THE MEDUXNEKEAG ARCHAEOLOGICAL PROJECT: A PRELIMINARY ASSESSMENT OF ARCHAEOLOGICAL SITE POTENTIAL IN SOUTHERN AROOSTOOK COUNTY, MAINE

by

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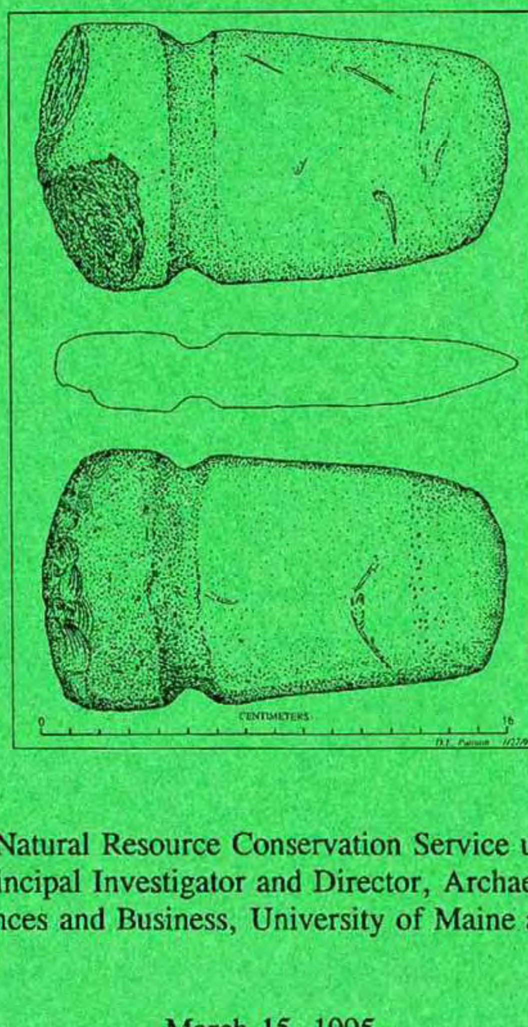

A report prepared for the Natural Resource Conservation Service under the supervision of Dr. James B. Petersen, Principal Investigator and Director, Archaeology Research Center, Department of Social Sciences and Business, University of Maine at Farmington, Farmington, Maine 04938

March 15, 1995

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ABSTRACT

The Meduxnekeag Archaeological Project was conducted by the University of Maine at Farmington Archaeology Research Center in 1994-1995 for the U.S.D.A. Natural Resource Conservation Service to develop a general model of prehistoric and historic archaeological site locations in the Meduxnekeag River basin in Maine. This study included an initial review of background information for prehistoric and historic Native American sites and historic Euroamerican sites in a sizeable portion of southern Aroostook County, Maine. From this review, a predictive model for Native American archaeological sites was developed and an initial inventory of potential historic Euroamerican archaeological sites also was established.

The limited field work component was focused on testing the predictive model for Native American sites. As a result of the field work, a total of five previously unrecorded prehistoric Native American sites were identified. These occur in the most sensitive portions of the project area, for the most part near the major waterways, but this is likely a biased sample since settings of lesser potential sensitivity have yet to be evaluated in the study area.

Additional field work will be necessary in a broader range of Native American site sensitivity categories to more fully evaluate the predictive model. In addition, future field work should address the 50 potential historic Euroamerican sites established by the initial historic background research. More historic background research also should be undertaken in the future. The Meduxnekeag study area is apparently relatively rich in terms of both prehistoric and historic archaeological sites on the basis of the work undertaken to date and the Natural Resource Conservation Service should take account of this in its future undertakings in the study area.

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Landowners in the study area were generally friendly and willing to permit testing on their properties, although concern regarding possible government intrusion was evident in some cases. The Houlton Band of Maliseet Indians was the major landowner, and their support and enthusiasm is deeply appreciated; to Jim Burton, Sheri Venno, Larry Robichaud, Chief Clair Sabbatis and everyone in the Houlton Band, we express our gratitude. Mr. Greg Royal and Mr. and Mrs. McLaughlin kindly allowed us to dig holes in their lawns. Mr. John Gardiner graciously allowed us access to test his lands along the river and generously suggested that we split any "gold" we might find; none was found, however. As is customary, the authors are solely responsible for any errors or omissions in this report.

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THE MEDUXNEKEAG ARCHAEOLOGICAL PROJECT: A PRELIMINARY ASSESSMENT OF ARCHAEOLOGICAL SITE POTENTIAL IN SOUTHERN AROOSTOOK COUNTY, MAINE

Introduction

The Meduxnekeag Archaeological Project was conducted by the University of Maine at Farmington Archaeology Research Center (UMF ARC) for the U.S.D.A. Natural Resource Conservation Service (NRCS), formerly the Soil Conservation Service (SCS). This study was conducted between September, 1994 and March, 1995. The principal goal of this study was development of a general model of prehistoric and historic archaeological site locations in the Meduxnekeag River basin in Maine, an area that is poorly known in terms of archaeological sites. The NRCS requires specific information regarding sensitivity for archaeological sites in this large area to facilitate compliance with Federal legislation and Maine Historic Preservation Commission (MHPC) guidelines in advance of various undertakings.

The study area, located in southeastern Aroostook County, is described as all land drained by the Meduxnekeag River in Maine, excluding the watershed of the North Branch of the Meduxnekeag River which enters the main branch in adjacent New Brunswick, Canada (Figure 1). It includes the major tributaries of the South Branch of the Meduxnekeag River locally known as Hodgdon Stream, Big Brook, B Stream, Moose Brook, Mill Brook, and the main branch that drains Meduxnekeag Lake, locally known as Drew's Lake. Meduxnekeag Lake is the larger of the two major lakes in the drainage basin, the other being Nickerson Lake (Figure 2).

The total study area includes approximately 185,000 acres (34,425 hectares) and 200 linear miles (321.8 kilometers) of perennial streams of this large area, as defined by the NRCS. Within this large area, a total of 30,800 acres (12,474 hectares) of cropland comprise some 400 farms.

This study was designed to provide general information about Native American archaeological site sensitivity based on landscape attributes. These attributes should be useful in the identification of potentially sensitive areas for most Native American sites by NRCS personnel and others prior to agricultural assistance undertakings which will cause landscape

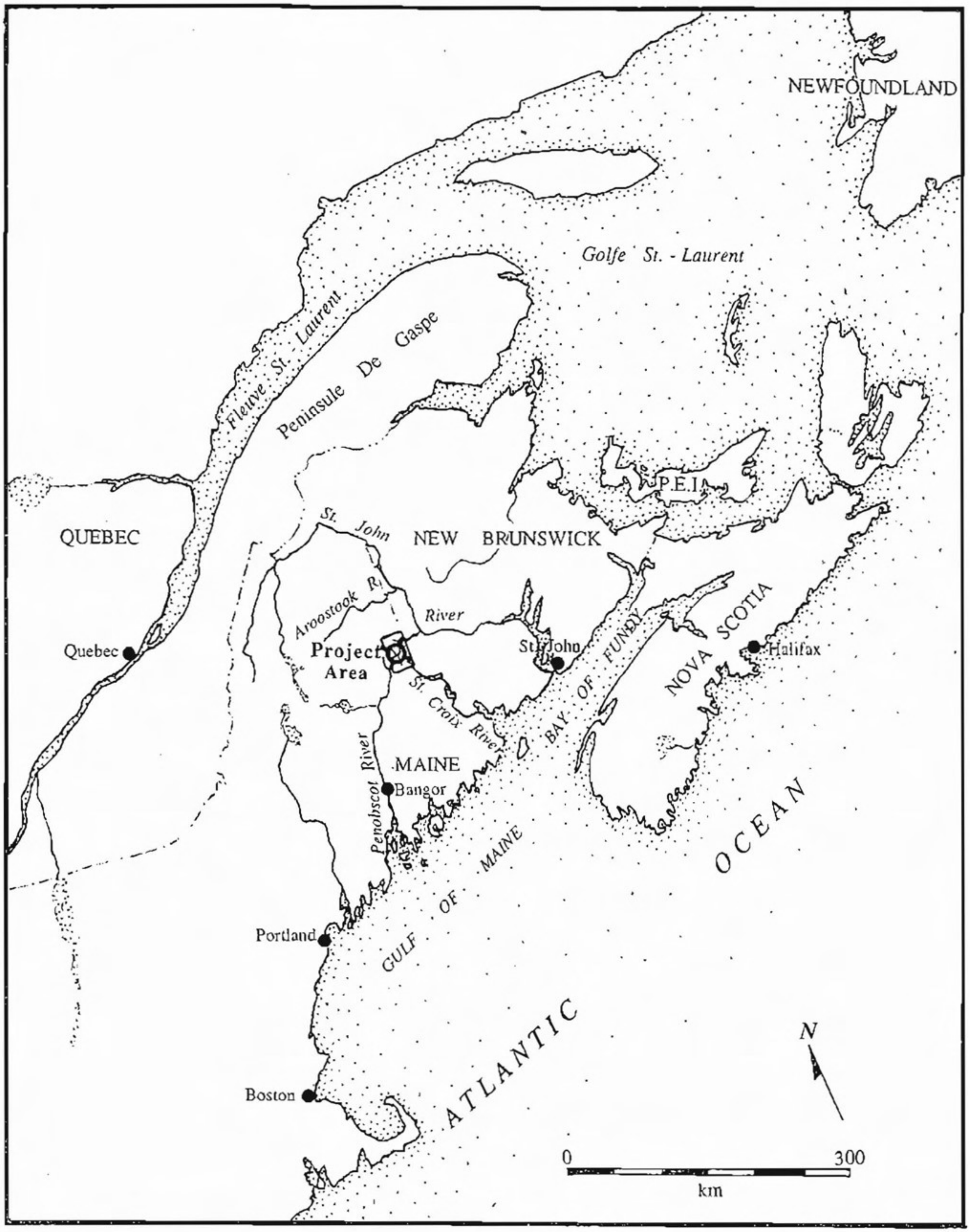

Figure 1. Location of the Meduxnekeag River study area in southern Aroostook County, Maine.

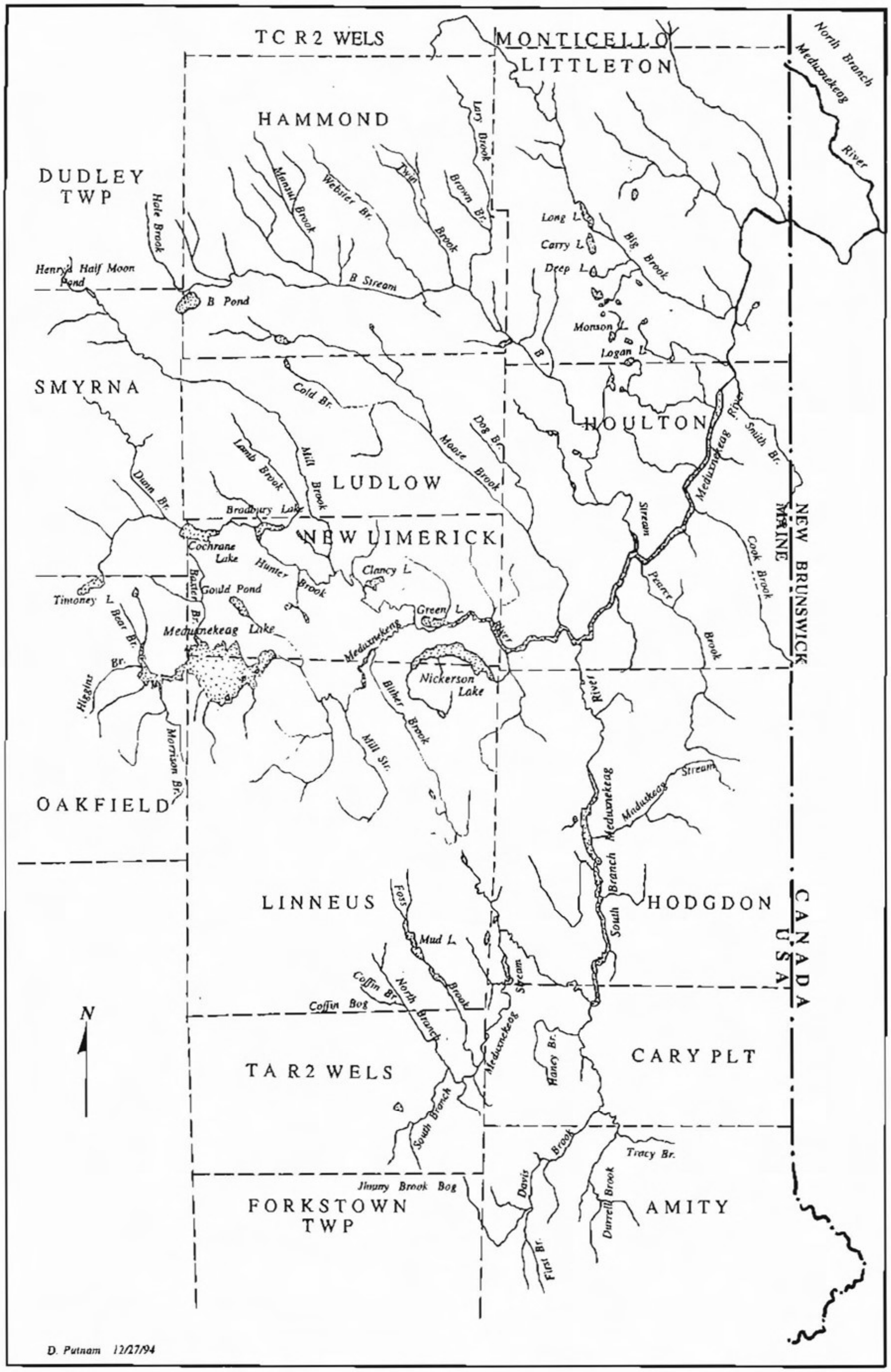

Figure 2. Map of the Meduxnekeag River basin in southern Aroostook County, Maine. Note location of various waterways and modern political boundaries.

alteration. A multiple-stage process was used to develop and test a preliminary model of Native American archaeological site distribution across the local landscape. In addition, historical background research was undertaken to provide initial information about potential historic Euroamerican sites within the study area, but no specific field work verification was done for this aspect of the study area given the overall limited scope. This should be an obvious priority in the context of any additional archaeological research in the future.

A literature search was conducted and selected archaeological and primary historical sources pertinent to the study area were reviewed by Putnam and Wheeler. Putnam undertook the Native American review and gathered basic information about historical issues, while Wheeler more specifically addressed historical background information for Euroamerican occupation of the area. Previous professional investigation of Native American archaeological sites in the study area has been limited to a single site report (Cranmer and Spiess 1993) which was very useful, although the UMF ARC has previously conducted limited archaeological phase I survey work in the study area. The fact that this single reference pertains to an area of this size reflects the paucity of information about the study area and the little studied nature of Aroostook County in general.

A preliminary field inspection was used to identify the range of geomorphological environments present in the study area and to evaluate these environments for their similarity to others in Maine known to preserve Native American sites. In the course of this activity undertaken by Putnam, two previously unrecorded prehistoric Native American archaeological sites were identified, as described more fully below.

A predictive model of potential Native American site settings was then developed. The study area was divided into four categories of Native American archaeological site potential: very high; high; medium; and low sensitivity. This was a particularly difficult task, as the study area has little elevation relief, and perennial surface water is ubiquitous, providing relatively few attributes to divide up the local landscape. In more mountainous settings, steep, rocky land obviously has a "low sensitivity" for prehistoric archaeological sites, although lithic quarries and possible rockshelters may be present. In the Meduxnekeag study area, however, only the low mountains surrounding Meduxnekeag and Nickerson lakes represent such a situation, leaving the vast bulk of the landscape characterized as low to medium sensitivity.

Because many, if not most potential NRCS undertakings will be done in the area of low to medium sensitivity for archaeological sites, we agonized over the competing issues of providing a model useful to NRCS personnel and the danger of excluding a range of largely prehistoric human activities across the local landscape by focusing the model too much. It should be noted also that this model pertains to most prehistoric Native American sites, namely habitation sites, and some of the early historic period too, specifically those produced by Native Americans prior to substantial and sustained contact with European peoples. Thus, the model presented here is explicitly a general prediction of where we believe most Native American archaeological sites will be found, recognizing that such sites may be found in some medium and low sensitivity settings as well. Consequently, more archaeological data will need to be collected from the study area before this (or any other) model can be used to obviate field investigation on some level. Likewise, field work is also needed to verify potential historic site locations and refine this aspect of the record in a similar fashion.

Aerial photographs of the study area, maintained in the Houlton NRCS office were analyzed and used to make the distinction between the sensitivity categories for Native American sites; again, this work was done by Putnam. Soil type, slope, distance to perennial surface water and the nature and magnitude of the surface water were considered as potentially significant attributes. A base map compiled from NRCS orthophotoquad soil maps was used to plot the general sensitivity categories for later application during the limited field work and in the future by NRCS personnel and others.

Field testing of the Native American site model was conducted by a crew of archaeological technicians from the UMF ARC and the consulting prehistoric archaeologist during five days in October, 1994. Due to the limited nature of the study and the general lack of information regarding Native American sites in the study area, this field work was focused on identification of such sites in high and very high sensitivity locations. A total of 121 50 cm x 50 cm standard test pits were excavated to various depths in various settings, most associated with terraces bounding larger drainages or lake shore locations. Some effort was also allocated to surface inspection of cultivated fields during the field work, but this was rather limited. Field work was only undertaken after first obtaining permission from the landowners.

Test pit excavation located two previously unknown prehistoric sites (ME 149-4 and ME 149-5) and a possible historic foundry at one of these sites (ME 149-5). Excavation of test pits also contributed additional information about two previously identified sites, ME 149-2 and ME 149-3. Two other new sites were found in the initial field inspection, ME 149-7 and ME 149-8, and the location of a fully grooved, pecked and ground stone axe was also recorded as a site, ME 149-6.

Seven prehistoric Native American sites are now known within the study area, of which five were first identified during the present study in one fashion or another. Additional information from local informants was collected during the work that may lead to identification of additional sites with more documentation in the future.

It should be emphasized that the limited field work was explicitly focused on the search for Native American sites and not historic Euroamerican sites. Although the site of a probable historic foundry was encountered during test pit excavation, no specific effort was made to locate or investigate historic Euroamerican sites in the field given the limited time and the lesser known nature of the prehistoric record in the local area, as noted above. Moreover, this decision was influenced by general MHPC significance criteria which exclude most nineteenth-century sites unless they are of exceptional character.

As described at greater length below, Aroostook County was first settled by Euroamericans in 1807, under significantly different circumstances than the remainder of the State of Maine; slightly earlier Eurocanadian settlement, specifically Acadian, occurred in northernmost Aroostook county during the late eighteenth century. In any case, the County, as it is known locally, has a unique history of industrialization and agricultural development, as well as a complex relationship with neighboring New Brunswick, Canada. Evaluation of the local historic sites within the study area in the future may require modification of general significance criteria used elsewhere in the state to suit Aroostook County, that is, to include archaeological sites attributable to initial settlement, international conflict, and early industrialization and agricultural development. Like Native American sites, early historic Euroamerican sites are certainly represented in the study area and may suffer adverse effects from future NRCS undertakings, as well as a broad spectrum of other projects that fall under State and Federal regulation.

All field and laboratory work was conducted under the general supervision of Dr. James B. Petersen, Principal Investigator. Field work was supervised by David E. Putnam, a prehistoric archaeology and terrain analysis consultant, and Peter Miller, an assistant research supervisor for the University of Maine at Farmington Archaeology Research Center. Dr. Kathleen Wheeler, a historical archaeology consultant, also contributed to this study through her initial historical background research.

ENVIRONMENTAL SETTING

The basin of the main branch of the Meduxnekeag River is located in southeastern Aroostook County, Maine, and adjacent New Brunswick, Canada. It drains approximately 749 square km (289 square mi). In Maine, it includes all or portions of the towns of Amity, Hodgdon, Linneus, Littleton, Ludlow, Monticello, New Limerick, Oakfield, Smyrna, Cary Plantation, Dudley Township, Forkstown Township, Hammond, TA R2 WELS and TC R2 WELS (see Figure 2).

The Meduxnekeag River flows into the St. John River in Woodstock, New Brunswick. It is one of several major tributaries of the St. John River that drain much of extreme northern Maine. The St. John River flows eastward to the Bay of Fundy at St. John, New Brunswick. The watershed boundaries that define the present study area are shared with four other river systems, indicating its potential significance to aboriginal or Native American groups that used these waterways as travel corridors (Cranmer and Spiess 1993).

To the north, the headwaters of Mill Brook oppose those of St. Croix Stream, a tributary of the Aroostook River. To the southeast, eastern tributary brooks of the South Branch of the Meduxnekeag River oppose the headwaters of the Eel River, another St. John River tributary. To the south, the St. Croix River flows to the Gulf of Maine in Passamaquoddy Bay, and to the west, the Mattawamkeag River is a major tributary of the Penobscot River that flows south into Penobscot Bay. The Meduxnekeag River basin offers relatively easy access into these divergent systems. In combination, they provide relatively easy access to points on the Gulf of Maine and Bay of Fundy separated by 280 kilometers. In addition, the headwaters of the Miramichi River, which flows into the Gulf of St. Lawrence, are only 50 kilometers to the northeast of the project area.

The study area includes a number of lakes and ponds in the various headwaters, most of which are associated with the Mill Brook drainage (i.e., Timony Lake, Cochrane Lake, Bradbury Lake, Clancy Lake) (see Figure 2). Meduxnekeag Lake has had a history of several dams. The existing dam has raised the surface elevation approximately 2 meters (m) above the natural level of the lake. Nickerson Lake has never been dammed to our knowledge.

A large esker system, known as the Littleton Esker, trends southward through the study area and affects the pattern of many drainages. A chain of small, deep, cold, kettle ponds are present in the towns of Houlton and Littleton. With the exception of Sam Drew Mountain at an elevation of 433 m (1,421 ft) and associated ridges that form the northwestern drainage divide, the Littleton Esker system provides a major element of topographic relief in the study area.

Generally, relief is moderate across the area, with a 61-75 m (200-250 ft) variation between the valley floor and nearby hills. The character of the land is gently rolling, with large open croplands occupying the better soils, and dense northern hardwood and coniferous forest present on poorly drained or excessively rocky areas (Arno 1964). Reduction in the acreage of tilled farm land over the past decade has resulted in a significant amount of fell fields, brush and second-growth woodland in the local area.

Local bedrock consists primarily of weakly metamorphosed limestone and calcareous pelite, and sandstones of Paleozoic age (Osberg et al. 1985). Surficial geological deposits include calcareous tills derived from underlying bedrock, glacial drift and stratified alluvium (Thompson and Borns 1985). Probable glaciolacustrine clays and silts were noted in river cut banks during the field work as well. All of these, except at least some of the alluvium, are attributable to the Pleistocene epoch and are older than about 10,000 years ago.

Much of the forest land in the study area is on poorly drained and shallow soils, as noted above (Arno 1964). Poorly drained areas are unlikely to have ever attracted substantial human occupation, but may provide excellent conditions for preservation of perishable artifacts (e.g., Petersen et al. 1994). Shallow soils indicate stable or erosional surfaces and are commonly strongly acidic in the upper horizons, both characteristics of which are frequently detrimental to preservation of archaeological context (e.g., Nelson et al. 1991). Agricultural land use on the deeper, better drained soils is a source of contextual disturbance to archaeological sites as well. At one point in the historic past, some of the thinner, less favorable settings were cultivated too, but these have been largely abandoned. Unfortunately, the oldest potential archaeological sites in the study area can be expected only on the shallow, largely nondepositional sediments of Pleistocene landforms. Younger sites are potentially there too, but may be buried in alluvium as well.

Limited alluvial deposits attributable to Holocene fluvial processes over the past 10,000 years are present in narrow floodplains along the larger streams and the river. These deposits vary from relatively thick sequences, characteristic of lateral channel progradation, to thinner overbank deposits over eroded tills that seem to indicate a progressive process of focused channel incision. Floodplain alluvium has a particularly high sensitivity for the location and preservation of archaeological sites (e.g., Putnam 1994). Upper, older floodplain landforms are commonly cultivated today, while lower, more recent deposits are commonly vegetated in forest or brush, and are now typically included in riparian buffer zone management.

Lake shores have a high probability for archaeological sites (e.g., Bartone et al. 1991; Hamilton et al. 1984; Nelson et al. 1991), although the context of such sites is typically quite poor. As noted above, the surface of Meduxnekeag Lake has been raised by at least 2 m, indicating that most original lake shore sites may be presently submerged and/or they may have been disturbed by wave action. Nickerson Lake has not been dammed to our knowledge, and any sites there may be better preserved beneath the forest duff.

The local climate is typical of far northern Maine (Cox and Petersen 1994; Fobes 1946), generally consisting of long, cold winters and summer temperatures somewhat higher than other areas of the state due to a more continental aspect. Average precipitation is 37 inches (94 cm) per year, with 115 inches (292 cm) of snowfall. The average annual temperature is 39° F, and the January and July averages are generally about 7-12° F and 61-68° F, respectively.

The biotic communities of the study area are pertinent to issues of traditional Native American subsistence and settlement. The local forest is characterized as the Spruce-Fir-Northern Hardwoods vegetation zone (Westveld et al. 1956). Resident large mammals include white tail deer, moose, black bear, coyote, lynx and bobcat. Mountain lion, wolves and woodland caribou were extirpated from the area in the early twentieth century.

Anadromous Atlantic salmon, shad and alewives once passed up the St. John River and probably the Meduxnekeag River to spawn. Although dams, pollution and overfishing at sea have eradicated anadromous fish runs over the last century, these fish likely were very important to prehistoric Native Americans, and the timing and geographic distribution of their runs likely affected subsistence and settlement patterns. Resident brook trout, lake trout (togue), white and yellow perch, pickerel and suckers are present throughout the drainage. Landlocked salmon, smelt and brown trout were stocked in the drainage early in the twentieth century.

The evolutionary development of local and regional biota was certainly of great importance to human populations during the Holocene epoch. Conditions have varied from tundra and spruce-poplar parkland soon after deglaciation in the late Pleistocene until ca. 7500 B.C. to pine and hardwoods during what was likely the postglacial climatic optimum, ca. 5500 B.C. to ca. 2500-2000 B.C. Near-modern conditions were established thereafter, with an increase in conifers since ca. A.D. 1, as cooler conditions prevailed (Anderson et al. 1986). Human populations were present by at least 8500 B.C., and undoubtedly adapted to these changing conditions, as described in the following section.

CULTURAL SETTING

Regional Native American Prehistory and Early History

Archaeological research at Native American sites has been long undertaken in Maine and New Brunswick, but it has been particularly focused in coastal localities where site preservation and visibility have attracted systematic research (e.g., Bourque 1976; Bourque and Cox 1981; Cox 1983; Davis 1978; Sanger 1982, 1987). Interior, noncoastal localities have received considerably less attention to date, due perhaps to a mistaken perception that they characteristically exhibit poor stratigraphic development and organic preservation (e.g., Borstel 1982; Kopec 1985; Sanger et al. 1977). The case is similar for many noncoastal sites in northern New England and adjoining Canada (e.g., Deal 1985; Petersen et al. 1985), with some notable exceptions (Petersen and Putnam 1992; Putnam 1994). Indeed, a bias toward coastal investigation may be largely responsible for some long-standing misconceptions regarding the culture history of the region (Robinson et al. 1992).

Archaeological research in the Meduxnekeag River basin prior to this study was apparently limited to a single mitigation project at the Smith Bridge prehistoric site (ME 149-2) in the town of Houlton (Cranmer and Spiess 1993) and some associated cursory reconnaissance survey undertaken by the UMF ARC. That report was an important initial contribution to knowledge of the study area, but it was limited to a Woodland (or Ceramic) period occupation where the context had been substantially disturbed by historic cultivation. Therefore, culture history information from elsewhere must be used at this point to outline the local sequence of Native American prehistoric and early historic developments.

Dated archaeological sites in Aroostook County and adjacent interior New Brunswick are few (Cox and Petersen 1994). The earliest evidence of human presence in the broad region dates to the Paleoindian period, ca. 9000-8000 B.C., in general; the Early Paleoindian period is dated ca. 9000-8000 B.C., while the Late Paleoindian period is dated ca. 8000-7000 B.C. Early Paleoindian artifacts associated with chert quarries at nearby Munsungan Lake have not been reliably dated, unfortunately (Bonnichsen 1981; Bonnichsen et al. 1985). The Early Paleoindian Debert site in Nova Scotia (MacDonald 1966, 1985) has been well documented, and individual diagnostic fluted points have been found at various locations in New Brunswick and interior Maine (Spiess and Wilson 1987; Turnbull 1975). Early

Paleoindian artifacts are typically associated with late glacial outwash and aeolian sands at significant elevations above and sometimes considerable distances from river channels.

Scant evidence of Later Paleoindian period occupation, ca. 8000-7000 B.C., is rare all across the region, although a growing number of find spots of apparently diagnostic projectile points can be specified (e.g., Bartone et al. 1989; Doyle et al. 1985; Keenlyside 1985; Sanger et al. 1992; Nelson et al. 1989). Find spots are known from Quebec's Gaspe Peninsula in the north and across much of the region to the south in widely scattered localities. The artifacts have been found on eroded lake shores (Doyle et al. 1985) and in variably buried contexts in river floodplain alluvium (e.g., Bartone et al. 1989; Sanger et al. 1992).

Evidence of subsequent Archaic period occupation, ca. 7000-1000 B.C., is more common in the broad St. John River drainage, although it too is still poorly understood. The Archaic period can be divided into three subdivisions: Early, ca. 7000-5500 B.C.; Middle, ca. 5500-4000 B.C.; and Late, ca. 4000-1000 B.C. A date of ca. 6200 B.C. was recently obtained from a site at Loring Air Force Base to the north of the study area; it indicates the possible presence of Early Archaic people in the local area (Cox and Petersen 1994). With the exception of that date, no unequivocal evidence of Early Archaic occupation is known from the St. John River drainage, and the possibilities of site destruction due to early Holocene erosion and/or some degree of occupational hiatus have been proposed to account for the apparent absence of such sites in this region (e.g., Nicholas 1986; Sanger 1979; Tuck 1984:14-17). Evidence from the Piscataquis River in central Maine suggests that such deposits may be deeply buried in river floodplain sediments and consequently difficult to find (Petersen and Putnam 1992; Putnam 1994).

Sites attributable to the Middle Archaic period, ca. 5500-4000 B.C., are more common in regional contexts, but have not yet been clearly identified in the St. John drainage (Cox and Petersen 1994). Numerous surface collected and other undated artifacts are known from elsewhere in the state (e.g., Hamilton et al. 1984; Kopec 1985; Spiess et al. 1983; Yesner et al. 1983). However, dated Middle Archaic period components are limited thus far to the lower Penobscot River drainage (Belcher and Kellogg 1987; Petersen and Putnam 1992; Sanger et al. 1994).

Late Archaic period sites, ca. 4000-1000 B.C., are much more common locally and regionally. These remains, although imperfectly understood, represent a variety of regional complexes (e.g., Borstel 1982; Bourque 1976; Hamilton et al. 1984; Kopec 1985; Sanger 1971, 1973, 1975; Tuck 1984:18-41). Unequivocal Late Archaic period remains attributable to the Laurentian tradition, ca. 4000-3000 B.C., Moorehead complex, ca. 3000-1800 B.C., and Susquehanna tradition, ca. 1800-1000 B.C., are all known from the entire St. John River drainage (Butler and Hadlock 1962; Harper 1956; Nicholas 1982; Sanger 1973).

Of particular note, the Cow Point Cemetery, attributable to the Moorehead complex, was excavated near Grand Lake by David Sanger in 1970. It produced an important collection of mortuary goods dated between 1900-1800 B.C. and is one of only a few fully reported sites of any time period within the drainage (Sanger 1973; also see Cox and Petersen 1994; Cranmer and Spiess 1993; Foulkes 1981). In addition, a distinctly northern manifestation presumably attributable to the Late Archaic period, the Tobique complex, has been recognized in the upper reaches of the St. John River, especially in and around the Tobique River area in New Brunswick (Sanger 1971; Tuck 1984:31-33). It may be related to the Shield Archaic tradition of northern Canada, but it remains largely enigmatic.

Late Archaic materials are found in a variety of settings, usually associated with lake shores and river floodplains (Bartone et al. 1992; Nelson et al. 1991; Petersen 1991). The two possibly diagnostic artifacts documented in this study are likely attributable to the Susquehanna tradition, ca. 1800-1000 B.C. As presented in more detail below, a surface collected stone axe was reportedly found in a potato field more than 150 meters from a moderate-sized waterway, Moose Brook, and several kilometers from the main river. A projectile point biface fragment, recovered from a test pit in floodplain alluvium at another location, is suggestive of the "Susquehanna Broad" type, one of the stylistic hallmarks of the Susquehanna tradition (e.g., Borstel 1982; Bourque 1976).

The final major era of prehistory, known as the Ceramic period in Maine and as the Woodland period in most of northeastern North America, is divisible into three periods: Early, ca. 1000-100 B.C.; Middle, ca. 100 B.C.-A.D. 1000; and Late, A.D. 1000-1550. Evidence of all three periods is variably represented in the St. John River drainage, although Early Ceramic period remains are scarce relative to the latter two periods (e.g., Butler and Hadlock 1962; Foulkes 1981; Sanger 1979, 1981; Turnbull 1975). Ceramic period sites are known from the length of the St. John River, but relatively few have been radiocarbon dated or thoroughly reported (Foulkes 1981; Turnbull 1975). The Smith Bridge site (ME 149-2), reported by Cranmer and Spiess (1993) directly within the study area, assumes additional importance in this light.

Ceramic period sites have been more completely studied in coastal and interior settings elsewhere in Maine (e.g., Borstel 1982; Bourque and Cox 1981; Cox 1983; Hamilton 1985; Spiess and Hedden 1983) and New Brunswick (e.g., Allen 1981; Davis 1978; Deal 1985; Sanger 1987). Ceramic period populations across the region are known for their production of pottery and cultivation of crops. Cultivation is thought to have only reached southwestern Maine late in prehistory, although a carbonized squash fragment dated to ca. 4300-3700 B.C. from the Sharrow site in central Maine (Petersen and Putnam 1992) raises questions. Some degree of increased population density and sedentism may have occurred during the Ceramic period, especially along the Atlantic Coast.

The Etchemin people, currently known as Maliseet or Malecite, were the prevalent Native American group in the area when first recorded in the seventeenth century. They lived a seasonally nomadic lifeway, moving between "large summer villages and dispersed winter settlements" (Erickson 1978:123). Crop cultivation had only variable importance among local native economies and was combined with seasonal fishing and hunting activities. A major Maliseet settlement was located at Meductic, ca. 20 km below the mouth of the Meduxnekeag River on the St. John River. Other settlements were recorded up and down the St. John River as well, and early accounts place "Etchemin" people south to Penobscot Bay (Prins 1992).

Maliseets and their close kin, the Passamaquoddies, remain today in a number of communities scattered throughout eastern Maine and New Brunswick. The Houlton Band of Maliseets comprise the major landholder in the Meduxnekeag study area, for example. Many Micmac people also currently live in the area on both sides of the international border.

The St. John River served as an important travel artery between coastal New Brunswick and Nova Scotia to and from Quebec in early historic times (Day 1989:3-4). This pattern is attributed to prehistoric Native American canoe route precedents (Cranmer and Spiess 1993). Again, the importance of the Meduxnekeag basin as a central location on the St. John River, with easy carries into the Penobscot, St. Croix and Miramichi rivers cannot be overstated in terms of prehistoric settlement.

