REPORT

LOWELL NATIONAL HISTORICAL PARK
AND
PRESERVATION DISTRICT

CULTURAL RESOURCES INVENTORY

prepared for

DIVISION OF CULTURAL RESOURCES
NORTH ATLANTIC REGIONAL OFFICE
NATIONAL PARK SERVICE

by

SHEPLEY BULFINCH RICHARDSON AND ABBOTT
ARCHITECTS BOSTON MASSACHUSETTS

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Architects Boston, Massachusetts

1980

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CHAPTER TWO

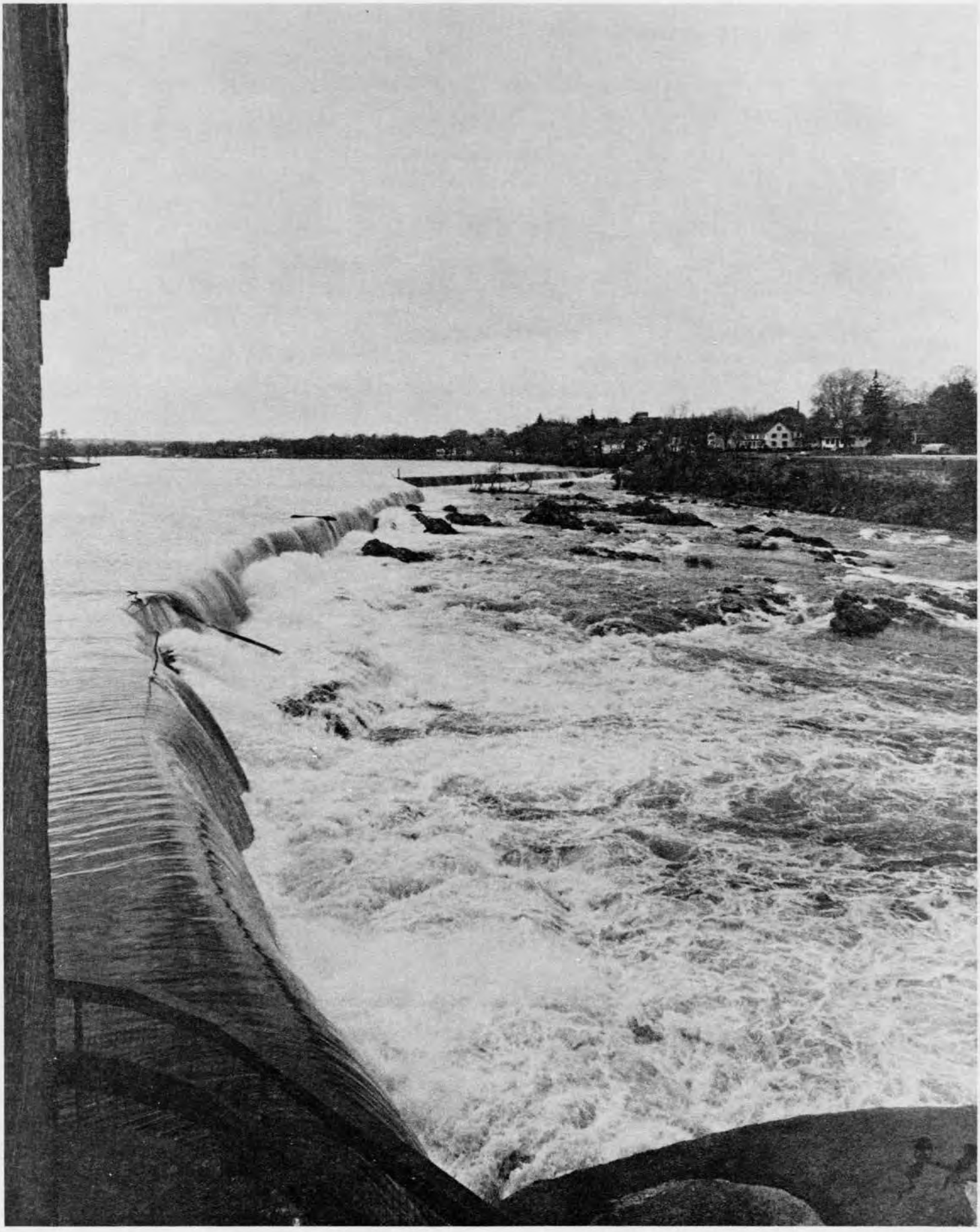
PHYSIOGRAPHY AND PREHISTORIC ARCHEOLOGY OF THE LOWELL NATIONAL HISTORICAL PARK AND PRESERVATION DISTRICT

PHYSIOGRAPHY

The present-day landscape of Lowell is as much a result of the natural environment as it is a product of man's skill and energy. Much of the discussion of Lowell's physical setting centers on the fact that it is a river city. However, to understand the why and how of Lowell's entire physical setting, it is important first to examine the region in which it lies.

The bedrock beneath Lowell averages only twenty feet or so below the ground's surface and, in many places, it is exposed. Recent summaries of the nature of bedrock do not agree concerning its composition and structure, except to call them complicated (U.S. Army 1974: vol. 4, 4-7). Basically, the bedrock is sedimentary rock changed by heat and pressure into several types of metamorphic rock, such as gneisses and schists, and igneous rock formed by the cooling of molten lava, resulting in granite, diorite, and grandiorite (Carroll 1979: 8-10). To complicate this record, the bedrock has been weathered and eroded by continuous water action for millions of years. This erosion process formed the pattern of valleys which carry rivers to the sea (Carroll 1979: 11).

