (33 percent) were recovered from Stratum II, Level 2. All artifacts are summarized by artifact class, type, and raw material in Table B-4. The assemblage recovered from EU 2 consisted of a hammerstone (n=1), a scraper (n=1), and debitage (n=16). The debitage is comprised mostly of quartzite (n=11 or 69 percent), followed by quartz (n=4 or 25 percent), and one piece of shatter is likely made from schist (n=1 or 7 percent). The hammerstone is made from locally available granite and the scraper is also made from quartzite.

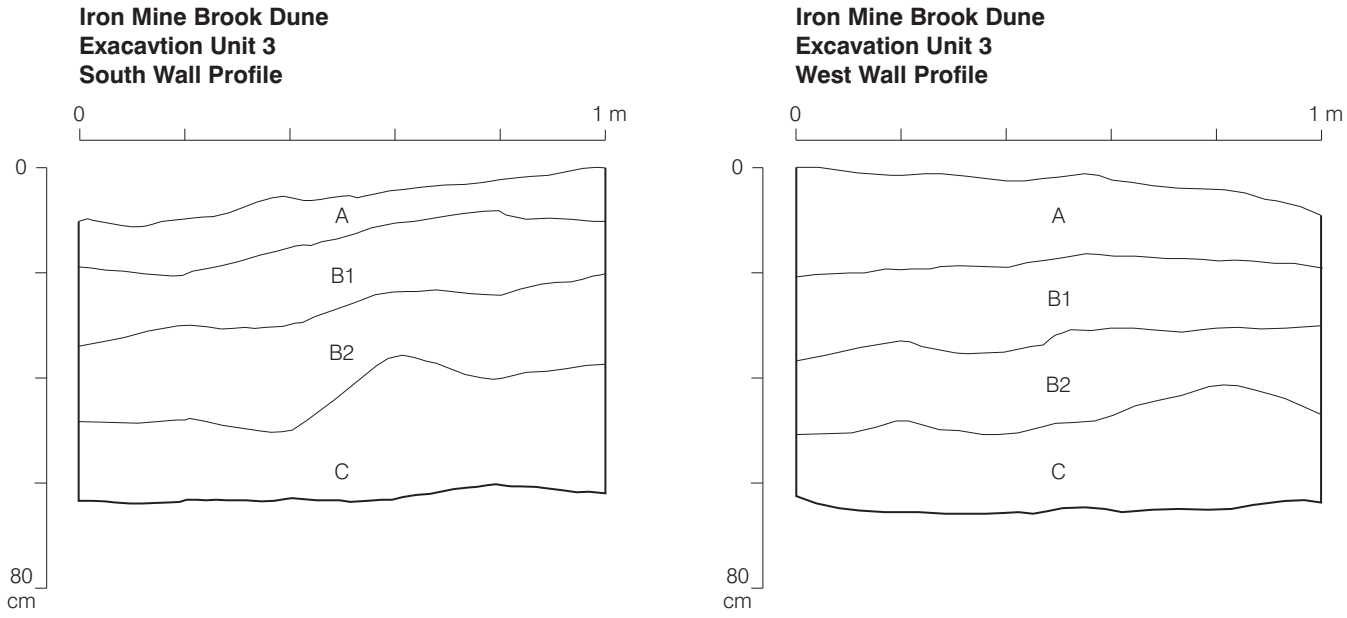
Excavation Unit 3

Excavation Unit 3 measured 1 by 1 m (3 by 3 ft.) and was located in the eastern portion of the site and approximately 2 m (7 ft.) north of ST A-7 (Figure B-4). The EU was placed here due to the recovery of cultural materials from STs A-7 and B-9. This EU consisted of six levels within four strata and was excavated to a maximum depth of 70 cmbd (28 in.) (60 cmbs [24 in]) (Figure B-7). Stratum I, the A horizon, was excavated within one level, for a maximum thickness of 10 cm (4 in.). It consisted of a dark brown (10YR 3/3) fine sandy loam and was culturally sterile. Stratum II was excavated in two arbitrary levels, with a maximum thickness of 20 cm (8 in), and consisted of a dark yellowish brown (10YR 4/4) fine sandy loam Bw horizon. Stratum II was culturally sterile. Stratum III was excavated in three arbitrary levels to a maximum thickness of 30 cm (12 in.). It was comprised of light olive brown (2.5Y 5/4) fine sandy loam Bw horizon and was culturally sterile. This stratum overlay Stratum IV, a C horizon. The C horizon was comprised of a light olive brown (2.5Y 5/4) gravelly fine sandy loam and was also culturally sterile. Zero artifacts were recovered from EU 3.

Excavation Unit 4

Excavation Unit 4 measured 1 by 1 m (3 by 3 ft.) and was located in the southcentral portion of the site and between STs TT1 and TT1 5m south (Figure B-4). The EU was placed here due to the recovery of cultural materials from the aforementioned STs during the archaeological site identification survey. This EU consisted of nine levels within four strata and was excavated to a maximum depth of 90 cmbd (35 in.) (80 cmbs [32 in]) (Figure B-8). Stratum I, the A horizon, was excavated within one level, for a maximum thickness of 10 cm (4 in.). It consisted of a dark brown (10YR 3/3) fine sandy loam and was culturally sterile. Stratum II was excavated in two arbitrary levels, with a maximum thickness of 20 cm (8 in), and consisted of a dark yellowish brown (10YR 4/4) fine sandy loam Bw horizon. Stratum II was culturally sterile. Stratum III was excavated in five arbitrary levels to a maximum thickness of 50 cm (20 in.) and was comprised of light olive brown (2.5Y 5/4) fine sandy loam Bw horizon. Stratum III, Level 1 yielded a single piece of quartz debitage. All additional levels of Stratum III were culturally sterile. This stratum overlay Stratum IV, a C horizon. The C horizon was comprised of a light olive brown (2.5Y 5/4) gravelly fine sandy loam and was also culturally sterile. Only a single piece of quartz debitage was recovered from EU 4.