Local Euroamerican Historical Background

Historical settlement of the study area by non-native people, specifically Euroamericans and Eurocanadians, began relatively late in relation to more coastal portions of Maine and adjacent New Brunswick. In large part, this was due to its relative remoteness from the coast and uncertainties about its status as part of the United States or Canada. Competing claims to much of northern Maine were made first by France and England in the seventeenth and eighteenth centuries, and then by the United States of America and Great Britain thereafter. Madawaska, situated in the northernmost portion of modern-day Aroostook County, was settled by Acadian French in 1785, or so, marking the first permanent occupation of the region by European people (Day 1989).

Houlton was the first Euroamerican settlement in Aroostook County in 1807 and was only connected with the rest of Maine when a road was built in 1827 (Day 1989; Putnam 1958). The first really adequate road to Houlton came as a military road in 1832 from Bangor via Madawamkeag.

Resolution of the so-called Aroostook War in 1842 and the attendant treaty established the St. John River as an international waterway. Thus, the Meduxnekeag River and other nearby areas to the north in Aroostook County have been bound as much to the province of New Brunswick and the port of Saint John as they are to Maine.

A combination of agriculture and local industry accompanied the permanent Euroamerican (and Eurocanadian) settlement of the study area in the early to mid-nineteenth century. Logging and the lumber industry was important early on too. By 1810, Aaron Putnam, one of the first settlers of Houlton, had established a saw mill on the Meduxnekeag River in town (Judd 1989; Putnam 1958). Various saw mills and other local industries followed thereafter, as described more fully below. The arrival of the Houlton Branch Railroad, a short line between Houlton and Woodstock, New Brunswick, in 1870, was a particularly important factor in linking the local economy to external markets, but initially through Canada and not the United States. The Bangor and Aroostook Railroad was constructed in the early 1890s and reached Houlton in 1893, thereby better establishing an economic link to the rest of Maine (Judd 1989; Putnam 1958).

Further details about local history are presented in the discussion of the historical background research undertaken as one component of this study. Brief summaries of local history are presented below for the towns of Hodgdon, Houlton, Linneus, Littleton, Ludlow and New Limerick, representing the large majority of the area.

PRELIMINARY FIELD INSPECTION

From late September through mid-October, 1994, Putnam spent a total of five days examining various portions of the study area to determine the range of local environments and specific attributes characteristic of each of these. Much of the time was spent along various reaches of brooks and rivers, and in examination of lake shores. A lesser amount of time was devoted to examination of eskers and fortuitous exposures associated with road cuts, gravel pits and plowed fields.

Although this field inspection was meant to provide a general assessment of the project area, two prehistoric Native American archaeological sites (ME 149-4 and ME 149-5) were identified during this field work. Both sites, described in detail in a subsequent section, were identified on the basis of fire-cracked rocks eroding from cut banks at the mouths of several brooks along the Meduxnekeag River. Site ME 149-4 was identified at the mouth of B Stream and ME 149-5 was discovered at the mouth of Moose Brook. No archaeological testing was conducted at either locality after their identification, however, as the principal goal of the field work was identification of new sites, not site evaluation.

The distributions of alluvial floodplains, erosional river terraces and knolls of outwash sand were noted, and lakes were evaluated for evidence of damming during the initial field inspection. Arrangements were made with several landowners whose property was assured to be of interest in the following subsurface testing component of the field work. Inquiries were made regarding possible prehistoric artifact collections, resulting in the documentation of a possible Archaic period stone axe and the location of a small collection from Grand Lake Matagamon (belonging to Mr. Philip Howe, School Street, Houlton). The latter collection contains a "stone bowl, stone rod, and large, black, non-stemmed, lobate based, biface," from the owner's description. However, it was not evaluated further given that it did not originate within the study area.

Following the preliminary field inspection, a predictive model for Native American archaeological sites in the study was designed. This model grew out of the field inspection and past experience in Maine and various other areas, as described more fully below.

PREDICTIVE MODEL DEVELOPMENT FOR NATIVE AMERICAN SITES

Introduction

The development of any predictive model in archaeology can never be complete. Even in areas where the archaeological sites are well known, human activities and chance occurrences that preserve sites or special artifacts are likely to surprise us. In the Meduxnekeag River basin, the resource base for archaeological sites, both prehistoric and historic, and most other cultural resources is virtually unknown. Because this portion of Maine is significantly different than other, better known areas, analogies taken from elsewhere may or may not be appropriate. The field work component of this study was a first step to address the problem, but NRCS (and other) field personnel must remain observant in all areas of the landscape for archaeological remains. Perhaps the greatest danger of presenting such a model is not that it may be inaccurate or "wrong" in some sense, but that strict adherence to any one model may be limiting. In such cases, subsurface testing or other kinds of close observation might be solely restricted to areas where sites are expected, thereby perpetuating a bias of some sort.

Building upon experience in other areas, the landscape in the study area has been divided into four categories, or "strata," of archaeological "site potential." "Site potential" is used in this context to mean "the probability that a general environment, or landscape category, attracted concentrated human activity and preserved it in a potentially visible state." Issues of preservation potential within the larger categories are also important, but must be evaluated carefully by trained archaeologists on a case-by-case basis.

Archaeological predictive models have been developed and used for a variety of purposes with varying success in Maine (Petersen et al. 1988a, 1988b, 1988c; Petersen and Putnam 1988; Putnam et al. 1986), in the region (Thomas and Doherty 1985) and more broadly (King et al. 1992). The most useful models are those that are assumed to be imperfect and include stratified sampling strategies that involve <u>all</u> portions of the landscape for their testing to provide data for ongoing revision of the model. Notably, models used as a template for determination of where archaeological surveys will be required are self-perpetuating and therefore are flawed in conception to one degree or another.

Most models of archaeological site distribution, including the one presented here, are based on knowledge of where most sites are likely to occur. Often, the most important and exciting archaeological finds are those that differ from expectations, however. Indeed, these finds are often the catalyst for the reconstruction of fundamental paradigms, and spur broad revision of models of archaeological process (e.g., Robinson and Petersen 1992).

Thus, the real value of any model is inherent in an attendant sampling strategy. Models structure the way we think about the landscape and they can be very useful in the identification and testing of assumptions of where sites are likely to occur. Ultimately, all models should be flexible to allow for the incorporation of new and potentially different information.

The criteria used to develop the predictive model in this study can be best envisioned as hatched overlays on a map. Each hypothetical overlay depicts a specific attribute that is believed to be conducive to archaeological deposition. As additional overlays are applied, overlapping attributes cause some areas to become increasingly dark, suggesting a higher potential for the presence of archaeological deposits. Spots that are essentially black after all attributes are applied should contain a site or sites, unless they have been removed or destroyed through post-depositional processes. Conversely, areas with no overlay should be completely free of sites. No model will ever be exact, however, and a fairly high percentage of sites will likely be found where the model says they shouldn't be. Typically, one expects to find sites in the areas with the highest sensitivity, however.

It should be emphasized that this predictive model is designed to address Native American sites that were situated in the study area prior to substantial European contact, that is, under "traditional" settlement criteria. Thus, it must be a composite of all such occupations over the long span of aboriginal occupation, reflecting shifting priorities in landscape utilization over time. However, it should be emphasized that both potential Paleoindian period and Contact period occupations, the earliest and latest "traditional" native sites in other words, were somewhat differently situated on the landscape than the vast portion of the expected Native American sequence during the Archaic and Ceramic periods.

Paleoindian sites are not necessarily situated close to modern water bodies due to their use of a landscape that was substantially less vegetated than later during the Holocene epoch. Paleoindians thus often chose relatively high, well-drained settings for their sites, sometimes well away from substantial water bodies. Likewise, early Contact period (and late prehistoric) sites were often situated in high, defensible settings given the nature of sociopolitical dynamics at the time.

In contrast, Archaic and Ceramic period sites were typically situated near water first and foremost. As a result, this model is more applicable to these latter sites which clearly represent the large majority of all potential Native American sites in the study area, with some likelihood that it applies to most, if not all Paleoindian and Contact period sites as well. Nonetheless, it should be recognized that somewhat rare (but certainly important) Paleoindian and Contact period sites may be found in other areas away from water and care must be taken not to completely ignore them during evaluation of proposed modification of the local landscape. It should be further noted that other "unusual" site types, such as cemeteries, lithic raw material acquisition or "quarry" locales, among others, are not necessarily represented in this model; these too should be considered during evaluation of the local landscape, whenever possible.

The specific criteria considered and this study are outlined below, after which the archaeological sensitivity categories are described in some detail.

Predictive Model Criteria

1.) Distance to perennial water is perhaps the most important factor in locating archaeological sites. It also may represent one of our largest biases. Certainly, a substantial number, if not most prehistoric sites in Maine and the broader region are situated near water since traditional travel corridors followed waterways, as noted above in reference to "canoe routes" (e.g., Hamilton et al. 1984; Thomas and Doherty 1985). However in Montana, for example, the lack of forest lands in river valleys has forced U.S. Forest Service archaeologists to search for sites in other environments. An extensive search of mountainsides, saddles, high mountain passes and alpine meadows has generated hundreds of prehistoric archaeological sites there, while few are known from the river valleys. Unlike Maine, the environment there facilitates identification of sites through surface examination. Similar patterns are found in the arid lands of the Great Basin and Columbia Plateau, where excellent surface visibility allows identification of sites attributable to activities such as root gathering that have nothing to do with the proximity of water. Occasional sites in Maine and research in mountainous areas elsewhere in northern New England (e.g., Lacy 1994) suggest that we might be missing an entire suite of sites in the forested uplands, but the reluctance of Maine's forest to reveal it's secrets has resulted in a strong correlation between known sites and perennial water sources. As always, we will find sites where we look for them.

2.) Drainage Order involves the simple premise that the larger a stream or river, the more likely we are to find associated archaeological sites. In the Meduxnekeag study area, the local drainages were divided into three basic strata: a) the main branch of the Meduxnekeag River between Cary's Mills and the international border was given a 200 meter buffer along each bank, as were all lake shores; b) larger tributaries, such as Big Brook, B Stream, the South Branch, Moose Brook and Mill Brook were given a 100 meter buffer to their mouths; and c) the smallest perennial tributaries were given a 50 meter buffer on each bank to their mouths, overlapping that of the water body into which they flow. By overlapping the successive strata of stream order over the point where streams flow into a larger water body, the added influence of confluence is recognized.

3.) Slope is an important element in human habitation. Although countless examples of sites on steep slopes can be specified, due to valuable resources such as a salmon intercept point or lithic quarry, for example, most occupation sites occur on land with less than 15% slope. Mortuary sites in Maine are sometimes associated with eskers, particularly where they intersect a river. So, this attribute which is seen as positive for occupation may under-emphasize some settings where ancient cemeteries are present, but cemeteries are relatively rare in all settings in any case.

4.) Eskers and sandy knolls are known to contain Archaic period cemeteries and Paleoindian materials in the region. Areas of prominent relief that offer a wide view of the surrounding landscape, or that occur in close proximity to rivers or lakes are considered to be potential site locations in general. A substantial portion of the Littleton Esker is notable for its potential sensitivity.

5.) Internal drainage of soils also may well have affected choices of habitation sites by Native American people. Well to moderately drained substrates are favorable to habitation, while very poorly drained areas likely would have been avoided. Some poorly drained areas are extremely favorable to preservation, although concentrated deposition of archaeological material is not likely to be common. Peatlands and other wetlands may potentially produce occasional finds of great significance (e.g., Petersen et al. 1994). They are not considered to be common or easily predictable at this stage, however, and generally have a low potential for archaeological deposits in this model.

The categories of archaeological sensitivity used in this study bear further explanation too.

Archaeological Sensitivity Categories

1.) Very High Potential

This category includes areas that most archaeologists would instinctively choose to search for sites. In the Meduxnekeag study area, the areas deemed to have Very High Potential include floodplain and terrace alluvium within 100 meters of the main river below the confluence of the South Branch of the Meduxnekeag River at Cary's Mills on either bank of the river near the mouths of perennial brooks. Major confluences above the main stem of the river, such as Moose Brook, Mill Brook, and Hunter and Mill brooks, are also included.

Lake shore locations such as inlets, outlets, prominent points and sheltered coves are likewise included in this category. Relatively level, well-drained surfaces within 100 meters of these features are likely to contain archaeological resources. This setting is known to preserve habitation sites, ranging from small, seasonal camps to larger settlements. Artifact density can range from a thin veneer over a broad area, resulting from long-term use of various types, to concentrations of very high density in places where habitation was concentrated and recurrent through time.

2.) High Potential

This category includes relatively level, moderate to well-drained surfaces within 200 meters of the banks of significant perennial streams, rivers and lakes. Significant water bodies are here generally defined as those that provide year-round habitat for significant fish populations and/or that provide an access route to other areas of importance, such as lakes, other watersheds, or large areas of upland game habitat. This category also includes esker crests and sandy knolls within 200 meters of the described drainage types. This category overlies areas of Very High Potential, increasing the potential of areas within both categories and including an additional 100 meters of high potential area peripheral to Very High Potential areas along the main river.

This area is likely to exhibit archaeological patterning similar to the Very High Potential area, but artifact densities are likely to be less and habitation sites will be smaller. Special activity sites may be present in association with locations where fish might be present or important to local travel corridors, for example.

3.) Medium Potential

Medium Potential areas comprise a substantial portion of the study area. They include all lands within 100 meters of the margins of small perennial and intermittent surface drainages, such as small brooks, springs and wetlands, as well as knolls and vantage points away from water sources with moderate drainage. Sites potentially present in such settings are likely small and widely scattered, have low visibility characteristics, and likely represent special activity sites. Although the potential for encountering such a site in any given NRCS undertaking is moderate to slight, they are almost certainly present across the local landscape.

4.) Low Potential

Low Potential areas include all other portions of the study area. Steep, rocky, or poorly drained lands are not typically attractive to human habitation. Areas of land without any distinguishing topographic or specific resource characteristics are included in this category. Undoubtedly, archaeological sites are present in these areas too, but the probability of encountering them in NRCS undertakings, or in archaeological survey is presumably low.

Predictive Model Implementation

The utility of a complete categorization of the study area using these four categories is still limited at this point, even after completion of this study for reasons discussed more below. The mapped areas of the different site sensitivity categories reflect the modern and late glacial drainage patterns at the grossest scale (Figure 3). Specific, more precise determinations regarding small-scale topographic and resource features of the landscape still need to be made in the field by NRCS (and other) personnel. As emphasized above, no predictive model will ever completely replace the need for field inspection and where warranted, more exhaustive cultural resource investigations (i.e., archaeological phase I, II and III work, as needed). For example, areas where NRCS undertakings will involve Very

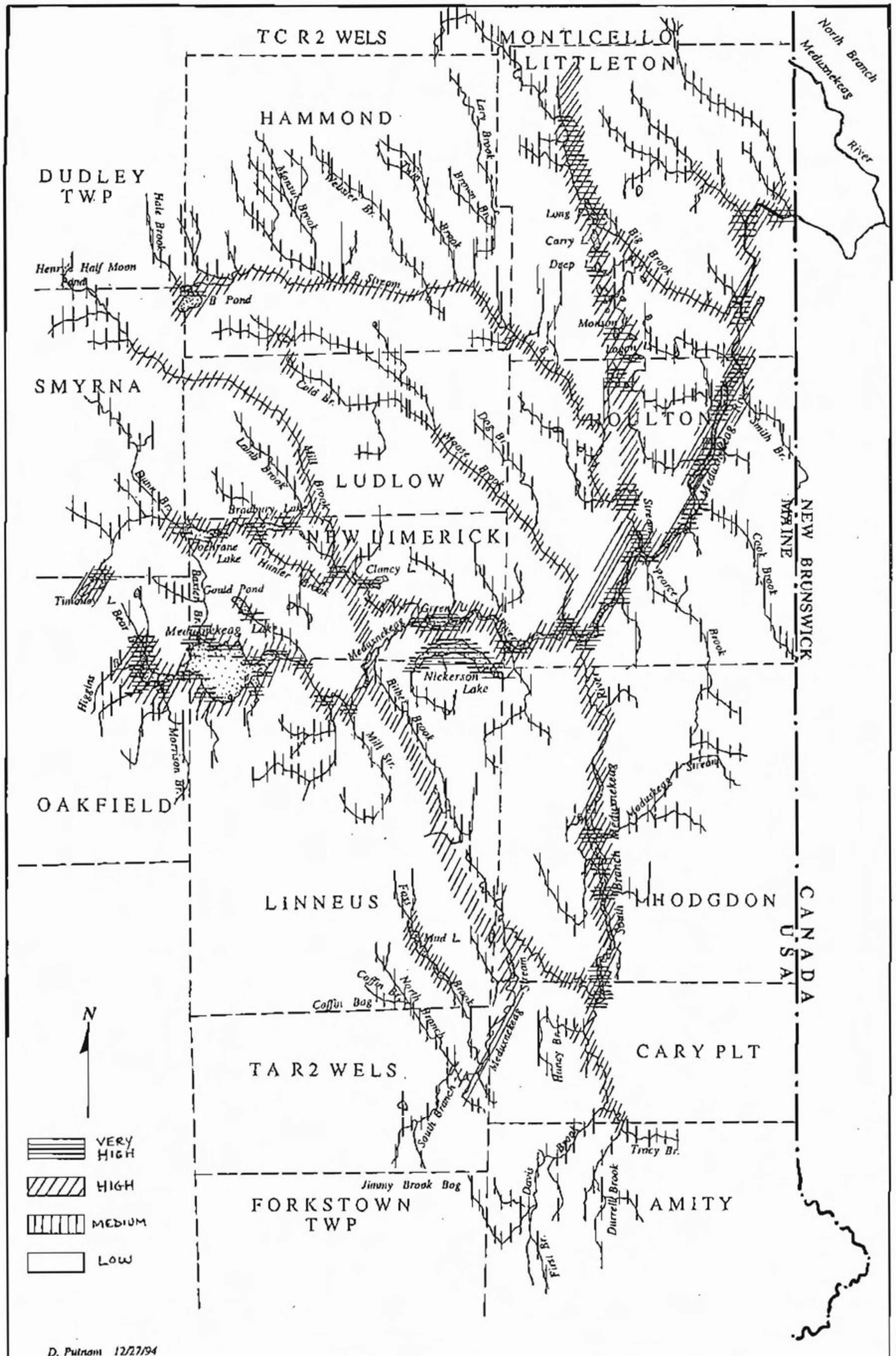

Figure 3. Map of the Meduxnekeag River basin showing the distribution of Native American site sensitivity categories within the study area.

High Potential or High Potential settings should include a professional archaeological reconnaissance survey early in the planning stage. It is possible that Medium Potential and Low Potential areas perhaps can be examined for sites (and other cultural resources) by competent NRCS personnel after specific training for historic preservation. Perhaps, cultural resource examinations can be accomplished by NRCS personnel in some cases within the framework of future site evaluation for additional compliance issues, such as wildlife habitat, wetlands and soil survey testing.

BACKGROUND RESEARCH FOR HISTORIC EUROAMERICAN SITES

Introduction

Historical background research for Euroamerican sites was undertaken by Wheeler over the course of two days at the Maine State Library and at the MHPC in Augusta. Town histories, maps, water-power surveys, archaeological reports and site-file inventories were examined for background information about the towns of Hodgdon, Linneus, Littleton, Ludlow and New Limerick, and the city of Houlton. A complete set of USGS topographic maps for the study area was compared with earlier historic maps of this portion of Aroostook County to document addition and loss of historic structures over the past 120 years or so.

Background research in general indicates that Euroamerican exploitation of the Meduxnekeag River basin began in the first decade of the nineteenth century, as noted above, although Eurocanadian settlement had begun several decades earlier in far northern Aroostook County. Houlton was the first town in Aroostook County to be settled by Euroamericans, relying heavily on water-powered industries and agriculture. Lumbering offered a primary source of revenue to the Meduxnekeag River towns, and saw mills were primarily powered by water.

The third and fourth quarters of the nineteenth century saw a small boom in the growth of Hodgdon, Houlton, Littleton, Ludlow, New Limerick and other nearby towns. However, after the Depression, during the early to mid-twentieth century, the small town industries began to fade. Comparison of modern topographic maps with an 1877 atlas of Aroostook County (Roe 1877) indicates abandonment of various old farmsteads and nearly all early water-powered mills, for example.

Archaeological survey for historic Euroamerican sites in this part of Aroostook County has been minimal, as for prehistoric and historic Native American sites. One historic period site has been registered in the MHPC files, the Hancock Barracks site in Houlton. The location of this American fort is marked with a bronze plaque, recognizing it as the American headquarters during the Aroostook War in the late 1830s and early 1840s. The precise locations of the various military housing and other structures have not been determined by field work, however. The Hancock Barracks site may be the military station referenced in Varney (1882:284), which was established in 1830 and deserted in 1847. In

1882, when Varney was writing, the barracks were on the outskirts of the village of Houlton near the railway station and in a bad state of repair. On a late nineteenth-century map (Roe 1877), "Houlton Barracks" is noted at the east edge of Houlton Village, but no structures are depicted. This site is part of the urban compact of Houlton, which is to be avoided in this study. Many more potential historic Euroamerican sites are likely present in or near the study area (Table.1).

The following section surveys each of the towns of Linneus, Hodgdon, New Limerick, Ludlow, Littleton, Hammond and Houlton in turn, specifically discussing the early settlement, physical layout of homesteads and water-powered industries and expectations for archaeological sensitivity.

Linneus

The headwaters of the Meduxnekeag and Mattawamkeag rivers are in Linneus, and the main industry in the 1880s was farming potatoes, hay and wheat, with some corn (Varney 1882:332). Settled in 1826 by Daniel Neal of New Brunswick, the town was incorporated ten years later by 1836 (Varney 1882:332). In the final quarter of the nineteenth century, Linneus suffered a slight decline in population, going from 1,008 in 1870 to 917 in 1880 (Varney 1992:333).

The absence of investment in water-powered industry in Linneus may have been a factor in its decline. Two surveys of water power for the State of Maine compiled in the 1860s indicate that the town had available water-power sources that were not being used to their potential. A total of four water-power sources (i.e., waterfalls) was noted in the two surveys (Anonymous 1868; Wells 1869)--Bither Brook, Mill Brook, Beaver Brook and the Meduxnekeag River in the northwestern part of town. The first two were unimproved in the 1860s, while the latter two sources were unoccupied. By 1882, two saw mills and one grist mill were in operation (Varney 1882:332). One saw mill and the grist mill were located at the outlet of Meduxnekeag Lake, and the location of the second saw mill was unspecified (Varney 1882:332) (Figure 4).

No town history is available for Linneus and so, a detailed chronology for its development is not yet possible. The most significant primary source was the atlas compiled

Table 1. Potential Historic Euroamerican Archaeological Sites in the Meduxnekeag Study Area.

Town	River/Stream	Range/Lot	Site Type	Name	Modern Landmark
Linneus	Meduxnekeag River	R9, LB	saw mill	Moses Drew	Meduxnekeag Lake outlet
	Meduxnekeag River	R9, LB	grist mill	Moses Drew	Meduxnekeag Lake outlet
	Meduxnekeag River	R7, L2	farmstead	Mrs. D. Adams	
	Bither Brook	R4, L3	farmstead	D. Plummer	dirt road N of Horseback Rd.
	Bither Brook	R3, L9	farmstead	R. Rockwell	E side Hutchinson Rd.
	Bither Brook	R2, L10	farmstead	L.M.M.	along dirt road to Johnson Road
Hodgdon	S. Branch Meduxnekeag	R9, L9-10	grist mill	Jewett & Durrell	E side concrete dam
	S. Branch Meduxnekeag	R9, L9-10	saw mill	Jewett & Durrell	W side concrete dam
	S. Branch Meduxnekeag	R9, L9-10	carding mill	Jewett & Durrell	N and E of concrete dam
	S. Branch Meduxnekeag	R9, L7	saw mill	C.C. Hutchinson	McIntyre Road
	S. Branch Meduxnekeag	R9, L7	farmstead	J. Hurrington	McIntyre Road
	S. Branch Meduxnekeag	R9, L6	farmstead	M. Hutchinson	McIntyre Road
	S. Branch Meduxnekeag	R9, L5	farmstead	H. Jones	McIntyre Road
	S. Branch Meduxnekeag	R9, L3	farmstead	J. Wilson Taylor	McIntyre Road
	S. Branch Meduxnekeag	R9, L2	farmstead	G. White	McIntyre Road
	S. Branch Meduxnekeag	R5, L15	farmstead	R. Taylor	Horseback Road
	S. Branch Meduxnekeag	R4, L14	farmstead	? Appley	small tributary of Meduxnekeag
	S. Branch Meduxnekeag	R4, L14	farmstead	T. Wilson	small tributary of Meduxnekeag
	S. Branch Meduxnekeag	R4, L5	farmstead	J. Williams	small tributary of Meduxnekeag
	S. Branch Meduxnekeag	R2, L14	farmstead	G. Shaw	small tributary of Meduxnekeag
	S. Branch Meduxnekeag	R1, L12	farmstead	J. Newman & Collins	small tributary of Meduxnekeag
New Limerick	Meduxnekeag Lake	R1, L6	saw mill	Moses Drew	Meduxnekeag Lake outlet
	Meduxnekeag Lake	RF, L6	saw mill	Shaw	N of New Limerick Lake
	Meduxnekeag Lake	RF, L5	tannery	?	now a gravel pit
	Cochrane Lake	RA, L11	saw mill	H.P. Cochrane	between Cochrane and Bradbury L.
	Cochrane Lake	RA, L11	shingle mill	H.P. Cochrane	between Cochrane and Bradbury L.
Ludlow	Lamb Brook	R1, L9	farmstead	D. Hemore	Lamb Brook
	Lamb Brook	R1, L9	farmstead	J.L. Small	Lamb Brook
	Mill Brook	R2, L8	saw mill	D.W. Small	
	Moose River	R1, L1	saw mill	J.F. and R.H. Thompson	
	Moose River	R1, L1	farmstead	J.F. Thompson	
	Moose River	R2, L2	farmstead	A.B. Atherton	
	Moose River	R3, L2	farmstead	L. Ingraham	
	W. small tributary	R2, L13	blacksmith	D.M. Corliss	

Table 1
(cont.)

Town	River/Stream	Range/Lot	Site Type	Name	Modern Landmark
Littleton	Big Brook	R6, L5	farmstead	J. Bannan	now a gravel pit
	Big Brook	R7, L4	saw mill	no name	
	Meduxnekeag River	R2, L5	schoolhouse		Carson Road/Foxcroft Road
	Meduxnekeag River	R2, L5	schoolhouse		Carson Road/Framingham Road
	Meduxnekeag River	R3, L5	farmstead	W. Watson	
	Meduxnekeag River	R3, L1	farmstead	A. Ingraham	
	small tributary	R6, L9	farmstead	H. Drake	south end of town
Houlton	Meduxnekeag River	R4, L14	farmstead	B.R. Gidney	end of Cleveland Road
	Meduxnekeag River	R4, L13	farmstead	J. Lowery	Lowery Road
	Meduxnekeag River	R3, L11	farmstead	G.W. Moore	W side Foxcroft Road
	Meduxnekeag River	Lot 52	saw mill	L.B. Merriam	upstream from village
	Meduxnekeag River	Lot 59	starch factory	Mansur	site of Aroostook & Bangor RR
	Meduxnekeag River	Lot 66	farmstead	G. McGinley	end of New Limerick Road
	Moose Brook	Lot 65	farmstead	H. Nickerson	Porter Settlement Road
	Moose Brook	R12, L18	farmstead	C.J. Maxwell	Ludlow Road

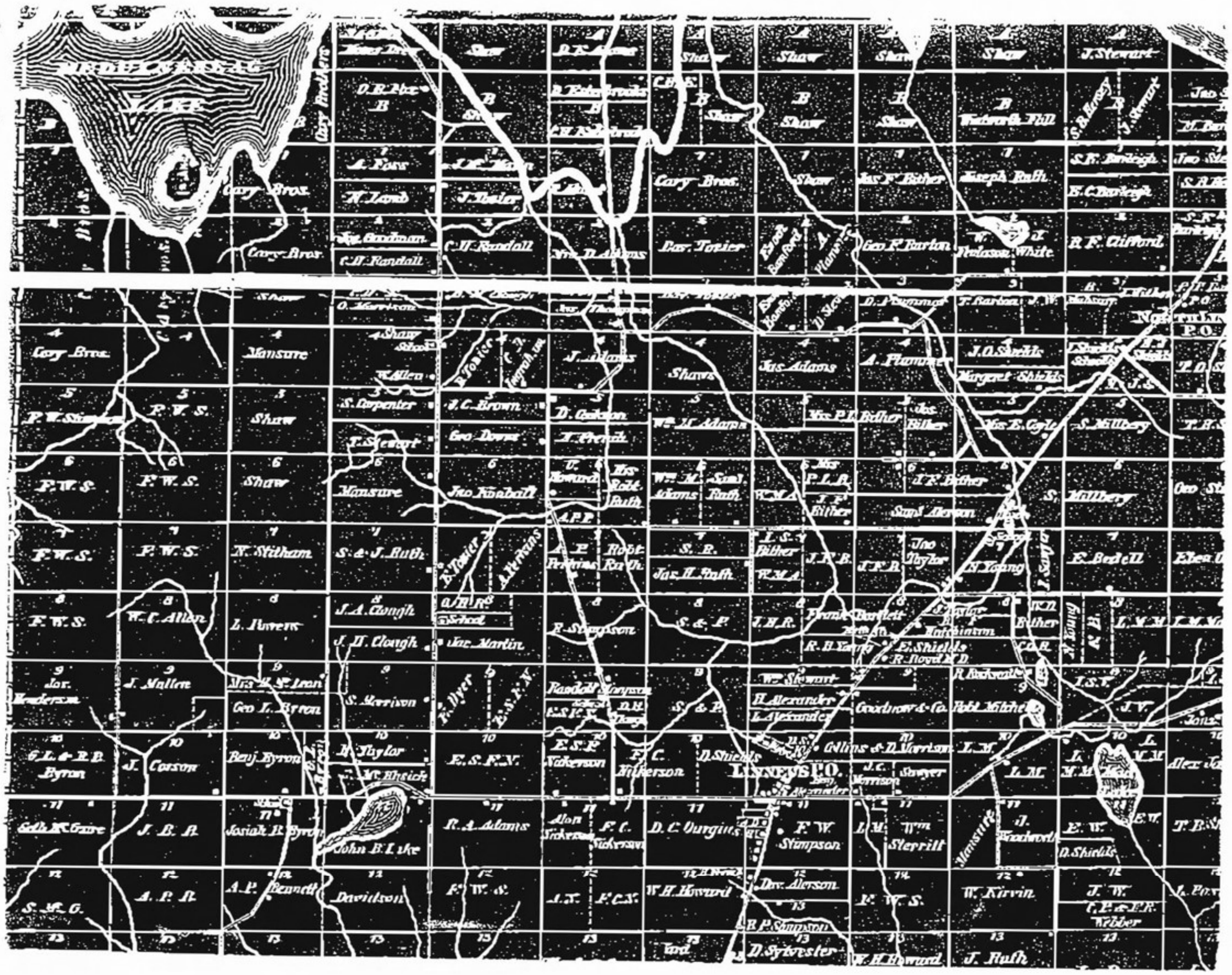

Figure 4. Partial historic map of the town of Linneus, Aroostook County, Maine. Note waterways and historic structures (from Roe 1877).

by Roe (1877) that shows the towns of Aroostook County, as noted above (see Figure 4). All the townships in the study area share the spatial arrangement of the range-and-lot system, that is, lots of equal size were laid out for the landowners. Comparison of the Roe atlas with modern topographic maps indicates that as many as six nineteenth-century archaeological sites may be present in relative proximity to the major waterways in Linneus, including the saw mill and the grist mill at the outlet of Meduxnekeag Lake, and four homesteads (see Figure 4 and Table 1). A larger number of sites may be present at a greater distance from the river and its tributaries elsewhere in town. This number does not include the second saw mill mentioned in Varney (1882:332), which was not depicted on the Roe map.

Hodgdon

The South Branch of the Meduxnekeag River runs through the western part of this town, from south to north, and Hodgdon Village lies along it. Granted in 1797 as two half townships to Westford and Groton academies, Hodgdon was not settled until 1824, when there was a total of five log cabins along the present "Calais Road" [U.S. Route 1] (Scott 1982:19). Nine years later, in 1833, the town was incorporated. Despite this late start, the local history notes that between the years of 1830 and 1870, "Hodgdon contained more industry than any other town in Aroostook County" (Scott 1982:22).

The heart of the local industry in Hodgdon was the South Branch of the Meduxnekeag River which offered three notable sources of water power (Anonymous 1868; Wells 1869). The first fall, or source of water power, was 3.4 m (11 ft) high and operated a grist mill, a saw mill, and a carding and fulling mill (Anonymous 1868). The second fall was 1.8 m (6 ft) high, on which a single shingle mill was located. The lower falls of 2.9 m (9 ft) supported a saw mill with an up-and-down saw, clapboard, shingle and lath saw, and a planing machine. The two upper water-power sources were known jointly as the Jewett and Durrell mills, while the lower fall ran Hutchinson's mills (Anonymous 1868; Wells 1869:310). Varney (1882:281) noted that one of the lumber mills in the village was steam-powered, the only such powered mill recorded during this background research, although others may have been present later on.

The milling industry arrived as early as 1828 in Hodgdon, as John Hodgdon and Jabez Bradbury built a dam in what is known as Hodgdon Village. Hodgdon sold all rights to

Bradbury, who improved the dam and saw mill, and also built a grist mill and carding mill (Scott 1982:12). In between the grist mill and the carding mill, Bradbury constructed an oat kiln for drying grain prior to grinding (Scott 1982:12).

In 1860, the Bradbury sons sold off their rights to the mills to Jewett and Durrell. A year later they built a new saw mill on the western end of the dam and installed the first rotary saw for long lumber in Aroostook County (Scott 1982:12). In 1862, they built a new and larger grist mill. In Hodgdon Village, then, the Bradbury saw and grist mills operated for 32 years, before being replaced by new water-powered mills. The Jewett and Durrell saw mill was apparently built on a new site to the west of the original dam, and it is not clear what happened to the original Hodgdon saw mill. A year later, the Bradbury grist mill was replaced, and it is conceivable that it was sited on the same site as the original grist mill.

In 1877, Hodgdon Village was depicted with the Jewett and Durrell saw mill to the west of the upper dam, the grist mill to the east, with three structures, and the carding mill further along the fall (Figure 5) (Roe 1877). The second fall was not noted on the Roe map, but at the lower fall, Hutchinson's saw mill is recorded just east of the homestead of C.C. Hutchinson (see Figure 5). Hutchinson built the mill in 1854 with an up-and-down saw and in 1868 rebuilt the mill into a two-story structure with a circular rotary saw and clapboard machine downstairs, and a furniture manufactory in the upper floor. After passing to Hutchinson's son, Alonzo, the mill burned in 1885 (Scott 1982:14).

Alonzo Hutchinson restored the dam and "...built a shingle mill over the dam in the middle of the river" (Scott 1982:14). The shingle mill operated until the late 1890s, after which it passed through several owners who did not use the mill. About 1910, Wilbur Harding bought the mill and developed a barrel manufacturing business. Harding milled some long lumber and shingles, but his primary product was "Harding's Famous Plug Head Barrels" for handling potatoes (Scott 1982:15). Harding sold his business to Ransford and Ada Harding Tidd in 1953, who continued the Harding barrel operation until 1964 (Scott 1982:15).

