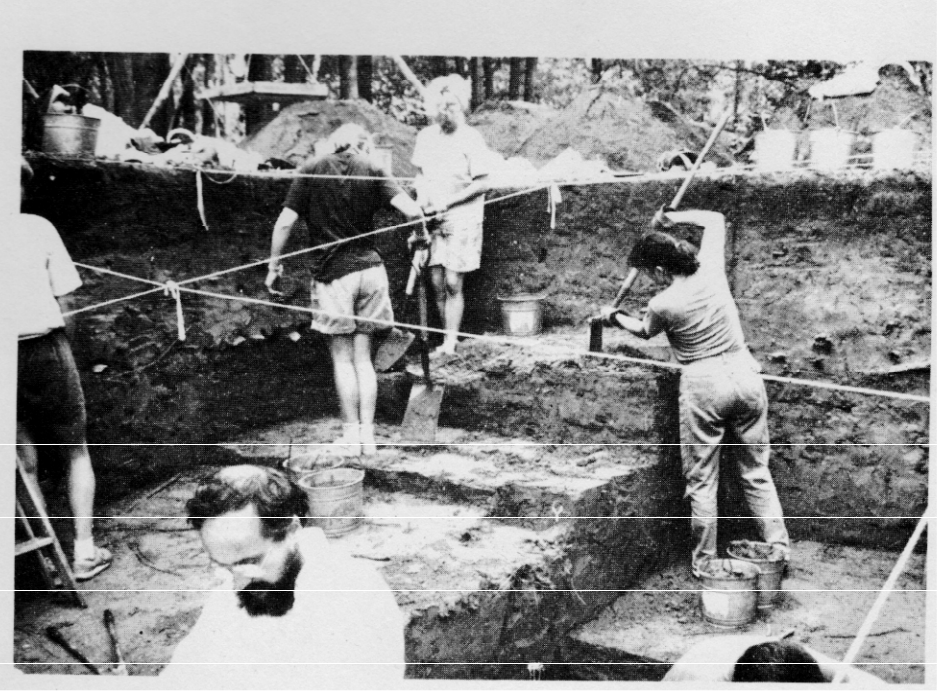
THE MAINE ARCHAEOLOGICAL SOCIETY INC. BULLETIN



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THE EVOLUTION OF MAINE'S ANTIQUITIES LAWS

Robert L. Bradley

The beginning of State-sponsored archaeology in Maine can be assigned to the year 1962 when the Legislature appropriated funds for research on state-owned historic sites. Under the direction of Charles Bradford, Superintendent of Historic Sites, the State Park Commission awarded contracts for Wendell Hadlock's fieldwork at Fort O'Brien in Machiasport (1808), Fort Pownall in Stockton Springs (1759), Fort George in Castine (1779) and at the site of the Popham Colony in Phippsburg (1607). By the end of 1964, Hadlock's efforts had yielded significant data and, just as importantly, had brought archaeology prominently before the eyes of the public.

In the midst of this activity, in 1963 the Legislature passed the first Maine law pertaining to antiquities, Section 2901 of Chapter 123 with the heading, "Archaeological Excavations". This required that any "historical, archaeological, or paleontological excavations" be reported to the Maine Bureau of Parks and Recreation by the persons conducting the research. The driving force behind this law was surely Superintendent Bradford, and his probable motivation was to be aware of important sites which the State might wish to consider acquiring for their preservation and for public benefit. Regardless, over the eighteen years in which this provision was law, almost no one knew of its existence, including those in the archaeological community. Failure to report excavation carried no stipulated penalty, however, so errant diggers never faced sanctions.

In the late 1960s, with the State Museum rising on the landscape as part of the new cultural building, a consensus quickly formed that the State needed to define its jurisdiction over antiquities. In 1969 a measure titled, "State-Owned Objects and Specimens" (27 MRSA, Sections 371-374) was passed into law. This for the first time stipulated that all artifacts on or beneath state lands (except Baxter State Park) were to be under the control and ownership of the State Museum on behalf of the people of Maine. Such areas included submerged lands. It also for the first time required that parties outside of State Government secure permits for excavation of sites on state land. This law also had teeth: persons guilty of damaging or illegally removing objects were liable for a fine of up to $500 per artifact. Finally, although the law exempted state agencies with jurisdiction over lands, it encouraged them to inform the State Museum of any planned activities which might damage or destroy sites and artifacts under their control.

Two years later, in 1971, "An Act Relating to Preserving Historical Materials by the State Museum" was passed (27 MRSA, Section 86-A). This law clarified the issue of state-owned objects by exempting the holdings of the State Library and the State Archives. It also exempted "historical materials" deriving from state parks and historic sites. While the exemptions for the Library and Archives collections had a clear reason, the Bureau of Parks exemption had a less obvious rationale. The thinking was that artifacts, such as those generated by Hadlock's excavations, should be owned by the agency owning the sites and, potentially, be displayed where they were found. Indeed, when the State had acquired Colonial Pemaquid State Historic Site in the previous year, the Bureau of Parks suddenly found itself in the business of running an on-site museum which to this day displays hundreds of nationally-significant artifacts generated by Helen Camp's excavations beginning in 1965.

For centuries marked graves have enjoyed the protection of the law. In 1973, early by national standards, a law was passed under the title, "Indian Bones" (22 MRSA, Section 4720). This stipulated that, from October 3, 1973 on, any party gaining possession of Native American remains could hold them for up to one year for scientific study by "persons skilled in the anthropological and archaeological fields", by which time they had to

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be "transferred to appropriate Indian Tribes in Maine."

In 1981 the antiquities law was fundamentally revisited. In that year, "An Act to Preserve Maine's Archaeological Heritage" was enacted (27 MRSA, Sections 371-377). The Maine Historic Preservation Commission had been advised that the 1969 law contained no specific definition of what a "site" is and that this deficiency should be corrected. The solution was to state that a legally-defined "site" contains physical evidence of prehistoric or historic human use, is listed in the National Register of Historic Places, and is on state land or on private land covered by a conservation easement. When a site is nominated to the Register, a detailed form must be submitted to the Department of the Interior, which, among many other things, precisely records the property's location and boundaries. But the 1981 law was much more than a minor housekeeping measure. In addition to the legally-defensible definition of a "site", it stipulated that the property had to be posted to alert the public as to its protected status. Civil penalties for unauthorized ground disturbance carried fines of $50 to $1,000 per day of illegal activity. Sale of artifacts was prohibited without permission, with violators penalized by a fine of twice the amount of sale price. Artifacts from state-owned land could not permanently leave Maine. Finally, and of great importance, state agencies and the University of Maine were able to protect sensitive site location information by an exemption from the State's right-to-know law, mirroring an equivalent federal exemption. The Director of the Maine Historic Preservation Commission was now a co-signer of excavation permits on protected sites, as was the Director of the State Museum and the site's owner. A year later "An Act Concerning the Preservation of Archaeological Sites" was passed (27 MRSA, Section 378). This added a section to the 1981 law titled "Emergency Site Designation". Under this provision, the Director of the Maine Historic Preservation Commission, with the assent of the landowner, could designate a privately owned archaeological area a "site" and post it for up to a year pending its listing in the National Register.

In 1989 further changes to the law were enacted as "An Act Relating to Historic and Archaeological Preservation". These changes amended Sections 373 and 375 by adding a definition of "Landowner" which included any party or entity, public or private, and by expanding the penalties for violating the law. In addition to the fine for each day of violation, the Director of the Maine Historic Preservation Commission could bring an injunction against further violations and can require the violator to restore the site or otherwise mitigate any damages. It also stated that complaints filed by the Attorney General were to be made in Superior, rather than District Court. (The text of 27 MRSA '371-378 as revised is presented in Appendix A.)

Graves of all periods are protected by a measure passed in 1991 under the title "Limitations on Construction and Excavation Near Burial Sites" (13 MRSA, Section 1371-A). With few exceptions (certain public improvements) no construction or excavation is allowed within 25 feet of a "known" burial site or graveyard (see Appendix B). Construction that encounters an "undocumented" grave (prehistoric or historic) must cease, while there is a stop work order mechanism for suspected burials under which the local building inspector must notify the Director of the Maine Historic Preservation Commission and the "president of any local historical society" who are then to investigate within a 120-day period.

Finally, in 1995 two additional improvements were made to the antiquities law (Sections 373-A and 378), via "An Act to Protect Maine's Maritime Heritage". The first included artifacts which are "fully or partially submerged" and "tidal sites", as well as adding "vandalism" to the types of ground disturbance. The second added all publicly owned sites to the emergency designation clause.

APPENDIX A
27 MRSA § 371-378

§ 371. Statement of policy

The Legislature, in recognizing the importance of Maine's cultural heritage of the distant past to our understanding of Maine's people, declares that it is the policy of this State to preserve and protect archaeological sites for proper excavation and interpretation.

It is the public interest to. provide for the preservation and interpretation of archaeological artifacts and specimens for the benefit of the people of the State. In order to ensure proper preservation and interpretation of artifacts, specimens and materials which are found on, in or beneath state-controlled land, it is in the public interest that a single state department be designated to hold title, as trustee for the State, to all such artifacts, specimens and materials, except as may be authorized by section 376.

The State Museum Bureau is best qualified to assume that trusteeship by virtue of the fact that its facilities are intended to function primarily for the purpose of preserving and interpreting artifacts, specimens and materials as defined within this subchapter.

§ 372. Legislative intent

1. Transference of custody. The several departments of the State are authorized to transfer any archaeological objects, materials or specimens in their possession to the custody and trusteeship of the State Museum Bureau.

2. Museum responsibility. The State designates the State Museum Bureau to hold title, as trustee for the State, to all archaeological objects, materials and specimens found on, in or beneath state-controlled lands. The State charges the State Museum Bureau with the responsibility of protecting, preserving and interpreting such objects, materials and specimens as may be placed under its trusteeship; preventing their defacement, damage, destruction or unauthorized removal; and ensuring their continued availability for scientific study by qualified persons, agencies or institutions.

§ 373-A. Definitions

As used in this chapter, unless the context otherwise indicates, the following terms have the following meanings.

1. Artifact. "Artifact" means a physical entity which has been worked or modified by human action.

1-A. Owner. "Owner" means any person, corporation, partnership, organization or other legal entity, including a municipality, county or other political subdivision of the State, an agency of the Federal government and any quasi-governmental entity, which owns or controls historic property.

2. Authorized representative. "Authorized . representative" means any official or group of officials employed by the permittors or other competent person authorized in writing by the permittors.

3. Excavation. "Excavation" means any turning over, removal or disturbance of the soil, artifact in the soil or ground matrix or recovery or disturbance of artifacts that are fully or partially submerged in the water and tidal sites. "Excavation" includes, but is not limited to, activities such as purposeful looting, material procurement or construction activities or vandalism. In the case of private property the term "excavation" on a site shall not include activities associated with agriculture or forestry unless specifically, provided for in the permit or the preservation agreement as defined in Title 33, section 1551, subsection 2.

3-A. Landowner. "Landowner" means any person, corporation, partnership, organization or other legal entity, including a municipality, county or other political subdivision of the State, an agency of the Federal Government and any quasi-governmental entity, which owns or controls a site.

4. Materials. "Materials" means 3-dimensional items, other than artifacts and specimens, and excludes books, papers, manuscripts and archival or library material commonly included in the display or research collection of museums.

5. Object. "Object" means any archaeological monument, artifact, relic or article.

6. Permittors. "Permittors" means the Director of the Maine Historic Preservation Commission and the Director of the State Museum Bureau as well as the director of any state department administering state-controlled lands, acting in concert in the review, approval and granting of permits.

7. Principal investigator. "Principal investigator" means the senior scientist in charge of an archaeological excavation.

8. Site. "Site" means any area containing archaeological artifacts or materials or other evidence of habitation, occupation or other use by historic or prehistoric people, and which is either:

A. On or under state-controlled land and is:
(1) Listed in the National Register of Historic Places; and
(2) Posted;

B. The subject of a preservation agreement between the landowner or landowners and the Maine Historic Preservation Commission, pursuant to Title 33, section 1551 and is:
(1) Listed in the National Register of Historic Places; and
(2) Posted; or

C. Subject to Section 378.

9. Specimen. "Specimen" means any items, set of items or parts of items collected as representative samples of geological media or biological forms found within the State.

10. State-controlled land. "State-controlled land" means any land or water area owned in fee simple by the State, with the exception of those lands contained within Baxter State Park. State-controlled

land includes, but is not limited to, state parks, state recreation areas, wilderness and wildlife preserves, located public lots and land beneath great ponds or navigable bodies of water and other submerged lands owned by the State.

§ 374. Legislative provisions

1. Purpose. The people of this State benefit only when a site is systematically excavated, analyzed and interpreted by a qualified principal investigator

2. Permit procedure. The procedure for obtaining a permit to excavate a site shall be as follows:

   A. Any person, agency or institution desiring to excavate a site shall submit a written application.

   B. Application for a permit shall be in the form of a letter and research proposal directed to the Director of the Maine Historic Preservation Commission and shall be accompanied by a copy of the preservation agreement attested by the Register of Deeds and the written permission of the landowner to proceed with the excavation. The landowner may give permission to excavate in the preservation agreement.

   C. The permit to excavate shall be cosigned by the Director of the Maine Historic Preservation Commission and the Director of the State Museum Bureau, except for state-controlled lands where the permit also shall be cosigned by the director of the agency with primary jurisdiction.

   D. The application shall state the nature and specific location of the artifacts, specimens and materials to be removed, the legal name and address of the, person, agency or institution seeking authorization and the date or dates on which the artifacts, specimens or materials are to be removed.

   E. Upon receipt of an application, the permittors may issue a written permit authorizing the excavation of the site for such term and upon such conditions as they deem reasonable and which are consistent with subsection 3.