This long-time development of a land surface with eroded valleys has also recently been modified on a large scale by the action of glaciers. The glacial era is thought to have occurred between 100,000 and 25,000 years ago, and to have consisted of four or five cold periods during which ice fields up to one mile thick covered the area (U.S. Army 1974: vol. 1, 23-26). Each event moved all loose material on the earth's surface, as well as scouring, rupturing, and moving much of the harder bedrock beneath.



View of the Pawtucket Dam and Falls from the northeast, 1979.

As the glacier retreated, it left behind deposits of this loose material in two basic forms: glacial till and glacial drift. Glacial till is made up of a mixture of stone, ranging in size from boulders to sand particles which was deposited as the glacier melted. Glacial till is also called hardpan (Flint 1971: 45). Glacial drift consists of similar material washed out of the glacier by streams of water as the ice melted. Glacial streams piled up drift in layers wherever the force of the current slacked sufficiently for particles to settle. Because the stream lost its ability to carry materials of different weights in direct proportion to its current or force, stones or particles of the same size tended to settle in the same place, leaving accumulations of gravel or sand in streamlined piles called kames, drumlins, or eskers.

The Merrimack River originally flowed in a valley that the last glacier left clogged with till and drift. These deposits acted as dams to the river, which found new outlets and ways to the sea. The Merrimack left its old blocked valley just upstream from Lowell, cutting a new channel that washed over the bedrock which was formerly the eastern side of the old river valley (Goldthwait 1925: 42-44). The action of water passing over this sill of bedrock has only begun its erosion work at Lowell, for the jutting bedrock ledge can still be seen at the Pawtucket Falls. Geological deposits within the Lowell area have been historically useful to man; providing sand and gravel for construction; sand for the manufacture of glass; clay for brickmaking; and iron that was smelted from deposits gathered in bogs (Wilson 1917).

The Concord River, which joins the Merrimack at Lowell, is a far smaller river than the latter. Fairly sluggish through most of its course, the Concord falls a total of fifty feet in its last mile before it enters the Merrimack (Carroll 1979: 6).

The ground of the Lowell region is covered with surface layers of soil, primarily fine sandy loams. Thick layers are found along watercourses on the rivers' terraced banks, where they have been deposited by water (Latimer and Lamphear 1924).

PREHISTORIC PEOPLES

Native Americans lived in the Lowell region for thousands of years before Europeans arrived. Archeologists have excavated a wide number of sites in the Northeast and have established that Native American cultures changed through three major temporal periods during their habitation in northeastern North America: the Paleoindian, the Archaic, and the Woodland.

Paleoindian Period

Evidence of early human occupation in the Northeast indicates that by approximately 13,000 before the present (BP), the region was being exploited by human groups. The term "Paleoindian" is used to describe a variety of cultural groups which inhabited North America immediately following the retreat of the Wisconsin ice sheet. These people were once commonly perceived as big-game hunters. In fact, these early inhabitants of the Northeast were probably adapted to a wide range of subsistence resources (Barber 1977; Eisenberg 1979).

The data presently available concerning the Paleoindian period in the Northeast makes it extremely difficult to predict Paleoindian site location with certainty. Recent research conducted in the Connecticut River Valley suggests that river terraces may have been preferred habitation sites during the Paleoindian period (Dincauze and Curran 1977).

Dincauze and Curran's research indicates that by 12,000 BP the environment of southern New England was in a transition period from a spruce-parkland to a spruce-woodland habitat. This evolving forest would have resulted in an environment possessing a high degree of diversity. Under such environmental circumstances, inhabitants would have preferred broad river valleys as habitation sites for several reasons. The development of rich alluvial soils in the floodplains would have supported a variety of wild plant growth for food. Location on a major river would have provided access to the upland areas

via the tributary streams. Perhaps most importantly, river valleys would have generally extended the northern limits of more productive southern habitats (Dincauze and Curran 1977).

Although no Paleoindian sites have been reported in the immediate vicinity of the project area, a single surface find of a reworked fluted point attributed to the Paleoindian period has been reported by an avocational archeologist. He collected it on the second terrace above the Merrimack in Lowell (Winters 1979). Two significant Paleoindian sites have been reported in the region: the Bull Brook site in Ipswich, Massachusetts, and the Swansee site near Keene, New Hampshire (Byers 1959; Curran 1978). Paleoindian points have also been recovered in the Concord River valley and in the Ossippee area of southern New Hampshire (Casjens 1979: Sargent and Ledoux 1973; Winters 1979).

The distrubution of Paleoindian sites and fluted point "find spots" in the region, combined with the Paleo-environmental data as interpreted by Dincauze and Curran, suggest the possibility that the project area was once inhabited or at least used by Paleo-indian groups. The fact that none of these sites has been recorded in the immediate vicinity of the project area may be a function of the inadequacy of archeological site discovery and sampling strategies presently being employed in the Northeast. It is reasonable to assume, as Funk suggests, that many of these early sites may be buried under deep deposits of alluvial or windblown soils (Funk 1972). However, this seems unlikely in the Pawtucket Falls area because the river has not deposited material but rather has been cutting through bedrock. Below the falls, the river's carrying capacity lessens along with its velocity, resulting in considerable silt buildup, especially along the north bank near the outside of the big bend and near the confluence of Beaver Brook.