In addition to the water-powered mills, at least four blacksmith shops were constructed locally (Scott 1982:33). At least two were represented in Hodgdon Village (Roe 1877). Blacksmithing did not necessarily require water power, but shops were nearly always located

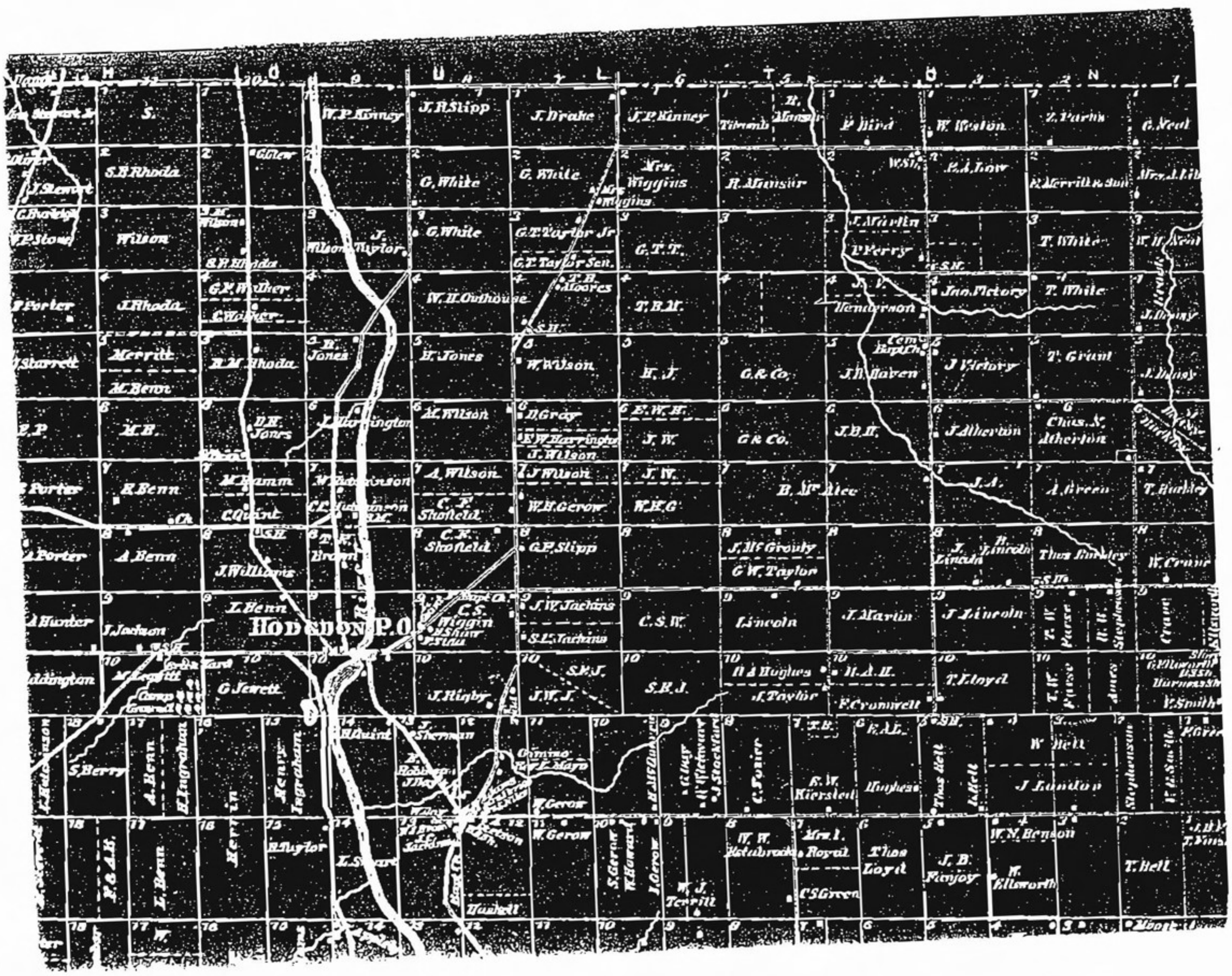

Figure 5. Partial historic map of the town of Hodgdon, Aroostook County, Maine. Note waterways and historic structures (from Roe 1877).

in proximity to major roadways, which in rural settings often coincided with the industrial center of villages.

As many as 14 historic archaeological sites may be in close proximity to the major waterways in Hodgdon (see Figure 5 and Table 1). At the upper falls, the modern topographic map shows a concrete dam where the grist mill and saw mill once stood. All remnants of the mills, including the carding mill lower down on the first fall, are gone from the modern map. At the lower fall (the site of Hutchinson's mills), an earth dam is still indicated, but no signs of the mills are evident. At least four nineteenth-century mills are no longer present and may be represented only as archaeological sites. Along McIntyre Road, five houses shown on the Roe (1877) map are no longer visible, and south of the village six farmsteads are absent from modern maps. All of these constitute potential archaeological sites, along with others potentially present in Hodgdon.

New Limerick

The half township of New Limerick was granted prior to 1810, and was then settled by Samuel Morrison of Wells in 1818 (Smith n.d.:1). Waterways in the town include the Meduxnekeag River and several ponds and lakes; the latter include Nickerson Lake, Cochrane Lake, Bradbury Lake and County Road Lake. Meduxnekeag Lake, known historically as Drew's Lake, is situated in the southwestern corner of the town where it extends into Linneus, as noted above. Lithic resources are mainly granite and limestone, and the town abounded in excellent timber (Varney 1882:387). In 1870, the population was 408, climbing to 590 by 1880 (Varney 1882:387).

At the outlet of Meduxnekeag (Drew's) Lake, before the Meduxnekeag River curves southward into Linneus, a saw mill and a starch factory were powered by the river (Figure 6) (Roe 1877; Smith n.d.). Then, as the river bends northward back into New Limerick, another saw mill was built on the western bank and a tannery was established on the eastern bank (Roe 1877). Along the small stream running between Bradbury Pond and Cochrane's Lake, a shingle mill and a saw mill were erected on either side of the stream; the name associated with this lot is H.P. Cochrane (see Figure 6).

As many as 14 homesteads were located near the Meduxnekeag River, along with one blacksmith shop, a hotel, a schoolhouse, and several stores and offices (see Table 1). All

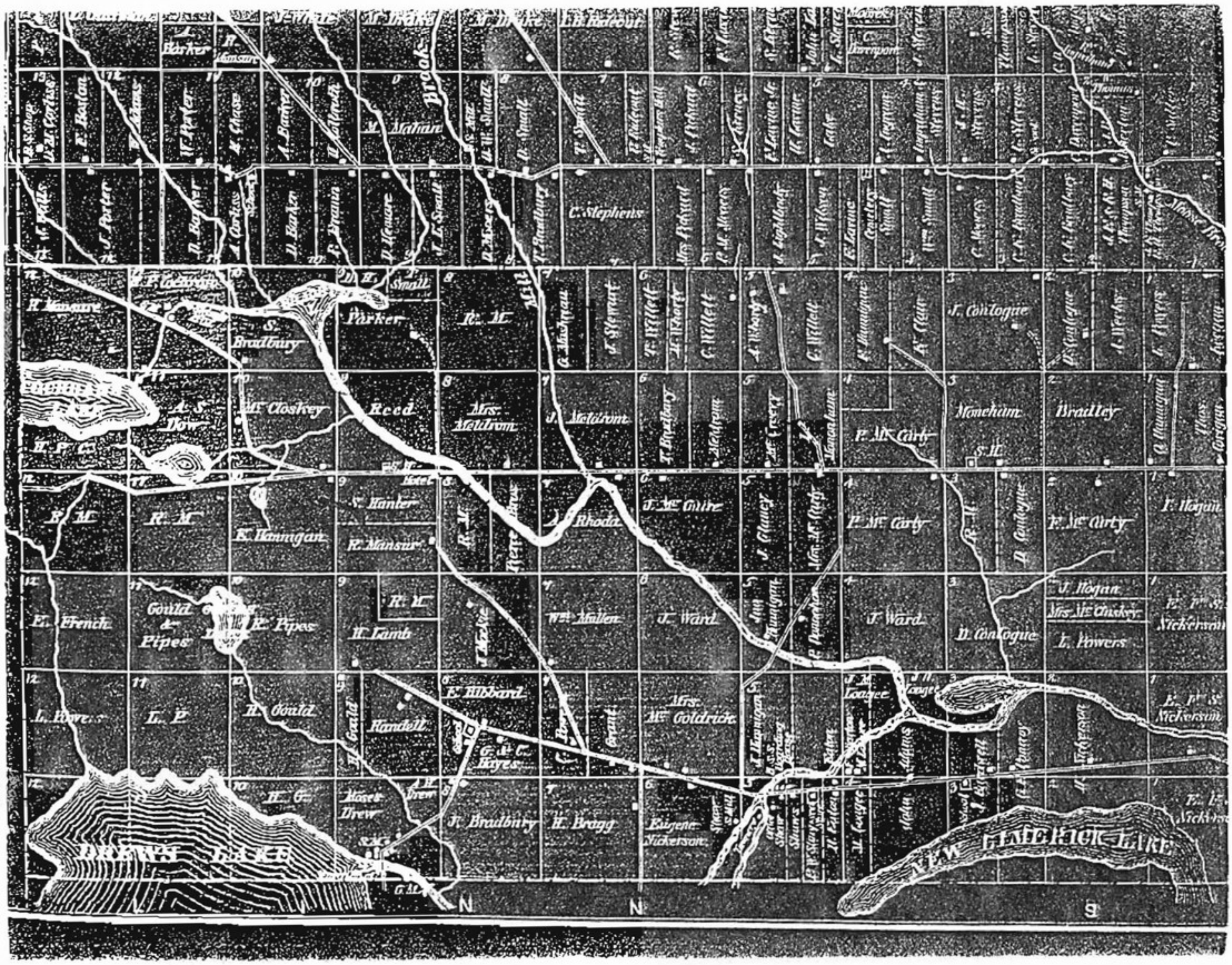

Figure 6. Partial historic map of the town of New Limerick, Aroostook County, Maine. Note waterways and historic structures (from Roe 1877).

water-powered industries are no longer extant and may be represented as archaeological sites. Within New Limerick Village, the settlement density is very high, and field work is required to verify the presence of nineteenth-century house sites. Presently, there is a heavy concentration of houses along the north side of Nickerson Lake, where none had previously appeared in the nineteenth-century sources. Overall, early farmsteads in New Limerick may well have considerable integrity, with a high rate of abandonment for water-powered industries again, as in other local towns.

Ludlow

Ludlow is a half township to the north of New Limerick, with the Moose River, Cold Brook and Mill Brook as the main streams. Ludlow was incorporated in 1864 (Smith n.d.:1). No town history has been yet located and so, a specific sketch of the settlement history cannot be provided. Local rock is chiefly slate, and the main crops are hay, oats, wheat and potatoes (Varney 1882:343).

Nineteenth-century water-power surveys recorded the presence of only one fall in Ludlow, at Small's Mill Brook (Anonymous 1868; Wells 1869), a landmark that is shown as D.W. Small's saw mill along Mill Brook in 1877 (see Figure 6) (Roe 1877). Along Cold Brook, no settlement was recorded on available cartographic sources, while along the Moose River, four homesteads were recorded, along with one saw mill. A blacksmith shop was present along a small tributary at the western edge of town. Nearly all of these residences and water-powered industries do not appear on modern topographic maps (see Table 1).

Littleton

The town of Littleton consists of two separate townships; the northern half was granted to Framingham Academy in 1801, and the southern half was granted to Williams College in 1800 (Varney 1882:337). The grant to Williams College was a full six-mile square township, the northern half of which became part of Littleton, while the southern half was affixed to Houlton. The layout of the ranges and lots of south Littleton and north Littleton correspond to the original grant of the full township. Despite the early date of the grants, the town was not incorporated until 1856 (Varney 1882:337). A town history for Littleton has yet to be located and so, the history of early settlement and development can not be specified here.

Varney (182:338) reported that Littleton was very fertile for crops, and the 1870 population of 700 went to 904 by 1880. Water-power surveys indicate that three falls exist along Big Brook, as well as several on the Meduxnekeag River (Anonymous 1868:188; Wells 1869:343-344). Only one fall on Big Brook was recorded as "improved" in 1868 and this was a saw mill owned by Lewis B. Johnson (Anonymous 1868:189).

The 1877 county atlas shows 23 farmsteads, one schoolhouse, and a saw mill along the several streams and tributaries of the Meduxnekeag River (Figure 7) (Roe 1877). Comparison with modern topographic maps reveals the loss of at least ten homesteads, schools and industries (see Table 1). An old railroad grade cuts through two nineteenth-century farmsteads, and electric power lines run west of the former D. Manson farm. Road systems are much more highly developed today than they were in 1877. One significant feature may be the covered bridge over the Meduxnekeag River on Carson Road.

Hammond

Time did not permit a survey of historic resources for the town of Hammond. However, B Stream traverses diagonally across the town, along with the Mansur, Webster, Twin, Brown and Lary brooks. B Stream is likely to have had historic-period exploitation for water power in Hammond and the other smaller brooks also may have been improved for mills. More background research is required to allow prediction of the number and location of potential historic archaeological sites in Hammond, as with the other local towns which are not mentioned here.

Houlton

The shire town of Aroostook County is Houlton, by far the most populous town in the area. In 1870, the population of Houlton was 2,850, and by 1880, it had climbed to 3,228 (Varney 1882:284). Houlton is blessed with abundant water sources for power, with the Meduxnekeag River flowing from the southwest to the northeast, along with B Stream, and Bog, Moose and Cooks brooks.

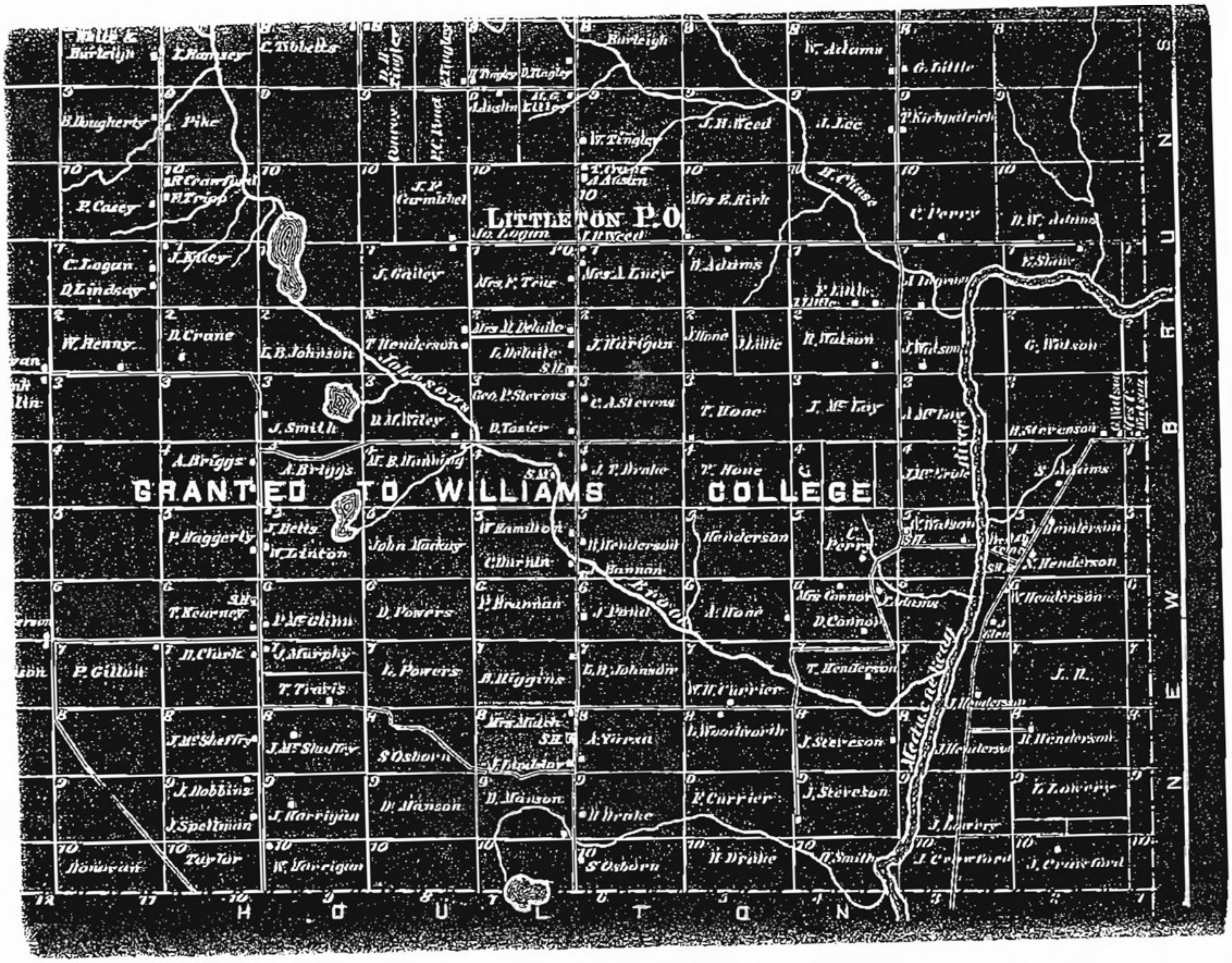

Figure 7. Partial historic map of the town of Littleton, Aroostook County, Maine. Note waterways and historic structures (from Roe 1877).

Long the center of trade for the county, Houlton was settled in 1807 by Joseph Houlton and Aaron Putnam (Old Pioneer 1884; Putnam 1958:19; Varney 1882:284). Both of these early settlers were involved in milling. Aaron Putnam built the first saw mill on the river in 1810 and Joseph Houlton built a saw and grist mill on Cooks Brook in 1811 (Putnam 1958:169), while Carr and Carle built a grist mill at the dam of Aaron Putnam in the village (Putnam 1958:169). Ten years after Houlton had erected his dual-purpose mill, Ebenezer Warner had a saw mill at the falls of the South Branch of the Meduxnekeag River, two miles upstream from Putnam's mill in the village (Putnam 1958:169).

At about this same time, Shepard Cary entered into the first of his many successful enterprises. Beginning first as a retailer, Cary ventured next into lumbering and by 1852, he had built a foundry and machine shop at Cary's Mills (Putnam 1958:170). Cary's Mills is the name given to the confluence of the main branch of the Meduxnekeag River and its South Branch, upon which Shepard Cary established his several mills. The scale of the water power there may be inferred from the following description: "The water was brought in a high flume several rods down across the road to the wheel house of the machine shop to huge overshot wheels more than thirty feet in diameter, similar to the one in the grist mill" (Putnam 1958:170). Cary maintained his interests in the mills at the southern end of town until the 1870s. Henry Sincock bought the grist mill some time before it burned in 1872, and T.S. Getchell and son bought the foundry from Cary in 1875 (Putnam 1958:170).

The water surveys of the 1860s recorded seven falls in Houlton, including the Cary, Page and Madigan, Ham, Logan, Mansur, Cressey and Houlton falls. The Cary fall at the confluence of the main and south branches of the Meduxnekeag had a 9.2 m (30 ft) drop; all others had 3.7 m (12 ft) falls (Anonymous 1868:160; Wells 1869:312-313). The water power was sufficient for the largest manufactories, with abundant water available all year round. The power was improved in two grist mills, four saw mills, two carding mills, two cabinet shops, one tannery, one machine shop and one foundry. In fact, the one major complaint offered during the 1860s water survey was that Houlton was poorly connected to outside markets (before the establishment of a railroad at about that time). A lack of easy access to outside markets was a severe constraint on the town, despite its abundant water power (Anonymous 1868:160-161).

In 1882, water power was still operating the many mills in Houlton, including two cheese factories, two starch factories, a canning factory, a woolen mill, four lumber mills, three flour mills, one tannery, two iron foundries and machine shops, two printing offices and a sash-blind-and-door factory (Varney 1882:284). This list indicates the shift to newer products and technologies--canning, cheese and woolens.

During the nineteenth century, as many as 20 homesteads were recorded in immediate proximity to the Meduxnekeag River, along with one saw mill, the Cary Brothers' machine shop and foundry, the Mansur starch factory and a blacksmith shop (Figures 8 and 9) (Roe 1877). Along the South Branch of the Meduxnekeag River, farming was more typical, with the exception of the mills directly at the confluence of the main and south branches. Eight farmsteads and one saw mill were located along B Stream, while no occupation was recorded then along Bog Brook. A single farmstead was noted on Cooks Brook (with no sign in 1877 of Joseph Houlton's saw mill), while seven farmsteads were located on Moose Brook. As many as eight sites can be specified as potential archaeological resources near the waterways in Houlton (see Table 1), although there may be far more. In congested areas near Cary's Mills, it is difficult to determine solely from cartographic sources whether nineteenth-century structures are now gone. The South Branch also needs field examination before a final number of potential historic sites can be predicted.

Historic Euroamerican Site Summary

As many as fifty historic Euroamerican sites may be represented by archaeological remains in relative proximity to the major waterways within the study area. These include 20 farmsteads, 10 saw mills, and various other water-powered industries. These potential sites were derived primarily from comparison of modern topographic maps with the Roe's 1877 atlas for Aroostook County. Other potential historic sites may be present in the Meduxnekeag study area, especially those early industries (e.g., saw mills and grist mills) that were mentioned in historic sources but not represented in the 1877 atlas. A substantial amount of additional background research in town histories and land deed records may be necessary before all such potential sites can be enumerated. Moreover, the above-mentioned industries also saw modification, renovations and rebuilding to replace or upgrade to newer

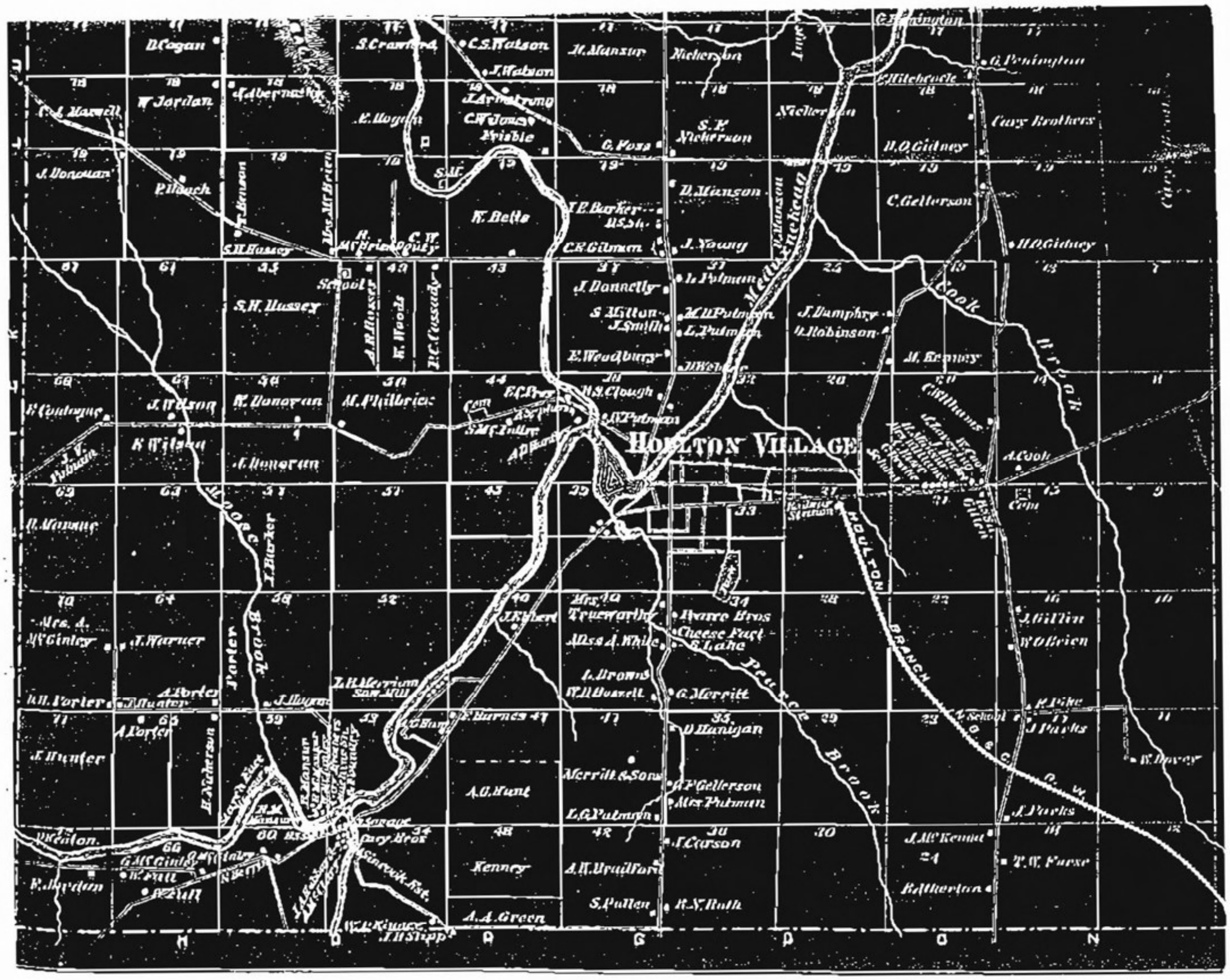

Figure 8. Partial historic map of the town of Houlton (South), Aroostook County, Maine. Note waterways and historic structures (from Roe 1877).

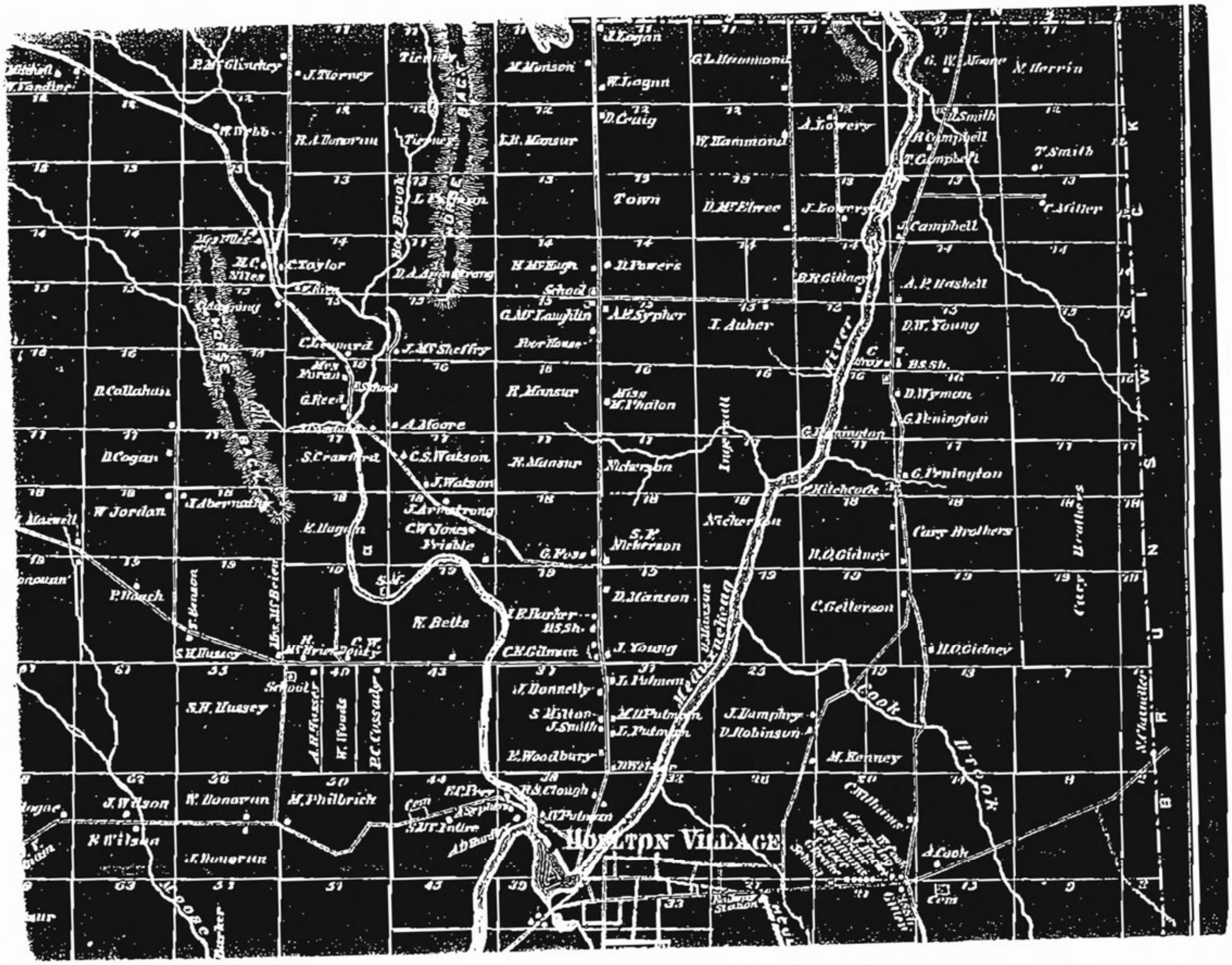

Figure 9. Partial historic map of the town of Houlton (North), Aroostook County, Maine. Note waterways and historic structures (from Roe 1877).

technologies over time. Thus, for each of the 15 or so industrial sites, at least two or more phases of development may be represented.

Minimally, the study area is the setting of some of the earliest water-powered industries of Aroostook County. These mills allowed early inhabitants of the far northern frontier of Maine to convert trees to woodframe houses and to grind their own grain into flour, among other activities. After the local development of a railroad to Houlton, the towns of the study area and Aroostook County in general could be more outward looking for markets for their products, including lumber, potatoes, starch and other agricultural commodities. Along with local industries, farmers situated along the many streams, brooks and tributaries of the Meduxnekeag River were given an impetus to produce for external markets.

Archaeological field work will be necessary to further specify the integrity of these nineteenth-century historic Euroamerican sites. Of special significance is potential research related to early water-powered technology in northern Maine. For example, at least one saw mill in Hodgdon was recorded as steam-powered, a technology which was relatively short-lived once electrification became widely available. Further archaeological work within the Meduxnekeag study area can offer new insights about the transition of self-sufficient frontier industries to open-market production of commodities in Aroostook County, among other topics.

RECONNAISSANCE SURVEY AND SUBSURFACE TESTING

Introduction

The field work undertaken as one component of this study was designed to test assumptions about Native American archaeological site distribution represented in the predictive model discussed above. Due to the paucity of previous research in or near the study area and the limited resources allocated to the subsurface testing component of the study, the sampling strategy focused on the concrete identification of Native American sites in Very High Potential and High Potential areas, rather than assessment of the presence or absence of sites in other areas designated as Medium or Low Potential. No specific effort was made to identify historical archaeological sites or structures in the field, as noted above.

In the course of the field inspection, conducted before, during and after the subsurface testing to some degree, diverse portions of the study area were examined. Although the purpose of this inspection was a general evaluation of the landscape, two previously unknown prehistoric archaeological sites, ME 149-4 and ME 149-5, were tentatively identified during the field inspection prior to the subsurface testing.

Ultimately, subsurface testing involved the systematic excavation of 121 50 cm x 50 cm standard test pits along twenty-three sampling transects (Figure 10 and Appendix II). Each test pit was excavated in arbitrary 10 cm levels and profiled by the excavators (Appendix I); all excavated sediments were screened through 6.4 mm (1/4 in) hardware cloth in the field. Testing was generally focused in areas of Very High and High Potential, and in two locations that were of specific interest to the Houlton NRCS office because of planned undertakings (i.e., a Maliseet gravel extraction proposal and a Houlton Cemetery expansion proposal). In fact, both of these latter areas represented settings of particular applicability to model testing.

Historic Euroamerican artifacts were recovered from 29 test pits, while 11 test pits produced prehistoric Native American remains (Table 2). All prehistoric remains identified in the study area were recovered from floodplain settings, with the notable exception of the Hagan axe, which was reportedly found in a potato field at least 200 m from Moose Brook in upland soils of the Caribou Gravelly Loam association (Arno 1964).

Specific areas sampled during the field work are described below.

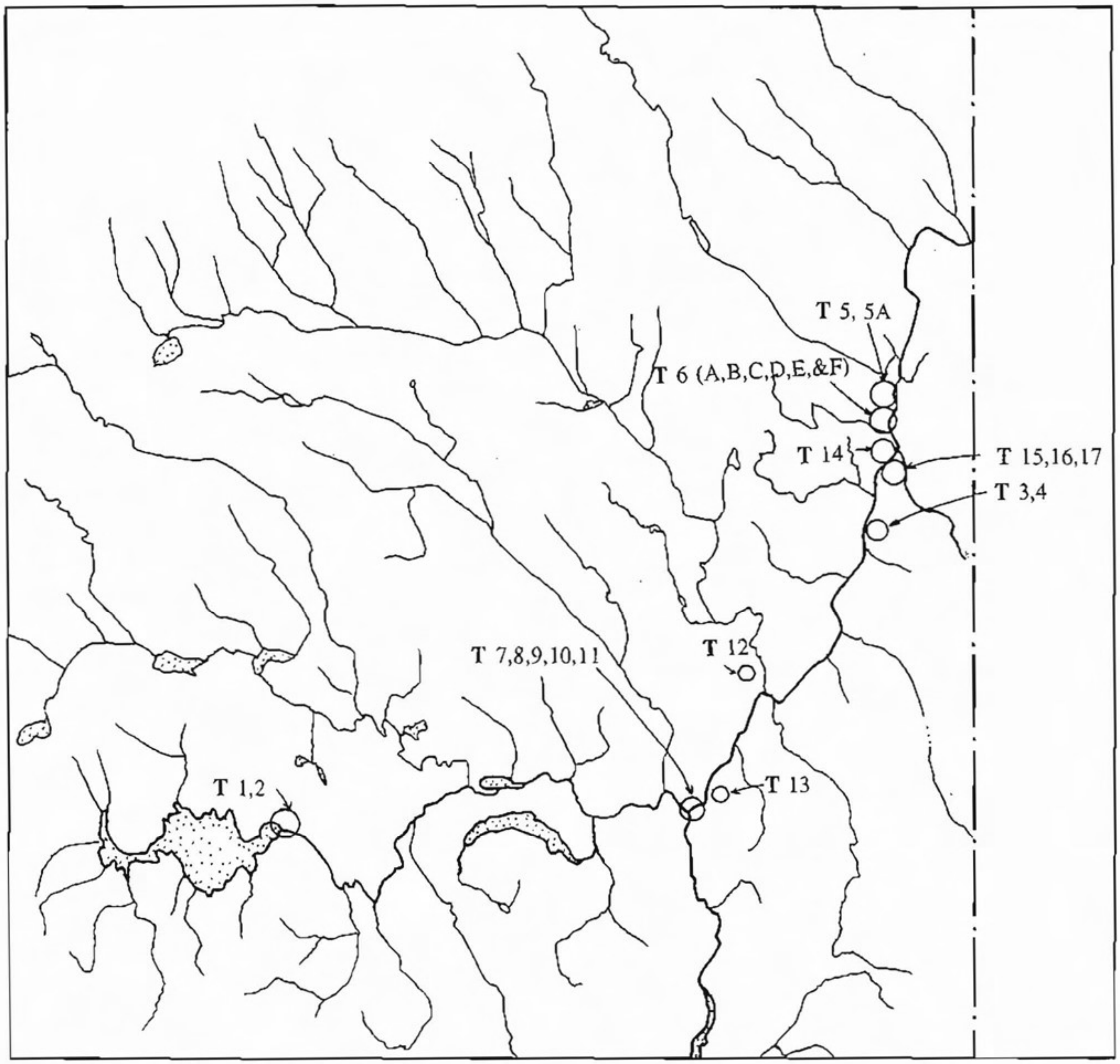

Figure 10. Location of archaeological sampling transects within the Meduxnekeag study area.

