AN ARCHAEOLOGICAL SITE LOCATIONAL SURVEY FOR THE WATER DISINFECTION SYSTEM, ACTON, MASSACHUSETTS

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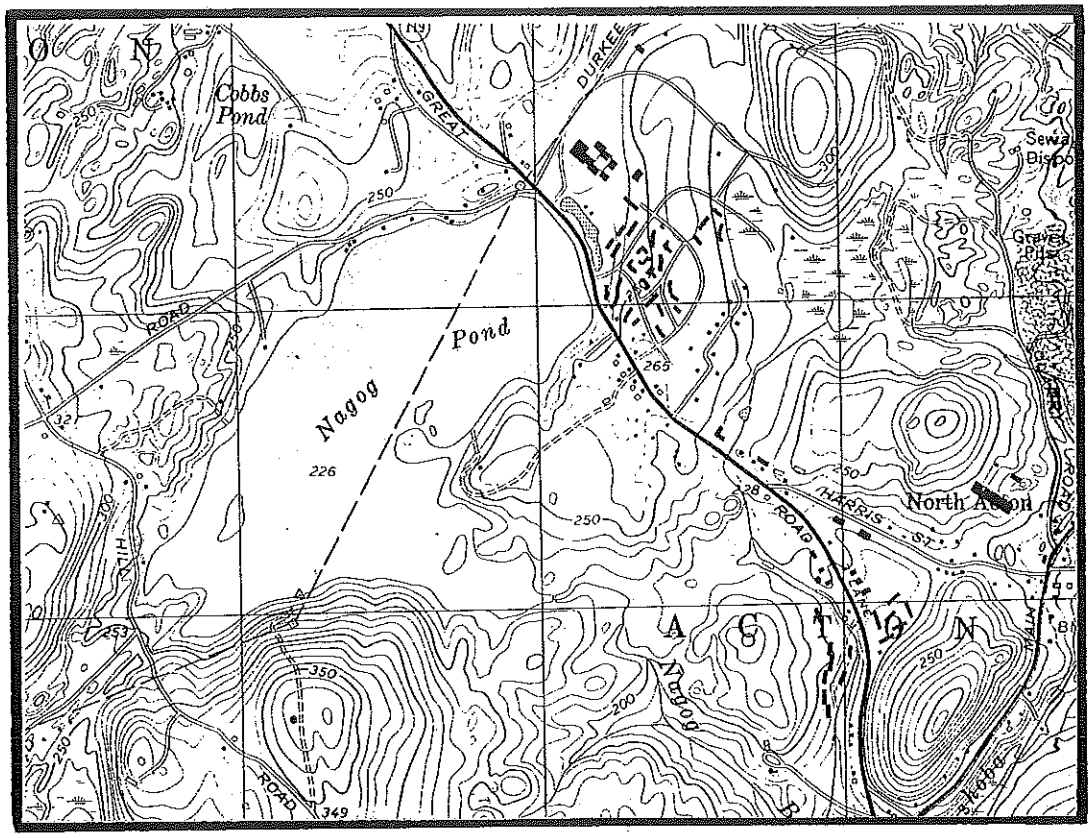

UMASS ARCHAEOLOGICAL SERVICES

University of Massachusetts, Amherst, Massachusetts

ARCHAEOLOGICAL SITE LOCATIONAL SURVEY FOR THE PROPOSED WATER DISINFECTION SYSTEM, ACTON, MASSACHUSETTS

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Presented to:
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UM-175

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ABSTRACT

The University of Massachusetts Archaeological Services (UMAS) conducted an archaeological site locational survey at the site of the proposed water disinfection system near Nagog Pond in Acton, Massachusetts. The project area consists of an approximately 460 square m- (5,000 square ft-) construction site and a 200 m- (660 ft-) access road. These two locations had a high potential for prehistoric or historic cultural resources. Twenty-six shovel test pits were excavated. No prehistoric artifacts or features were found. No historic artifacts were recovered. A single historic quarry pit was documented outside the project area; it will not be impacted by the proposed construction. This pit is probably related to remains previously reported in ACT-HA-1. No further investigations are recommended.

MANAGEMENT SUMMARY

The University of Massachusetts Archaeological Services (UMAS) completed an archaeological site locational (Phase I) survey at the site of the proposed water disinfection system near Nagog Pond in Acton, Middlesex County, Massachusetts. A background review of documented historic and prehistoric cultural resources was conducted.

Previous archaeological surveys conducted in association with the Acorn Park development project identified two prehistoric camp sites located approximately 300 m (1,000 ft) east of the present project area (19-MD-585 and 586; Ritchie and Holstein 1987).

Historic documents indicate little residential use of this immediate area in the past 300 years. Quarrying local granite bedrock appears to have been the principal activity. The only historic resources known to exist within the vicinity of the project area are five quarry pits, scattered about the southeast side of Nagog Pond; these are recorded in the site files of the Massachusetts Historical Commission (MHC) as historic archaeological site ACT-HA-1 (Ritchie and Holstein 1987).

Twenty six shovel test pits (STPs) were excavated in two areas of high potential for containing prehistoric sites. No prehistoric artifacts or features were found anywhere in the project area. The evidence for historic use of the area is limited. Typical forest soil profiles indicate that no historic agricultural use of this area has occurred. No historic artifacts were found anywhere in the project area. One historic quarry pit was identified, located east of the proposed disinfection facility and south of the proposed access road. The pit is probably related to those reported in ACT-HA-1. It was documented, and it will not be impacted by the proposed construction.

Based on the documentary background review and the lack of cultural material recovered during subsurface testing, no further archaeological study is recommended in the project area.

ACKNOWLEDGMENTS

The Project Archaeologist and the Project Historian wish to thank Betsy Conant and Anita Dodson of Acton for their time in providing information on the quarries of Acton. Several staff members at the University of Massachusetts Archaeological Services contributed their expertise in the completion of this report, for which the authors extend their thanks.

INTRODUCTION

The University of Massachusetts Archaeological Services (UMAS) conducted an archaeological site locational (Phase 1) survey at the site of the proposed water disinfection system near Nagog Pond in Acton, Middlesex County, Massachusetts (Figures 1-3). The project was conducted for Haley and Ward, Inc., of Waltham, Massachusetts.

Fieldwork was conducted on August 16, 1994. Frederick T. Barker conducted the initial walkover and served as Field Assistant. Crew members were Erik Jonsberg, John Murray, Chen Wei, and Elizabeth West. The Laboratory Supervisors were Angelé Smith and Amy Gazen-Swartz. Graphics were produced by Maureen Manning-Bernatzky. The editors were Richard D. Holmes and Paul R. Mullins.

UMAS 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 include the ANTIQUITIES ACT of 1906 (PL 59-209), the HISTORIC SITES ACT OF 1935 (PL 74-292), the NATIONAL HISTORIC PRESERVATION ACT (PL 89-665, 16 USC 470, as amended), EXECUTIVE ORDER 11593 of 1971, the NATIONAL ENVIRONMENTAL POLICY ACT OF 1969 (PL 91-190, 42 USC 4321), ADVISORY COUNCIL PROCEDURES FOR THE PROTECTION OF HISTORIC AND CULTURAL PROPERTIES (36 CFR VIII, PART 800), and the ARCHAEOLOGICAL AND HISTORICAL PRESERVATION ACT of 1974 (PL 93-291). State legislation dealing with the protection of historic and archaeological resources includes Massachusetts General Laws CHAPTER 9, Sections 26-27C, the UNDERWATER ARCHAEOLOGY ACT (Chapter 989, acts of 1973) and the MASSACHUSETTS ENVIRONMENTAL POLICY ACT (MGL, Chapter 30, amended by Chapter 947 of the Acts of 1977). Massachusetts archaeological permit regulations are outlined in 950 CMR 70.00.

In compliance with Massachusetts General Laws Chapter 9, Section 27, Massachusetts State Permit number 1382 was issued by Brona Simon, the State Archaeologist.

All artifacts and stratigraphic data are curated permanently at the Department of Anthropology, University of Massachusetts, Amherst.

AREA OF INVESTIGATION

Project Boundaries and Description.

The project area is located in Middlesex County, Massachusetts (Figures 1 and 2). Depicted on the 7.5 by 15 minute Westford, Mass., Quadrangle (USGS 1979) (Figure 3), it lies 52 m (170 ft) east of the southeastern end of Nagog Pond. It is just south of Nagog Brook, which drains the pond toward the south. Acton's town center is located 2.6 km (1.6 miles) to the south of the project area. Great Road (Route 2A) runs east of the project area to the center of Acton.

There are two portions to the project area, designated Survey Units (SUs) 1 and 2 (Figure 3):

Survey Unit 1 is the proposed disinfection facility site, located on a small knoll at an elevation of 74 m (242 ft) above sea level (asl). It covers approximately 460 square m (5,000 square ft) (Figure 4).

Survey Unit 2 is the location of a proposed access road. The land drops from SU1 on a slight slope to an elevation of 64 m (210 ft) near Nagog Brook. It is approximately 200 m (660 ft) long (Figures 5 and 6).

Granite bedrock forms most of the backbone of the area, which consists of several small hills and knolls. Most of the land around the project area is presently undeveloped, though a residential subdivision is located to the east. The area to be impacted is wooded.

Project Impacts.

Impacts to potential archaeological and historic resources will result from ground disturbances and earthmoving associated with the construction of the disinfection facility and the leveling and filling for the access road. An outflow pipe and leaching field will also be constructed adjacent to the facility. It is expected that the proposed construction will destroy any subsurface cultural resources within the project area.

GENERAL METHODOLOGY

The purpose of an archaeological locational (Phase 1) survey is first to assess the prehistoric and historic potential of the area of investigation and then to conduct a systematic subsurface field survey in areas determined to have a moderate to high potential to contain subsurface cultural deposits. The reconnaissance portion of this project included 1) prehistoric and historic background research; 2) a systematic walkover of the project areas; and 3) an inspection of standing structures. The results of the reconnaissance were then used to identify areas that potentially could contain prehistoric and/or historic archaeological deposits. These areas then were investigated further using subsurface testing methods. For the Shrewsbury Street project, subsurface testing was conducted using hand-excavated pits and the screening of the soils from these pits.

This section will describe the methodologies and theoretical foundations of the different phases of background work conducted for the Shrewsbury Street project. A description of the field methodologies used during the subsurface testing of the area is presented in the discussion of field investigations.

Background Research.

In order to accomplish the background research, several methods were employed. These included:

1. Researching historical documents, such as town, county, and state histories and maps, and state or federal records, to determine the location of reported European Contact-period aboriginal sites, and of historic structures and industrial sites within the area of investigation. The archaeological literature was researched to determine the characteristics of the types of sites that might be expected to occur within the project area. Sources consulted during background research are cited in the bibliography.

2. Researching archaeological site files maintained by the Massachusetts Historical Commission (MHC) in Boston.

3. Researching archaeological site data maintained by the Department of Anthropology, University of Massachusetts at Amherst.

4. Stratifying the project area using environmental factors known to be associated with aboriginal sites.

5. Conducting a preliminary on-site "walkover" visual inspection of the project area, including those areas predicted to have low potential for containing prehistoric and historic archaeological sites.