Although some silt and eroded material was always carried over the falls, it was probably minimal during the prehistoric period compared with the silt carried off during the eighteenth, nineteenth, and twentieth centuries. This is because in the past 300 years, deforestation and cultivation has left the

land far more open and susceptible to erosion than before. Recent rates of silting are estimated at 276,000 tons annually (U.S. Army 1974: vol. 1, 63-64). The silting does not now and did not then affect the land and/or sites on the rock banks of the river in the gorge or falls area, but may well have covered the river's floodplain, which starts downstream from Lowell. In the process, downstream sites may have been covered with silt.

Early Archaic Period

The Early Archaic period (ca. 10,000-8,000 BP) in the Northeast is, like its predecessor, poorly understood because of the paucity of information relating to this period. However, data from the Taunton River drainage in southeastern Massachusetts, combined with the recovery of Early Archaic bifurcated-base projectile points from the Concord and Merrimack River drainages, suggest that early Archaic peoples were exploiting the riverine environments of southern New England (Casjens 1979; Dincauze 1976; Barber 1977).

Data from a series of pollen diagrams suggest that the floral community was enriched gradually as the area was colonized by plant species migrating north and east from regions in which they had taken refuge during the Wisconsin glaciation. By approximately 9,500 BP the southern New England area was covered by a mixed deciduous-coniferous forest roughly analagous to the forest type found in present-day southern Ontario, but much richer in terms of species variety because of the warmer lower latitudes (Dincauze 1973). The southern New England mixed deciduous-coniferous forest included the following species listed in order of their abundance: white pine, poplar, hemlock, maple, and oak (Davis 1969).

The transition from the spruce-woodland forest to a pine-dominated forest coincides with the transition from Paleoindian to the Early Archaic period. This transition was not heralded by any dramatic alterations in cultural pattern; rather there was a continued adaptation of existing exploitative strategies to changing environmental conditions. The environment became increasingly diversified in

terms of the number of exploitable plant and animal species. The gregarious species of large animals, such as the caribou, were replaced by an essentially modern assemblage dominated by a variety of smaller solitary game animals.

The presence of Early Archaic sites within the project area is suggested by the discovery of several bifurcated-base projectile points along the Merrimack and Concord Rivers (Dincauze 1976; Barber 1977; Casjens 1979). Although Dincauze does not believe that the bifurcated base point which was recovered from stratum 5 of the Neville site on the Amoskeag Falls in Manchester, New Hampshire was deposited there by its original makers, its presence does imply that early Archaic peoples were living in the general area. More convincing evidence of the presence of Early Archaic people within the project area is a diagnostic Early Archaic projectile point that was found on an eroded surface of the Poznick site (Thorstensen 1977), which is located in Lowell on the southern bank of the Merrimack River east of the confluence of the Merrimack and Concord Rivers. This site appears to be one locus in a large multicomponent site, MHC 19-MD-47, part of which is located within the project area.

The problems inherent in locating Paleoindian sites under deep alluvial deposits along river terraces also pertain to locating Early Archaic period sites. This is graphically illustrated by the fact that the cultural deposits on the Poznick site reach a depth of five feet and are often separated by sterile flood deposits.

Middle Archaic Period

During the Middle Archaic period (8,000-6,000 BP), the climatic conditions in southern New England continued to change, although much less dramatically than in the preceding periods. The pine-dominated forest slowly evolved into a deciduous forest type dominated by oak and hemlock. The major rivers in southern New England, including the relevant portion of the Merrimack, appear to have reached modern levels during this period. The riverine environment was similar to present conditions, but probably

slightly richer in natural food resources (Dincauze and Mulholland 1977). In general, the environment became more stable, predictable and reliable during the Middle Archaic period.

In most ways, the climate and environment in the Lowell area did not change very much. The old river cut a new course, wearing away the bedrock in its path. The Merrimack River's course at the falls and throughout Lowell is not an old formation with a well-established floodplain and terraces but a relatively new one. This made the Lowell area with its falls a fairly uncommon type of setting even to the early inhabitants of the region. Many of their archeological sites have been found at such places where waterways are constricted, which occurred in the Lowell area at the falls of both the Merrimack and the Concord Rivers.

The recent recorded seasonal variations of the Merrimack's flow are interesting in that they give clues regarding how the Indians may have used the falls as a major food source. Since records have been kept, New England has been receiving forty to forty-two inches of rain annually (Carroll 1979: 36-37), evenly distributed throughout the year. There is great seasonal variation in the river's flow, however, caused by the amount of moisture that the ground can absorb and by the melting of snow and ice, which releases the greater part of the precipitation from the colder months at the spring thaw. The river flow is greatly reduced during the late summer months because the watershed can absorb most of the rainfall and because evaporation is at its greatest during the hot weather.

Several species of fish use these spring floods to make spawning runs into the watershed, and it is at the falls, where fish collect in numbers, that they are easiest to catch. Archeological evidence from this period suggests that the Native Americans collected large amounts of food resources in various places according to season. The significance of this practice is that it allowed people a chance to gather in larger groups. With more sophisticated food preparation and storage techniques, the spring bounty could be stretched out, allowing people to stay in one place for longer periods of time.