Table 2. Prehistoric Native American and Historic Euroamerican Remains Recovered During Archaeological Testing in the Meduxnekeag Study Area.

PROVENIENCE		ARTIFACT CATEGORY																						
SITE		LITHIC			LITHIC TOOL			BONE	CERAMIC			GLASS		METAL					OTHER				OTHER	
TEST PIT/UNIT		FLAKE			MFLK	PROJ	LITHIC																ORGANIC	TOTAL
LEVEL		CH	QZ*	RH	FL	FL	FCR	UNBR	IR	PW	WW	CV	FL	AR	CN	WN	OT	UN	BR	CI	CO	OT	HIDE	
GARDINER																								
T8 P1	10-20	1					1																	2
T8 P3	10-20	1					4																	5
	20-30							1													2			3
Subtotal		1					4	1													2			8
T8 P4	10-20	1					1												1	2	7			12
	20-30																			3	4			7
Subtotal		1					1												1	5	11			19
T8 P5	0-10						3													1	3			7
	10-20	2				1	5														5			13
	20-30																			2	3			5
Subtotal		2				1	8													3	11			25
T8 P6	10-20																	1						1
	30-40																			1				1
Subtotal																		1		1				2
GARDINER TOTAL		5				1	14	1										1	1	9	24			56
LOWERY																								
T6F P1	10-20						6					1												7
T6F P2	20-30											1												1
T6F P4	0-10	1																						1
T6F P5	20-30																						1	1
LOWERY TOTAL		1					6					2											1	10
ROYAL																								
T7 P2	0-10	1																						1
	20-30	5																						5
Subtotal		6																						6
T7 P4	10-20	1																						1
T7 P5	0-10				1																			1
	10-20						1																	1
Subtotal					1		1																	2

Table 2
(cont.)

PROVENIENCE		ARTIFACT CATEGORY																						
SITE		LITHIC FLAKE			LITHIC TOOL		LITHIC	BONE	CERAMIC			GLASS		METAL					OTHER				OTHER ORGANIC	TOTAL
TEST PIT/UNIT					MFLK	PROJ																		
LEVEL		CH	QZ*	RH	FL	FL	FCR	UNBR	IR	PW	WW	CV	FL	AR	CN	WN	OT	UN	BR	CI	CO	OT	HIDE	
T7 P6	0–10															1								1
	10–20							1								1	1							3
	20–30																			2				2
	30–40															1								1
	40–50	2																						2
Subtotal		2						1								3	1			2				9
ROYAL TOTAL		9			1		1	1								3	1			2				18
NONSITE																								
T1 P4	0–10													1										1
T2 P0	Surface													1								1		2
T2 P3	0–10											1												1
T2 P5	0–10											9					2							11
T4 P0	Surface			1																				1
T5 P1	0–10													1										1
T5 P18	0–10																	1						1
T6A P2	10–20										1													1
	20–30									1	1													2
Subtotal										1	2													3
T6A P4	20–30										1													1
T10 P2	10–20																				1			1
T10 P3	0–10											1												1
T10 P3A	10–20											1												1
	20–30																		2					2
Subtotal												1							2					3
T10 P4	10–20											1												1
T10 P5	10–20											1							1					2
T10 P6	10–20											1												1
T10 P7	0–10											1						1						2
T13 P1	0–10																				2			2
	10–20														1									1
Subtotal															1						2			3

Table 2
(cont.)

PROVENIENCE	ARTIFACT CATEGORY																						
SITE / TEST PIT/UNIT	LITHIC FLAKE			LITHIC TOOL		LITHIC	BONE	CERAMIC			GLASS		METAL					OTHER				OTHER ORGANIC	TOTAL
				MFLK	PROJ																		
LEVEL	CH	QZ*	RH	FL	FL	FCR	UNBR	IR	PW	WW	CV	FL	AR	CN	WN	OT	UN	BR	CI	CO	OT	HIDE	
T13 P2 0-10											1			1									2
T13 P3 10-20		1										1								1			3
T13 P4 10-20												1								2			3
T13 P5 0-10												1		1									2
T16 P10 Wall Fall								1															1
NONSITE Subtotal		1	1					1	1	3	17	3	3	3		2	2	3		6	1		47
PROJECT TOTALS	15	1	1	1	1	21	2	1	1	3	19	3	3	3	3	3	3	4	11	30	1	1	131

ARTIFACT CATEGORY :

LITHIC FLAKE	LITHIC FCR	BONE	LITHIC TOOL	CERAMIC	GLASS	METAL	OTHER
CH= chert	FCR= fire-cracked rock	UNBR= unburned	MFLK= modified flake	IR= ironstone	CV= curved	AR= armament	BR= brick
QZ*= quartz (possible flake)	(aboriginal or historic)		PROJ= projectile point	PW= pearlware	FL= flat	CN= cut nail	CI= cinder
RH= rhyolite			FL= felsite	WW= whiteware		WN= wire nail	CO= coal
						OT= other	OT= other
						UN= unknown	

Testing Locations

Meduxnekeag (Drew's) Lake Outlet Area

The area around the outlet of Meduxnekeag Lake was examined extensively on foot, from a canoe and through subsurface testing. This area, presently used as a public boat landing, is the site of a historic mill constructed by Capt. Moses Drew in 1861 (Figure 11) (Smith n.d.; also see the historic background presented above). The first dam on Meduxnekeag Lake may have been constructed then, or perhaps earlier. Logs were driven down the lake to the mill, and bark from cedar and hemlock was used by the Shaw Brothers' Tannery in New Limerick, established in 1875. Remnants of an older dam or mill race are located ca. 300 m downstream at a small waterfall, but the historic record for these remains has yet to be established.

No prehistoric artifacts were found around Meduxnekeag Lake, nor to our knowledge has any ever been found. The Putnam camp, which occupies the north shore at the outlet, was the first camp on the lake. It was constructed about 1900 by Ali Hutchinson somewhere on the north shore. About 1910, it was acquired by Amos Putnam who moved it across the ice with a team of horses to its present location.

An old galena or iron pyrite mine is located on the south side of the South Shore Road between the lake outlet and the Drew's Mill Road on the Linneus/New Limerick town line. Historical documentation has yet to be established for this feature.

A possible musket ball and a shell button were surface collected from the beach scarp at the public landing. Numerous bottles attributable to the late nineteenth and twentieth centuries were noted in the outlet stream and along the banks, in conjunction with other historic artifacts. However, none of these latter artifacts were collected. Sampling transects T1 and T2 were excavated in this area.

Transect T1: Transect T1 was located on a level surface paralleling the north bank of the outlet of Meduxnekeag Lake at the public landing (Figure 12). It consisted of five test pits spaced at 5 m intervals on a bearing of 130° from test pit T1-1. Test pit T1-1 was located 4 m from a utility pole and 25 m to the east of the dam at a bearing of 127°. The transect T1 test pits averaged 28 cm in depth in fine sandy silt loam, with rocks and pebbles. A

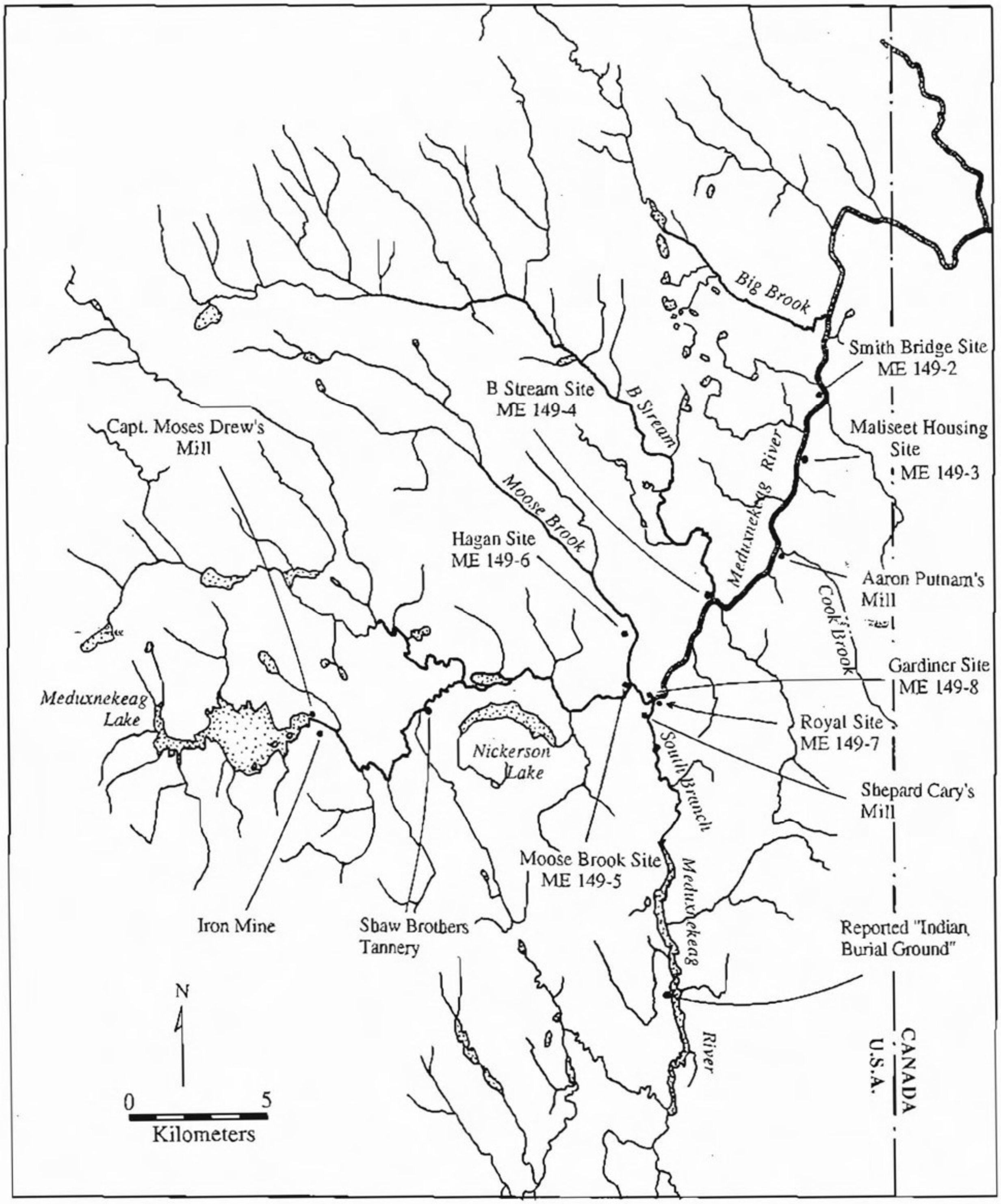

Figure 11. Location of prehistoric Native American sites and selected historic Euroamerican sites within the Meduxnekeag study area.

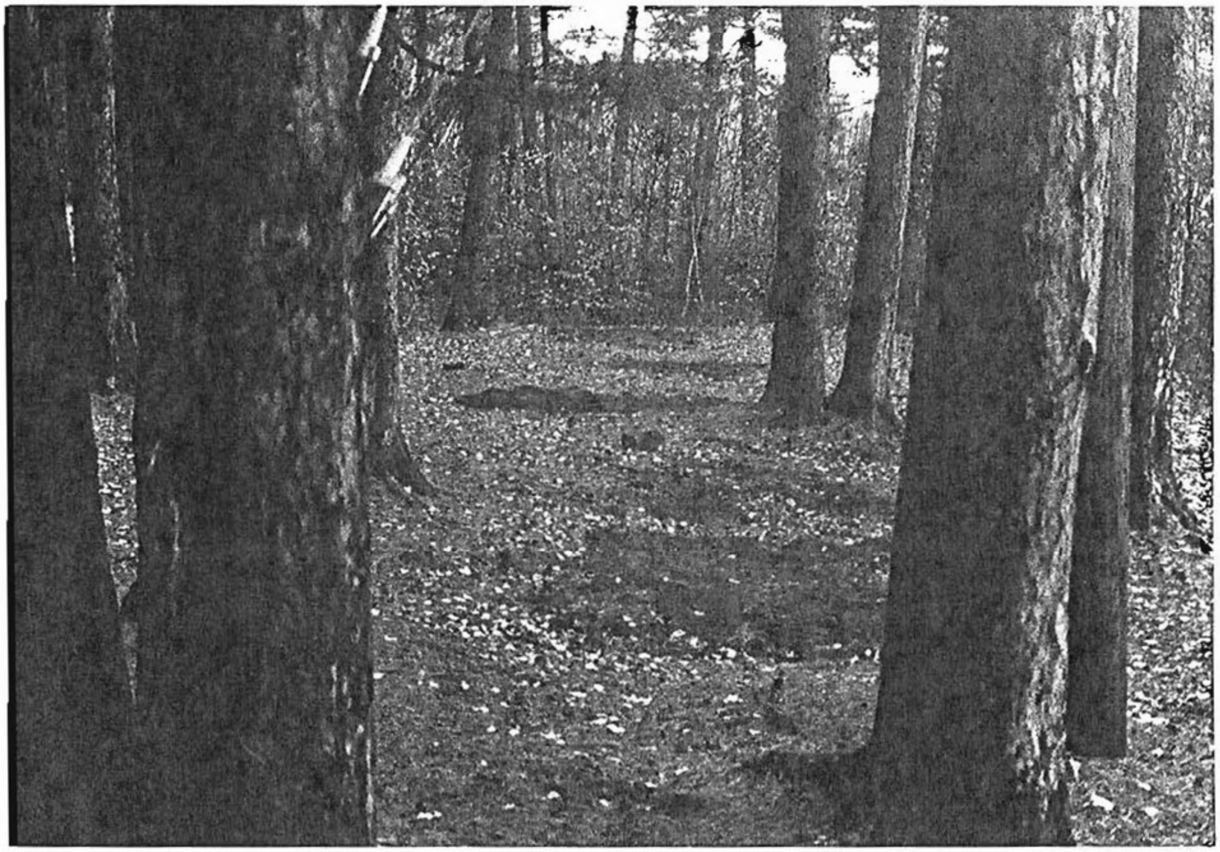

Figure 12. General view of sampling transect T1 near Meduxnekeag Lake within the Meduxnekeag study area, facing east.

piece of historic metal was recovered from the 0-10 cm level in test pit T1-4, representing the only artifact found there.

Transect T2: Transect T2 was continued from the eastern end of transect T1 on a bearing of 125°. It also consisted of five test pits spaced at 5 m intervals. These test pits averaged 20 cm in depth in rocky, silt loam sediment. Test pit T2-3 produced a sherd of historic glass from the 0-10 cm level, while test pit T2-5 produced nine glass sherds and two metal crown bottle caps from the 0-10 cm level. Also, as previously mentioned, a musket ball and a two-hole button of unknown material (shell?) were found on the surface.

Maliseet Gravel Extraction Area

Sampling transects T5 and T5A were placed along the western bank of the Meduxnekeag River at the northern end of property owned by the Houlton Band of Maliseet Indians and above the mouth of Big Brook (see Figure 11 and Appendix II). The area is currently being evaluated for the feasibility of gravel mining. Jim Burton, Forestry Coordinator for the Houlton Band, asked us to examine some odd depressions along the terrace margin. They proved to be attributable to twentieth-century agricultural activities.

Transect T5: Sampling transect T5 was laid out along the margin of a high gravel terrace on the edge of sparse hayfields and near the river (Figure 13). Test pit T5-1 was positioned at the north end of the hayfield among small planted pines; other test pits were pinned on a bearing of 218° from it along the margin of the field at 20 m above the river. However, only test pits T5-1, 2, 3, 4, 9, 10, 15, 16 and 18 were excavated (Figure 14). One .22 caliber cartridge and a metal fragment were the only artifacts recovered from transect T5.

Transect T5A: Transect T5A consisted of two test pits excavated on a high knoll of fine, bedded sand; this knoll was located several hundred meters to the southwest of the southern end of transect T5 (Figure 15). Gravel pits are present on all sides of the knoll. These two test pits were spaced 10 m apart and were excavated to 50 cm and 100 cm deep. No cultural remains of any kind were encountered there.

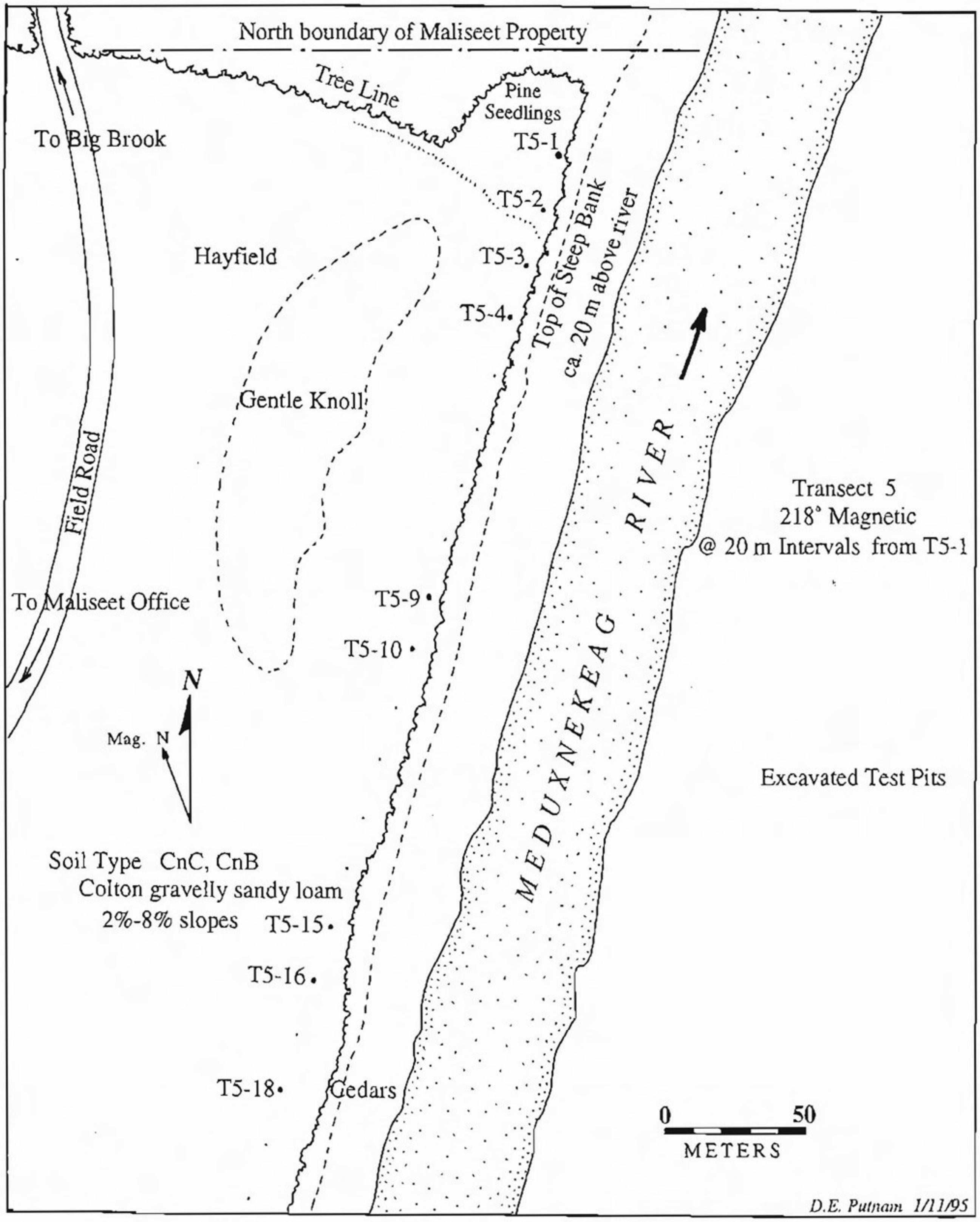

Figure 13. Map of the area of sampling transect T5 in the Meduxnekeag study area.

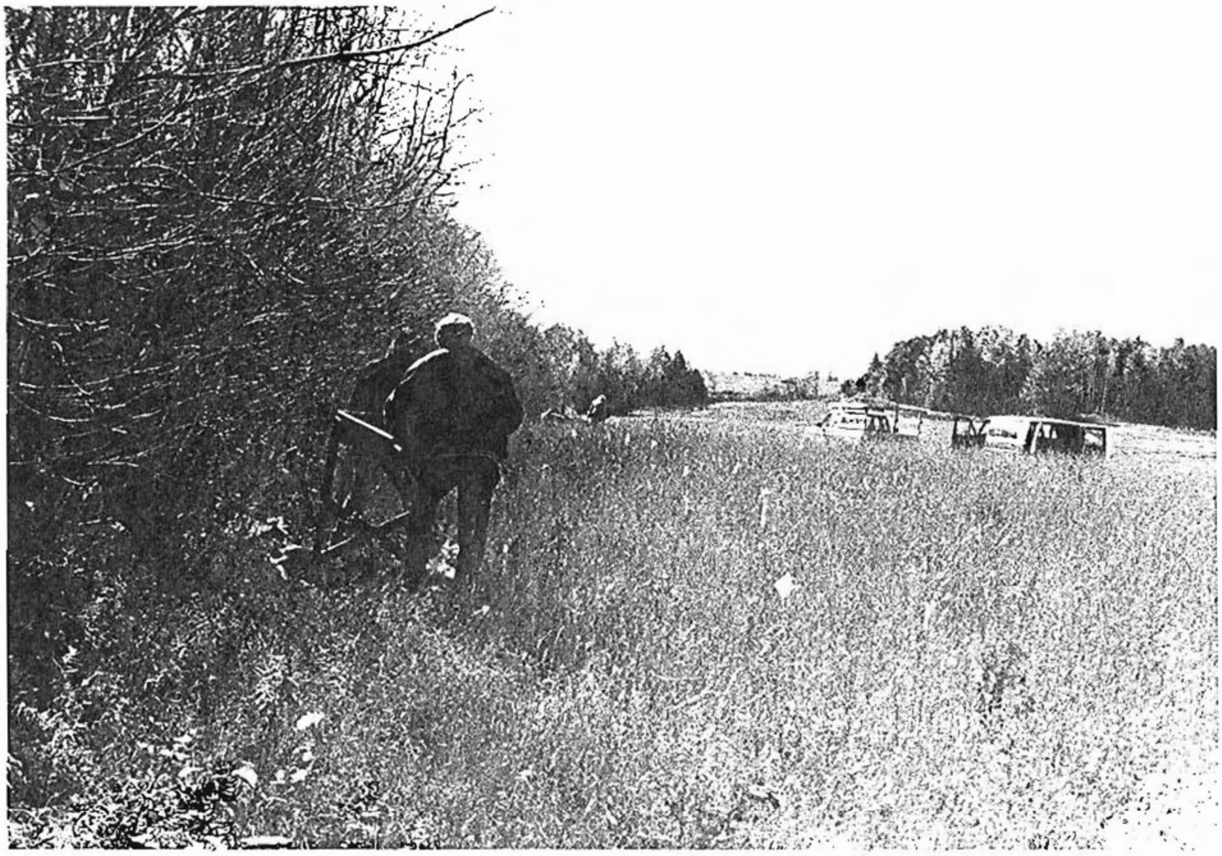

Figure 14. General view of crew working along sampling transect T5 from test pit T5-2, facing south.

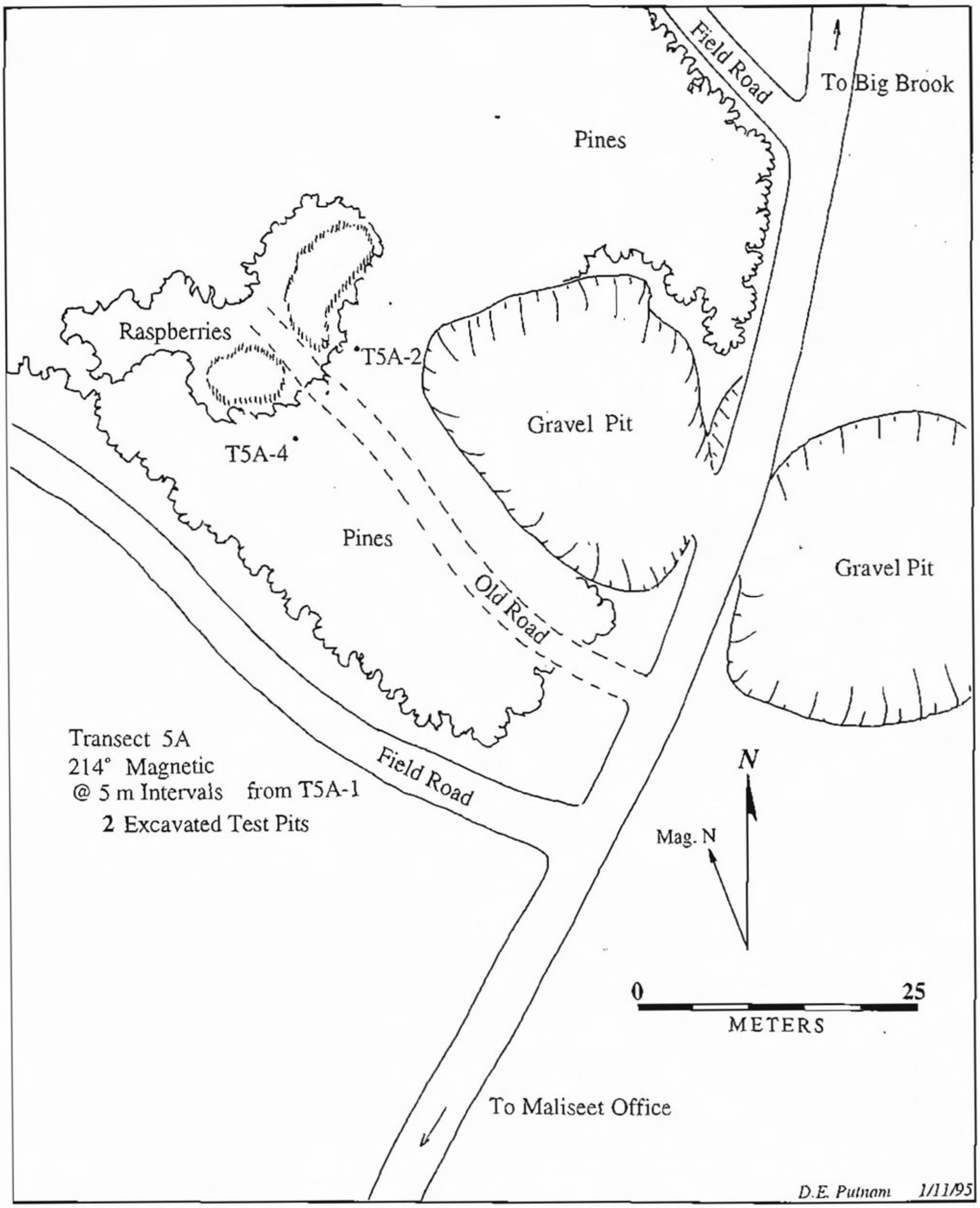

Figure 15. Map of the area of sampling transect T5A in the Meduxnekeag study area.

Maliseet Terraces Area

Transects T6A, T6B, T6C, T6D and T6E: Four short sampling transects (i.e., T6A, T6B,T6C, T6D) were emplaced on various surfaces of a complex of old river terraces above the modern floodplain of the Meduxnekeag River about 1 km to the north of the Houlton Band office building (Figure 16; see Appendix II). Transect T6A consisted of two test pits spaced 10 m apart on a high terrace margin in the northernmost portion area. Transect T6B included a single test pit excavated on a high knoll, while transect T6C consisted of two test pits spaced 10 m apart on the lower terrace margin above the modern floodplain, as did transect T6D (see Figure 16). Finally, transect T6E consisted of two test pits spaced 10 m apart in the lawn area directly below the Maliseet office building; this latter area is a terrace above the floodplain of the river and the small unnamed brook that drains the extensive "flowage" between that point and Big Brook. Test pit T6A-2 produced a historic whiteware ceramic sherd from the 10-20 cm level and a sherd each of historic pearlware and whiteware from the 20-30 cm level. Test pit T6A-4 also produced a historic whiteware sherd from the 20-30 cm level.

Smith Bridge Site (ME 149-2) Area

The Smith Bridge site was recently investigated and reported by the MHPC (Cranmer and Spiess 1993). It is a Ceramic (or Woodland) period site attributed to seasonal habitation on the river floodplain. We intentionally avoided this site, but by testing previously untested areas to the north of the known site boundaries additional prehistoric artifacts were recovered. These have been since attributed to the Smith Bridge site (see Figure 16 and Appendix II), although it might be useful to designate them as a separate site. Sampling transects T6F, T14, T15, T16 and T17 were excavated in this general area.

Transect 6F: Transect T6F was laid out on a low, floodplain terrace margin along the southwest bank of the river and to the north of the mouth of a small unnamed brook; this brook was previously considered the northern boundary of the Smith Bridge site (Figure 17; see Appendix II). Test pit T6F-1 was placed in the trees 10 m to the northwest of the brook mouth and six test pits were pinned at 10 m intervals from it along a bearing of 304°.

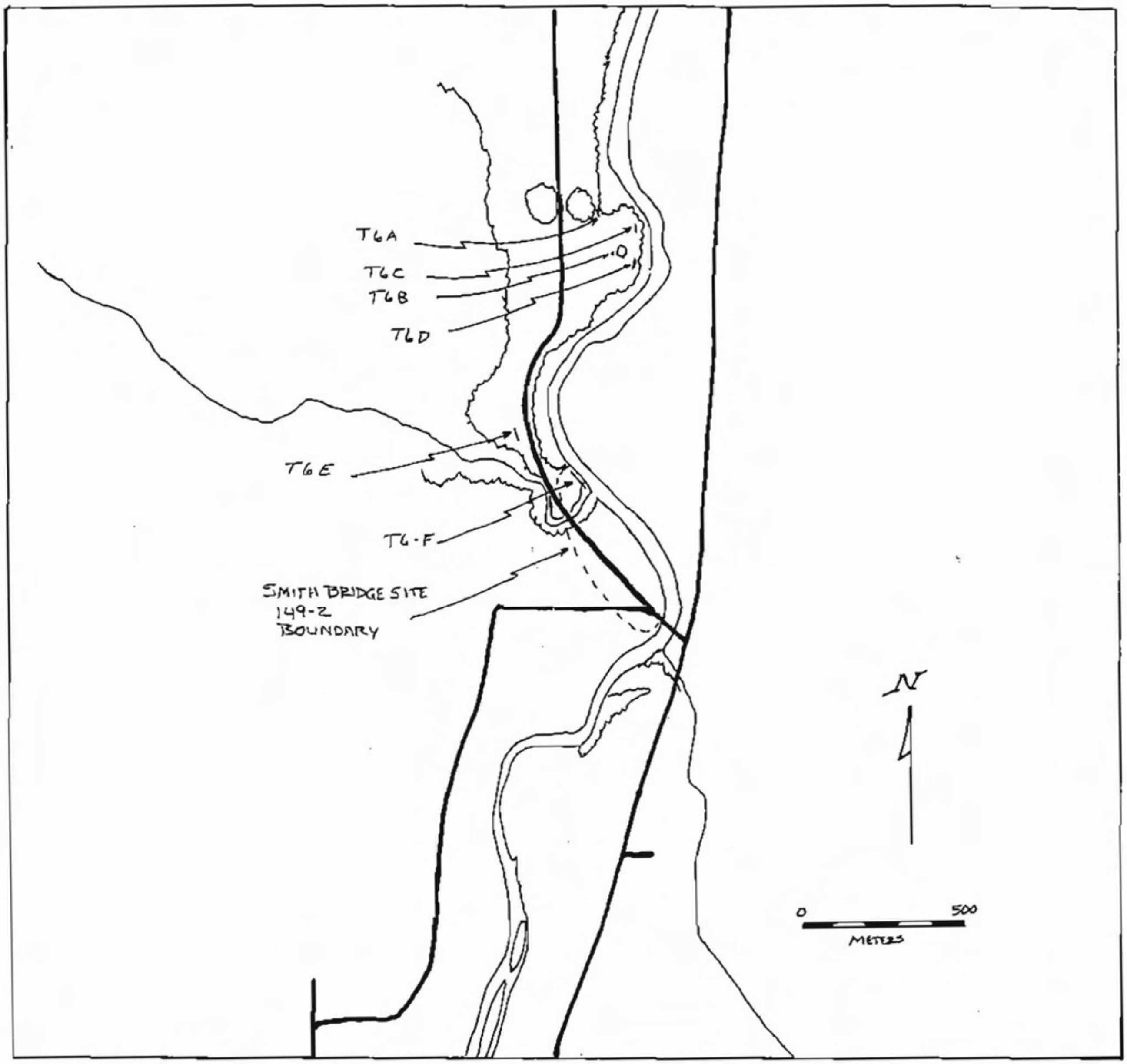

Figure 16. Location of the sampling transects T6A, T6B, T6C, T6D, T6E and T6F near the Smith Bridge site (ME 149-2) in the Meduxnekeag study area.

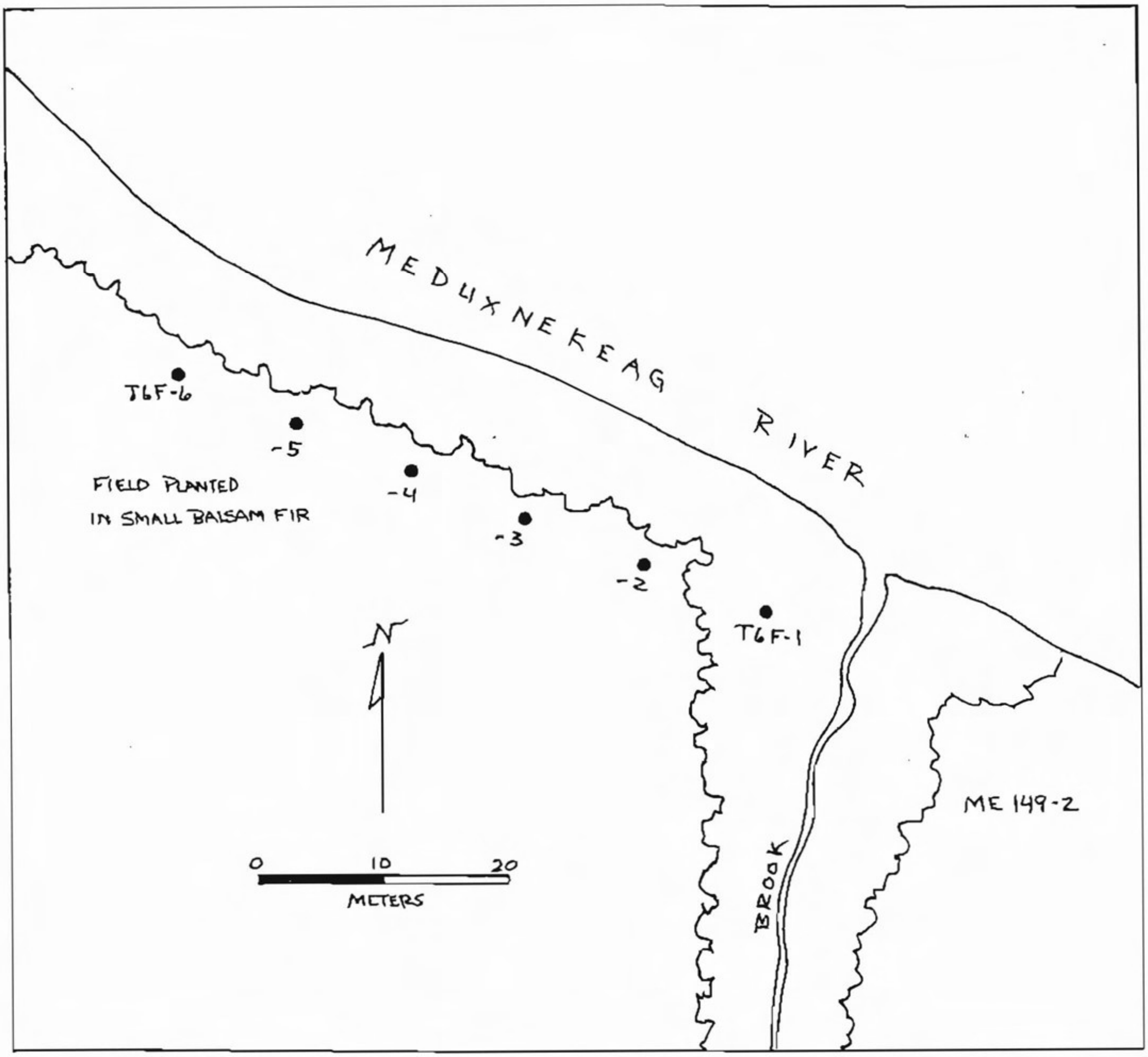

Figure 17. Map of the area of sampling transect T6F in the Meduxnekeag study area. Note mouth of brook and adjacent Smith Bridge site (ME 149-2).