3. Permit conditions. The conditions which may be imposed upon a permit are as follows.

   A. In order to minimize damage to state-controlled lands and to artifacts, specimens or materials to be removed, and, in order to ensure the recording and preservation of significant data regarding those artifacts, specimens, materials or sites, the permit may set forth requirements or limitations regarding the methods and equipment to be employed in the removal, the procedures to be followed in documenting the removal and the report or reports, if any, to be submitted to officials or agencies of the State upon completion of the removal activities.

   B. The permittors may require that an authorized representative of the State be present to witness and document the removal of artifacts, specimens or materials from state-controlled land.

   C. The permit shall clearly indicate the type of artifacts, specimens or materials to be removed,

the location of the site, the time of the proposed removal activity or excavation, the legal name and address of the permittee and any other limitations and requirements that may be imposed by the permittors.

D. On excavations authorized by the permit process, the principal investigator should normally possess the minimum qualifications of a graduate degree in anthropology, archaeology or a related field, accompanied by institutional facilities to ensure proper conservation and curation of the artifacts, materials and specimens or extensive experience and demonstrated ability.

4 Permit revocation. All permittors, or their authorized representatives, may revoke or suspend a permit if there is evidence to indicate that the permittee has violated or exceeded the limitations of his permit, or if there is evidence to indicate that artifacts, materials or the site are being unnecessarily defaced, damaged or destroyed in the course of their removal. Any willful violation of the provisions or limitations of a permit is grounds for immediate revocation of the permit and shall be construed as unauthorized excavation.

5. Permit possession. The permit shall be retained in the personal possession of the permittee during the course of removal activities, and shall be made available for inspection upon demand of any authorized representative of the State. Any person or persons engaged in excavation on a site who do not produce a valid permit upon demand of an authorized representative of the State, are presumptively engaged in unauthorized excavation.

§ 375. Unlawful excavation

1. Definition of unlawful excavation. "Unlawful excavation" means unauthorized excavation at a site, unless:

A. A demonstrable emergency situation existed relating to the survival of the site; and

B. An excavation permit is immediately applied for in accordance with section 374.

2. Penalty. Violation of this chapter is a civil violation for which a forfeiture of not less than $50 nor more than $1,000 shall be adjudged. The unlawful excavation for any one day shall constitute a separate violation. The Director of the Maine Historic Preservation Commission, in the name of the people of this State through the Attorney General, may in addition to other remedies provided bring an action for an injunction seeking one or more of the following remedies:

A. To restrain a violation of this chapter;

B. To enjoin future unlawful excavation; or

C. To direct the violator to restore the site to the condition that existed prior to the unlawful excavation or to ameliorate the effects of unlawful excavation.

3. Prosecution. The Attorney General, upon receiving notification of a violation of this section from

the Director of the-Maine Historic Preservation Commission, is authorized to file a complaint against the person named in the District Court or the Superior Court of the district or county in which the person resides, or in the district or county in which the violation occurred.

§ 376. Antiquities recovered from archaeological sites

1. State-owned artifacts to remain in Maine. No artifacts, objects, specimens or materials originating from a site on state-controlled land may be authorized to leave the State permanently without written permission of the permittors. They may be loaned for a term specified by the permittors for proper study or exhibit.

2. Sale of artifacts. Attempts to sell, offers of sale and sale of artifacts, objects or specimens, excavated after the effective date of this Act, whether excavated lawfully or unlawfully from a site, without the written permission of the permit grantors or the Director of the Maine Historic Preservation Commission and the Director of the State Museum Bureau, shall be punishable by a civil penalty not greater than twice the price for which artifacts, objects of specimens are sold or offered for sale.

3. Prosecution. The Attorney General, upon receiving notification and evidence of violation of this section from the Director of the Maine-Historic Preservation Commission, is authorized to file a complaint against the person named in the District Court of the district in which the person resides, or in the district in which the violation occurred.

4. Artifact ownership. Artifacts, objects, materials and specimens recovered from sites on state-controlled land are the property of the State Museum Bureau. Artifacts, objects, specimens or materials originating from a site on other than state-controlled land are the property of the landowner and shall be deposited with a suitable repository as designated by the landowner in the preservation agreement, or the permit.

§ 377. Protection of site location information

In order to protect the site from unlawful excavation or harm, any information on the location or other attributes of any site in the possession of the Maine Historic Preservation Commission, the State Museum Bureau, the Bureau of Parks and Recreation, other state agencies, or the University of Maine may be deemed by the Maine Historic Preservation Commission or State Museum Bureau to be confidential and exempt from Title 1, Chapter 13. Such data shall be made available for the purpose of archaeological research. The directors of the Maine Historic Preservation Commission and the State Museum Bureau shall jointly adopt rules establishing standards and procedures for obtaining the data, and may impose reasonable requirements on its use, including requirements of confidentiality.

§ 378. Emergency Site Designation

In the case of an area containing archaeological materials or artifacts that is directly threatened with unauthorized excavation, the Director of the Maine Historic Preservation Commission, with the written permission of the landowner, may designate the area as a site that is subject to this chapter for a period

not to exceed one year. All sites given emergency designation under this section must be posted against unauthorized excavation. Notice of the designation must be filed with the registrar of deeds in the county in which the site is located.

§1371-A. Limitations on construction and excavation near burial sites.

1. Known burial sites. Construction or excavation in the area of a known burial site or within the boundaries of an established graveyard must comply with local zoning regulations concerning burial sites or graveyards, whether or not the burial site or graveyard is properly recorded in the deed to the property. In the absence of those regulations, construction or excavation may not be conducted within 25 feet of a known burial site or within 25 feet of the boundaries of an established graveyard, whether or not the burial site or graveyard is properly recorded in the deed to the property, except when the construction or excavation is necessary for the construction of a public improvement, as approved by the governing body of a city or town or, in the case of a state highway, by the Commissioner of Transportation.

2. Undocumented burial site. The following procedures apply to construction or excavation that threatens an undocumented or unmarked burial site.

A. Whenever any person has knowledge that excavation or other construction activity may disturb a burial site, that person shall notify the local building inspector by providing an affidavit and any other evidence of the location of the burial site.

B. Upon receipt of proper notification, the local building inspector shall issue a stop work order to the person or entity responsible for the activity that threatens to disturb the burial site.

C. The local building inspector shall notify the Director of the Maine Historic Preservation Commission and the president of any local historical society of the probable location of the burial site and they shall arrange for appropriate investigation.

D. When the investigation is complete, if no human remains are discovered, or in 120 days, whichever is less, the building activity may resume.

E. If a burial site is discovered, excavation or construction may not continue except in accordance with subsection 1 and other applicable provisions of state law.

LITHIC RESOURCES IN THE JIM POND FORMATION, FRANKLIN COUNTY, MAINE

Jeff Georgiady and Mark Brockmann

INTRODUCTION

There are several known cherts used by the prehistoric populations of Maine. These include Munsungun, Ledge Ridge and Wassataquoit. One of the lesser-known cherts, from the Jim Pond Formation, outcrops in northwestern Maine. This jasper (or more correctly, red to maroon chert) has been described in its geologic context by a number of authors (Boudette 1991 and Caldwell 1998). The prehistoric use of Jim Pond chert has, however, been almost overlooked. Only a minor mention in literature (Gramly 1979) touch upon it as a resource. This lack of data may be the result of a number of factors. Among these factors are Jim Pond's remote source, the lack of familiarity by investigators, the lack of fieldwork and/or the limited availability of the chert. Other factors may include social preferences based on knapping qualities and occupational patterns.

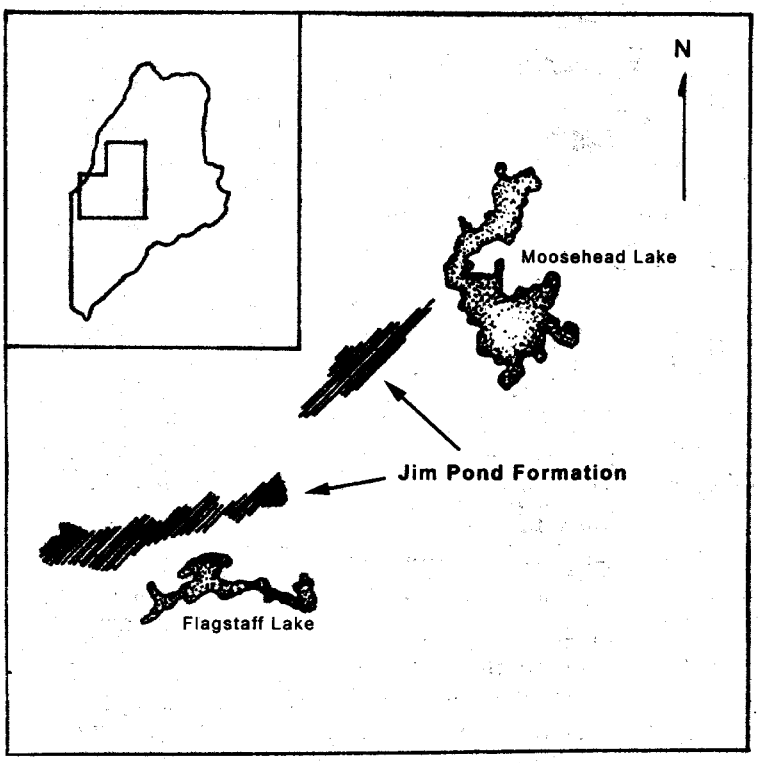

Figure 1. Location map for the Jim Pond Formation showing the study area in northern Franklin, Somerset and Piscataquis Counties, Maine. The two belts of the Jim Pond Formation in relationship to Flagstaff and Moosehead Lakes.

GEOLOGY

The Jim Pond Formation was first investigated, formally named and described by Eugene Boudette (Boudette, 1978). The Jim Pond Formation (Cambro-Ordovician Age) has been divided into five informal members (Boudette, 1991) and are listed in descending order: 1.) melange, 2.) metaquartzwacke, 3.) Iron bearing, 4.) felsic metavolcanic and 5.) mafic metavolcanic (greenstone). The contacts between these members are gradational and gravity sliding between them has also occurred. Chert and jasper have been identified in the following three informal members: the greenstone which includes pillow basalts (Caldwell, 1998), the cherty iron-bearing and the melange (Boudette, 1991).

The Jim Pond Formation is well-exposed on ridge tops and along Tim Pond Stream, Alder Stream and the Dead River (about 3 km north of Eustis in Franklin County, Maine). However, due to extensive cover by glacial sediments and lack of access by roads, it is difficult to reach the outcrops. The Jim Pond Formation (1-3 km thick) is exposed in two belts trending from southwest to northeast (see Figure 1) Excellent outcrops of the Jim Pond Formation occur in ledges along the southern and eastern margins of Jim Pond, the source of the name for the formation.

An excellent outcrop of green pillow basalts occurs along State Route 27 near the confluence of

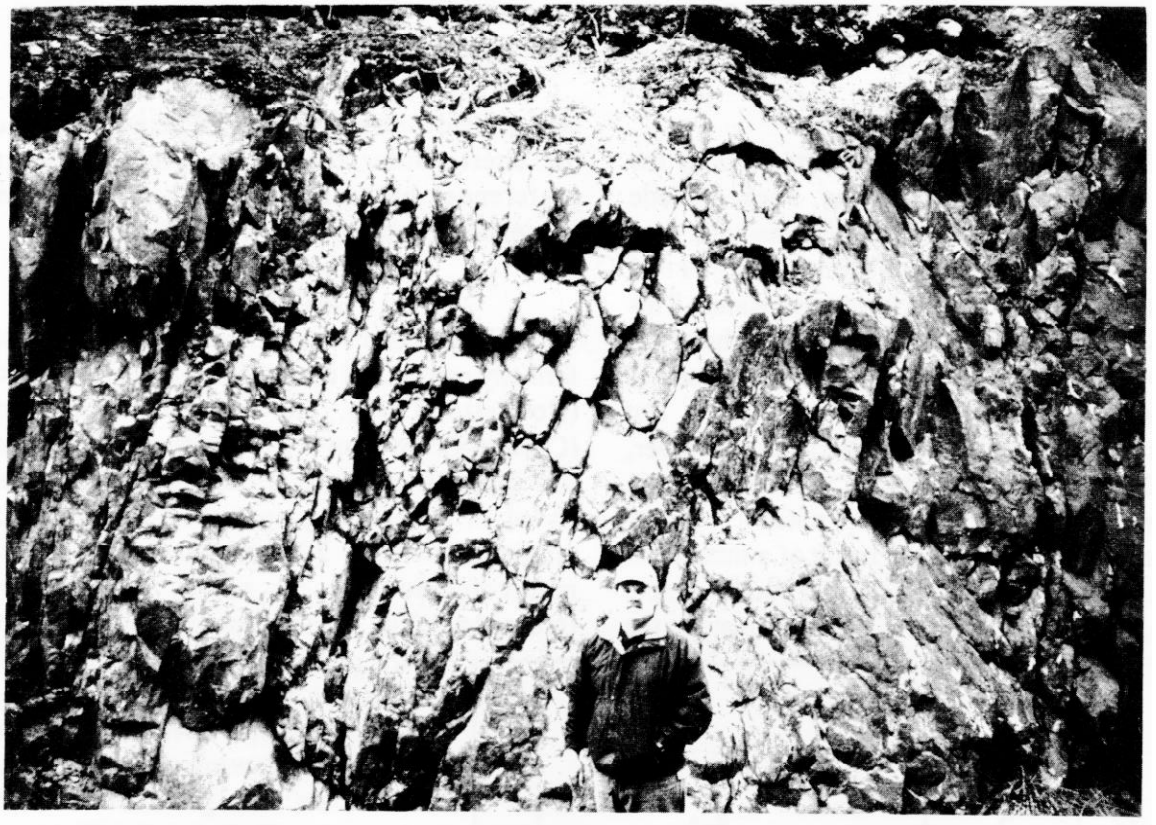

Figure 2. Green pillow basalts of the Jim Pond Formation exposed about 7 km north of Eustis along the west side of State Route 27 in Jim Pond Township.

