ARCHAEOLOGICAL SITE REPORTS AND CLASSROOM ARCHAEOLOGY: SOME QUESTIONS AND SUGGESTIONS FOR TEACHERS

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CHAPTER I

INTRODUCTION

The purpose of this thesis is twofold. It is an attempt to introduce the reader, through example, to ongoing archaeological research being conducted in southern New England. Secondly, it is meant to serve as a tool for teachers who wish to introduce students to archaeological concepts and exercise. The main body of the thesis consists of chapters which provide a historical context for current archaeological research and chapters which discuss the actual investigations of a prehistoric site area in Norwood, Massachusetts. Chapter IX, the concluding section, is a guide for the generalization and application of the archaeological data into the classroom setting. Chapter IX outlines the key elements of previous chapters and suggests questions, materials and activities which can be employed to provide classroom archaeological experiences.

A Brief History of Archaeological Investigations Leading to the Research Program

The initial archaeological investigations for the Stone Ridge project area began on September 7, 1984, when McNeil and Associates, Inc. contracted with The Public Archaeology Laboratory,

Inc. to conduct an intensive archaeological survey within the 52 acre project parcel (Figure 1-1). The intensive survey resulted in the identification of prehistoric cultural materials concentrated in the northernmost project limits, along the Neponset River (Leveillee and Gallagher 1985).

A site examination was conducted by The Public Archaeology Laboratory, Inc. immediately following the intensive survey. It was determined that the material concentrations constituted two archaeological site areas, separated both spatially and chronologically. Both sites, Oak Terrace and Red Leaf, were recommended for eligibility to the National Register (Leveillee and Gallagher 1985). Since proposed construction plans could not be altered to avoid the sites, eliminating an in-place preservation option, an excavation program to recover data was recommended to mitigate the adverse effects of the development.

In February, 1985, a proposal (Leveillee) for a data recovery program at the Oak Terrace and Red Leaf sites was approved and accepted. The Public Archaeology Laboratory, Inc. was given a permit from the State Archaeologist to excavate the archaeological sites, as required by Massachusetts General Law. Fieldwork began in April, 1985, and proceeded through the spring. Laboratory processing and analysis took place through the fall and winter of 1986. This thesis is a synthesis of archaeological data collected during those investigations. The author was responsible for the

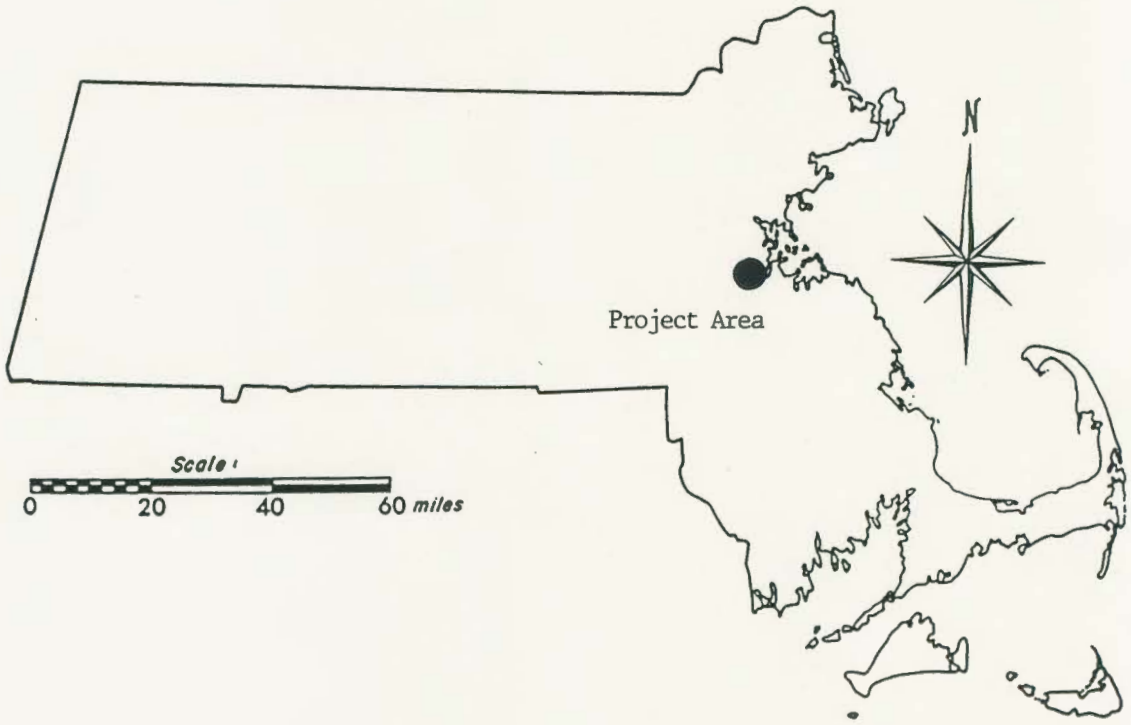

Figure 1-1. Project Area Location.

design, implementation and interpretation of the data recovery program and takes responsibility for the content of this thesis.

CHAPTER II

AN OUTLINE OF PREHISTORIC SOUTHERN NEW ENGLAND

The inventory of known prehistoric sites in southeastern New England has resulted from years of archaeological investigations, initially by avocational collectors and groups. Within the past decade, spurred by the conservation movement and supporting legislation, professional archaeologists have focused attention on the region. Today a number of archaeological interests, including government agencies, university-affiliated individuals and groups, and professional cultural resource management firms, as well as avocationalists are conducting research in southeastern New England. The body of data, which has been and continues to be generated by these archaeological efforts, provides expanding insights into the region's past 12,000 years.

The work of avocationalists prior to and through the 1960s provided data for the seriation of artifact types and the identification of stratigraphic artifact relationships which became the foundation of a regional cultural chronology (Fowler & Luther 1950; Fowler 1945, 1952, 1963). Professional work initially focused upon refinement of the chronologies by defining cultural complexes and their associated tool assemblages (Ritchie 1959, 1965a, 1965b; Dincauze 1968, 1971, 1972). The identification of cultural traditions and complexes from southern New England sites has always been dependent upon sequences of diagnostic projectile

points and other stone tools and ceramics. Radiocarbon dating has proved an invaluable aid in the refinement of these chronologies. As more data are collected and the chronologies refined, larger issues beyond component identification can be addressed. Among these issues are settlement patterning and socio-political organization (Dincauze 1980).

The outline presented here summarizes and is included in this report to introduce the reader to the overall contexts and perspectives considered when discussing specific sites, such as Oak Terrace and Red Leaf (for a more specific discussion of sites in proximity to the Stone Ridge Development area, see Chapter 3).

The PaleoIndian period represents the earliest known human occupation in southern New England. During this time period, approximately 12,000 to 10,000 years ago, an open spruce woodland with scrub birch and alder dominated the post glacial environment (Schafer & Hartshorn 1965; Davis 1965; Funk 1972). It is postulated that small bands of hunters nomadically roamed large territories, relying predominantly on pleistocene megafauna. Artifacts attributed to the PaleoIndian tradition and collected from sites in Massachusetts include diagnostic Clovis-type fluted projectile points and processing tools such as end and side scrapers, gravers and drills. PaleoIndian lithic technologies reflect a preference for highly siliceous materials, primarily cherts from eastern and West Central New York and jasper from Pennsylvania and New Jersey. The presence of these exotic materials from sources outside of the immediate region indicates

extensive travel or well defined trade networks in operation during the PaleoIndian period.

Relatively little is known of the PaleoIndians in southern New England. Sites are rare. Those that have been identified are located in topographic locations which were once shores of glacial lakes and upon elevated areas along large river drainages. A relatively small population as well as post-depositional natural changes in the landscape combine to contribute to the low frequency of known PaleoIndian sites. For example, sea levels along the coast were lower, allowing habitation of the continental shelf, now under water. PaleoIndian components reported in Massachusetts include Bull Brook in Ipswich (Byers 1954; Fowler 1972) and the Wapanucket #8 site in Middleboro (Robbins and Agogino 1964; Robbins 1980). Single, fluted point finds have been found on sites with predominant components of other time periods including Titicut in Bridgewater (Mello 1974), Mill River in Mendon (Roop 1963), and sites in Wrentham (Fowler 1954) and Twin Rivers, Rhode Island (Fowler 1952).

During the time period between approximately 10,000 to 8000 B.P., a pine-dominant forest type with some deciduous species such as oak was replacing the spruce dominant environment of post-glacial New England (Davis 1979; Hartshorn 1968; Newby, Webb and Webb III 1986). The human groups in the area were apparently adjusting their ways of life to adapt to the changing ecosystems. Though we know little about the cultures of the Late PaleoIndian

period some contrasts to the preceding millenium exist. The diagnostic Plano-type projectile points of this period include lanceolate and pentagonal types resembling those from sites in New York, New Jersey and Vermont (Ritchie 1965; Kraft 1977) and represent technological changes reflecting changing procurement strategies. Single point finds have been made upon multi component Massachusetts sites including Titicut (Robbins 1967; Fowler 1967), Oak Island in Norwell (Scothorne 1968), Swan Hold in Carver (Fowler 1976), Wapanucket #8 in Middleboro (Robbins and Agogino 1964) and Eel River in Plymouth (Fowler 1972). Criteria used to select site location during this millenium were apparently similar to those used during the earlier PaleoIndian period. Projectiles were being made from locally derived felsites and quartzites, indicating an increasing knowledge of and dependence on local lithic sources.

The time period which encompasses approximately 9,500 to 7,000 years ago is recognized as the Early Archaic. Environmental data indicates a fairly warm post-glacial climate with pine-oak forests dominating (Davis 1969; Newby, Webb, Webb III 1986). At this time rising sea levels were slowly drowning many areas previously exposed along the continental shelf. As with cultures in the late PaleoIndian period, little beyond isolated point finds represent Early Archaic populations in the area. It is hypothesized that there was a shift from a primary dependence on big game during the late glacial environment to a hunting, fishing and gathering strategy reliant upon a diversity of game such as white-tailed deer, bear, and elk as well as many smaller mammals

and birds. Plant and nut foods were no doubt important resources as well. It is postulated that populations increased with a more reliable subsistence base provided by deciduous forests and associated waterways (Dragoo 1976; Fowler 1959; Gribben 1978; Willey 1956; Ritchie 1965; Ritchie and Funk 1973; Fitting 1968; Snow 1980).

Site locations are generally consistent with those attributed to earlier PaleoIndian finds. Diagnostic bifurcate-based projectile points of this period are considered to represent technological changes in response to changing target resources, including smaller game and fish (Dincauze & Mulholland 1977). Projectile points of this type have been recovered from several areas of Massachusetts including the Boats site in Dighton (Rose 1965), the Nunkatusset and the Double P sites in Bridgewater (Engstrom 1951; Thorbahn 1982). Taylor reports a concentration of bifurcated point finds from the middle Taunton River drainage area in North Middleboro and Taunton (Taylor 1976). On the Double P site in Bridgewater a single bifurcate point and a deep pit feature carbon dated to 8,550 years ago represent the first identified component of this period in southern New England (Thorbahn 1982). As with the earlier Paleo periods, a combination of environmental changes to the landscape and a relatively low population utilizing a widespread economic system, has no doubt contributed to the rarity of these sites.

Environmental conditions during the Middle Archaic time period, spanning from approximately 7,500 to 4,500 years ago, were

warm and dry with an oak dominant mixed hardwood forest with intermittent coniferous species (Davis 1967; Newby, Webb and Webb III 1986). The inundation of coastal and tidal areas which was noted for earlier periods continued through the Middle Archaic.

Components of the Middle Archaic are known from sites in many environmental settings. However, riverine, lake and wetlands associated topographies seem preferred. The distribution and frequencies of sites of this period indicate an increase in population and utilization of a wide variety of resources. Anadromous fish and waterfowl collection areas were frequented, perhaps on a seasonal basis (Dincauze and Mulholland 1977; Snow 1980).

Based upon work in New Hampshire, two and possibly three cultural complexes have been recognized in the Middle Archaic period (Dincauze 1976). These three complexes are represented by Neville, Stark and Merrimac projectile points, respectively. Lithic technologies from this period show a preference for various fine grained volcanics such as felsites and rhyolites. Quartzite, argillite and some shales are also utilized but the use of quartz is limited. Tool assemblages from Middle Archaic sites include a wide variety of implements including chipped (points, knives, scrapers, choppers, preforms), ground and pecked (axes, atl atls, gouges, semi-lunar knives, plummets, whetstones) artifacts suggesting an extensive range of subsistence and maintenance activities.

Many Middle Archaic site areas and spot finds have been reported in southeastern Massachusetts. Included in the inventory are several in proximity to the Stone Ridge project location, along the Neponset drainage (discussed in more detail in Chapter 5). However, little beyond locational information is known about these sites and many have been lost through industrial and commercial development as Norwood has continued to grow. Aspects of the composition of southern New England Middle Archaic sites and their internal configurations have only relatively recently been studied (Dincauze 1976; Starbuck 1982; Thomas 1980; Hoffman 1983).

The majority of known site locations in southeastern New England contain cultural components assignable to the Late Archaic Period, spanning from approximately 4500 to 3000 B.P. Climatic conditions during the Late Archaic are dominated by the Altithermal period, with continued warming (with several periods of rapid drying). Temporate forest types, composed of oak and hickory covered most of southern New England (Newby, Webb, Webb III 1985; Nelson 1985).

Three cultural traditions have been identified within the Late Archaic period in the region. These include the Laurentian (Ritchie 1965), Small Stemmed Point (Ritchie 1969), and the Susquehanna Tradition (Ritchie 1969; Dincauze 1971).

Two cultural phases are included in the Laurentian Tradition. The earliest phase, Vergennes, may have begun in the later Middle Archaic (around 5500 B.P.). The Brewerton phase appears to be slightly later (around 5000 B.P.). The Laurentian Tradition site

locations in southern New England are widespread with Vergennes and Brewerton phase components located on inland sites such as rockshelters and hollows. It appears that these Laurentian complexes were adapted to interior upland resource exploitation.

The Small Stemmed Point Tradition appears to be an indigenous development within southern New England. It may, however, like the Vergennes, have its beginnings in the Middle Archaic (Merrimac) (Dincauze 1978). This small stemmed projectile point type is widespread and numerous in southern New England with a wide temporal span. Within the larger Small Stemmed Point Tradition, the Squibnocket Complex has been defined from data collected initially on Martha's Vineyard (Ritchie 1969). The small, triangular points diagnostic of this Complex, like Small Stemmed Points are frequently recovered from multi-component deposits.

The Small Stemmed Point tradition shows the most widespread and diversified settlement pattern within the Late Archaic period. Sites are known from a variety of environmental settings in both coastal and inland environs. The representation of many small sites (as well as possible habitation sites like Bear Swamp (Staples and Athern 1969; Barnes 1972) and Wapanucket #6 (Robbins 1959) of this tradition in a range of settings indicates that these people utilized a broad spectrum subsistence system with an extensive knowledge of local resources.

The Susquehanna Tradition, initially recognized from data collected in New York and Pennsylvania (Witthoft 1953; Ritchie

1965), is further refined to three cultural phases. The Atlantic Phase dates to approximately 3700 B.P. (Dincauze 1972). Developing from this phase is the Watertown phase sometime after 3600 B.P. (Dincauze 1968). The third phase, Coburn, succeeded the Watertown and is believed to continue to about 3000 B.P. (Dincauze 1968).

Within the Susquehanna Tradition, the distribution of Atlantic Phase sites is known mostly from work within the Boston Basin and coastal Massachusetts. Estuarine and island sites are utilized during this phase. The beginnings of the Susquehanna Tradition represent what we believe to be a migration of peoples and ideas from outside the region, probably from the south (Dincauze 1974).

The Watertown Phase of the Susquehanna seems to have a wider distribution along the coastal plain than its predecessor. Adaptive strategies appear to have become modified to localized environments. Watertown phase components include secondary cremation burial sites in South Dighton (Rose 1953; Dincauze 1968) and the Mansion Inn site in Wayland (Mansfield 1960; Dincauze 1968).

Coburn Phase components of the Susquehanna are located within the coastal plain and seaboard lowlands. They, like the Watertown sites, consist of secondary cremation burials. Subsistence strategies appear to indicate gradual modifications toward those utilized by the native Small Stemmed Tradition.

Following the various phases of the Susquehanna Tradition is the Terminal Archaic Orient phase, with its roots in the earlier

Susquehanna. This phase has been radiocarbon dated to approximately 3500 B.P. in southern New England (Simmons 1970; Cox, Davin and Leveillee 1985). This Phase may indicate a mixing of the Small Point and Susquehanna traditions. Habitation components are known primarily from coastal estuary and riverine environments. Technological innovations attributed to the later Susquehanna groups and the Orient Phase include the use of soapstone bowls. This innovation no doubt was an improvement in cooking (as opposed to stone-boiling in wooden vessels), and indicates a more sedentary lifestyle. A final technological innovation in this period is the appearance of ceramic vessels.

Late and Terminal Late Archaic lithic technologies were predominantly based on locally available raw materials, with occasional use of eastern New York cherts. The Small Stemmed Point Tradition relied heavily upon quartz. Felsites and quartzite were also widely used in eastern Massachusetts. There appears to have been a localized preference for argillites as well as quartz in southeastern New England. The utilization of soapstone quarry areas in Massachusetts, Connecticut and Rhode Island probably began during the period of Susquehanna influence in the Late Archaic.

Features and artifact assemblages from sites associated with Small Stemmed depositions seem to indicate that small bands of people occupied sites periodically, building hearths, and digging pits for roasting and storage. At the Wapanucket #6 site in Middleboro, evidence suggests that a large population occupied the

area during the fall and winter months. Post molds indicate that large circular lodges were constructed and probably occupied by several families. Cremation burials found near this probable village site indicate that religious ceremonies involving secondary burials of artifacts and cremation remains were conducted as early as 4200 B.P. (Robbins 1959).

Most features of known Susquehanna Tradition sites are various forms of secondary burials. The exceptions are on small, single component sites where a hearth is the focal point of a single depositional event, as on the Purgatory II site in Sutton (Thorbahn and Cox 1983) and on Jamestown, RI (Cox, Davin and Leveillee 1985). Within the burial sites, cremated bones and accompanying artifacts were placed in single or compound pits with no apparent differential treatment for age, sex or social status. These people, like those of the Small Stemmed Tradition appear to have been organized in small bands exploiting resources in a specialized form of hunting and gathering. There are indications that the Susquehanna groups were involved in long range trade networks, exchanging high grade lithics for locally quarried soapstones.

It is generally agreed that the Woodland Period began when ceramic vessels were included as part of the material culture (about 3000 B.P.). These ceramics consist primarily of, coarse burnt rock and quartz tempered types with cord marked interior and exterior surfaces, similar to Vinette I types from New York (Ritchie 1965). Environmentally, the Altithermal climate of warm

and dry conditions noted during the Archaic Periods had become cooler and wetter, with increasing numbers of oak, pine, hemlock and chestnut species. Also by this period coastal inundation had essentially stabilized, allowing the formation of coastal ecosystems, which provided a wide range of reliable food resources. The majority of Early Woodland sites occur in coastal or estuarine zones with lesser numbers upon larger multicomponent sites on major rivers and lakes. It is likely that subsistence patterns were similar to those of earlier periods except for the shifting towards coastal as opposed to inland resources. Meadowwood, Lagoon and Rossville type projectile points as well as Vinette I like pottery are considered diagnostic markers of the Early Woodland. Some trade networking is indicated by occasional Adena (midwestern) type projectile points and exotic lithics.

During the Middle Woodland period (approximately 1600-1200 B.P.) the cooler conditions noted in the beginning of the Early Woodland period continued. Site locations, like the Early Woodland include riverine and coastal sites. Increasing utilization of saltwater resources is indicated by large shell middens in coastal areas. By the Middle Woodland subsistence and settlement was probably characterized by seasonal occupation between coastal and inland locations. Stone tool assemblages of this period are characterized by Jacks Reef Corner Notched and Pentagonal as well as Fox Creek projectile point types. A significant amount of exotic lithic materials such as jasper from Pennsylvania and New

York flints were utilized. Major local lithics of the period include hornfels, felsites and quartzite. Inhumation burials with associated red ocher deposits accompanied by grave goods included stone smoking pipes, adze blades and pendants (Brewer 1944), as well as shark's teeth and leaf-shaped blades (Taylor 1970).

The Late Woodland period (1200-400 years ago) experienced a similar climate to that of today. The oak dominated forests of the previous period continued. Site locations of this period are known in a number of environmental settings. These spatially varied locations include inland rockshelters, coastal and island sites, inland sites on major drainages and others located near swamps and along streams. An annual subsistence round of seasonal movements between riverine or coastal estuarine site location and inland wintering sites such as rockshelters may have existed. The beginnings of horticulture is considered to have occurred during the Late Woodland, with spring and summer planting locations in coastal settings, and along inland lakes. The continuing dependence on shellfish is evident from shell midden sites, with deer being a predominant meat source.

The construction of round and rectangular dwellings with pole frames is indicated at several Late Woodland site locations (Martha's Vineyard, Ritchie; Titicut, Robbins 1967). Palisaded dwelling sites are noted in Middleboro (Fort Hill, Fowler 1974).

Madison and Levanna projectile point types are considered diagnostic of the period and are included in assemblages along with triangular knives, scrapers, ungrooved adze blades and pestles.

Bone and antler tools are included in the material culture. Ceramic vessels were made with sand, grit and shell tempering by coiling as well as paddle and anvil techniques. Collared necks and castellated rims appear as attributes in the Late Woodland ceramic inventory.

In southeastern Massachusetts some data on Late Woodland sociopolitical organization is available from two large multi component sites which include Late Woodland depositions. At the Titicut site in Bridgewater, a cemetery was found which was associated with habitation of the site (Robbins 1956, 1967). At least 13 inhumation burials of adults and children were found with associated grave goods. At the Fort Hill site, in Middleboro, a Late Woodland and Contact period palisaded settlement was discovered. This indicates that conflicts over territory prompted fortifications.

The Contact Period, when native American and European cultures converged, is dated between 450 and 350 years ago. The native settlement pattern at the beginning of this period was essentially the same as that of the Late Woodland and consisted of seasonal hunting and gathering. In the spring and summer, fall line areas along streams and rivers were occupied. Upland and inland sites were occupied for short periods during hunting, trapping and lithic procurement activities. Coastal resources were depended upon heavily, with shell and offshore fishing. Horticulture was a significant part of the Contact Period

subsistence, with corn, beans and squash being grown in large coastal and inland fields.

Villages contained oval and round bark and mat covered houses, surrounded in some cases by protective log palisaded walls. Large storage pits for dried meat, fish, and corn were utilized.

The first contact with Europeans was probably with Spanish, Portuguese and English fishermen, who began to trade with the native population. With increasing contact settlement and subsistence patterns changed substantially as European materials, including metals and weapons, were introduced. Traditional types of chipped and ground stone tools were replaced by adopted European goods. Projectile points were fashioned from sheet brass, copper and iron. Iron axe and hoe blades, knives, clothing, and ornaments were obtained from the settling English.

The native ceramic industry disintegrated with the introduction of iron, brass and copper cooking kettles. Shell beads and wampum were produced by the native Americans in large quantities as a medium of exchange and ornamentation. Other ornaments included European "trade beads" and "Jesuit" rings.

In the seventeenth century a number of factors operated to cause a breakdown of native sociopolitical organization. The influence of prized trade goods and the desire to obtain them caused stress between tribal groups. The plagues of 1616-1620 depopulated some groups. The conflicts due to rapid colonial expansion resulted in irrevocable change.

As some native Americans became converts to Christianity "Praying Villages" were established in some areas including Ponkapoag and Middleboro. Changing burial practices reflect the colonial influence with the use of wooden coffins and utilization of head and foot stones. Grave goods include both aboriginal (stone pestles, bone beads, ceramics) and European items (glass beads, utensils, bottles).

CHAPTER III

RESEARCH FRAMEWORK

Theoretical Issues in Southern New England

Archaeologists working throughout New England are in general agreement that the best approach to understanding the patterns and processes of life during the past 12,000 years is by research on regional scale culture systems (Massachusetts Historical Commission 1979; Dincauze 1980; Moore 1980; Snow 1980; Thorbahn 1982). At the Public Archaeology Laboratory, Inc. (with which I am affiliated) research has focused primarily upon a description and explanation of both prehistoric and historic settlement through the investigation of land use systems. Our methods of research have been developed over years of work in southern New England. Our experience has proved beneficial in the interpretation of data from many environmentally diverse zones in the region, including coastal drainages (Pettaquamscutt River, Cox, Thorbahn and Leveillee 1983; Sakonnet River, Leveillee and Thorbahn 1984), interior lowlands (I-495, Thorbahn 1982; EG&G, Gallagher and Davin 1983; Taunton River, Thorbahn 1984), the interior uplands (146 corridor, Thorbahn and Cox 1983), as well as data recovery programs conducted on individual sites located throughout the area (G. B. Crane, Norton, Campbell and Sprague sites, Narragansett, RI, Cox and Thorbahn 1982; RI 711 in Jamestown, RI, Cox, Davin and Leveillee 1985; Bouchard, Usquepaug, RI, Davin 1985; Hartford Avenue Rockshelter, Route 146, Ritchie 1985; and Oak Ridge, Orleans, Loparto in prep.).

My research background has been to concentrate on the ways in which people have organized their activities over an area in order to obtain the resources they utilized. This method of studying land use systems attempts to define and explain five factors of human and environmental interrelationships. They include:

(1) population density and distributions;

(2) resource density and distribution;

(3) resource procurement technologies;

(4) forms of social organization; and

(5) environmental change.

When these five variables interact, the result is a specific pattern of land use. Looked at through time, these patterns will tell us where people went and what they did to survive. Process, within a land use system, is the dynamic change in the patterns of land use (Thorbahn 1982).

The initial goal within archaeological research is to formulate as complete as possible a description of the patterns and processes of regional land use. Our desired overall objective is to formulate a scientificially adequate explanation of our observations to construct an operational theory of land use systems. Having this theory we can begin to develop models which can define or predict elements of the system for a particular place during a specific time.

Historically the approach, until recently, has been through a cultural-historical perspective in which groups of people were

identified and dated to a certain time period. This was accomplished through comparing distinctive styles of artifacts and pottery. This approach has proved a useful tool for archaeologists. However, with increasing research some styles of artifacts, the Small Stemmed projectile points, for example, have proven to be of little use as a chronological marker. We now know, through a number of carbon dated associations that this point style was in use for thousands of years and their morphology may have more to do with function than style. Furthermore, a movement within the field contends that by now the chronological framework is well enough established to allow us to move on to address theoretical issues (Dincauze 1980; Moore 1980).