6. Conducting interviews with local informants, amateur archaeologists, area historians, and other individuals knowledgeable in the history and prehistory of the area of investigation.

7. Canvassing local residents as to the location of known historic and archaeological resources.

Criteria for Determining Archaeological Potential.

Numerous environmental attributes were considered in predicting areas of high site-potential. These characteristics were identified by reviewing previous studies in localities with environments similar to that of the project area. The following is a list of the major criteria used during the investigation to assess the archaeological potential of the project area.

1. The presence of known prehistoric or historic sites within or adjacent to the project area.

2. Proximity to a National Register property.

3. Proximity to a supply of fresh water.

4. Proximity to seasonal or perennial subsistence resources.

5. Soils characteristics (such as drainage, texture, suitability for cultivation).

6. Topographic features, such as slope, aspect, elevation, and barriers to prevailing winds.

7. Proximity to raw material sources.

8. Proximity to topographic features conducive to industrial development (such as hydrologic features).

9. Proximity to areas known to have been early historic settlement clusters, or having the potential to be early settlement areas.

10. Proximity to transportation routes.

11. Proximity to industrial, commercial, and agricultural markets.

The project area was stratified prior to field survey in order to eliminate those areas requiring no further survey and to delineate those with a potential for containing archaeological resources. Areas of obvious residential, highway, or other disturbance were eliminated from the survey.

Prehistoric Stratification.

There is seldom documentary evidence of prehistoric sites. Therefore, prehistoric sites were predicted on the basis of an environmental model which uses geological, soils, and climatic data; known site locations in the southern New England region; and expected prehistoric 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 (Jochim 1976). 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 microclimatic 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 prehistoric and historic horticulturalists. Perhaps the most critical resource to be considered, regardless of site function, is water. In inland situations, sites are likely to be located near some source of fresh water; i.e., 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 (thereby eliminating areas of low potential from consideration as a cost-effective measure), topographic maps (1979) compiled by the U.S. Geological Survey (USGS) and unpublished soil data compiled in 1977 by the Soil Conservation Service (SCS) were used to delineate all areas with well-drained soils and minimal slope. No surficial geological map for the project area is available. Level, well-drained soils in close proximity to water sources were considered to be areas of high potential. Those farther from a water source are considered to have lower potential. It was possible to stratify (i.e., rank) a project area into zones of high, moderate, and low potential to contain archaeological properties, according to soil matrix and distance to water:

> Undisturbed areas less than 1,000 feet (300 m) from water, on level, dry, well-drained soil, were considered areas of high potential. These areas required shovel test pits using a sampling interval of 7.5 m (25 ft) between pits, because small prehistoric sites were expected in the area. This interval also is adequate to intercept small historic foundations and refuse deposits.
>
> Areas more than 1,000 feet (300 m) from water, but on well-drained soil were considered to have moderate potential. These areas were also tested with shovel test pits at an 7.5 m- (25 ft-) interval.
>
> Areas that are poorly drained, in excess of 15 percent slope or that have been disturbed were considered to have low potential. No subsurface testing was conducted in these areas.

Maps of bedrock geology and historical documents were useful in locating old fall lines that have been eroded by stream action and are no longer

active. In addition to these sources, a USGS topographic map (Figure 3) was consulted to locate landforms (e.g., knolls or terraces) and identify points of high land in proximity to important resources. Topographic maps were also used to determine which slopes have the warmest exposure.

During the walkover, evidence of recent historic disturbance of the landscape was used to eliminate areas from further attention wherever possible. The walkover also was used to verify the evaluation of any area that previously had been assigned low probability on the basis of map or documentary research.

Historic Stratification.

An environmental model was not used in stratifying the project area for its potential to contain historic sites because considerable documentation exists concerning historic land use.

Field stratification for historic site location is based upon documentary research. Identification of important time periods in an area's history and recognition of places and people who were significant at the local, regional, or national scales, help to identify the kinds of archaeological resources expected during field work.

Census figures provide an indication of the patterns of population change, often reflecting periods of economic growth, decline, or stability. These patterns identify the time periods in an area's history in which significant events are likely to have occurred and to have left archaeological traces.

Map research may show what kinds of structures were built and how the land was used in the project area. Since mapmaking methods improved continuously over time and the level of detail on maps increased rapidly, this information must be used cautiously. Structures and land use before 1850 are seldom recorded clearly. The increasing number of maps published after this date also may lead to an undue concentration on the later historic period. Maps are nonetheless indicative of the place of the project area in a transportation network and its relationship to places of active trade, manufacturing, or habitation.

The model for the historic period integrates the background material on the study area which was found in written history, original maps, and interviews with local residents. An assessment of the kinds of archaeological materials likely to be found can be made using this information. The historic period model is based much more heavily on local documentary resources than the prehistoric model. It is much more specific than the prehistoric model because it is based on a larger set of shared assumptions about the timing and significance of events in the past. Some of the factors considered in each case are:

1. The position of the project area in a transportation network;

2. the proximity of the project area to commercial, manufacturing, or resource production sites;

3. periods of economic growth, stability, or decline measured primarily from the census; and

4. unique or very local events which affect the use or reputation of the project area.

When no historic resources can be documented, either through historical research or a walkover, reliance is placed upon the results of the same archaeological field testing used for prehistoric resources.

Field Methods and Strategies.

The major effort of this project included an intensive visual reconnaissance or walkover of the parcel and systematic subsurface testing. All structures, stone fences, and features found during walkovers and background research are mapped, thoroughly recorded, and photographed. Following background research and a walkover, subsurface testing focuses on high probability areas in order to locate possible sites. Shovel test pits are especially useful in evaluating prehistoric sites and features not indicated on historic maps.

Shovel test pits (STPs), 40 by 40 cm-square (two shovel-widths), were excavated to the depth of culturally sterile soil. This size pit permits adequate observation of soil profiles and subsurface prehistoric and historic features. STPs, in most cases, did not extend below 50 centimeters in depth. All soil was passed through one-fourth inch mesh screen to assure the recovery of artifacts. Stratigraphy observed in all profiles was recorded using the ARDVARC data management system.

In zones of high site potential, STPs were excavated at intervals no greater than 7.5 m (25 ft) or, when necessary, at locations chosen at the discretion of the Project Archaeologist or Field Supervisor. Test pit intervals were chosen on the basis of the size of sites expected to be within the project area. In areas of lesser potential, the interval remained the same, but there were fewer STPs.

Rationale for Field Strategy.

The effectiveness of a sampling strategy is based on its ability to intercept locations of aboriginal activity and small historic sites.

The 7.5 m- (25 ft-) interval is close enough to intercept reliably a wide range of small archaeological features (such as prehistoric campsites) and thin deposits (such as lithic scatters and small shell middens). It can provide 95 percent confidence of intercepting a roughly circular site with a diameter of 10 to 13 meters or larger. The 40 cm by 40 cm shovel test pit (STP) has a confidence level of 95 percent for detecting an artifact density of 20 items or more per square meter. This strategy provides a 79 percent reasonable certainty of intercepting sites 10 m in diameter, and it is 80 percent sure of detecting 10 artifacts per square meter. Larger sites, of 15 m diameters and artifact densities greater than 35 artifacts per square meter, are detectable at the 99 percent confidence level. Such sites might include small, temporary prehistoric shelters and butchering areas, and smaller features and activity areas such as campsites, storage facilities, burials with associated debris, small prehistoric lithic scatters, or hearths. The interval has the added advantage of providing uniform coverage of a sensitive

area, and it provides data that facilitate the computation of site, feature, and artifact densities and their distributions.

When employing this strategy, as a potential historic structure is encountered, additional STPs are excavated to identify the size of the structure, construction materials, and artifacts that are diagnostic of functions and time periods.

SUMMARY OF ENVIRONMENTAL, PREHISTORIC, AND HISTORIC BACKGROUNDS

Environmental Background of Acton.

Acton is located in northeastern Massachusetts, within the Assabet River Basin in the greater Merrimack River drainage system (Bickford and Dymon 1990:54-55). Nagog Pond, Nagog Brook, and tributaries leading to these waters drain town lands toward the southeast into the Assabet River. The Assabet flows into the Concord River, which in turn enters the Merrimack River just east of Lowell. The largest body of fresh water in Acton, Nagog Pond lies on the Littleton town line. Grassy Pond is just to the southwest of Nagog Pond, and Fort Pond lies to the west in Littleton.

This area of Massachusetts is within the Worcester Transition ecological zone (Wilkie and Tager 1991:3). To the west lies the edge of the Worcester Plateau, which is marked by a band of geological faults running in a northeasterly direction toward the mouth of the Merrimack River. These fault zones include granite bedrock formations, with outcrops in the Acton area around Nagog Pond. This rock is Acton Granite (Silurian or Ordovician), consisting of light to medium-gray, foliated, medium- to coarse-grained muscovite-biotite granite, with some pegmatite masses. It intrudes the Ordovician or Proterozoic Nashoba Formation of schist, gneiss, and marble (E-an Zen 1983).

Acton includes areas of low wetlands, as well as several small hills. The highest of these hills reaches an elevation of 116 m (380 ft) asl. These hills appear to have been created by glacial deposits.

Soils in the project area are largely the product of glacial processes. These soils are classified as Paxton-Woodbridge-Montauk association, which are deep, nearly level to steep, well-drained and moderately well-drained, loamy soils formed in compact glacial till (SCS 1981). Occasional boulders noted on the ground surface are likely glacial erratics left during the retreat of the last ice sheets from the area.

Vegetation in the project area consists mainly of white pines and red and black oak trees. Red maple, white oak, chestnut, gray and white birch, shagbark hickory, and red pine trees also were noted within the project area.

Previous Archaeological Research.

Archaeological research in the area of Acton has developed primarily out of the interest of local amateur archaeologists rather than as the product of planned scientific studies. The most thorough archaeological work was conducted by the Merrimack Archaeological Survey of 1930-1931 and by the Massachusetts Archaeological Society in 1940-1941. A large number of sites were located within the town of Concord, just to the southeast of Acton. Collections from these surveys provide some information on cultural change over the period of prehistoric occupation in the area (Johnson and Mahlstedt 1982).

On the Westford, Mass., USGS Quadrangle prehistoric sites have been recorded at Heart Pond in Chelmsford (19-MD-278 and 296), Spencer Brook in Carlisle and Concord (19-MD-54, 55, 56, and 634), and on an unnamed stream in Boxborough (19-MD-722) (MHC site files).

Few prehistoric sites have been recorded within the town of Acton. Most of these have little to no documentation other than a rough placement and a name of the site. Among them are 19-MD-136, 137, 501 (West Acton site), 502 (Fort Pond Brook), and 503 (East Acton site).

Two prehistoric campsites were located just east of the project area and north of Nagog Brook in 1986 by Public Archaeology Laboratory of Providence, as part of a survey conducted to assess the Acorn Park real estate development (Ritchie and Holstein 1987):

19-MD-585, the Crow Head site, which contained nine felsite chipping debris fragments; and

19-MD-586, the Nagog Brook site, which contained one quartz biface and 14 quartz fragments.

No known prehistoric sites exist within the project area itself. A recorded historic archaeological site reported by Ritchie and Holstein (1987), ACT-HA-1, is discussed below in the section on Historic Potential.