During the Middle Archaic period, the number and diversity of sites increase dramatically relative to the preceding periods. This increase in sites may be related to the establishment of a forest environment which contained at least 20% oak (Dincauze and Mulholland 1977). The importance of a forest type that includes at least 20% oak is that oak is a mast-producing tree. Mast (i.e., acorns in the case of oak trees) is a major food source for the white-tailed deer, which appears to have been an important component in the diet of the Archaic and later inhabitants of southern New England. Dincauze and Mulholland (1977) estimate that by 8,000 BP this important 20% oak isopall had reached the border of southern New Hampshire.

Within the Merrimack River valley, published archeological data indicate that by the Middle Archaic period there were communities of hunter-gatherers inhabiting much of the region (Thorstensen 1977; Barber 1977). Dincauze (1976) has suggested that the Middle Archaic component found at the Neville site represents a temporary, possibly recurrently occupied site located to exploit the seasonally abundant anadromous fish. Barber (1977) has interpreted the Middle Archaic component of the Buswell site in the lower Merrimack valley as representative of a seasonal fishing station. Middle Archaic components at several sites along the Shawsheen River might represent activities different from those found at the relatively large fishing areas (McManamon 1977).

The record of Middle Archaic period remains found at Lowell contains some tantalizing clues of what may have been a major locus of habitation. Hints of this former habitation can be found in the Massachusetts Historical Commission Inventory, which notes two sites containing Middle Archaic cultural material: 19-MD-46 and 19-MD-48. The former was situated on the north bank of the Merrimack near the entry of Beaver Brook into the river; it is said to have been more than a mile long. The latter (19-MD-48) was located south of the Merrimack, extending along both banks of the Concord from its confluence with the main river. An even larger site (one mile long) on the south bank of the Merrimack between the falls and the Concord was not identified in the Inventory by cultural period. The first two sites will be mentioned again, because they also were identified as later Native American sites.

Late Archaic Period

The climatic warming trend and forest development continued into the Late Archaic period (6,000-2,000 BP), reaching its peak about 5,000 BP. At this time the deciduous forest was dominated by the mast-producing species of oak and hickory. The climate remained essentially warm and humid until 3,000 BP, at which time there began a very slow, steady, cooling trend in climatic conditions, which has continued with minor oscillations until today (Braun 1974; Fairbridge 1977).

The cooling trend resulted in the elimination of some plant species not suitably adapted to the cool, humid environment. This trend culminated in the gradual replacement of the oak-hickory forest by the modern white pine-hemlock-hardwood forest typical of the present New England Seaboard region.

Judging from the number of known sites with Late Archaic components in the southern New England region, it might be that this period witnessed the maximum prehistoric population density (Dincauze 1975). Bullen (1949) identified a number of sites with a Late Archaic component in the valley of the Shawsheen River, a tributary of the Merrimack River. In the town of Concord a survey of the known prehistoric archeological sites produced thirty-nine sites that contained a Late Archaic component (Casjens 1979).

Within the District, at least two known prehistoric sites contained Late Archaic components: MHC 19-MD-46 and 47. Evidence from the Poznick site suggests that the site was visited repeatedly throughout the Late Archaic period, possibly for the purpose of quarrying the quartz veins in nearby rock ledges (Thorstensen 1977).

Woodland Period

The Woodland period is the next major period which is commonly recognized in the Northeast, dating from ca. 2,500 BP to the time of European settlement. It usually is subdivided into three parts: Early, Middle, and Late Woodland.

Early Woodland Period

The transition from the Late Archaic to the Early Woodland (ca. 2,500-2,000 BP) periods did not involve any drastic alterations in the adaptive strategies of the inhabitants of southern New England. The subsistence strategies of the Early Woodland period seem to have been a continuation of the Archaic pattern characterized by seasonal settlement shifts within a bounded territory.

The hallmark of the Early Woodland period in southern New England is the appearance of coarse, grit-tempered ceramics. This innovation was once believed indicative of a sedentary way of life; however, modern research has discredited this interpretation (Barber 1977). The social and political organization, as well as most aspects of the economic activities during the Early Woodland period, are understood poorly. Within the Merrimack River valley, Early Woodland components seem to exist at several multi component sites, including the Neville, Poznick, and Sweet Apple Tree sites (Dincauze 1976; Thorstensen 1977; Barber 1977).

Middle Woodland Period

During the succeeding Middle Woodland stage (ca. 2,000-1,000BP), specialization in subsistence strategies has been hypothesized (Dincauze 1976). One of the arguments supporting this hypothesis is a noticeable seasonal population shift into the estuarine and coastal areas in order to exploit abundant coastal resources, such as the intertidal soft-shell clam. This increasing utilization of the coastal zone was predisposed by the stabilization of the coastal zone following the termination of the sea level rise and crustal rebounding at approximately 3,000 BP (Braun 1974). By the Middle Woodland period, the marine water temperature had cooled considerably with the result that warm-water shellfish species, such as quahogs and oysters, had been replaced by the soft-shell clam, which is adapted to cool water temperatures. Use of food resources from coastal environments also occurred during the Archaic period (Salwen 1965; Brennan 1976). However, the extent of

this Archaic use of coastal resources is difficult to calculate. In many sections of the coast the areas available for occupation during the Archaic period are now under water.