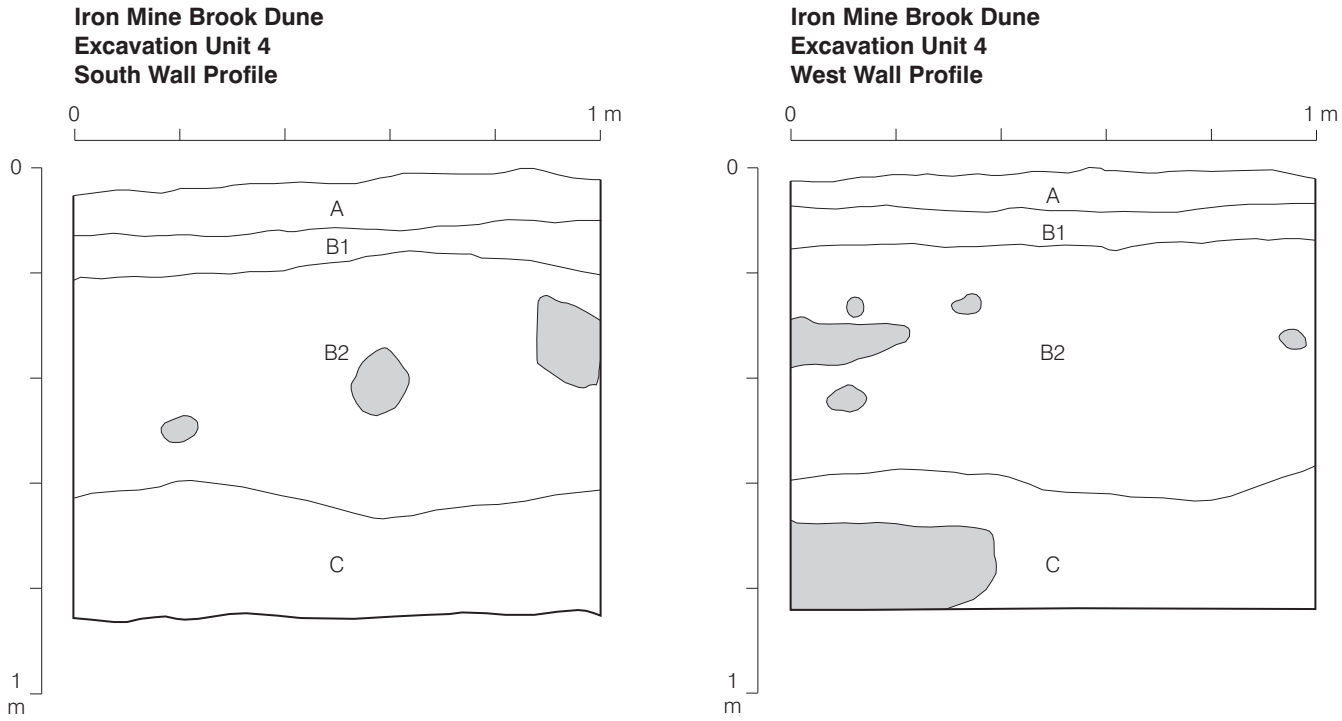
South wall profile of Excavation Unit 3.



A	10YR 3/3 Dark Brown fine sandy loam
B1	10YR 4/4 Dark Yellowish Brown fine sandy loam
B2	2.5Y 5/4 Light Olive Brown fine sandy loam
C	2.5Y 5/4 Light Olive Brown gravelly fine sandy loam

South and West Wall Profiles of Excavation Unit 3

South wall profile of Excavation Unit 4.



A	10YR 3/3 Dark Brown fine sandy loam
B1	10YR 4/4 Dark Yellowish Brown fine sandy loam
B2	2.5Y 5/4 Light Olive Brown fine sandy loam
C	2.5Y 5/4 Light Olive Brown gravelly fine sandy loam
	Rock

South and West Wall Profiles of Excavation Unit 4

Excavation Unit 5

Excavation Unit 5 measured 1 by 1 m (3 by 3 ft.) and was located in the northcentral portion of the site, approximately 7.7 m (ft.) north of ST WW2 (Figure B-4). The EU was placed here due to the recovery of cultural materials from the aforementioned ST during the archaeological site identification survey. This EU consisted of eight levels within four strata and was excavated to a maximum depth of 87 cmbd (34 in.) (77 cmbs [30 in]) (Figure B-9). Stratum I, the A horizon, was excavated within one level, for a maximum thickness of 10 cm (4 in.). It consisted of a dark brown (10YR 3/3) fine sandy loam and yielded a the basal/lateral fragment of a projectile point. Stratum II was excavated in a single arbitrary level, with a maximum thickness of 8 cm (3 in), and consisted of a dark yellowish brown (10YR 4/4) fine sandy loam Bw horizon. Stratum II yielded the tip/lateral fragment of the projectile point found in Stratum I. It also yielded two additional pieces of debitage. Stratum III was excavated in four arbitrary levels to a maximum thickness of 33 cm (13 in.) and was comprised of light olive brown (2.5Y 5/4) fine sandy loam Bw horizon and was culturally sterile. This stratum overlay Stratum IV, a C horizon. The C horizon was comprised of a very pale brown (10YR 7/4) sand and a light gray (10YR 7/2) loamy sand and was also culturally sterile.