Prehistoric Background of Acton.

Paleoindian Period (12000-10000 B.P. [years before present]). As is the case throughout New England, very little is known about the first inhabitants of the area. Evidence from the Paleoindian period is sparse in eastern Massachusetts. Isolated diagnostic artifacts have been reported from the Concord drainage, but no sites dating to this time period have been identified or examined (Dincauze and Mulholland 1977:440).

Evidence from the greater Northeast indicates that Paleoindians first settled in the area following the retreat of the Wisconsin glacier, sometime after 15,000 years ago. A tundra environment succeeded the glacier, and was, in turn, replaced by a spruce-parkland community. Paleoindians living in these ecological contexts traditionally have been characterized as hunters and gatherers who subsisted primarily off of several large species of animals known to herd in the northeast (Martin 1973; Funk 1976). These included the mastodon, mammoth, and smaller species, such as caribou and elk. This generalization may over-emphasize the reliance placed on these herding species, when a wider range of resources was probably important to the inhabitants of the area (Eisenberg 1978).

Despite the equivocal nature of the information on subsistence strategies, similarities in artifact forms among Paleoindians all across North America argue for a generalized character of adaptation, with few specializations to local conditions evident. A correlate of this fact is that population densities among Paleoindians almost certainly were very low.

Early Archaic Period (10000-8000 B.P.). Little, too, is known about the Early Archaic-period inhabitants of eastern Massachusetts. Environmental conditions were somewhat different from those of the preceding period, including more hardwood forest. Find spots and sites with diagnostic Early Archaic artifacts (such as a bifurcate-base projectile point) add little to our knowledge of methods of subsistence and social organization. No definite Early Archaic sites have been recorded in this area, though isolated finds of

diagnostic artifact types indicate that the area was occupied. It is likely that a seasonally-based settlement pattern was established by this time.

Middle Archaic Period (8000-6000 B.P.). More information is available for the Middle Archaic. The Sudbury and Concord Rivers were home to a fairly sizable settlement of Middle Archaic peoples, as indicated by the number and size of sites identified (Ritchie 1983). By this time period mixed deciduous and hardwood forests were becoming established throughout New England, and migratory faunal patterns akin to those of the present day were developing (Dincauze 1974). Settlement patterns may have been based on territories defined by river basins (Dincauze and Mulholland 1977). Although population levels were almost certainly higher by 6000 B.P., accurate estimation of densities and settlement sizes is not possible.

Late Archaic Period (6000-3500 B.P.). Late Archaic sites in New England are much more numerous than sites for previous times. Population densities during this period may have been sufficient to result in the development of multiple ethnic groups in the Northeast (Dincauze 1974). Three cultural traditions have been identified based on artifactual materials: the Laurentian, Susquehanna, and Small Stemmed (Ritchie 1971; Dincauze 1975). All three traditions are represented in eastern Massachusetts, although small stemmed materials may be the most common in the 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. Many sites along the Concord River contain diagnostic Late Archaic materials, though no formal excavations have taken place here.

Woodland Periods (3000-500 B.P.) and Contact. Woodland sites are known throughout eastern Massachusetts, though most of these date to the last 1,000 years. Little is known about Early Woodland peoples, as most of the artifactual material from this time period is difficult to differentiate from that of the Late Archaic. Most Early Woodland materials in the area come from sites which also contain Late Archaic artifacts, further blurring the distinctions between the two time periods. By Late Woodland times, population levels likely had reached what may be considered a relatively high density for hunting and gathering peoples. By A.D. 1000 the cultivation of corn, beans and squash had become commonplace, as a means of supplementing the more traditional diet of wild edibles. Although a large number of Late Woodland sites are known from the eastern Massachusetts area, only a few have been examined, and little additional information on the peoples of this time period is available. It is assumed that these people were the ancestors of the Nipmuc, one of the many Algonquian-speaking groups that inhabited southern New England (Salwen 1978).

Native groups in the area already were experiencing dramatic changes in their traditional ways of life early in the seventeenth century. Epidemics of smallpox and other diseases in 1615-1619 and 1634-1635 in many parts of New England cut in half the local populations, including the Nipmuc (Bradford 1908:312). Praying towns such as Nashoba, near Nagog Pond, were established in Massachusetts to assimilate Native Americans into European religion and other aspects of culture (Carlson 1986).

Prehistoric Site Potential of the Project Area.

Because of the proximity of fresh water sources and known prehistoric archaeological sites that cover a wide range of prehistory the project area has a high potential to contain prehistoric archaeological sites.

Historic Background of Acton.

Acton is in northern Middlesex County. Today it is bounded on the northwest by Littleton, on the north by Westford, on the northeast by Carlisle, on the east by Concord, on the southwest by Maynard and Stow, and on the west by Boxborough.

The early history of Acton is that of its mother town of Concord. This town was established in 1635 from a plantation at "Musketequid."

Contact (To 1620) and Settlement (1620-1675) Periods. Little is known about human activity in Acton during the Contact period. According to the MHC, no documented Contact-period sites have been reported in Acton. The area probably included a trail in the vicinity of Nagog Pond and Great Road (Route 2A) (MHC 1980:1-2).

Acton was not intensively used by Europeans during the early and middle seventeenth century. It was the hinterland of Concord at the time. The land that became Acton was not actually within the original boundaries of Concord, but this region, called the "New Grant" or "Concord Village," was an adjunct of that town. In 1642, Thomas Wheeler petitioned the General Court for a land grant northwest of Concord. Not until 1650 was this granted, and no English settlement took place until 1654. The boundaries of the New Grant were laid out in 1666. In 1669 Concord leased 260 acres west of Nashoba Brook to Wheeler for the pasturing of dry cattle. Wheeler was to build a house and barn; he also operated a mill, near today's Route 2A. Some iron was produced in the area, but the region's main value was apparently for pasture, wood, and charcoal. One twentieth-century historian described Acton as "Concord's Sheep Pasture" during this period (Conklin 1927:vol.II, 543; Phalen 1954:2-9).

About this time, some of the land near Nagog Pond and Fort Pond was occupied by Native Americans as "Nashoba," a "Praying Town" set up by John Eliot. One of the seven "old praying Indian towns" (as opposed to the seven "new" ones created in the Nipmuc country), it was described by S.E. Morison as, "another prosperous praying Indian town...a plantation four miles square near Nagog pond, between Acton and Littleton" (Morison 1981:305). There were about 50 residents of Nashoba. This community lasted from around 1646 to 1675, when its inhabitants were removed to Boston and jailed. The particular reason why these people were uprooted by the English was the death of Jacob Shepard in Littleton. After King Philip's War, a few returned to the Littleton-Groton region (Phalen 1954:15).

Colonial Period (1675-1775). In 1676 the first English settler of Acton, Thomas Wheeler, died of wounds he had received fighting at Brookfield during King Philip's War. The successor to his lands was Nathan Robbins, whose descendants had a long tenure over it (Phalen 1954:15).

In 1698 Concord Village held its own March meeting, and a controversy arose over who was eligible to vote as proprietors of the New Grant. It was

not, however, until the conclusion of Queen Anne's War in 1714 that the Acton area became developed (MHC 1980:3; Phalen 1954:17).

Acton was established as a town in 1735 from part of Concord called the "Village" or "New Grant" and an area known as "Willard's Farm" (Commonwealth of Massachusetts 1909:807, 825). At the time of incorporation, it was bounded by Littleton (established in 1714), Westford (1729), Chelmsford (1655), Billerica (1655), Concord (1635), Sudbury (1639), and Stow (1683) (Phalen 1954:8).

Settlement was concentrated in South Acton and East Acton in this period. In 1765 the population of Acton was 611 (Commonwealth of Massachusetts 1909:807; Figure 7; MHC 1980:3).

Federal Period (1775-1830). Residents of Acton played a role in the military engagement at Concord. Their leader, Captain Isaac Davis, along with private Abner Hosmer, was killed near the location of the Minute Man statue at the Old North Bridge (Acton Historical Society 1974:17; French 1978:24).

Throughout the period Acton was an agricultural town with small industrial operations geared to the needs of the community. There were no major shifts in the settlement patterns and transportation routes of the town in this period (Figure 8).

In 1776 the population was 769; in 1790, 853; in 1800, 901; in 1810, 885; in 1820, 1,047; and in 1830, 1,128 (Commonwealth of Massachusetts 1909:807; Figure 7).

Early Industrial Period (1830-1870). The Hales map of 1831 shows a principal concentration in the town center, with dispersed settlements elsewhere. Among the taverns indicated is White's Tavern on the Great Road, near Nagog Pond. Mills were located along Nashoba Brook, Ford Brook, and on the Assabet River (Figure 9).

Powder mills were built on the Assabet by Nathan Pratt in 1835. These were operated by him until 1864, after which the American Company and its successor, the American Powder Mills, ran them (Conklin 1927:vol.II, 546). Henry David Thoreau wrote in his Journal in 1859, "As you draw near the powder-mills, you see the hill behind them bestrewn with the fragments of mills which have blown up in past years, the fragments of the millers having been removed, and the canal is cluttered with the larger ruins" (quoted in McAdow 1990:80).

There was home-based industrial production of shoes and boots, and a pencil factory was located on Nashoba Brook. Agriculture, however, remained the principal economic activity (MHC 1980:5).

Nagog Pond's level was raised by a dam in the mid-nineteenth century. It provided water power for mills downstream on Nagog Brook, south of the project area. Once considered for Acton's central water supply, it was not used for that purpose. Later, Concord was "casting a yearning eye in that direction" and acquired rights to it (Phalen 1954:36, 274, 313).

The first decade of this period saw a loss of seven inhabitants. In 1840 the population was 1,121; in 1850, 1,605; in 1855, 1,678; in 1860, 1,726; in 1865, 1,660; and in 1870, 1,593 (Commonwealth of Massachusetts 1909:807; Figure 7).

Late Industrial Period (1870-1915). There was a change in the population pattern at the start of this period, with an increase of 115 inhabitants in the first five years. The remainder of the period saw a general increase. In 1875 the population was 1,708; in 1880, 1,797; in 1885, a drop to 1,785; in 1890, 1,897; in 1895, 1,978; in 1900, 2,120; in 1905, 2,089; in 1910, 2,136; and in 1915, 2,151 (Commonwealth of Massachusetts 1909:807, 1941:18; Figure 7). Immigrant populations increased in this period, with Irish and later Italian residents. The main foreign-born component of Acton came from Nova Scotia (MHC 1980:6).

There was little economic development to encourage major influxes of population. Except for the powder mills and the production of laundry bluing, there was only minor industrial activity.

One new enterprise was granite quarrying. The Harris, Prescott, and Sullivan Company operated quarries starting in 1882. There were at least seven quarries in town, located on Harris Street and Quarry Road. As one local historian wrote, "Here there was constant clinking of hammers as master craftsmen wrought in the obdurate stone" (Phalen 1954:259).

Early Modern Period (1915-1940) and After. The powder mills operated until after World War I, with a boom during the war (McAdow 1990:80). Granite was quarried until 1947 (E.S. Conant, personal communication, 1994). Agriculture remained more important than industry to the local economy. In 1927, one author wrote that Acton was "now as always, an agricultural town..." (Conklin 1927:vol.VI, 365).