Test pit T6F-1 produced a quantity of prehistoric fire-cracked rocks and charcoal from a matrix of fine sandy loam and silt loam in the upper 20 cm. No plow zone was apparent and a sherd of historic glass was recovered from the 10-20 cm level. Test pit T6F-4 produced a lithic flake of chert from the 0-10 cm level; this lithic flake is the product of prehistoric stone working. Test pits T6F-2 through T6F-6 were excavated on the edge of a field and exhibited a clear plow zone. Historic glass and leather fragments were recovered from the plow zone there.

Transect T14: Transect T14 was laid out parallel to the margin of the high bank above the river to the southwest of Smith Bridge (see Appendix II). Test pit T14-1 was flagged on the edge of the cultivated field about 35 m to the northwest of the terrace margin. Eleven test pits were placed at 5 m intervals on a bearing of 254° from test pit T14-1 and an additional 10 test pits were continued on a bearing of 242°. All of these test pits were sterile for artifacts of any age. Mr. Robert Wengrzynek, NRCS Cultural Resource Coordinator, related finding prehistoric lithic flakes along the margin of this terrace, but unfortunately, the recent testing, which was conducted some distance from the terrace margin, did not recover any such remains.

Transect T15: Transect T15 was emplaced on a low floodplain terrace in Winooski silt loam about 50 m to the west of the mouth of Smith Brook; it was located on the southeast bank of the Meduxnekeag River (Figure 18 and 19; see Appendix II). Two test pits were excavated 10 m apart in deep, interbedded, sandy loam. The stratigraphy, vegetation community of alders and ash, and the surface topography suggest an area of active deposition (see Figure 19). No artifacts of any kind were recovered.

Transect T16: Transect T16 was laid out along the riverbank in an old field to the southwest of Smith Brook and to the west of transect T15 (Figure 20; see Figure 18 and Appendix II). Test pit T16-1 was pinned in the eastern end of the field at about 10 m from the river. Ten additional test pits were laid out at 5 m intervals on a bearing of 242° from test pit T16-1. The ground in this area was very hard and stony, with a thin soil overlying apparent channel lag gravel and cobbles, leaving no mystery as to why cultivation had been abandoned there. One historic ceramic sherd was recovered from the top 10 cm of test pit T16-10. The underlying gravel deposit and obviously active nature of the brook mouth

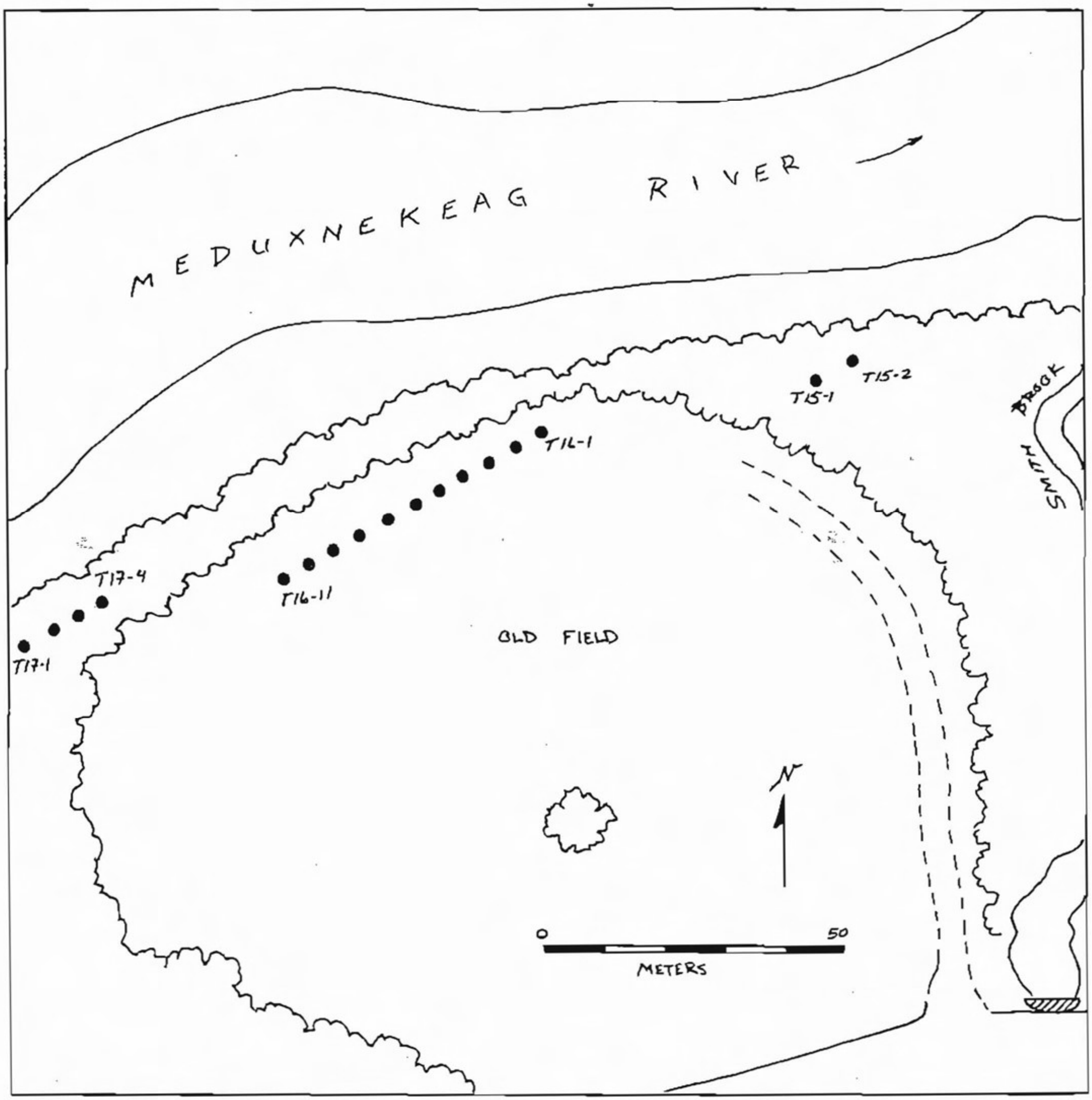

Figure 18. Map of the area of sampling transects T15, T16 and T17 in the Meduxnekeag study area. Note mouth of brook and adjacent Smith Bridge site (ME 149-2).

Figure 19. General view of sampling transect T15 near the Meduxnekeag River in the Meduxnekeag study area, facing northeast.

Figure 20. General view of the old field and the area of sampling transect T16 near the Meduxnekeag River in the Meduxnekeag study area, facing northwest.

suggest substantial high-energy alluviation in this area, caused by one event or multiple activities in the drainage at some time in the past.

Transect T17: Transect T17 consisted of four test pits offset toward the river at 40° to sample a band of deep floodplain alluvium near the western property boundary along the river; transect T17 was situated to the west of transect T16 (Figure 21; see Figure 18 and Appendix II). This alluvium extends some distance upstream and across the property boundary. Testing was not extended across the property boundary because at the time we thought it belonged to someone other than the Houlton Band, but they were later confirmed to be the owners. No artifacts of any kind were found in the tested area in any case.

Maliseet Housing Area

Sampling transects T3 and T4 were excavated along the eastern bank of the Meduxnekeag River in Houlton on land owned by the Houlton Band of Maliseet Indians (see Figures 10 and 11 and Appendix II). The studied area there is low cropland in the floodplain below the Maliseet housing development. Dr. Arthur Spiess of the MHPC had previously visited this location during his work at the Smith Bridge site (ME 149-2) and he identified fire-cracked rocks in the plowed fields then.

Transect T3: Transect T3 was placed near the northern property boundary on the edge of the cultivated field next to the river. It consisted of five test pits spaced at 20 m intervals on a bearing of 213°. The soil was a stony loam with a distinct plow zone. No artifacts of any kind were found, however.

Transect T4: Transect T4 was continued from the southern end of transect T3 on a bearing of 205°. It consisted of six test pits spaced at 20 m intervals paralleling the riverbank. A prehistoric rhyolite lithic flake was found on the surface of the plowed field between test pits T4-4 and T4-5; again, this lithic flake indicates prehistoric stone working in the area. Neither additional surface examination or test pit excavation produced any more artifacts. This area had been previously designated as site ME 149-3 in the MHPC files.

Cary's Mills Area

The community of Cary's Mills is situated at the confluence of the main branch and the South Branch (Hodgdon Stream) of the Meduxnekeag River in Houlton. The South Branch

Figure 21. General view of crew excavating a test pit along sampling transect T17 in the Meduxnekeag study area, facing northeast.

enters from the south just below a large waterfall that is the historic site of a mill constructed by Shepard Cary before 1860, for which the place is named. This falls may have represented the upper barrier to runs of anadromous fish such as Atlantic salmon in the South Branch. There is no impassable barrier in the main branch below Meduxnekeag Lake.

Areas of alluvial floodplain are present on both sides of the river at the confluence, and older terraces flank the river on the northern bank for several hundred meters downstream. The Littleton Esker intersects the river in the confluence area and flanks the western bank of the South Branch upstream to its source. These layered attributes of major drainage, major confluence, barrier falls, esker and level, well-drained floodplain alluvium all combine to suggest a high potential for prehistoric archaeological sites. No sites were known from the area prior to testing. Transects T7, T8, T9, T10, T11 and T13 were excavated in the general area (see Figures 10 and 11 and Appendix II).

Transect T7: Transect T7 was positioned along the edge of a mown lawn behind "Greg's Store," on the south bank of the main river at the confluence. The property is owned by Mr. Greg Royal who kindly granted permission to test it. Test pit T7-1 was placed at the edge of the trees on the bank of Hodgdon Stream (Figure 22) and five additional pits were excavated along the tree line at 20 m intervals. Test pits T7-2, 4, 5 and 6 produced a total of nine prehistoric chert lithic flakes and one modified chert flake; the latter is an expedient tool of some sort, perhaps used for cutting or scraping. One piece of unburned bone was recovered and charcoal was noted in a number of pits.

Notably, test pit T7-6 revealed a probable fire hearth preserved at ca. 65-75 cm below the ground surface. This likely represents a buried cultural feature and helps establish the potential significance of this prehistoric site. The other prehistoric remains were associated with a diffuse 25-30 cm thick historic plow zone. Also associated with the plow zone were the only historic remains recovered from T7: three wire nails, one other piece of metal and two cinders from test pit T7-6.

This prehistoric site was named the Royal site after its landowner and is designated ME 149-7 in the MHPC files (see Appendix II). A series of apparent fossil levees that have prograded across the area suggest a process of alluviation and channel movement to the north over time. Only the northern, youngest levee feature was tested. A lower depositional terrace between the lawn and river is wooded and likely has never been plowed.

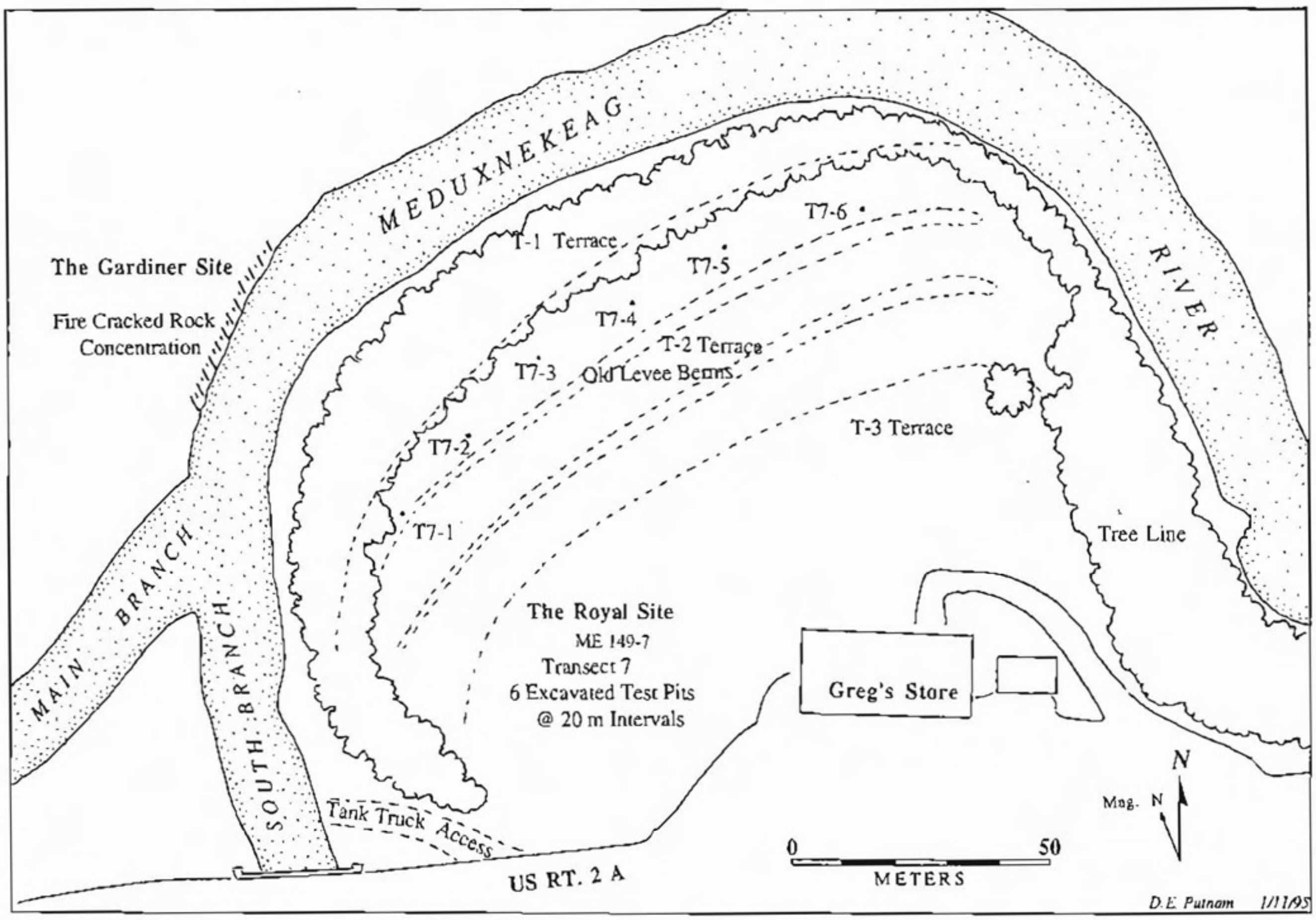

Figure 22. Map of the area of sampling transect T7 and the Royal site (ME 149-7) in the Meduxnekeag study area. Note the Gardiner site (ME 149-8) across the river.

Transect T8: Transect T8 was placed on a level hayfield in the floodplain on the north bank of the river, opposite the mouth of Hodgdon Stream. The property is owned by Mr. John Gardiner who granted us permission to test. Mr. Gardiner reported that a foundry was once present there on the basis of someone's report to him.

Test pit T8-1 was positioned in the northeastern corner of the field and 8 m from the eroding riverbank (Figure 23). Five additional test pits were placed at 10 m intervals on a bearing of 212°. Test pits T8-1, 3, 4 and 5 produced five prehistoric chert lithic flakes, a felsite biface fragment, 14 fire-cracked rocks, one unburned bone and charcoal. Historic metal, brick, slag and coal cinders, suggestive of a foundry operation, were also recovered from test pits T8-3, 4, 5 and 6. All of these artifacts were recovered from a plow zone about 28 cm thick. However, additional fire-cracked rocks found eroding from the riverbank were not attributable to the apparent plow zone, but seemingly came from intact contexts (see Figure 23).

The single biface fragment apparently represents a basal corner portion of a projectile point, or a prehistoric spear tip. It is directly suggestive of the "Snook Kill" or "Susquehanna Broad" type, both of which are attributable to the Susquehanna tradition of the Late Archaic period (e.g., Borstel 1982; Bourque 1976). However, its fragmentary condition makes this assignment somewhat equivocal. In any case, it is consistent with the style of the Hagan stone axe found near Moose Brook described below.

This site was named the Gardiner site and has been designated as ME 149-8 (see Appendix II). A lower terrace is present between the tested surface and the main branch of the Meduxnekeag River above the confluence; this terrace may well preserve undisturbed prehistoric deposits. Also, it is possible that portions of the identified site are deeper than the plow zone in the tested area, although this was not confirmed by any of the test pits.

Transect T9: Transect T9 consisted of two test pits spaced 10 m apart on the edge of a higher gravel terrace about 50 m to the east of test pit T8-1 (see Figure 23 and Appendix II). This gravel terrace is ca. 8 m high above the river and it is eroding into it. This area is also situated on the Gardiner property. No artifacts of any kind were found in either test pit, however.

Transect T10: Transect T10 was placed on a long narrow terrace marginally above the floodplain; it was on the northern riverbank across from "Greg's Store." This property is

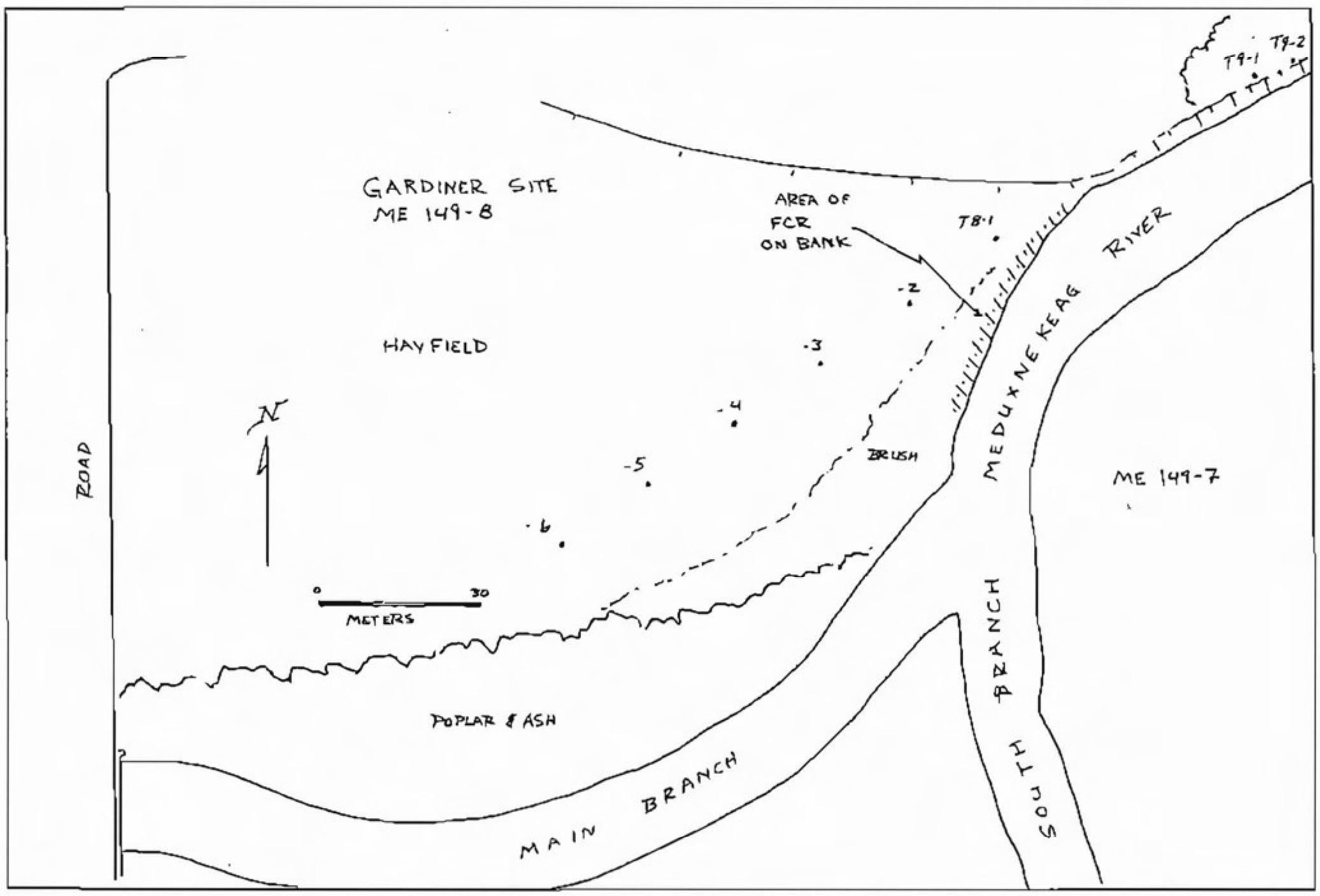

Figure 23. Map of the area of sampling transect T8 and the Gardiner site (ME 149-8) in the Meduxnekeag study area. Note the Royal site (ME 149-7) across the river.

owned by Mr. John Gardiner and was a hay field at the time of the field work. Test pit T10-1 was placed at the eastern end of the hayfield near the riverbank (Figure 24 and see Appendix II). Three additional test pits were flagged at 10 m intervals on a bearing of 96°; two more were spaced 10 m apart on a bearing of 87°, and five were spaced 10 m apart on a bearing of 63°. One test pit, T10-3A, was offset from the transect 5 m to the south of test pit T10-3 to test a lower landform.

A total of six historic glass, metal and brick fragments were recovered from test pits T10-4, T10-5, T10-6 and T10-7, but they seem attributable to manure-spreading activities and apparently do not represent an intact historic site. Transect T10 test pits ranged in depth from 35-90 cm, and averaged 65 cm in variably deep soils. Some flood alluvium may have been incorporated into the soil, but it appeared to be largely a thick soil developed from till or drift.

Transect T11: Transect T11 was offset from test pit T10-9 about 10 m to the north to investigate higher ground on a ridge with a bedrock core (see Figure 24 and Appendix II). Three test pits were spaced at 10 m intervals on a parallel bearing of 63°. Test pit T11-1 was only 20 cm deep when it hit bedrock, but the other two test pits were excavated to 60 cm below the ground surface. No artifacts of any kind were recovered from this transect.

Transect T13: Transect T13 was placed on a very high, prominent sandy knoll overlooking a deeply incised reach of the Meduxnekeag River; this knoll lies about 1 km below Cary's Mills (see Figure 10 and Appendix II). This property is owned by the McLaughlin family and Mrs. McLaughlin kindly allowed testing of what is essentially her lawn. The knoll rises about 10 m above the McLaughlin house, which is about 40 m to the west of the knoll. Five test pits were dug in a four-point star arrangement on the conical crest of the knoll. The sediment was fine sand with rounded pebbles. Historic cultural remains, including three cut nails, four pieces of glass and five coal fragments, were recovered from the first 20 cm of test pits T13-1, 2, 3, 4 and 5. Also recovered was an equivocal fragment of quartz which is probably not cultural.

Houlton Cemetery

At the request of Don Collins of the Houlton NRCS office, subsurface sampling was undertaken in the area of proposed expansion for the Houlton Cemetery. This cemetery

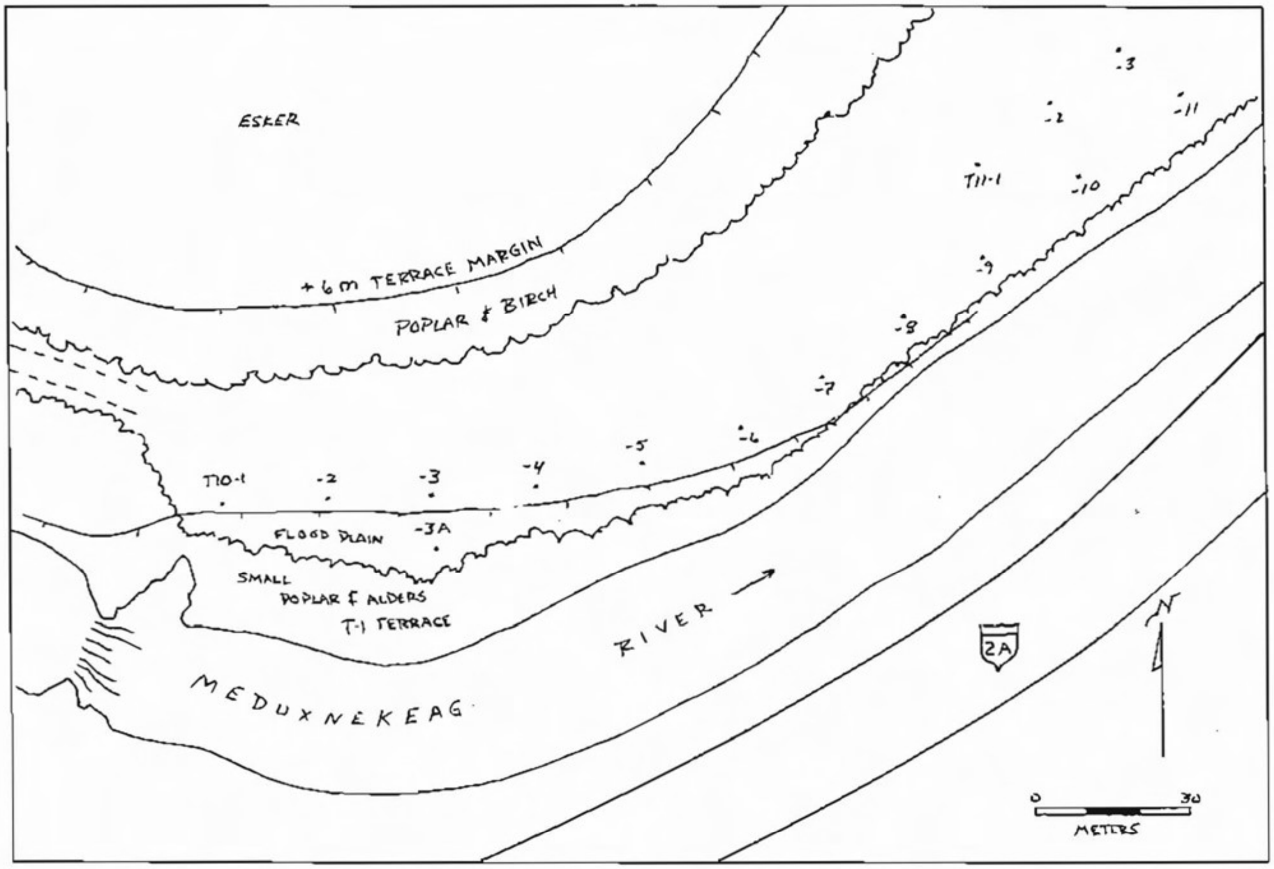

Figure 24. Map of the area of sampling transects T10 and T11 in the Meduxnekeag study area.

expansion will involve the high crest of the Littleton Esker above the mouth of B Stream, which lies about 1 km to the southeast (see Figure 10 and Appendix II). A single transect, T12, was excavated in this area.

Transect T12: Transect T12 consisted of two test pits on the high crest of the esker. These test pits were spaced 7.5 m apart and were about 45 m to the north of the Kidder monument beyond the north edge of the existing cemetery (Figure 25). A large section of the adjacent gravel pit was also examined, as was some of the lower lying terrain to the northeast. No artifacts of any kind were found there, however.

Other Identified Sites

Three other unequivocal prehistoric sites were produced through the initial field inspection and informant contacts. These are described separately below.

Hagan Site (ME 149-6)

Putnam was permitted to examine a stone axe head that had been found in a potato field near Moose Brook by Mr. Fred Hagan years before the advent of mechanized potato harvesters. It is noteworthy that mechanical harvesters also likely harvest potato-sized ground stone tools. In any case, the axe is a pecked and ground metamorphic rock with a moderately deep, pecked, full groove for hafting purposes (Figures 26 and 27). Its size and form are suggestive of a Late Archaic period Susquehanna tradition attribution, dated 1800-1000 B.C., as noted above.

The identified location of the find is at least 150 m from the channel of Moose Brook and about 1 km above its mouth at the Meduxnekeag River (Figure 28). The find spot has been named the Hagan site and is designated as ME 149-6 (see Appendix II). It bears further investigation in the future, although it is possible that it is a stray artifact, lost by an aboriginal woodcutter long ago.

B Stream Site (ME 149-4)

This site was identified at the mouth of B Stream at the Meduxnekeag River in Houlton (see Figure 28 and Appendix II). An eroding cut bank on the western bank of the stream

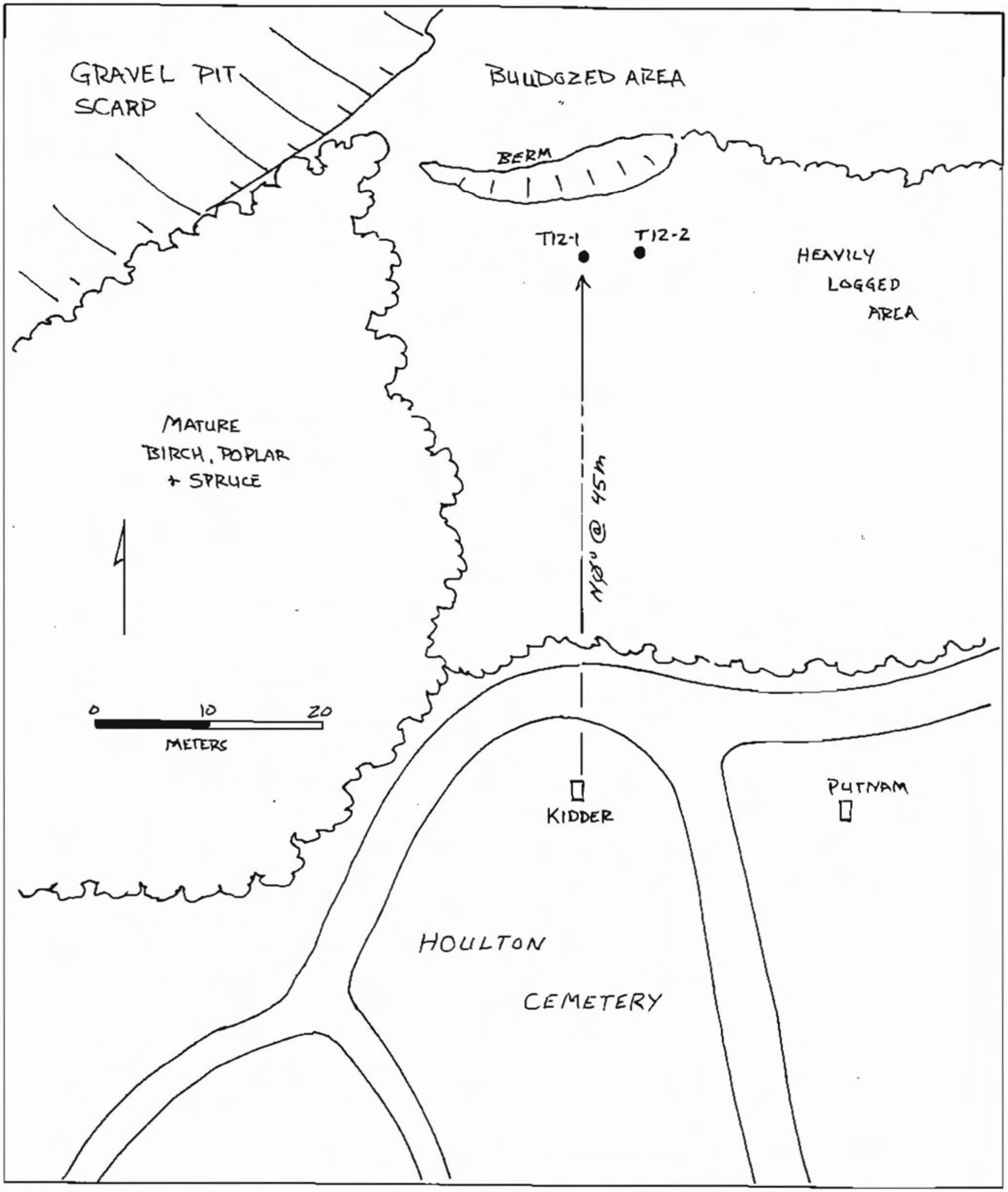

Figure 25. Map of the area of sampling transect T12 in the Meduxnekeag study area.

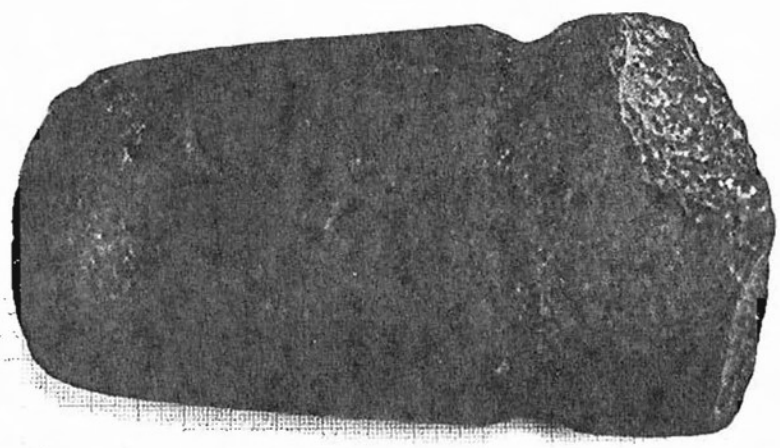

Figure 26. Close-up view of the Hagan stone axe recovered by Fred Hagan near Moose Brook in the Meduxnekeag study area.