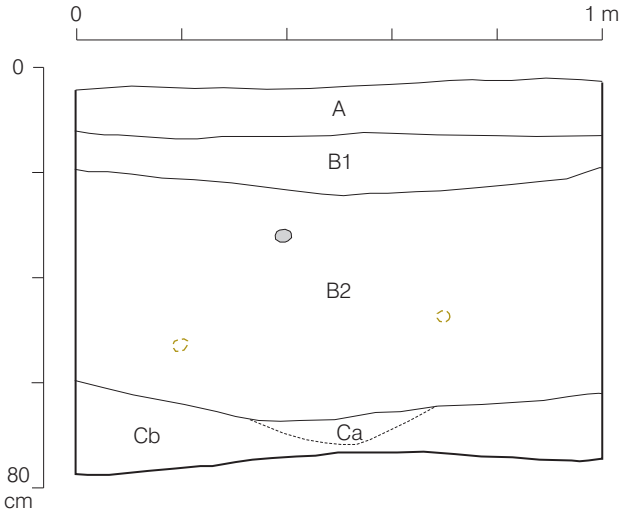
Excavation Unit 5 yielded a total of four Native American artifacts, one of which (25 percent) were recovered from Stratum I and the remaining three (75 percent) were recovered from Stratum II. All artifacts are summarized by artifact class, type, and raw material in Table B-5. The assemblage recovered from EU 5 consisted of a projectile point, likely a Greene point dating to the Middle Woodland period, and two pieces of debitage. The projectile point is broken in half with the base recovered from Stratum I and the tip from Stratum II. This is likely a representation of bioturbation relocating cultural materials within the soil column. The projectile is manufactured from Onondaga Chert while the debitage is made from quartz and quartzite.

Table B-5. Native American Artifacts Recovered from Excavation Unit 5

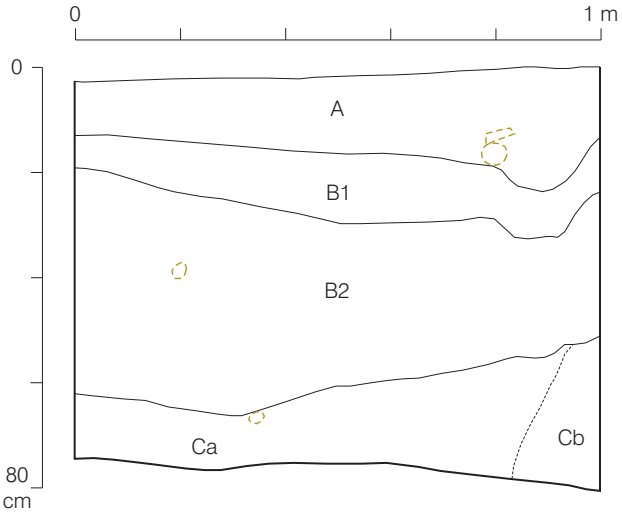
Strat	Level	Depth (cmbd)	Artifact Class	Artifact Type	Raw Material	Count
I	1	10–20	Projectile Point	Basal/Lateral Fragment (Possible Greene)	Onondaga Chert	1
II	1	26–36	Projectile Point	Tip/Lateral Fragment (Possible Greene)	Onondaga Chert	1
			Debitage	Chip	Quartz	1
			Debitage	Biface Thinning Flake	Quartzite	1
Total						**4**

South wall profile of Excavation Unit 5.

Iron Mine Brook Dune
Excavation Unit 5
South Wall Profile



Iron Mine Brook Dune
Excavation Unit 5
West Wall Profile



A	10YR 3/3 Dark Brown fine sandy loam
B1	10YR 4/4 Dark Yellowish Brown fine sandy loam
B2	2.5Y 5/4 Light Olive Brown fine sandy loam
Ca	10YR 7/4 Very pale brown sand
Cb	10YR 7/2 Light gray loamy sand
	Rock
	Root

South and West Wall Profiles of Excavation Unit 5

Excavation Unit 6

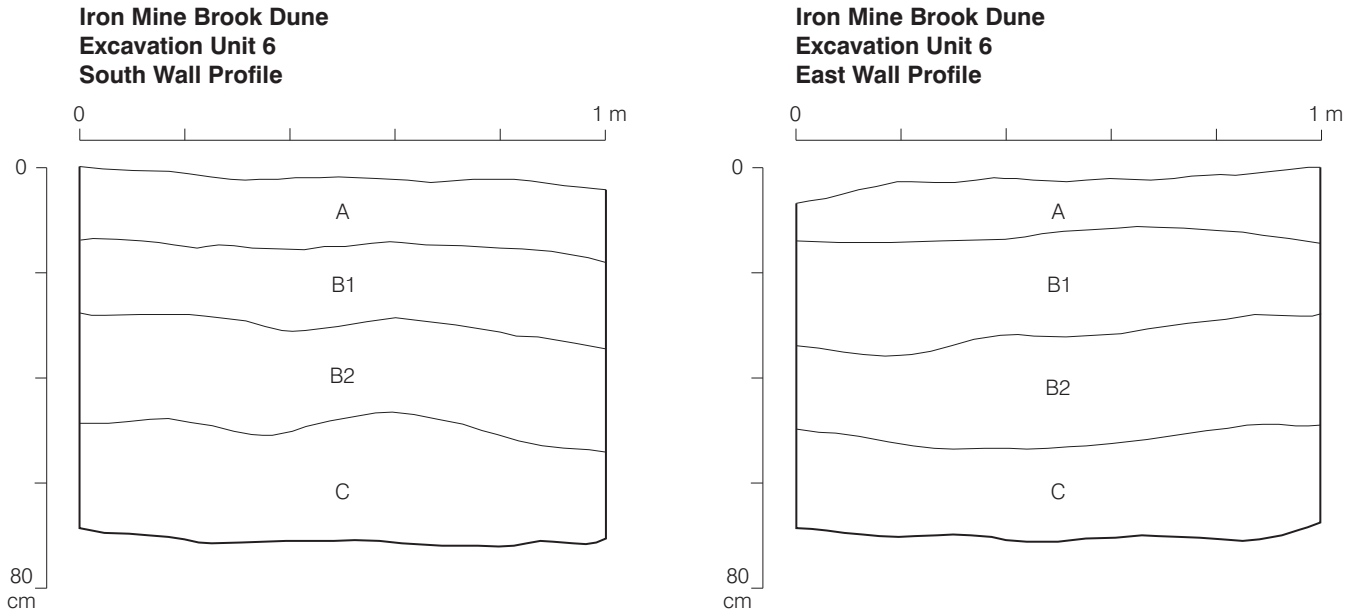
Excavation Unit 6 measured 1 by 1 m (3 by 3 ft.) and was located in the southeastern portion of the site and 5 m (16 ft.) west of A-7 (Figure B-4). The EU was placed here to test this portion of the landform as it begins to slope towards the west and south. This EU consisted of seven levels within four strata and was excavated to a maximum depth of 80 cmbd (32 in.) (70 cmbs [28 in]) (Figure B-10). Stratum I, the A horizon, was excavated within one level, for a maximum thickness of 10 cm (4 in.). It consisted of a dark brown (10YR 3/3) fine sandy loam and yielded three pieces of debitage (Table B-6). Stratum II was also excavated in a single arbitrary level, with a maximum thickness of 10 cm (4 in), and consisted of a dark yellowish brown (10YR 4/4) fine sandy loam Bw horizon. Stratum II yielded a single piece of quartzite debitage. Stratum III was excavated in three arbitrary levels to a maximum thickness of 30 cm (12 in.). It was comprised of light olive brown (2.5Y 5/4) fine sandy loam Bw horizon. Stratum III, level 1 yielded an additional piece of debitage manufactured from quartz. The remaining levels of Stratum III were culturally sterile. This stratum overlay Stratum IV, a C horizon. The C horizon was comprised of a light olive brown (2.5Y 5/4) gravelly fine sandy loam and was also culturally sterile.