With the improvement of highways in the Boston area and the increasing use of private automobiles, Acton was about to be transformed. Its population grew but did not dramatically expand in the first part of this period. There was little increase during the First World War, with a 1920 population of 2,162. In 1925, it was 2,387; in 1930, 2,482; in 1935, 2,635; and in 1940, there were 2,701 residents. After the Second World War, the region became more suburbanized, with large increases in population. In 1950, 3,510; in 1960, 7,238; and by 1980, over 17,000 (Commonwealth of Massachusetts 1941:18, 26, 1963:n.p.; Wilkie and Tager 1991:140; Figure 7).

Historic Site Potential of the Project Area.

It is possible that the project area includes land used by Native American residents of Nashoba (1646-1675).

The project area was probably land assigned to John Flint in the First Division of the lands in this region in the early eighteenth century. A road may have existed near the pond in addition to the Great Road (Route 2A) (E.S. Conant, personal communication, 1994). In 1794 Route 2A appears as the "Littleton road" (Figure 8).

On the 1831 map, the project area is designated by a symbol for "Woodland" (Figure 9). On the Great Road, north of the project area are at least four structures, one of which is labeled "Whites Tav." None of these are to be impacted by proposed construction.

A Beers map from 1875 (Figure 10), reported by E.S. Conant, does not indicate structures or apparent land use in the project area (E.S. Conant, personal communication, 1994). Another map reported by this informant is a reconstruction of land occupancy and use by a local surveyor in 1890 (E.S.

Conant, personal communication, 1994) (Figure 11), a map which indicates that the land between Nagog Brook and Great Road (i.e., east of the project area) was occupied by Abel Robbins and Thomas Moore (Tuttle 1890). No structures listed in the Acton Historic Inventory are impacted by the proposed construction. It is, nonetheless, possible that the project area was occupied. If so, traces of a road and structures would be evident.

Quarrying was done in Acton to take advantage of the granite deposits. While quarrying was done on small boulders in places one might not expect, large-scale industrial operations require substantial outcrops with unfaulted, building-quality rock (Holmes et al. 1992, 1994). Most of the commercial quarries in Acton appear to have been east of the Great Road (A. Dodson, personal communication, 1994). At least seven quarries have been worked in Acton. Three were located on Harris Street, east of the project area, and several were worked by the Harris family off Quarry Road in North Acton from 1882 to 1947 (Phalen 1954:259-260). The closing of this operation ended quarrying in town.

A quarry site north of Nagog Brook was reported by Ritchie and Holstein (1987), ACT-HA-1. It consists of five quarry pits ranging from 30 to 150 ft in diameter, with a depth of 10 to 30 ft below the surface (MHC site files).

Considering the rocky nature of the land and the absence of documentary evidence of land use, it is likely that the project area was used for resource extraction; i.e., the extraction of wood and/or stone. It is possible that features related to early quarrying (e.g., hand-drilled holes in rock outcrops) may be found. It does not appear from background research that the project area was used intensively for quarrying in the late-nineteenth century, but if it did occur here, quarry pits and metal fragments (e.g., "deadmen," machinery parts, and tool fragments) may be found.

It does not appear that mills or other industrial structures were located within the project area itself. The land may have been used for the summer pasturing of cattle. Such activity probably would leave few material traces.

FIELD RESEARCH RESULTS

Based on an initial walkover, the project area was divided into two areas, labelled Survey Units 1 and 2 (Figure 4).

Survey Unit 1.

Survey Unit 1 is the area proposed for the disinfection facility building (Figure 4). It is located 52 m (170 ft) west by southwest of the dam and gate house at the southeastern end of Nagog Pond. The proposed facility covers a 460 square m- (5,000 square ft-) area near the top of a small knoll. The knoll reaches an elevation of 74 m (242 ft), 5 m (16 ft) above the surface of Nagog Pond. Much of the area to be impacted by the facility is located on a west-facing slope, which varies in grade up to 20 percent. The area is forested, with mostly white pines, oaks, and maples present; none of these appear to be of substantial age.

The project proposal recommended that ten STPs be used to test this area, covering the entire facility location at a 7.5 m- (25 ft-) testing interval. Ten STPs (STPs 1-10) were excavated, in two transects oriented along the long axis of the proposed building.

No artifacts or features of any kind were found in this survey unit.

Soils in this area were very shallow, with exposed bedrock visible in large portions of the impact area. Soil development consists of two horizons. An A-horizon of dark brown sandy silt ranges in thickness from 5 to 15 cm. This soil averaged 10 cm-thick, typical for undisturbed forest soils in New England. A B-horizon of yellow-brown silty fine sand averaged 20-30 cm thick. Bedrock was encountered at less than 50 cm below the ground surface in several test pits. A typical soil profile is provided from STP 2 (Figure 12).

No further testing in this survey unit is recommended.

Just east of the survey unit, outside the project area, one historic feature was identified during the initial project walkover (Figure 5). It consists of a 3 m-diameter quarry pit located 27 m (89 ft) south of the western end of the access route (STP 11). Granite is visible in the pit, and several drill holes were noted. No historic artifacts or other features were identified in association with the quarry pit. The pit is located approximately 33 m (110 ft) east of the disinfection facility and appears to be in no danger of disturbance from the proposed construction.

Survey Unit 2.

Survey Unit 2 is a 200 m (660 ft) long access route from the property line with the Acorn park residential development to the disinfection facility (Figures 5 and 6). The terrain of the access route is wooded, and runs downhill from an elevation of 73 m (240 ft) to 64 m (210 ft) near Nagog Brook. A portion of the access route approximately 90 m (300 ft) east of the disinfection facility is on a moderate slope, and was considered not viable for testing.

Sixteen STPs were recommended in the project proposal, and 16 were excavated in two transects. The first, consisting of seven test pits (STPs 11-17), covered the area just east of the proposed disinfection facility to

the edge of the slope (Figure 5). The second was located at the eastern end of the access route, consisting of the remaining nine STPs (STPs 18-26; Figure 6). Some disturbance to the ground surface was noted in this eastern portion of the survey unit. This appears to be the result of logging activity, or cutting for logging access. Uprooted and overturned trees have impacted some of the ground surface, but this does not appear to have affected most of the soils in the area.

Similar to soils in the first survey unit, soils in this area are shallow, and bedrock exposures are visible throughout the forest. An A-horizon of dark brown silty loam ranged from 2 to 15 cm thick, averaging 8 cm. Two B-horizons were observed here: a light brown silt over a light yellow-brown silt. Bedrock was noted at between 31 and 50 cm below the ground surface. A typical soil profile is provided from STP 12 (Figure 13).

No artifacts or features were found in this survey unit.

Summary of Field Results.

Subsurface testing of Survey Units 1 and 2 resulted in the excavation of 26 STPs. This was the number as recommended in the project proposal. No prehistoric or historic artifacts or features were found anywhere within the project area. A single historic quarry pit found nearby was documented but does not appear to be threatened by the proposed construction.

CONCLUSIONS, INTERPRETATIONS, AND RECOMMENDATIONS

A total of 26 STPs was excavated in two survey units determined to have high potential for containing prehistoric and historic deposits. Soils in the survey units were found to be generally free of disturbance, but no prehistoric or historic cultural material was found.

The lack of soil disturbance and close proximity of a large fresh water source provide ideal conditions for recovering significant cultural resources. Nevertheless, in this case no cultural resources were found. It is likely that the lack of any cultural resources found is due primarily to the rather small size of the project area.

No further archaeological survey is recommended at this location.

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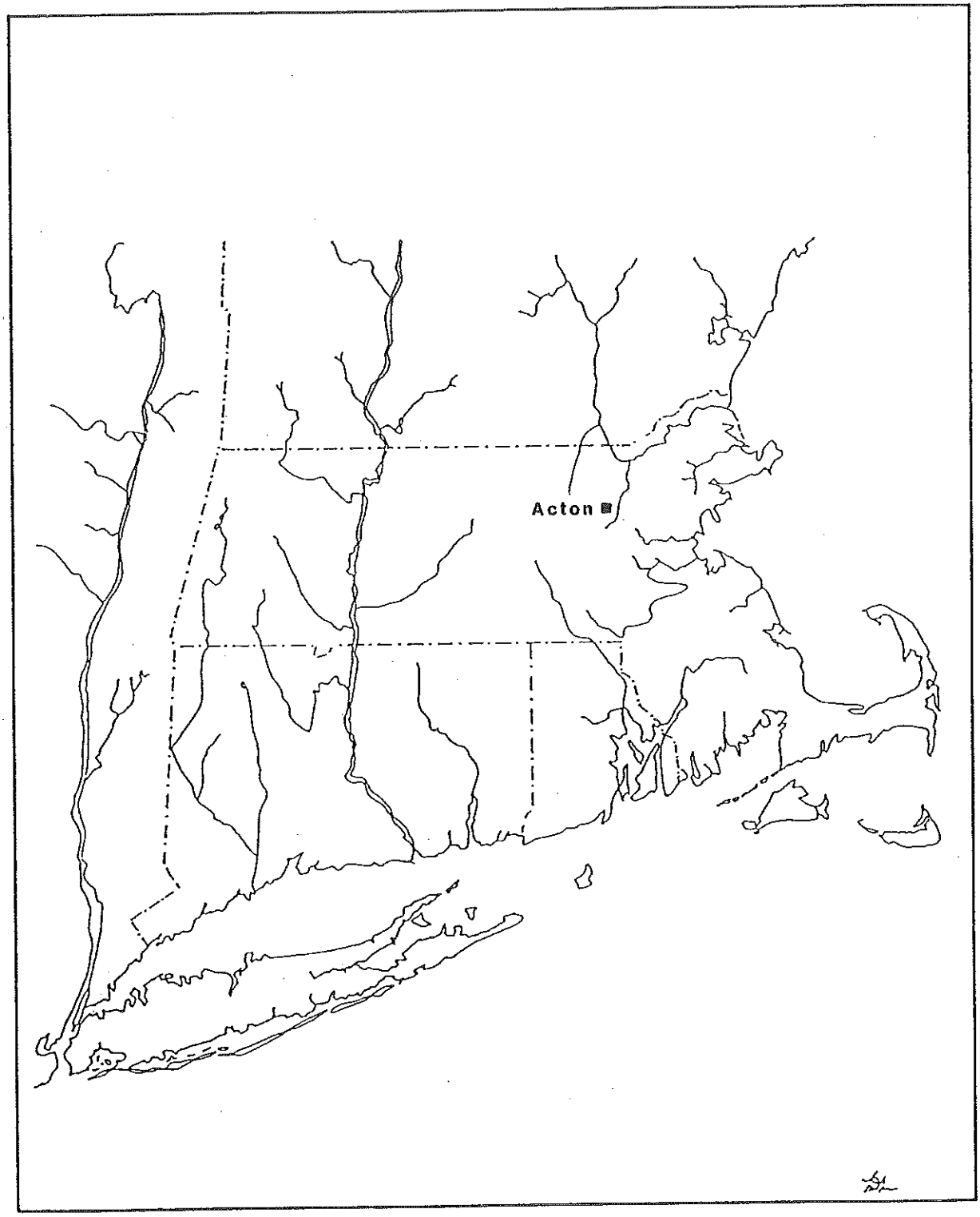

Figure 1. Project location in the southern New England region.