Evidence from the Wheeler site located in the estuary of the Merrimack River indicates that it was an autumn food procurement station utilized by Middle Woodland people. "The Middle Woodland use of the region seems to be marked by specialized food gathering in the estuarine zone in autumn following which the inhabitants broke into small groups and wintered inland" (Barber 1977: 54-66). In the spring, they returned to the waterways to exploit the spawning fish, whereas summer occupation was elsewhere, perhaps the coast (Barber 1977).

It is difficult to distinguish among Early, Middle, and Late Woodland components for Lowell sites recorded in the Massachusetts Historical Commission Inventory. The only site at which components can be definitely identified is the Poznick site, where material has been found that can be attributed to all three Woodland periods (Thorstensen 1977). Other sites in Lowell attributed to the Woodland Period include 19-MD-46, 19-MD-47, and 19-MD-52. Several sites also contain Archaic period components, indicating that the area supported Native American settlement over a long period. It also shows that the river has not substantially changed the configuration of its new valley, except to slowly erode the bedrock over which it flows.

Late Woodland Period

During the Late Woodland period (1,000 BP to Contact), horticulture began in southern New England with crops of corn, squash, and beans. The earliest recorded date for the use of cultigens in southern New England comes from a charred corn cob from a site on Martha's Vineyard radiocarbon dated to 1,160 AD, plus or minus 80 years (Ritchie 1969). Because of the poor preservation qualities of the acidic New England soils, the floral remains deposited on archeological sites do not often survive. Therefore, this single date should not be interpreted as the earliest possible date for the introduction of domesticated plants.

Agriculture probably increased sedentarism, judging from the appearance of large permanent village sites on elevated river terraces. However, it did not eliminate the necessity for seasonal shifts to exploit certain food sources, such as shellfish and other coastal resources. For example, the Morrill Point site in the Merrimack estuary represents a seasonal Late Woodland site. Barber (1977) speculates that this site may have been a specialized camp used by a small segment of the community.

The Early Historic Period

During the Late Woodland period and continuing into the mid-seventeenth century, the area around Lowell was occupied year-round. The Pawtucket Falls were a valuable resource used in the exploitation of anadromous fish harvested during their spring runs. In 1648 John Eliot traveled to Pawtucket Falls and recorded that "...he found there a great confluence of the Indians, engaged in fishing, and in wild festivities..." (Richardson 1978). This area was utilized also for corn fields by the native inhabitants as evidenced by the large number of hoes recovered at the Poznick site (Thorstensen 1977).

During the early historic period, the area immediately south of and adjacent to the Pawtucket Falls was one of the population centers of the Pennacook Confederacy and the primary residence of the Pennacook Sachem Passaconaway (Richardson 1978). The exact political structure of the Pennacook Confederacy is difficult to reconstruct from the accounts of the English colonists. However, it appears to have been a loose amalgamation of a number of Native American groups who inhabited New Hampshire and northern Massachusetts. This system may not be representative of the political system of the Late Woodland or earlier periods, but rather a makeshift arrangement put together after the devastating plagues of 1616-19, which left much of the area depopulated and the remaining groups weakened politically. When the colonists began to expand into the territories claimed by the Pennacook Confederacy, Passaconaway and several local sachems signed a treaty with the colonial governors placing themselves, their subjects, and their possessions under colonial rule (Richardson 1978). Although

Passaconaway and his people were supposed to retain their tribal lands under this agreement, the inevitable encroachment of the colonial settlements had already begun.

As early as 1629, Passaconaway had deeded all the lands between the Piscataqua and the Merrimack Rivers to John Wheelwright. In 1643, the Massachusetts Bay Colony divided all the lands under its jurisdiction into counties, including much of the land claimed by the tribes of the Pennacook Confederacy. The following year the General Court of Massachusetts Bay Colony instructed the county courts to provide religious education to the natives within their jurisdiction. In the Lowell area this did not come to fruition until 1653, when John Eliot established one of his famous "Praying Indian Villages" at the confluence of the Merrimack and Concord Rivers (Richardson 1978). Although Passaconaway never converted to Christianity, he retained possession of his planting fields in the vicinity of Pawtucket Falls. However, the division of his lands continued with the granting of 1,000 acres on the northern bank of the Merrimack River opposite the Pawtucket Falls to Lt. Peter Oliver, Captain James Oliver, James Johnson, and Ensign John Evered. These men were all members of the Ancient and Honorable Artillery Company, and the grant thus became known as the Military Grant. This large land grant led to a proliferation of smaller grants and purchases, which culminated in the "Wamesit Purchase" of 1686. The Wamesit Purchase deeded all the tribal lands of the Pennacook Confederacy located in the vicinity at Lowell to the colonists, marking the effective end of the Indian occupation in Lowell.

The records of known sites of native American habitations after the European arrival mention the Merrimack's banks below the falls, the banks of the Concord, and the tops of some local hills, where defenses were built to protect the settlements. These are sites 19-MD-46, 19-MD-47, the "Wannalancet site" and the "aboriginal burial ground," all of which are discussed in the Inventory section below.

REVIEW OF PREHISTORIC ARCHEOLOGICAL POTENTIAL

The entire project area possesses a very high potential for containing prehistoric archeological properties. This evaluation is based on the criteria elaborated below.