Excavation Unit 6 yielded a total of two Native American artifacts, one from Stratum II and the other from Stratum III. All artifacts are summarized by artifact class, type, and raw material in Table B-6. The assemblage recovered from EU 6 is comprised entirely of debitage. The debitage was manufactured from quartz and quartzite, both of which are regionally available.

Table B-6. Native American Artifacts Recovered from Excavation Unit 6

Strat	Level	Depth (cmbd)	Artifact Class	Artifact Type	Raw Material	Count
II	1	17–27	Debitage	Flake Fragment - Distal	Quartzite	1
III	1	27–37	Debitage	Flake Fragment	Quartz	1
Total						**2**

South wall profile of Excavation Unit 6.



A	10YR 3/3 Dark Brown fine sandy loam
B1	10YR 4/4 Dark Yellowish Brown fine sandy loam
B2	2.5Y 5/4 Light Olive Brown fine sandy loam
C	2.5Y 5/4 Light Olive Brown gravelly fine sandy loam

South and East Wall Profiles of Excavation Unit 6

5.3 Artifacts

The Phase II archaeological site examination excavations at the Iron Mine Brook Dune site yielded a total of 37 Native American artifacts (Appendix A). The overall assemblage consists of 38 debitage, four bifaces, and one hammerstone (Table B-7)**.** The majority of the artifacts (58 percent) were recovered from the 1- by 1-m (3- by 3- ft.) EUs. The remaining 42 percent were found during the shovel test excavations. Discussion of the entire site's Native American assemblage is provided below.

Table B-7. Artifact Classes from Both Phases of Investigation at the Iron Mine Brook Dune Site by Provenience Type

Provenience Type	Lithic			Grand Total
	Biface	Debitage	Ground/Pecked/Battered Stone	
Phase I Shovel Test		6		**6**
Phase II Shovel Test	1	11		**12**
Excavation Unit	3	21	1	**25**
Grand Total	**4**	**38**	**1**	**43**

Raw Material

Raw material types identified from this site are summarized in Table B-8. Quartzite was the most common material type present at 44 percent, with a tan quartzite being the most common variety. Quartz followed at 38 percent, with it predominantly being comprised of milky quartz. Rhyolite comprised 9 percent of the assemblage, followed by chert at 5 percent, and schist and granite both at 2 percent.

Table B-8. Native American Lithic Artifacts by Raw Material at the Iron Mine Brook Dune Site

Raw Material	Biface	Debitage	Ground/Pecked/Battered Stone	Grand Total	Percent
Quartz		16		**16**	38
Quartzite	2	17		**19**	44
Rhyolite		4		**4**	9
Chert	2			**2**	5
Schist		1		**1**	2
Granite			1	**1**	2
Grand Total	**4**	**38**	**1**	**43**	**100**

The quartz and quartzite materials in the collection were most likely obtained locally from stream gravels, from the glacial till that cover the landscape, or directly from exposed bedrock sources. The blue gray chert recovered from the site is reminiscent of Onondaga chert, which originates to the west in New York State.

Quartz, quartzite, granite, and schist occur naturally within a local region around the site, while the cherts and rhyolites were imported from outside the region. The high proportion of quartzite and quartz at this site likely reflects the relative availability of this material type rather than an overall preference of Native American knappers in this region. The lithic material collection from this site shows that the native group(s) that used this site depended mainly on local materials, but either had an established trade network or a far enough migration range to encounter materials not native to this region.

Debitage

In total, 38 pieces of debitage were collected during this investigation. Eight distinct debitage types are represented in the assemblage (Table B-9, Plate B-6), including initial reduction flakes (Class 1), flakes of unspecified reduction sequence (Class 2), biface initial reduction flakes (Class 3), biface thinning flakes (Class 4), biface finishing flakes (Class 5), chips (Class 6), flake fragments (Class 7), and angular shatter (Class 8). Initial reduction trajectory debitage (i.e., angular shatter and initial reduction flakes) consists of one of the smallest proportions of the debitage assemblage (n=6, 16 percent), suggesting that initial reduction activities were not an important part of the reduction activates on site.

Table B-9. Native American Artifact Debitage by Raw Material at the Iron Mine Brook Dune Site

Debitage Class	Rhyolite	Quartz	Quartzite	Schist	Grand Total
Initial reduction flake			2		2
Flake Unspecified Reduction Sequence		1	1		2
Biface initial reduction flake			2		2
Biface thinning flake	2	3	6		11
Biface finishing flake	1				1
Chip		4			4
Flake Fragment	1	5	6		12
Angular Shatter		3		1	4
Grand Total	**4**	**16**	**17**	**1**	**38**

Biface manufacture is represented by 30 (79 percent) flakes, including biface initial reduction flakes (n=3), biface thinning flakes (n=14), biface finishing flakes (n=14), chips (n=10), and microdebitage (n=1). This suggests that biface manufacture and/or maintenance were the main focus of the lithic reduction trajectory at the site. Five percent of debitage consisted of non-diagnostic flake fragments (n=2). Flake fragments can be produced at any time during the knapping process.