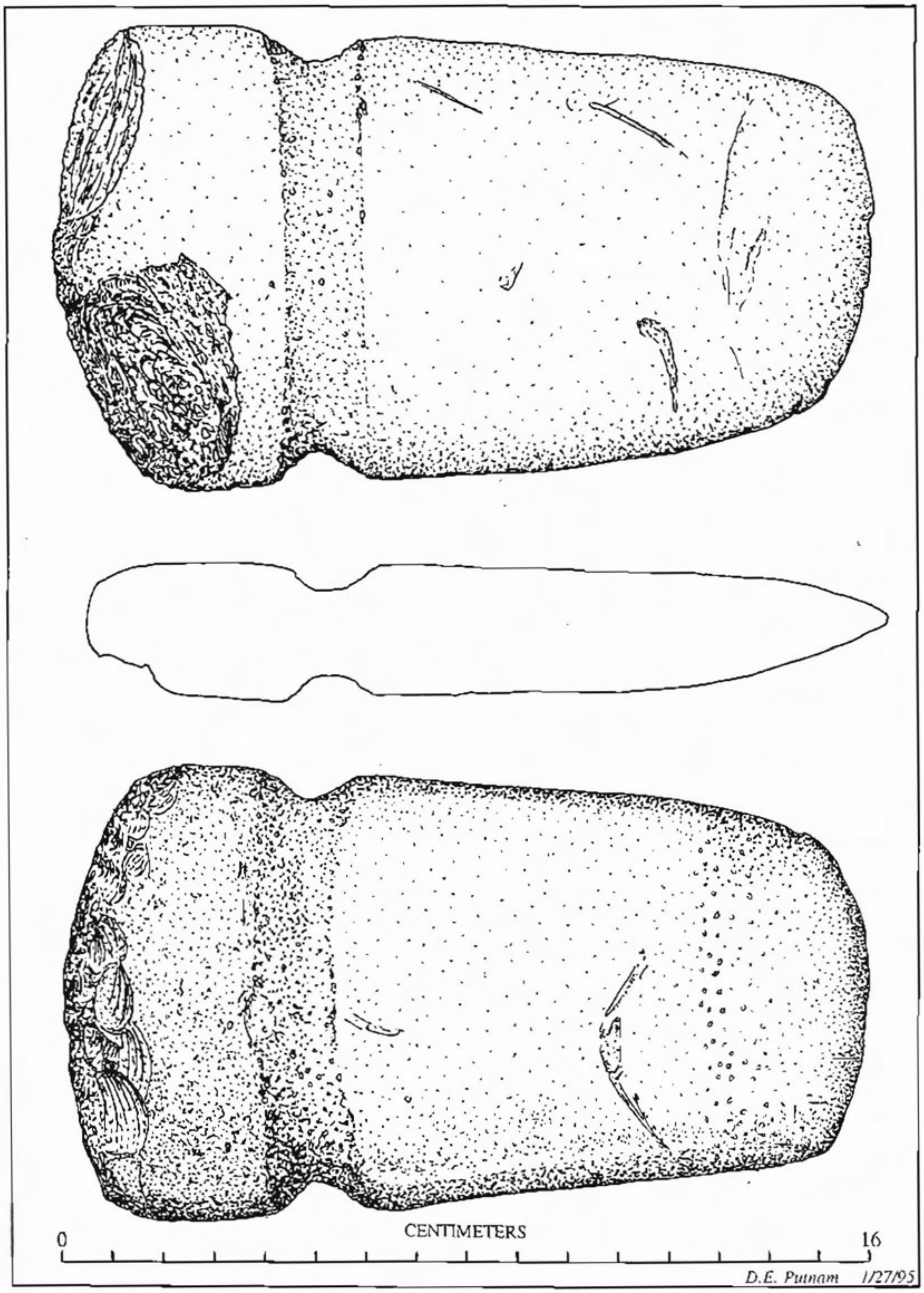

Figure 27. Obverse, reverse and cross-section of the Hagan stone axe recovered by Fred Hagan in the Meduxnekeag study area.

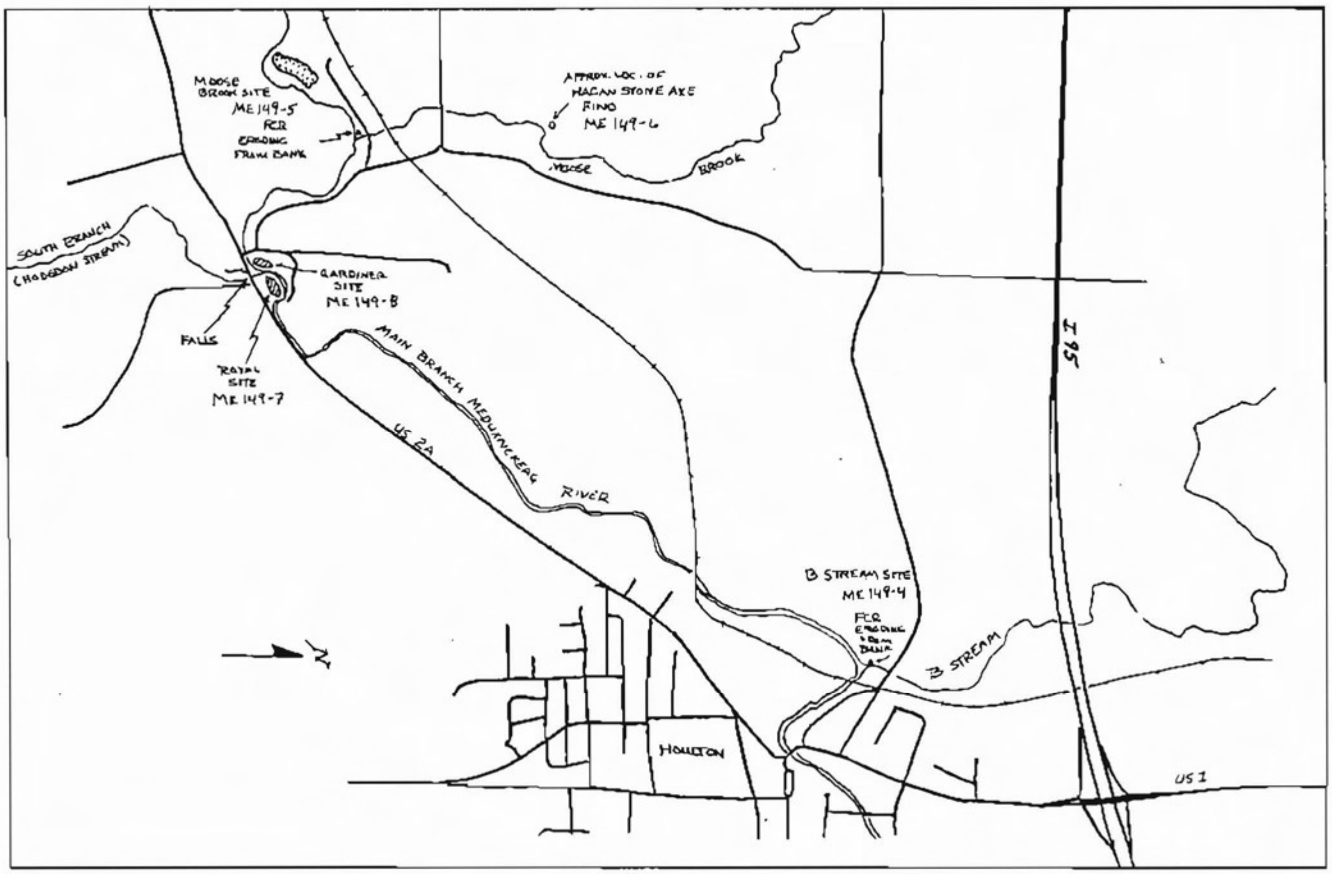

Figure 28. Location of newly identified sites and informant reported sites in the Meduxnekeag study area.

about 30 m above its mouth produced a number of unequivocal fire-cracked rocks in an eroded context and in situ in the bank. The exposed stratigraphy included a basal red-brown clay of possible glaciolacustrine origin, overlain by a horizon of round pebbles and small cobbles indicative of a channel lag. The uppermost sediment unit consisted of stratified sandy loam extending a meter or more in depth below the current surface. The in situ fire-cracked rocks were found in the sandy loam about 30 cm below the ground surface.

Moose Brook Site (ME 149-5)

This site was identified on the eroding bank of the Meduxnekeag River about 20 m to the west of the current mouth of Moose Brook in the town of Houlton (see Figure 28 and Appendix II). Several concentrations of fire-cracked rocks were found in slumped context along an eroding bank. The area appears to have been disturbed historically, perhaps by reorientation of the brook through other construction of a road and culvert in the past twenty-five years or so.

Informant Reports

A considerable effort was made to locate artifact collections or individuals with information regarding possible site locations. Local knowledge of archaeological finds is curiously rare, considering the vast amount of cultivated land and the prior practice of manual potato harvesting. Indeed, other than the Lowery Collection that resulted in excavations at the Smith Bridge site (ME 149-2) (Cranmer and Spiess 1993), the Hagan stone axe was the only additional local evidence that was unequivocally documented through informant contacts.

Of several leads that were followed up, only one report still shows promise. Mr. Glen Manuel, former commissioner of the Maine Department of Inland Fisheries and Wildlife, currently a resident of Littleton, Maine, reported a possible "Indian Burial Ground." The location of this possible site is on the western bank of the South Branch of the Meduxnekeag River (Hodgdon Stream) in the town of Hodgdon (see Figure 11 and Appendix II). Mr. Manuel's report detailed a concentration of unusual surficial depressions on the level surface of an esker bordering the upper end of the Hodgdon Mill Pond. This particular location apparently has a local reputation as a burial ground that goes back several generations. Mr. Manuel said that he had set out to dig into the depressions as a boy, but his father stopped him and reprimanded him for a lack of respect for Native American religion. Mr. Manuel first guided Mr. Larry Robichaud of the Houlton Band of Maliseet Indians to the spot, and Mr. Robichaud later accompanied Putnam on a surface examination in late November, 1994.

Although no artifacts were found on the surface, the topography and distribution of the shallow depressions is intriguing. They do not appear to be attributable to wind-thrown trees or other apparent natural phenomena. The setting is consistent with other "Red Paint" or Moorehead tradition cemeteries of the Late Archaic period elsewhere in the state.

The Houlton Band is particularly interested in investigating the spot. The land is owned by the State of Maine and is managed as part of the Gordon T. Manuel Wildlife Management Area. After consultation with Dr. Arthur Spiess at the MHPC, a formal request has been submitted to the Maine Department of Inland Fisheries and Wildlife for permission to test the area in the spring or summer of 1995. Any testing will be conducted under the auspices of the Houlton Band of Maliseet Indians due to the potential sensitivity of this area.

CONCLUSIONS AND RECOMMENDATIONS

A predictive model of potential Native American archaeological site locations has been developed for a portion of the Meduxnekeag River basin. The model is general in nature and tends to highlight areas adjacent to drainages and along eskers. The model can be a useful tool in determining the potential sensitivity of locations for proposed NRCS undertakings, but it should be assumed to be incomplete and potentially biased since it is based on a limited data base and it has been only superficially tested through the present study. Investigation of a greater range of landscape types including the full range of local sensitivity categories, must be conducted at some level if the model is to be fully and rigorously evaluated. Although probably rare, prehistoric Native American archaeological sites are likely to occur in Medium and Low Potential areas, along with their presence in Very High and High Potential areas. Sites in these potential settings may have increased significance because they are different and unexpected, providing exceptions to expectations manifested in the model. It will be only through the identification of the more or less complete range of local site types and site settings that this model can be fully tested. Perhaps it will be possible to address the full range of site sensitivity categories in the future using a random sampling approach to systematically investigate a sample of each category.

Likewise, future field work should begin to address the potential wealth of historic Euroamerican archaeological sites that the historical background research has seemingly demonstrated. A total of at least 50 historic Euroamerican sites has been documented and many more are potentially present. These sites too need to be identified and managed as potentially significant cultural resources. The potential historic sites should be field checked as soon as possible, and a combination of more background research and field work should be undertaken to identify any additional sites.

Seven prehistoric Native American sites are now known from the study area. Two of these, the Smith Bridge (ME 149-2) and the Maliseet Housing (ME 149-3) sites, were previously identified and additional information was collected during the field work portion of this study. The other five sites, B Stream (ME 149-4), Moose Brook (ME 149-5), Hagan (ME 149-6), Royal (ME 149-7) and Gardiner (ME 149-8), were first identified in the process of model development and testing undertaken through this study for the NRCS.

With the exception of the Hagan axe, all known prehistoric sites in the study area are associated with and preserved in alluvial floodplain settings. Only 35 (28.9%) of the total number of subsurface test pits excavated in this study were placed in floodplain settings, resulting in 11 pits that produced prehistoric cultural remains, or 31.4% of those in such settings (Table 3). This distribution meets expectations of relatively common, large habitation sites along rivers, but it does not address a wide range of less common, but potentially significant site types in a variety of other environmental settings. It seems clear that there is potentially a rich and varied archaeological record in the study area, notably including prehistoric Native American sites as now known, and certainly including various historic Euroamerican sites as well; historic Native American sites also may be represented.

We strongly suggest that additional field testing be conducted to better resolve emerging patterns of prehistoric site distribution and to verify the historic sites as possible. Such testing may be left to the time of planned NRCS undertakings, but at that rate it will take a long time to refine the available information. Additional nonproject archaeological field work in the near future would be valuable to expedite refinement of the predictive model and it should include diverse settings, perhaps even some specific non-floodplain areas where no impacts are planned. Surficial reconnaissance of cultivated land (before crops grow too tall or in the autumn), a technique that was not included in the scope of work for this study, may be very effective for prehistoric site identification in the study area because of the high percentage of land currently under regular cultivation. Historic sites will be most easily located through the field follow-up of historical documentation, as emphasized in this study.

NRCS personnel represent the front line of cultural resource identification and preservation in Aroostook County. Additional training in identification and documentation procedures for NRCS field personnel likely will result in new information from this little known area. It is essential, however, that archaeological ethics be stressed, so that cursory training does not encourage Federal employees to engage in destructive activities. Public education of the broadest sort should be emphasized in all aspects of cultural resource work in the Meduxnekeag study area. In the end, more complete identification, evaluation and protection of cultural resources in the study area should be a common goal for NRCS personnel and others alike.

Table 3. Distribution of Archaeological Test Pits by Environmental Setting in the Meduxnekeag Study Area.

Transect	Number of Pits	Positive for Prehistoric Remains	Postive (%)	Percentage of Total
Non-Floodplain River Terraces				
T5	9	0	0	7.5
T6A	2	0	0	2.9
T6B	1	0	0	1.5
T6C	2	0	0	2.9
T6D	2	0	0	2.9
T6E	2	0	0	2.9
T9	2	0	0	2.9
T10	12	0	0	17.9
T11	3	0	0	4.5
T14	21	0	0	31.3
T16	11	0	0	16.4
Subtotal	67	0	0	55.4%
River Floodplain				
T3	5	0	0	14.3
T4	6	0	0	17.1
T6F	6	2	33.3	17.1
T7	6	4	66.6	17.1
T8	6	5	83.3	17.1
T15	2	0	0	5.7
T17	4	0	0	11.7
Subtotal	35	11	31.4	28.9%
Esker Crest/Sandy Knoll				
T5A	2	0	0	22.2
T12	2	0	0	22.2
T13	5	0	0	55.6
Subtotal	9	0	0	7.4%
Lake Outlet				
T1	5	0	0	50
T2	5	0	0	50
Subtotal	10	0	0	8.3%
TOTALS	121	11	9.1%	100%

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APPENDIX I:

TEST PIT SEDIMENT PROFILES

KEY TO SOIL COLORS AND TEXTURES FOR TEST PIT SOIL PROFILES

Soil Colors		Soil Textures	
1	white	s	sand
2	gray	si	silt
3	black	c	clay
4	brown	l	loam
5	red	h	humus
6	yellow	z	podzol
7	olive	p	pebbles
P	pale	g	gravel
L	light	k	cobbles
M	medium	b	boulders
D	dark	t	till
S	strong	r	angular rocks
V	very	o	oxidized
( )	mottled with	i	iron staining
[ ]	with lenses	ic	iron concretions
-	to range	ci	charcoal infused
		or	organics
		ch	charcoal
		x	limonite
		f	fine grained
		m	medium grained
		q	coarse grained
		v	very
		( )	with
		////	extent of excavation

Example: VD24(L74)sifs(ic,r)= very dark gray-brown mottled with light olive-brown silty fine sand with iron concretions and angular rocks.

UMF ARCHAEOLOGY RESEARCH CENTER

0.5 m x 0.5 m TEST PIT PROFILES

Project *Meduxnekeag I* Site ______ Rec(s)/Exca(s) *JAG, JAW, KH, WFR* Date *10-21-94*

T1-1	*T1-2*	*T1-3*	*T1-4*
GROUND SURFACE	GROUND SURFACE	GROUND SURFACE	GROUND SURFACE
h	*24gs*	*h*	*D64sil(p)*
24sil	*L64fs*	*24sil*	*S4fsl*
S4sil		*S4sil*	
74sil			

Depth scale: 0cm, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100

UMF ARCHAEOLOGY RESEARCH CENTER

0.5 m x 0.5 m TEST PIT PROFILES

Project *Meduxnekeag I* Site ______ Rec(s)/Exca(s) *JAW, WFR* Date *10-21-94*

T1-5	______	______	______
GROUND SURFACE	GROUND SURFACE	GROUND SURFACE	GROUND SURFACE
D64sil(p)			
S4fsl			
L64fsl			

Depth scale: 0cm, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100

UMF ARCHAEOLOGY RESEARCH CENTER

0.5 m x 0.5 m TEST PIT PROFILES

Project Meduxnekeag I Site ______ Rec(s)/Exca(s) JAG, JAW, PCM, WFP Date 10-21-94

T2-1

GROUND SURFACE

0cm – 10 – 20 – 30 – 40 – 50 – 60 – 70 – 80 – 90 – 100

h

24 sil

S4 sil

T2-2

GROUND SURFACE

0cm – 10 – 20 – 30 – 40 – 50 – 60 – 70 – 80 – 90 – 100

D64 fsl

S4 fsl

64 fsl

T2-3

GROUND SURFACE

0cm – 10 – 20 – 30 – 40 – 50 – 60 – 70 – 80 – 90 – 100

24 sil

T2-4

GROUND SURFACE

0cm – 10 – 20 – 30 – 40 – 50 – 60 – 70 – 80 – 90 – 100

D64 sil (p)

S4 fsl (p)

64 fsl

UMF ARCHAEOLOGY RESEARCH CENTER

0.5 m x 0.5 m TEST PIT PROFILES

Project Meduxnekeag I Site ______ Rec(s)/Exca(s) JAG, PCM Date 10-21-94

T2-5

GROUND SURFACE

0cm – 10 – 20 – 30 – 40 – 50 – 60 – 70 – 80 – 90 – 100

24 sil

______

GROUND SURFACE

0cm – 10 – 20 – 30 – 40 – 50 – 60 – 70 – 80 – 90 – 100

______

GROUND SURFACE

0cm – 10 – 20 – 30 – 40 – 50 – 60 – 70 – 80 – 90 – 100

______

GROUND SURFACE

0cm – 10 – 20 – 30 – 40 – 50 – 60 – 70 – 80 – 90 – 100

UMF ARCHAEOLOGY RESEARCH CENTER — 0.5 m x 0.5 m TEST PIT PROFILES

Project *Meduxnekeag I* Site ______ Rec(s)/Exca(s) *JAG, JAW, PCM, WFR* Date *10-21-94*

	T3-1	*T3-2*	*T3-3*	*T3-4*
	GROUND SURFACE	GROUND SURFACE	GROUND SURFACE	GROUND SURFACE
0cm				
10	*D64sil*	*64sil(g)*	*D64sil*	*D64sil*
20				*D54 Vfsl*
30	*D54Vfsil*	*64sil(g)*	*64sil*	
40	*2s*			
50	*D54Vfsil*			
60				
70				
80				
90				
100				

UMF ARCHAEOLOGY RESEARCH CENTER — 0.5 m x 0.5 m TEST PIT PROFILES

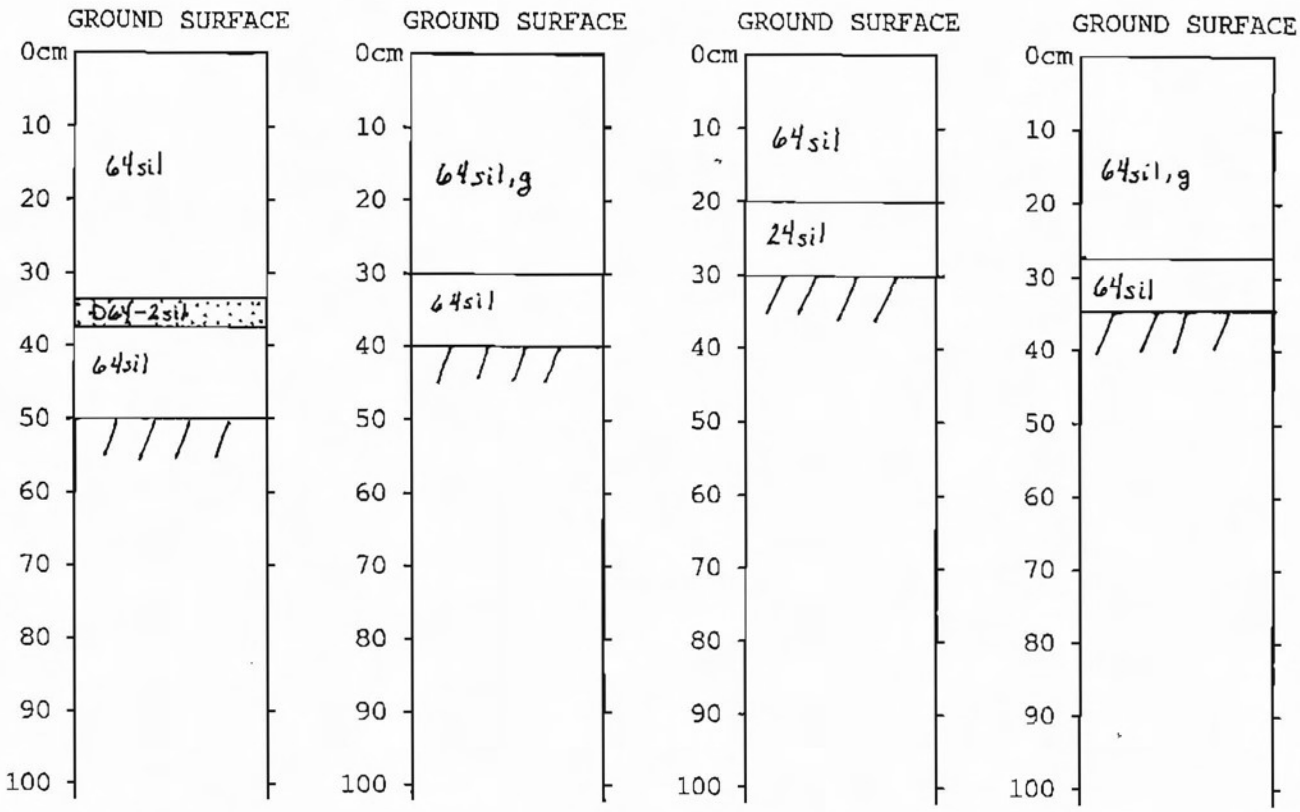
Project *Meduxnekeag I* Site ______ Rec(s)/Exca(s) *JAG, JAW, PCM, WFR* Date *10-21-94*

	T3-5	______	______	______
	GROUND SURFACE	GROUND SURFACE	GROUND SURFACE	GROUND SURFACE
0cm				
10	*64sil, g*			
20				
30	*64sil*			
40				
50				
60				
70				
80				
90				
100				

UMF ARCHAEOLOGY RESEARCH CENTER — 0.5 m x 0.5 m TEST PIT PROFILES

Project *Meduxnekeag I* Site ______ Rec(s)/Exca(s) *JAG, JAW, PCM, WFR* Date *10-21-94*

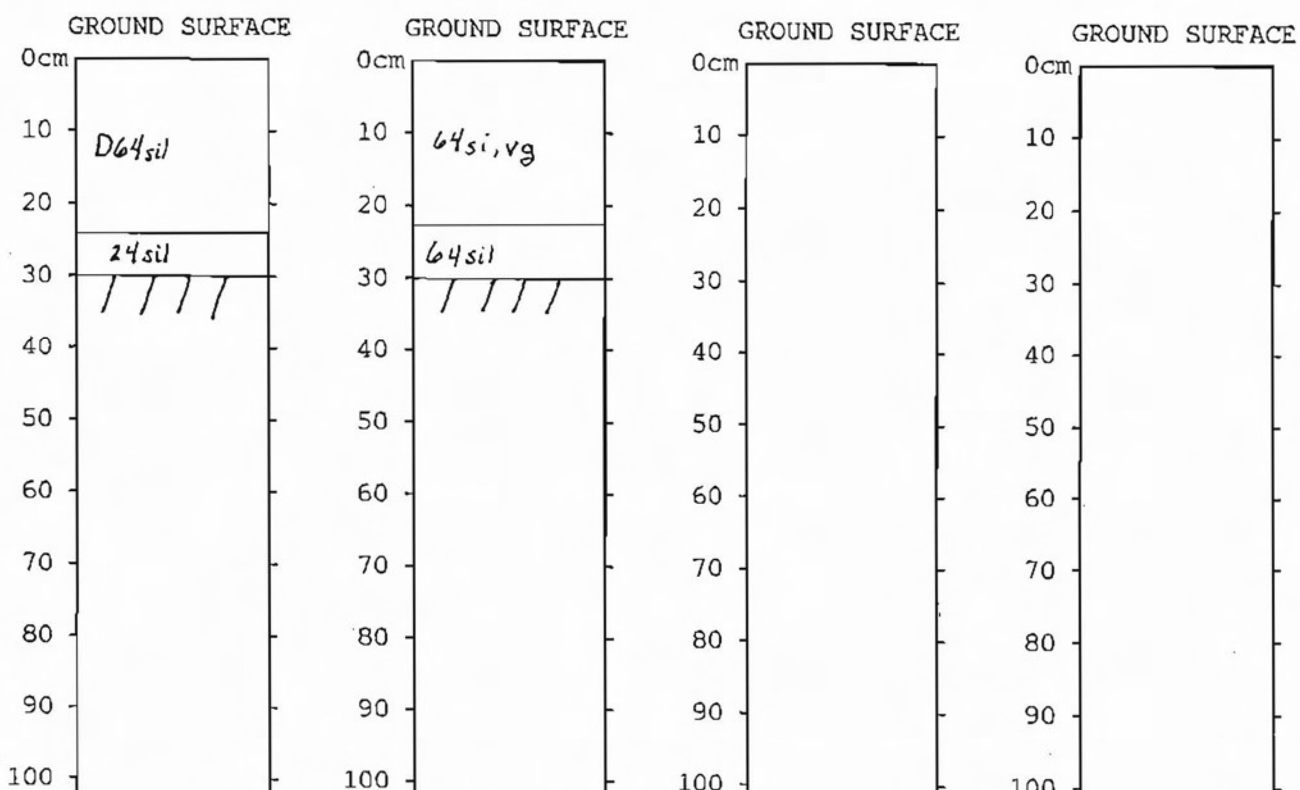
T4-1 | *T4-2* | *T4-3* | *T4-4*



UMF ARCHAEOLOGY RESEARCH CENTER — 0.5 m x 0.5 m TEST PIT PROFILES

Project *Meduxnekeag I* Site ______ Rec(s)/Exca(s) *JAG, JAW, PCM, WFR* Date *10-21-94*

T4-5 | *T4-6* | ______ | ______



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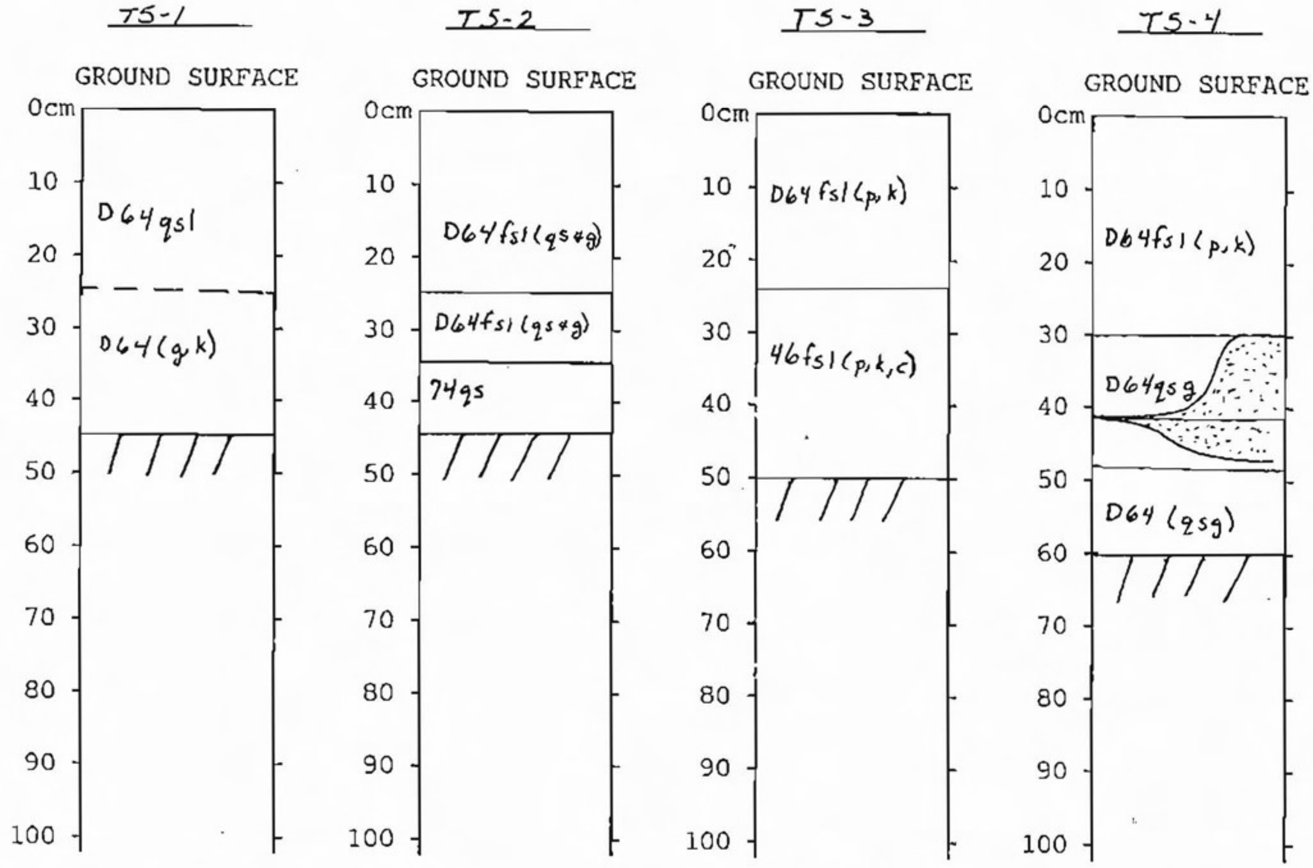
Project Meduxnekeag I   Site ________   Rec(s)/Exca(s) JAG, JAW, PCM, WER   Date 10-17-94



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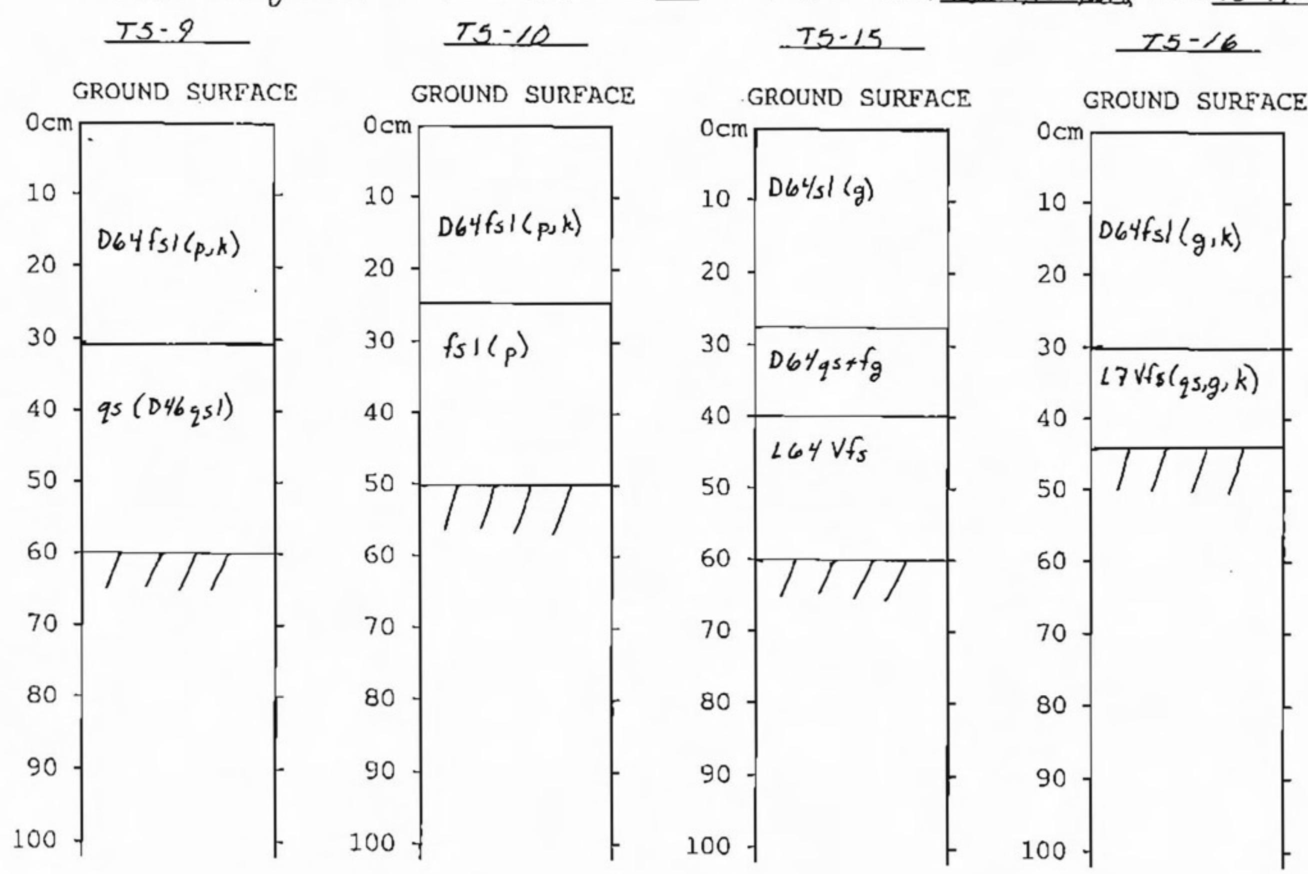


UMF ARCHAEOLOGY RESEARCH CENTER

0.5 m x 0.5 m TEST PIT PROFILES

Project *Meduxnekeag I* Site ________ Rec(s)/Exca(s) *JAG, JAW, PCM, WFR* Date *10-17-94 / 10-18-9?*

	TS-18	*TS-A2*	*TS-A4*	*T6-A2*
	GROUND SURFACE	GROUND SURFACE	GROUND SURFACE	GROUND SURFACE
0cm				
10	*D64fsl4g*	*L74fs(qs)*	*4Msl*	
20				*D64Vfsl(p)*
30	*D64qsg&k*	*L42Ms,g*		
40			*74qs*	*64Vfsl(p,k)*
50				
60			*24qs*	
70				
80				
90				
100				