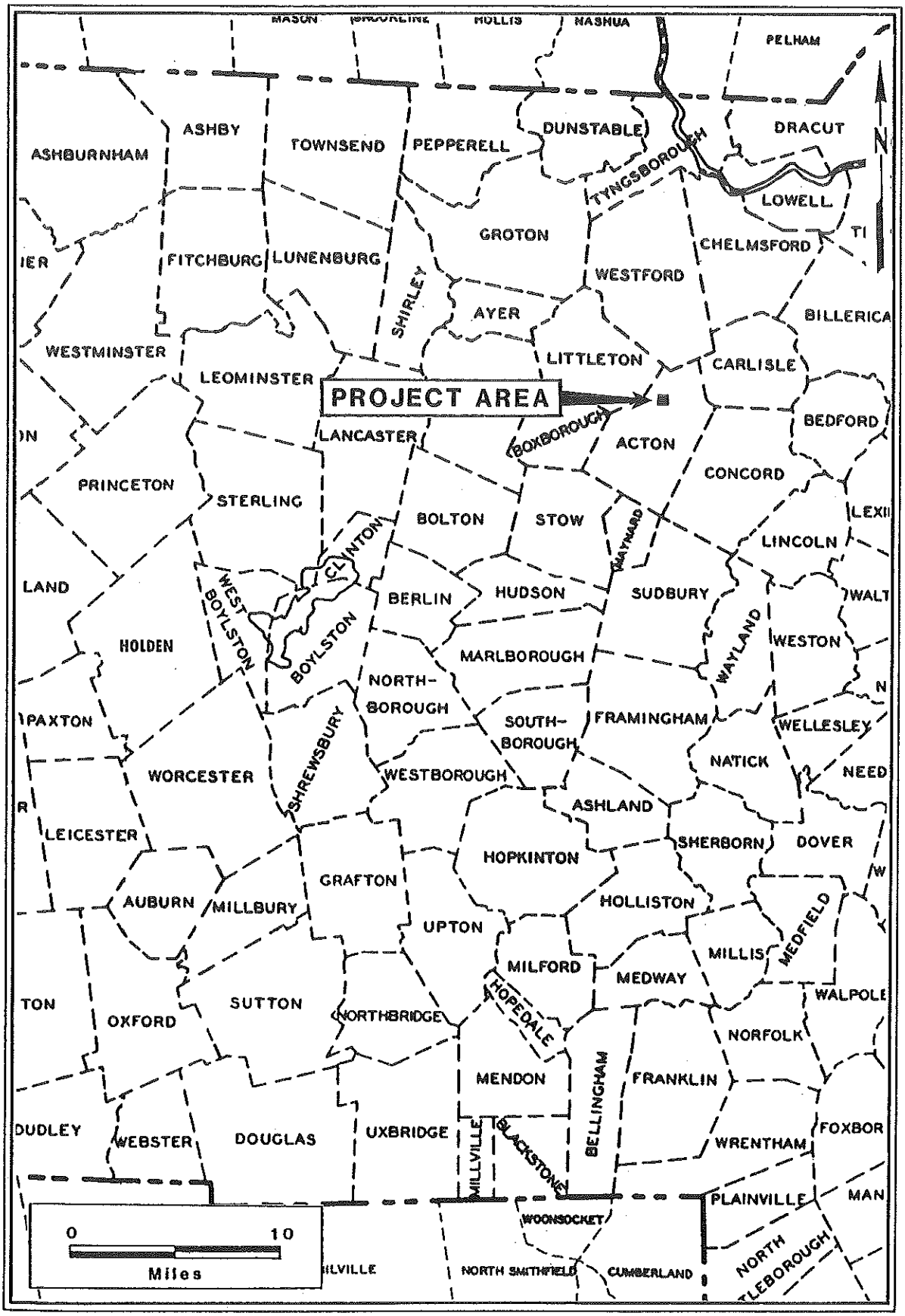

Figure 2. Project area in Middlesex County region.

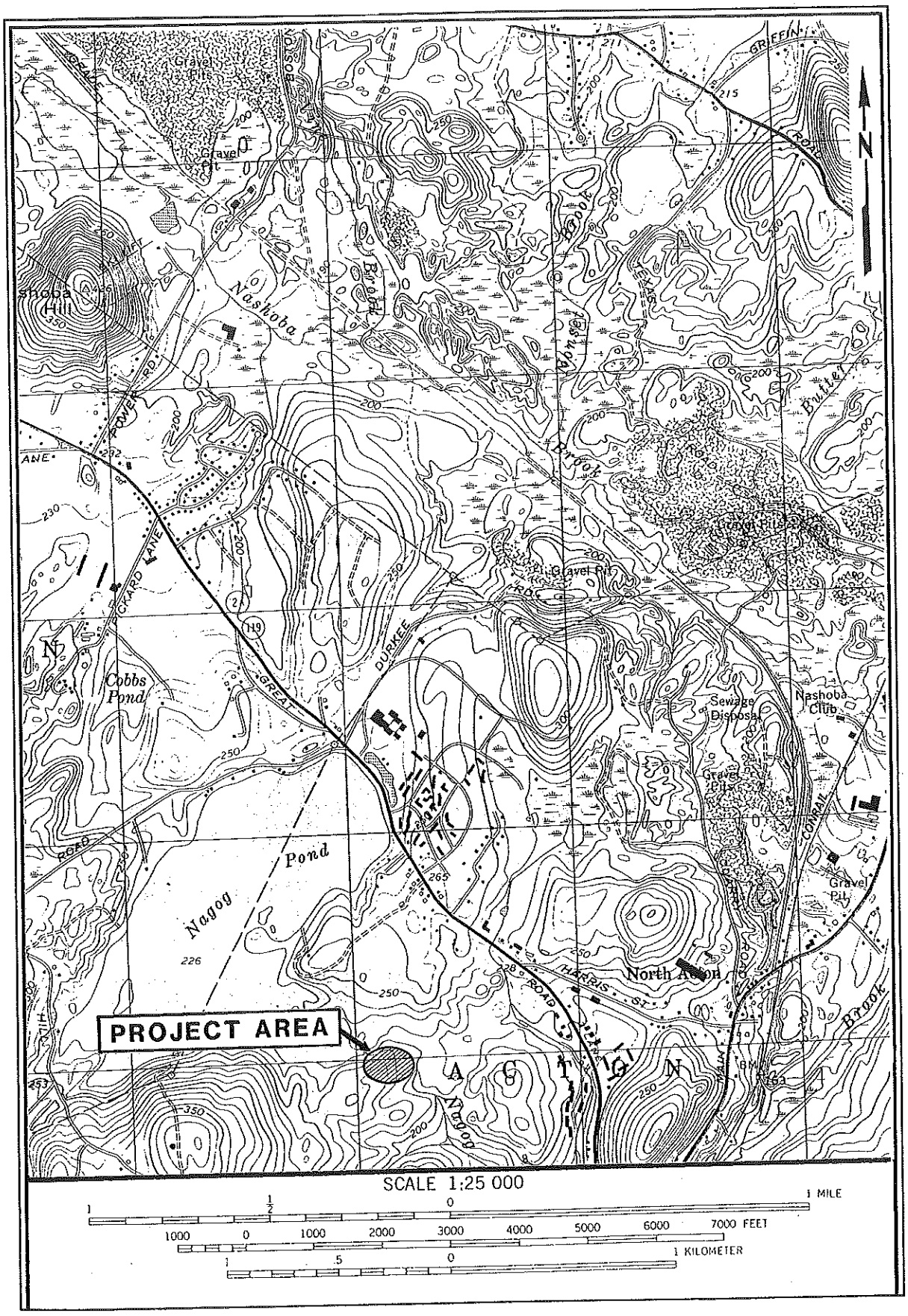

Figure 3. Project area on the Westford, Mass., USGS Quadrangle (1979).

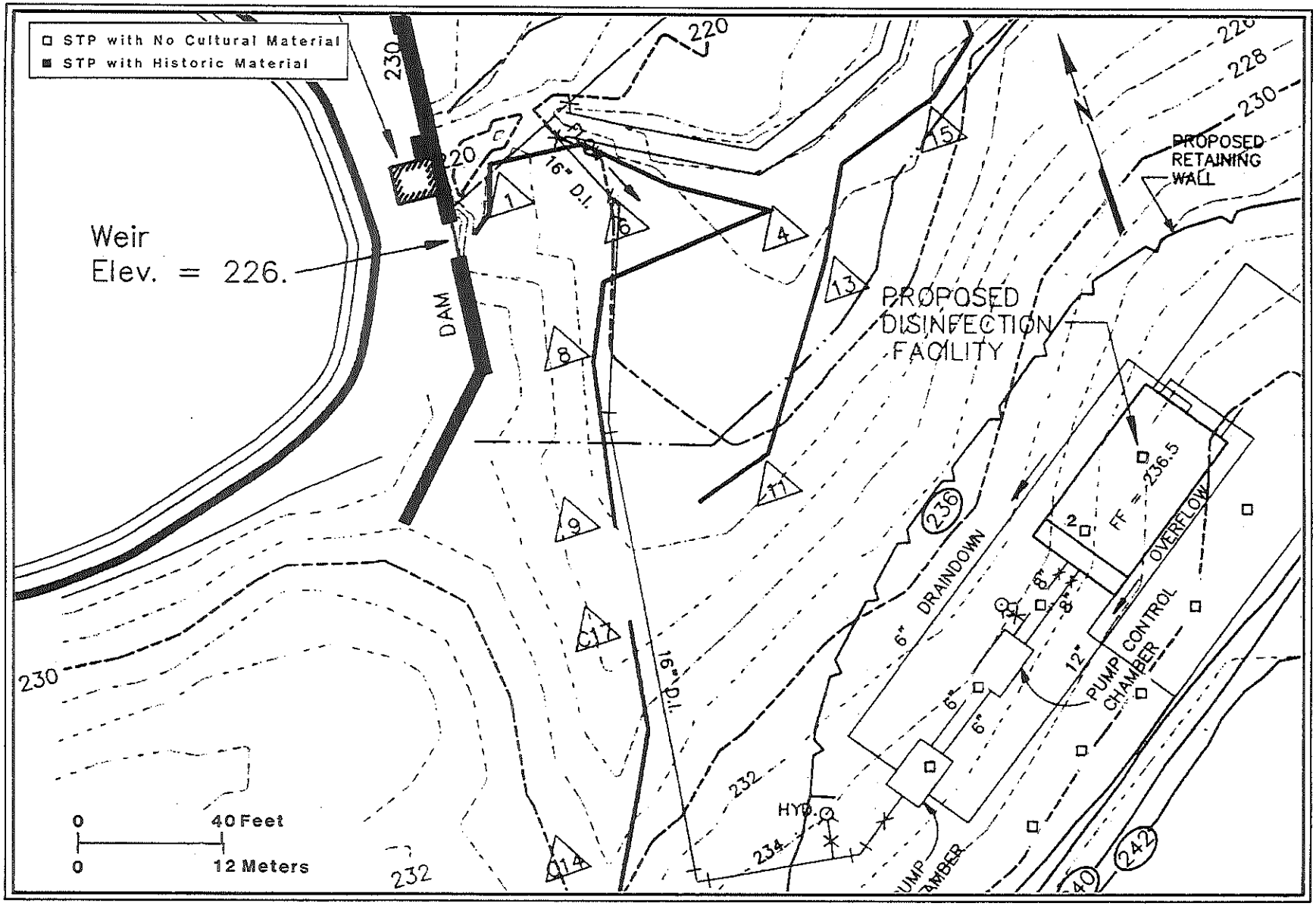

Figure 4. Survey Unit 1 (STPs 1-10).