Plate B-6. Native American debitage recovered during the Phase II archaeological site examination. Left to right: quartz biface thinning flake, quartzite flake fragment, and quartzite biface initial reduction flake from Excavation Unit 2, Stratum I, Level 1; quartzite flake fragment from Shovel Test Z-5; and quartz flake fragment from Excavation Unit 4, Stratum III, Level 1.

Bifaces

Four bifacial tools were recovered during site excavation investigations (Plate B-7). The bifacial tools recovered were made of Onondaga chert and quartzite. Table B-10 presents the data on the bifacial tools, including measurements and weights for complete bifaces.

Table B-10. Native American Bifaces by Raw Material at the Iron Mine Brook Dune Site

Provenience	Strat	Level	Depth (cmbd)	Object Type	Biface Stage	Segment	Material Type	Weight	Count
ST A-7	II	1	25–35	Biface – Basal Fragment	Stage 4-Formed	Complete	Quartzite, Tan	1.5	1
EU 5	I	1	10–20	Biface – Basal Fragment	Stage 4-Formed	Complete – Possible Greene Projectile Point	Onondaga Chert	2.8	1
	II	1	26–36	Biface – Tip Fragment	Stage 4-Formed	Complete – Possible Greene Projectile Point	Onondaga Chert	3.4	1
EU 2	II	1	20–30	Biface	Scraper	--	Quartzite	13	1
Total									**4**

Of the bifacial tools recovered during site examination investigations, only two are diagnostic. These include the two fragments, which refit and appear to be a possible Greene projectile point, that were recovered from EU 5. The bifacial tool assemblage from this site suggests that the main activities consisted of tool maintenance and resharpening. This also indicates that initial reduction and tool manufacture were primarily occurring off site. Two of the bifaces recovered from the site are diagnostic projectile points, one is a scraper, and one is an undiagnostic basal fragment of a projectile point. The bifaces recovered from this site do not appear to be concentrated in one particular area, rather they are spread across the landform.

Diagnostic Projectile Points

A single temporally diagnostic projectile point was recovered during the site investigations (Table B-10). This was recovered from EU 5 between the A and Bw1 horizons and refit to produce a nearly complete projectile point. The point type appears similar to that of the Greene projectile point dating to the Middle Woodland Period (Boudreau 2008). These projectile points were described by Ritchie (1969) on Martha's Vineyard, but are recognized throughout southern New England extending to the north and west into New York and Pennsylvania, and are primarily found in Hudson Valley of New York State associated with the Kipp Island Phase. The material (e.g., Onondaga chert) and the projectile point type definitely appear to suggest a New York trade network.

Plate B-7. Native American bifaces and scrapers recovered during the Phase II archaeological site examination. Left to right: quartzite projectile point base fragment from Shovel Test A-7; chert projectile point base fragment from Excavation Unit 5, Stratum I, Level 1; chert projectile point tip fragment from Excavation Unit 5, Stratum II, Level 1 (note these two fit together to form a Greene projectile point); and quartzite scraper from Excavation Unit 2, Stratum II, Level 1.

Ground or Pecked Stone

A single hammerstone manufactured from granite was found during the Phase II archaeological site examination (Plate B-8). It exhibits bipolar damage and was recovered from the Bw1 horizon. This artifact was found in EU 2, Stratum II in conjunction with the scraper, both of which appear to have been recovered from intact subsoil deposits.

5.4 Site Structure

As noted above, this site is located on a remnant dune, which likely formed shortly after the last glacial period, and lies at an elevation of 174 m (570 ft.) above sea level. Site soils formed in lodgment till. While the soils themselves do not exhibit a high level of development, they have been forming for approximately 14,000 years. The soil profile is uniform across the site, with little to no variability. The soil exhibits minimal disturbance, with alterations observed being mainly related to either the access trails present on the north and south sides of the site. As such, the site is considered to have a good potential for well-preserved artifact context.

For the most part, the soils at the site were relatively thin, with the A horizon averaging 10 cm (4 in.) in thickness and the Bw1 horizon averaging 20 cm (8 in.), and Bw2 horizon averaging between 30 and 40 cm (12 and 16 in.) thick. The average thickness of the C horizon is unknown as excavations did not extend to its base; however, in most cases a single 10-cm (4-in.) level was the maximum depth of excavation into this horizon. As such, the A horizon averaged a single 10-cm (4-in.) levels, the Bw horizons averaged up to five or six 10-cm (4-in.) levels, and the C horizon averaged one 10-cm (4-in.) level.

Nine percent (n=4) of all artifacts recovered from the site examination investigations came from the A horizon. The remaining 91 percent were recovered from the Bw horizons. Sixty-five percent of all artifacts were recovered from the first 10 cm (4 in.) of the Bw1 horizon, while only 19 percent of all artifacts were recovered from the second level of the Bw1 horizon, and seven percent of all artifacts were recovered from the first 10 cm (4 in.) of the Bw2 horizon. Clearly, the majority of artifacts were concentrated at the top of the Bw horizon. Those recovered from the second level of the Bw horizon may have worked down the soil column via displacement from natural processes (i.e., bioturbation). Some artifacts may have been displaced upwards in the soil column by the same processes. This supposition is directly supported by the findings from EU 5, where a Middle Woodland Greene projectile point base was found in the A horizon, immediately overlaying the tip of the projectile point which was recovered within the top 10 cm (4 in.) of the underlying Bw1 horizon.

While no major erosional events are assumed to have occurred at the site, it is likely that a small amount of sediments have eroded due to wind and fluvial activities associated with nearby Iron Mine Brook. This small input of sediment, combined with an annual input of decaying organics likely allowed the A horizon to be slowly built up over time, allowing for burial of artifacts. Natural bioturbation processes may have moved artifacts up or down in the soil profile. Unfortunately, no other characteristics of the artifact assemblages are present in the A and Bw horizon to be able to better distinguish the multiple occupations that appear to have occurred here.