The data gathered during the programs of excavation at the Stone Ridge development are significant in that as a body of information they can contribute to an understanding of prehistoric land use systems within the middle Neponset River drainage area, and in particular the study of peoples utilizing a distinctive lithic technology who concentrated thir settlement and subsistence patterns within riverine environs throughout southern and central New England. Within the study region, the Middle Neponset, elements of differing land use systems through time are present. Therefore the results must also be correlated with data generated from other studies on a regional scale, including works concentrating on other, nearby drainages (Charles, Blackstone, Taunton).

The analysis of data recovered from the Oak Terrace and Red

Leaf sites is guided by categorizing it according to the five elements listed above. An interpretation of the site's place in operating land use systems will then be possible. The section to follow discusses the general concepts I will use in this interpretation.

Concepts of Land Use Patterning

As archaeological work in the region progresses, interpretations of the increasingly complex matrix of material culture can be attempted. Several recent models have been developed which can be applied to our work and may eliminate the need for the constant reinvention of a similar wheel. Lewis Binford has developed a model to account for complexities of depositions left by a contemporary group of hunters and gatherers (Binford 1978). Since the model's initial introduction he has adapted the original concepts involved to allow an application to prehistoric data (Binford 1980, 1982). In his model, Binford identifies two basic strategies employed by hunter and gathering groups. One of these is "foraging"; the other is "collecting" or "logistic."

When a group employs a foraging strategy they move to differing locations depending upon the availability and duration of target resources. This way of life is characterized by variable group sizes, high mobility and activities of daily food procurement (Binford 1980:5-12). Two distinct types of sites are created by a foraging way of life--residential base camps of variable duration

(depending on how long resources are available) and resource foraging locations, where extraction tasks are carried out. These second kinds of sites are visited for short duration and have a low archaeological visibility (most certainly in cases where gathering was not dependent on making or maintaining tools).

The existence of collecting or logistic strategies is documented by ethnographic studies on modern groups such as !Kung Bushmen and Nunamiut Eskimos (Lee and DeVore 1968, 1976; Binford 1978). Data gathered during these studies indicates that environments with differing spatial and seasonally available resources support logistically organized land use systems. Using this collecting strategy essentially involves bringing resources to the group. Site types common to this kind of system include residential base camps, foraging locations and logistic field camps created by task specific smaller groups. These field camps, usually located more than a day's round trip from residential bases, could also have associated foraging locations and may have served a wide range of purposes; collection and processing, storage, observation.

The interpretations of sites we have excavated are based upon this theory of foraging and logistic strategies. With the generation of enough data from local and regional sites we can begin to piece together land use systems that were in operation during given time periods. The data generated from the Red Leaf and Oak Terrace sites has been analyzed within this overall

framework. Chapter 8 of this report will discuss the sites within this theoretical perspective.

Site Specific Research Design and Regional Applications

In order to consider the justifications and considerations that came into play when proposing a data recovery program on the Oak Terrace and Red Leaf sites it will be necessary to briefly review initial phases of work there. In September, 1984, the firm of McNeil and Associates, Inc. contracted with The Public Archaeology Laboratory, Inc. to conduct an intensive survey prior to the area's development. During the course of the study, subsurface testing located several concentrations of prehistoric cultural material in the northern project area. These concentrations were recommended for further testing (Leveillee 1984). Site examination was conducted in the fall of 1984 (Leveillee and Gallagher 1985). The recommendations following site examination were that the Red Leaf and Oak Terrace sites should be considered significant in terms of the State and National Register criteria and any adverse effects to the sites should be mitigated. It was decided that the only option for mitigation would be an archaeological program of data recovery.

The justifications for a data recovery program were outlined in a proposal submitted in February, 1984 (Leveillee). The proposal stated that the body of archaeological data that the Oak Terrace and Red Leaf sites contained was significant in terms of making a substantial contribution to understanding prehistoric land

use at both the local (Neponset River drainage) and regional (central and southeastern New England) levels. It also described the project area's archaeological record as complex and fragile, representing little understood periods in New England's past. The sites, the proposal contended, consisted of intact, coherent depositions of prehistoric occupation that needed to be studied for two reasons:

(1) rapid destruction of Norwood's prehistoric record through development; and

(2) the prehistoric activities that took place at these sites fell within three recognized periods of the prehistoric past, the Middle Archaic, the Transitional Late Archaic and the Middle to Late Woodland. The utilization of this area along the Neponset River during these periods was said to be indicative of the area's strategic importance.

The results of the site examination program on the Oak Terrace deposits indicated that the primary activity carried out on the site was lithic reduction. Five isolated features and workshops suggested that quarried felsites from local sources were carried onto the site where the manufacture of implements took place.

Within the Woodland deposits a projectile point base and low densities of chipping debris concentrated around a feature indicated a different primary function during that period. Expeditious food preparation during a single occupation was suspected.

Several research questions were formulated for Oak Terrace following the site examination:

(1) What role did the sites occupy within the larger land use system? How large were the prehistoric groups that occupied the sites? How long were the sites occupied and at what time of the year?

(2) What kind of technological information is contained in the lithic debris and artifacts discarded at both the Oak Terrace and the nearby Red Leaf sites?

The site examination of Oak Terrace concluded that while no convincing diagnostic artifacts had been recovered from high density workshop areas, a Middle Archaic (Neville) origin was suspected. I felt that the recovery of firmly diagnostic elements was necessary to place these lithic concentrations within their proper chronological mileu. It was further speculated that lithic debitage and artifact fragments from these workshop areas might contain the entire reduction sequence for Neville type projectile points.

Lithic deposits on the Red Leaf site were said to have the potential to provide insights into the Transitional Archaic. Materials associated with the Susquehanna tradition were located on this small, tightly concentrated feature and lithic scatter. The site examination concluded that the site was the result of a single depositional event by a small group, utilizing locally obtained lithic raw material. It was speculated that the site was created in a time period within the Transitional Archaic when small task specific, procurement groups were becoming increasingly familiar and dependent on local rather than extra regional lithic sources.

Finally, my research proposal for the data recovery program posed the question: Do the recovered diagnostic artifacts fit into

the generally accepted temporal range that our current cultural chronology dictates? How will our ideas about the known chronology change?

In order to begin to address these questions it is necessary to provide information on the existing comparative data base as well as outlining methodologies, discussing environmental information and providing a description of materials recovered. The remainder of this chapter will concern itself with three relevant aspects of my research; the nature of known settlement and subsistence, based upon work within geographic zones of southern New England; specific characteristics of known sites in proximity to the Stone Ridge Development area and, a brief discussion of several regional sites with similar procurement components.

Previous Research in the Region

Interior Lowlands

Large numbers of sites in the interior lowland zones of southeastern New England have been investigated by both avocational and professional archaeologists. As a result of cultural resource management surveys within the past ten years, the inventory of known sites has increased significantly. Perhaps the most intensive of these surveys was that of the I-495 project concentrating within 21 km of a 120 m wide highway corridor from Mansfield to West Bridgewater. Thirty-nine prehistoric sites were discovered during the first stages of the survey and 23 of these received intensive investigation (Thorbahn 1982).

Results of the study revealed important information about the types of sites located in this zone as well as activities which formed the operating subsistence patterns. Sites in the interior lowlands, for example, are almost ten times as large spatially, as well as being significantly more complex than those situated in the interior uplands (see next section). A small number of sites appear to be long term residential camps, containing evidence of many occupations and a high diversity of activities, reflected in artifact assemblages. The greatest proportion of sites, however, were apparently more temporary and used primarily as short term camps, where procurement activities were carried out.

The Double P site in Bridgewater, for example, is believed to have served as a residential base. This small site contained at least three distinctive feature types: deep pits, possibly intended as storage areas; lithic workshops; and a cache of large quarry blanks (very similar to blanks located on Oak Terrace). The diversity of these feature types is important in that at least two of them have implications for an intended reutilization of the site. This implies a high degree of logistic complexity. Radiocarbon analysis of charcoal samples from this site yielded dates ranging between 6,500 and 8,500 years ago.

Other sites which may have served as long term residential bases include the Bay Street and Newcomb Street sites. Bay Street contained eleven distinguishable activity areas ranging in age from the Middle Archaic through Middle Woodland periods. One activity area in particular contained a wide variety of lithic reduction and

feature producing activities. This area was carbon dated between 1400 ± 25 B.P. (GX 7573) and 4305 ± 180 B.P. (GX 7411). Features included lithic workshops, postmolds, pits, hearths and at least one deep storage/refuse pit.

The third example of a potential base camp site, Newcomb Street, contained three chronologically discrete deposits: Late Archaic, Middle Woodland, and Late Woodland. These three areas on the site exhibited a diverse range of feature and artifact types suggesting differential utilization over time. The focal point for the Late Archaic deposits was a large pit feature containing chipping debris, tools, burnt rock and bone fragments. The Middle Woodland concentration contained a concentration of hornfels and rhyolite chipping debris. The Late Woodland component was characterized by numerous ceramic sherds. Carbon dates ranged between 4080 ± 145 B.P. (GX 7406) and 435 ± 115 B.P. (UG 2919).

The Canoe River West site is one of ten sites within a 90 degree bend in the river (similar to the Oak Terrace area). Collectively these sites represent field camps and locations from which riverine and wetland resources were exploited. The earliest dated utilization of the sites in this cluster was 4835 ± 250 B.P. (GX 7085). The majority of occupations, however, clustered between 3,000 and 2,500 years ago. Diagnostic artifacts included Neville (as on Oak Terrace), Brewerton, Orient, Small Stem and Squibnocket projectile points. The most prevalent features were burnt rock "pavements" apparently used repeatedly over many occupational episodes.

Other foraging sites in this inland lowland zone included three within the Norton Reservoir District. The Treatment Plant, Yellow Dog and Gully sites contained the remains of numerous depositional events created by small groups during brief utilizations. The primary activities seem to have been winter hunting locations where primary and secondary lithic reduction had taken place. One deposit on the Gully site included a large concentration of calcined bone, almost exclusively white-tailed deer.

The high frequency of repetition of utilization and activities involving storage, processing and caching indicates a complex logistical system was in operation within the Middle Archaic, radio carbon dated to 5640 $\pm$ 280 B.P. (GX 7474) in this concentration of sites. Diagnostic artifacts included Neville and Brewerton projectile points, an adze, choppers, cores and a net weight sinker.

The Inland Upland Zone

Generally speaking, this zone is underrepresented in the regional inventories. One intensive survey however, in advance of highway construction along Route 146 from Sutton to Uxbridge, located 29 prehistoric sites. The highway corridor provides a transect through part of the interior upland near the headwaters of the Blackstone River.

Sites in this zone tend to be concentrated along headwater streams. Upland sites are similar to some lowland sites in that

they appear to have been created in similar patterns. Both small, high density and large, low density artifact deposits are noted (Thorbahn and Cox 1983). The uplands, however, were exploited differently than coastal zones. It appears that the uplands were most heavily utilized when environmental conditions allowed maximum territory expansion and then were abandoned during periods of ecological stress (Cox, Davin and Leveillee 1984). Upland interior sites have been found to be fragile, small in area and thinly distributed vertically.

Few sites within the 146 corridor were candidates for residential bases. Among the possibilities was the Black Bear site, which was the largest in the project area. The site consisted of three depositional events during the prehistoric past. Area 1 yielded a date of 2935 $\pm$ 190 (GX 9216). Area 2 was dated to 995 $\pm$ 155 (GX 9218) and 885 $\pm$ 145 (GX 9217). In both areas 1 and 2 stone tool manufacture and maintenance were the primary activities reflected by recovered materials. In area 2, two distinct features were separated spatially by 20 meters. Both features contained burnt rock, chert projectile points and charcoal fragments. These features and their related lithics suggest resource procurement and processing activities during utilization.

The majority of sites found along Route 146 were temporary campsites where target resources were exploited by small groups. Among these was the Hartford Avenue Rockshelter, which served as a hunting and foraging camp where white-tailed deer in particular was

represented by numerous bone fragments. Large quantities of ceramic sherds were also recovered. Projectile points included Levanna, Orient and Small Stem types. The range of dates from the site indicates most intensive utilization during the Late Woodland period.

A Middle Archaic presence at the rockshelter is indicated by a single Neville projectile point fragment and some associated chipping debris. The patinated, light grey felsite used to make the point resembles porphyritic felsite derived from the Mattapan Volcanic Complex along the southern rim of the Boston Basin (Ritchie 1986:25). Also several small Neville variant points of similar felsites are recorded from an avocational collection of artifacts from sites in the Sutton, Uxbridge area.

The Bear Hollow site is another example of a temporary campsite along the 146 corridor. This site was created during utilization between 425 $\pm$ 150 (GX 9215) and 340 $\pm$ 150 (GX 9214) years ago. Among the materials recovered from the deposits were projectile points, bifaces, scrapers, ceramic sherds and burnt rock and bone fragments. Activities reflected in the artifact and feature assemblages were hunting, processing, and fire-related features for cooking or heat. Stone tool manufacture and maintenance were also indicated.

Data gathered from sites in the southern section of the 146 corridor provided additional evidence that prehistoric groups were occupying the area, performing limited procurement activities for short durations. The Pine Grove site, for example, had a low

density of artifacts with no culturally related features. The site appeared to be the result of numerous, short term visitations with only minimal lithic related activity, perhaps collecting floral resources.

Coastal Zone Sites

A distinctive pattern of settlement and subsistence is indicated by archaeological survey projects in the coastal zone. Results of work along the Pettaquamscutt River, a coastal riverine ecosystem in Rhode Island, suggest that coastal resources were not extensively utilized prior to 4,000 years ago. Furthermore, the period between 3,000 and 1,000 years ago was a time when riverine resources apparently were abandoned. While there appeared to be an evenly spread spatial distribution along the river, larger (area in square meters) concentrations of materials were located downriver with smaller sites upriver (Cox and Thorbahn 1982). Analysis of survey results of the Pettaquamscutt led to the basin being categorized into three varying zones of land use intensity. The zone adjacent to the oceanic convergence was most heavily utilized. The Freeman site, for example, yielded evidence of occupations during the Late Archaic and Late Woodland periods. Tools recovered included Small Stemmed projectile points, bifacial fragments, a core, and high densities of chipping debris within shell midden deposits. One of these deposits dated to 400 years ago. Large quantities of shell, fish remains and lithics were encountered

across the site where oceanic resource procurement, tool manufacture and processing were the dominant activities.

Within zone 2, the lower pond and middle river, sites yielded further evidence of lithic manufacturing areas. Also a lithic spade was recovered from the Browning site, providing the only evidence in the area of horticultural activity. The Campbell site, in this zone, had been repeatedly occupied by a series of small groups apparently staying for long periods. Features here included large storage pits, refuse pits, hearths and areas where shell tempered clay pots were being used for cooking or storage. The lithic assemblage of the site included processing tools (drills, scrapers, knives, hammerstones, pestles), floral and faunal remains included carbonized seeds and nuts, calcined bone and shell fragments. The focus of activity seems to have been procuring and processing of animal and plant resources with tool manufacture and maintenance as an adjunct (Cox, Davin and Leveillee 1985).

Zone 3 along this coastal river basin was an area of low land use intensity, with small sites of higher densities of materials than those sites in the middle zone, predominantly lithic workshops.

The survey along the Pettaquamscutt concluded with the observation that times of occupation and utilization corresponded to times of environmental stress, as reflected in the area's pollen record (Thorbahn 1982).

Several other coastal survey projects, including the Taunton and Sakonnet River surveys, noted increased utilization of the

coastal zone in the Woodland periods and concluded that a core-periphery model of settlement and subsistence successfully explains recognized patterns of site distribution (Thorbahn 1985; Leveillee and Thorbahn 1985). Other studies have noted that the majority of lithics recovered from coastal sites consist of locally available quartz from beach cobbles. By comparison, lithic materials from interior sites are more varied (Solomon 1980). Features within coastal sites have been reported less complex than those encountered on inland deposits (Simon, Cox and Adams 1982).

Known Sites in Proximity to the Oak Terrace and Red Leaf Sites

The central section of the Neponset River drainage has been utilized by prehistoric hunter and gatherer populations since approximately 9,000 years ago. Diagnostic artifacts representing all recognized prehistoric time periods are represented in the inventory of materials collected from sites along the river. The majority of this information has resulted from avocational efforts and in numerous cases site locations and characterisics are unpublished. In a few cases, as with the evidence of the region's earliest ocupations, there is some reluctance on the part of collectors to discuss their finds. Among sites that have been documented are several lithic source areas, rockshelters, lithic workshops and small open campsites (Bowman 1981; Dincauze and Gramley 1973; Anthony et al. 1980; Leveillee and Ritchie 1982, 1986; Ritchie 1983).

The greater Neponset basin has been identified as a

concentration area within the system of Middle Archaic subsistence and settlement (Dincauze and Mulholland 1977). At the Green Hill and Ponkapoag sites in nearby Canton, significant Middle and Late Archaic components have been investigated. Diagnostic artifacts indicate that a variety of activities took place on the sites, reflecting the exploitation of a wide range of resources. Materials recovered included chipped and ground stone tools from lithic raw materials originating in the nearby Blue Hills quarry areas.

The Meadowlands site, located on a small island along a tributary of the Neponset, in Canton, is a multicomponent site with depositions from the Middle Archaic, Late Archaic, Terminal Archaic, Middle and Late Woodland periods (Ritchie 1983). Despite its small size the variety and content of the features and materials on this island site are indicative of the intensive utilization of the area throughout several millenia.

Along the Neponset, at the location of the Bird School and in an area north of Walpole Street overlooking the river were reported two large and complex sites. Many artifacts from the Middle Archaic through the Late Woodland are reported to have been collected from these locations during construction projects (Leveillee and Gallagher 1985).

At the Neponset Raceway site, adjacent to the Stone Ridge project aera, prehistoric deposits approximately 75 yards in diameter were reported. In the spring and summer of 1978,

avocational excavation resulted in the recovery of a number of culturally diagnostic artifacts including orient fishtail like points, Susquehanna Broad and Lagoon like points, a full grooved axe, utilized flakes, a scraper and a perforator. Two features were encountered which measured 48 x 36 inches and approximately 30 to 36 inches x 48 inches, both containing charcoal and chipping debris (MHC site files; Fred Carty, personal communication 1985). The site was destroyed by construction in 1984.

Ten loci of prehistoric felsite quarrying have been identified within the Hale Reservation and the nearby High Ridge Estates development, in Westwood (Anthony 1978; Leveillee and Ritchie 1985). The Cat Rock quarry (Chapin 1970) represents a locus of talus quarry activity, while at the Noanet Quarry a felsitic dike in a granite boulder was almost completely removed by hammering out blocks. A diagnostic Susquehanna projectile point was excavated from workshop debris at this site.

The Powissett Rockshelter was located along a small tributary stream in the rocky upland zone between the Neponset and Charles river drainages. The earliest occupation of this site apparently took place during the Late to Terminal Archaic. Small Stemmed, Orient Fishtail and Susquehanna tradition bifaces were recovered from the limited Archaic utilization. By the end of the Late Woodland to early Contact period, utilizations of the rockshelter increased. Based on cultural materials and faunal remains, it appears that small groups were traveling between the Neponset and Charles Drainages, using the rockshelter as a convenient trail side

camp. Preparation of food over small fires was indicated by ceramic sherds and discarded bone (deer, racoon, bird, turtle, fish) and shell. This upland location was probably in close proximity to a path connecting the Neponset and Charles drainages since a nearby road is reported to have followed the general route of a native American trail (Dincauze and Gramly 1973; Ritchie 1985).

A Brief Discussion of Regional Sites With Predominant Components Similar to the Oak Terrace Site

While many regional sites can provide insights into the nature of the deposits within the Oak Terrace and Red Leaf sites, few studies have progressed beyond a level which permits comparison of specific attributes. Artifact analysis, for example, in most cases is restricted to discussions of general morphological characteristics, making detailed comparisons impossible. Having considered the lithic workshops within the Oak Terrace site significant Middle Archaic deposits, it was desirable to consider other, in-depth studies of similar materials. Fortunately two regional works have been published which provide invaluable data. Dincauze's (1976) analysis of artifacts from the Neville site in Manchester, provides an approach based upon technological and functional attributes with in-depth description of observations. Her efforts on this site have resulted in what remains the definitive work on the Middle Archaic period within New England.

Starbuck's (1982?) report on the excavation of a Middle Archaic site in Belmont, New Hampshire is especially relevant in

that the predominant deposits within the site consisted of two spatially discrete lithic workshops, as is the case with the Oak Terrace site. Starbuck's lithic analysis methodologies were influenced by Dincauze (1976) and his results provide equally valuable data. Within my study, sections discussing lithic analysis and interpretation will make frequent use of both Dincauze and Starbuck.

CHAPTER IV

METHODOLOGIES

The intent of a data recovery program is to mitigate adverse impacts on an archaeological property which has been determined eligible to the National Register of Historic Places. The methodologies for the operationalization of that intent vary from site to site. In the cases where below ground deposits are distributed over a given area, as with prehistoric sites, it is not economically feasible to excavate the entire area. Therefore it must be decided, prior to the commencement of fieldwork, what data must be extracted from the site and how to accomplish the extraction. My research design (Feb 1985) for the Oak Terrace and Red Leaf sites outlined these concerns to varying degrees. It was approved by all involved agencies, and served as a guideline or operational plan during excavations.

The original research goals as stated in the research design were outlined in the preceding chapter. Later chapters of this report will present my findings in reference to those original questions. This chapter will concentrate upon the methods of collecting and analyzing the data.

Sampling

The sampling design for both the Oak Terrace and nearby Red Leaf Sites was designed to accomplish two objectives:

(1) Provide uniform coverage across the sites to define the internal configuration of artifact and feature deposits; and

(2) Insure adequate recovery of cultural data classes by focusing excavations in the high density artifact and feature concentrations as identified during previous testing.

The site examination program on the Oak Terrace and Red Leaf sites identified the limits of prehistoric utilizations and defined loci of activities. Analysis of the site examination data had indicated that there were three areas of concentration of artifacts and features at the Oak Terrace site. Over 85% of all materials recovered during site examination originated in these areas. It was proposed that data recovery excavations would further investigate these concentrations.

During data recovery a sample of 80 square meters of hand excavation was proposed and accomplished. The Oak Terrace site was large, encompassing 3,075 square meters. Combined excavations prior to the data recovery program had investigated .5% of the site. The additional testing of 72 square meters increased the percentage of excavation to 1% of the total area, less than ideal but acceptable. Two, 2 x 2 meter units were placed in the Woodland concentration of materials while 12 units (also 2 x 2 meters) were placed within the suspected Middle Archaic concentration. Within the Red Leaf site, four 2 meter square excavation units (16 square meters) were placed in areas of high material densities.

Field Data Collection

Prior to excavation of the Oak Terrace site I had decided that the placement of testing units would be on the basis of a random pair method. The first unit of the pair was placed based

upon data gathered during the reconnaissance and site examination work on the site. Excavation unit 1A, for example, was placed in the high density lithic concentration identified during the initial reconnaissance survey (Figure 4-1). To complete the pair, following the excavation of Unit 1A, a second unit location, 1B, was randomly generated (angle and distance) utilizing the southwest corner of excavation unit 1A as a datum.

The topography and size of the Red Leaf site restricted the placement of excavation units within a relatively narrow area making the use of random pairs impractical. Within these deposits pits were placed judgementally, based upon previous testing and ongoing excavations. Figure 4-2 illustrates the locations of all testing units.

Each excavation unit was dug in 5 cm levels. Excavation continued to one level below a sterile layer unless an obstruction prevented further digging (i.e., bedrock). All excavated soil was screened through 1/4 inch hardware cloth. When features or material concentrations were encountered trowels were utilized. All culturally related materials were bagged and labeled by level and in the cases of loci and features, horizontal and vertical loci were recorded. Implements and implement fragments, when recognized as such in the field, were bagged separately and assigned artifact numbers. They were then recorded on individual forms, noting material and three dimensional provenience. For each excavation unit information was recorded on standard forms and supplemented by

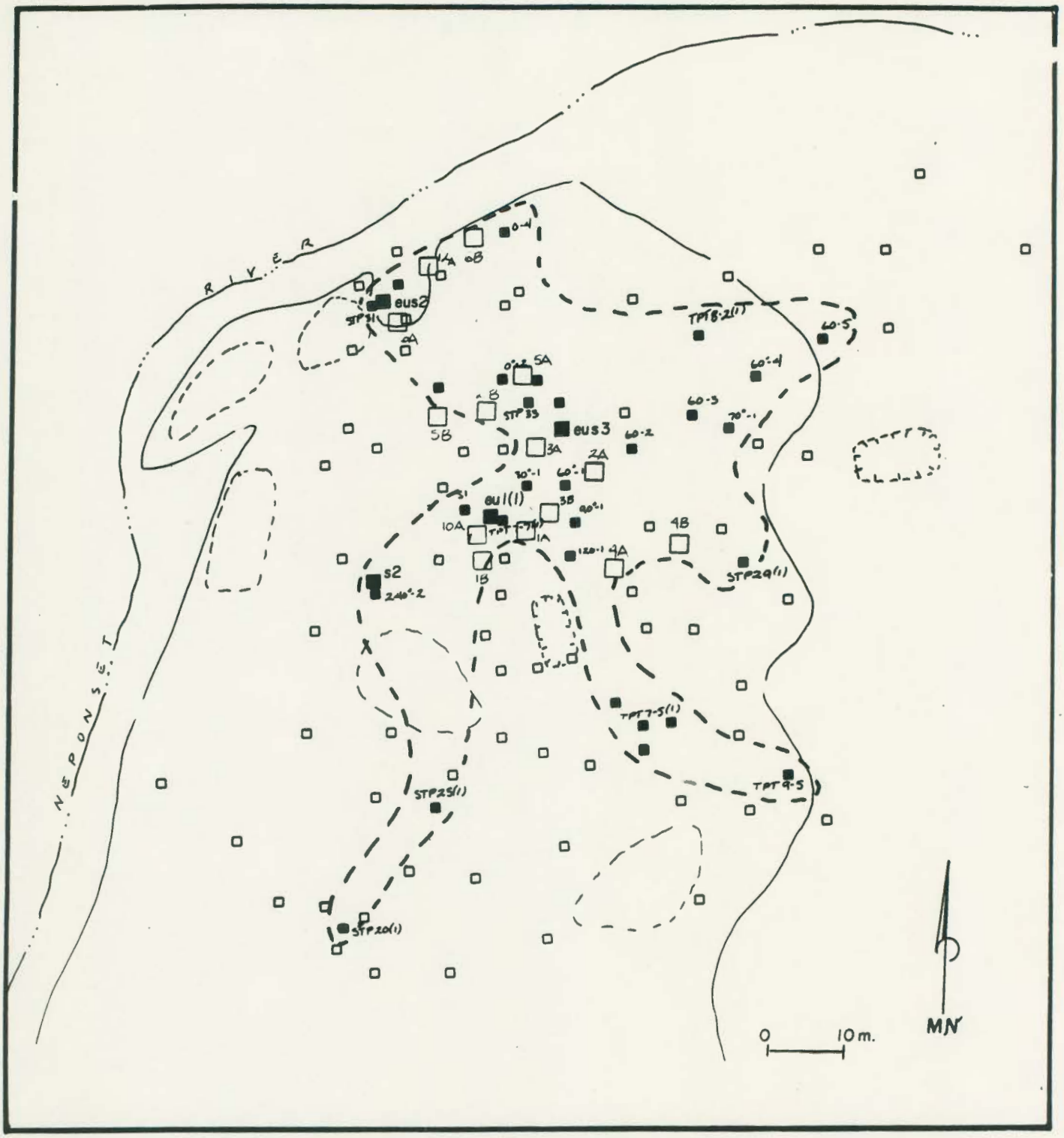

Figure 4-1. Location of Phase I, II, and III Testing Units.