Alder Stream with the Dead River (Figure 2). A blood-red jasper occurs in voids and pockets within these pillow basalts. The cherty iron member and melange outcrops are exposed in the area of the Kennebago Lake Quadrangle along the Squirtgun fault (Boudette, 1991). The cherty iron member and melange occur in large float blocks 1,000 meters west of State Route 27, about 4 km north of Eustis.

There is a great deal of speculation about the origin of chert in the geologic record. The cherts within the various informal members of the Jim Pond Formation may have formed under different physical and chemical conditions. The pillow basalts of the greenstone member probably formed at the spreading center of a midoceanic rift zone. The pillow structure in the basalts forms when magmas cool rapidly at deep oceanic rift zones. These basalts are mafic in composition or rich in magnesium, iron and silica. The chert within the pillow basalts of the Jim Pond Formation may have resulted from the filling of voids and cavaties by fossilogenic silica derived from deep-sea sediments. The silica and iron of the cherty iron member may have originated as chemical precipitates in a restricted evaporitic basin adjacent to an exhalative volcanic arc. The chert in the melange member, present as clasts of jasper, may have originally formed in the greenstone or iron members. Following initial lithification, the cherts may have been brecciated during gravity sliding in submarine turbidite flows. These brecciated submarine turbidite flows may have been re-lithified as melange.

ARCHAEOLOGY

Archaeology has a long history in Maine, but

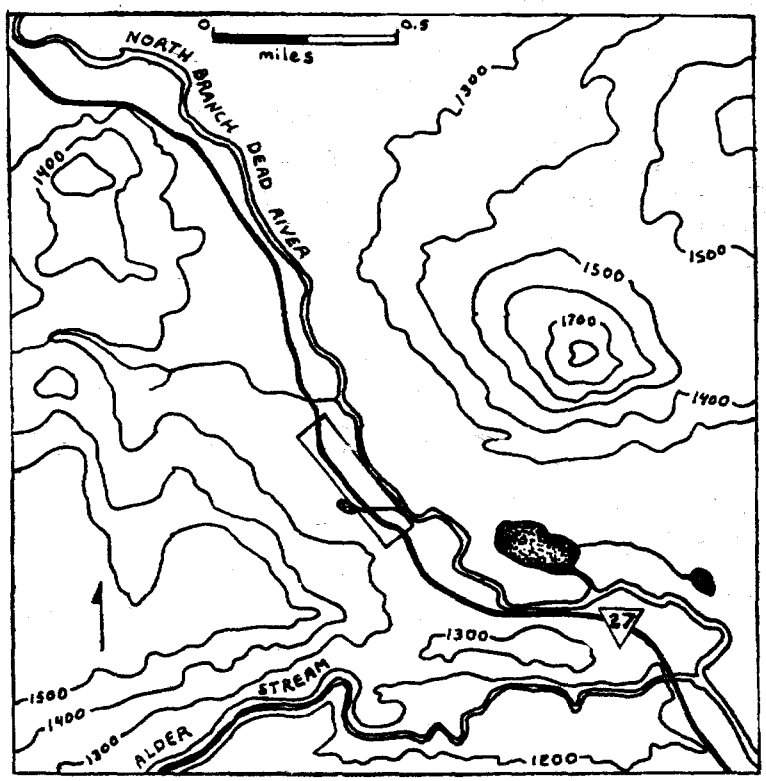

Figure 2. Box area indicates pillow basalts with jasper of the Jim Pond Formation, Jim Pond Township, Franklin County, Maine.

most of the research until recently was concentrated on coastal sites. This restricted database is being slowly expanded as a result of environmental laws dealing with cultural resources. Of the known sites within the study area are two Woodland sites discovered during cultural resource testing for the Eustis hydroelectric project (Quinn and Petersen, 1991). The lithic materials recovered from these sites include chert, rhyolite and quartz. The bulk of the chert recovered was attributed to non-local sources including Munsungun and Wassatoquoit. The quartz and the rhyolite may be manuports, but are more likely derived from local sources. It is noteworthy to mention that milky quartz occurs within the Jim Pond Formation.

The study area for the Eustis hydroelectric project was restricted to lowlands which could be affected by water levels. This excluded upland areas which would be closer to outcrop sources and may have been more desirable occupation sites for earlier populations (i.e. Early Archaic, PaleoIndian, etc.). A surface collection from the Flagstaff Lake area has produced flaked tools and debitage that appear to be manufactured from Jim Pond chert (David Kidd personal communication). At the Michaud Site (Spiess and Wilson, 1987) five distinctive types of red chert were reported. These red cherts were attributed to subtypes of Munsungun chert, although they were also compared to Ledge Ridge chert.

EXPERIMENTAL KNAPPING OF THE JIM POND CHERT

The quality of the Jim Pond chert covers a wide spectrum. The colors range from orange to brick red to maroon (Munsell color range: 2.5YR 2.5/4, 5YR 3/2, 5YR 3/4, 10YR 3/3 and 10YR 3/6). Luster varies from a dull, grainy-earthy luster to a waxy luster. While fracture or cleavage also varies greatly, some of the poorer cherts exhibit a slatey or blocky fracture while the finer cherts exhibit a chonchoidal fracture. Some of the chert is excessively high in iron content which negatively affects controlled fracture. The jasper found exposed to surface weathering is most often too flawed to knap. This is not untypical of many chert outcrops, which require digging for "green" or fresh stone.

CONCLUSIONS

The nature of chert occurrence within the Jim Pond Formation precludes its use as a major lithic source. Due to its remote location and rarity of the chert within the formation, the Jim Pond formation is not considered a major source of chert for prehistoric populations. This is in contrast with the fact that red chert was highly prized among

aboriginal populations (Gramly, 1988).

Pebbles and cobbles of chert can be found in the glacial drift and streambeds and are more readily accessible than bedrock outcrops. It seems highly unlikely that any such desirable source would have been entirely overlooked by aboriginal populations. Chert utilization is probably restricted to localized populations and nomadic groups passing through the outcrop area. It would be advantageous to re-examine known institutional and local private collections from the Flagstaff Lake area for lithic sourcing study. Some Maine materials that could be confused with Jim Pond chert include red argillite, red Munsungun chert, and the maroon to brown Ledge Ridge cherts.

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DEEP TESTING ON THE KENNEBEC: THE WATERVILLE-WINSLOW BRIDGE

Arthur Spiess

Archaeological testing and data recovery for a new Waterville-Winslow bridge (now the Donald Carter bridge) and its approach roads, work that began in the fall of 1987 and ended in 1992, resulted in the discovery of several archaeological sites (Hedden and Spiess 1993, Spiess et al. 1990). During this work we found three sites on the east side of the Kennebec River, in the main Kennebec River levee and associated with a small pond at the margins of the floodplain. Small sites associated with the pond are Late Archaic special activity sites (sites 53.37 and 53.39), but the main levee contains scattered Middle Ceramic Period activity areas (site 53.36).

During this work we excavated two deep (3 meters) pits in the river alluvium, along with smaller testpits. In our first Big Pit (as named by the crew) we encountered a complex and intense series of fire-cracked rock discard features and postholes, which were interpreted as possible remnants of a sweat bath (Spiess and Hedden 1993). In a different paper we will summarize a method of fire-cracked rock analysis, borrowed from Yoon (1986), that we have found useful in making this interpretation.

In neither deep excavation unit did we find deeply buried Archaic occupations underlying the Ceramic material. But we did recover some geological information on the age and nature of the flood events that built this portion of the river levee. Unfortunately, at least at this location, the deep alluvium does not contain the rich, stratified cultural record found at sites such as the Sharrow site (Petersen 1991).

ENVIRONMENTAL SETTING AND SITE LOCATIONS

The project area (Figure 1) is located in the Kennebec River valley near the inland limits of the seaboard lowlands physiographic province. Bedrock in the project area is composed of north-northeast/south-southwest trending folds in the metasedimentary Waterville Formation of Middle Ordovician to Lower Devonian age (Osberg et al 1985). The Waterville Formation is composed of calcareous quartz sandstone and interbedded pelite and sandstone. Locally we observed cracks in the bedrock filled with white quartz associated with iron oxides (including hematite). The local bedrock was virtually useless for tool manufacture prehistorically, except perhaps for the highly localized quartz veins.

The project area lies near the northeastern limit of Fobes's (1946) Central and Southwestern Interior (Maine) Climatic Area. The project area was characterized by an average of 140 frost-free days between 1930 and 1944 A.D. The Central and Southwestern Climatic Area has the highest summer temperatures in Maine. Mean January temperature is approximately 16° F. The area is the northeastern limit of many tree species, including the white oak, chestnut and shagbark hickory. Thus, the project area is on the northeastern limit of the area in Maine most likely to have been able to support prehistoric agriculture, and/or a hunter-gatherer economy heavily reliant on nut trees or other plant species more common in southern New England. However, mixed white pine and red oak is the dominant vegetation today in the project area, the pine more frequent on well drained sandy soils and red oak more frequent on silty soils. Charcoal identification from prehistoric features at site 53.36 does not contain any evidence of horticulture, or intensive use of the potential nut crop at the site, however.

The hills on either side of the Kennebec River rise rapidly to 150 feet elevation, and extend east and west as rolling uplands. The river valley above the 50 foot elevation and the uplands in the project area are covered with glacio-marine deposits of the Presumpscot formation. These deposits are generally fine sandy silts or sandy-silty clays, although there are localized deposits of coarser

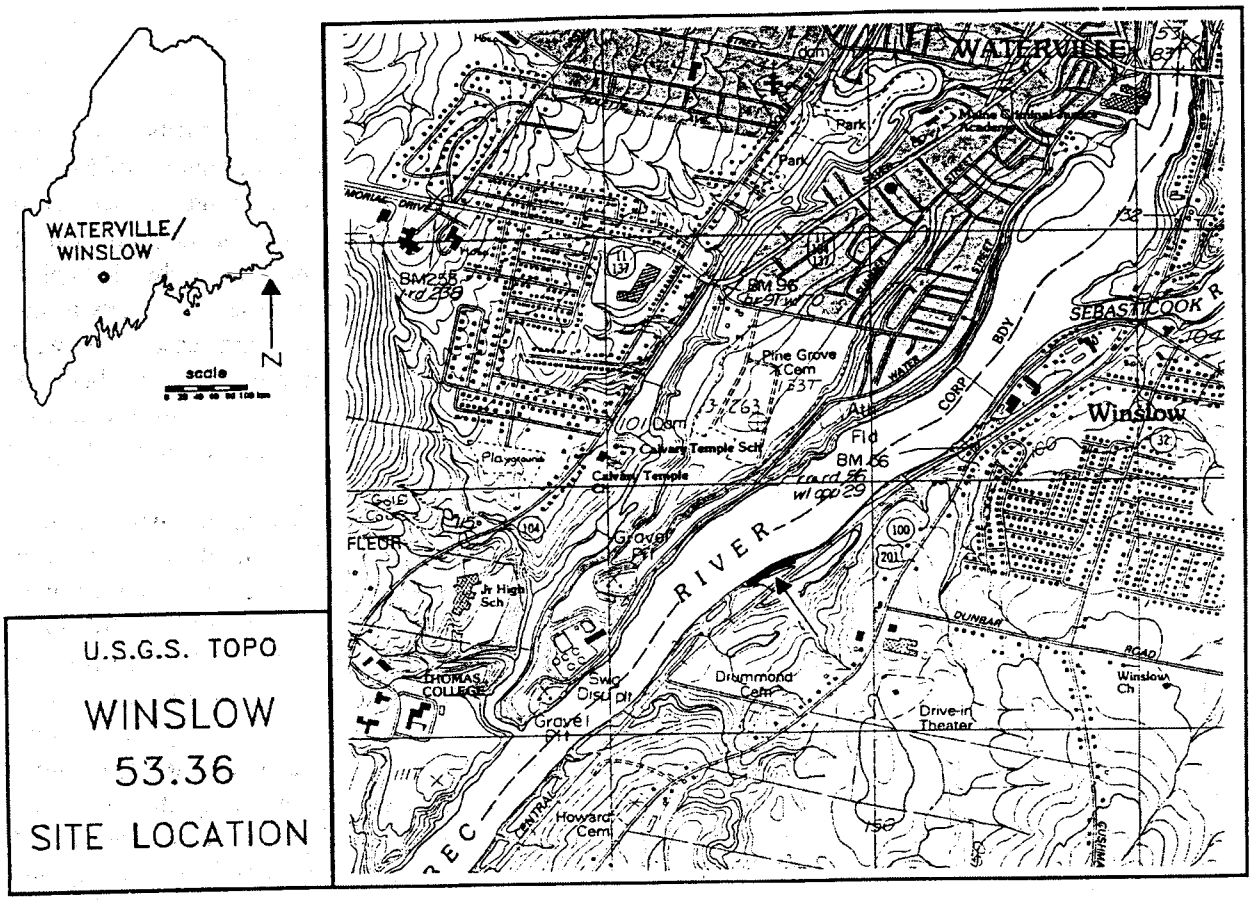

Figure 1. Location of site 53.36 on the USGS Winslow topographic map, on the east bank of the Kennebec just below the "er" in "River". Note the adjacent wetland east of the railroad tracks.

materials generally characterized as medium sand. Medium sand covers the hillside east of sites 53.20 and 53.39 uphill to the height of the valley margin at roughly 130 feet elevation.