Plate B-8. Native American ground/pecked stone hammerstone recovered from Excavation Unit 2, Stratum II, Level 2 during the Phase II archaeological site examination.

Based on the assembled data, it is postulated that this site was a base camp for hunting parties, where people waited and observed game in the stream valley below. Lithic activities seem to be centered on biface maintenance or the production of new points from blanks or preforms brought onto the site with the hunters. The artifact concentration seen within this site likely represents a retooling episode. The relatively light density of artifacts across this site would indicate that the site was not often visited, with the main visit(s) occurring in the Middle Woodland period.

5.5 Answers to the Research Questions

1) What is the size and layout of the site? Are there features associated with the site? Can activity areas be defined, or is the site comprised of a single area? Does the site reflect use of the adjacent large wetland?

The Iron Mine Brook Dune site now measures approximately 65 m (213 ft.) northwest to southeast by 35 m (115 ft.) southwest to northeast (0.2 ha [0.4 acres]). This encompasses the positive STs and EUs identified during both the Phase I archaeological site identification survey and subsequent Phase II archaeological site examination. The site occupies the topographically highest portions of the landform (e.g., the barchans or parabolic dune with its tails pointing generally northeast). Tools were recovered from both EUs 2 and 5, located on nearly opposite positions of the landform with EU 5 to the north and EU 2 located to the south.

No features were identified, however, the cultural materials appear to have been recovered from intact subsoil deposits. The cultural materials recovered from the Iron Mine Brook Dune site suggest tool maintenance activities and the diagnostic materials suggest a Middle Woodland period use of the landform. This particular site location may have been selected due to its topographically advantageous setting as a high spot by nearby wetland areas; however, no faunal or floral remains were recovered from the site to make a distinct determination.

2) Are there any faunal or floral remains at the site? Do these provide any indication of the seasonality of the site?

No floral or faunal remains were recovered.

3) Does the site include multiple components, or is it confined to a single time period? Is there any evidence to indicate whether the site was a single occupation, or was used over a period of years or decades? Are there artifacts that indicate a distinct cultural period? Can features or carbons sample be located to help date the site?

A single diagnostic tool was recovered from EU 5. This was a broken Greene projectile point dating to the Middle Woodland Period. The diagnostic tool was manufactured from Onondaga chert, which is not locally available. This suggests trade relations with, or an influx of, people from the Hudson Valley, New York, during this time period. No other diagnostic materials were recovered.

4) What kinds of tools are present? Do these tools provide indications of the function of the site?

Three tool types were recovered during the archaeological investigations at the Iron Mine Brook Dune site. These include projectile points, a scraper, and a hammerstone. The artifact assemblage indicates biface manufacture and maintenance at the site. Furthermore, the assemblage suggests that this site was used as a base camp for hunting. The recovery of the scraper suggests that game was acquired and processed at the site, or at least this possibility was prepared for by the site occupants.

5) What types of lithic raw materials were used at the site? Are these raw materials primarily local in origin, or were they obtained from non-local sources? Do the raw materials in the debitage assemblage match those of certain tools, or the whole assemblage?

The raw material types identified within the artifact assemblage is comprised largely of locally available materials (e.g., quartz, quartzite, schist, and granite). Additional materials represented are rhyolite and Onondaga chert, both of which are found in the Hudson Valley region of New York State, though rhyolite is also found throughout southern New England. The only diagnostic artifact recovered was manufactured from the Onondaga chert and suggests, minimally, external trade with those in the Hudson Valley region, or use of the site by those originally from the Hudson Valley region.

6) Are there any indications of how the site relates to any other the sites in the local region? How does this site fit in with the history of settlement of the region? Do the results of the site examinations provide information to understand the relative position and significance of this site within the homelands of the ancestral Nipmuc or Narragansett people?

State site records on file at RIHPHC record nine pre-contact Native American sites in Burrillville. Two of the sites, RI 1655 and RI 1656, are located south of the Branch River in the village of Nasonville. They area described as low density, lithic scatters. The Hummingbird site (RI 1660) is described as a low density, lithic scatter yielding chipped quartz. The Mallard site (RI 1661) is similar to the Hummingbird site, though it yielded a Small Stemmed Tradition projectile point. Archaeological survey for the Rhode Island Army National Guard identified the RTI 1 site (RI 2494) and the Clear River site (RI 2493). The RTI 1 site was a concentrated locus of 16 quartzite flakes contained within an area less than 10 m^2 (108 $ft.^2$). The Clear River site was another low density archaeological site that yielded chert, rhyolite, and quartz debitage along a knoll overlooking its namesake. The nonlocal chert and rhyolite suggest possible trade with eastern New York, similar to the Iron Mine Brook Dune site. Both the materials and assemblage were similar between the two sites. Three sites, RI 2568, RI 2569, and the AL find spot, were identified during previous surveys of the Burrillville Compressor Station located immediately north of the current project area. The Algonquin Lane site, RI 2568, was located immediately west of the present compressor station (Waller 2013; Waller 2014). It was larger in size and more varied in content than the Mallard site, Hummingbird site, RIT 1 site, RI 1655, and RI 1656. The Algonquin Lane site, RTI 1 site, Clear River site, and the Iron Mine Brook Dune site yielded quartzite debitage, providing evidence for the exploitation of the interior quartzite source areas of Connecticut, Massachusetts, and Rhode Islands. The Clear River site, Algonquin Lane site, and the Iron Mine Brook site all produced evidence for hunting, processing, and camping.