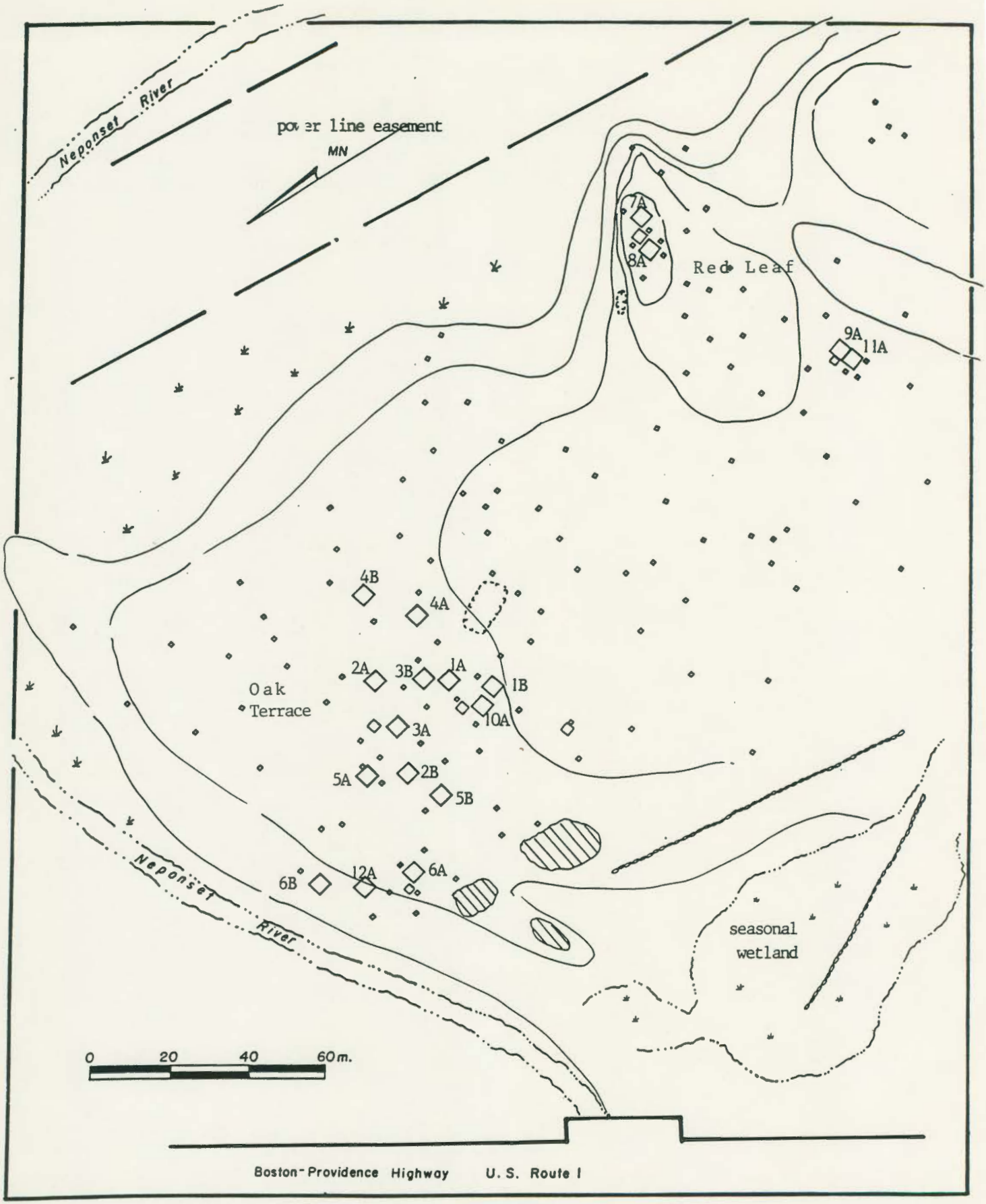

Figure 4-2. Data Recovery Excavation Unit Locations.

supervisor's field notes. Scale drawings were made of the south wall of each unit as well as feature profiles. Plans were drawn for features and anomalies. Color and black and white photographs were taken of general views, as well as specific loci such as features. As the data recovery program progressed, unit locations were mapped, permitting a visual representation of excavations to date.

Sample Collection

Flotation samples were taken from within feature fills as well as from within each excavation unit at the junction of the south and west walls at the A/B soil junction (as a unit control). Four additional control flots were taken from cardinal compass points outside the limits of cultural material. Whenever possible, when charcoal was encountered from within testing units, it was separated, placed in foil and bagged separately for later carbon dating. When bone or recognized floral specimens were encountered, they were removed, placed in empty film cannisters and labeled for later identification.

To enable paleoenvironmental reconstruction, a pollen core was extracted from Houghton's Pond, within the nearby Blue Hills Reservation, in Milton. A Livingstone piston corer was used to collect a 7 meter core of lake sediments at the west end of the lake at a water depth of 11.83 meters.

Laboratory Processing

All lithic cultural material was cleaned and catalogued, which included description, measurement and provenience information. The cultural material was catalogued in a form ready to enter into an IBM computer. Graphics were completed, in some cases aided by a MacIntosh computer.

Flotation samples were processed by an aeration flotation system and scanned under magnification for floral, faunal and lithic (small flakes) remains. These remains were separated, placed in empty film cannisters and forwarded to consultants for identification. The carbon samples collected during excavation were cleaned by brush, repackaged and forwarded for dating.

Samples for pollen analysis were taken from the Houghton's Pond sediment core at 20 cm intervals and processed. This involved removing unwanted sediments using hydrochloric acid, hydrofluoric acid, potassium hydroxide, and acetolysis leaving a residue rich in pollen. The residue was mounted on microscopic slides in silicon oil and the pollen grains were identified at a magnification of 400X.

Lithic samples from the site (chosen by selecting visually representative samples of chipping debris) were thin sliced and polished facilitating comparative petrographic analysis. Several samples from known source areas in the vicinity (as well as lithic samples from the site) were submitted for analysis.

Data Analysis

A variety of analytical methods were utilized. These include an analysis of the site's natural and cultural characteristics in an attempt to understand the complexity of depositional patterns. Lithic artifact analysis was directed toward understanding patterns of reduction sequences, stone tool typologies and their technological signatures. Also considered was the nature and origins of raw materials. Comparisons of lithic materials and recognized typologies were made for materials from across the site as well as from other sites throughout the region.

The analysis of features included the examination and comparison of morphological and content attributes. Possible methods of construction, purpose and utilization were considered. Floral and faunal analysis provided information on target food resources.

Analysis of pollen was conducted in order to provide both a general stratigraphic description of the pollen record and a specific analysis of the conditions represented during the time of the site's human occupation.

In sum, the analytical processes, including depositional, lithic, feature and floral and faunal combine to investigate site specific questions, discussed in earlier sections. When the results are compared with other similarly investigated sites interpretations of regional land use become refined.

CHAPTER V

THE SITES

Environmental Setting

The Oak Terrace and Red Leaf sites are located within a wooded environment, on slightly elevated, well drained soils in an area containing frequent granitic bedrock outcrops, overlooking the middle Neponset flood plain (Figure 5-1). Topographically, the area is similar to other elevated sections of ground moraine with bedrock outcrops along the western edge of the lower lying marshes and wooded wetlands which characterize the drainage.

Exposed bedrock in proximity to the sites consists of igneous types comprised of diorite, syenite and granites of varying composition. To the north and northwest of Oak Terrace and Red Leaf, outcrops of sedimentary rock (sandstone, conglomerate) associated with the Wamsutta formation are found. Mattapan volcanic complex igneous rocks (porphyritic rhyolite, felsite) also occur in the area (Chute 1966). These felsite and rhyolite outcrops, as well as glacially deposited cobbles, were source materials for lithic procurement activities which are reflected in regional sites, including Oak Terrace and Red Leaf. The nature of these lithics will be discussed at more length in the next chapter.

Borings conducted in 1967 indicate that soils in the general vicinity of the data recovery program consist predominantly of loose loamy sand and loamy sand with traces of gravel to depths

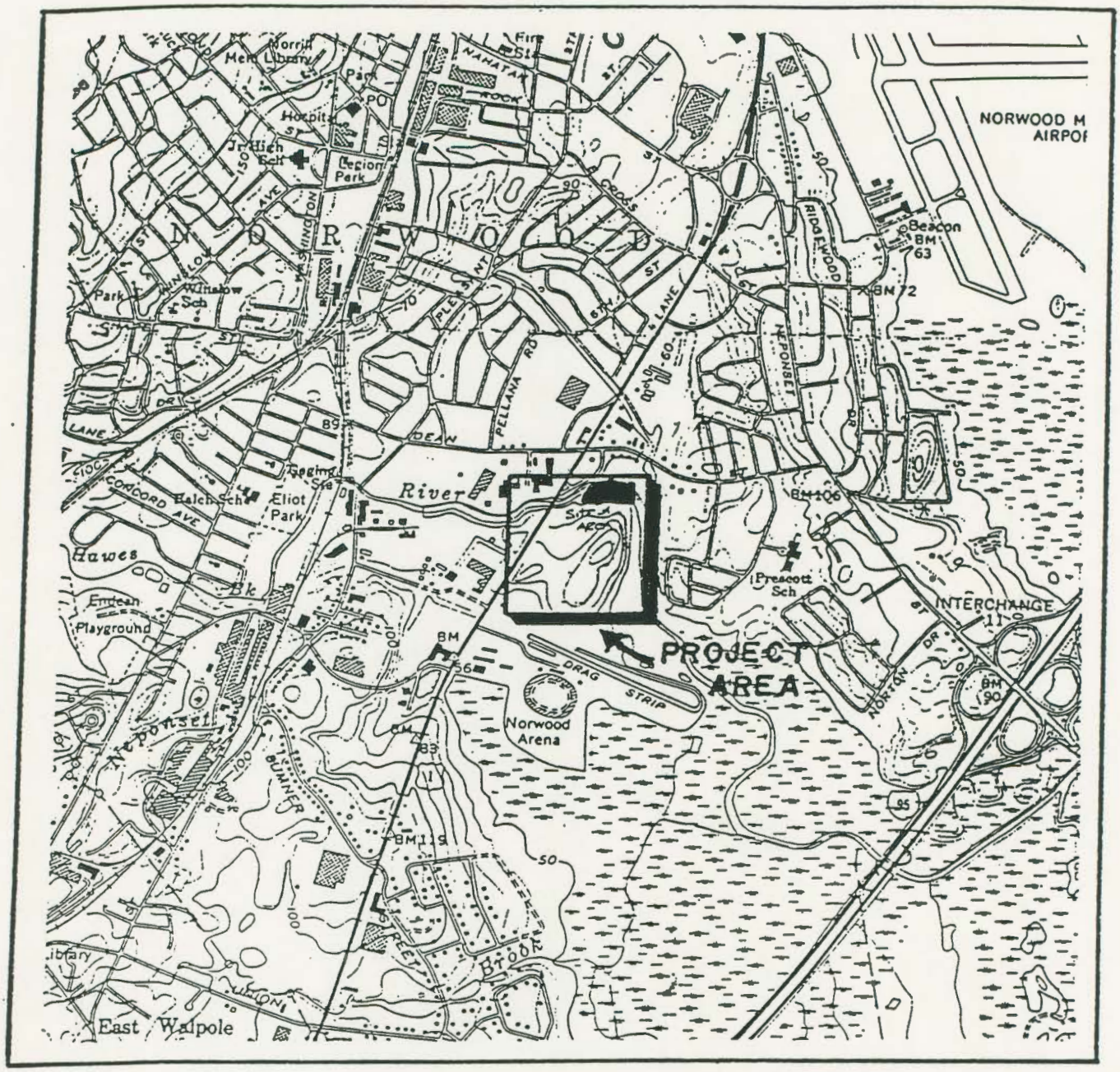

Figure 5-1. U.S.G.S. Project Area Location Norwood Quadrangle.

averaging 46 cm. Below this level in areas other than bedrock firm fine sand and some gravel extend to depths ranging from 91 to 213 cm, where hard sand and gravel with traces of clay are encountered. Traces of peat and organic deposits are located along the wetlands to the north of the site areas. These are generally shallow deposits (Carr-Dee Test Boring 1967). Representative soil profiles from across the Oak Terrace and Red Leaf sites are noted in Figure 5-2. The present vegetation in proximity to the sites consists predominantly of second growth mixed wooded and wetland species, dominated by oak, maple and pine.

Soil Stratigraphy and Cultural Matrix

As noted in the representative soil profiles distinctions between topsoils and subsoils were clearly visible. Across the sites an organic lens covered the soil to an average depth of 7 cm. Below this organic duff A zone soils extended to an average depth of 29 cm. The color of this soil is predominantly dark brown with Munsell ranges of 10 yr 2/2-3/2. In some cases two sub-zones were recognized in the A soil horizon. When this distinction was noted the A1 averaged 21 cm and the A2, extending to 29 cm was in a color range of 10 yr 5/7-5/8. These soils consisted of generally sandy loam with fine to medium textures.

B soils were yellow fine and medium textured which averaged 52 cm in depth. As with A horizon soils a sub-zone was occasionally recognized which distinguished the B1 and B2 zones.

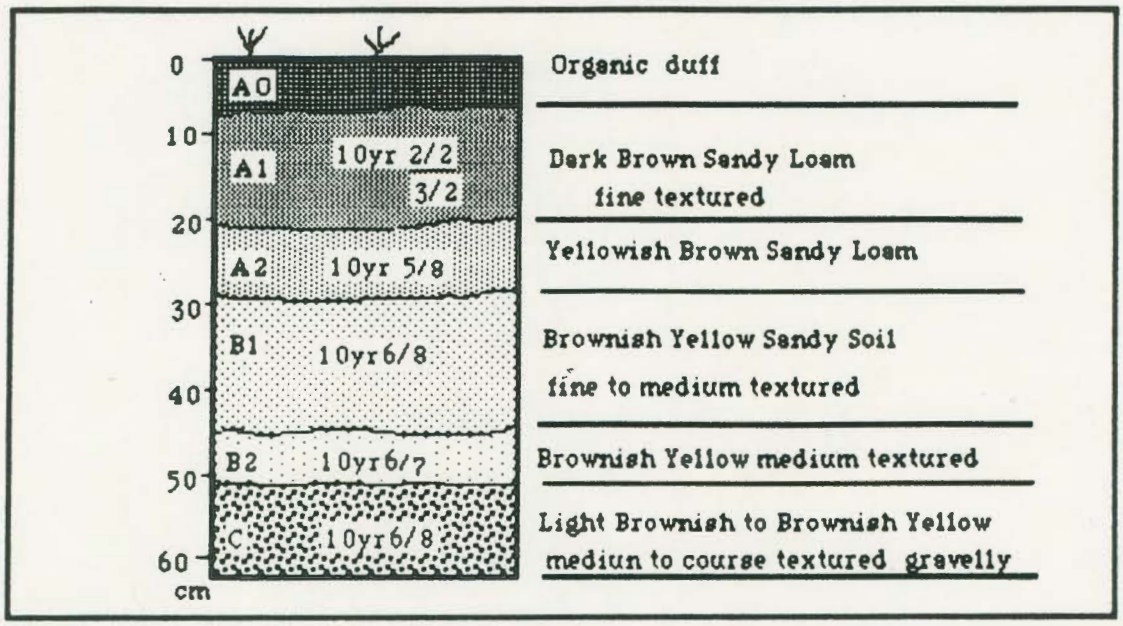

FIGURE 5-2. REPRESENTATIVE SOIL PROFILE OF THE STONE RIDGE PROJECT AREA.

B1 soils were in the Munsell range of 10 yr 6/8 with the deeper B2 soils in the 10 yr 6/6-6/7 color scale.

With increasing depth soils became more gravelly with coarse textures and frequent cobbles. C horizon soils were encountered at an average depth of 52 cm across the sites. These gravelly and sandy, medium to coarse textured soils were in the Munsell color range of 10 yr 6/6.

Soil profiles of excavated units across the sites were generally uniform and did not exhibit evidence of plowing. Excavation units averaged a depth of 60 cm, with several pits in lithic workshop areas exceeding 80 cm. Table 5-1 indicates the area, depth and volume of all testing units.

The cultural matrix of the Oak Terrace and Red Leaf sites extends to a vertical depth of approximately 80 cm below the present ground surface, with the majority of materials between 15 and 40 cm. Figure 5-3 illustrates quantities of lithic cultural material by level across the sites. Table 5-2 lists the amount and percentage of cultural material from each 5 cm level, by unit.

Natural, post depositional factors which can affect a site are numerous, ranging from animal burrows to tree throws. Evidence of these processes will be discussed as they pertain to specific excavation units. One natural process, however, which all units have in common is cyroturbation or disturbance from seasonal freezing and thawing cycles (Wood and Johnson 1978). Frost penetration in the region exceeds depth of 100 cm (Johnson 1952) affecting the cultural deposits within Oak Terrace and Red Leaf.

Table 5-1. Area, Depth and Volume of Data Recovery Testing Units.

UNIT	SITE	AREA (sq m)	DEPTH (m)	VOLUME (cubic m)
1A	OT	4.0	.7	2.8
1B	OT	4.0	.45	1.8
2A	OT	4.0	.7	2.8
2B	OT	4.0	.7	2.8
3A	OT	4.0	.5	2.0
3B	OT	4.0	.6	2.4
4A	OT	4.0	.6	2.4
4B	OT	4.0	.5	2.0
5A	OT	4.0	.5	2.0
5B	OT	4.0	.85	3.4
6A	OT	4.0	.5	2.0
6B	OT	4.0	.5	2.0
9A	OT	4.0	.7	2.8
10A	OT	4.0	1.0	4.0
11A	OT	4.0	.5	2.0
12A	OT	4.0	.5	2.0
7A	RL	4.0	.5	2.0
8A	RL	4.0	.5	2.0

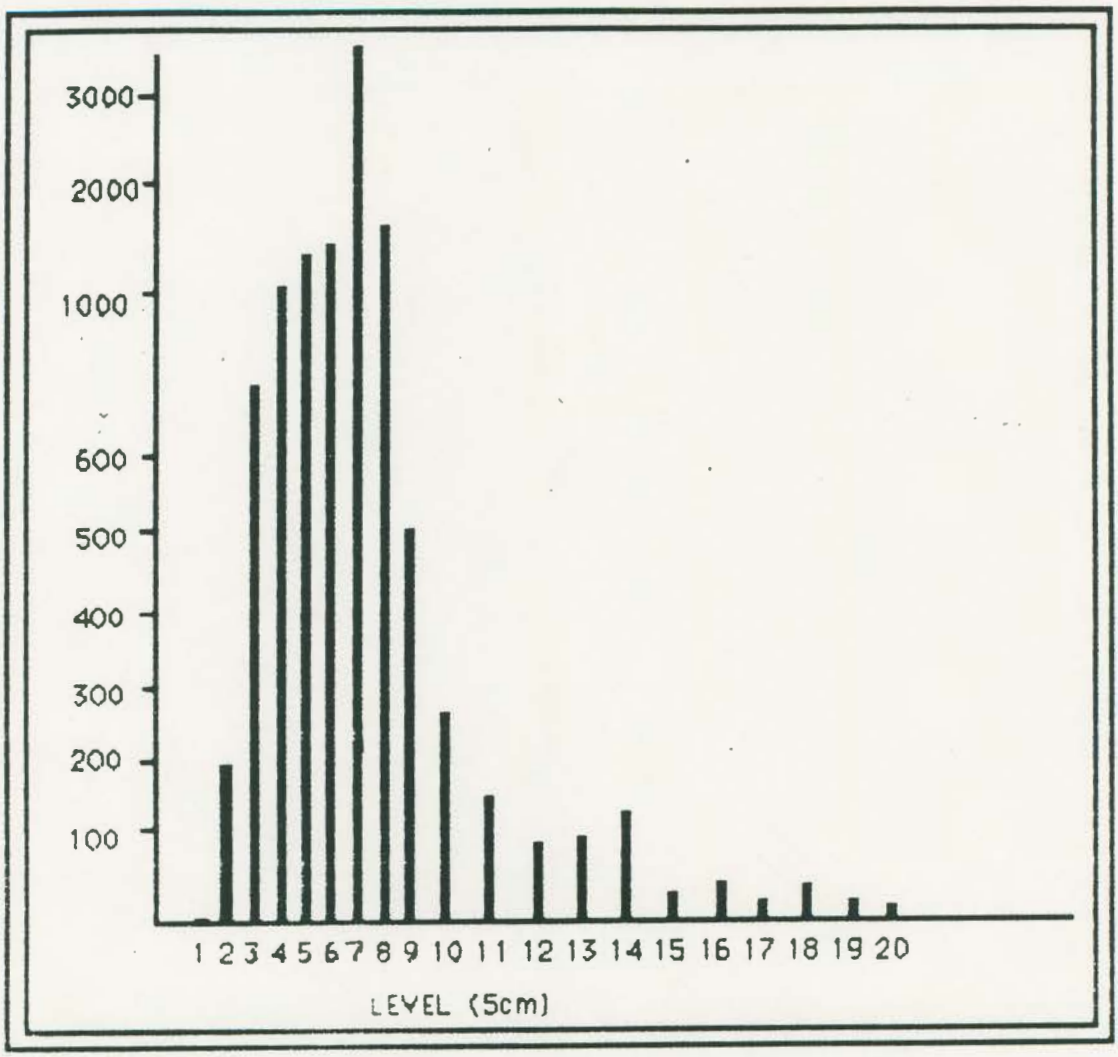

Figure 5-3. Frequency of Lithics by Level.

Table 5-2. Cultural Material Quantity by Levels.

EXCAVATION UNIT	LEVEL 1 (0-5 cm)	LEVEL 2 (5-10)	LEVEL 3 (10-15)	LEVEL 4 (15-20)	LEVEL 5 (20-25)	LEVEL 6 (25-30)	TOTAL
1A	6	109	306	216	194	516	
1B						1	
2A			12	44	50	80	
2B		1	8	34	62	51	
3A		8	69	172	232	38	
3B		3	36	31	42	15	
4A		1		1	6	4	12
4B		2			3		
5A				1	6	3	10
5B		8	26	6	2		
6A		38	164	83	22	6	
6B			10	8	14	6	
7A		6	93	168	300	27	
8A			78	245	165	8	
9A		3	19	51	164	447	
10A	2	12	21	31	91	74	
11A				7	6	18	
12A			11	11	67	30	
TOTAL	8	191	853	1108	1426	1324	

Table 5-2. (Continued).

EXCAVATION UNIT	LEVEL 7 (30-35)	LEVEL 8 (35-40)	LEVEL 9 (40-45)	LEVEL 10 (45-50)	LEVEL 11 (50-55)	LEVEL 12 (55-60)	TOTAL
1A	2070	1203	325	194	62	16	
1B	5						6
2A	41	22	27	16	3	2	297
2B	21	29	19	5	8		238
3A	309	121	35	11			995
3B	21	9	5	6	4	6	184
4A							
4B	4						9
5A							
5B	1	4		2			49
6A	4						343
6B	5	1					44
7A	166	40	2				802
8A	11	11					518
9A	1002	261	57	15	9	12	2043
10A	15	64	13	17	14	47	
11A	1	8	40				80
12A	36	3					158
TOTAL	3570	1776	523	268	100	83	

Table 5-2. (Continued).

EXCAVATION UNIT	LEVEL 13 (60-65)	LEVEL 14	LEVEL 15	LEVEL 16	LEVEL 17	LEVEL 18	LEVEL 19	LEVEL 20	TOTAL
1A									
1B									
2A									
2B									
3A									
3B	6								
4A									
4B									
5A									
5B									
6A									
6B									
7A									
8A									
9A	3								
10A	76	111	37	57	26	41	35	13	797
11A									
12A									
TOTAL	85	111	37	57	26	41	35	13	

Being situated upon gently sloping elevations with aspects towards the river, the deposits were also subject to some effects through erosional processes.

Historic period activities which have impacted the site areas are in evidence along the northernmost limits of the Oak Terrace deposits. In this area rechanneling of portions of Neponset during bridge and roadwork along existing Route 1 cut into the woodland component of the site, leaving little evidence of that occupation.

Pollen Analysis (from Newby, Webb and Webb III 1986)

Newby, Webb and Webb III (1986) report that the pollen diagram for Houghton's Pond (Figure 5-4) can be divided into three major zones: Zone 1 which is dominated by spruce pollen, Zone 2 which is characterized by an increase in pine pollen and Zone 3 which is predominantly oak pollen. The dates for each pollen zone were calculated from extracted carbon samples and correlated with similar pollen zones from Winneconnet Pond (Suter 1985) near Taunton, Massachusetts.

Zone 1

Spruce-Alder (650-610 cm, ca 10,500-9800 B.P.)

The Spruce-Alder zone is characterized by high values of spruce and alder pollen. Fir pollen also has relatively high values (3-10%) within this zone with sedge and grass having values of 1 to 3%. The last sample examined from this zone contains a peak value of elder pollen of 32% just after spruce pollen percentages have begun to decline.