UMF ARCHAEOLOGY RESEARCH CENTER

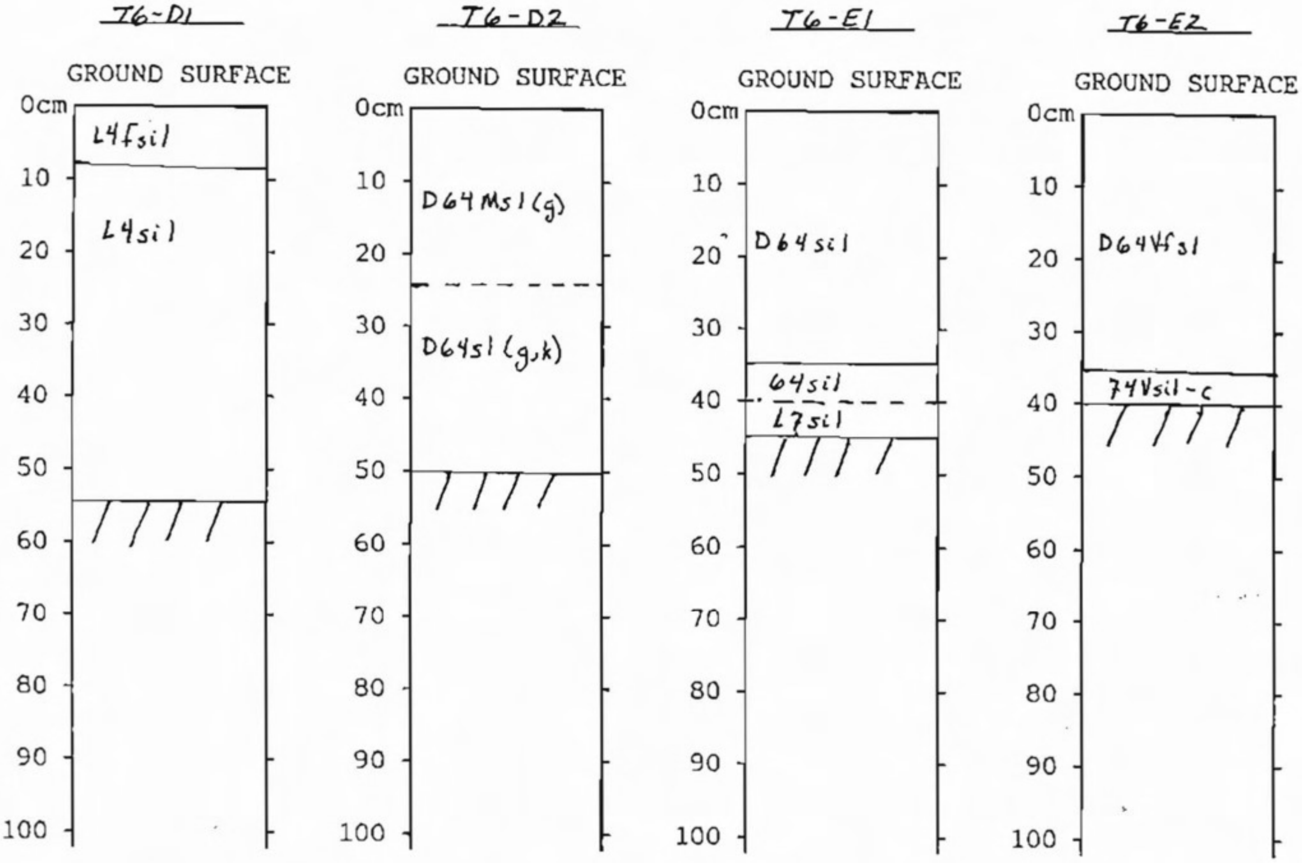
0.5 m x 0.5 m TEST PIT PROFILES

Project *Meduxnekeag I* Site ________ Rec(s)/Exca(s) *JAG, JAW, PCM, WFR* Date *10-18-94*

	T6-A4	*T6-B1*	*T6-C1*	*T6-C2*
	GROUND SURFACE	GROUND SURFACE	GROUND SURFACE	GROUND SURFACE
0cm				
10		*L4sil(p)*	*D64fsl(g,k)*	*D64fsl,g*
20	*D64Vfsl(p)*			
30		*4sil(p)*	*64fsl(g,k)*	*64Ms,g,k*
40	*L64Vfsl(p)*			
50		*64sil(p,ic)*		
60				
70				
80				
90				
100				

UMF ARCHAEOLOGY RESEARCH CENTER 0.5 m x 0.5 m TEST PIT PROFILES

Project Meduxnekeag I Site ______ Rec(s)/Exca(s) JAG, JAW, PCM, PEP, WFR Date 10-18-94



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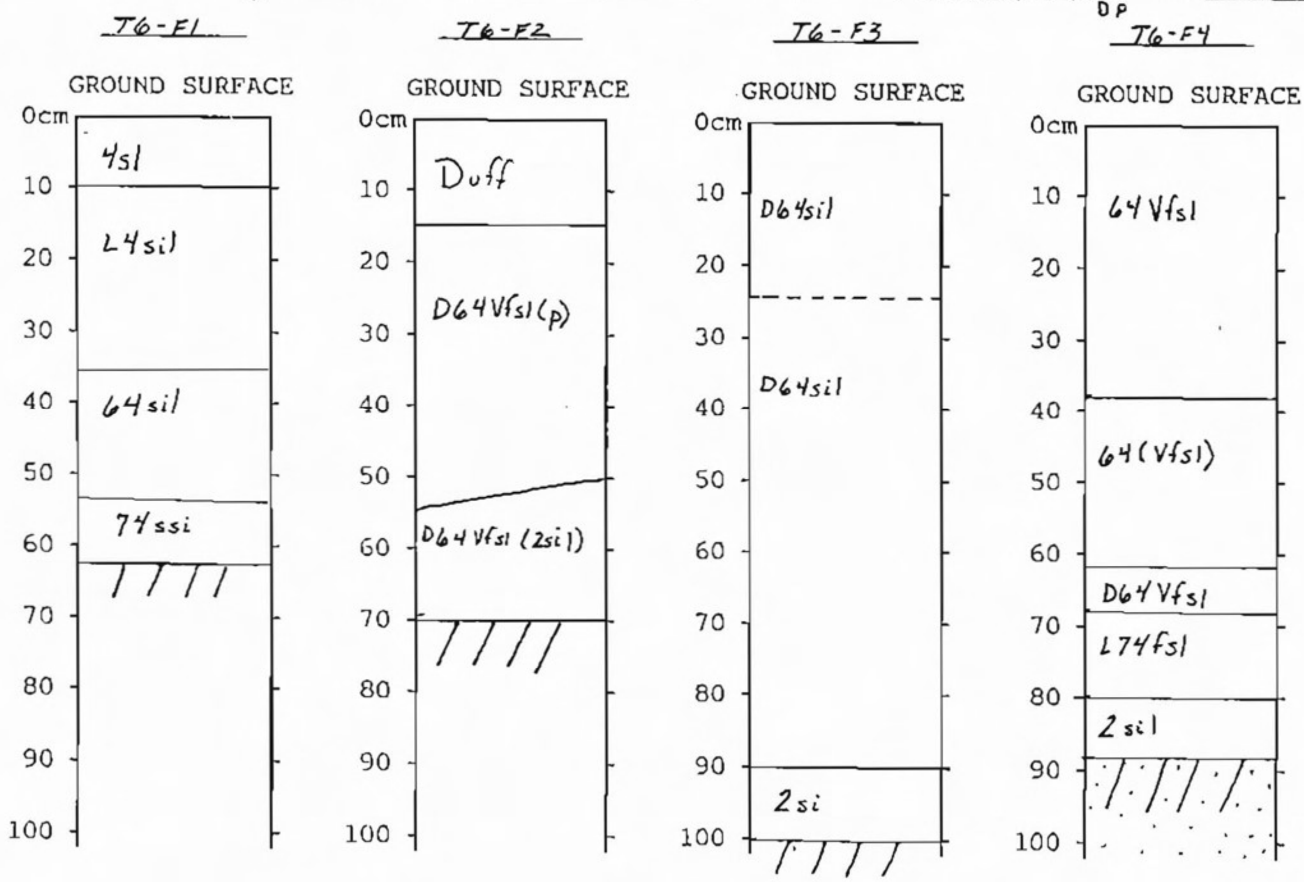
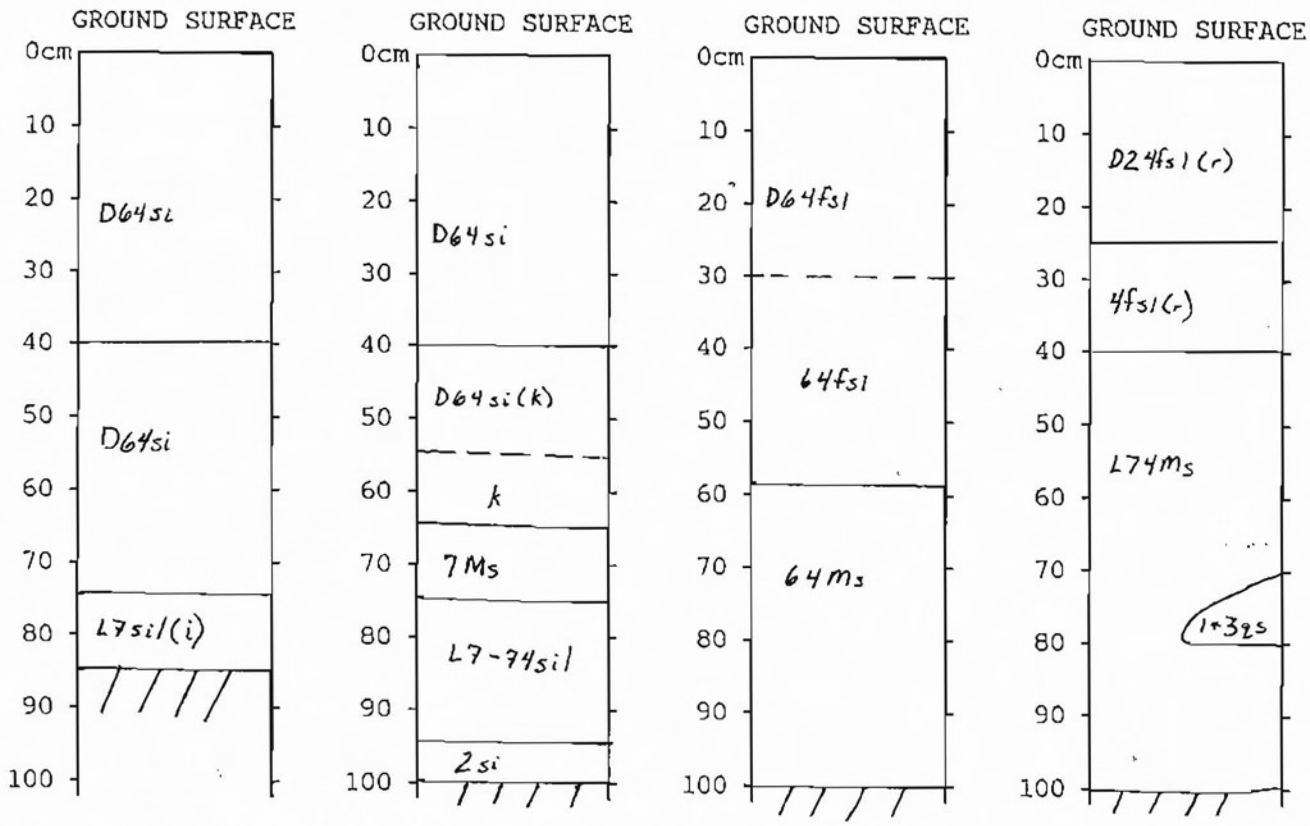
Project Meduxnekeag I Site ME149-2 Rec(s)/Exca(s) JAG, JAW, PCM, WFR, DP Date 10-18-94



UMF ARCHAEOLOGY RESEARCH CENTER — 0.5 m x 0.5 m TEST PIT PROFILES

Project: Meduxnekeag I — Site: ME149-2(T6-F) / ME149-7(T7) — Rec(s)/Exca(s): JAG, JAW, PCM, WFR — Date: 10-18-94

T6-E5 | T6-F6 | T7-1 | T7-2



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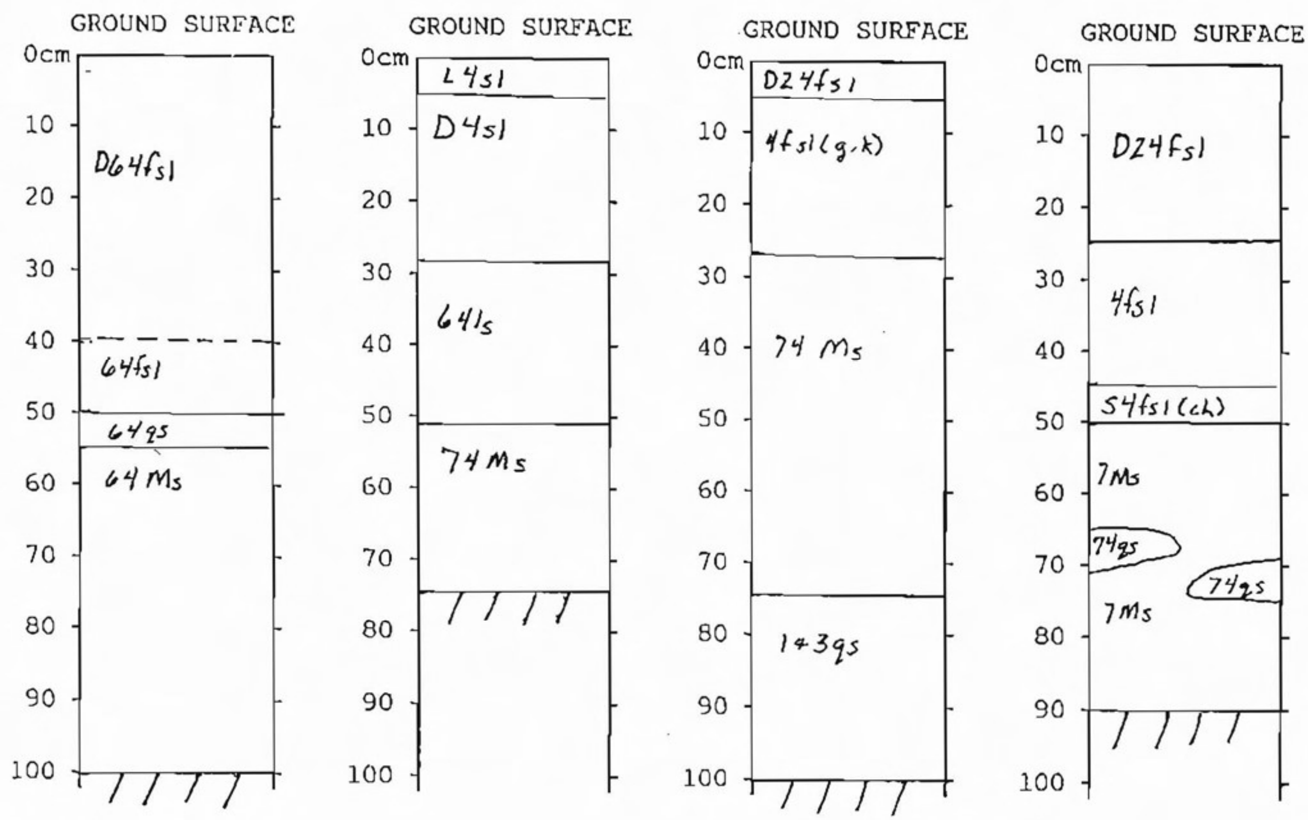
Project: Meduxnekeag I — Site: ME149-7 — Rec(s)/Exca(s): JAG, JAW, PCM, DEP, WFR — Date: 10-18-94

T7-3 | T7-4 | T7-5 | T7-6



UMF ARCHAEOLOGY RESEARCH CENTER 0.5 m x 0.5 m TEST PIT PROFILES

Project Meduxnekeag I Site ME149-8 Rec(s)/Exca(s) PCM, JAG, WFR Date 10-19-94

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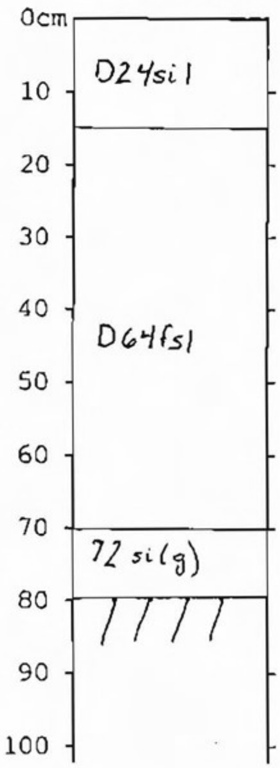
GROUND SURFACE



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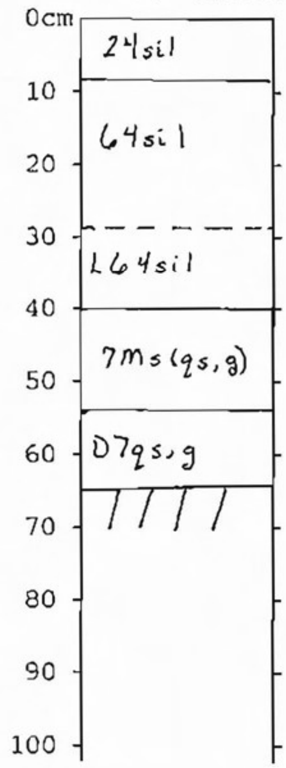

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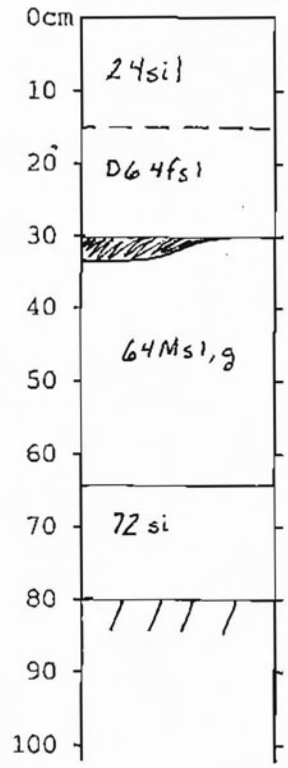

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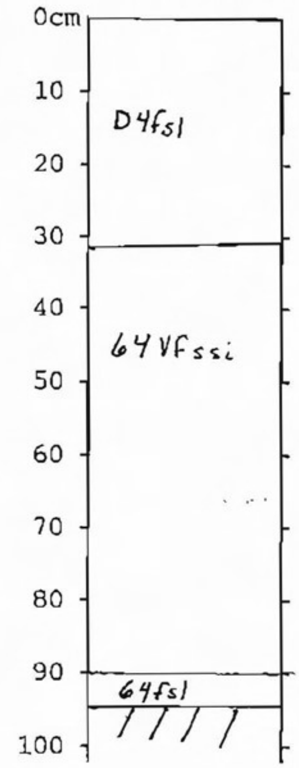

UMF ARCHAEOLOGY RESEARCH CENTER 0.5 m x 0.5 m TEST PIT PROFILES

Project Meduxnekeag I Site ME149-8 (TB) Rec(s)/Exca(s) DEP, JAG, JAW, PCM, WFR Date 10-19-94

TB-5

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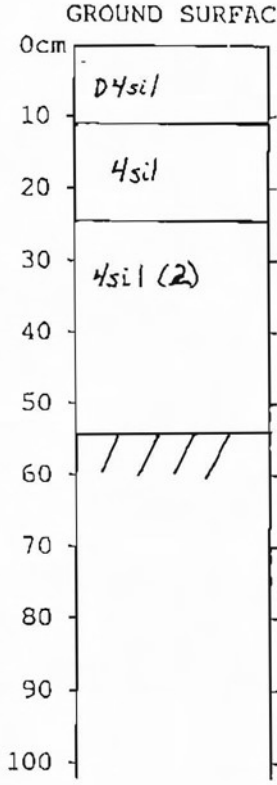
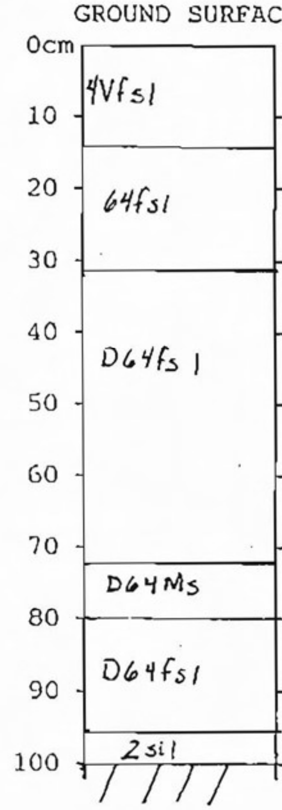


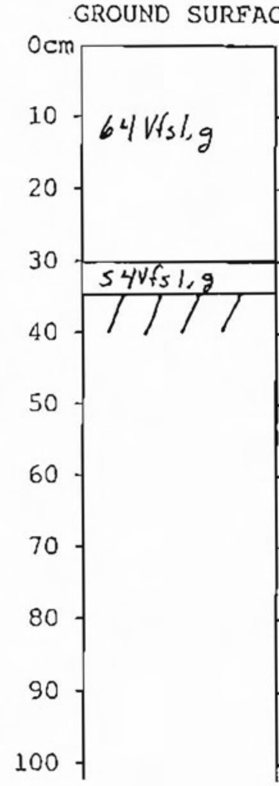
TB-6 NE

GROUND SURFACE



T9-1

GROUND SURFACE



T9-2

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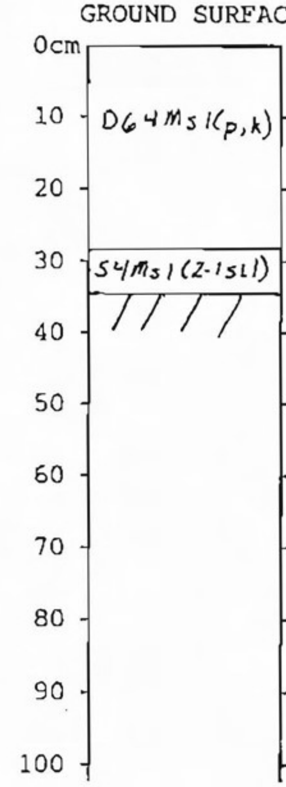


UMF ARCHAEOLOGY RESEARCH CENTER — 0.5 m x 0.5 m TEST PIT PROFILES

Project Meduxnekeag I Site ______ Rec(s)/Exca(s) DCP, JAG, JAW, PKM, WFR Date 10-19-94

T10-1 (GROUND SURFACE, 0cm–100cm)
- D64fsl(p)
- D64fsl(k,b)

T10-2 (GROUND SURFACE, 0cm–100cm)
- 64sil(g)
- D64sil
- 64k

T10-3 (GROUND SURFACE, 0cm–100cm)
- D4g,sil
- L4sil

T10-3A (GROUND SURFACE, 0cm–100cm)
- D24sil
- 4sil
- 24ssil

UMF ARCHAEOLOGY RESEARCH CENTER — 0.5 m x 0.5 m TEST PIT PROFILES

Project Meduxnekeag I Site ______ Rec(s)/Exca(s) JAG, JAW, PKM, WFR Date 10-19-94

T10-4 (GROUND SURFACE, 0cm–100cm)
- 64Yfsl(p,k)
- 2sil-c
- 7sil-c
- r r r

T10-5 (GROUND SURFACE, 0cm–100cm)
- 64l(g)
- 64f-Msl
- Ms(qs,g)
- qs

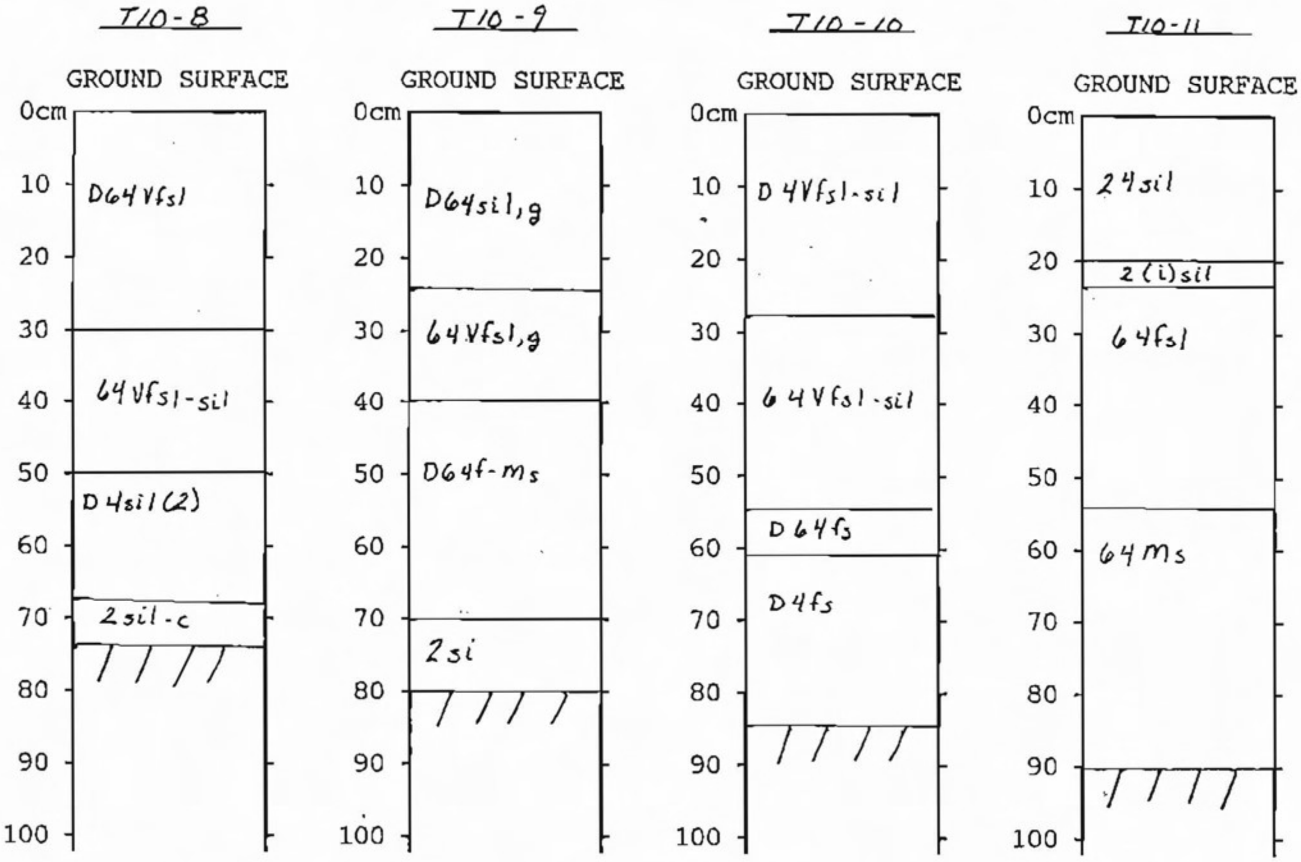
T10-6 (GROUND SURFACE, 0cm–100cm)
- D64fsl(p)
- 64Msl(p)
- D4M-qs
- D64fsl(p)
- D4M-qs
- D64fsl(p)

T10-7 (GROUND SURFACE, 0cm–100cm)
- 24sil
- 64sl
- Msl
- 2si

UMF ARCHAEOLOGY RESEARCH CENTER

0.5 m x 0.5 m TEST PIT PROFILES

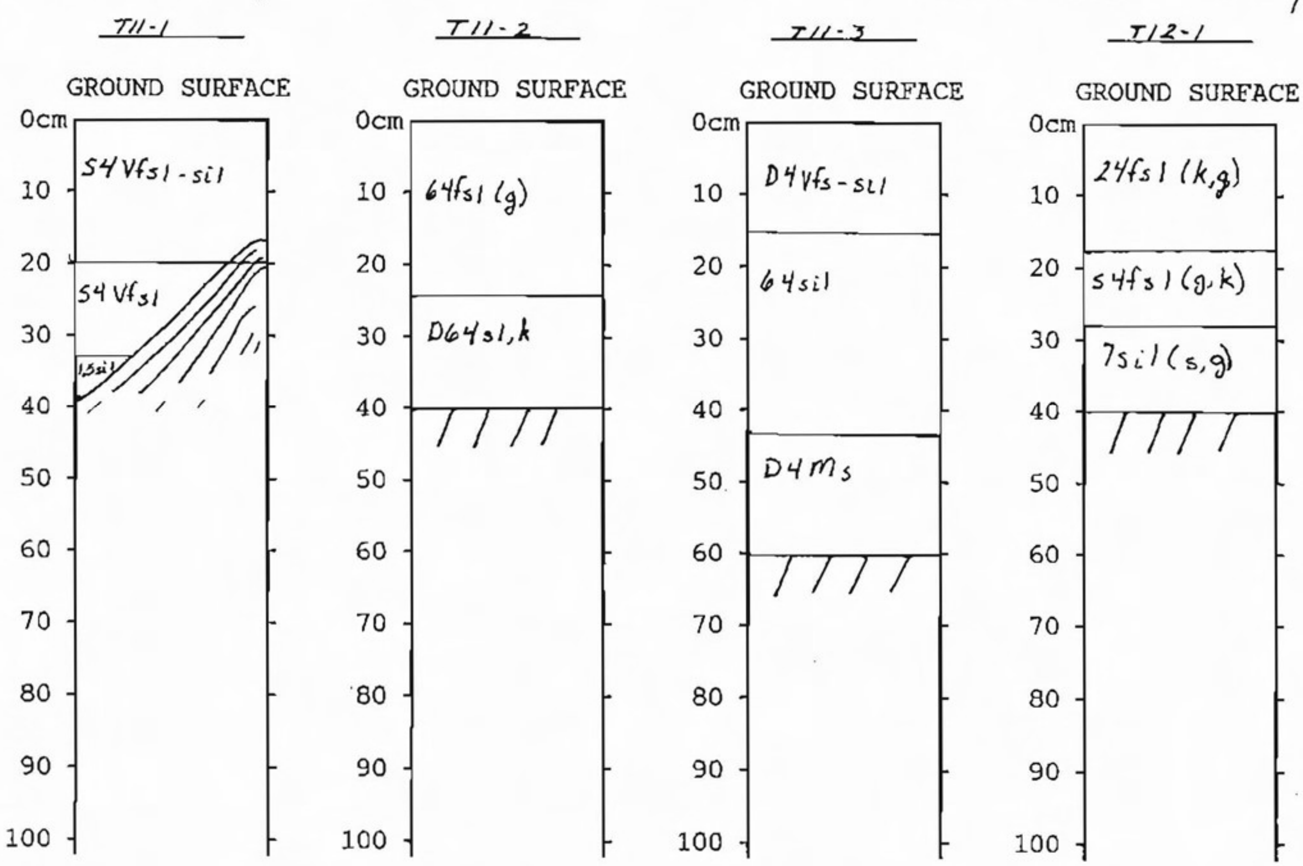
Project Meduxnekeag I Site ______ Rec(s)/Exca(s) JAG, JAW, PCM, WFR Date 10-19-94



UMF ARCHAEOLOGY RESEARCH CENTER

0.5 m x 0.5 m TEST PIT PROFILES

Project Meduxnekeag I Site ______ Rec(s)/Exca(s) JAG, JAW, PCM, WFR Date 10-19-94 / 10-20-9

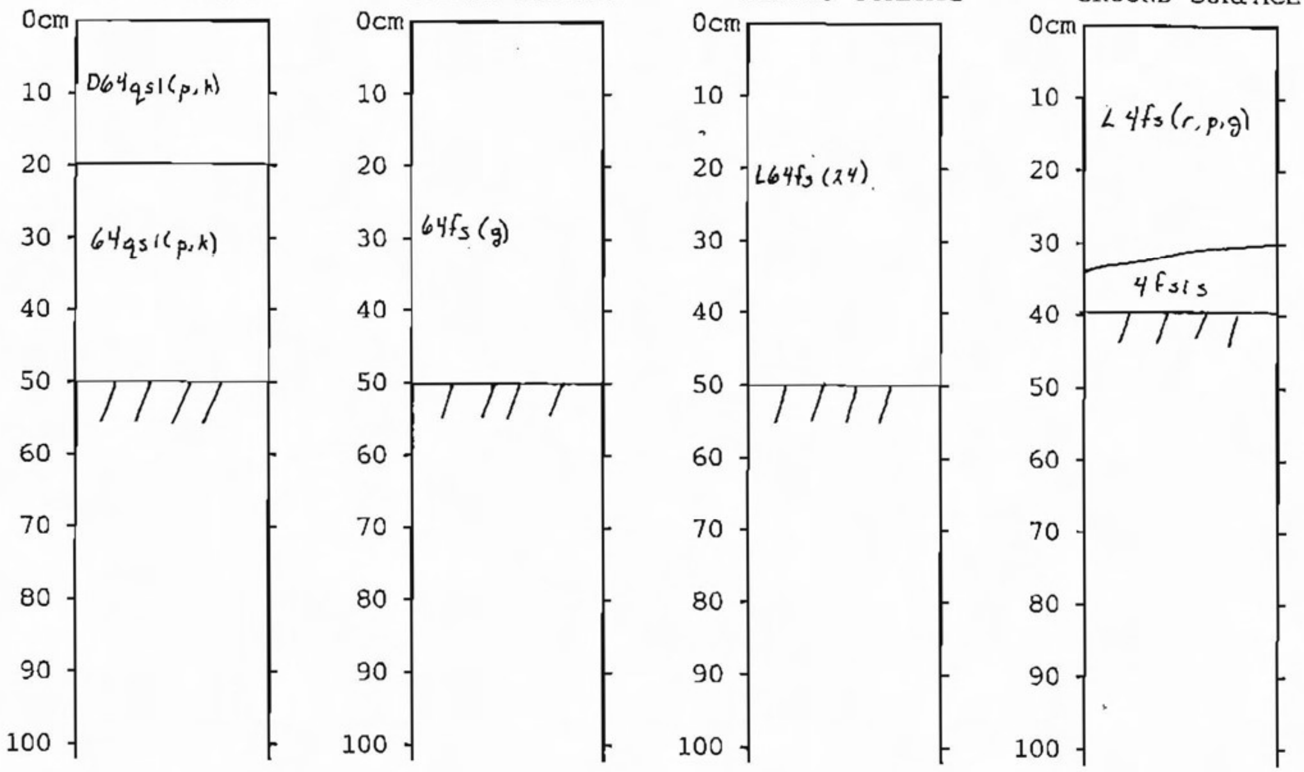


UMF ARCHAEOLOGY RESEARCH CENTER

0.5 m x 0.5 m TEST PIT PROFILES

Project *Meduxnekeag I* Site ______ Rec(s)/Exca(s) *DEP, JAG, JAW, PCM, WFR* Date *10-20-94*