Two major tributaries empty into the Kennebec River nearby. Just above the project area the Sebasticook River enters the east bank while, just downstream, Messalonskee Stream enters the west bank. The entrance of two major tributaries in two kilometers of river means that the project area is particularly prone to flooding and the deposition of stream sediment load. The normal summer water level on the Kennebec River is approximately 29 to 32 feet in elevation, but it varies several feet due to the release of water from dams upstream. The project area is at the upstream limit of the pool created by the Edwards hydroelectric dam in Augusta. Before construction of the Edwards dam, the river level was controlled by three factors. Long term control probably included the process of downcutting through glacial sediment to the existing river bed, which is composed of terminal Pleistocene clay, washed till, and bedrock sills. The river bed controlled the base level in short stretches of the river, divided by bedrock and till-controlled falls, rapids or "quickwater". The second factor was the seasonal flow of the river, highest during late winter and spring floods. The third factor affecting the river level is the tide. Evidence of the presence of sturgeon (an anadramous species not capable of

swimming over large rapids or falls) at Fort Halifax (Spiess 1989), only ½ km north of the Waterville-Winslow Bridge project area, indicates that estuarine influence (highest tides) at least periodically flooded the sill at the location of Edwards dam in Augusta and any quick water between Augusta and Waterville.

The flood of historic record occurred on April 1-3, 1987. This event left between 2 and 15 cm of silty sand on the river terrace surfaces at 50 feet elevation in the vicinity of sites 53.20 and 53.36 in the project area. This flood was greater than any since 1754-1756, because it washed away the historic Fort Halifax blockhouse that had been built at that time. However, the frequency and size of modern floods such as the 1987 flood is not directly comparable with prehistoric floods. Due to the construction of dams on the river, floods could certainly have been of greater magnitude before man-made impoundments were available for water storage along the Kennebec River. On the other hand, release of water from dams, and clearing land for agriculture may contribute to higher flood heights. An understanding of the river dynamics and its history therefore becomes important for all sites, such as 53.36, in the alluvium of the river.

Inspection of the 7.5' USGS Waterville topographic map, aerial photographs, and the landforms in the area has convinced us that the area of sites 53.20, 53.36, 53.37 and 53.39 contains a complex series of erosional and depositional features. Site 53.36 occupies an alluvial levee formation (see discussion below) the accumulation of which has been dated by the site's presence to the last 2000 years or so. Discounting landform changes caused by railroad and other construction, this levee is backed by a shallow overflow channel. On the east side of the tracks are two elongate marshy lakes. The one nearer to the tracks is perched at about 50 feet elevation, while another one (located some 200 meters downstream) is perched at about 66 feet elevation. The current river base level in the project area is 29 to 32 feet. Both lakes are bounded on their easterly sides by a steep hill with surficial deposits composed of gravelly coarse sand, a late glacial outwash. Sediments around the lower lake, at least, are composed of silts and clays and include a near-surface buried soil layer dated at 3700 B.P. (site 53.20, 3770±70 B.P., Beta-5248). We hypothesize that these two lakes are cut-off valley side river meanders or major overflow channels, which were active sometime between the late Pleistocene and late Holocene, when river levels (base level or maximum flood crest) were significantly higher than today. The upper lake is fed only by runoff today, while the lower lake is fed by runoff and occasional extreme floods, such as the April 1987 flood, which crested at an elevation of approximately 50 feet.

Today, the lower lake is a depositional environment only during the most massive floods. However, our discovery of cultural material redeposited into a series of clay-peat layers near the outlet of the lower lake (53.37) means that it was actively eroding and redepositing cultural material from upstream during some part of its history. We suspect that all this material dates roughly 4000 to 3500 B.P. and is associated with one or more occupations of the buried land surface of 53.20. Thus, the lower lake must have been a more active overbank flow channel at or slightly after the occupation, but probably before the levee of the main river bank reached it current size by slow accretion (at least by 1500 B.P.).

EAST OF THE TRACKS: SITES 53.20, 53.37, AND 53.39

A set of railroad tracks runs parallel with the river and divides the project area. The project area east of the railroad tracks, from west to east, consists of a narrow strip of dry land, a swampy or marshy shallow lake and a steep rise to higher ground. The main sewer line from Winslow to the Winslow sewage treatment plant runs generally parallel to the railroad track, about 10 meters east of it. The sewer line is a large diameter buried pipe, marked by well-spaced manhole points of entry.

Peter Nichols of Augusta discovered site 53.20 toward the upstream end of the swamp complex about 1976. An amateur archaeologist, he examined

the sewer line trench while it was open, noticed a dark soil stain in the wall some distance below the surface and recovered a felsite biface sticking from the wall in the dark stain. The biface was described (Nichols, pers. comm. to Spiess, June 1980) as a 4 inch long "preform", ie. unfinished and undiagnostic. Spiess subsequently visited the site area with Nichols. Then, on May 6, 1981, Spiess and Theodore Bradstreet tested the site with a small (roughly 50 x50 cm) test square. In August, 1982, Bradstreet expanded the small test unit into a 2 x 2 meter. Bradstreet's testpit encountered a buried, dark soil layer (fossil A horizon) in river silt at 30 to 35 cm depth below surface, apparent in all four walls of the square. The cultural inventory from Bradstreet's test included a few pieces of debitage (mostly felsite and some coarse volcanic rock), 3 fire-cracked rocks, one granite hammerstone, 7 fragments of ground slate, a few (minute) lumps of red ocher and several small fragments of highly decomposed calcined bone (unidentifiable). Handpicked charcoal from the dark soil layer returned a date of 3770±70 B.P. (Beta-5248). This charcoal was not recovered from a fireplace or other defined feature, and should be considered to be scattered charcoal in a buried soil surface. Whether it records a single event or a series of events over several centuries during the life of the buried soil surface is unknown. No written report on the site exists.

MHPC Phase I testing east of the tracks (Figure 2) produced a small atypical assemblage of prehistoric debris: flakes of a coarse volcanic stone and one large celt preform of the same material, broken quartz-phyllite bedrock with adhering limonite fragments, hammerstones and anvil stones. It was designated site 53.37 (Spiess 1988). Site 53.39 was identified when we discovered two flakes on the edge of a steep gully on the hillside east of the shallow lake. A dirt road had been built down the gully and an area of about 5 x 5 meters immediately adjacent to G15T2 tp7 had been excavated for borrow.

Both sites 53.37 and 53.39 support a white pine forest as the climax forest type where they are dry. Wet areas around site 53.37 support a dense growth of alder and poplar where the pine has been cut, on wet and dry soils respectively. Site 53.39 had just been logged and the ground cover was dense blackberry thorn bushes growing among pine "slash" and stumps. Soils at site 53.37 are generally alluvial silty fine sands, often with buried A horizons rich in organic material and often showing signs of being waterlogged (iron mottles present, minimal decomposition of the organic material in the buried A horizons). Notable features in N220E22 include a 20 cm thick plowzone (Ap) buried under 30 cm of 1987 flood deposits and fill from construction of the sewer trench.

All cultural material from site 53.37, most of it historic, was associated with the level interpreted as a plowzone. For example, in N306E20, the following cultural material was encountered: one possible hammerstone, one quartz flake, a brick fragment, a creamwear fragment, a piece of calcined bone, several pieces of unburned bone, a few pieces of fire-cracked rock, and a 4/64" diameter clay tobacco pipe stem fragment. Although prehistoric material is present on the site, the dominant material seems to be 19th or early 20th century broadcast debris. No possible prehistoric material was encountered below the plowzone in any of the testpits at 53.37. An undated pollen sample from sediment at 1.7 meters depth in a testpit (R10T1) yielded a pollen spectrum reflecting conditions similar to today (55% pine, 13% hemlock, and 20% fern spores) (Holloway 1988).

Site 53.37 seems to have been the location of occasional prehistoric processing of phyllite-quartz bedrock associated with limonite (possible red ocher raw material), and, perhaps, heavy stone tool (celt) manufacture. The soils do not seem suitable for intensive habitation and, in fact, some of the material at the southern end of site 53.37 is demonstrably redeposited in near-shore swampy deposits. Multiple buried A horizons are present, but do not contain prehistoric habitation debris.

Site 53.39 sits on the western slope of the valley. The soil on site 53.39 is a typical forest

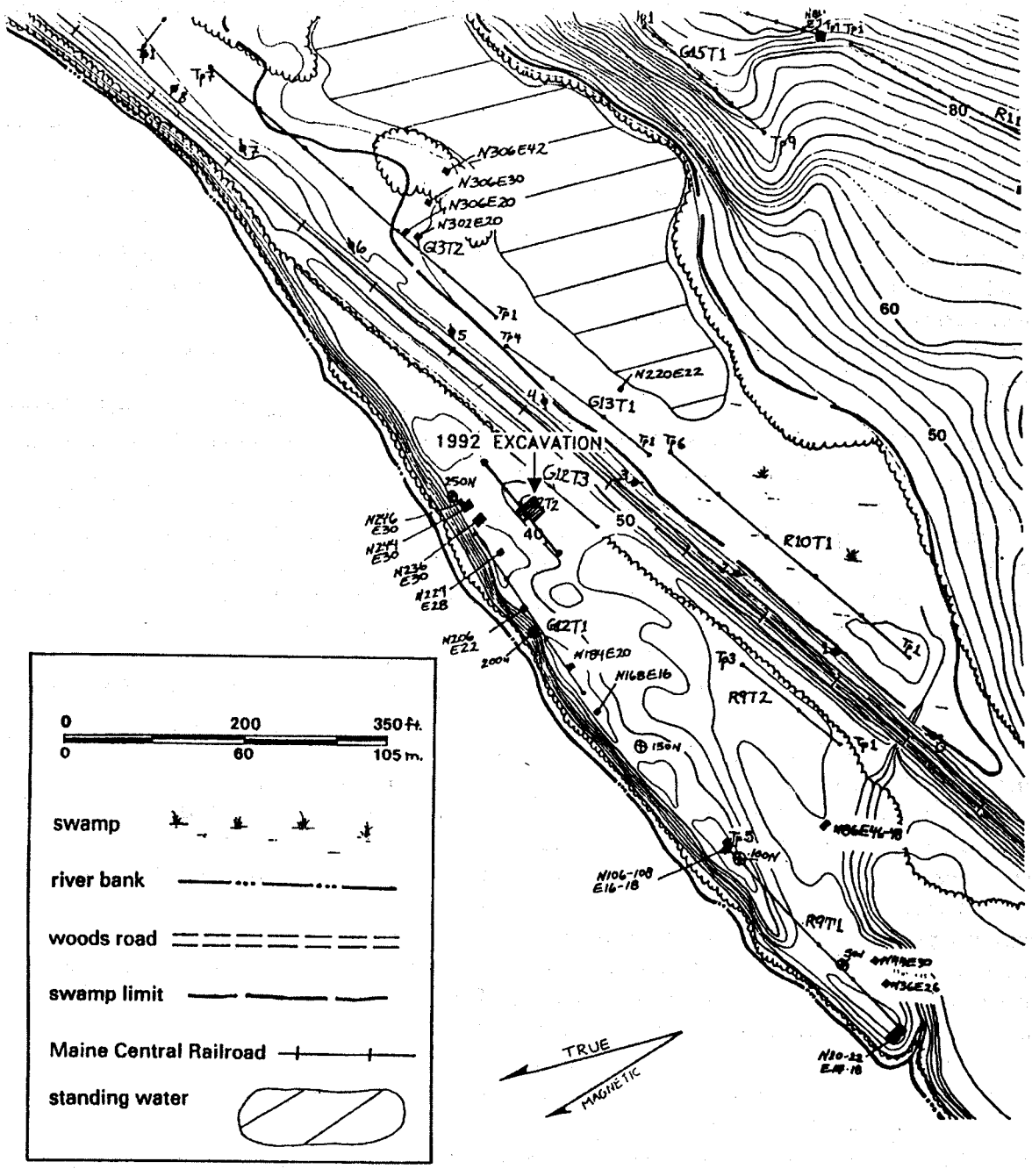

Figure 2. Testpit transects and excavation units in the project area. Site 53.37 is located east of the tracks (G13 and R10 transects), and site 53.39 is perched on the hillside above the wetland (G15 and R11 transects). Site 53.36 is located west of the tracks on the riverbank. The Big Pit is the large excavation unit adjacent to a small stream gully at the lower right of the map, and the Bridge Pier pit is labeled "1992 excavation".

podsol developed on well-drained, sandy soil under a coniferous forest. Site 53.39 has yielded several definite pieces of debitage from the edge of a stream gully overlooking the swampy lake. None are culturally diagnostic. Intensive testing failed to reveal features, or any other prehistoric material, and has demonstrated that any small activity area once present has been destroyed either by erosion or borrow activities for dirt road construction. A second small activity area located at N20E4 consists of a scattering of fire-cracked rock and a few quartz flakes, demonstrating limited activity use of the hillside above the lake.

SITE 53.36 AND THE BIG PITS

The river bank area west of the tracks is the location of site 53.36, the site that forms the subject of the rest of this report. The site is composed of two distinct topographic features: 1) the top and river side of the modern levee and 2) the slightly lower inland areas east of the levee that are bordered on the east by railroad tracks (Figure 2). The crest and riverside of the modern levee is well drained. The modern vegetative cover consists of a thick overstory of red oak and ash trees with an understory of horsetail, ferns, ash and oak saplings and poison ivy. There are scattered clumps of grass along the riverbank. The slightly lower (1 to 2 m) inland areas east of the levee crest are not well drained. Dense strands of tall (1 to 1.25m) ferns and occasional patches of horsetail are the predominant vegetation ground cover, with only isolated small ash and oak saplings under a dense overstory of red oak. Despite the presence of a deeply incised tributary streambed which should drain the area, the soil generally had a perceptible moisture content.

Horizontal control across the site was established by cutting a long survey line through the underbrush and using a tape and transit to establish a baseline. This baseline was designated the E30 line. Grid north (the E30 line) was established to run along the river levee top. Its orientation is 76° East of Magnetic north, or roughly east-north-east-by-north true. Large diameter orange plastic stakes were set using a 100 m tape and transit at N20E30, N50E30, N100E30, N150E30, N200E30, and N250E30. These plastic stakes were used as local datums to establish 2 meter grids in areas where we wished to excavate.