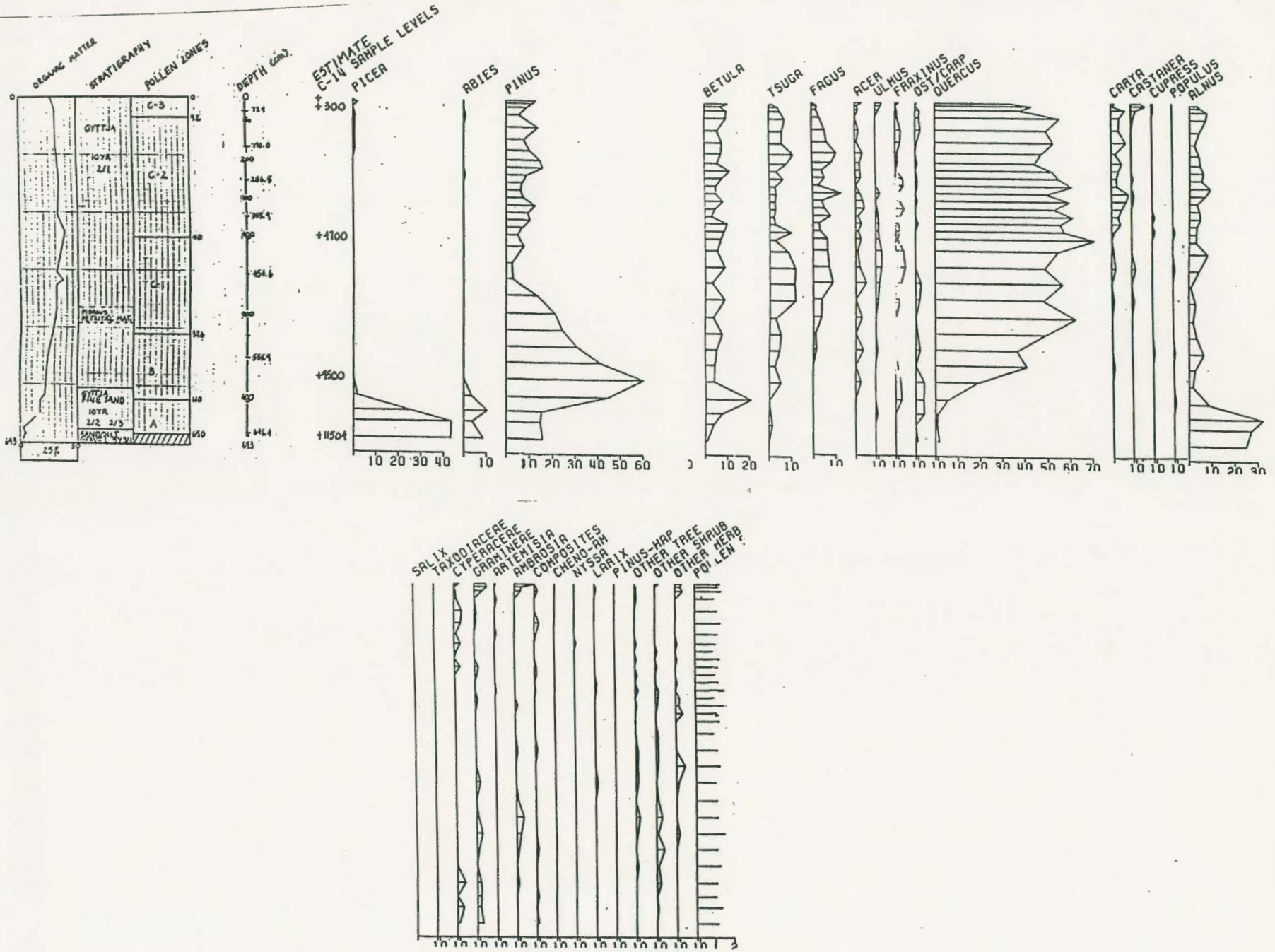

Figure 5-4. Pollen Diagram Houghton's Pond.

Zone 2

Pine-Oak-Birch (610-526 cm, ca. 9800-8200 B.P.)

This zone contains a peak in pine pollen percentages with a peak in birch percentages at the base and a rise in oak above 570 cm. Minor amounts of ironwood/hornbeam, ash and hemlock pollen occur.

Zone 3

Oak

This zine is characterized by high values of oak pollen and can be divided into three subzones:

Subzone 3A Oak-Hemlock-Beech (526-410 cm, ca. 8200-4800 B.P.)

This sub-zone is characterized by high values for oak pollen (49-63%) and peak values for hemlock (12%). Beech pollen is first evident (ca. 8400 B.P.) and its value increases to 9%. Pine values decline to 3%. Minor pollen values for basswood, elm and maple are present within this sub-zone.

Subzone 3B Oak-Hickory-Beech (410-92 cm, ca. 4800-790 B.P.)

This sub-zone is also dominated by oak pollen. Hemlock pollen percentages decline abruptly around 4,700 years ago, after which the values for hickory pollen increase to 8% and beech pollen attains peak values of 13% at 277 cm. Hemlock pollen percentage are evident but do not attain their former values. A high diversity of pollen occurs in this zone which contains pollen from each arboreal taxa listed on the diagram and includes alder, sedge and blackgum.

Subzone 3C Oak-Chestnut-Ragweed (92-0 cm, 789 to present years)

This sub-zone is also characterized by high values for oak pollen. Chestnut pollen, infrequent in sub-zones 1 and 2 is present in each sample and achieves a peak value of 6% just below the sediment/water interface (20.3 cm). Values for Ragweed pollen and other herbaceous types are also present in this sub-zone.

Generalized Vegetational History

The history of postglacial vegetation change represented by the pollen record from Houghtons Pond fits well into the classic New England sequence of pollen zones that summarize the main stratigraphic changes in pollen percentages (Deevy 1958; Gaudreau and Webb 1985). In Deevy's scheme, the pollen percentage changes follow a sequence from an herbaceous and pine pollen zone (T), to high percentages of spruce (Zone A), then pine (Zone B), and finally oak pollen (Zone C). This zonation scheme has been applied to the Houghtons Pond record and indicates its regional similarities with other pollen stratigraphies in southern New England. The earliest zone (T), characterized by significant populations of sedges and other herbs or shrubs is not evident in the available data from the Houghtons Pond core. The sequence begins with the spruce zone which represents a transition from a parkland to a more closed forest environment. High percentages of spruce and alder pollen in Zone A suggest that an open spruce woodland grew near Houghtons Pond from 11,500 to 10,500 B.P. It is likely that the pine and birch represented in Zone A are types

associated with open parkland vegetation, red and jack pine, for example, and shrub birch. In Zone B, approximately 10,000 to 8,000 years ago, pine (probably white pine) and birch (probably white birch) expanded into the area around the pond, indicating a change to a closed forest environment. Ash, hemlock and ironwood/hornbeam trees were also present at this time. Zone C is characterized by significant amounts of oak pollen and indicates growth of an oak dominated deciduous forest that included varying numbers of hemlock, beech, hickory and chestnut trees.

Paleoenvironmental Reconstruction During Periods of Occupation
(From Webb, Webb II and Newby 1985)

The times of occupation at the Norwood sites are all within the period when oak-dominated deciduous forest grew near Houghtons Pond (HP-3). The Middle Archaic component of the Oak Terrace site (5110 B.P.) occurs during the HP-3A zone and coincides with the regionally synchronous "hemlock decline." The area around Houghtons Pond was affected by the decline (hemlock pollen percentages are 10 to 3% in this interval), but it seems unlikely that human groups would have been affected by this relatively long-term decline. Hickory pollen percentages increased from 1 to 4% indicating expansion of hickory populations into the area. Low numbers of pine, birch, maple, elm and ash trees were also present along with alder shrubs. Total herb taxa are less than 3% for this interval.

The remaining Oak Terrace occupations and Red Leaf site also

occurred when oaks grew abundantly in the region. Chestnut populations expanded into the area, while hickory, birch and beech were present. Hemlock pollen percentages indicate that this taxa re-expanded in the area. Pine, maple, ash and alder also are present.

The Houghtons Pond pollen record from 216.5 to 296.4 cm depth below sediment/water interface (3739 to 2728 B.P.), coincides with the late and terminal Archaic occupations from Norwood (HP-3B). This interval was examined for palynological indications of human disturbance. Prehistoric human alteration of vegetation in Europe is well-documented using pollen data (Berglund 1969). However, well-documented evidence of human activity in pollen stratigraphies from lake sediments in North America does not occur until the historic period, when European settlers cut the forest and farmed the land. Prehistoric human activity in pollen spectra is suggested by the presence of pollen from Cerelia and other cultigens (Winkler 1984; McAndrews 1977), significant increases in herb pollen (Bernabo 1977), and phase relationships of successional taxa which suggest human-induced fires (McAndrews 1977; Bernabo 1977). Initial data from Houghtons Pond indicated slight increases in grass and composite percentages, and minor amounts of other herbs which, in conjunction with the dated occupations, could be the result of human activity in the area. However, the results from further analysis were inconclusive (Appendix, Table 5, levels 9-17 and Figure 3). Although the percentages of herb pollen increased, the relative percentages were insignificant compared to

those for arboreal taxa. This fact suggests that any clearance or burning in the region around Houghtons Pond at this time was neither extensive nor prolonged enough to be recorded in the pollen record.

CHAPTER VI

CULTURAL MATERIAL

Lithics

Excavations during the data recovery program at the Oak Terrace and Red Leaf sites resulted in the recovery of 11,802 pieces of culturally related lithics. Table 6-1 is a breakdown of these lithics into categories which allow discussion of the materials as groups. These general groupings include tools, flakes and shatter. The category tools includes all ground and chipped stone artifacts and is further broken down into the following functional categories:

Projectile Points

Symmetrical biconvex (or biconvex prior to apparent breakage) bifaces with low edge angles on blade edges is the operational definition utilized for this class of artifact. A total of nineteen projectile points or point fragments were recovered from excavations within Oak Terrace. Fifteen specimens are sufficiently intact to permit classification, while an additional two are suspected to be basal fragments of Neville types (dimensions are listed in Table 6-2). To date, two point (blade) fragments of Susquehanna affiliation have been recovered from the Red Leaf deposits. Point types represented include Neville, Brewerton, Small Stemmed, Squibnocket Triangle and Susquehanna types (Figure 6-1).

Table 6-1. Data Recovery - Lithics.

EU#	SITE	TOOLS	FLAKES	SHATTER	TOTAL CM
1A	OT	67	5,114	36	5,217
1B	OT	1	5	-	6
2A	OT	4	169	124	297
2B	OT	6	229	3	238
3A	OT	12	913	70	995
3B	OT	2	179	3	184
4A	OT	1	7	4	12
4B	OT	-	5	4	9
5A	OT	2	7	1	10
5B	OT	3	40	6	49
6A	OT	3	323	17	343
6B	OT	4	23	17	44
7A	RL	11	769	22	802
8A	RL	9	456	53	518
9A	RL	15	2,025	3	2,043
10A	OT	8	785	4	797
11A	RL	5	74	1	80
12A	OT	2	121	35	158
TOTALS:		155	11,244	403	11,802

Table 6-2. Neville Points.

	RANGE	MEAN	N
Length	-	4.60	1
Max Width	2.36-3.03	2.7	4
Max Thick	.55- .76	.62	4
Width of base	.75-1.03	.85	6
Edge blade	67°-77°	71°	4
S/Stem	95°-133°	109°	4
L/W ratio		1.9:1	1
W/T ratio	3.1:1-5.7:1	4.5:1	4

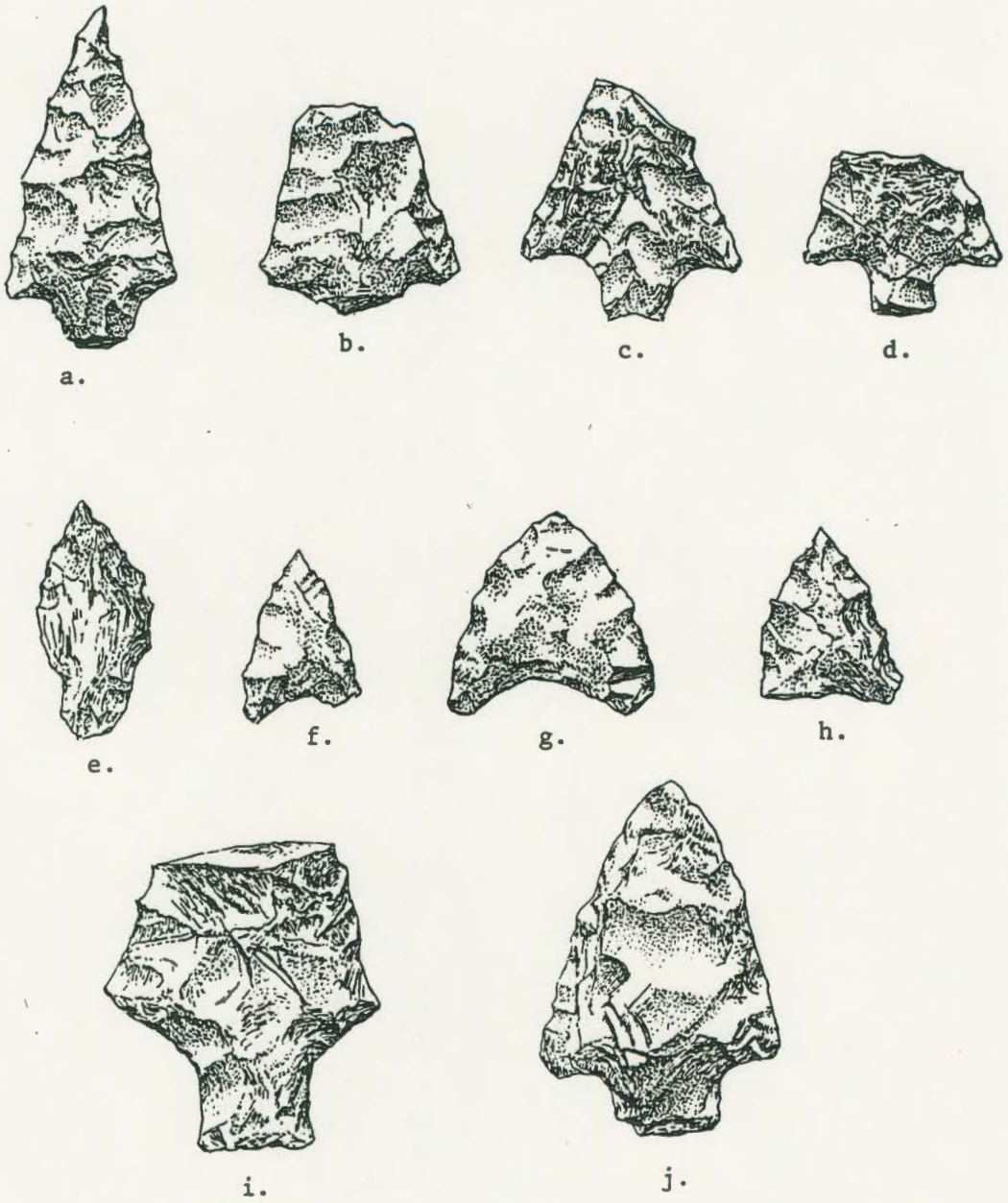

Figure 6-1. Projectile points from the Oak Terrace and Red Leaf deposits. Neville a,b,c,d; Small Stemmed e; Squibnocket Triangle f,g,h; Susquehanna i,j.

Figure 6-2 illustrates depths from which all projectile points were excavated.

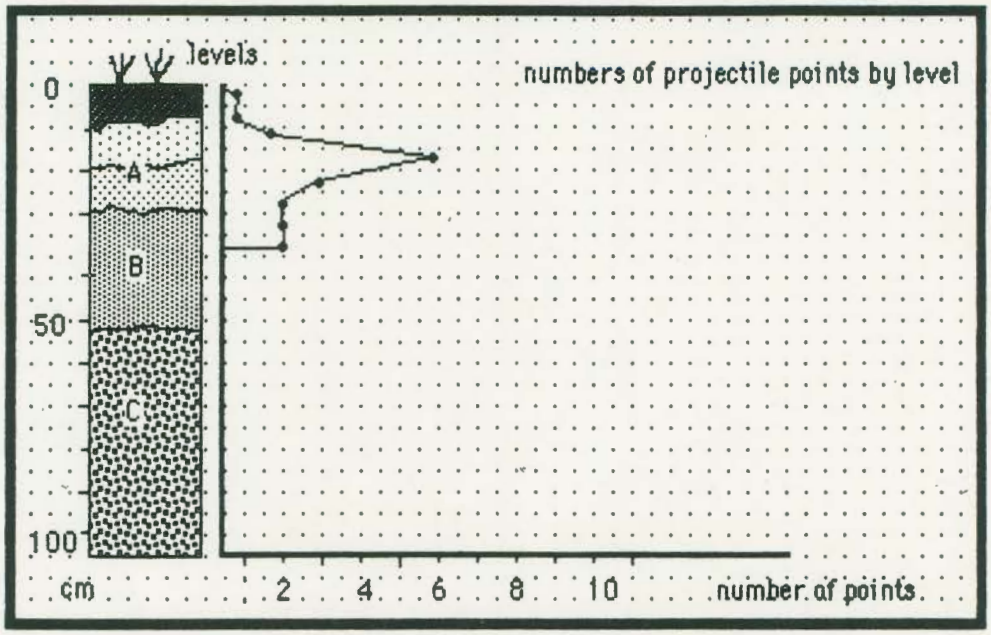

Figure 6-2. Number of projectile points by levels, depth.

Neville Points

Six specimens (40%) from the Oak Terrace site have been identified as Neville projectile points and fragments. Four of these points are illustrated in Figure 6-1. In four cases it was possible to determine that these points were manufactured from both bifaces (2) and flake blanks (2). Lithic materials of choice were grey felsite (5) and quartzite (1). Concavo-convex (1), plano-convex (1) and bioconvex (2) cross sections are represented. These points were manufactured by percussion methods with generally expanding flakes and step fractures toward the midline. Careful continuous basal pressure flaking continued to the shoulder and

became discontinuous along blades to achieve desired regularity. In four cases basal thinning was bifacial and intended to result in concavity. The steep crushing retouch defining shoulder to stem angles observed by Dincauze (1976) was noted in one specimen (quartzite), on one shoulder only.

The dimensions of the Neville specimens are included in Table 6-2. While the population is small, the mean ratios fall within those designated as representing this type with L:W=1.9:1(1), and W:Th=4.5:1(4). Blades of all specimens expand from the tip to the shoulder in straight edges. No serration is observed. All stems contract toward the base. Visually these points resemble those recovered from within the Cochato River Valley (Cote 1958).

Small Stemmed

Three projectile points (20%) recovered during the data recovery program were classified as Small Stemmed. All are made of quartz by percussion and pressure flaking techniques. Two specimens appear to be manufactured from flake blanks, having concavo-convex and plano-convex longitudinal cross sections. The two complete specimens have sharp tips with excurvate edges. Shoulders are not present. In all three specimens bases are thinned. Dimensions are noted in Table 6-3.

Triangular Points

Four Squibnocket Triangle projectile points (27%) were recovered (quartz 3, quartzite 1). All specimens are complete with convex sides, concave bases and bio-convex cross sections.

Table 6-3. Norwood Data Recovery, Projectile Points.

ARTIFACT #	1A-1-2	1A-2-1	1A-4-4	1A-3-2	1A-4-2	1A-6-2	1A-7-8	1A-7-12	1A-8-8
Type (var)	Nev (?)	Unknown	Nev (?)	Neville	Squib.	Squib? Variant	Neville	Neville	Sast?
Material Com/frag	Rhyolite Frag. (Base)	Quartz Com	QTZT F	QTZT Frag(g) (BMS)	Quartz Com	Rhyolite Complete	Felsite Frag. (BMS)	Felsite Frag. (BMS)	Quartz Base (Frag.)
Length	.75	2.67	.91	2.77	2.32	2.49	2.19	3.30	2.02
Max width	1.0	1.32	1.1	2.72	1.68	1.79	2.67	3.03	1.34
Max thick.	.41	.61	.45	.62	.56	.58	.55	.53	.59
Base width	?	.9		1.13	.57	1.05	.95	1.21	1.15
Shoulder blade angle	?	71°		74°	70°	76°	67°	67°	
Shoulder to stem angle	?	109°		107°			95°	102°	
Length/width ratio	?	2.02:1	Base		1.4:1	1.4:1	Frag		
Width/thick. ratio	?	2.16:1	Only	4.4:1	3:1	3:1	4.9:1	5.7:1	Base Only
Flaking pattern	?	Uni			Uni	Uni			
Edge damage									
Retouch									
Base length	.75	.79	.91	.92			.67	.85	1.24
Base width (distal)	.75	.53	1.03	.82			.89	.83	.82
Base thick.	.41	.27	.45	.45			.46	.39	.38
Width/thick ratio	1.8:1	2.0:1	2.3:1	1.8:1			1.9:1	2.1:1	

Table 6-3. (Continued).

ARTIFACT #	3A-4-1	3A-5-2	3A-5-3	5A-4-1
Type (var)	Squib.	?	Squib.	Susq. Broad
Material	Quartz	Quartz	Quartz	Felsite
Com/frag	Com	Tip Frag	Frag (Almost com)	Frag B/MS
Length	1.78		1.86	4.30
Max width	1.77		1.83	3.80
Max thick.	.54		.55	.89
Base width	1.68		1.77	1.70
Shoulder blade angle	66°		64°	74°
Shoulder to stem angle				123°
Length/width ratio	1:1		1.0:1	
Width/thick. ratio	3.3:1		3.3:1	4.26:1
Flaking pattern				
Edge damage				No
Retouch				No
Base length				1.89
Base width (distal)				1.65
Base thick.				.53
Width/thick ratio				1.2:1

Table 6-3. (Continued).

ARTIFACT #	6A-3-1	6B-4-1	6B-6-1	6B-8-1	9A-5-1	11A-4-1
Type (var)	Squib	Squib	Neville	Smst	?	Susq?
Material	Quartz	QTZT	Felsite	Quartz	QTZT	QTZT
Com/frag	Com	Com	Com	Com	Com	Com
Length	2.35	2.81	4.60	3.24	5.35	4.90
Max width	1.90	2.77	2.36	1.55	2.40	3.21
Max thick.	.56	.50	.76	.63	.99	.82
Base width	1.74	2.77	1.19	1.14	2.40	1.62
Shoulder blade angle	71°	63°	77°	66°		
Shoulder to stem angle			133°	134°		
Length/width ratio	1.33:1	1.0:1	1.9:1	2.1:1		
Width/thick. ratio	3.4:1	5.5:1	3.1:1	2.5:1		3.9:1
Flaking pattern						
Edge damage						
Retouch						
Base length			.96	1.30	1.60	1.00
Base width (distal)			.83	.44	1.03	1.25
Base thick.			.46	.51	.59	.47
Width/thick ratio			1.8:1			

Pressure flaking appears to be the predominant manufacturing technique. Three of these points are illustrated in Figure 6-1 (f, g, h).

Susquehanna Points

Two projectiles have been classified as Susquehanna types (13%) (Figure 6-1, i, j). One additional specimen was recovered during site examination excavations. The example recovered from excavation 5A is the base and midsection of a grey felsite, Susquehanna Broad type (Figure 6-1, i). Blade edges are slightly concave and asymmetrical. The base is typically concave. Manufacture appears to have been complete or nearly complete, the break occuring across the blade. The longitudinal cross section is bio-convex. The second Susquehanna example is a complete, quartzite Atlantic like point (Figure 6-1, j). It was apparently manufactured from a tabular blank by percussion flaking. Edges have been finished by pressure. The blades are slightly excurvate, the shoulders steeply flaked. The third Susquehanna example, recovered from the Red Leaf deposits (site examination) is the basal fragment of a Mansion Inn blade. This quartzite specimen was broken during the manufacturing process.

Other Bifaces

No processing implements (i.e., drills, scrapers, knives) were recovered from Oak Terrace or Red Leaf deposits. While the majority of non projectile point bifaces were too fragmentary to permit interpretation, those large enough to analyze included

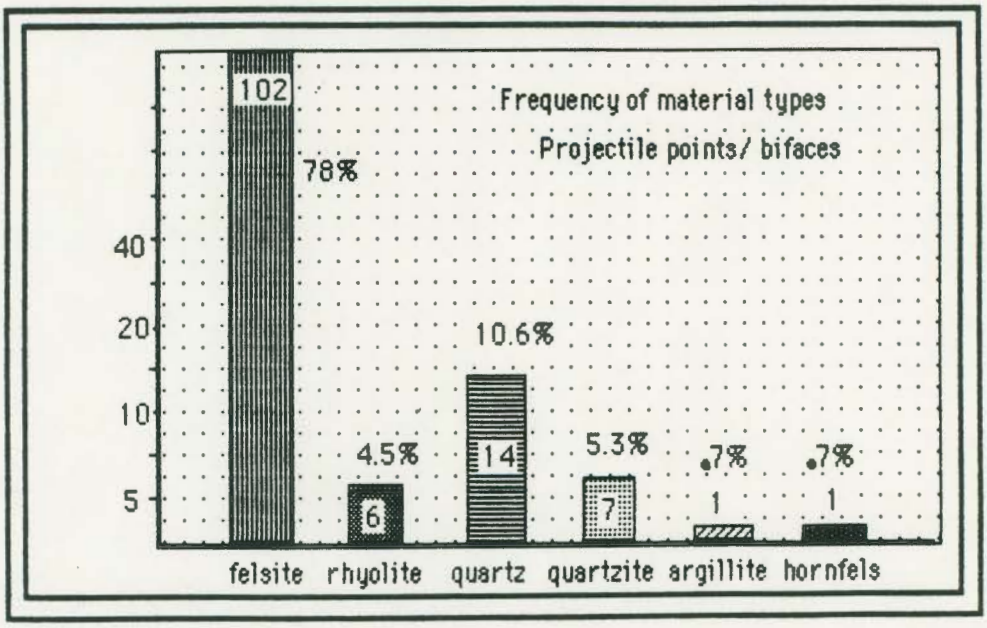

Figure 6-3. Frequency of material types, points and bifaces.

fragments and completed specimens that would fit into a category of projectile point blanks, representing various stages of reduction for the only class of bifacially flaked tools present on the site. Several of these bifaces are illustrated in Figure 6-4. They are similar to those described as "Middle Archaic Biface Preforms" from the Neville site (Dincauze 1978) with the proximal end pointed and the distal end convex, or nearly straight. These bifaces were manufactured from large flake blanks (Figure 6-4, b, e) by percussion methods. Few specimens show indications of pressure flaking, with all broken specimens resulting from misplaced force/ blows or natural fracture planes (along banding) in the material. Several of these bifaces, nearly finished, were apparently discarded for non conformity to an ideal template, either being too

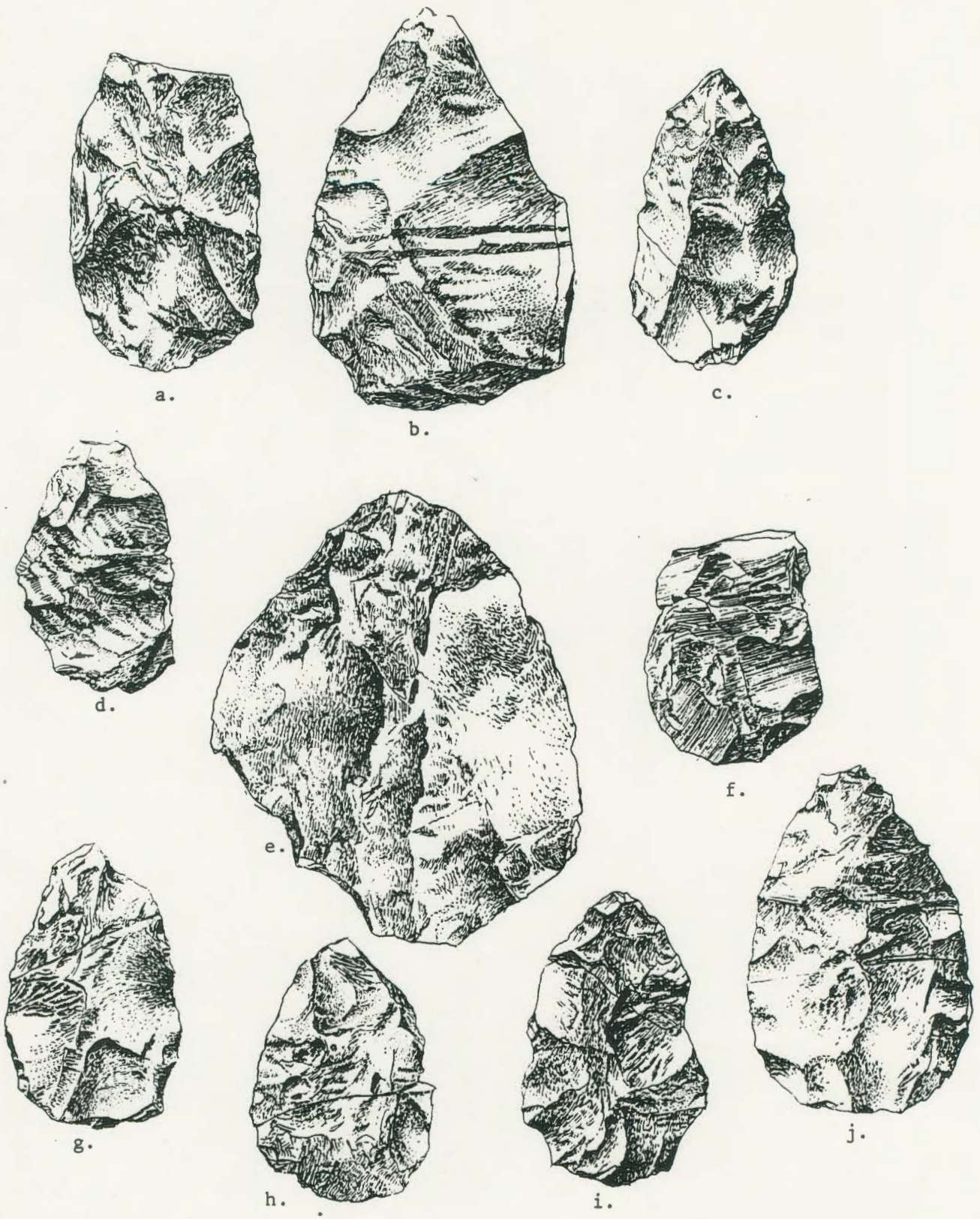

Figure 6-4. Blanks and preforms recovered during the Data Recovery program at the Oak Terrace and Red Leaf Sites.

small or having ridges which could not be thinned to satisfaction. It was possible to reconstruct eight complete blanks from fragments within the workshop areas of Oak Terrace (Figure 6-4 c, g-j). In all cases breakage occurred during manufacture. Some data on these bifaces is provided in Table 6-4.