The Iron Mine Brook Dune site is located in northwestern Rhode Island, which correlates to the traditional area of seventeenth century Narragansett Indian hunting and resource exploration as

described by Roger Williams in 1643 and within the ancestral Nipmuc lands (Rhode Island Department of State 2016). The site appears to represent a single component site that was occupied for several days and used as a hunting base camp. The recovery of a diagnostic Greene projectile point suggests a Middle Woodland period occupation. Unfortunately, little is available to determine if a cultural connection exists between the Native American peoples who utilized the site and the ancestral Nipmuc or Narragansett.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Gray & Pape has conducted a Phase II archaeological site examination of the Iron Mine Brook Dune site (RI 2757) located within the proposed Invenergy, LLC, the Clear River Energy Center project in Burrillville, Providence County, Rhode Island. The proposed impacts to the site are the use of the area as a laydown area, thus grading activities are likely to occur. This archaeological investigation was conducted in accordance with Federal and State legislation. The site examination investigation was based on prior Phase I archaeological site identification survey. The site examination investigation phase included the excavation of STs and excavation units March 14–18, 2016, building off of, and taking into account, the previous work done on each site.

The Iron Mine Brook Dune site (RI 2757) was investigated with an additional 34 STs and six EUs. All EUs were excavated as 1- by 1-m (3- by 3-ft.) units and were placed in areas were STs recovered Native American artifacts. Results of these excavations showed that, while the Iron Mine Brook Dune site was somewhat larger (0.2 ha [0.4 ac.]), it contained little additional information about Pre-Contact Native American lifeways. Based on diagnostic lithic projectile points recovered from this site, it appears that at least one occupation occurred here during the Middle Woodland cultural period. While cultural deposits seem relatively intact, no cultural features were located within this site. A scraper suggests the site was used for processing, while the majority of the artifacts recovered indicate the main activities at the site were for biface tool manufacture and maintenance. Overall, the Iron Mine Brook Dune site appears to represent a site where game hunters stopped to retool or maintain their lithic tools, while also taking advantage of the site's natural setting within the landscape near an active stream. No features, or artifacts that denote the presence of feature activity, were found within the site. This in turn likely indicates that, while the site may have been reused periodically over an unknown period of time, no long-term occupations occurred here. Based on the lack of diversity of artifacts and the absence of cultural features, this site lacks the ability to expand on the region's knowledge of Pre-Contact Native American peoples and, therefore, no further archaeological investigation is recommended for the Iron Mine Brook Dune site.

7.0 REFERENCES CITED

Boudreau, Jeff

2008 *A New England Typology of Native American Projectile Points*. Freedom Digital, Ashland, Massachusetts.

Bradley, B. and C. Garth Sampson

1986 Artifacts from the Cottages Site. In P*aleoecology and Archaeology of an Acheulian Site at Caddington, England*. Edited by C.G. Sampson, pp. 83,137. S.M.U. Press, Dallas, Texas.

Bordes, Francois

1961 *Typologie du Paleolithic Ancien et Moyen*. Bordeaux, Delmas, France.

Callahan, Everett

1979 The Basics of Biface Knapping in the Eastern Fluted Point Tradition: A Manual for Flintknappers and Lithic Analyst. *Archaeology of Eastern North America* 7(1): 1-179.

Cambron, James W., and David C. Hulse

1964 [1990] *Handbook of Alabama Archaeology: Part I Point Types*. Alabama Archaeological Society, Huntsville.

Frison, George C.

1974 *The Casper Site: A Hell Gap Bison Kill on the High Plains*. Academic Press, New York, New York.

Justice, Noel D.

1987 *Stone Age Spear and Arrow Points of the Midcontinental and Eastern United States*. Indiana University Press, Bloomington.

Newcomer, Mark

1971 Some Quantitative Experiments in Handaxe Manufacture. *World Archaeology*. 3 (1):85–94

Newcomer, Mark H and C. Karlin

1987 Flint chips from Pincevent. In Sieveking, G. de G. and Newcomer, M.H. (eds)., *The Human uses of Flint and Chert. Proceedings of the Fourth International Flint Symposium held at Brighton Polytechnic 10-15 April 1983*. Cambridge University Press, Cambridge. 33–36.

Rhode Island Department of State

2016 Rhode Island History. http://sos.ri.gov/divisions/Civics-And-Education/RI-History. Accessed April 2016.

Rhode Island Historical Preservation and Heritage Commission (RIHPHC)
2015 *Performance Standards and Guidelines for Archaeology in Rhode Island*. Rhode Island Historical Preservation and Heritage Commission, Providence, RI.

Ritchie, W.A.
1969 *The Archaeology of Martha's Vineyard*. Second edition. Natural History Press, Garden City, New York.

Robbins, Maurice
1980 *Wapanucket*. Massachusetts Archaeological Society, Attleboro, Massachusetts.

Sellet, Frederic
1993 Chaîne Opératoire; The Concept and Its Applications. *Lithic Technology*. 18 (1/2):106–112.

Spiess, A.E., and D. Wilson
1989 Paleoindian Lithic Distribution in the New England-Maritimes Region. In *Eastern Paleoindian Lithic Resource Use*. Edited by C. J. Ellis and J. C. Lothrop, pp. 75–97. Westview Press, Boulder, Colorado.

Tixier, Jaques, Marie-Louise Inizan, and Helene Roche
1980 *Prehistorie de la Pierre Taillee I, Terminologie et Technologie.* Valbonne Cedex, France.

Waller, Joseph N.
2013 *Algonquin Incremental Market Project: Archaeological Identification (Phase I[c]) Survey, Burrillville Compressor Station, Burrillville, Rhode Island.* PAL Report submitted to Spectra Energy Partners, LP., Waltham, Massachusetts.

2014 *Phase II Archaeological Site Examination of the Algonquin Lane Site (RI 2568), Algonquin Incremental Market Project - Burrillville Compressor Station, Burrillville, Rhode Island.* PAL Report submitted to Spectra Energy Partners, LP., Waltham, Massachusetts.