During Phase II testing at the southern end of the site adjacent to a small stream and abutting the Kennebec River bank, we excavated a 4 x 6 meter area (N20-24, E14-20) to a depth of 160 cm, with a central 1x1 m square dug to 3 meters depth (Figures 3 and 4). The crew named this block excavation "The Big Pit". In addition to The Big Pit, we dug four other block excavations and 6 1x1 meter squares.

One block excavation consisted of three 2x2 meter squares in the N106E16 area of the site (see Figure 2). A phase I testpit had yielded 131 sherds of a single dentate stamped and finger impressed vessel lot (vessel lot# 1), 3 flakes and charcoal. Two other 2x2 meter pits were excavated that yielded features and artifacts that could be related to the Middle Ceramic period. A hearth (Feature 10) with associated postholes was uncovered in a 2 meter square at N236E30 with a vertical extent from 40 to 55 cm below surface. Feature 11, part of a pit hearth, was discovered immediately underlying Feature 10 (58 to 65 cm). A short distance away at N244E30 another 2 meter square encountered one hearth (Feature 9 at 40 to 65 cm) and a reddened soil stain about 140 cm. Feature 9 was associated with apparent early Middle Ceramic period sherds (vessel lot #10). Other units were sterile.

During June and July of 1992, Phase III (Data Recovery) excavation was carried out in the foundation area of a bridge pier (see Figure 2) on the Winslow side of the Waterville-Winslow Bridge (Hedden and Spiess 1993). This area (N 207-213, E39-45) is called the Bridge Pier Pit. To achieve the anticipated depth (3 meters plus) of the excavation in the bridge pier impact area, we excavated a 6x6 meter area in an inverted pyramid form, with the deepest 2x2 meter excavation unit in the center. This approach would eliminate the risk of cave-ins to the excavators in the central test unit.

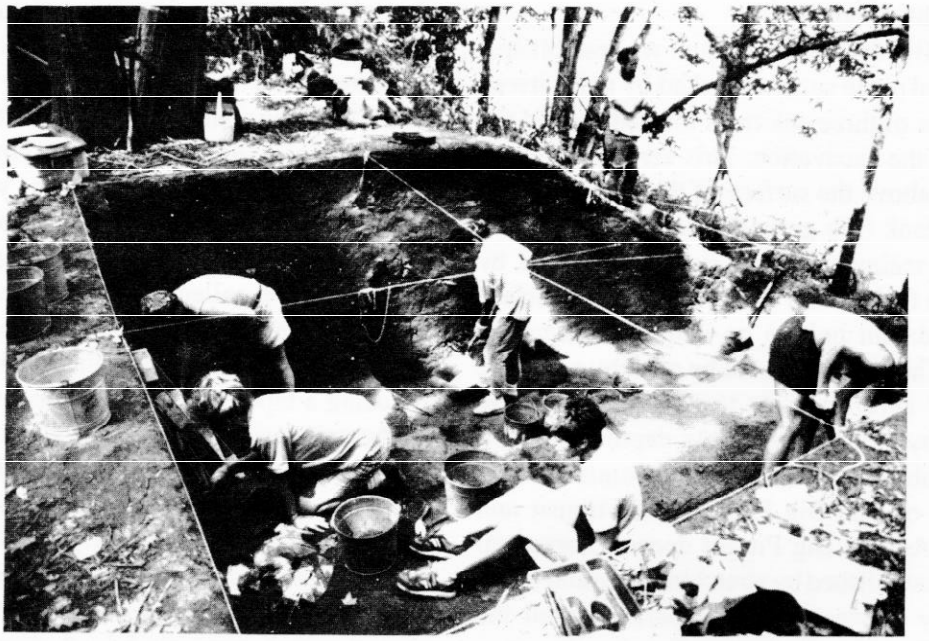

Figure 3. Excavation in the Big Pit looking southwestward toward the river bank.

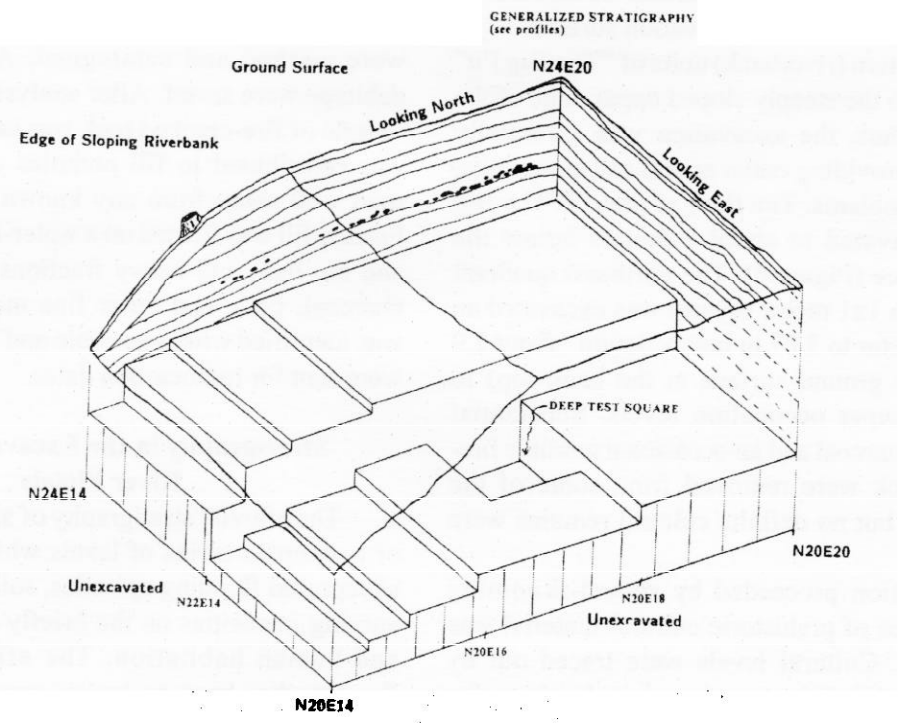

Figure 4. Diagram of the excavation of the Big Pit, with Feature 7 fire-cracked rock extending into the north wall.

Excavation Methods

In The Big Pit, vertical datum was established as an artificial plane surface marked by nails driven into the bases of three oak trees located around the perimeter of the excavation. This vertical datum is 16 to 21 cm above the surface of the ground on top of the riverbank (the ground is uneven.). Vertical control was maintained on a day-to-day basis by using strings tied on one end to the ground surface (subsidiary datum points) on which we mounted line levels. These points could be reset by using the transit and reference to the artificial plane established by the three nails. As depths exceeded one meter, subsidiary vertical datum points were set in the walls of The Big Pit using the transit and stadial rod. As The Big Pit got deeper, horizontal control was established by stretching wire and nylon string tightly between 2-meter marks around the periphery of The Big Pit (Figure 5), tying the string intersections so they would not move, and dropping a plumb bob from the intersection downward to project the point onto the excavation surface.

The western (riverbank) units of "The Big Pit" extended onto the steeply sloped upper edge of the riverbank. Thus, the excavation was essentially three-sided, providing easier access and eliminating safety exit problems. The floor of most of The Big Pit was excavated to about 2 meters below the highest surface (Figure 6). The northeast quadrant of N20E16 (a 1x1 meter square) was excavated an additional meter to 3.07 m below datum (about 2.9 m below the ground surface at the bank top) to check for deeper occupation levels. Substantial amounts of charcoal and an occasional possible fire-modified rock were removed from some of the lower levels but no definite cultural remains were recovered.

Excavation proceeded by shovel-skimming until evidence of prehistoric cultural material was encountered. Cultural levels were traced out by trowelling. All fill was placed in buckets for screening through standard 1/4 inch mesh hardware cloth. Test units were shovel skimmed by natural soil levels, either following soil chemical development layers (A, E, B, C) of the typical forest podsol or depositional layers marked by changes in soil grain texture or color or the presence of anthropogenic deposits (hearths and associated charcoal stains and fire-cracked rock (FCR) on burned soil surfaces). When indications of subsurface cultural features were located (minimally in the form of FCR) plans and profiles were drawn and photographed. Feature fill and other samples were collected with a clean trowel and bagged directly for further processing in the laboratory. Artifact provenience data were recorded by using a tape measure and line level to a corner of the unit designated as the local datum. Debitage, calcined bone and scattered fire-cracked rock (FCR) were located by 50 cm quarter-quad and soil layer or by exact provenience, if possible, whenever a feature was encountered. The grossest provenience was a 50x50 cm block. The finest provenience unit was a point specified in 3 dimensions to 1 centimeter.

Subsequent laboratory procedures included systematic processing of all materials. All artifacts were washed and catalogued. All artifacts and debitage were saved. After analysis a 10% random sample of fire-cracked rock was saved, and the rest was contributed to fill potholes on a private dirt road well away from any known prehistoric site. Feature fill was floated on a water-flotation machine and the light and heavy fractions were sorted for charcoal, bone and other fine material. Charcoal was identified where possible and selected samples were sent for radiocarbon dates.

Stratigraphy in the Excavations and River Floods

The alluvial stratigraphy of site 53.36 consists of a complex series of levels which are the result of repeated flooding episodes, soil development of varying intensities on the briefly exposed surface, and human habitation. The effect of frequent flooding has been to lessen organic buildup and decrease the intensity of soil development compared with more stable surfaces. Buried A and B horizons are difficult to discern below the uppermost levels. Levels were defined in the field on the basis of fine

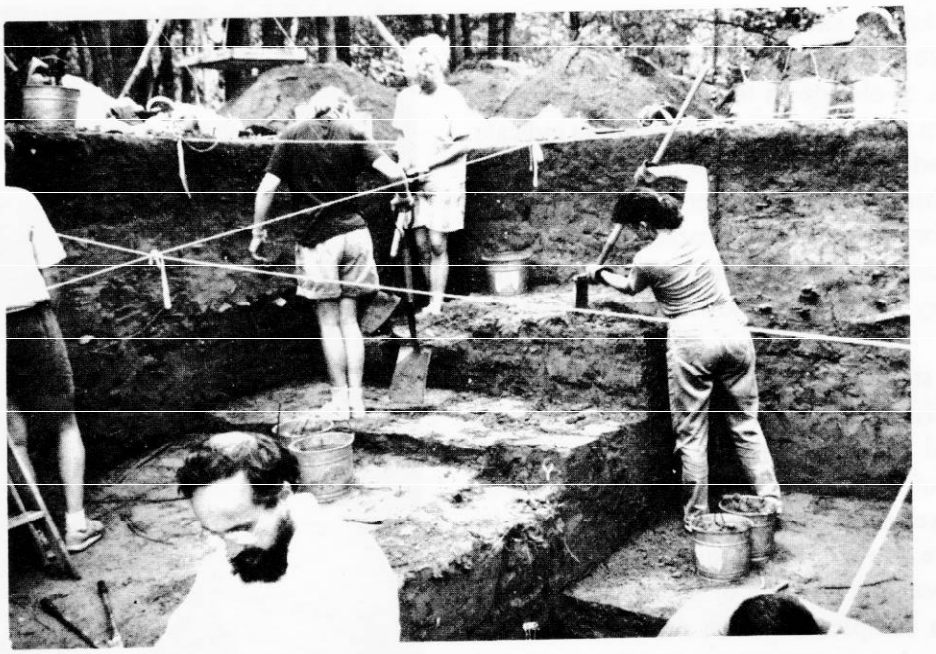

Figure 5. Excavation in the Big Pit, with horizontal and vertical control maintained by strings stretched on 2 meter intervals.

Figure 6. Profile work in the Big Pit, with subsidiary vertical levels marked by strings on the walls. Note the intense soil development of the upper 30 centimeters and the lighter, recent flood silts from 20th century floods in the upper few centimeters.

color gradations or subtle textural changes. A total of 22 different "strata", recognized by a combination of change in texture and color, were recognized in the Big Pit. Thus, these strata indicate the combined effects of texture changes in flood layer deposition, and subsequent soil development causing color changes. The coarser the sediment (more medium and fine sand, less silt and clay) the more velocity in the water flow that deposited the sediment.

Visual stratigraphy in these deep excavations was primarily the result of grain size changes in depositional units, apparently related to flood episodes. Soil development layers, and cultural features were minor by comparison. In order to quantify the grain size changes that we were observing, we took a series of detailed 10x10 cm soil column samples in 1 cm or 2 cm vertical increments. A laboratory analysis sample of approximately 250 g wet weight was taken from each soil sample. This soil was dried under heat lamps and weighed dry. The sample was then mixed with Calgon® and wet screened through a standard #230 mesh (63 micrometer) screen. The residue was then dried again and weighed. This total was then subtracted from the original dry weight total to obtain the weight of "fines" (silt and clay) that had washed through the screen. The dry residue of larger soil particles was then shaken through a column of Standard Testing Sieves which included (with mesh openings in parentheses): #6 (3.35mm), #18 (1.00mm), #40 (0.425mm), #60 (0.25mm), #80 (0.18mm), #100 (0.15mm) and #270 (0.053mm). The dry weight of soil particles retained in each sieve, expressed as a percentage of the total dry weight sample, is presented in graph form as a cumulative total for each 2cm in vertical depth. These cumulative totals were integrated with the visually defined soil horizons and the interpretations discussed in detail below.