Other Tools

A core, one hammerstone, one pestle and three utilized flakes are also included in the non debitage categories, the lithic inventory of the deposits. Cores included those fragments of parent raw material displaying two or more detachment flakes, those flakes being the object of the process. The single core specimen was recovered from excavation unit 9A, a workshop concentration area. It is a glacial felsite cobble with three large flakes removed. This cobble may have been quarried from glacial till in close proximity to this test unit. Small scale talus quarrying was indicated by soil profiles in the area as well as felsite cobbles being present in the subsoil. This aspect of the site will be discussed further in the culture history and interpretation sections.

One hammerstone was recovered from the Oak Terrace site. It is granitic, generally spherical with a length of 7.6 cm, a width of 7.46 cm and is 5.63 cm at its widest point. It weighs 516.2 grams.

The single pestle recovered from the site was encountered in excavation unit 4A. It was made from Wamsutta formation sandstone

Table 6-4. Complete and Composite Blanks.

BIFACE	MATERIAL	SHAPE	LONG.CROSS SEC.	L/T RATIO	L/W RATIO
pit/level/art#					
6A-3-2	qtz	ellip.	bio-con.	4.3:1	1.3:1
2A-6-1	fel	ellip.	plano-con.	3.6:1	1.4:1
2B-6-1	qtzt	ellip.	concavo-con.	4.1:1	1.6:1
2A-5-1	fel	ovate	concavo-con.	5.3:1	1.5:1
1A-8-3	fel	ovate	concavo-con.	4.1:1	1.3:1
1A-7-15	qtzt	ellip.	bio-con.	6:1	2.2:1
1A-6-1	qtzt	ellip.	plano-con.	5:1	2:1
3A-5-1	fel	ovate	concavo-con.	4.6:1	1.3:1
9A-5-1	qtzt	ellip.	bio-con	5.4:1	1.5:1
9A-6-2	fel	ellip.	concavo-con.	4.4:1	1.5:1
3A-7-3	fel	ellip.	concavo-con.	4.6:1	1.8:1
3B-5-1	fel	ovate	bio-con.	2.4:1	1.1:1
5B-7-1	fel	ellip.	concavo-con.	3.6:1	1.5:1
composite from frags					
9A-7-1/ 11A-9-1	fel	ovate	concavo-con.	4.2:1	1.4:1
8A-3-1/ 8A-4-2	fel	ovate	concavo-con.	4.5:1	1.3:1
1A-4-1/ 1A-1-3	fel	ovate	concavo-con.	5.8:1	1.5:1
1A-8-1/ 1A-5-1	fel	ovate	concavo-con.	4.9:1	1.4:1
1A-7-6/ 1A-6-4	fel	ovate	concavo-con.	5.7:1	1.5:1
1A-7-1/ 1A-1-6	fel	ellip.	concavo-con.	6.7:1	1.8:1
1A-7-9/ 1A-7-7	fel	ellip.	concavo-con.	4.7:1	1.4:1
1A-8-6/ 1A-8-7	fel	ovate	concavo-con.	5.5:1	1.6:1
			RANGE	2.4:1- 9.5:1	1.1:1- 2.2:1
			MEAN	4.6:1	1.6:1
			N	21	21

by pecking a cylinderically shaped cobble. It has been utilized for grinding and as a mortar. Its length is 19.1 cm, its width 6.02 cm and its thickness is 3.70 cm. The weight of the pestle is 674.1 grams.

Three pieces of debitage exhibited evidence of modification and utilization. These flakes had been unifacially pressure flaked and used as flake knives. They represent expeditious processing tools, reflecting activity secondary to the stone tool making that was being carried out in lithic workshop areas.

Other Non-Debitage Lithics

Excavations to date have recovered eight artifacts considered to be quarry blanks. These large, roughly shaped (percussion) felsite blanks were carried onto the site for processing. During the site examination testing, five of these artifacts were clustered in one excavation unit, in close proximity to a lithic workshop. An additional three specimens were recovered during data recovery. Table 6-5 provides metrics on these artifacts.

Debitage

By far the most frequently encountered class of lithic material during the data recovery program was debitage (98.68%). This class of chipping debris includes both flakes and shatter. Shatter (3.4% of all lithics) consists of blocky or irregular debitage with no visible striking platform and no distinctions between dorsal and ventral surfaces (with the exception of cortex). Flakes (95.27% of all lithics) include all material, other than

Table 6-5. Quarry Blanks.

ARTIFACT	LENGTH (cm)	WIDTH (cm)	THICKNESS (cm)	WEIGHT (grams)
2B-5-1	7.42	7.00	4.00	223.0
2B-5-3	8.35	6.33	2.16	96.1
9A-7-6	5.92	3.48	1.78	38.6
3-3-1*	7.40	4.92	1.53	63.4
3-3-2*	5.95	4.45	1.57	63.7
3-3-3*	6.02	5.5	2.42	73.5
3-3-4*	7.37	4.68	1.86	50.0
3-3-5*	6.53	4.54	1.57	31.3
RANGE	5.92-8.35	3.4-7.00	1.53-4.00	31.3-275.3
MEAN	6.87	5.12	2.11	71.95

*recovered during site examinations

blanks and bifaces, that exhibit a dorsal and ventral surface. In cases where a striking platform remained, its presence was noted. As Figure 6-5 illustrates, locally obtained, grey felsites were the predominant raw materials of all chipping debris. It is interesting to note that only .001% exhibited remnant cobble cortex.

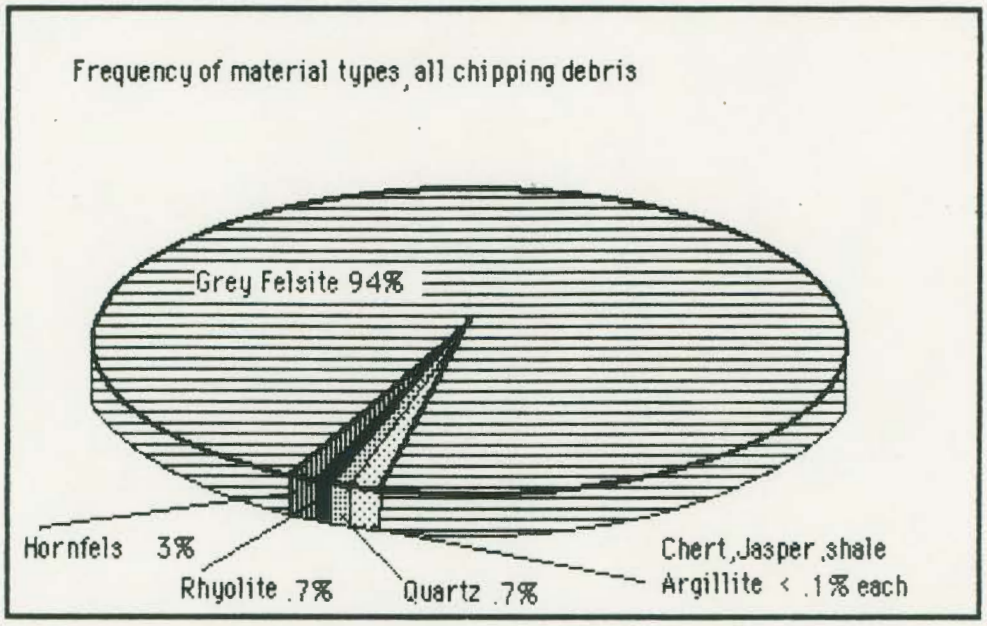

Figure 6-5. Frequency of material type, all debitage.

Debitage was catalogued within four size ranges: 0-1 cm; 1-3 cm; 3-5 cm; and 5+ cm. In that 1/4 inch hardware cloth was used for all screening, numbers of flakes within the smallest category will be underrepresented. Table 6-6 indicates quantities of chipping debris recovered within each size range. Tiny flakes, resulting from pressure during final stages of manufacture were

Table 6-6. Chipping Debris Size and Frequency per Excavation Unit by Level.

UNIT	LEVEL	0-1 cm	1-3 cm	3-5 cm	5+ cm	TOTAL
1A	2	20	85	2	-	107
	3	57	240	2	-	299
	4	81	128	-	-	209
	5	54	136	63	-	253
	6	172	327	8	-	507
	7	538	1429	62	-	2029
	8	287	873	27	-	1187
	9	54	262	4	-	320
	10	38	147	1	-	186
	11	29	52	1	-	82
	12	5	11	-	-	16
1B	7	3	1	0	1	5
2A	3	2	9	1	-	12
	4	8	20	2	-	30
	5	9	20	2	-	31
	6	9	39	5	-	53
	7	13	-	-	1	14
	8	1	7	-	-	8
	9	3	7	2	-	12
	10	3	7	9	-	19
	11	1	2	-	-	3
3A	2	8	-	-	-	8
	3	15	51	-	-	66
	4	40	108	1	-	149
	5	53	149	5	-	207
	6	7	30	-	-	37
	7	83	194	9	-	286
	8	38	77	1	-	116
	9	6	26	1	-	33
	10	3	8	-	-	11
3B	2	3	-	-	-	3
	3	2	28	1	-	31
	4	5	26	-	-	31
	5	8	32	1	-	41
	6	15	-	-	-	15
	7	6	13	-	-	19
	8	3	5	-	-	8
	9	2	3	-	-	5
	10	5	-	-	-	5
	11	4	-	-	-	4
	12	1	4	1	-	6
	13	5	-	-	-	6

Table 6-6. (Continued).

UNIT	LEVEL	0-1 cm	1-3 cm	3-5 cm	5+ cm	TOTAL
4A	4	-	-	-	1	1
	5	2	1	-	1	4
	6	-	3	-	-	3
4B	2	-	2	-	-	2
	5	-	1	1	-	2
	7	-	1	1	-	2
5A	5	1	2	2	-	5
	6	-	-	2	-	2
5B	2	-	5	3	-	8
	3	4	18	-	-	22
	4	-	2	3	-	5
	5	-	2	-	-	2
	8	-	3	-	-	3
6A	2,3,4 (root)	4	18	2	-	24
	2	-	31	5	-	36
	3	31	116	10	1	158
	4	14	49	12	-	75
	5	4	15	2	-	21
	6	5	-	-	-	5
	7	-	4	-	-	4
6B	3	1	4	-	-	5
	4	-	5	-	-	5
	5	2	4	-	-	7
	6	1	1	1	-	3
	7	1	2	-	-	3
7A	2	-	6	-	-	6
	3	2	72	10	-	84
	4	29	122	6	-	157
	5	56	231	4	-	291
	6	46	144	2	-	192
	7	5	30	2	-	37
	8	-	2	-	-	2
8A	3	5	37	3	-	35
	4	10	209	9	-	228
	5	27	125	3	-	155
	6	1	7	-	-	8
	7	-	8	1	-	9
	8	-	8	-	-	8

Table 6-6. (Continued).

UNIT	LEVEL	0-1 cm	1-3 cm	3-5 cm	5+ cm	TOTAL
9A	2	-	2	1	-	3
	3	5	13	1	-	19
	4	13	34	2	-	49
	5	34	107	7	3	151
	6	106	314	24	-	444
	7	229	738	48	1	1016
	8	97	157	-	-	254
	9	16	39	1	-	56
	10	3	10	2	-	15
	11	1	8	-	-	9
	12	1	11	-	-	12
	13	1	2	-	-	3
10A	1	2	-	-	-	2
	2	3	8	1	-	12
	3	2	15	3	-	20
	4	4	22	2	-	28
	5	20	66	5	-	91
	6	15	58	1	-	74
	7	-	15	-	-	15
	8	14	50	-	-	64
	9	2	10	-	-	12
	10	1	15	1	-	17
	11	3	10	1	-	14
	12	13	33	-	-	46
	13	20	53	-	-	73
	14	40	67	2	-	109
	15	8	24	3	-	35
	16	16	41	-	-	57
	17	8	17	1	-	26
	18	20	17	3	-	40
	19	11	23	1	-	34
	20	8	5	-	-	13
11A	4	1	5	-	-	6
	5	1	4	-	-	5
	6	1	15	2	-	18
	8	-	3	4	-	7
	9	5	29	4	-	38
12A	3	3	7	1	-	11
	4	5	5	-	1	11
	5	5	46	1	1	52
	6	2	1	4	-	7
	7	4	23	-	-	27
	8	-	3	-	-	3

recovered from a number of flotation samples (each approximately 2 liters of soil), indicating that tools were being finished and curated on the sites. Table 6-7 is a breakdown of flakes recovered from flotation across the site, from both features and control samples, taken from each unit at the A/B soil horizon junction.

In an attempt to make general observations regarding the nature of chipping debris within workshop areas, feature areas, and across the site, a small sample (700 flakes, 0.6%) was randomly selected for analysis beyond that permitted by catalogued data. Following excavations at a Middle Archaic workshop in Belmont, New Hampshire, Starbuck (1981) conducted an extensive analysis of 7,000 pieces of debitage which allowed comparative observations. This analysis allowed the researchers to identify variables which might be useful in other lithic studies (Holstein, personal communication). While our sample size was restrictively small, my analysis has benefitted from Starbuck's observations.

Eleven variables were considered within the analysis. These included raw material, flake integrity (i.e., complete/frag), length, width, thickness, presence/absence of dorsal cortex, number of dorsal ridges, platform depth, platform width, platform shape (oval/triangular/crescent/other), and termination type (feather/hinge/step/outrepasse). Table 6-8 lists the valid observations of the measured variables.

Table 6-7. Size and Quantity of Flakes Recovered From Flotation Samples.

UNIT	PROVINCIA	#<.5cm	#.5-1cm	#>1 cm	TOTAL
1A	A/B junct.	73	27	5	105
2A	A/B junct.	1			1
2B	A/B junct.	1			1
3A	A/B junct.	4	1		5
3B	A/B junct.	3	2		5
6A	A/B junct.	7	2	1	10
10A	65-70 cm	40	27	5	72
7A	A/B junct.	30	20	14	64
8A	A/B junct.	1		1	2
	TOTALS:	160	79	26	265

Table 6-8. Flake Provenience and Number of Valid Observations for Each Variable.

	RLEU7AL4	OTEU6AL3	OTEU3AL7	OTEU9AL7	OTEU1AL7	OTEU2BL5/6
Raw material	101	101	100	100	100	100
Flake type	101	101	100	100	100	100
Flake length	101	101	100	100	100	100
Flake width	101	101	100	100	100	100
Flake thick	101	101	100	100	100	100
Cortex?	64	47	51	55	57	50
# Ridges	63	46	50	54	57	48
Plat depth	63	46	50	54	56	48
Plat width	63	46	50	54	56	48
Plat shape	63	46	50	54	56	48
Term type	63	46	50	54	56	48

Material Type

Flakes from units EU9A and EU1A (both workshop areas) consist of 100% felsite. With the exception of one sample unit all other areas exhibit frequencies of greater than 90% locally obtained Mattapan volcanics, light grey slightly patinated felsites. The one exception to this trend occurs in the samples from excavation unit 6 on the Oak Terrace site. The material of choice reflected in this sample is hornfels, with a frequency of 96%.

Within the sample quartz accounted for 2.3%, with a frequency exceeding 5% in only one area, that of excavation unit 7, within the Red Leaf deposits. Argillite occurs at a .7% frequency being represented by two flakes within Red Leaf and three flakes within the Oak Terrace (EU2B) sample. Chert accounts for .3%, with one flake each from the Red Leaf deposits and EU6 on the Oak Terrace Site.

Type of Flake

Shatter (as opposed to flakes) occurred at a 2% frequency across the sample. The single occurrence of frequencies greater than 2% in any one sample unit was EU7 (Red Leaf) with nine pieces, accounting for 8.9% of the population.

Complete flakes represented 32.2% of the sample, across all areas, with frequencies exceeding 35% in two areas, EU7A (Red Leaf) and EU3A (Oak Terrace). Proximal fragments consisted of 18.3% of all broken flakes, with 22.5% distal and 25% medial specimens. Six flakes (.9%) of the sample were longitudinally broken.

Across the sample, 28 (.04%) occurrences of dorsal cobble cortex were noted, with the highest value for any one unit being 9 (representing 32% of all cortex bearing flakes) from EU2B on the Oak Terrace site. Five instances (17.9%) of cobble cortex flakes were reported for Red Leaf flakes (EU7A).

Length of Flakes

Across the entire sample, flakes less than 1 cm in length occurred at a 70.9% frequency, exceeding 80% in one area, levels 4-6 of EU7A on the Red Leaf site. Within a size range of between 1-1.99 cm, a 17% frequency was found, with a high of 29 flakes from Red Leaf deposits. Size ranges between 2-2.99 cm include 8% of the population with no apparent differences across the unit areas. A 3.1% frequency of flakes is noted in size ranges from 3-3.99 cm, with a high of nine flakes from EU1A. Seven flakes across the sample exceed 4 cm in length with three from EU9, two from EU3A, and one each from EU2B and EU7 (Red Leaf).

Flake Width

Of all flakes, 57.8% were less than 1 cm in width, 27.6% were within 1-1.99 cm, with 12.1% between 2-2.99 cm. In the range of 3-3.99 cm, a frequency of 2.3% was observed. Only one flake in the sample (Oak Terrace EU3A) exceeded 4 cm (.1%).

Flake Thickness

The majority (67.5%) of all flakes fell within a size range (thickness) of less than .25 cm. Red Leaf (EU7A level 4-6) and Oak

Terrace 3A had the highest frequencies within this range with 78% and 77% respectively. Those locations with less than 60% within the 0-.25 cm range include Red Leaf 7A with 56.4% and Oak Terrace EU2B with 54%.

Within the size range of .26-.50 cm, 22.4% of the total population is included. Red Leaf EU7A level 4 is the highest value with 32.7%, followed by Oak Terrace 2B with 29%. Three cases of thicknesses greater than 1 cm include Red Leaf 7A level 4, and Oak Terrace EU3A and EU2B.9 each with one occurrence.

Dorsal Ridges (Complete flakes)

Sixteen percent of complete flakes had no evidence of dorsal ridges. The sample unit with the highest occurrence or lack of ridges was Red Leaf EU7A with 25.4% frequency. Across the sample units an occurrence of one ridge was the most frequently encountered percentage (30.4%). The Red Leaf (EU7A level 4) sample included 28 instances of one ridge (44.4%) being the highest value in this range. Two dorsal ridges were reported in 24.8% of the sample, with 10.4% exhibiting three ridges. Frequencies of greater than eight ridges were reported for four locations including EU3A (2 instances of 9), EU9A (1 instance of 9), EU1A (1 instance of 8 and 6 instances of 9), and EU2B (1 instance of 9).

Platform Depth

Three hundred and fifty-four flakes (50.50%) retained platform remnants. Depths were recorded in ten ranges. The highest frequencies (35.3%) occurred within the .16-.25 cm and .26-

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.35 ranges (24.6%). The highest percentage values for any size ranges within single sample units were 25% within the range of .36-.45 cm within EU9A and 36% within the range of .46-.55 cm within EU1a on the Oak Terrace site. These represent the highest values for knapping consistency encountered on the sites.

Platform Shape

Across the sample units soft hammer percussion is indicated by a majority of platforms with crescent (42%) and ovid (31.3%) remnant shapes. Shapes suggesting hard hammer techniques (triangular and quadrangular) combine to represent a frequency of 24.6%. Within all but two individual sample areas crescent shaped platforms predominate with 60.9% of EU6A, 54% of EU3A, 51% of EU7A levels 4-6, and 38% of EU1A included. Ovid platforms are predominant in areas EU7A level 4 with 39.7%, and EU2B with 37.5% within this category.

Flake Termination Type

Four types were recorded in this category and include feather, hinge, step and outrepasse. Of the total population (322) across sample areas feather termination is most prevalent with a frequency of 53.4%. In the Oak Terrace, EU1A sample a rate of 76% feather termination indicates a high rate of optimal force being applied most consistently. EU2B also exhibits a high frequency of optimal force for flaking with a 75% rate. EU9A (Oak Terrace) and EU7A (Red Leaf) exhibit values of 54.4% and 50% respectively. EU6A

is the area with the lowest occurrence of feathered termination types with 37.7%. At this location hinge termination types dominate with 42.3%. A difference in predominant raw material (hornfels as opposed to felsite) may be a variable here.

Outrepasse termination types, suggesting forces greater than optimal for flake removal account for a total percentage of 2.9% occurring in 11 instances, with 3 being the maximum in any one area (EU3A).

Less than optimal force application, resulting in step termination types occurred at a 12.9% rate across the sample. EU7A (Red Leaf) has the highest occurrence with 22.2%.

Features

For purposes of my analysis the operational definition of a feature is a visually observable, discrete deposition produced by a site's inhabitants in the course of an activity or activities (Barnes 1980; Thorbahn, Cox and Ritchie 1983). Recognizable aspects of a feature include morphology, content, size, fill variation and the relationship to the surrounding soil matrix as well as other intrinsic aspects of the site (i.e., other artifacts and features). My objective in recording and analyzing features was to define functions that in turn reflect site activities.

During excavation of unit 1A a feature became observable at level 4 (20 cm) and well defined in level 6 (30 cm). The feature consisted of very dark greyish brown (10 yr 3/2) soil within a reddish yellow (7.5 yr 5/8) matrix (Figure 6-6).

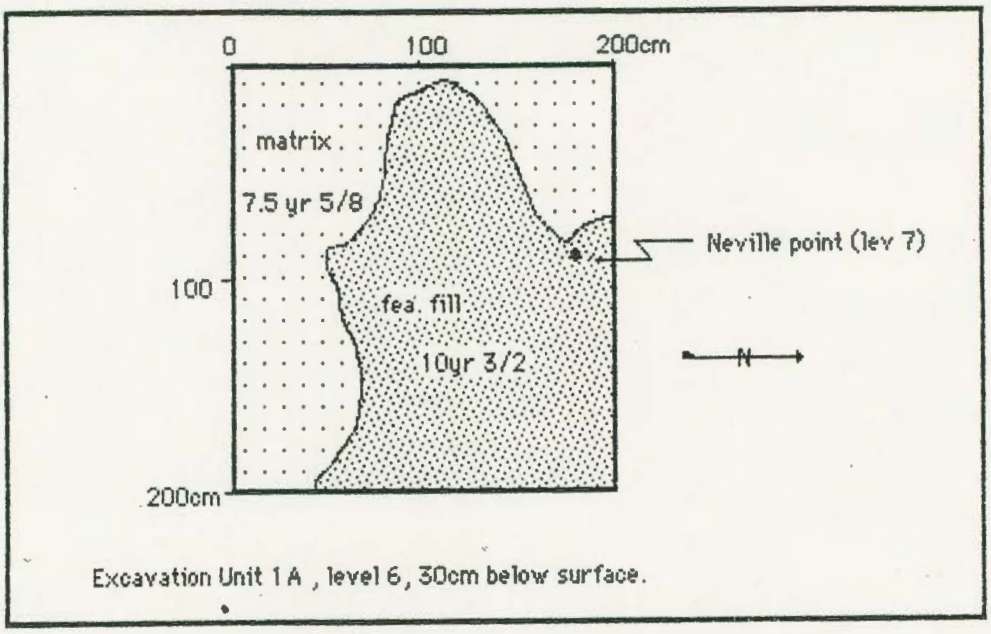


Figure 6-6. Feature plan, excavation unit 1A at 30 cm.

A carbon sample collected from level 7 (35 cm) within this feature yielded a radiocarbon date of 3,600 ± 110 years (beta 12790). The distinctions between soil coloration which first represented this feature became diffuse in level 8. By level 9 it was no longer visibly obvious. Large quantities of chipping debris (5,000+), bifaces (50+) and projectile point fragments (5 Neville, 2 triangular) were associated with this feature. Table 6-6 notes the quantities of debitage throughout the unit. It is considered a lithic workshop.