Criterion A: Contains a known prehistoric site or is located in close proximity to a known prehistoric site.
The site files at the Massachusetts Historical Commission (MHC) list eight known prehistoric sites within or adjacent to the project area. In addition to these sites, John Richardson's research indicates that in 1669 Wannalancet constructed a palisaded fort on what is now Fort Hill in Lowell, for the protection of his people against the raiding Mohawks.
Richardson also locates Native American burial grounds on the east bank of the Concord River between the river and the Lowell Cemetery, probably equated with MHC 19-MD-52.

Criterion B: Contains cultural artifacts or has a history of containing such artifacts.
Although the artifact lists contained on the MHC site file cards are very general in nature, they indicate that a quantity of both Archaic and Woodland period artifacts have been found within the boundaries of the project area.

Criterion C: Located on arable soil, such as exists on the floodplains of major rivers.
The majority of the project area lies within the floodplains of either the Merrimack or the Concord Rivers and possesses arable soil of the Ondawan or Merrimack soil series.

Criterion D: Located on ground that has a slope of less than 20 degrees.
The majority of the project area is located on relatively level river terraces having a slope of less than 10 degrees. In a recent survey of the town of Concord, Massachusetts, Casjens discovered that although all the prehistoric sites that were surveyed were located on ground having a slope of less than or equal to 15 degrees, the majority of sites were located on ground with a slope of less than or

equal to 3 degrees (Casjens 1979). An investigation of known prehistoric sites in Franklin County, Massachusetts, discovered that 81% of all sites were located on ground with a slope of less than 8 degrees (Dincauze et al. 1977).

Criterion E: Located near a permanent water source or wetland and possesses well-drained parts.
Anthony (1978) has demonstrated that 94% of the 115 known prehistoric sites in Worcester County were located within 100 feet of a permanent water source. Similarly, in the town of Concord, all the known prehistoric sites were located within 200 meters of a permanent water source. The major permanent water sources within the project area are the Merrimack and Concord Rivers, Beaver Brook, and Hale's Brook. The vast majority of the project area, including all but one of the known prehistoric sites, is located within 200 meters of a permanent water source.

Criterion F: Located near the site of a specific resource known to have been exploited during the prehistoric period.
The historical record documents the use of the Pawtucket Falls as a major fishing station used by the aboriginal inhabitants until 1686. An analogous situation which documents the utilization of a similar natural resource as early as the Middle Archaic period is the Neville site (Dincauze 1976).

Although the background research indicates that the entire District possesses a high potential for the location of prehistoric archeological properties, the actual probability is greatly reduced by the high degree of land disturbance in the majority of the District. In a recent survey of reported sites in the lower Merrimack River valley, it was determined that of the seven prehistoric sites reportedly located in urban settings, only two could be verified (Barber 1977).

Prehistoric sites contained within an urban setting have a greater probablility of being destroyed than those in rural areas. However, sites from the early periods of aboriginal occupation may be deeply buried under and hence protected by alluvial deposits or

modern fill. If an undisturbed site or part of a site can be found, it would expand the present fragmentary understanding of prehistory in the Lowell area.

A list of reported sites follows. Surface inspection of these sites or their reported locations indicates that the Fort Hill area on the east bank of the Concord River and the north bank of the Merrimack River contain the least amount of industrial-period disturbance among areas with high concentrations of reported sites. In most of the other areas, a very high degree of industrial development has occurred.

Another area of potential interest is the Lowell Manufacturing Company millyard on the north side of the Pawtucket Canal, off Market Street. The 1821 "Plan of Farms...at Patucket" (Figure 3-1) shows a pond or swampy area alongside the canal at that point. Before mills could be built there in the late 1820s, considerable filling was required, reportedly up to a level of twenty feet in some spots. (For more detailed information on the development of this site, see the Lowell Cultural Resources Inventory's research report on the Lowell Manufacturing Company.) While no specific prehistoric activities are known to have occurred in this area, it might have been usable land before the Pawtucket Canal's construction in the 1790s. Any pre-1820 deposits in that area are presumable very deeply buried, and may not have been disturbed by the subsequent development of the site.

SITE INVENTORY
Sites located within (or partially within) the Lowell Historic Preservation District (LHPD) and Lowell National Historical Park (LNHP)

Inventory: Massachusetts Historical Commission Inventory No. 19-MD-46

Location: Northern bank of the Merrimack River between Mammoth Road to Lakeview Avenue. Note: This area includes the area where Beaver Brook flows into the Merrimack. The site width is considered to include the river bank and the first terrace behind it.