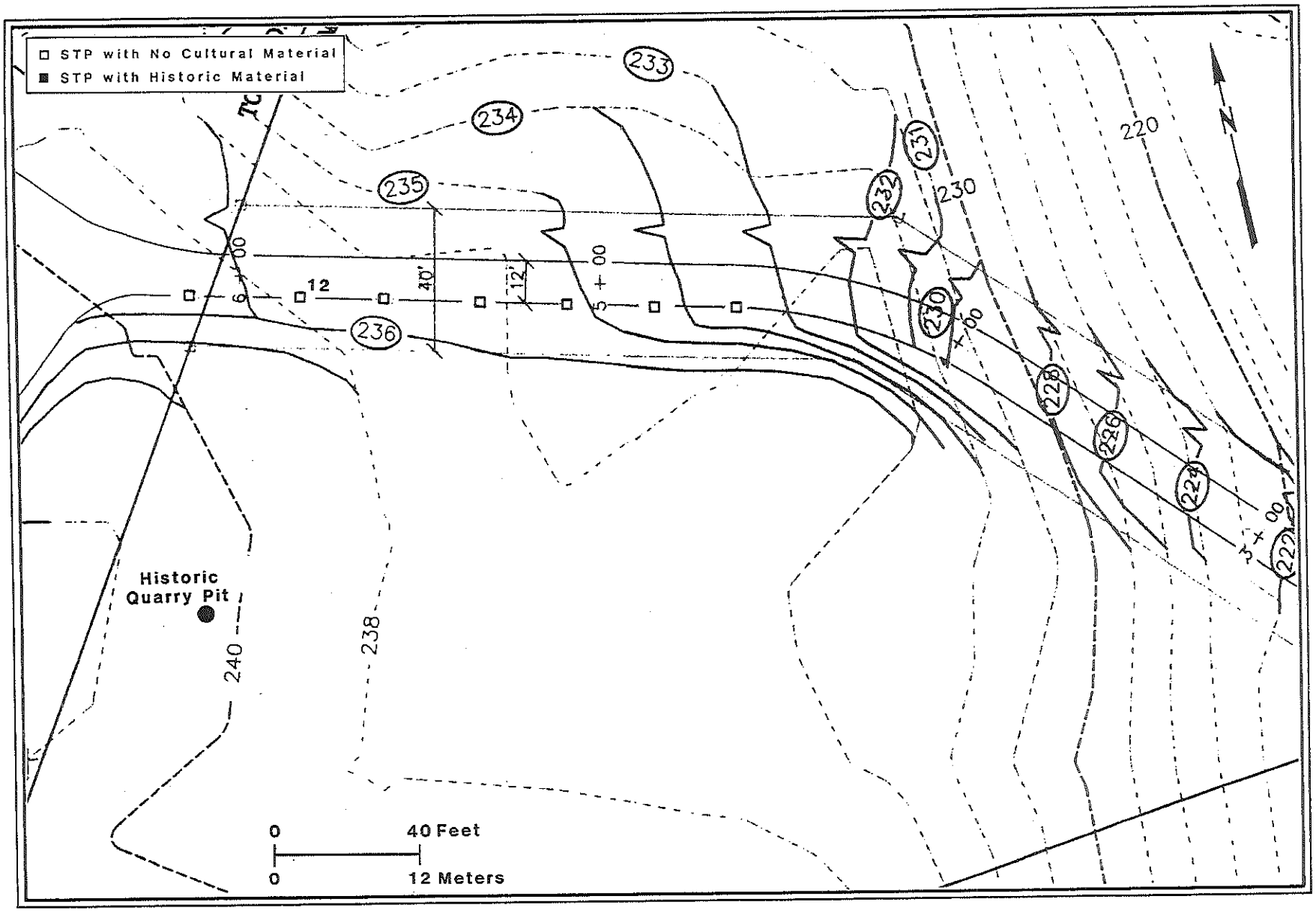

Figure 5. Survey Unit 2 (STPs 11-17).

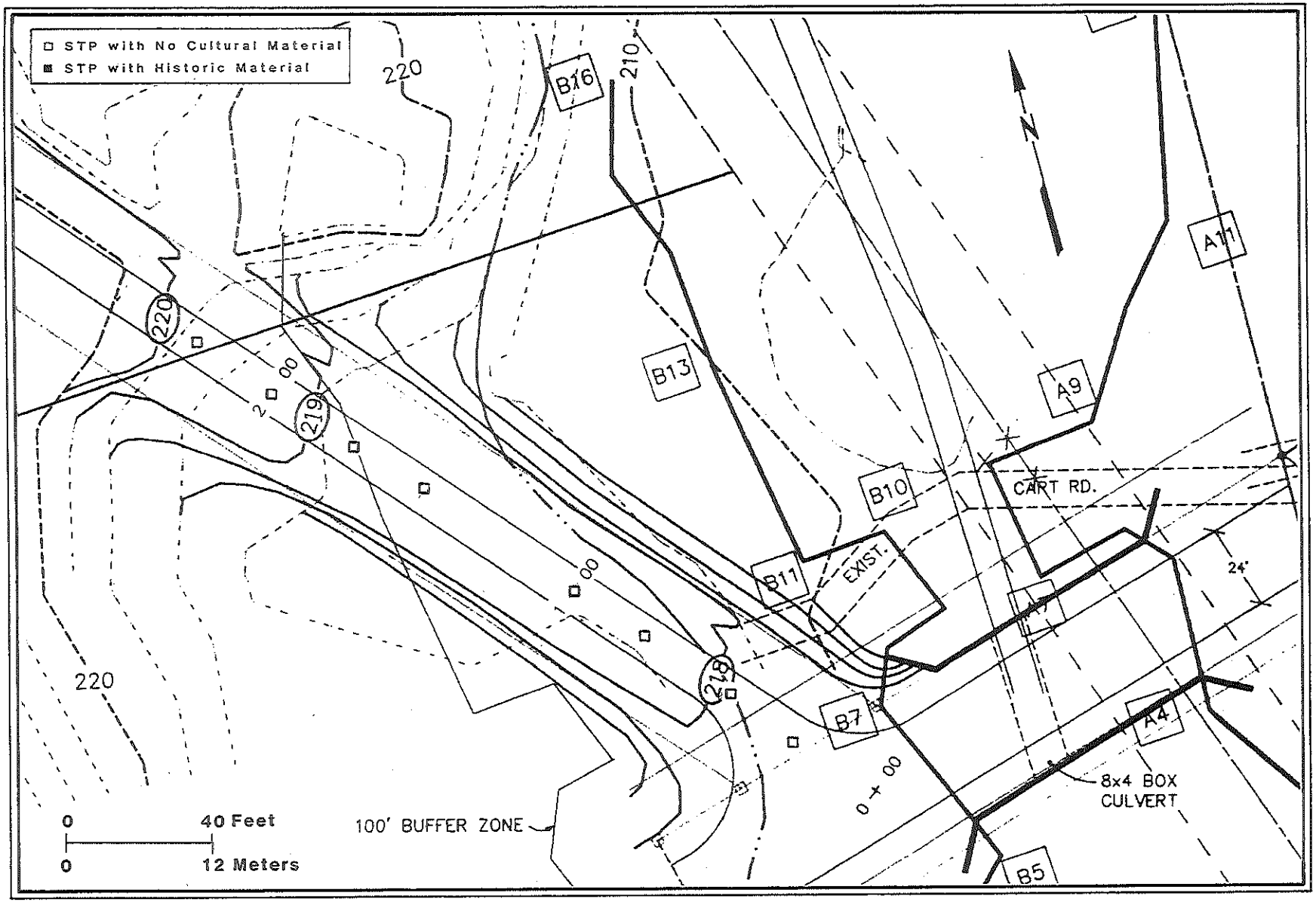

Figure 6. Survey Unit 2 (STPs 18-26).

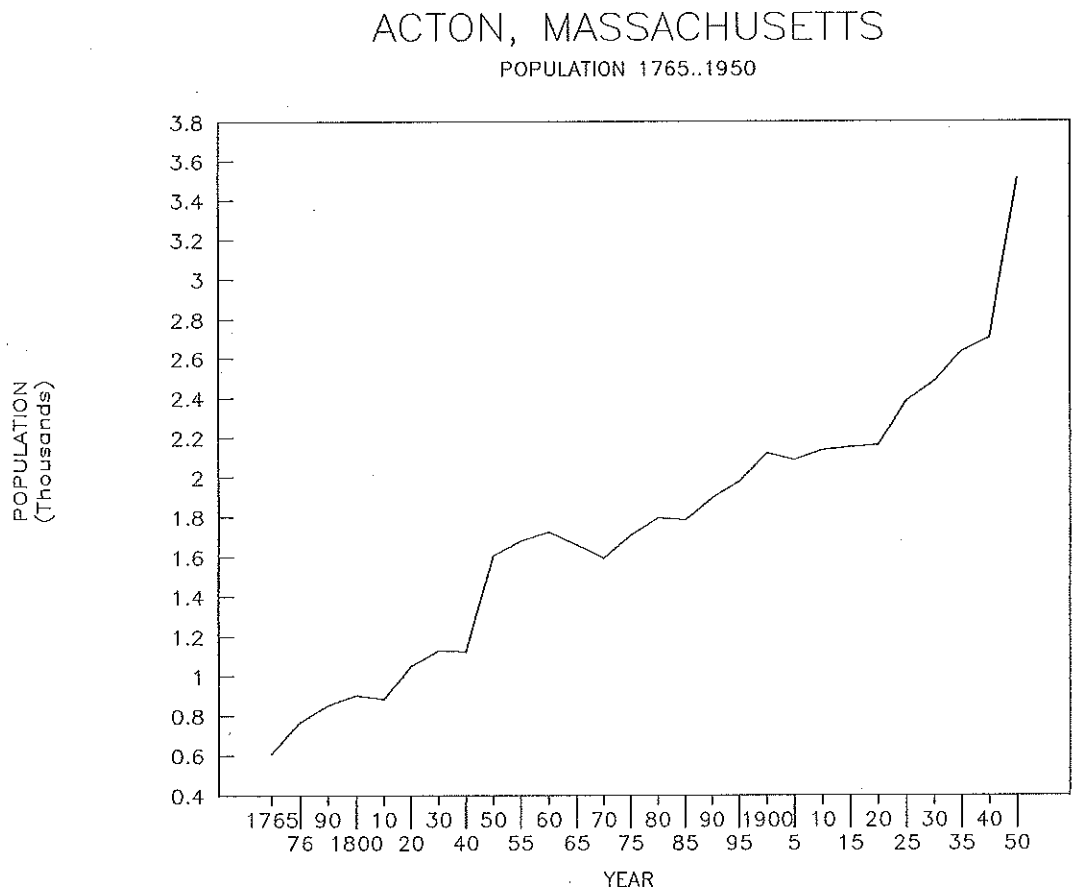

Figure 7. Population of Acton.