During the excavation of unit 3B concentrations of burnt rock and associated chipping debris were noted in the northeastern quad of the pit in level 5. At level 8 (40 cm) an area of dark brown soil (10 yr 3/3) was noted within a yellowish brown (10 yr 5/8) matrix. Low densities of chipping debris were also noted. A charcoal sample collected from level 8 yielded a radiocarbon date of 5,110 $\pm$ 100 years ago (beta 12925). Two bone fragments and 35 nut fragments were recovered from flotation samples of this unit. They will be discussed later in this chapter. This feature was no longer observable below level 10 (50 cm). Figure 6-7 illustrates the nature of the feature at 45 cm, where it was last observed. Figure 6-8 reprsents a stylized profile.

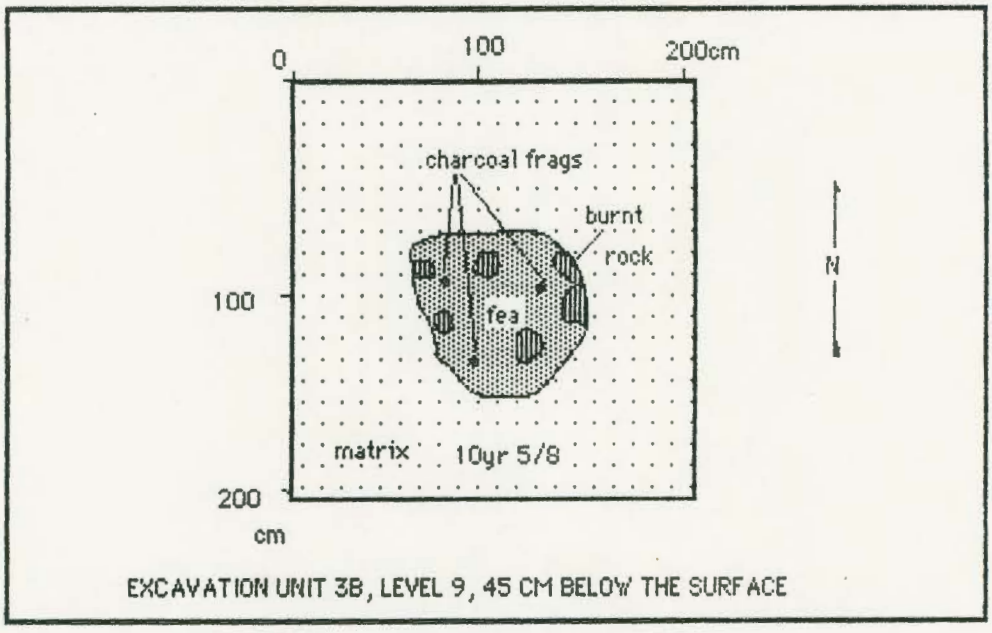


Figure 6-7. Plan of feature in unit 3B.

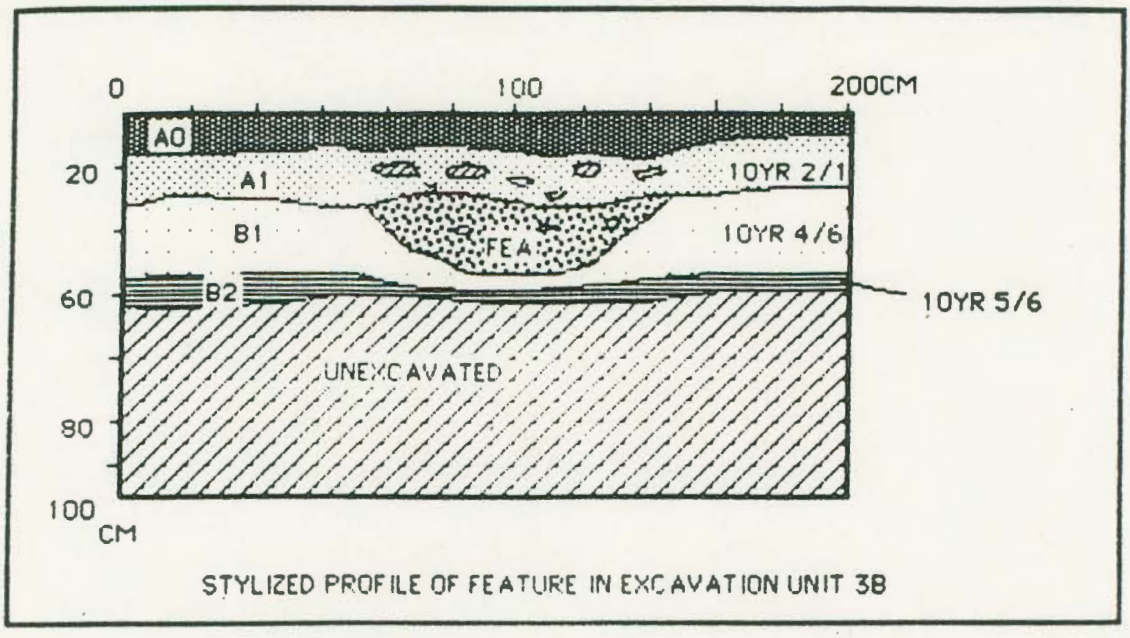


Figure 6-8. Profile of feature in unit 3B.

Excavation unit 5B contained an anomalous loci of dark brown (7.5 yr 3/4) soil within a gravelly yellowish brown (10 yr 5/8) matrix. No concentrations of either charcoal or lithics were noted in this loci. Flotation samples failed to yield floral or faunal remains. This anomaly appears to have been a natural disturbance (i.e., tree throw).

Within excavation unit 9A a feature was first observed in level 6 (25-30 cm) where high densities of chipping debris were in association with a strong brown (7.5 yr 4/6) soil stain and charcoal fragments, within a dark yellowish brown (10 yr 4/6) matrix (Figure 6-9). The soil stain was visible to a depth of 42 cm (Figure 6-10). Large quantities of chipping debris (2,000+), 17 bifaces and two projectile points were recovered in proximity to this feature. A charcoal sample recovered from the feature yielded

a radiocarbon date of 3,210 ± 110 (beta 12791). Flotation of soil samples from within the feature fill failed to recover floral or faunal remains. The soil stains and associated chipping debris is considered to represent a lithic workshop.

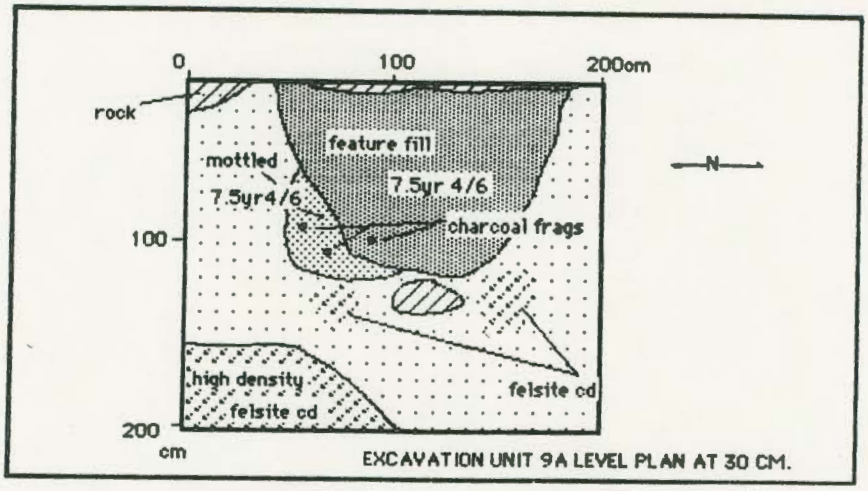


Figure 6-9. Plan of excavation unit 9A, level 6 (25-30 cm).

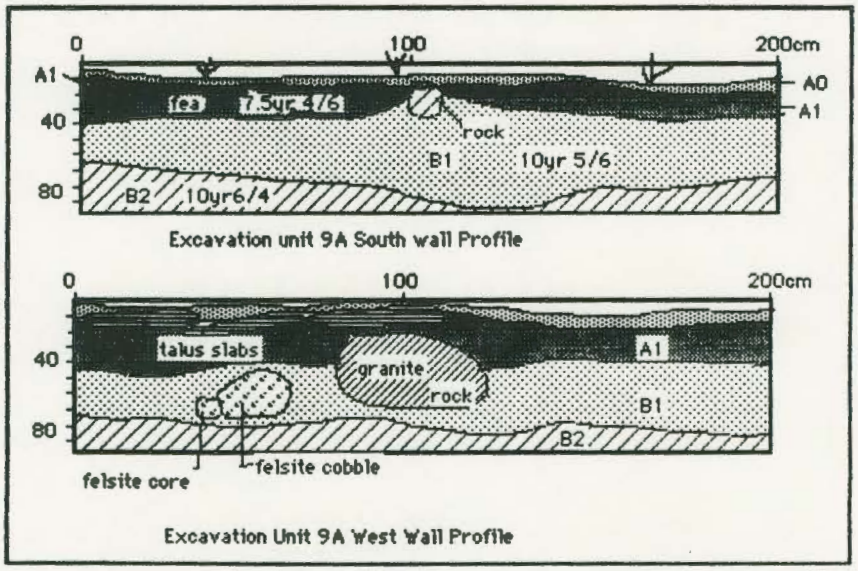


Figure 6-10. Profiles of south and west walls, excavation unit 9A.

Excavation unit 10A was placed judgementally to investigate a feature encountered during earlier phases of testing. Throughout levels 2-14 (10-70 cm) mottled areas of dark brown soil with occasional charcoal flecks, chipping debris and biface fragments were encountered. The nature of this feature became more obvious at level 14 (70-75 cm) when three separate soil matrices became apparent (Figure 6-11). At 80 cm below the surface (level 16) areas of mottled soil, as well as charcoal fragments, were well defined (Figure 6-12). The feature continued to a depth of 90 cm. Within the adjacent testing unit (site examination 1A 1 x 1 m) the feature continued to 100 cm. Figure 6-13 represents the profile of this feature within the east wall of excavation unit 10A. Radiocarbon analysis of charcoal fragments collected from the mottled soils in level 16 yielded a date of 3,430 $\pm$ 200 (beta 12926). Charcoal fragments collected from 40-50 cm below the surface during site examination yielded a date of 3,990 $\pm$ 120 years ago (beta 11014). The nature of feature fills and the pattern of lithic distribution throughout the unit indicate a function other than that recognized for workshop features in units 1A and 9A. Unlike other features on the site, there is evidence to indicate that it was a constructed pit. That is to say surface preparation and digging took place prior to utilization. The mottled areas of 10 yr 5/4 and 4/4 soils noted in Figures 6-11, 6-12 and 6-13 represent backdirt resulting from the original construction. Utilization, or re-utilization as a refuse pit is indicated by the generally unstratified nature of fills, the juxtapositioning of

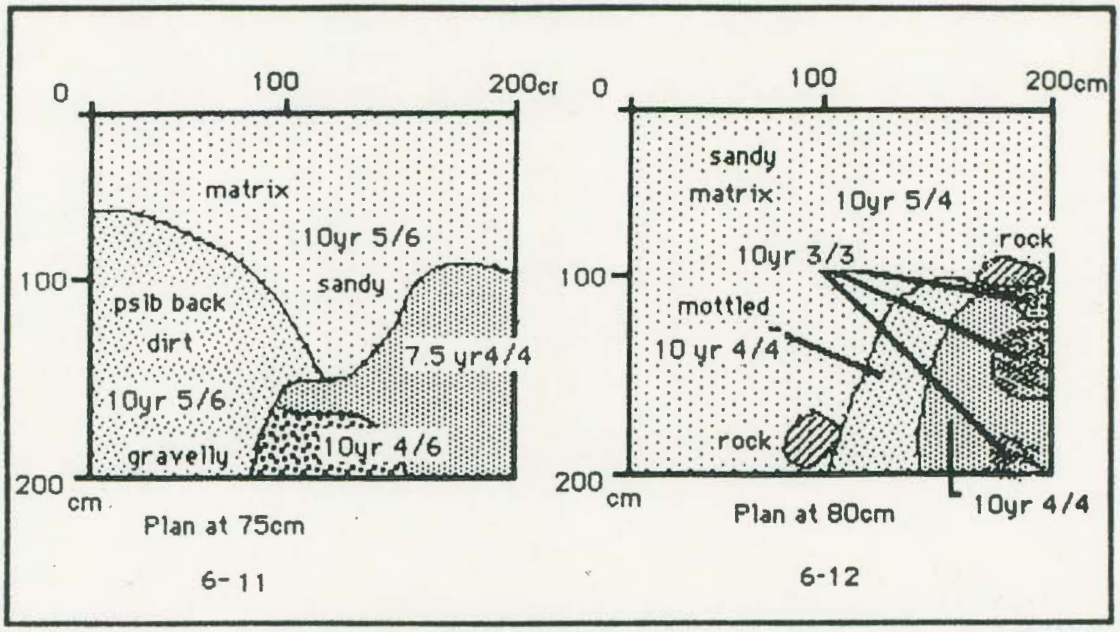


Figure 6-11, 6-12. Stylized plans of feature in excavation unit 10A, levels 15 and 16.

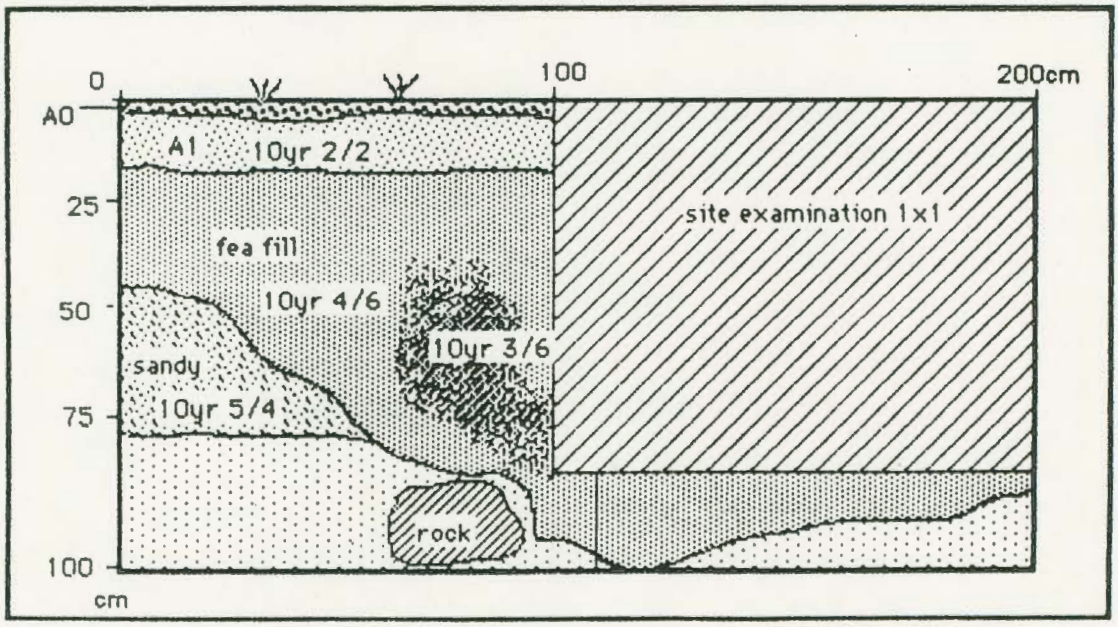


Figure 6-13. Stylized profile of excavation unit 10A, east wall.

dated deposits and the relatively uniform distribution of lithic debitage (see Figure 6-14) throughout the feature.

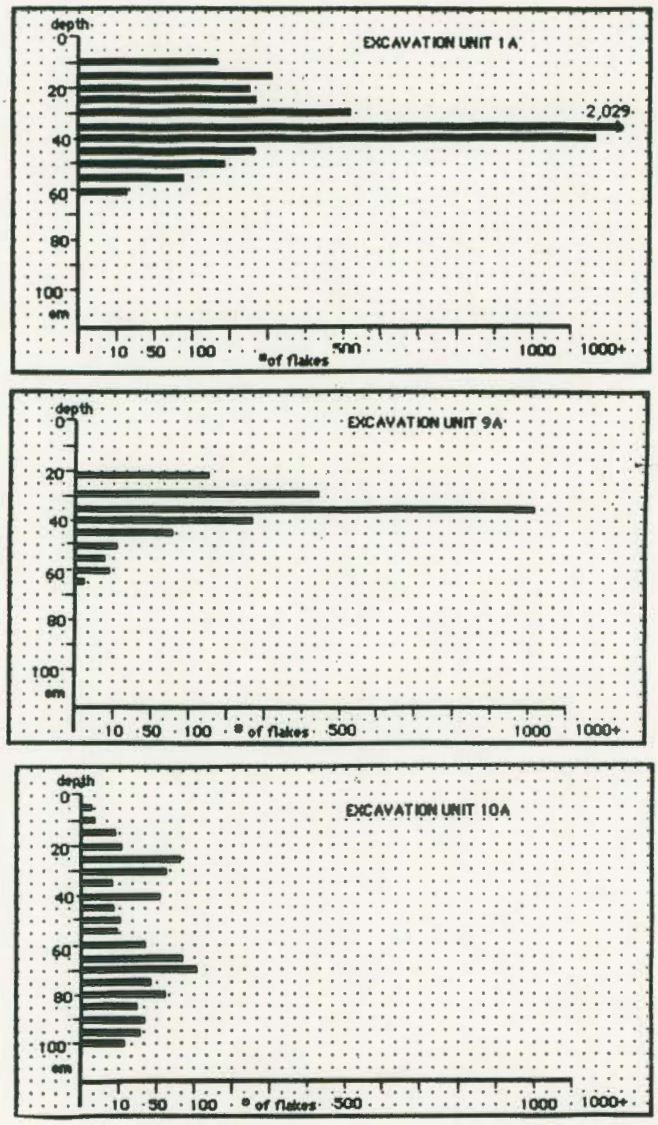


Figure 6-14. Distribution of lithics within units 1A, 9A and 10A.

One feature has been located within the Red Leaf deposits to date. During site examination testing within unit EU#1 it appeared at approximately 20 cm below the surface as a dark yellowish brown (10 yr 4/6) stain in a brown (10 yr 5/3) soil matrix (Figure 6-15). Within the dark yellowish brown stain was a smaller concentration (approximately 20 x 20 cm) of strong brown (7.5 yr 4/6) soil with occasional charcoal fragments. Five of the seven artifacts recovered from the Red Leaf deposits during site examination were associated with this feature. A radiocarbon date of 1030 $\pm$ 140 (beta 11017) resulted from analysis of charcoal from 20 cm below the surface within this feature.

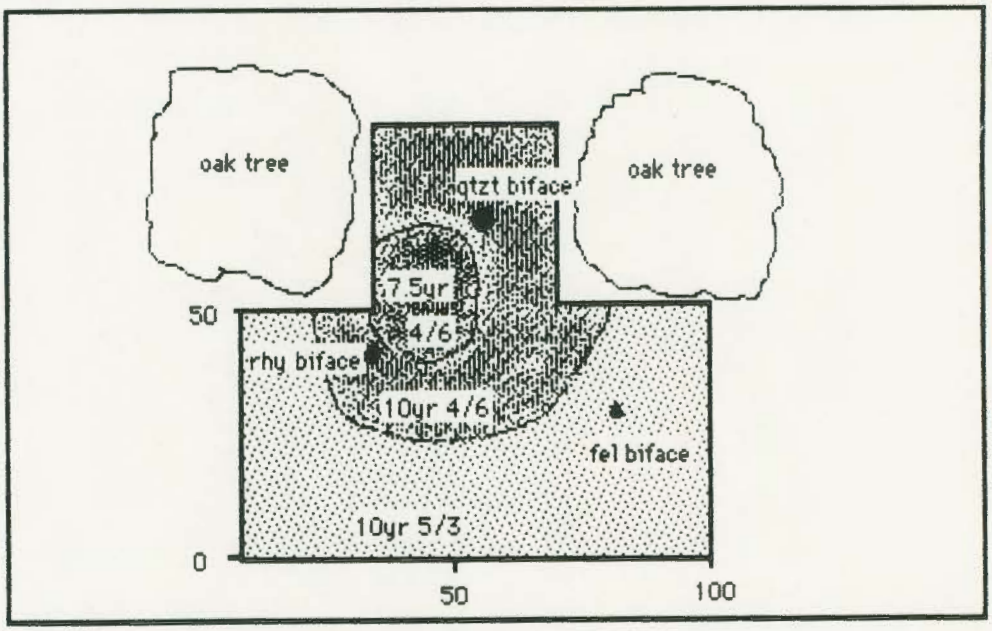


Figure 6-15. Plan of feature at 20 cm, excavation unit 1 (site examination) Red Leaf deposits.

Features encountered within the Oak Terrace and Red Leaf deposits fall within three types: (1) lithic workshops, represented by high densities of debitage, artifact fragments and occasional burnt rock and charcoal fragments (Units 1A and 9A); (2) shallow dark soil stains with charcoal, bone fragments, nut fragments and low densities of burnt rock and chipping debris (Units 3B and 5B); and (3) deep pits containing scattered, unstratified chipping debris, occasional artifact fragments, mottled soils, and charcoal fragments (Unit 10A).

Table 6-9 lists features encountered during all phases of testing to date and their characteristics.

Morphologically features include those types which were surface based and the pit in units EU1 (site examination) and 1A (data recovery). The term surface based refers to activities and functions that required minimal surface preparation. This would include the building of hearths and fire-related activities (light, heat, food preparation) that did not require digging prior to the activity. The oxidation of soils and remnant charcoal are the major factors of soil coloration. The one obvious exception to surface based features within Oak Terrace and Red Leaf deposits is the single pit feature. This feature was constructed by hand and was later filled with debris from across the site. Use as a refuse pit was most likely a secondary activity in that alternative, less strenuous options for refuse disposal would have been available. It seems probable that the pit was originally constructed with a

Table 6-9. Feature Characteristics.

TEST PIT	PHASE	DEPTH OF FEATURE	TYPE OF FEATURE	M A T E R I A L S	C-14 DATES
EU1	2	25-100 cm	pit	c.d., br, tip frag.	3,990 ± 120
EUS2	1	15-35 cm	soil stain	c.d. point frag.	3,530 ± 80
240-2	2	20-30 cm	soil stain	char. c.d.	
EU3	2	25-30 cm	cache	5 blancks	
1A	3	30-40 cm	workshop	c.d./artifacts	3,600 ± 110
3B	3	30-45 cm	b.r.	c.d.	
5B	3	30-45 cm	soil stain	c.d.	
9A	3	20-40 cm	workshop	c.d. artifacts	3,210 ± 100
10A*	3	20-110 cm	pit	c.d., br, artifacts	3,430 ± 200

*the feature in 10A is an extension of the feature encountered in EU1.

more specific function in mind. Having served its original function, the site's inhabitants (or later inhabitants) found the pit a conveniently located place for debris.

Fill types within the features provide additional insights into function. As has been discussed the fill within the deep pit feature represents generally unstratified deposits from across the site, which includes charcoal, debitage, artifact fragments, and burnt rock. Floral and faunal remains were essentially absent from the fill (with the exception of one charred bud). From within surface based features several types emerge. The least complex are those which contain high densities of lithics, including flakes and artifact fragments. Features in Units 1A and 9A contain these fills and represent lithic workshop areas. It is interesting to note that both workshops have associated hearths. The second type include those with burnt rock and charcoal deposits as well as chipping debris (units EUS2, 240-2, 5B, 3B), representing fire related activities, in some cases for the preparation/processing of floral and faunal remains.

Floral and Faunal Analysis

As was discussed in the methodology chapter, flotation samples were taken from each unit as well as from within feature fills. Flotation residues were scannend resulting in the collection of materials noted in Table 6-10.

Samples which had potential to be identified further were extracted from the materials listed in Table 6-10 and submitted to

Table 6-10. Flotation Results.

UNIT	SITE	PROVINCIA	NOTES
1A	OT	A/B junction sw corner	control #17R
chipping debris <.5 cm = 73 .5-1 cm = 27 > 1 cm = 5		nut fragments <.5 cm = 1	
2A	OT	A/B junction sw corner	control #19
chipping debris <.5 cm = 1		nut fragments <.5 cm = 1 .5-1 cm = 1	
2B	OT	A/B junction sw corner	control #20R
chipping debris <.5 cm = 1		nut fragments <.5 cm = 1	
3A	OT	A/B junction sw corner	control #21R
chipping debris <.5 cm = 4 .5-1 cm = 1 > 1 cm = 0		bone level 5 .5-1 cm = 1 bone level 7 .5-1 cm = 1 nut fragments <.5 cm = 33 .5-1 cm = 2	
3B	OT	A/B junction sw corner	control #20
chipping debris <.5 cm = 3 > 1 cm = 1			
4A	OT	A/B junction sw corner	control #23R
nut fragments <.5 cm = 1 .5-1 cm = 2			
5A	OT	22-27 cm below surface	control #16
bone fragments <.5 cm = 1			

Table 6-10. (Continued).

UNIT	SITE	PROVINCIA	NOTES
6A	OT	A/B junction sw corner	control #27R
	chipping debris <.5 cm = 7 .5-1 cm = 2 > 1 cm = 1	bone fragments <.5 cm = 7 .5-1 cm = 1 nut fragments <.5 cm = 1 .5-1 cm = 2	
6A	OT	level 3 (15-20)	
	bone fragments > 1 cm = 1		
6A	OT	level 7 (30-35)	
	bone fragments <.5 cm = 1 .5-1 cm = 1		
10A	OT	65-70 cm	#7
	chipping debris <.5 cm = 40 .5-1 cm = 27 > 1 cm = 5		
7A	RL	A/B junction sw corner	#29R
	chipping debris <.5 cm = 30 .5-1 cm = 20 > 1 cm = 14		
8A	RL	A/B junction sw corner	#30R
	chipping debris <.5 cm = 1 > 1 cm = 1		

Tonya Largy, the project consultant for such analyses. Table 6-11 lists the results of the investigation. Based upon these materials, the following observations were made (from Largy 1986).

The list of medium mammals in eastern North America includes wolf and coyote as well as deer. A small fragment of selected beaver bones might also be the same size as the above specimens.

Two species of hazel nut are native to North America, both of which grow in New England. These are Corylus americana Marsh (American hazel), and Corylus cornuta Marsh (Beaked hazel). The fruit of C. americana ripens from July to October, producing a good crop every 2-3 years and a light crop every 1+ year (U.S. Dept. of Agriculture 1948:151). Both species occupy the same habitat, often growing together. They are "common along roadsides and borders of fields and woods, forming thickets" (Seymour 1969:219).

The nuts are available in late summer and may remain on the shrubs into fall. However, they may be eaten by rodents, larger animals, or some birds even before they are fully mature. To circumvent losing the crop, they can be picked as soon as the edges of the husks begin to turn brown, as early as mid-August (Brinkman 343).