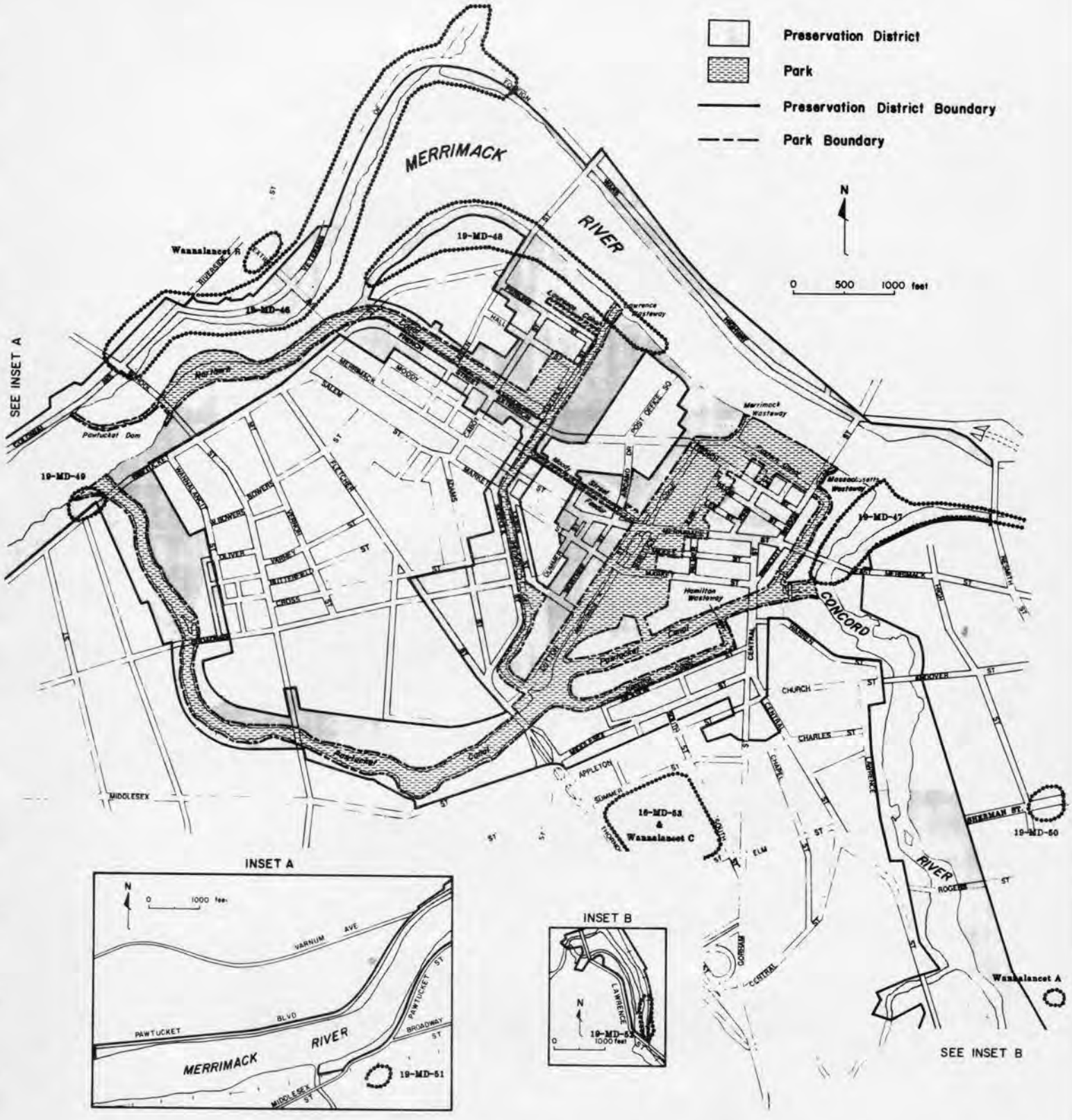
Culture: Massachusetts Archeological Society Site #25 notes that the site contained Archaic and Woodland period material, with the presence of ceramics identifying the later period. The site is described as having been "very large and important, more than a mile in length and to have included the location of fishing grounds used by aborigines in the historic period" (Moorehead 1932).

Pedestrian Survey: The entire area was traversed on foot with a close examination of fortuitous excavations, eroded banks, and cleared areas. Today, the area is traversed by a shore road, the V.F.W. Highway, which is built on a filled embankment. The surface of the area shows it to have been covered by silt-bearing flood waters. The only artifacts observed were large deposits of late nineteenth-century trash, both domestic and industrial, which is part of the road embankment.

Evaluation: Deep testing may reveal silt-covered layers of aboriginal material. A site in this area is also reported on Fishing Island (Winters 1979: personal communication).

Inventory: Massachusetts Historical Commission Inventory No. 19-MD-47

Location: Both sides of the Concord River near its confluence with the Merrimack River.



Map indicating reported prehistoric archeological sites in and around the LNHP and LHPD.

Culture: The Massachusetts Archeological Society Inventory lists the artifacts from this site (#26) with those from site #24. Artifacts recovered here may be in the collections of the Bronson Museum, Attelboro. They are diagnostic of the Archaic, Woodland, and Contact periods. Moorehead (1932) identified this as the site of one of the "Praying Indian Villages."

Pedestrian Survey: The area on the west side of the Concord River is completely developed as an intensively used industrial area. It is in the very heart of the historic industrial district near the mouth of the main canal. Areas of destroyed buildings and collapsed walls gave a fair view of subsurface strata in several locations. These strata were limited to industrial-period debris. On the east bank of the Concord, there is a greater likelihood that a remnant of this site may remain intact. The area has seen continuous use from the nineteenth century onward but development is in the form of terraced gardens, roads, and walks--all part of the landscaping around religious and public buildings. The property of St. John's Hospital is typical of this area (Winters 1979: personal communication).

Evaluation: No area can be tested unless substantial industrial-period material is removed first.

Inventory: Massachusetts Historical Commission
Inventory No. 19-MD-48

Location: South side of the Merrimack River starting at the falls and extending downstream to an area close to the mouth of the Concord River. Site is said to be three-quarters of a mile long.

Culture: Massachusetts Archeological Society Site #25 does not make any cultural identification other than aboriginal. The extent and location of the collection is not noted.