The Big Pit

A soil column sample was taken from the walls of The Big Pit at 1 cm intervals (Figure 7). The column began along the east wall of N20E18,

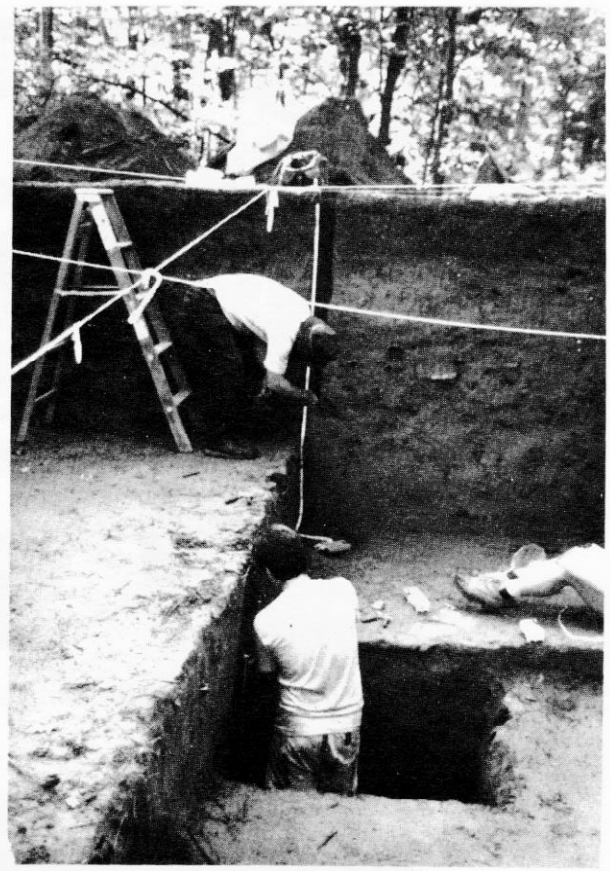

Figure 7. Removing a column sample from the Big Pit in one centimeter depth increments, continuing down into the deep test unit.

extending downward to the level floor of that square. The column was continued on the east wall of the deep test square 9N20E16 (NWq) to a depth of 2.9 m below surface. The grain size data (Spiess et al. 1990) show significant variability in grain size from coarser (more coarse, medium and fine sand) to finer (more silt-clay) sediments. Most of the variability can be found in the medium sand, fine sand and silt-clay columns, with peaks in medium and fine sand covarying positively with each other and covarying negatively with the silt-clay column. Most of the distinguishable episodes of deposition have thicknesses between 10 and 20 cm.

There is an overall pattern of progressive decrease in average silt-clay content above about 190 cm depth and an increase in very fine sand

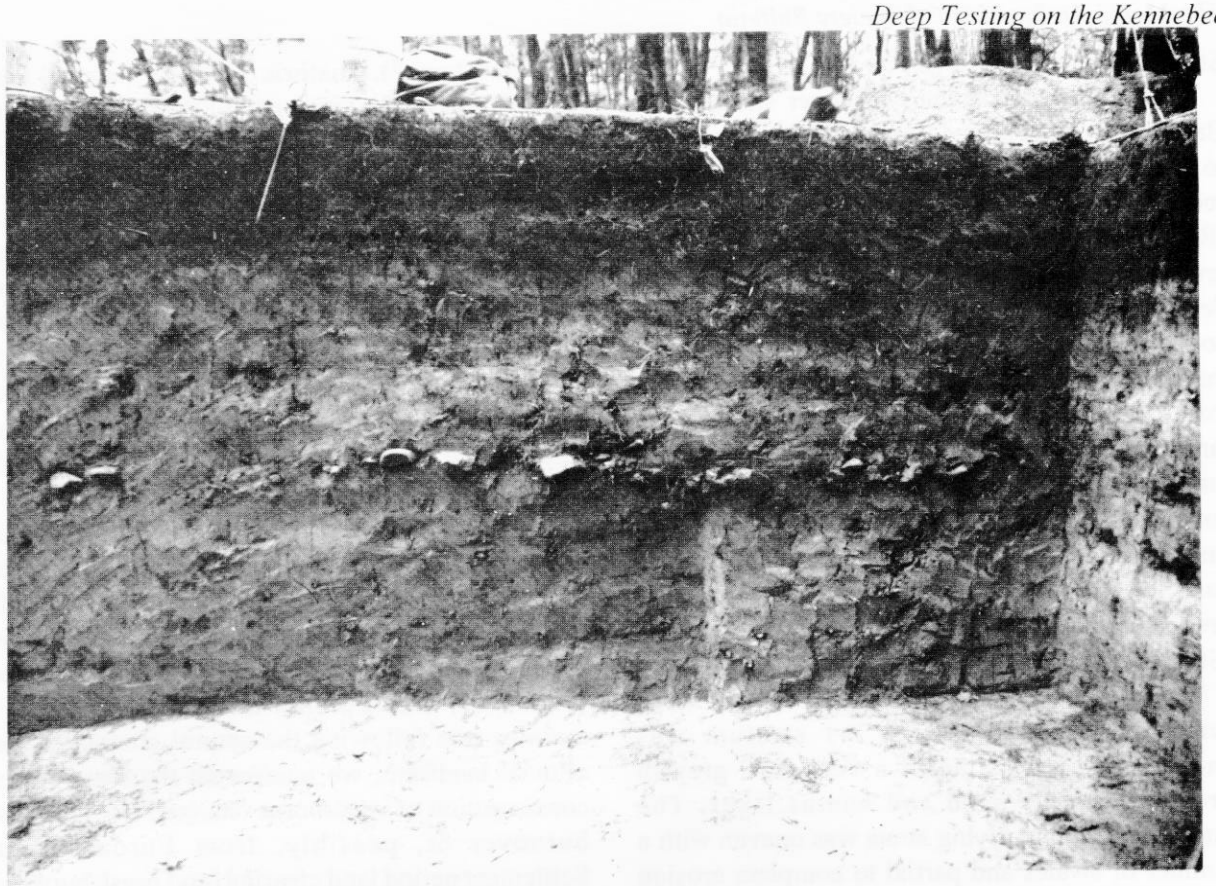

Figure 8. Fire-cracked rock in the north wall of the Big Pit where the margin of Feature 7 extends into unexcavated soil.

content. In general, there is an excellent correspondence between visible stratigraphy and grain size changes. Soil development (A and B soil horizons) sometimes followed the flood episodes. The 1987 flood is a coarser sand, while the plowzone is an homogenized material with greater silt-clay content. Stratum 4, the old (2A) forest soil, is slightly sandier. The 2B horizon soil level had developed on 2 or 3 smaller (approximately 10 cm thick) flood episodes of differing grain size. The complex visible stratigraphy of 3B Upper, 3B Lower and 3C Upper is similar in grain size to that of the 1A Plowzone and contains the largest percentage of large clasts (pebbles and small rock fragments) of the sequence. These levels (3B, 3C) contain the main cultural horizons of The Big pit, with the Feature 7 complex having been built on the surface of 3B Lower and covered by 3B Upper (Figure 8). Some homogenization of layers (analogous to a plowzone) can be expected from this human activity, with the addition of large clasts of imported rock fragments (minute pieces of FCR) and gravel. The 3C level is a sandier deposition episode. The fourth, fifth, sixth, and eighth soils (4B, 5B, 6B, and 8B) each seem to have developed on sandier to siltier couplets that may each represent a single flood episode changing from course to fine particle deposition as flood waters decreased in velocity. A massive unit of sandier sediment (160 to 190 cm) comprises the 8C level, which lacks a soil development. Below 200 cm the periodic sandier to siltier flood couplets return with an average thickness of 15 to 20 cm.

Stratigraphy in the Bridge Pier Pit

The alluvium in the two upper strata of the Bridge Pier pit (Figures 9 and 10) was determined to have originated from recent floods of historic record (in 1936 and 1987) during Phase II testing. (Regular excavation began on the pre-1936 historic levels A1, B1 and A2). Samples of the recent flood depositions, however, were taken in the vertical soil columns. The 5% retention of soil particles larger than 0.5mm in size, up to 30% of particles larger than 0.25mm and a similar percentage for particles larger than 0.18mm for a cumulative total greater than 50%, indicates the high energy of these recent "once in 500 years" floods. In the Soil Column #3 sample, floods with sufficient energy to move soil particles of that size are absent from the record of prehistoric depositions above 3 meters in depth (Stratum B9-2).

Once the 20th century flood silts were removed, a 6-12cm thick A1 stratum was encountered, consisting of a very dark greyish brown fine silty sand and humus layer. The interface with underlying strata was uneven with a number of swales and partial to complete erosion of an underlying B1 horizon. A1 is interpreted as an old flood deposit which was well on the way to becoming forest podzol before the 1936 flood. Histories of Waterville and Winslow pinpoint three freshets in 1832, 1869 and 1901 as potential candidates for a flood associated with the A1 horizon (Kingsbury 1892:572 and Marriner 1954:150f).

B1 was a fine silty sand ranging from dark yellowish brown (10 YR 4/4) to dark brown (10 YR 4/3) in color with thicknesses ranging from 0 to 20cm. In many places the entire stratum appears to have been eroded out, presumably by the flood which laid down the A1 horizon. We interpret the B1 as a partially leached Euroamerican plowzone of 19th century date. The A2 horizon, a fine silty sand ranging from very dark greyish brown (10 YR 3/2) to yellowish brown (10 YR 5/4), contained a very light mixture of historic artifacts (bricks, pearlware, and glass) and a scatter of prehistoric artifacts (early Middle Ceramic period sherds and calcined bone?). Historic cultural material was concentrated in the upper part of the A2 horizon and was not present in the B2, a fine yellow silty sand, at 50 to 57cm b.s.

While no historic artifacts were recovered from the B2, a black charcoal-rich stain was encountered along the east wall of the excavation at ca. 60cm bs. This stain was designated Feature 12 (continuing the feature number series from Phase II excavations at 53.36). The stain is described as black, very fine sandy silt with charcoal which was interpolated between B2-1, fine yellow silty sand, and B2-2, fine yellow sand with charcoal flecks.

The B2 stratum separated into 3 substrata (B2-1,B2-2 and B2-3) on the eastern edge of the levee crest and swale behind the levee, in the east side of the square. Because the charcoal stain rested in a depressed area behind and at the base of the levee (Figure 11) and appeared to meander to the SE, more or less following the natural contour of the alluvial landform, we interpreted the feature as a concentration of waterborne charcoal from a forest burnover or, possibly, from Euroamerican Settlement period land clearing (and brush burning) operations. A single piece of FCR rested at the base of this deposit, but F12 itself appears to be of natural origin. When the underlying strata (B2-2 and B2-3, a reddish stained fine silty sand with flecks of charcoal) were traced to the west end of the excavation they proved to be at or near the same level (ca. 50cm bs) as early Middle Ceramic sherds recovered near the top of the levee. This sequence was interpreted as indicating a long period of relative quiescence in high energy floods along the Kennebec River between ca. 2000 BP and the beginning of the Post-Revolutionary War Settlement period in Maine. Timber cutting and land clearing operations began in earnest in centrai Maine before the official end of the Revolutionary War and F12 may represent a concentration of waterborne charcoal from a local clearing and brush burning operation. One 1785 flood, for example, which could have contributed to this deposit is described in Williamson's History of the State of Maine (Wm.D. 1832:vIIp520) as an "uncommon

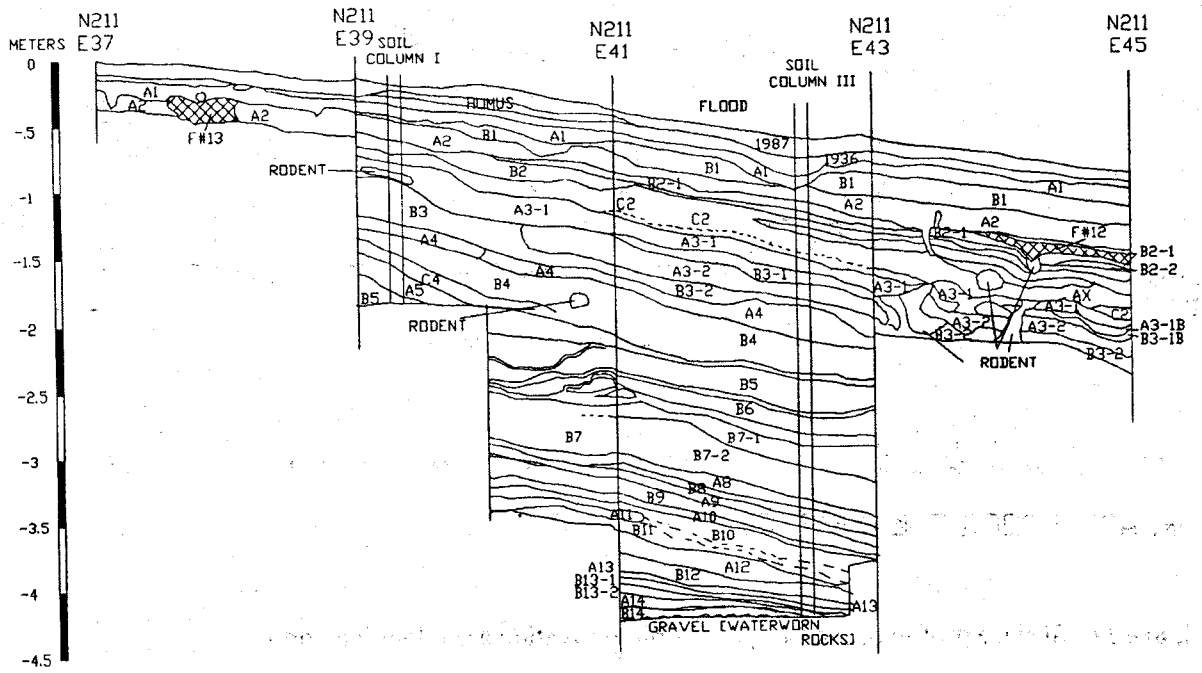

Figure 9. Profile of the stratigraphy in the Bridge Pier pit along the N211 line, looking north. The river is to the left, and the Bridge Pier pit was excavated on the downsloping Aback@ side of the river levee.