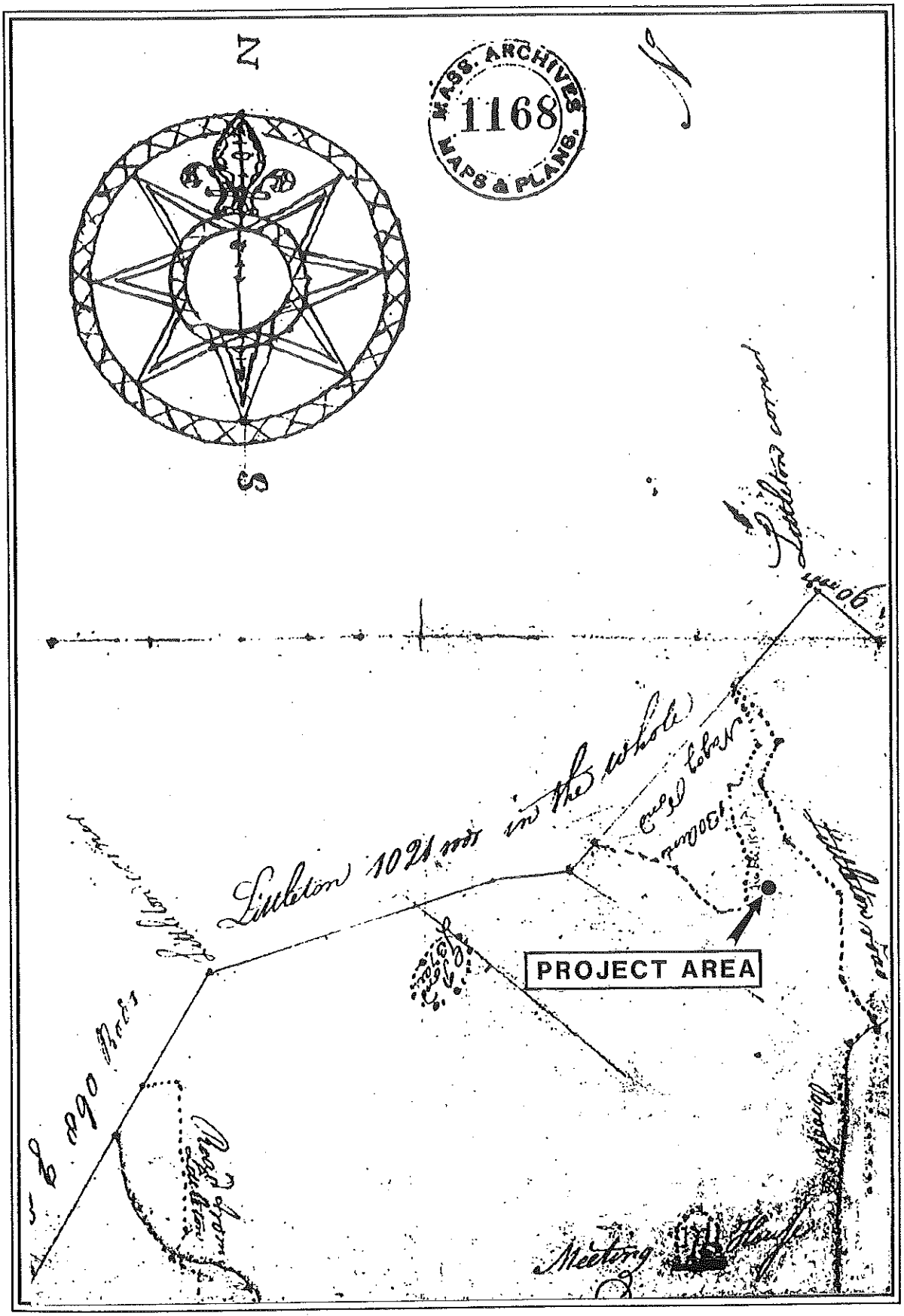

Figure 8. Map of Acton (Brown 1794).

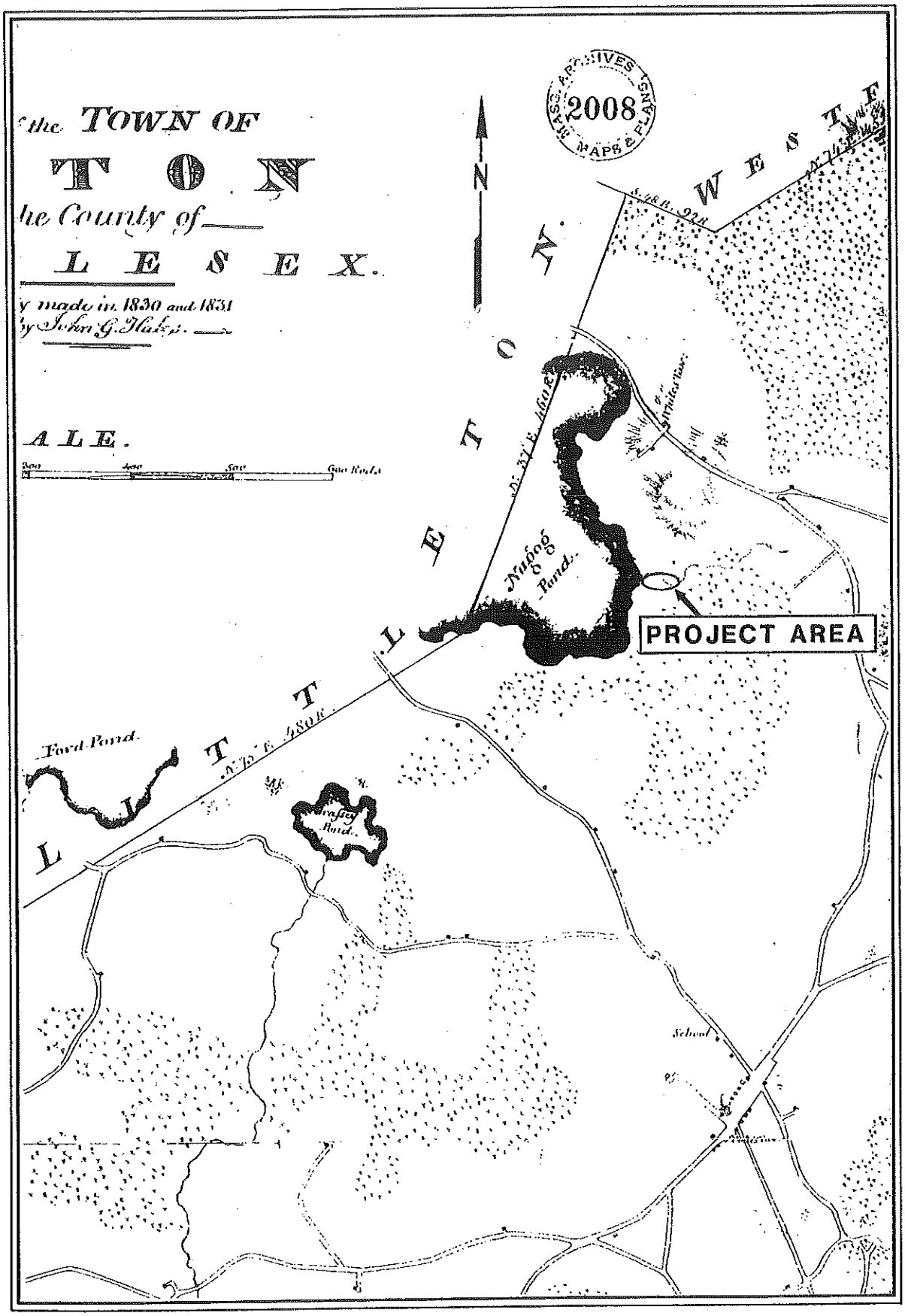

Figure 9. Map of Acton (Hales 1831).

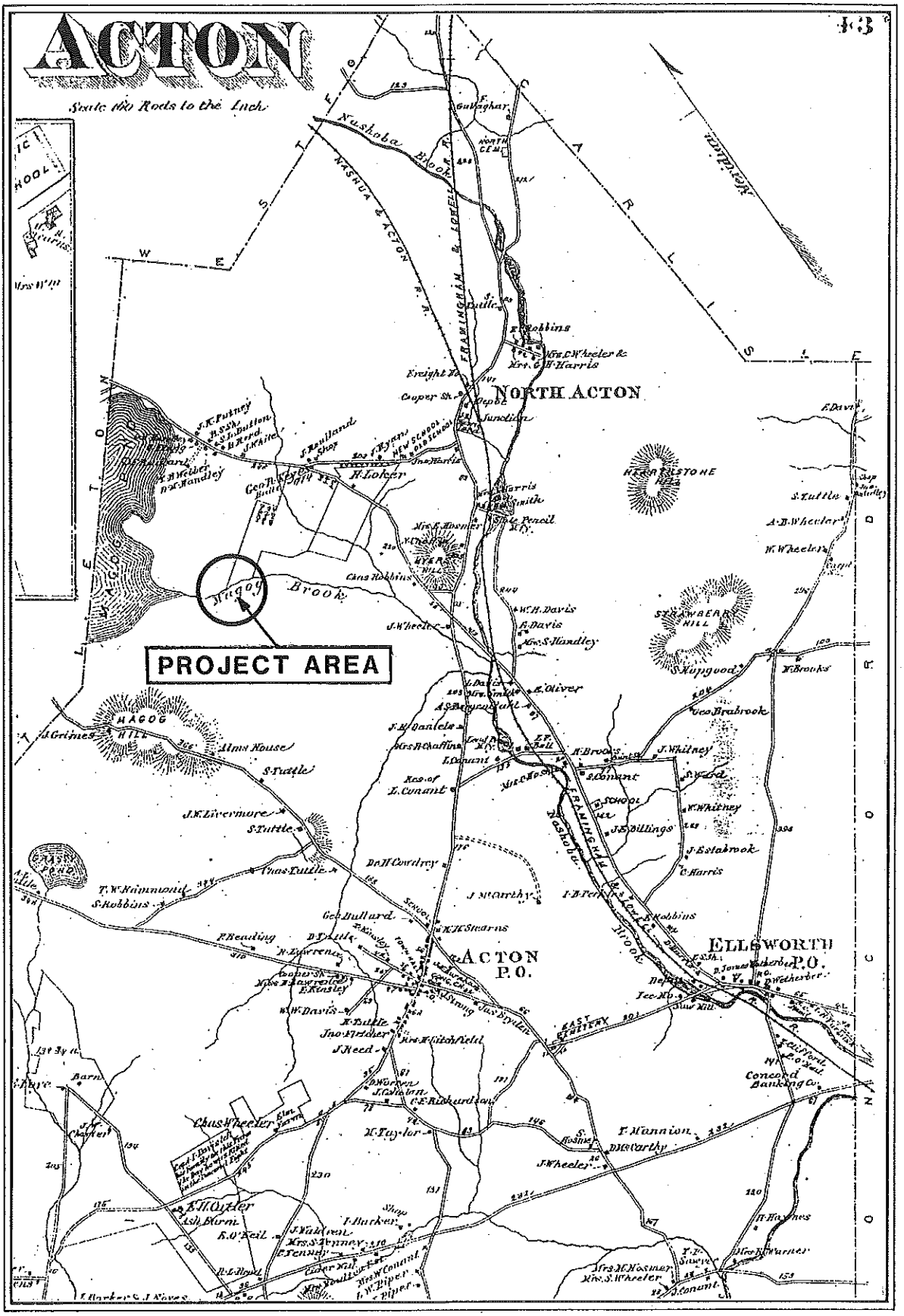

Figure 10. Map of Acton (Beers 1875).