T12-2 | *T13-1* | *T13-2* | *T13-3*

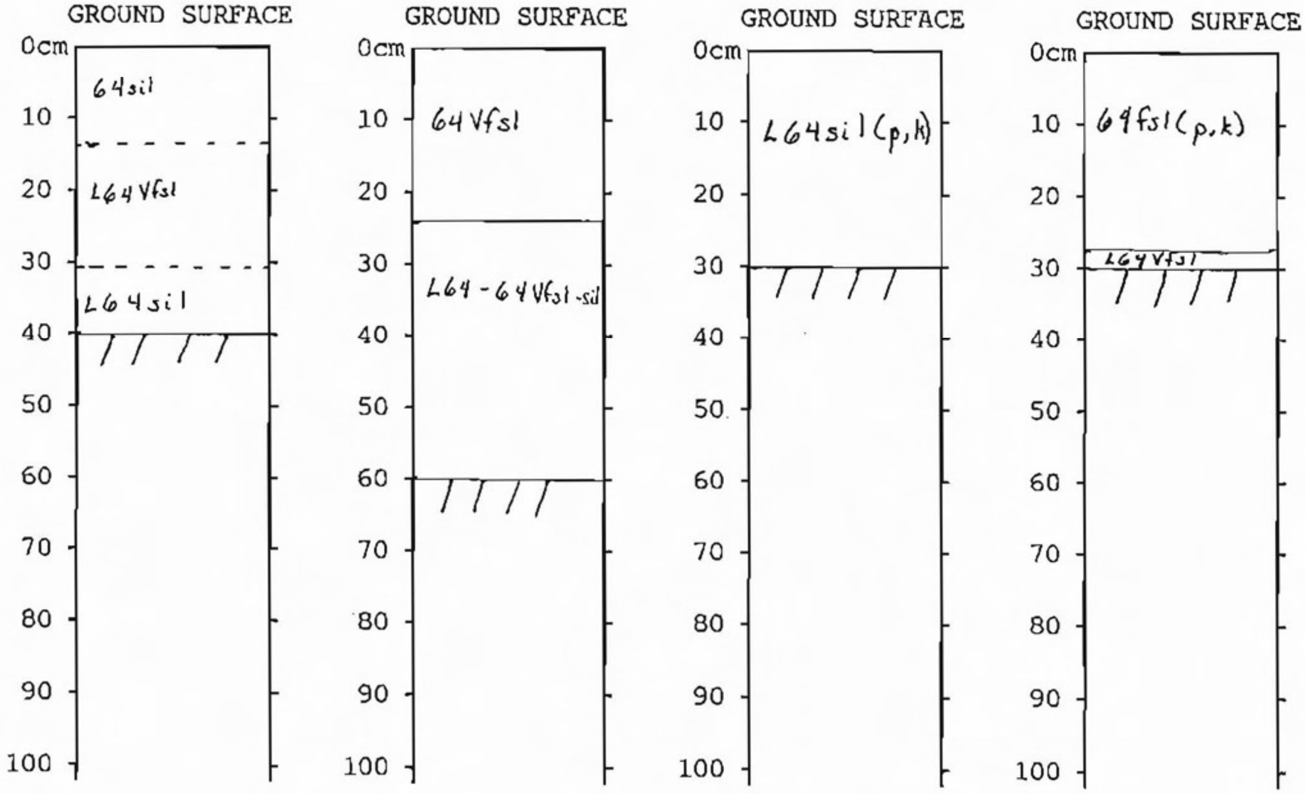


UMF ARCHAEOLOGY RESEARCH CENTER

0.5 m x 0.5 m TEST PIT PROFILES

Project *Meduxnekeag I* Site ______ Rec(s)/Exca(s) *JAW, WFR* Date *10-20-94*

T13-4 SE | *T13-P5* | *T14-1* | *T14-2*



UMF ARCHAEOLOGY RESEARCH CENTER — 0.5 m x 0.5 m TEST PIT PROFILES

Project Meduxkeneag I Site ______ Rec(s)/Exca(s) JAG, JAW, PCM, WFR Date 10-20-94

T14-3

GROUND SURFACE (0cm–100cm)

64ssil

64ssil

T14-4

GROUND SURFACE (0cm–100cm)

64sil

T14-5

GROUND SURFACE (0cm–100cm)

74sil,g

T14-6

GROUND SURFACE (0cm–100cm)

74sil (g,r)

UMF ARCHAEOLOGY RESEARCH CENTER — 0.5 m x 0.5 m TEST PIT PROFILES

Project Meduxkeneag I Site ______ Rec(s)/Exca(s) DEP, JAG, JAW, PCM, WFR Date 10-20-94

T14-7

GROUND SURFACE (0cm–100cm)

L4gsil

64gsil

T14-8

GROUND SURFACE (0cm–100cm)

64gsil

64gsil

T14-9

GROUND SURFACE (0cm–100cm)

64sil

64sil

64(5,4)sil

T14-10

GROUND SURFACE (0cm–100cm)

74silg

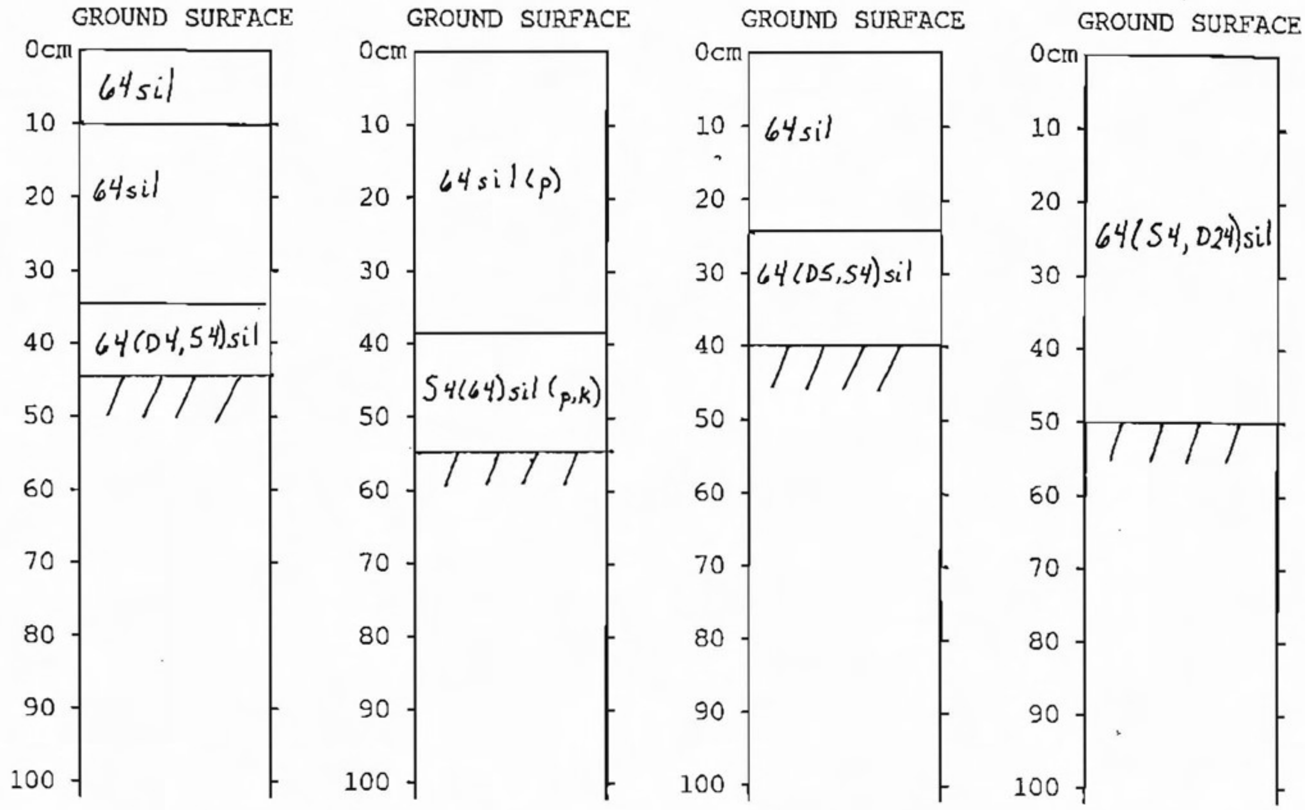
74si(l)

UMF ARCHAEOLOGY RESEARCH CENTER

0.5 m x 0.5 m TEST PIT PROFILES

Project Meduxkeneag I Site ________ Rec(s)/Exca(s) JAW, WFR Date 10-20-94

T14-11 T14-12 T14-13 T14-14

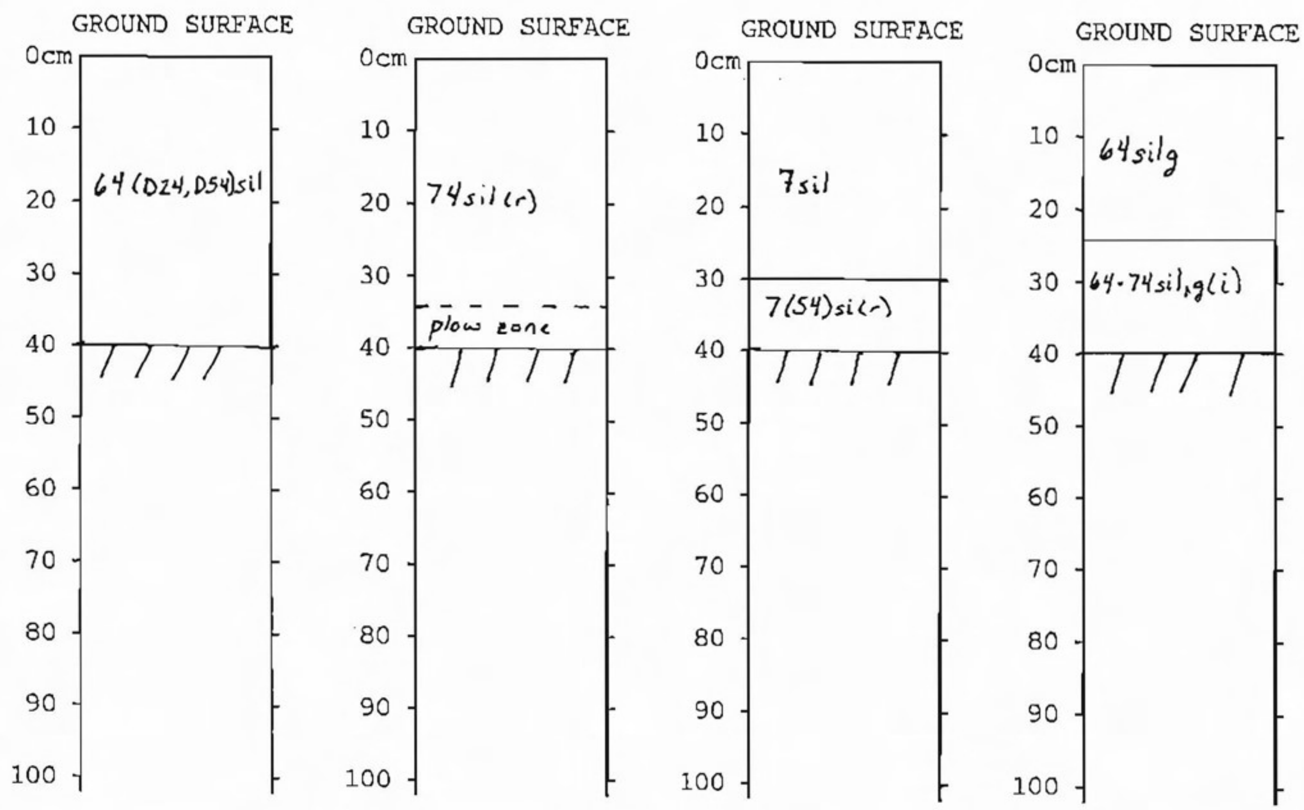


UMF ARCHAEOLOGY RESEARCH CENTER

0.5 m x 0.5 m TEST PIT PROFILES

Project Meduxnekeag I Site ________ Rec(s)/Exca(s) JAG, JAW, PCH, WFR Date 10-20-94

T14-15 T14-16 T14-17 T14-18



UMF ARCHAEOLOGY RESEARCH CENTER — 0.5 m x 0.5 m TEST PIT PROFILES

Project Meduxnekeag I — Site ______ — Rec(s)/Exca(s) JAG, JAW, PCM, WFR — Date 10-20-94

14-19	T14-20	T14-21	______
GROUND SURFACE	GROUND SURFACE	GROUND SURFACE	GROUND SURFACE
0–25 cm: 64 silg	0–25 cm: 64 silg	0–45 cm: 64(54) sil	
25–30 cm: 64-74 silg	25–30 cm: 74 sil(cr)		

Depth scale: 0cm, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100

UMF ARCHAEOLOGY RESEARCH CENTER — 0.5 m x 0.5 m TEST PIT PROFILES

Project Meduxkeneag I — Site ______ — Rec(s)/Exca(s) JAW, WFB — Date 10-20-94

T15-1	T15-2	______	______
GROUND SURFACE	GROUND SURFACE	GROUND SURFACE	GROUND SURFACE
0–20 cm: D64fsl	0–29 cm: D64vfsl		
20–29 cm: D64sil	29–54 cm: 64fsl		
29–70 cm: 24(54) sil	54–84 cm: L64sl		
	84–90 cm: 24s		

Depth scale: 0cm, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100

UMF ARCHAEOLOGY RESEARCH CENTER — 0.5 m x 0.5 m TEST PIT PROFILES

Project *Meduxnekeag I* Site ______ Rec(s)/Exca(s) *DEP, JAG, PCM* Date *10-20-94*

T16-1

GROUND SURFACE

0cm, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100

64slk (0–40 cm); base at 40 cm

T16-2

GROUND SURFACE

0cm, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100

64 vfsl (g) (0–24 cm); *64 msl* (24–40 cm); base at 40 cm

T16-3

GROUND SURFACE

0cm, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100

4s sil (r, k) (0–20 cm); *cgs* (20–50 cm); base at 50 cm

T16-4

GROUND SURFACE

0cm, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100

4sil (0–25 cm); base at 25 cm

UMF ARCHAEOLOGY RESEARCH CENTER — 0.5 m x 0.5 m TEST PIT PROFILES

Project *Meduxnekeag I* Site ______ Rec(s)/Exca(s) *JAG, JAW, PCH, WFR* Date *10-20-94*

T16-5

GROUND SURFACE

0cm, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100

64vfsil (0–25 cm); *64silg* (25–30 cm); base at 30 cm

T16-6

GROUND SURFACE

0cm, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100

64 vfsl (0–26 cm); *pk* (26–30 cm); base at 30 cm

T16-7

GROUND SURFACE

0cm, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100

64 vfsl (0–30 cm); *7gsg* (30–35 cm); base at 35 cm

T16-8

GROUND SURFACE

0cm, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100

64 vfsl (0–35 cm); base at 35 cm

UMF ARCHAEOLOGY RESEARCH CENTER

0.5 m x 0.5 m TEST PIT PROFILES

Project Meduxnekeag I Site ________ Rec(s)/Exca(s) JAG, JAW, PCM, WFR Date 10-20-94

T16-9

GROUND SURFACE

- 64 sil(g)
- 64fslk
- D64m-qs

T16-10

GROUND SURFACE

- 64sil
- L64sil

T16-11

GROUND SURFACE

- 64 sil
- D64sil

____

GROUND SURFACE

UMF ARCHAEOLOGY RESEARCH CENTER

0.5 m x 0.5 m TEST PIT PROFILES

Project Meduxnekeag I Site ________ Rec(s)/Exca(s) JAG, JAW, PCM, WFR Date 10-20-94

T17-1

GROUND SURFACE

- 64sil
- 64 sil (g,k)

T17-2

GROUND SURFACE

- 64fsl
- D64lqsg

T17-3

GROUND SURFACE

- 64 vfsl
- D64 vfsl
- D64vfsl

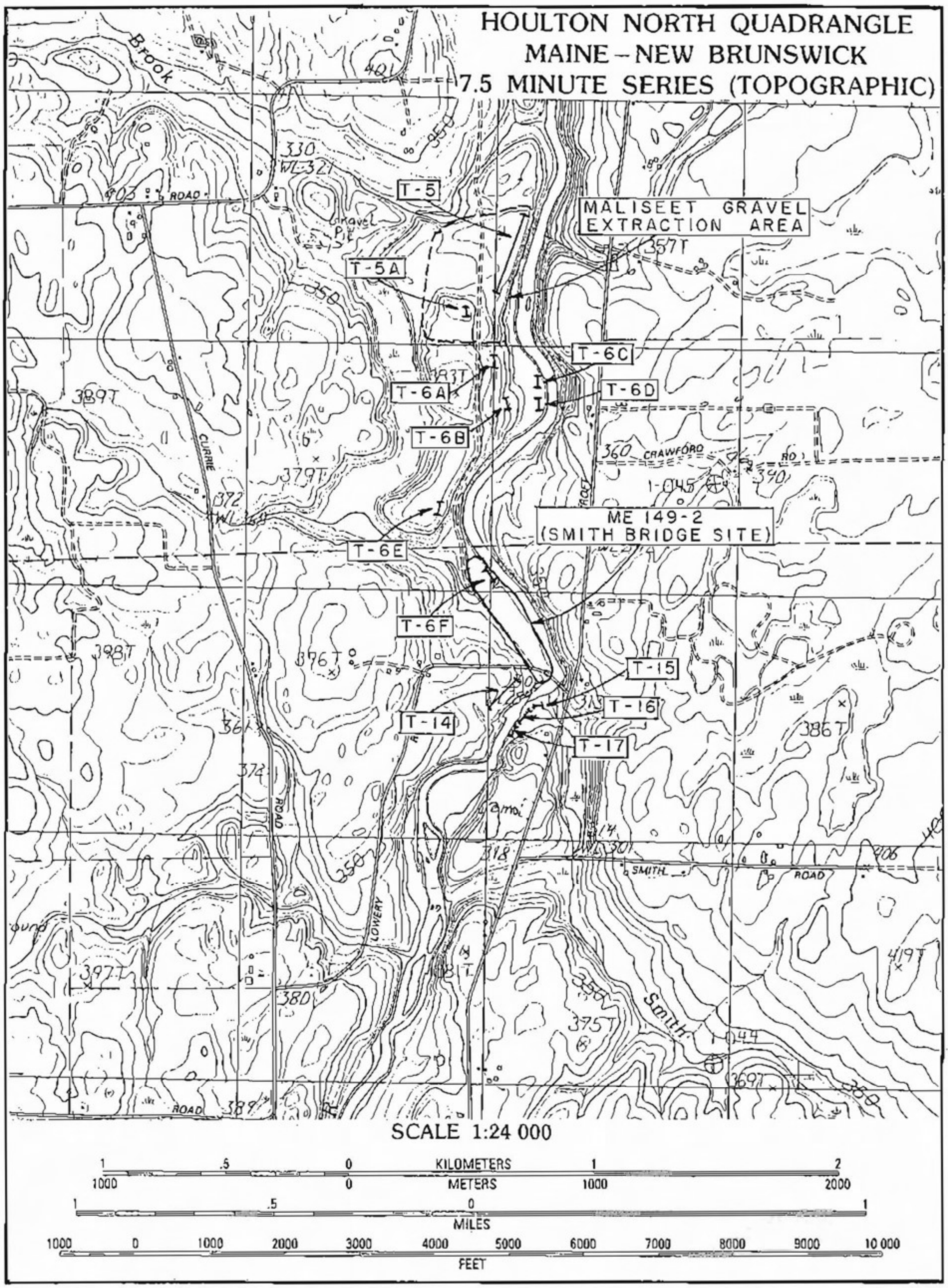
T17-4

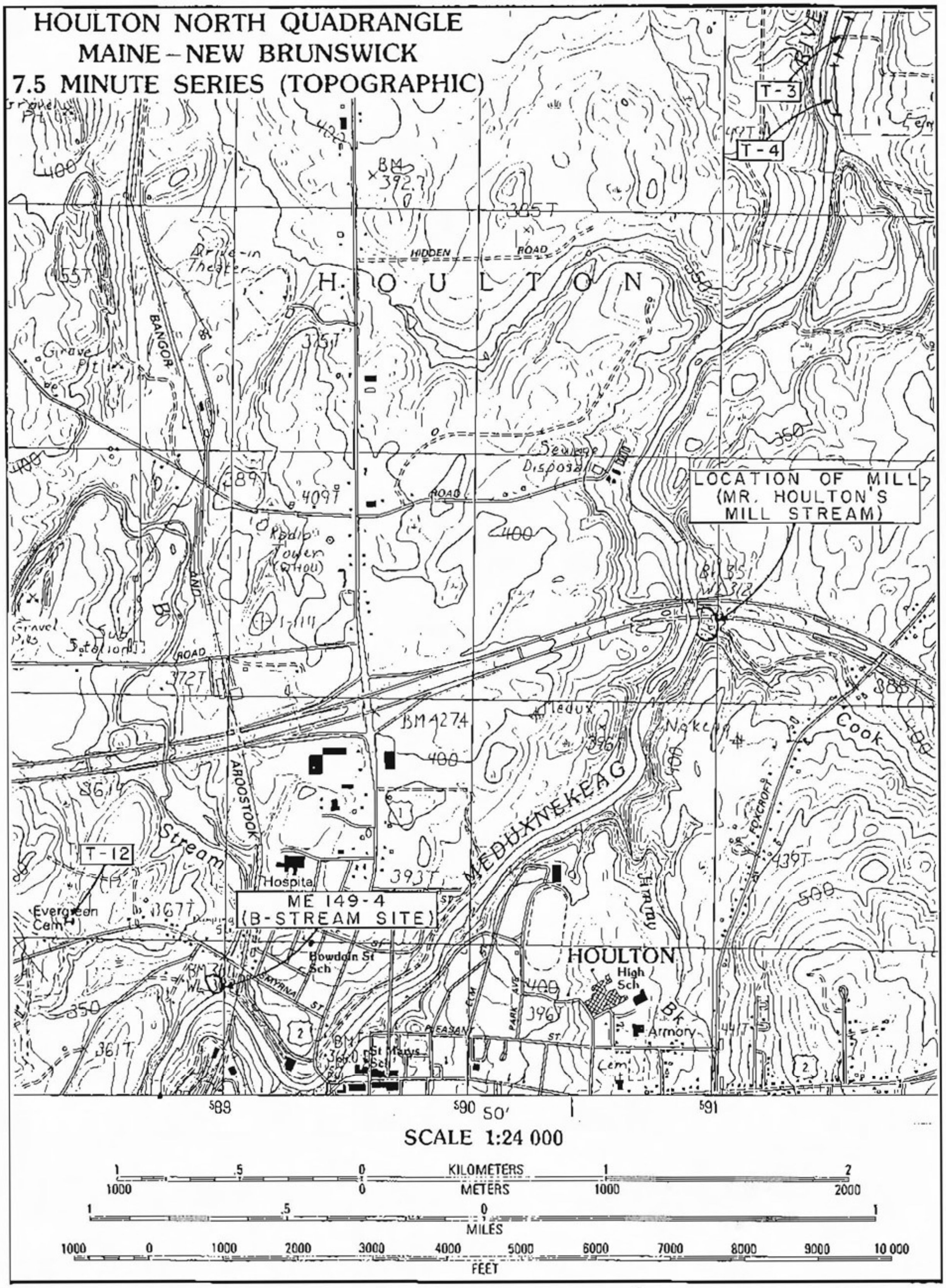
GROUND SURFACE

- 64vfsl

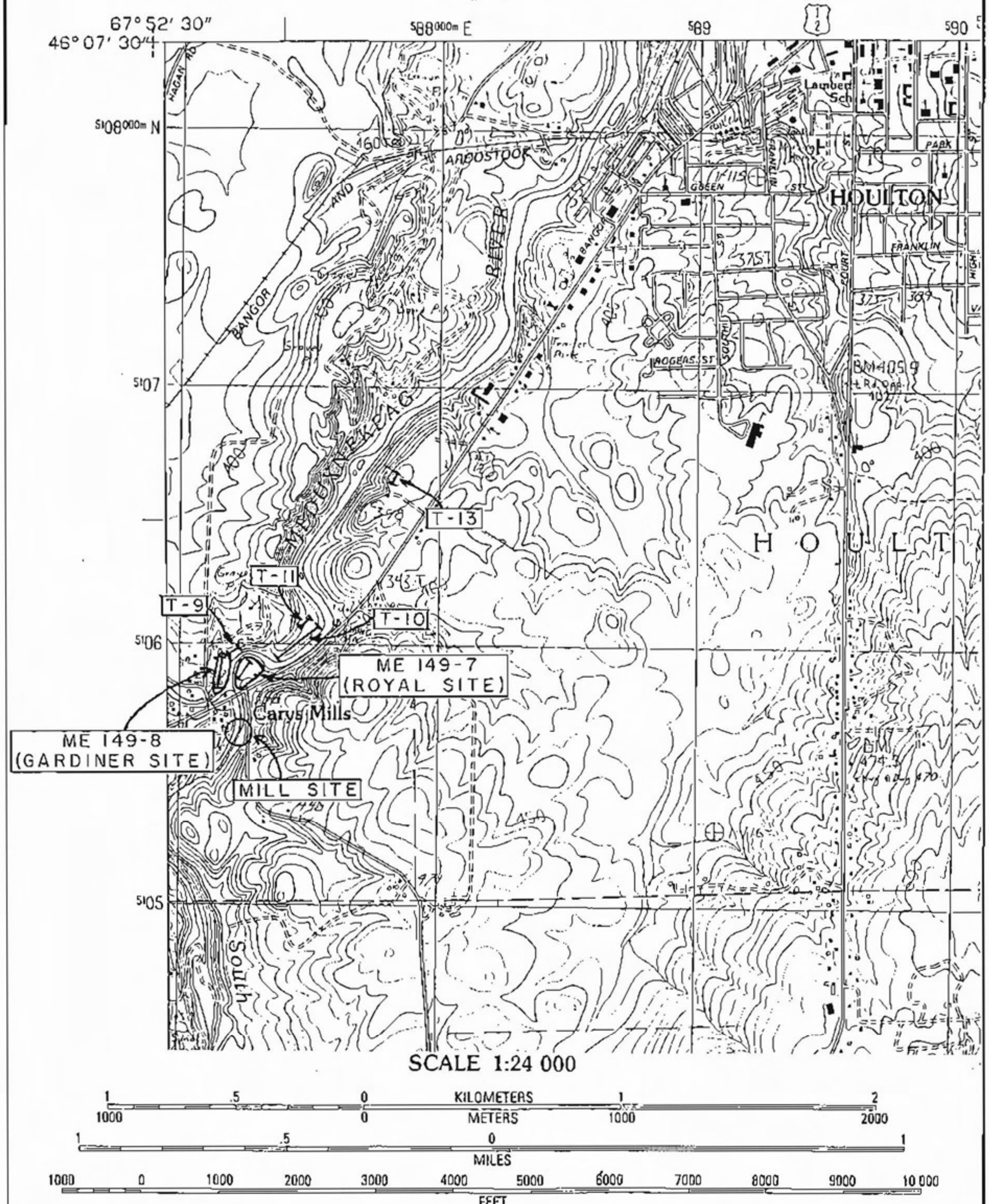
APPENDIX II:

USGS TOPOGRAPHIC MAPS SHOWING LOCATIONS OF SAMPLING TRANSECTS AND SELECT SITES

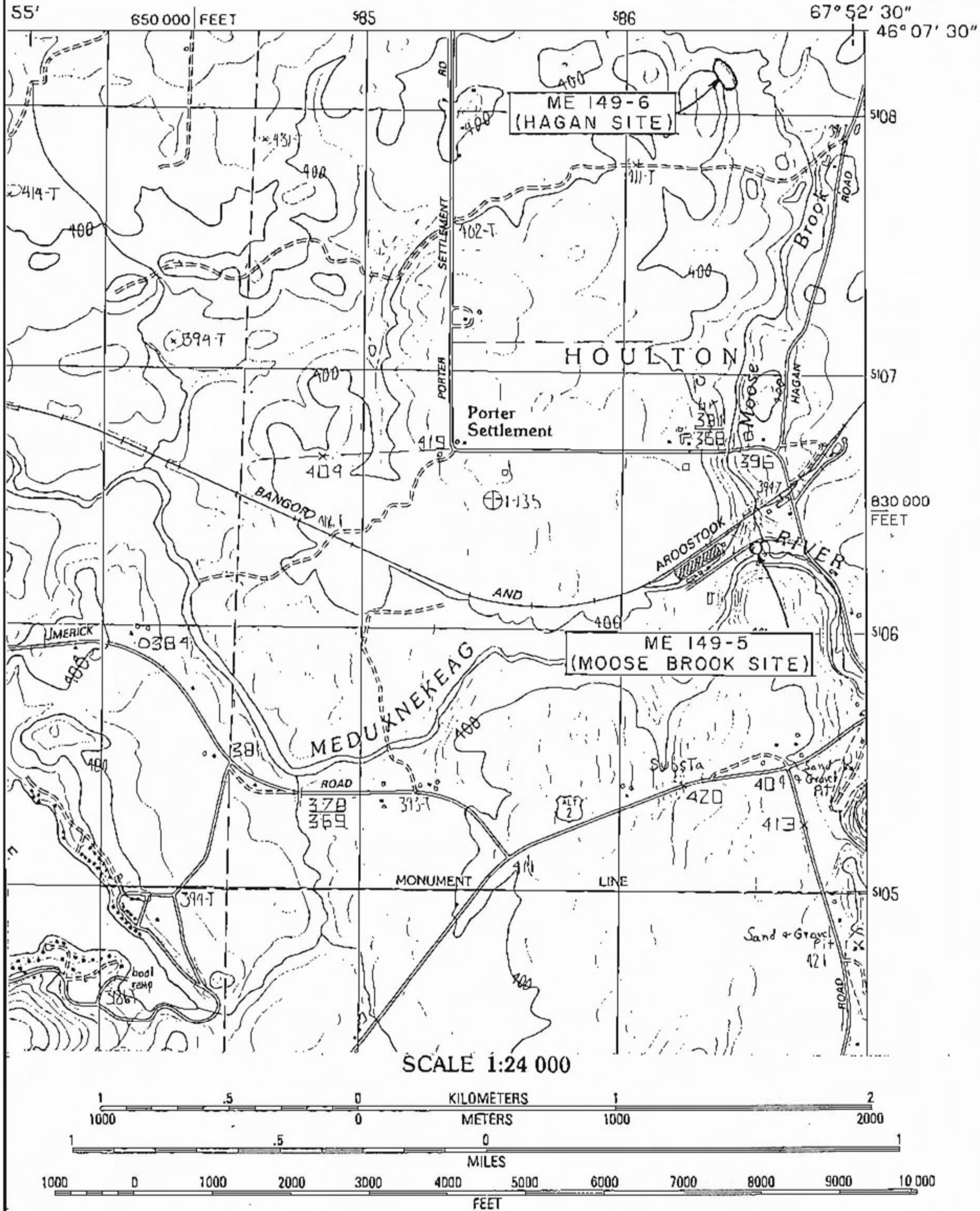

HOULTON NORTH QUADRANGLE
MAINE – NEW BRUNSWICK
7.5 MINUTE SERIES (TOPOGRAPHIC)
MALISEET GRAVEL EXTRACTION AREA
ME 149-2
(SMITH BRIDGE SITE)
T-5
T-5A
T-6A
T-6B
T-6C
T-6D
T-6E
T-6F
T-14
T-15
T-16
T-17
CRAWFORD RD
SMITH ROAD
CURRIE ROAD
LOWERY
Brook
Smith
Gravel Pit
SCALE 1:24 000
KILOMETERS
METERS
MILES
FEET

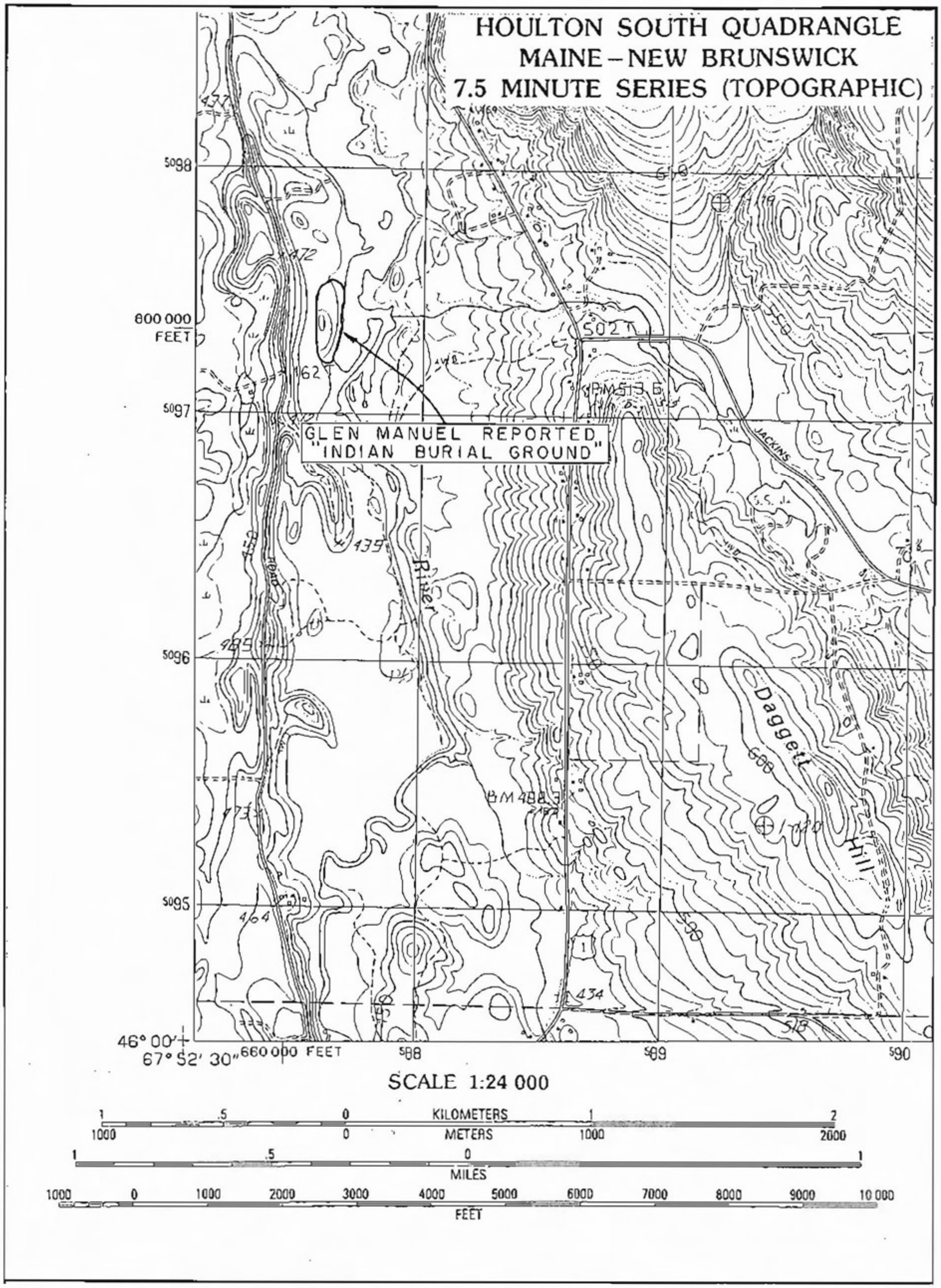

HOULTON NORTH QUADRANGLE
MAINE – NEW BRUNSWICK
7.5 MINUTE SERIES (TOPOGRAPHIC)
T-3
T-4
H O U L T O N
HIDDEN ROAD
Drive-in Theater
BANGOR AND
Sewage Disposal
LOCATION OF MILL (MR. HOULTON'S MILL STREAM)
Radio Tower
ROAD
BM 427.4
MEDUXNEKEAG
Cook
FOXCROFT
AROOSTOOK
Stream
T-12
Hospital
ME 149-4 (B-STREAM SITE)
Evergreen Cem
Bowdoin St Sch
SMYRNA ST
St Marys Sch
PLEASANT ST
PARK AVE
HOULTON
High Sch
Armory
Cem
589
590 50′
591
SCALE 1:24 000
KILOMETERS
METERS
MILES
FEET

HOULTON SOUTH QUADRANGLE
MAINE – NEW BRUNSWICK
7.5 MINUTE SERIES (TOPOGRAPHIC)



LINNEUS QUADRANGLE
MAINE – AROOSTOOK CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)




HOULTON SOUTH QUADRANGLE
MAINE – NEW BRUNSWICK
7.5 MINUTE SERIES (TOPOGRAPHIC)
GLEN MANUEL REPORTED
"INDIAN BURIAL GROUND"
JACKINS
River
Daggett
Hill
600 000
FEET
46° 00'
67° 52' 30"
660 000 FEET
SCALE 1:24 000
KILOMETERS
METERS
MILES
FEET

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