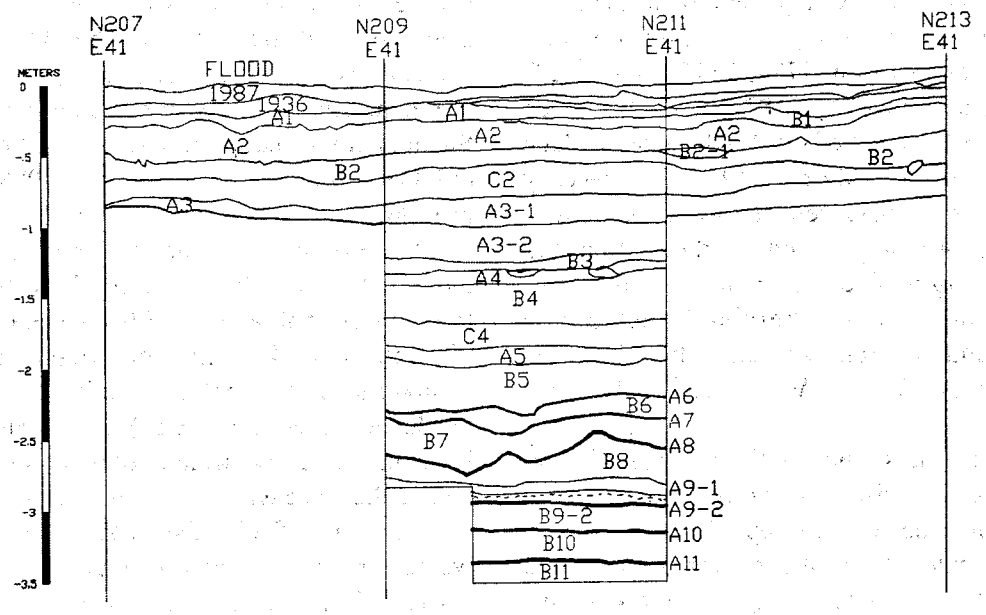

Figure 10. Stratigraphy in the Bridge Pier pit along the E41 line, looking east (parallel with the levee crest). Soil A11 was radiocarbon dated about 7500 years B.P.

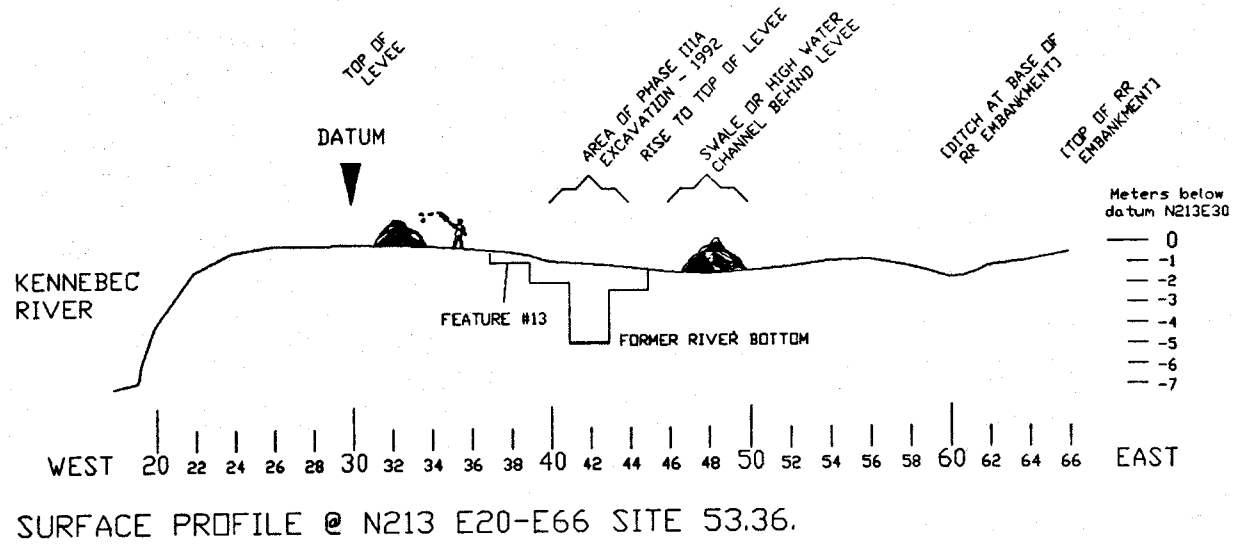

Figure 11. Surface profile of the Bridge Pier pit excavation area, looking north.

freshet...following two days and nights of incessant rain in October...which did immense damage...washing away mills and bridges along the Presumpscot and Saco Rivers." James North (1981) referred to a series of locally devastating "freshets" in the Augusta area from 1794, 1795, 1806, 1826, 1827, 1832 and on to the 1870's. Major floods recalled in the Waterville/Winslow histories include 1832, 1869 and 1901 (Marriner 1954). The severity of 1832 flood, considered the worst on record before 1936, was aggravated by the cutting and floating of virgin pine logs 6' to 8' in diameter which jammed on Bunkersland just above Waterville and then released suddenly, raising the river level 26 feet at Waterville (Marriner 1954:150f).

Part of the A3 stratum on the east wall of N209 E43 is marked by a rise of 30cm followed by a level plateau 70cm long with a steep 40cm drop on the downstream side. This profile pattern is interpreted as a tree fall, possibly testifying to the force of the flood associated with the initial deposition of the C2 stratum. A similar anomaly near the top of the levee can be seen on a profile of the west wall of N211 E39. Grain size analysis in Soil Column #3 shows a series of spikes of coarser grain sediments between A3-2 and A4 which represent the strongest period of flood activity between the historic period and heavy sediment deposits below 3 meters (B9-2 and B-11 through B14). The B3-1 and B3-2 depositions may correspond to a period of heavy sediment deposition observed below and during the Susquehanna occupation levels at Fort Halifax (53.35) during test excavations in 1988 (Spiess et al 1990).

Coarser sand depositions were first noticed on the top of the B8 stratum, as a relatively thin band (on the west wall at N209 E40) which thickened to 10cm thick at E41. The same stratum divides into 3 darker lenses through 24cm of vertical deposit at the lower level (East Wall) of the pit. The lens banding may derive from pooling or swampy areas behind the levee which concentrated organic matter. From the base of B8 to the bottom of the excavation we encountered heavy gravel and river cobbles (a vertical distance of 1.3 meters) to 3.9 meters below the surface at N209 E41, the relative thicknesses of the A-horizons increased compared to the B-horizons, along with the incidence of medium to coarse sand deposition. Color gradations between

A horizons and B horizons are extremely subtle, differing by about one degree in color value (i.e. for example, 2.5Y4/4 "olive brown" for the A horizon and 2.5Y5/4 "light olive brown" for the B horizon). The excavators' impression, when drawing the profiles, was that strata from A13 to the basal coarse sand of B14 (a vertical distance of from 40cm at E41 N211) were, in fact, divisible into many small layers. Some of these may represent laminae from ponding in the high water channel to the east of the levee. The coarser sand indicates a faster waterflow during flooding episodes. The increase in thicknesses of the A horizon developments over B horizon alluvial depositions suggests a period of relative quiescence in the frequency and intensity of flooding episodes. This is supported as well by the near dead level layouts of the strata from A9 through B11 on the west wall of N209 E41.

Feature Descriptions

In this section we describe the physical form of the features in site 53.36. Feature 1 was abandoned as a separate designation during analysis subsequent to the excavation as it became obvious that the FCR recovered in the 1987 testpit belonged to the larger Feature 6 complex. The descriptions below present a narrative summary of the excavation of each feature.

The Big Pit

Features 3, 4 and 8 are largely enclosed within the 2x2 m square designated N22E18. Feature 4 continues into the northeastern corner of N20E18 and Feature 8 merges with the 3 discrete piles of FCR designated Features 5a, 5b and 5c in the northwest quadrant of N20E18. Feature 3 was an elliptical (approximately 70 x 50 cm) concentration of FCR with a vertical depth of roughly 20 cm. The soil between the FCR was dark and charcoal-rich. The FCR of this feature were distinctly "heaped up" in the center of the elliptical pile. Reddened (oxidized) soil was encountered underneath the FCR and charcoal-stained soil. Feature 4 was an elliptical distribution of FCR, in size similar to feature 3, and located at about the same depth (91-113 cm below datum from top of FCR to base of FCR). Charcoal and dark soil was interspersed among the rock. There was no noticeable oxidation of the soil under the feature. Feature 8 was a large, shallow oval, 90 cm across by 80 cm north and south. A contracting "tail" of blackened soil continued south into N20E18 where it merged with the 3 separate clusters of FCR in Feature 5. The core of Feature 8 contained very dark black soil. On all sides the blackened area is bordered and mixed with FCR, with some of the largest rocks and deepest concentrations along the north wall of the excavated area. The blackened soil of the feature initially appeared at 74 cm below surface (95cm below datum). It continues to a depth of 92cm b.s. (113cm b.d.) with some FCR bases as low as 97cm (118 b.d.). All traces of dark soil disappear at 100cm b.s. (121 b.d.) in the southeast quarter of the northwest quad. Feature 5 begins also at 68cm b.s. in the northwest quad of N20E18. It was a shallow depression filled with greasy black soil, charcoal and FCR, measuring 34x18 cm at 106cm b.d. Careful dissection of the feature revealed that three concentrations of FCR which comprised the feature were a series of consecutive FCR and ash discards. There was no reddened soil around or beneath the FCR. The Feature 5b stain disappeared at 116 cm b.d. and the 5c stain at 120cm b.d.

These four associated features are part of one complex. The basal feature, also the largest in area (Feature 8), consists of an oval shallow depression filled with river cobbles which had probably been broken through thermoshocks resulting from repeated dousing by cold water (FCR analysis, after Yoon 1986). The high degree of fragmentation in the center of the feature suggests that this area experienced the most extreme contrasts in temperature. Large pieces of FCR and some unbroken cobbles were located on the northern edges under Feature 3 and outside the concentrated mass in the center of the feature. Of the three satellite features (3, 4 and 5a-b-c) only Feature 3 partly overlies the central oval of Feature 8. The satellite features 3, 4, 5a, 5b, and 5c appear to be

Figure 12. Fire cracked rock of Features 6 and 7 appearing as the Big Pit is excavated. Note: we numbered individual fire-cracked rocks in the field with magic marker before removing them.

end products of clearing episodes in which ashes and charcoal from previous episodes of use of Feature 8 were cleared off, along with rocks from the tops of the pile. This clearing completed, new fires were set to reheat the central pile. The vertical and horizontal spacing of each satellite pile allow a tentative ordering of the sequence of use. Both Features 3 and 4 overlie sand deposits which built up over the edges of the original oval of Feature 8. The various segments of Feature 5 seem to be coterminous with the southern edge of Feature 8 and to lie at depths equal to Feature 8 or slightly above or below, depending on the slope. In all cases Feature 5 lies lower than Features 3 and 4. Feature 3 overlies sand probably dumped by a (spring?) flooding episode which buried part of the original perimeter of Feature 8. Feature 4 is less clear but probably represents a series of dumping episodes. Some of the FCR of Feature 4 appear to be scattered. The direction of FCR scatter can be equated with a water movement spilling over the levee and down into the gully left by the abandoned river channel.

Features 6 and 7 are located mostly in the N22E16 2x2 m square, with FCR spilling over into neighboring squares (Figures 12 and 13). Feature 7, the largest and deepest feature of the pair, is concentrated in the northeast quad of N22E16 with extensions into the northwest quarter of N22E18 and northeast quarter of N22E14. On its southern periphery, Feature 7 contacts and mixes with the margin of Feature 6. Feature 6 spreads out to the west into the southeast quarter of N22E14 and to the south along the north wall of N20E18. All of the FCR collected in 1987 in Testpit R9T1Tp#1 that had originally been designated Feature 1 were part of what we later designated Feature 6. Feature 6 appeared at 95 cm b.d. with a few scattered FCR and charred sticks. The FCR bases were set between 101 and 107 cm b.d. The concentration sloped slightly downward and northward. Feature 7 began to appear at 103-104 cm below datum (82-83 cm below surface). Individual rocks were considerably larger than the chunks associated with Features 6, 3, 4, and 5. At 105-107 cm b.d. it became evident that Features 6 and 7 were part of the same complex, joining along the southern periphery of Feature 7, with Feature 6 remaining slightly higher in elevation than Feature 7. Feature 7 ends at 116cm b.d. on reddened soil and badly decomposed rock. It had been built in a large pit. The pit bottom was 44 cm wide (east to west) and 46 cm long. Excavation of the crumbled FCR collected in the base of Feature 7 revealed two potsherds of vessel lot 5. One of these showed signs of wear on one edge that suggested it had been used as a scraping implement after the vessel had been broken and discarded. This evidence suggests that Feature 7 had been constructed some time after the breaking of