Pedestrian Survey: The area lies in the most

intensively developed portion of the industrial district. The western portion of the site is completely covered by the Northern Canal. A solid row of factory structures lined the river below the bend. Areas cleared of factories today were walked-over, but no traces of aboriginal remains were observed.

Evaluation: The potential for aboriginal cultural resources to have remained undisturbed in this area is low.

Inventory: Massachusetts Historical Commission Inventory No. 19-MD-49

Location: South bank of the Merrimack River above the falls between the Pawtucket Canal intake and Walker Street.

Culture: Massachusetts Archeological Society Site #19 does not make any cultural identification other than aboriginal. A reference, unsupported by comment, is made to its being a "Village site." No collections were found regarding this site.

Pedestrian Survey: This area, which is slightly out of the study area, was found to contain residential, light industrial, and recreational development. The river bank (ponded by the Pawtucket Dam) shows signs of having been repeatedly shored up to prevent erosion. No surface indications of aboriginal culture were observed in the area. Some freshly turned ground and eroded areas revealed no cultural debris.

Evaluation: Test excavations might reveal whether any of the original surface contours and aboriginal cultural-period strata are present.

Inventory: Massachusetts Historical Commission Inventory No. 19-MD-52

Location: On the east bank of the Concord

River between the river and the cemetery, just north of Lawrence Street on the southwest end of Fort Hill.

Culture: The Massachusetts Archeological Society number is 27. It is listed as prehistoric aboriginal in origin, and because ceramics were found it is attributed to the Woodland period. Frederick Burtt, who reported the site, called it a "camp site." B. L. Smith visited the site and recovered lithic debitage but no diagnostic tools.

Pedestrian Survey: This area contains abandoned and marginally operating industry and the Lowell Cemetery. Cemetery workers reported finding no cultural material in their excavations. Surveys of the industrial area show there to be heavy concentrations of industrial material on the surface of the ground.

Evaluation: This site should be investigated in conjunction with other sites reported in the Fort Hill area.

Sites located near the LHPD

Inventory: Massachusetts Historical Commission Inventory No. 19-MD-50

Location: East of the Concord River on Sherman Street between High Street and Fort Hill Avenue.

Culture: The Massachusetts Archeological Society lists this site as #14 and #15. The site was not identified as to culture period. Reference is specifically made to a burial at this site. Recorders include Moorehead (1932) and Bullen (1940).

Pedestrian Survey: This area is covered with urban development, consisting of industrial toward the Concord River, and dense residential away from the river. Empty lots and unused land showed historic cultural

materials only.

Evaluation: This site may have been a single burial, but should be investigated along with the other sites reported in and around Fort Hill.

Inventory: Massachusetts Historical Commission Inventory No. 19-MD-51

Location: Along Middlesex Street between Burnside and Foster Streets, south of Middlesex Street and the railroad underpass.

Culture: Massachusetts Archeological Society Site #20 does not make any cultural indentification other than aboriginal. Reference is made to a "village site" by Moorehead (1931).

Pedestrian Survey: This area is covered with domestic structures and light industry. A survey of several gardens, a fortuitous street excavation, and empty land showed no visible trace of aboriginal cultural material.

Evaluation: If there are any undistrubed portions, testing may reveal aboriginal remains. However, the probability of undisturbed land is small.

Inventory: Massachusetts Historical Commission Inventory No. 18-MD-53

Location: On South Common between Summer and High Streets.

Culture: The Massachusetts Archeological Society assigned #18 to this site. It was attributed to aboriginal culture with no identification of period.

Pedestrian Survey: This site is located in park land. No evidence of aboriginal culture was observed.

Evaluation: Testing may reveal further information.

Inventory: Wannalancet site

This site is attributed to three separate locations by nineteenth-century traditional historians. We have labeled them Wannalancet A, B, C.

Location: Wannalancet A--On Fort Hill in Fort Hill Park. This location is attributed by Cowley (1862: 12).

Wannalancet B--On the north side of the Merrimack on the north campus of the University of Lowell (S. Coburn 1922: 44).

Wannalancet C--On South Common on Roger's Hill (Old Residents' 1891: 388).

Richardson (1978) suggests that all three sites are possibilities but feels that Fort Hill is the most likely prospect. Winters (1979) concludes that Fort Hill and Roger's Hill are the same place and are the location of the village.

Culture: Wannalancet is known to have repaired to the Lowell area and built a palisaded village to protect his people from raids by the Mohawk Indians during the historic period.

Pedestrian Survey: Wannalancet A--Fort Hill is a public park. Eroded areas and cultivated ground revealed no artifacts. Although the hill would be a secure defensive position, the area lacks fresh water. Environmental reconstruction may show that water resources were present.

Wannalancet B--A drive through the campus, along with a pedestrian survey and close visual inspection of several areas of recently disturbed ground, revealed no aboriginal cultural material.

Wannalancet C--No evidence of aboriginal material was found in this area of South Common.

Evaluation: Although all three areas are outside the District boundaries, testing at South Common and Fort Hill may be very productive; testing at the campus would be less so.

Inventory: Aboriginal burial ground

Location: Between the Lowell Cemetery and the Concord River.

Culture: Richardson (1978) mentions that historic indians are reported to have used this area as a burial ground.

Pedestrian Survey: This area was checked for site 19-MD-52 with no success.

Evaluation: Further research should consider the whole Fort Hill Park area.

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