The nutmeats were commonly used for food, while the bark, twigs and branches were used for a variety of purposes, such as homemade brushes and brooms, baskets, drum sticks, medicine and as a setting agent for dyes (Erichsen-Brown 1979:175-177).

There are four species of Carya (Hickory) which are native to

Table 6-11.

PROVENIENCE	IDENTIFICATION
BONE	
Unit 6A, L-3	Medium Mammal shaft fragment
Unit 6A, L-7	Medium Mammal fragment (2 pieces fit together - recent break)
CHARRED NUT SHELLS	
Unit 1A, A/B	1 frag. *Corylus*, sp. hazelnut
Unit 1A, L-6 fea fill	2 frags. *Corylus*, sp. hazelnut 1 frag. *Carya*, sp. hickory
Unit 2A, A/B	1 frag. *Corylus*, sp. hazelnut 1 frag. probably *Corylus*, sp. hazelnut
Unit 6A, A/B	3 frags. *Corylus*, sp. hazelnut
SEEDS AND OTHER MATERIALS	
5A, 22-27 cm	2 *Acalypha* (uncharred)
10A, L 15-16	1 charred bud
off site control flot	7 nodules
Red Leaf, L-7	1 unid. uncharred 1 unid. charred frag.

New England. These are C. cordiformis (Wangenh.), K. Koch, bitternut, pignut, swamp hickory; C. glabra (Mill.), Sweet, pignut; C. ovata (Mill.), K. Koch, shagbark hickory; and C. tomentosa Nutt., mockernut hickory. Of these, the most highly prized for nutmeats is the shagbark hickory. Mockernut may also be eaten. The remaining two species are bitter tasting and have less economic value.

Shagbark hickory grows best in dry, upland slopes, well-drained soils of lowlands and valleys. Mockernut hickory is generally found on ridges, hills, slopes and river valleys. The nuts of all species of hickory generally are available in September to October.

The three uncharred seeds shown on Table 6-11 are most likely modern intrusives. Acalphya, sp. is commonly called copperleaf or 3-seeded Mercury. It is found in old fields, waste places, and roadsides. It has no known economic uses for man. The one unidentified seed is most certainly a modern intrusive. Note the very shiny coat. It resembles the genus of Chenopodium sp., but has an uncharacteristic sculpturing pattern on both surfaces. For this reason, I hesitate to identify it as such.

Seasonality

Assuming that the carbonized nutshell was deposited on the Oak Terrace site by the inhabitants during the time of occupation, the season of occupation appears to be late summer to fall. Even though the carbonized bud has not been identified as to species,

its presence may also indicate a fall or later occupation. Buds are formed and remain dormant on their stems through winter. It probably had no economic use, such as emergency food, due to its small size.

CHAPTER VII

DEPOSITIONAL HISTORY AND INTERPRETATIONS

Occupation and utilization of the Oak Terrace/Red Leaf area along the Neponset began in the Middle Archaic period. The first dated deposit occurred about 5,100 years ago. The initial utilization(s) of the site reflect collection and storage activities. During early use a large pit feature was constructed and foods were processed and stored. It is possible that lithic quarry blanks were also cached at this time. Lithic manufacturing activities however were generally restricted to low density manufacture and maintenance.

Groups utilizing lithic technologies associated with those of Middle Archaic deposits elsewhere continued the utilization of the Oak Terrace area well into the Late Archaic. That is to say groups making and using Neville points occupied the site as late as 3,400 years ago. This observation is not unique to the Oak Terrace deposits, however (Thorbahn 1982; Hoffman 1983). While groups which occupied the site following initial deposits were concentrating activities on lithic production, the collection and utilization of floral resources is indicated by nut fragments (hickory, hazelnut) within workshop hearths. During this period, represented by as many as three depositional events, groups returning from quarry areas within a 10 km radius proceeded to manufacture Neville projectile points. The first of these

utilizations is represented by the reuse of a storage pit as a refuse dump, containing materials dating to 3,900 years ago. The most extensive lithic workshop on the site, located in Excavation Unit 1A was created about 3,600 years ago when quarry and flake blanks were carried onto the site and points were made. This depositional event is also represented within the refuse pit. A similar deposition occurred around 3,200 years ago when a second workshop was created in the area of Excavation Unit 9A. In this locus of activity a limited amount of talus quarrying took place sometime after the workshop was created. The object of the quarrying was glacial felsitic cobbles.

Use of the area following Middle Archaic deposits and preceding the Terminal Late Archaic period was minimal and is reflected by scattered artifacts without apparent concentrations. Included in this category are isolated Brewerton, and occasional Small Stemmed and Squibnocket point types. As has been discussed in previous sections the cultural affiliation of the Small Stemmed points is problematical. All that can be said of the Late Archaic utilizations of Oak Terrace is that a presence is represented. Little can be said of activities which took place during this time period. The isolated artifacts could be said to have resulted from occasional hunting activities along the river.

During the Terminal Late Archaic a single depositional event created the Red Leaf site on a small bluff in close proximity to the Oak Terrace deposits. Here individuals associated with the Susquehanna Tradition centered their activity around a single

hearth. Biface manufacture took place utilizing felsites, quartzite, rhyolite and small amounts of argillite.

Utilization during the Woodland period is represented by deposits in the extreme northern boundaries of the Oak Terrace site. While rechanneling of the Neponset has apparently cut into this area, some elements of the Woodland component remain. Unlike earlier cultural groups Woodland occupants had a preference for hornfels as a lithic raw material. The quarrying of this material took place to the north of the site area, within the present day Blue Hills Reservation. While some lithic manufacturing is indicated the component primarily reflects a campsite where food collection and processing had taken place.

Interpretations

Previous chapters and sections of this thesis have presented descriptions and analyses of the different classes of archaeological data encountered within the Oak Terrace and Red Leaf sites. The major points discussed can be summarized as follows.

(1) The northern Stone Ridge project area, adjacent to the Neponset River, contains two prehistoric sites. These are the Oak Terrace, which contains Middle Archaic, Late Archaic and Woodland components and Red Leaf, which contains a single, Terminal Late Archaic component.

(2) Depositions on the sites were produced by groups of people who utilized the sites for short periods of time.

(3) Radiocarbon dates from within "Middle Archaic" contexts range from 5,110 $\pm$ 100 to 3,430 $\pm$ 200, representing dates which are later than had been expected, but in the light of recent research (Hoffman 1980:49) are considered valid.

(4) Different Middle Archaic activities took place within the Oak Terrace site, including food processing and storage as well as lithic workshop activity.

(5) While Middle Archaic components are predominant, Late Archaic and Woodland utilizations are represented. These deposits reflect activities which differed from Middle Archaic ones, indicating different land use through the history of occupancy.

(6) Site activities included stone tool making, materials storage and constructing fires for heat, light or cooking.

We can now consider these observations in the light of land use models that were introduced in Chapter III. The model Binford (1980, 1982) has constructed will be utilized to address the five key factors of human and environmental interrelationships. These are: density and distribution of populations and resources; forms of social organization; resource procurement technologies; and environmental change. Binford's model makes certain assumptions about what different site types will look like archaeologically. Collecting groups, for example, will have fewer residential moves than foragers and will include more seasonal storage sites within the total inventory.

In that site types are directly related to logistical procurement strategies, a wider range of types will result from a collecting (as opposed to a foraging) strategy. In addition to residential bases and location types, Binford (1980) includes three other site types created by collecting groups. Field camps are temporary operational centers where a group maintains itself while procuring resources away from the residential base. Stations are sites where task groups situate themselves when gathering

information as in the case of observing animal movements. Caches are temporary field storage places where bulk resources, gathered by task groups, are kept. The utilization of any one area may reflect one or more of these kinds of deposits. That is to say that at any one place one or more of the activities reflected in the site types above can take place. Therefore, the archaeological record increases in complexity as a site area is utilized differentially.

Considering the five site types and their associated activities separately, the archaeological record for groups employing collecting strategies would appear in the following form:

(1) Residential Base

Contents: high variety and density; may reflect all economic and sociocultural group activities; residential structures; storage facilities; high archaeological visibility.

(2) Location

Contents: low variety and density; reflective of specific extractive activity; low archaeological visibility unless utilized repeatedly.

(3) Field Camp

Contents: variable density and variety depending on length of occupation; will reflect some task group maintenance activities (daily activity to support the task group) as well as activities which support the larger group (storage pits); variable visibility depending on duration of stay and repetition of occupancy.

(4) Field Station

Contents: low variety and density; activities on these sites do not generate materials; very low archaeological visibility.

(5) Cache

Contents: low variety, variable density depending on the amount of the resource procured and stored; variable visibility depending on the nature of the procured resource, amount procured and repetition of utilization.

Considering these site types and examining the archaeological record of the Oak Terrace and Red Leaf deposits we can address the five key factors of human and environmental interrelationships outlined earlier.

My interpretation of depositional sequence, supported by lithic and feature analysis provided indications of group size and number of occupations of the area. Additionally, these analyses provide lines of evidence for density and diversity of activities reflected in the variety of artifacts and features. Carbon dates, diagnostic artifacts and material differences across the deposits indicate that utilizations occurred through a 4,000 year period. Pollen analysis indicates that ecological zones were stable throughout all periods of occupation (Chapter V).

The Middle Archaic utilization of the site can be viewed in two ways. The first way is to consider individual depositional events, as represented by carbon dated features. From this perspective the initial deposits would fall within the cache site type. The deep storage pit and the cache of felsite blanks are both features which indicate an intended return to the site. While the resources stored within this deposit could be utilized by a relatively large group of individuals they were probably constructed by a small group. This deposit then, reflects the

activity of a task group who were members of a larger system operating within the Neponset drainage. The technology of this group included knowledge of the area's floral and lithic resources, quarrying blanks at local source areas and utilizing manufacturing processes similar to those practiced throughout central and southern New England.

The second and third depositions, created by groups utilizing Middle Archaic technologies, were lithic related. During these occupations the primary site activity was the manufacture of projectile points from blanks which had been quarried from nearby felsite source areas. Secondary activity during these workshop utilizations include the use of surface based fires, probably for the preparation of food. The foods processed on the site during these episodes of occupancy were to support the task group members, not for later use by the larger group. Rather than store goods for later consumption, the task groups utilized the older storage pit for refuse disposal. These utilizations represent field camp type sites.

If we choose to consider the Middle Archaic deposits collectively (i.e., considering the variability of range within radiocarbon dates a result of post depositional or natural processes) a field camp site is indicated, with both daily activity (workshops) and larger group support activity (storage, cache) represented. Regardless of how we choose to scale our chronological observation within the Middle Archaic deposits we come to the conclusion that all activities were carried out in

support of the larger group. Secondly, the deposits were created by short duration visitations.

The Middle Archaic utilization(s) of Oak Terrace provides limited insights into the nature of social organization. Task specific groups utilizing the site for a limited range of activities and for short durations may be a "signature" of some degree of specialization. This may be especially true in the case of lithic procurement and projectile point manufacturing.

Sporadic land use of this section of the Neponset during the Late Archaic is suggested by period diagnostic artifacts. There is no significant clustering of artifacts and no features can be attributed to Laurentian or Squibnocket complex utilizations. The presence of artifacts diagnostic of these groups may suggest utilization of the area as a field station type site during this epoch.

A Terminal Late Archaic visitation created the single component Red Leaf site. Located upon a slight knoll and generally concentrated around a hearth feature, individuals built a fire for heat, light or to prepare a meal. Low densities of chipping debris and biface fragments were left around the feature as the refuse of later stage tool manufacture and maintenance. Rather than situate themselves upon the lower and more level ground of the Oak Terrace site these inhabitants chose the visual vantage point of higher ground overlooking the Neponset. The site is considered to represent either a location type where expeditious, task group

supportive activity took place or a station type where secondary activity included preparation of a hearth and some tool making. Considering the visual vantage point of the site the later interpretation is more likely correct.

The Woodland (probably Middle Woodland) Oak Terrace component is believed to represent the remnants of a field camp where a few individuals were engaged in processing floral and (hazelnut) faunal resources (probably deer as suggested by faunal analysis), perhaps for the larger group. Lithic activity included biface manufacturing with locally obtained hornfels. In that this section along the Neponset has been impacted in the recent past (rechanneling), interpretations about the nature of this utilization are difficult. It is unlikely however that a residential base could have existed in such close proximity to the remainder of the site and not manifest itself more distinctively. Results of floral and faunal analysis suggest a fall season of occupation during this final prehistoric depositional episode.

CHAPTER VIII

SUMMARY AND CONCLUSIONS

Excavations at the Oak Terrace and Red Leaf sites within the Stone Ridge Development area in Norwood have successfully recovered archaeological data from prehistoric deposits representing four thousand years of human activity along the Neponset. The data generated by the investigation of "Middle Archaic workshops" and features as well as later utilizations of the area will provide a comparative data base, permitting quantitative analysis for other sites in the region. It has been my intent to describe and interpret human behavior which is reflected in material remains. In the best of circumstances this presents an incomplete picture. Constraints on time, sample size and fragile nature of the resource combine to complicate the task. Nonetheless, as more sites are identified and empirically documented our understanding increases. Expanding data bases and continuing refinement of methodologies in combination with increasing reliance on other disciplines (computer, palynology, geology) enable us to approach each new find with refined insights. These insights are often in the form of questions rather than answers.

The excavations at Oak Terrace and Red Leaf have produced fuel for the generation of questions concerning both specific analytical applications and general regional questions for future researchers to consider. The analysis of debitage from across the

site(s) raises the question of identifiable "signatures" for discrete workshop areas. While the sample size is restrictively small, results indicate that a similar approach within other, comparable contexts is warranted. The identification of stages of reduction for a specific artifact type (and resulting debitage) could have comparative value for sites lacking diagnostics. On a regional level, questions have been raised about the cultural affiliations and/or the chronological homeostasus of the Neville projectile point. The radiocarbon dates obtained from features in direct association with this artifact type indicates its utilization well into what has been recognized as the Late Archaic period. Traditionally, the Neville point has been assumed to represent Middle Archaic dates. Indeed, in several past instances where Late Archaic dates have been found in association with Neville points those dates were considered erroneous (Starbuck 1982; Leveillee and Gallagher 1985). With the increasing evidence for later dates being valid (Hoffman 1983), it becomes obvious that we need to rethink the implications of the Neville point, as a reliable diagnostic artifact.

Perhaps the most telling conclusion of the study is the intense utilization of the site area. While I am able to pinpoint as many as six different occupations at the site our resolution techniques are at best on the scale of centuries. Without question the Middle Neponset drainage has been utilized heavily since man first came into New England. Much of the archaeological record of that utilization remains beneath the surface. The proximity of

this archaeologically sensitive area to large cities, major transportation routes and potential development properties places prehistoric resources in jeopardy. In today's dynamic world development is a necessary and positive reality. In the case of the Stone Ridge Development a concern for the past as well as the future resulted in the documentation of the Oak Terrace and Red Leaf sites.

CHAPTER IX

APPLICATIONS FOR THE CLASSROOM QUESTIONS, MATERIALS AND ACTIVITIES

Having presented a body of archaeological data we must now consider the utilization of that data within the classroom setting. A wide range of topics and ideas have been introduced in the preceding chapters. This concluding section will consist of guidelines for the generalization of archaeological research methods and results in classroom topics and exercises. This section of the thesis will consider preceding chapters' contents with regard to possible areas of focus within archaeological study. A series of suggested questions, materials and activities will be provided. followed by issues and ideas introduced.

Chapter I
Questions

The introductory chapter outlined a brief history of the archaeological investigations within an area of proposed development. The followiwng questions relate to the various stages of research that took place in the construction area.

(1) What are modern, New England archaeologists studying?

(2) Why were archaeologists studying this particular area?

(3) What were the archaeologists looking for?

(4) How do the archaeologists know where to look?

(5) What laws protect archaeological sites?

(6) What if I were to discover a site? Who would I contact?

Materials

The different stages of phases of archaeological investigation referred to in Chapter I as well as their objectives can be summarized in the following outline form:

Phase I--Reconnaissance Level Survey

OBJECTIVE: To identify areas that may contain sites.

METHODS: Background studies of histories, maps, informant interviews with local collectors, study soils, hydrology and general environmental characteristics of the project area. Walk over the project area to look for surface indications of sites and to identify zones that seem like possible site location areas.

Phase II--Intensive Level Survey

OBJECTIVE: To locate a representative sample of sites within a project area.

METHODS: Background research as in a Reconnaissance Survey as well as subsurface testing of sensitive areas (places which are considered likely to be site areas).

Site Examination

OBJECTIVE: Once a site area has been located it is necessary to conduct excavations to determine the size, age, internal content and overall condition of the deposits. It is also necessary to collect enough information to consider the potential significance of the site in relation to others in the region.

METHODS: Extensive background studies on known sites in the region. Excavation of a sample of the site to collect artifacts and note features within the site.

Data Recovery Program

OBJECTIVE: To scientifically recover an adequate sample of the archaeological record within the site prior to its destruction.

METHODS: Large-scale excavations and in-depth study of all aspects of the site. The body of this thesis is indicative of the levels of research conducted during a data recovery program.

A Brief Explanation of Significance

Chapter I also discusses the concept of Significance. Within an archaeological context, significance refers to several aspects of the site and the consideration of the deposits in the light of the combination of those aspects. Significance refers to the condition, contents, age and uniqueness of the site in relation to other sites in the region and the potential of the site to add knowledge to what we know about the prehistoric past. We refer to the degree of disturbance on a site as its integrity. If the ground has been bulldozed or gravelled out any archaeological deposits it contains would be altered severely making the site's integrity poor. In other cases, where a field has been plowed for example, the materials would be altered but not completely destroyed so we might consider the integrity fair or good. If a site's integrity is not altered severely and if the site has the potential to add to the existing archaeological data base it is

significant. The National Register of Historic Places is maintained by the Department of the Interior and sites that are significant can be nominated to be included.

The following materials are excerpted from documents available through the Massachusetts, Connecticut and Rhode Island Historic Preservation Commissions.

FEDERAL LEGISLATIVE HISTORY

(as outlined by the Connecticut Historic Commission)

Antiquities Act of 1906 (P.L. 59-209)

In general, the Antiquities Act of 1906 provides for the protection of historic and prehistoric resources located on federal lands. Further, it authorizes the scientific examination of archaeological sites on federal lands by means of the controlled issuance of excavation permits. Conversely, the 1906 Act establishes criminal sanctions for the unauthorized destruction or appropriation of antiquities from federal lands. In summary, the Antiquities Act of 1906 serves to establish the principle that the federal government, acting on behalf of the American people, not only should protect archaeological and historical resources, but also should maintain an actively responsive program for the continued preservation and public availability of the nation's cultural heritage.

Historic Sites Act of 1935 (P.L. 74-292)

Congress strengthened the federal preservation policy with respect to cultural resources, as well as mandating the authority of the National Park Service as the lead agency for federal preservation efforts, through its enactment of the Historic Sites Act of 1935. The Act declares a national policy "to preserve for public use historic sites, buildings, and objects of national significance for the inspiration and benefit of the people of the United States." This legislation reflects Congress' recognition that the adequate identification and protection of the nation's heritage could be accomplished only by uniting the efforts of the federal government with those of state and local governments, preservation organizations, and concerned citizens. The National Park Service was authorized to conduct surveys and to study historic and archaeological sites in cooperation with interagency, intergovernmental and interdisciplinary preservation efforts. The Historic Sites Act of 1935 further authorized National Park Service administration of three new federal programs: the Historic American Buildings Survey (HABS), the Historic American Engineering Record (HAER), and the National Survey of Historic Sites and Buildings (the latter sites are now known as National Historic Landmarks). In addition, the 1935 Act continued the National Park Service's archaeological research program with respect to federal properties.

Reservoir Salvage Act of 1960 (P.L. 86-523)

The Reservoir Salvage Act provides for the recovery and preservation of significant historical and archaeological data "which otherwise might be irreparably lost or destroyed" by flooding or construction activities associated with federally funded or licensed dam or reservoir construction projects. In such cases, the Act authorizes the Secretary of the Interior to initiate archaeological surveys and to recover and preserve historical and archaeological data by means of either the direct actions of the National Park Service or the establishment of cooperative agreements with qualified consultants for the undertaking of a professional, scientific data recovery program.

National Historic Preservation Act of 1966
(P.L. 89-665; 80 State 915, 16 USC 470 as amended)

The pivotal preservation legislation with respect to cultural resource protection is the National Historic Preservation Act of 1966. This Act, which establishes a broad policy of historic preservation, including the active encouragement of state and local efforts, came about as the result of the federal government's acknowledgement of the inadequacies of the pre-1966 preservation program in the face of an ever-increasing extension of state and federal construction projects. The Act serves to define historic preservation as "the protection, rehabilitation, restoration and reconstruction of districts, sites, buildings, structures and objects significant in American history, architecture, archaeology or culture."

Several sections of this Act require detailed discussion. First, Section 101 directs the Secretary of the Interior to expand and maintain a National Register of Historic Places which will include cultural resources of state and local as well as national significance in order to ensure future generations an opportunity to appreciate and enjoy the nation's heritage. The National Register criteria are as follows:

The quality of significance in American history, architecture, archaeology and culture is present in districts, sites, buildings, structures and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association, and:

A. that are associated with events that have made a significant contribution to the broad patterns of our history; or

B. that are associated with the lives of persons significant in our past; or

C. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack indivitiual entity whose components may lack individual distinction; or

D. that have yielded, or may be likely to yield, information important in prehistory or history.

Section 101 also establishes a State Historic Preservation Office within each state and territory which functions as the liaison agency between the federal and state governments with respect to both general preservation programs and the coordination of cultural resource review planning for specific projects. In

Connecticut, the Connecticut Historical Commission is the State Historic Preservation Office and the Director of the Commission serves as the State Historic Preservation Officer. Specific State Historic Preservation Office staff and preservation plan requirements are stipulated by federal regulations (36 CFR 60, The National Register of Historic Places). Currently, minimal staff requirements mandate that the State Historic Preservation Office consist of professionals from the disciplines of history, architectural history, archaeology and architecture. The State Historic Preservation Officer and the professional staff implement all federal and state historic preservation programs within Connecticut. Responsibilities of the State Historic Preservation Office include, among others, administration of the National Register of Historic Places program, the undertaking of a comprehensive statewide cultural resource survey, and the professional cultural resource review of all federally funded, assisted, or licensed projects within Connecticut.

Section 101 further establishes a Matching Grant-In-Aid Program to the states with respect to the preservation and rehabilitation of cultural resources listed in or eligible for the National Register of Historic Places. The Connecticut State Historic Preservation Office has actively encouraged and supported, via the matching grant program, the initiation of architectural and archaeological surveys by local communities and professional organizations.

Section 106 of the National Historic Preservation Act instructs every federal agency having direct or indirect jurisdiction over a proposed federal, federally assisted, or licensed undertaking to "take into account the effect of the undertaking on any district, site, building, structure or object that is included in or eligible for inclusion in the National Register." In addition, the federal agency "shall afford the Advisory Council on Historic Preservation an opportunity to comment with regard to such undertaking." In turn, the Advisory Council has developed Regulations 36 CFR 800, Protection of Historic and Cultural Properties, which outline the procedural process to be undertaken by federal agencies or their representatives in order to comply with Section 106. Together, Section 106 and Advisory Council Regulations 36 CFR 800 establish a mechanism for the professional review of cultural resources which are either listed in or eligible for the National Register during the active planning phase for all federally funded, assisted, or licensed undertakings.

Section 201 establishes the Advisory Council on Historic Preservation, while 1976 amendments to the National Historic Preservation Act change the administrative status of the Advisory Council from that of a subprogram of the Department of the Interior to that of an independent federal agency.

National Environmental Policy Act of 1969 (P.L. 91-190)

This Act declares a national policy to "encourage production and enjoyable harmony between man and his environment . . . and to

enrich the understanding of the ecological systems and natural resources important to the Nation." The National Environmental Policy Act mandates the systematic assessment of both natural and cultural resources in federal project planning. This legislation is generally recognized by its major requirement that federal agencies prepare a detailed Environmental Impact Statement for major federal actions which significantly affect the quality of the human environment. Preparation of an Environmental Impact Statement must explicity assess the undertaking's potential direct and indirect effect upon cultural resources as an integral part of the review process.

Executive Order 11593: Protection and Enhancement of the Cultural Environment

Issued in May 1971, this Executive Order instructs all federal agencies to provide leadership in preserving, restoring and maintaining the historic and cultural environment. This executive action further mandates that federal agencies locate, inventory, and nominate all cultural resources under their jurisdiction or control that appear to qualify for the National Register of Historic Places and exercise due caution in any undertaking prior to the completion of such inventories and evaluations. This policy directive has been codified within Section 206 of the National Historic Preservation Act Amendments of 1980.

Archaeological and Historic
Preservation Act of 1974 (P.L. 93-291)

This legislation amends the original Reservoir Salvage Act of 1960 so that appropriate federal actions for the preservation of significant archaeological data will be undertaken with respect to any alteration of the terrain caused as a result of any federally funded, assisted, or licensed undertaking. The Act directs federal agencies to notify the Secretary of the Interior when their activities may cause irreparable loss or destruction of significant scientific, prehistoric, historic, or archaeological data. The Act further authorizes the federal agency or the Secretary of the Interior to expeditiously undertake procedures for the identification, recovery, and preservation of threatened significant data.

1976 Amendment (P.L. 94-458) to
Freedom of Information Act (P.L. 89-665)

Section 101(a)(4) of this legislation provides the Secretary of the Interior with the authority to withhold from public disclosure the specific location of archaeological resources which are listed on the National Register when it is determined "that the disclosure of specific information would create a risk of destruction or harm to such sites or objects." In keeping with the spirit of this amendment, federal agencies are encouraged to carefully evaluate all potential deleterious effect, i.e., vandalism, which might accrue as a result of the publication of archaeological site locational data.

National Historic Preservation Act Amendments of 1980 (P.L. 96-515)

This legislation substantively amends the original 1966 Act in several ways. Of general importance, explicit participation of local governments within both the National Register nomination and the Section 106 processes has been mandated. Additionally, owner consent is required for National Register listing.

Section 106 responsibilities remain unchanged except for minor technical clarifications, such as local governmental participation, programmatic exemption of programs when impacts are negligible, and the imposition of higher review standards for federal actions which might affect National Historic Landmarks.

Executive Order 11593 directs that federal agencies inventory all eligible properties within their jurisdiction and exercise caution until the completion of such surveys *in toto*. This Act further advocates an increased sensitivity of federal programs towards the obtainment of federal preservation objectives. Lastly, Section 304 reaffirms the principle that federal agencies have discretionary authority to withhold from public disclosures information relating to the character and location of archaeological resources.

MASSACHUSETTS LEGISLATION
STATE: REVIEW OF STATE PROJECTS

The Commonwealth of Massachusetts has extended legislative protection to cultural resources, including archaeological sites and data.