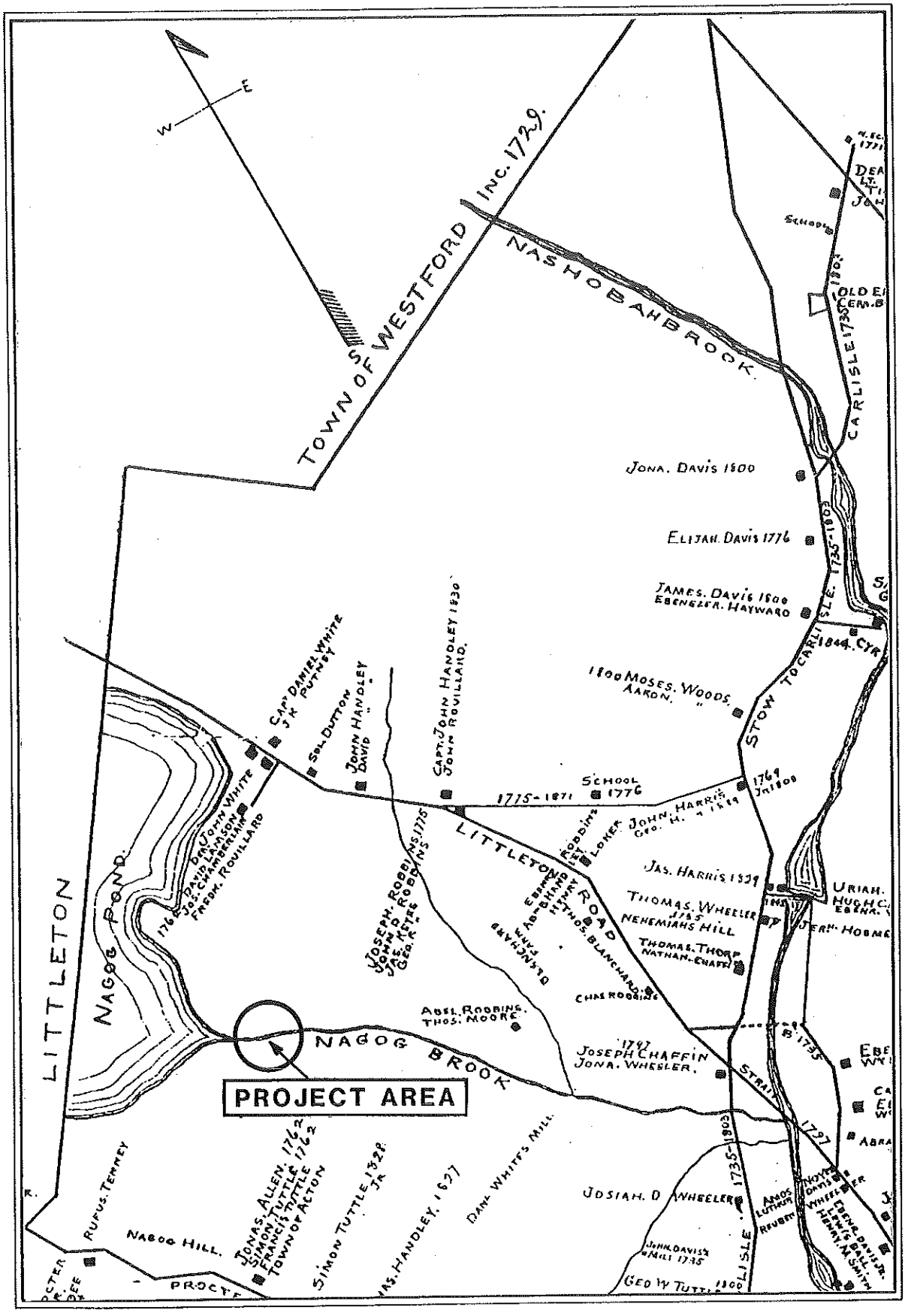

Figure 11. Map of Acton (Tuttle 1890).

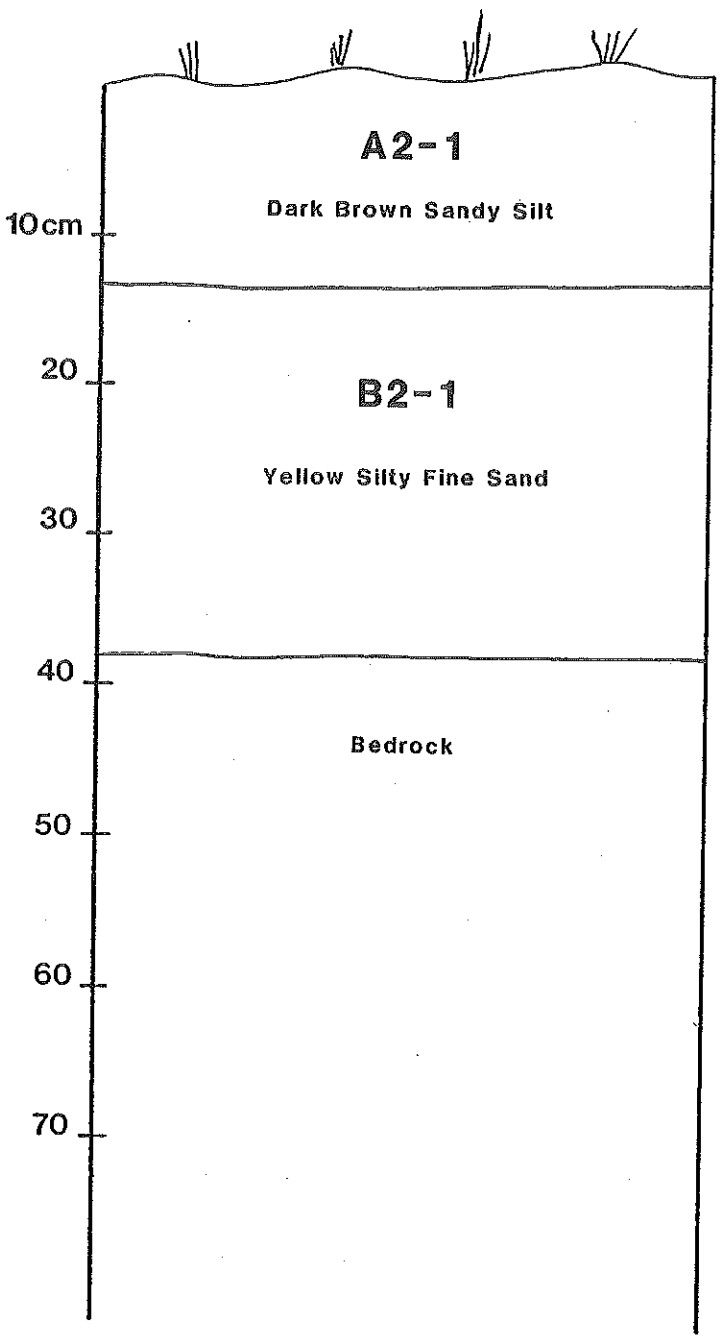

Figure 12. Typical Soil Profile from Survey Unit 1 (STP 2).

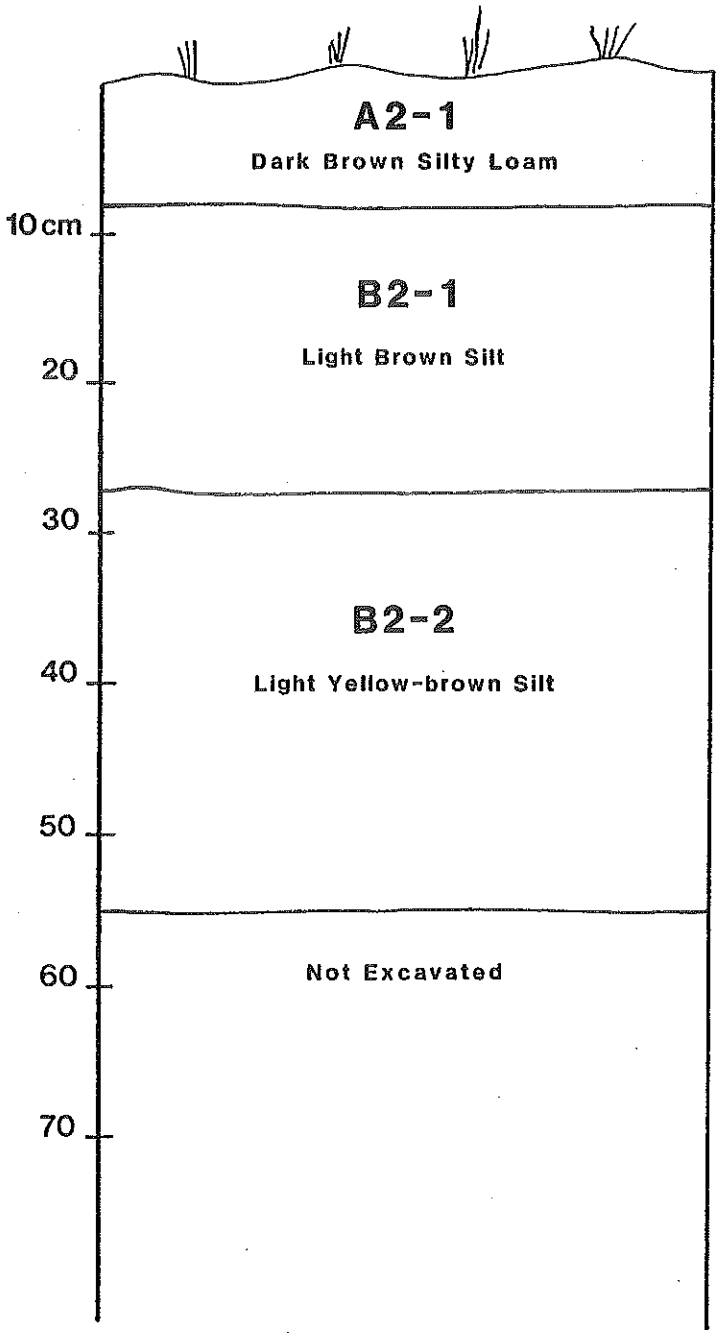

Figure 13. Typical Soil Profile from Survey Unit 2 (STP 12).

APPENDIX A

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