APPENDIX C

PHASE II ARCHAEOLOGICAL SITE EXAMINATION OF THE IRON MINE BROOK DUNE SITE (RI 2757)

ARTIFACT INVENTORY

Artifact Inventory for the Phase II Archaeological Site Examination of the Iron Mine Brook Dune Site (RI 2757), Burrillville, Providence County, Rhode Island

Site Name	Unit	Transect	Number	Excavation Unit Number	Strat	Level	Level Depth (cmbd)	Ct	Object Type	Debitage Class	Material Type	Weight
Iron Mine Brook Dune Site (RI 2757)	Shovel Test	Z	5		II		13-48	1	Debitage	Class 1 - Initial reduction flake	Quartzite	8.6
Iron Mine Brook Dune Site (RI 2757)	Shovel Test	Z	5		II		13-48	1	Debitage	Class 7 - Flake Fragment	Quartzite	12.5
Iron Mine Brook Dune Site (RI 2757)	Shovel Test	A	5		II		20-80	1	Debitage	Class 8 - Angular Shatter	Quartz	0.04
Iron Mine Brook Dune Site (RI 2757)	Shovel Test	A	7		II		25-65	2	Debitage	Class 8 - Angular Shatter	Quartz	1.1
Iron Mine Brook Dune Site (RI 2757)	Shovel Test	A	7		II		25-65	1	Debitage	Class 1 - Initial reduction flake	Quartzite	10.2
Iron Mine Brook Dune Site (RI 2757)	Shovel Test	A	7		II		25-65	1	Projectile Point		Quartzite	1.5
Iron Mine Brook Dune Site (RI 2757)	Shovel Test	B	9		II		20-30	1	Debitage	Class 2 - Flake (unspecified reduction sequence)	Quartz	0.6
Iron Mine Brook Dune Site (RI 2757)	Shovel Test	B	13		II		29-38	1	Debitage	Class 6 - Chip	Quartz	0.2
Iron Mine Brook Dune Site (RI 2757)	Shovel Test	D	2		II		15-25	1	Debitage	Class 4 - Biface thinning flake	Quartz	0.1
Iron Mine Brook Dune Site (RI 2757)	Shovel Test	D	2		II		15-25	1	Debitage	Class 7 - Flake Fragment	Quartz	0.1
Iron Mine Brook Dune Site (RI 2757)	Shovel Test	D	3		II		9-16	1	Debitage	Class 6 - Chip	Quartz	0.1
Iron Mine Brook Dune Site (RI 2757)	Test Unit			2	I	1	10-20	1	Debitage	Class 4 - Biface thinning flake	Quartz	1.3
Iron Mine Brook Dune Site (RI 2757)	Test Unit			2	I	1	10-20	1	Debitage	Class 7 - Flake Fragment	Quartzite	0.2
Iron Mine Brook Dune Site (RI 2757)	Test Unit			2	I	1	10-20	1	Debitage	Class 3 - Biface initial reduction flake	Quartzite	5.7
Iron Mine Brook Dune Site (RI 2757)	Test Unit			2	II	1	20-30	3	Debitage	Class 4 - Biface thinning flake	Quartzite	4.8
Iron Mine Brook Dune Site (RI 2757)	Test Unit			2	II	1	20-30	1	Misc.		Quartzite	13
Iron Mine Brook Dune Site (RI 2757)	Test Unit			2	II	1	20-30	1	Debitage	Class 7 - Flake Fragment	Quartzite	0.3
Iron Mine Brook Dune Site (RI 2757)	Test Unit			2	II	1	20-30	1	Debitage	Class 7 - Flake Fragment	Quartzite	1.6
Iron Mine Brook Dune Site (RI 2757)	Test Unit			2	II	1	20-30	1	Debitage	Class 7 - Flake Fragment	Quartz	0.1
Iron Mine Brook Dune Site (RI 2757)	Test Unit			2	II	1	20-30	1	Debitage	Class 4 - Biface thinning flake	Quartz	0.2
Iron Mine Brook Dune Site (RI 2757)	Test Unit			2	II	1	20-30	1	Debitage	Class 3 - Biface initial reduction flake	Quartzite	31.5
Iron Mine Brook Dune Site (RI 2757)	Test Unit			2	II	2	30-40	1	Debitage	Class 8 - Angular Shatter	Shist (possible)	
Iron Mine Brook Dune Site (RI 2757)	Test Unit			2	II	2	30-40	1	Ground/pecked/battered stone	Hammerstone	Granite	264.9
Iron Mine Brook Dune Site (RI 2757)	Test Unit			2	II	2	30-40	1	Debitage	Class 7 - Flake Fragment	Quartz	0.6
Iron Mine Brook Dune Site (RI 2757)	Test Unit			2	II	2	30-40	2	Debitage	Class 4 - Biface thinning flake	Quartzite	6
Iron Mine Brook Dune Site (RI 2757)	Test Unit			2	II	2	30-40	1	Debitage	Class 2 - Flake (unspecified reduction sequence)	Quartzite	10.9

Site Name	Unit	Transect	Number	Excavation Unit Number	Strat	Level	Level Depth (cmbd)	Ct	Object Type	Debitage Class	Material Type	Weight
Iron Mine Brook Dune Site (RI 2757)	Test Unit			4	III	1	19-29	1	Debitage	Class 7 - Flake Fragment	Quartz	2.3
Iron Mine Brook Dune Site (RI 2757)	Test Unit			5	I	1	10-20	1	Projectile Point		Onondaga	2.8
Iron Mine Brook Dune Site (RI 2757)	Test Unit			5	II	1	26-36	1	Debitage	Class 6 - Chip	Quartz	0.2
Iron Mine Brook Dune Site (RI 2757)	Test Unit			5	II	1	26-36	1	Debitage	Class 4 - Biface thinning flake	Quartzite	0.4
Iron Mine Brook Dune Site (RI 2757)	Test Unit			5	II	1	26-36	1	Projectile Point		Onondaga	3.4
Iron Mine Brook Dune Site (RI 2757)	Test Unit			6	III	1	27-37	1	Debitage	Class 7 - Flake Fragment	Quartz	0.5
Iron Mine Brook Dune Site (RI 2757)	Test Unit			6	II	1	17-27	1	Debitage	Class 7 - Flake Fragment	Quartzite	0.2