The Massachusetts Environmental Protection Act
(Chapter 781, Acts of 1972)

This act requires public agencies and authorities to evaluate the impact of their project upon the environment. The agencies must determine a project's environmental impact and " . . . use all practicable means and measures to minimize damage to the environment." The regulations of the Executive Office of Environmental Affairs, which oversees the implementation of the Massachusetts Environmental Protection Act, define "significance" of damage in terms of probability of impact and magnitude of impact.

If an archaeological site is going to be destroyed, the magnitude of that impact depends on the value of the archaeological resource. National Register eligibility is as good an indicator as any to assess the value of archaeological properties.

The Massachusetts Historical Commission (MHC) will make the comment that the potential impact on a significant archaeological property justifies publication of an environmental impact report when the MHC can determine that there is a 50% or better chance that a National Register quality property will be impacted.

Chapter 1155, Acts of 1973

Chapter 1155 amends Sections 26 and 27 of Chapter 9 of the General Laws, which established the MHC and the position of State Archaeologist and enumerated their respective duties concerning the preservation of the historical and archaeological resources of the

Commonwealth. Section 27C mandates that any person or institution conducting an archaeological survey or excavation on public land of the Commonwealth must secure a permit from the State Archaeologist. This section also requires that a report of the investigations be submitted to the MHC. Also, the artifacts recovered and records became the property of the Commonwealth and must be properly curated.

CONNECTICUT LEGISLATION

The Connecticut Historical Commission is charged by state statute (Section 10-321 et seq.) with, among other tasks, the identification, investigation, and preservation of Connecticut's historic, architectural, and archaeological resources. Major statutory responsibilities of the Connecticut Historical Commission include the establishment of standards and criteria to guide municipalities in the establishment of local historic districts, the administration of the Department of the Interior's National Register of Historic Places programs, and the administration of the State Register of Historic Places. The State Register is the official listing of those sites important to the historical development of the state and uses the same criteria for listing as the National Register. Designation is conferred in one of the following three ways: a site is proposed as an individual listing by resolution of the Connecticut Historical Commission; a site is included in a proposed local historic district; or a site is nominated for listing in the National Register. Connecticut State

Statutes, Section 10-321(d), provides the Historical Commission with the discretionary authority to withhold archaeological site location information where public knowledge might endanger the site's preservation.

The Director of the Connecticut Historical Commission serves as the State Historic Preservation Officer in carrying out the responsibilities of the National Register program. In compliance with federal regulations, the State Historic Preservation Office consists of professionals from the disciplines of history, architectural history, architecture and archaeology. The State Historic Preservation Office implements its National Register responsibilities by means of a program of historical, architectural, and archaeological research and survey; the study and nomination of cultural resources to the National Register; and the administration of the Historic Preservation Fund grants-in-aid program.

Regulations (Section 22a-1a-1 et seq.) were promulgated in November 1978 for the implementation of the Connecticut Environmental Policy Act. Section 22a-1a-3-(a)(4) of these regulations specifies that considerations of environmental significance shall include an evaluation concerning the "disruption or alteration" of a historic, architectural, or archaeological resource or its setting.

Connecticut Public Act 81-177 amended the Connecticut Environmental Policy Act in the following two ways: (1) cultural

resources are explicitly identified as important project-planning factors for state-sponsored undertakings, and (2) the Connecticut Historical Commission is identified as a mandated review agency. Therefore, state agencies should include cultural resource information as an integral component in the preparation of environmental impact evaluations. State agencies should request as early as possible the comments of the Connecticut Historical Commission with respect to both the identification of significant cultural resources and the nature of any potential effect which might occur as a result of a state-sponsored undertaking.

RHODE ISLAND LEGISLATION
January 1974

Rhode Island 74-H 7706

This act increased the membership of the historical preservation commission from 13 to 15 by adding ex-officio the chief of statewide planning and the state historic preservation officer. The act further provided for the protection of historic sites on the state register by requiring state and local agencies to obtain the advice of the commission before undertaking funding or licensing of any activity which might threaten or destroy such a property.

This act also directed the historical preservation commission to survey and catalog all historic buildings, sites and artifacts in state custody. In addition, state departments and agencies would be notified of properties in their possession and advised concerning their care and display.

Rhode Island 74-H 7699

This act provided for the protection of archaeological and underwater archaeological sites owned by the state. The historical preservation commission is designated as the agency responsible for programs relating to the study, excavation and display of objects and for the dissemination of information derived from such sites. An archaeological landmark program is set up in order to provide similar protection for archaeological sites under water ownership with the consent of the owner.

Suggested Exercises - Chapter I

(1) Visit the State Historical Commission

(2) Visit a district or building listed on the National Register of Historic Places

(3) Request a National Register nomination from your State Archaeologist and create a fictitious "significant" site

CHAPTER II

In Chapter II we discussed an outline of prehistoric southern New England. That outline was based on amateur and professional archaeological research in the region over the last four decades. We discussed the development of regional cultural chronologies and associated tool assemblages.

Questions

(1) What things do archaeologists use to "date" a site?

(2) Considering the legislative history discussed in relation to Chapter I, what can you say about the contribution of avocational archaeologists to regional study?

(3) Why is radiocarbon dating an important archaeological research tool?

(4) What was the climate like 12,000 years ago in southern New England?

(5) Why is it important to know what kinds of stone people were making their tools with?

(6) Why don't we know very much about how PaleoIndians lived?

(7) Why are projectile points shaped differently? What can the shape of a tool tell us about how it may have been utilized?

(8) Why has the climate changed in the last 13,000 years?

(9) How many different cultural time periods can we recognize from the archaeological record? Do you think this is an accurate picture? Why? Why not?

Materials

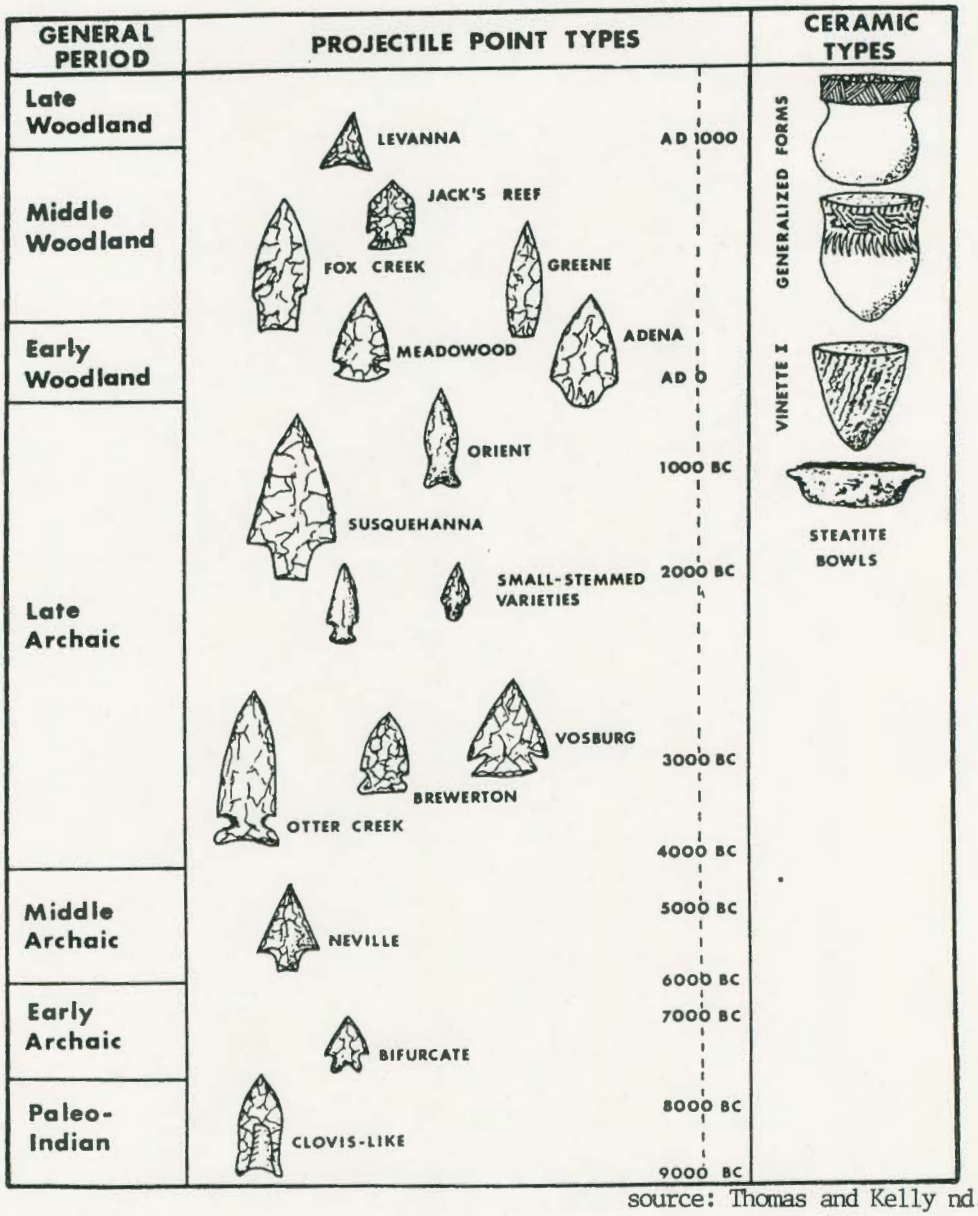
The following table can be used to illustrate the key highlights of the chapter.

General Period	Identified Temporal Subdivisions	Cultural Aspects
PaleoIndian		
12,000-8000 B.P. (10,000-6000 B.C.)	(1) Eastern Clovis (2) Plano	Big-game hunting in small groups with a specialized and uniform lithic technology was the rule for a few, highly mobile groups of small size.
Early Archaic		
9500-7000 B.P. (7500-5000 B.C.)	(1) Bifurcate-Base Point Assemblages	Socioeconomic patterns unnown, but the basic Archaic lithic technology was established. Small, widespread populations were probably practicing diversified hunting and gathering.
Middle Archaic		
8000-4500 B.P. (5500-2500 B.C.)	(1) Neville (2) Stark (3) Merrimack (4) Otter Creek (5) Vosburg	Hunting and gathering, especially within drainage systems. Fishing gear appears and local lithic sources were used. Social organizations probably at band level.

General Period	Identified Temporal Subdivisions	Cultural Aspects
ProtoHistoric and Contact 450- 300 B.P. (1500-1650 A.D.)	(1) Algonquian groups	Groups such as the Wampanoag, and Nipmuck were settled in the area. Political, social and economic organizations were very complex, but collapsed in face of European expansion.

General Period	Identified Temporal Subdivisions	Cultural Aspects
Late Archaic 4500-3000 B.P. (2500-1000 B.C.)	(1) Brewerton (2) Squibnocket (3) Small Stemmed Point Assemblages	Intensive hunting and gathering was the rule over entire region in diverse environments. Shellfish were exploited for first (?) time. Perhaps population and group sizes were at maximum for the Archaic period.
Transitional 3600-2500 B.P. (1600- 500 B.C.)	(1) Atlantic (2) Watertown (3) Coburn (4) Orient	Same economy as the earlier periods, but there may have been groups migrating into New England, or local groups developing technologies strikingly different from those previously used. Trade in soapstone became important. Burial rituals became complex.
Early Woodland 2600-1500 B.P. (600 B.C.-300 A.D.)	(1) Meadowood (2) Lagoon	There was apparent population decline. Sites of this period are rare. Pottery was first (?) made. Little is known of social organization or economy.
Middle Woodland 1650-1000 B.P. (300- 950 A.D.)	(1) Fox Creek	Economy focused on coastal resources. Horticulture may have appeared late in period. Hunting and gathering was still important. Population increased from the previous low in the Early Woodland.
Late Woodland 1000- 450 B.P. (950-1500 A.D.)	(1) Levanna	Horticulture was established by now. Coastal areas seem to be preferred. Large groups sometimes lived in fortified villages and were organized in complicated political alliances. Some groups may still have relied solely on hunting and gathering.

The relationship of diagnostic projectile points to chronological periods can be illustrated in graphic form. The illustration below is intended to demonstrate the dominant point types and general ceramic types along the prehistoric timeline.



source: Thomas and Kelly nd.

Suggested Exercises

(1) Visit the Bronson Museum in Attleboro, Massachusetts. This is the headquarters of the Massachusetts Archaeological Society, containing an excellent collection and display of prehistoric materials.

(2) Provide students with drawings of several projectile points and have them rank them by age. Refer to the chart in the materials section.

(3) Obtain some modern ethnographic films (African hunters and gatherers for example) and have the class consider technological and social aspects which compare and contrast with those reflected in New England's archaeological record.

(4) Obtain films which demonstrate stone tool manufacturing.

(5) Using necessary safety precautions (safety glasses and gloves), attempt to make a stone tool.

CHAPTER III

Chapter III provides us with issues of study which are being focused upon by archaeologists working within a regional framework. We are also introduced to the concepts of land use patterning and subsistence.

Subsistence refers to the ways in which cultural groups, or societies acquire food and consumable resources. In hunter and gatherer societies, agriculture is not practiced and the domestication of animals is limited. The dominant determinants of a successful subsistence strategy are the natural environment and the technology of the society. To study the prehistoric hunters and gatherers of New England we must be able to reconstruct both the paleoenvironment and the technologies reflected within the sites we study. This is why there is such an emphasis on pollen

study as well as the study of stone tools and workshop areas within the body of the thesis.

Questions

(1) In that the environment of New England has changed since the retreat of the glaciers some 14,000 years ago how would this effect subsistence strategies through time?

(2) If the environments changed did the technologies also change?

(3) What elements or artifacts on a site reflect technology?

(4) Do the changes in projectile point styles through time reflect changes in the technologies? What other artifacts or tools would reflect changes?

(5) How is our society like those of prehistoric New England? How is it different? How do we get food? How far do you travel from your house to get food? What kinds of food that prehistoric people ate do you eat? Does your father or mother do the shopping or does your whole family go for food? How would your life be different if you did not buy food but hunted?

Settlement pattern refers to the ways in which a society plans living space. Where they live in respect to food sources, other human groups, ceremonial places and so on. Some groups, as in the case of hunters and gatherers, may choose to move their villages and camps to different resources during different times of the year.

(6) If you were living in the prehistoric past when would you hunt deer? When would you collect nuts? When would be the easiest time to collect shell fish? When would you hunt geese and ducks? Do you think you would have to camp at different locations to find these things?

(7) What are the different material remains we could find on a site that would tell us something about what people were hunting and collecting and during what times of the year?

Materials

Reference can be made to specific sections within Chapter III. It would also be useful to refer to the chronological and cultural sequences presented in Chapter II.

Exercises

(1) Obtain films which discuss correlations between the environment and man.

(2) Compare and contrast prehistoric and modern interaction with the environment. Have students consider what perceptions of the environment prehistoric groups may have had, based upon the archaeological record. Was prehistoric man controlled by his environment to a greater or lesser degree than we are? What effect did prehistoric groups have upon their environment?

CHAPTER IV

Questions

Chapter IV is a consideration of the methods of collecting and analyzing archaeological data. The archaeologists chose to excavate the site in a random pairs strategy, placing one pit judgementally and then a second randomly from the first. Why do you think they chose to do that? How did the landscape effect the placement of excavation units?

Why do you think each excavation unit was dug in 5 centimeter levels?

Materials and Exercises

Within the classroom setting the concepts of excavation methods and interpretation can be addressed most successfully through experience. With few materials a "sand box excavation" can

accomplish this. The materials needed include a suitable box (plastic shoe box) for the dig, some sand and gravel, two or more types of colored sand and a variety of artifacts. These artifacts can be fragments of ordinary materials (i.e., brick, ceramics, bone, etc.) or small scale miniatures, available in hobby shops. Depending on the level of the class a wide range of "sites" can be created. For introductory lessons and lower grades a historic site is recommended. Before the class begins the teacher creates the site by layering the colored "soils" and placing the artifacts within each layer. The complexity of the stratigraphy as well as the relationship of artifacts can vary in relation to the group and lesson. Once the sites are ready for investigation, the students working either in groups or individually, armed with spoons, begin their digs. They recover and record their findings then must interpret their results. Each layer can, for example, contain artifacts from different rooms, or can consist of activity related items (tools, cooking, toys, etc.). This exercise is ideal in that it can introduce complex concepts in an exciting yet flexible way. Most important perhaps is that while the students certainly enjoy themselves they can learn that the goals of archaeology go beyond the thrill of discovery. That the recording and interpretation of the material record is the true objective. Furthermore, it should be noted that "sand box archaeology" exercises do not threaten actual sites. It is not advisable to consider actual excavations within a suspected or known site area. The flexibility and

convenience of simulated exercises provide the best opportunity for generalizing archaeological concepts. The complexities and range of concerns that need to be considered on actual sites are best addressed by qualified researchers in the field.

CHAPTER V

Chapter V describes the environmental setting of the prehistoric sites. Among the most important environmental aspects of the site was the proximity to a freshwater source. Also important was the discussion of local felsite, a type of rock that was used for tool making during the prehistoric era.

Questions

(1) Why were rivers and lakes important to prehistoric groups?

(2) Was a water source important to later, European settlers? How would that effect prehistoric sites?

(3) Why were some types of rock preferred for stone tool making?

(4) What kinds of economic decisions did prehistoric people have to make?

Materials and Exercises

We know from our regional studies that rivers and lakes were important to prehistoric populations. They served as transportation routes as well as providing a variety of resources. An appropriate exercise for addressing site locations and environmental variables is to show a class a United States map and discuss with them the locations of major cities in relation to

oceans, bays, rivers and mountains. Have the students discuss how the landscape may have correlations with a city's growth and development.

More complex issues such as trade routes, transportation routes and the distribution of goods between cities can also be introduced. These issues have correlations with prehistoric sites and a similar exercise could be done with local topographic maps showing different target resources. Have the students choose the most ideal settings for winter camps, fishing areas, lithic sources, travel routes, etc. This exercise can be further complicated and applied to the archaeological record by looking at the same landscape through time with a changing environment.

CHAPTER VI

In Chapter VI we discussed the artifacts and other materials within the sites, with particular detail to the description of artifacts, debitage and features.

Questions

(1) Why do archaeologists pay so much attention to the artifacts on a site?

(2) What can features tell us about the people who created them?

(3) In Chapter VI, how did the features differ from one another? In content? In depth? In age?

(4) How does the single feature on the Red Leaf site compare to those on the nearby Oak Terrace site? In age? In function?

Materials and Exercises

Use the many tables and illustrations in Chapter VI to consider the study of specific artifacts as they reflect technology and features as they reflect activities. On the Oak Terrace site we found not only the finished projectile points but also the workshops where they were made. This is an important find. It is analogous to studying fine chairs. We know of many places where chairs and other furniture are found but if you go to where a chair is made you will find not only chairs but the tools that made them. You will also find wood chips, boards, and chairs that have been started but are not finished yet. By studying these things in the chair making shop we can learn a great deal about furniture making technologies. The same can be said of the prehistoric stone tool workshop on the Oak Terrace site.

Features tell us about the activities on a site. They also contain clues about what foods were used and how they were stored, cooked and discarded. An interesting exercise in the study of features is to collect waste paper baskets from a variety of rooms in your school. Have students examine the content of each to interpret what kind of subject or activity is reflected and how contents compare and contrast across the baskets.

Considering the school and classroom a site or group of sites will enable the introduction of a wide range of archaeological concepts. These can range from the fine scale study of pencil and pen typologies and wear analysis to desk arrangements and differential functions of room space. Our society has countless

artifacts we can use in the classroom. What will archaeologists of the future study to learn about us? As we study 9,000 year old projectile points to understand PaleoIndian cultures we can only wonder if our culture will be represented by unbreakable combs and Big Mac containers.

Chapters VII and VIII of the thesis consist of the author's interpretations of the archaeological record. Theses chapters should be viewed critically by the student. After reading the chapters the author's interpretations can be examined in the light of data presented in previous sections of the thesis.

Questions

(1) How many times was the site area utilized by prehistoric groups?

(2) What was the main activity reflected in the archaeological record?

(3) Was the site used differently during different time periods?

(4) Where were there discrepancies between diagnostic projectile point styles and radiocarbon dates? What implications does this have for all diagnostic tool types? What does this say about the nature of archaeological research? Is it still developing?

(5) Looking at the data, do you agree with the author's interpretation?

(6) In that only 1% of the site area was excavated, is there too much room for error?

Activities

Using the data in previous chapters, formulate alternative explanations and interpretation of how the sites may have been created and what the dominant activities were.

The primary concern of archaeologists today is the recovery and interpretation of the material record of the past. Additionally there is a growing awareness that conservation and preservation is vital to our discipline. It is the contention of this thesis that research conducted by today's archaeologists can be utilized in directing and guiding students toward an appreciation of our non-renewable cultural resources.

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APPENDICES

Appendix I:

A Glossary of Terms

GLOSSARY

A Soils
Soils which contain organic materials, loams for example.

Altithermal - Climate
Warm, dry conditions during the Archaic periods, about 7,000 to 3,000 years ago.

Anadromous Fish
Fish which ascend rivers to spawn.

Archaeological Significance
A site with good integrity and the potential to address research questions on a local, regional or national level.

Argillite
A shale ranging from blue-green to green to black.

Avocational
A non professional; one who does something without being paid.

Artifact
An object made or modified by human hands.

B Soils
Soil which lies below organic soils that consists of sands and inorganic materials.

Biface
A flaked piece of stone with two condex surfaces and a sinuous edge.

Bifurcate-Based
A distinctive projectile point style diagnostic of the Early Archaic period, ca. 8,500 to 7,000 years ago.

C Soils
Sterile parent material, such as gravel, clay or rocks.

Cache
Temporary field storage location.

Chert
A granular cryptocrystalline silica. A rock of similar composition to Old World flint.

Component
One part which is separate from others. On a site it refers to a part of the site that can be attributed to a definite cultural group.

Contact Period
The era when Native American and European cultures came into contact, ca. 450 to 300 years before the present.

Core
A nodule of stone suitable for flake removal--a piece of stone with two or more flakes removed, the flakes being the desired objects.

Cortex
The outside surface remnant on stone debitage or tools.

Cyroturbation
Soil disturbance through freezing and thawing.

Data Recovery Program
An archaeological investigation which is designed to scientifically address and document a site. This is the highest level of excavation and analysis.

Debitage
The waste material resulting when stone tools are made.

Depositional Event
The activities of a group during their occupation of an area. That which creates a site.

Early Archaic
The prehistoric era from ca. 9,500 to 7,000 years before the present.

Early Woodland Period
The prehistoric era from ca. 2,600 to 1,500 years before the present.

Feature
A visual, discrete deposition produced by a site's inhabitants in the course of an activity.

Felsite
Light colored fine grained, tiny crystalline igneous rocks.

Field Camp (site type)
Temporary operational center where a group maintains itself while procuring resources away from the residential base camp.

Flake Blanks
A stone flake in the early stages of tool manufacture.

Flotation
The process of suspending soil samples in water to separate organic samples. The organic samples are then studied.

Hornfels
A lithic formed by metamorphic action. It is fine grained and was a lithic of choice for prehistoric tool makers. It weathers to a rusty color.

Horticulture
The practice of planting and maintaining crops without the use of a plow.

Hunters and Gatherers
Groups not employing agriculture but who depend on hunting and collecting foods.

Integrity
Archaeological integrity refers to the degree of disturbance on a site.

Intensive Survey
An archaeological investigation which is designed to locate site areas within a given project area.

Late Archaic Period
The prehistoric era dating between ca. 4,500 to 3,000 years before the present.

Late Woodland Period
Prehistoric era from ca. 1,000 to 450 years before the present.

Location (type site)
A site reflecting expeditious, task group supportive activities.

Midden
A feature containing refuse from food processing activities, i.e., shell, bone.

Middle Archaic Period
The prehistoric era from ca. 8,000 to 4,500 years before the present.

Middle Woodland Period
Prehistoric era from ca. 1,650 to 1,000 years before the present.

Mitigate (adverse effects)
To compensate for. In archaeology, to save the information which a site contains by scientifically studying it.

Moraine (ground)
Material deposited through glacial activity.

Multicomponent
A site which contains evidence of two or more utilizations, by distinct cultural groups.

National Register of Historic Places
A list maintained by the Department of the Interior of the nationally significant cultural resources of the country.

Paleoenvironment
The climate, animals and plants, and landscape in the prehistoric past.

PaleoIndian Period
The prehistoric era which represents the earliest Native American occupation in New England spanning ca. 12,000 to 8,000 years before the present.

Palynology
The study of pollens.

Percussion Flaking
A tool making technique when an implement is struck against the edge of the tool being made, the object of which is flake removal.

Plagues (1616)
One or more diseases introduced by Europeans in the early 1660s for which the Native Americans had no immunities. Many Indian groups lost 90% of their populations.

Pollen Core
A term referring to the long sample of sediment from which microscopic pollen is collected and studied. Those samples can represent pollen deposited over thousands of years.

Praying Villages
Historic period groups of Native Americans who had adopted Christianity and lived in small settlements.

Prehistoric
The era before written records of a cultural group. In New England, it refers to the time before European contact and settlement.

Pressure Flaking
A tool making technique where an implement is held against the edge of the tool being made and force is applied to detach flakes. This technique is generally done in later stages of manufacture.

Projectile Point
The stone, bone or metal tip of a spear or arrow.

Quartz
A silicate mineral, hard and glassy.

Quartzite
A fine grained metamorphosed sandstone.

Radiocarbon Dating (C-14)
A means of dating the amount/ratio of C14 which is formed in the atmosphere and is circulated throughout living matter. It can date carbon bearing materials up to 50,000 years old.

Reconnaissance Survey
An archaeological investigation which is designed to identify areas where sites may be located within a given project area.

Reduction Sequence
The stages of stone tool manufacture from beginning to finished tool.

Residential Base Camp
The primary, central camp of hunter-gatherers in this site will reflect a wide variety of activities and target resources.

Rockshelter
A site type where a rock overhang served as protection. The activities of the site are focused within the shelter's area.

Seriation (artifact)
In archaeology, the span of use and the variable intensity of occurrence over that span.

Settlement Pattern
The way in which a cultural group disperses itself spatially across a landscape for purposes of residence.

Sherd
A pottery fragment.

Site
A spatially discrete area where human activity has taken place.

Site Examination Program
An archaeological investigation, the purpose of which is to define site limits, determine the cultural affiliation and investigate the nature of activities which took place on the site.

Station (site type)
A site where task groups situate themselves when gathering information.

Striking Platform
That area on a flake where force was applied to detach it from the core or biface.

Subsistence Pattern
The way in which a cultural group disperses itself spatially across a landscape to exploit food and material resources.

Tempering (ceramic)
Material mixed with clay in the manufacture of pottery. In prehistoric ceramics, it is usually sand, shell or occasionally steatite or ground ceramic fragments (grog).

Workshop (lithic)
An area where stone tools were being manufactured.