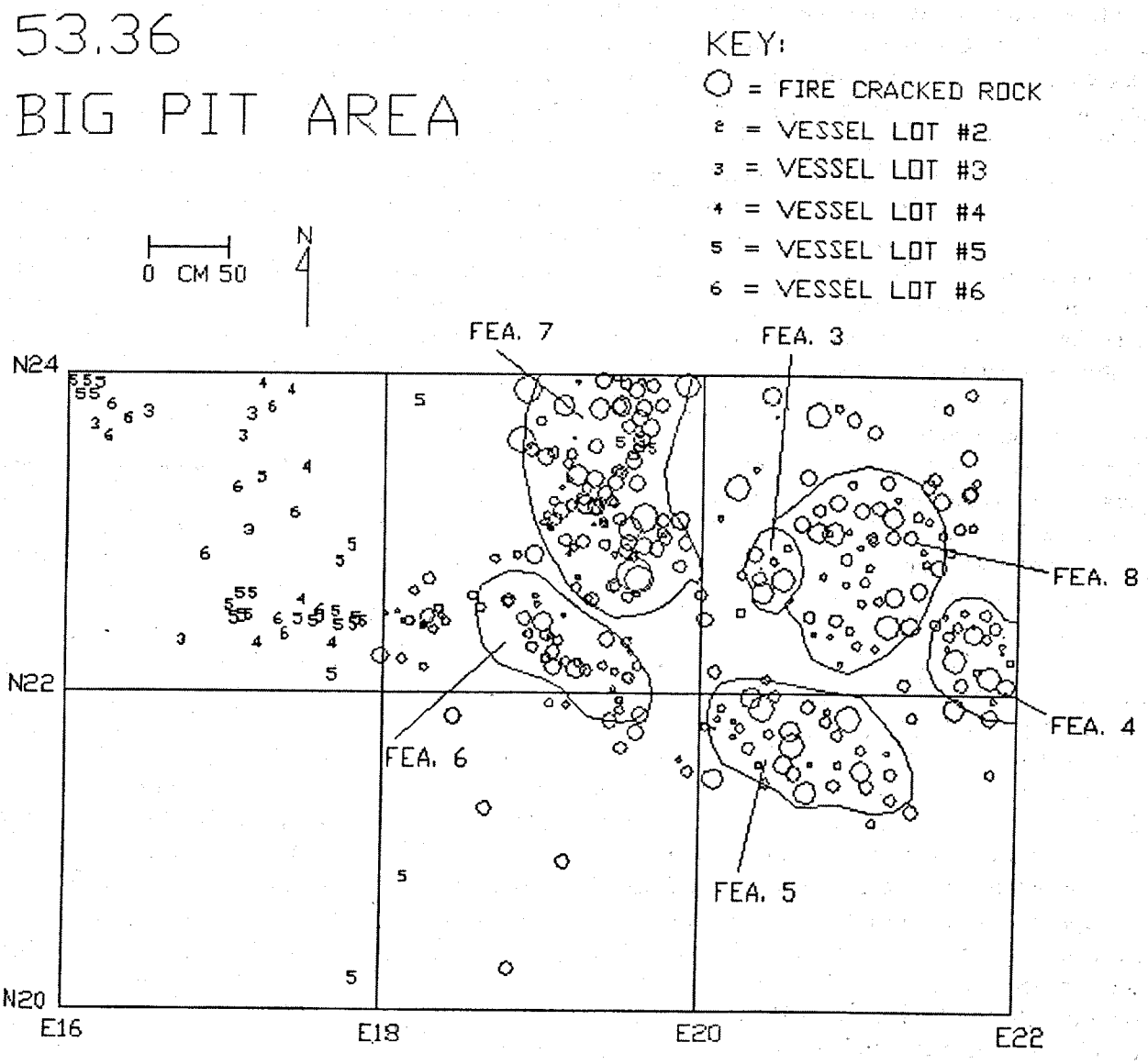

Figure 13. Fire cracked rock and soil stains of Features 3 though 8 in the Big Pit, shown with the distribution of sherds from vessel lots 3, 4, 5, and 6. Vessel 2 sherds are distributed mostly in the N20E16 square. Note, all material is projected vertically onto one level from about 30 cm of vertical separation.

Vessel Lot 5, and that its sherds had been incorporated into the pit base.

As in the case of the Feature 8 complex, Feature 7 has a satellite feature (Feature 6) composed of FCR and charcoal that had been pushed out of or thrown out of the pit to the southward or downslope to prepare for reuse of the main rock pile. The discarded FCR forms a more or less continuous distribution of rock fragments. One of the remarkable aspects of Feature 7 is the large size of some of the FCR left in the pit. This may mean that Feature 7 had fewer episodes of reuse than did Feature 8 before being buried in silt deposits. Feature 7 is located closer to the river than Feature 8 and lies directly under the highest part of the levee, so that new deposits of silt probably tended to concentrate more rapidly over Feature 7 than over Feature 8. Given this situation and the presence of vessel lot fragments in the fill, we suggest that Feature 7 represents the initial sweat lodge hearth established at the site while Feature 8 was slightly later, albeit a more intensely used sweat lodge hearth.

Features Outside the Big Pit

Feature 2, a Lodge (?) Hearth. The 1987 1m² testpit (R9T1#5) located 85 meters north of the Big Pit, yielded 127 fragments of a single Middle Ceramic period grit-tempered, rocker dentate-stamped vessel (see description of Vessel Lot #1) in a context that suggested a possible campsite and the opportunity to collect enough fragments to substantially reconstruct the vessel. Three 2x2 m squares were laid out around the original testpit at N106E16, N106E18, and N108E18. The excavation of N106, immediately south of the testpit, revealed a scatter of FCR, a potsherd, a well-used endscraper of Pennsylvania jasper and felsite flakes. Feature 2, an oval firepit measuring 53 cm by 43 cm (long axis, east to west), appeared at ca. 25 cm below surface. Feature fill was marked by sandy brown fill with flecks of charcoal. The fill continued to a depth of 38 cm. As excavations continued, 4 dark circular postmolds were recognized at 32cm with diameters of 5 cm (n=2), 5.5 cm and 8 cm and depths ranging from 10 to 12 cm below the points of first discovery. These postmolds were each set about 80 cm apart in a shallow arc describing about ? of an oval of ca. 3 meters in diameter. Virtually all the findspots of potsherds of vessel lot #1 we recovered would fall within the circumference of the area described by the postholes. The Feature 2 firepit falls outside the circumference to the southwest. This combination of postholes and exterior firepit suggests a summer lodge with a exterior heat source. Ninety percent of the fire-cracked rocks were scattered within a 1 meter radius of Feature 2. Their fracture patterns follow the distribution of fractures expected for heated rocks "cooled in open air" (Yoon 1986). However, only about one-third of the lodge area suggested by the postmold distribution was excavated during Phase II operations. An interior hearth might be present in the unexcavated portion.

Feature 9, a Hearth. Feature 9 is a large, amorphous fire pit located between 40 and 60 cm below surface and located along the west wall of N244E30. One end was transected in the course of the Phase II excavation. A stain of dark soil and charcoal marked the base of the pit just under a large piece of shale in the feature fill. Small fragments of FCR, calcined bone, an endscraper and 7 crumbly fragments of a net-wrapped-paddle impressed vessel were adjacent to Feature 9 on the same level. Vessel attributes indicate a possible early Middle Ceramic date.

Feature 10, a Hearth, and Feature 11, a Hearth or Earth Oven. Feature 10 is a possible firepit in Stratum 4 of N236E30, which has been heavily disturbed by rodent activity. The fill consists of brown to black mottled silty sand. No cultural remains were recovered except for large chunks of charcoal in the feature base at a depth of 56 cm b.d. A single rocker dentate-stamped sherd (vessel lot #9) with attributes similar to vessel Lot #2 was recovered from the stratum 3/4 interface associated with Feature 10. Also on this level were several felsite flakes, calcined bone and brick fragments. Evidence of heavy burrowing by rodents compounded by plow furrow bases scar the

overlying stratum throughout the square. Four circular stains with darker soil extend in an arc southward of Feature 10. None of these probable postmolds show the oblique side channels that generally distinguish rodent burrows. If the postmolds delineate a structure, the firepit of Feature 10 lies within an oval floorplan. Feature 11 is associated with the surface of the next Stratum down (4/5 interface) and is marked by deep orange/ red soil with flecks of charcoal and three FCR. Feature 11 is a large pit located in the northwest corner of the square. An occasional felsite flake, charcoal and a few scattered FCR are the only cultural items recovered from the stratum interface.

Feature 13 and Vessel Lot #11 in the Bridge Pier Pit. Twenty-one potsherds (designated vessel lot 11) were recovered in the A2 plowzone of the 3 western excavation units (E39 N207 to N211). Because the findspots seemed to indicate an activity locus on the adjacent levee surface a little to the west, we extended our excavation in that direction to include 2 more 2x2 meter units. These excavation units were taken into the B2 horizon only to a depth deemed sufficient to recover all ceramic fragments (ca. 50cm bs). The base of a basin-shaped pit was located along the north wall of N209 E37 extending into the B2 horizon from the plowzone interface. Two sherds of vessel lot 11, lump charcoal and 4 fragments of calcined bone were recovered from the undisturbed fill of Feature 13 by flotation. The remaining 72 sherds attributed to vessel lot 11, and a few more fragments of calcined bone were scattered in the A2 plowzone surrounding Feature 13. We interpret this distribution to mean that Feature 13 had been partially truncated by the plow and the associated living floor destroyed. The undisturbed base of Feature 13 was circular, measuring ca. 50cm in diameter by 20cm below the A2/B2 interface. A single slightly reddened piece of slate (phyllite) from the local bedrock may represent all that remained of any fire-cracked rock used in the feature.

Charcoal and Radiocarbon Dates

A total of 1072.6 grams of lump charcoal was recovered from site 53.36. Forty-five percent of the total (807.7 g) of charcoal lumps were found in the Big Pit features. Nancy Sidell identified wood species in 7 samples derived from light and heavy flotation fractions from three features: Features 7 and 8 in The Big Pit, and Feature 2 in N106E18 (Nancy Sidell, personal communication 4/3/93). A sample of 30 pieces were identified from each of the larger samples of feature fill, and 15 were identified from the smaller batch of feature fill (Feature 7). The vast majority of the identified charred plant material was charred wood, although there were a few pieces of bark. There was no indication of charred seeds, nut fragments, or edible roots in the sample. Mixed wood from a mixed hardwood-coniferous forest was the fuel used at the site. The charcoal records a forest cover not demonstrably different from the one on the site today (beech, ash, coniferous trees).

A total of 18.8 g of wood charcoal was recovered from Feature 13 fill. Macro-inspection suggests that much of the wood charcoal was pine with some incompletely burned segments of root and bark. This means whatever aboriginal charcoal component may exist in the feature fill was contaminated by a late tree/root burn, possibly associated with Settlement period land clearing and burning operations.

We obtained one radiocarbon date from Feature 8 in The Big Pit: 1840±80 B.P. (Beta 31819, uncorrected). The charcoal was a 2.8 gram sample of wood (mixed species: beech and unidentified wood) from the middle of the blackened area in Feature 8. A 1.5 gram sample of beech charcoal from the same provenience was too small to submit. The charcoal was obtained by flotation of feature fill in the laboratory.

A radiocarbon date was obtained from Feature 2 in N106E18: 2050±70 B.P. (Beta-31763, uncorrected). This date was run on a 2.8 gram sample of charcoal, all of which was identified as beech (*Fagus*) (N. Sidell, pers. comm.). The charcoal was obtained by flotation of feature fill in

the laboratory. Both radiocarbon dates are "believable" because they are associated with Middle Ceramic period ceramics.

Wood charcoal (4.1 g) collected from level A11 at about 3.4 meters depth in the Bridge Pier pit dated 7510±100 BP (Beta 62561). This charcoal is probably non-cultural (not from a feature), but it does date the A11 soil surface and thus provides information on the rate of deposition of silt on the site through the mid-Holocene.

Pollen and Charred Plant Material other than Charcoal

Two non-wood charred plant species of possible cultural origin were recovered during Phase III excavations. Feature 13 fill yielded a thumbnail size fragment (0.54 g) of butternut shell (*Juglans cinerea*) (specimen #109 F13 N211 E37 SW SE 50-60 cm bd). This fragment is possible evidence of use of butternut as food by early Middle Ceramic occupants of the site. A charcoal concentration at 3.1 m depth in the A11 Stratum, also in the Bridge Pier Pit, yielded a small, hard carbonized tear-drop shaped seed identified as a grape (*Vitis spp.*) seed (Sidell, personal communication). There was no recognizable cultural association with this charcoal concentration, however.

We would expect to have found many more nut fragments if butternut harvesting and processing were a major subsistence activity at the site, however. Butternut trees still occur in the immediate vicinity, as shown by fresh nuts found on the site surface in past years of archaeological fieldwork; so it is possible that this nut was incorporated into the hearth fuel mixture inadvertently.

A soil sample from within the complex of Features 3 to 8 in the Big Pit yielded a countable pollen sample, including 21% pine, 9% spruce, 15% hemlock, 5% poplar, 3% birch, and 11% herbs, sedges and grasses (Holloway 1988). This general pollen assemblage is consistent with forest types found in the central Maine region (ibid.). Not only does this pollen analysis provide paleoenvironmental information, but it indicates that the technique of analyzing pollen from features and river alluvium sediments in stratified sites has been underutilized in Maine.

Ceramic Vessel Lots

Ceramic vessel lots were established by sorting sherds using a sequence of distinctive attributes, beginning with the nature of the temper and proceeding through manufacturing techniques, surface finish, decorative tools and techniques and finally motif (overall scheme of decoration). Broken sherds were often matched and rejoined. Final vessel lot assignments were checked for consistency against recorded spatial distributions and depths below datum. The vessel remains from site 53.36 show small but distinctive variation which suggest that several generations of potters may be represented.

Big Pit Area

Seven vessel lots (2 through 8) were identified from more than 100 sherds recovered from the Big Pit area. Seven sherds belonging to one of the vessel lots from intact strata were found in slumped soils along the edge of the bank. All vessels belong to the early or middle part of the Middle Ceramic period (circa 2050 to 1350 B.P.).

The vessels were decorated using dentate rocker stamping and dentate stamping combined with punctates. There is no evidence of pseudo-scallop shell impressed (circa 2050 to 1650 B.P., CP2, Petersen and Sanger 1989) or of circular punctate and cordwrapped stick impressed vessels (circa 950 to 650 B.P., CP5).

Vessel lots 7 and 8 (Figure 14) are represented by sherds found only in the slumped deposits on the sloping river bank. Their original stratigraphic provenience and association could not be determined. In situ sherds (Figure 13) from vessel lots 3 through 6 are all located in the same horizontal and vertical location: 0 to 1 meter west of Features 6 and 7, at depths of 104 to 127 cm below datum. A conical basal sherd from vessel lot 5 was found in the basal portions of Feature 7.

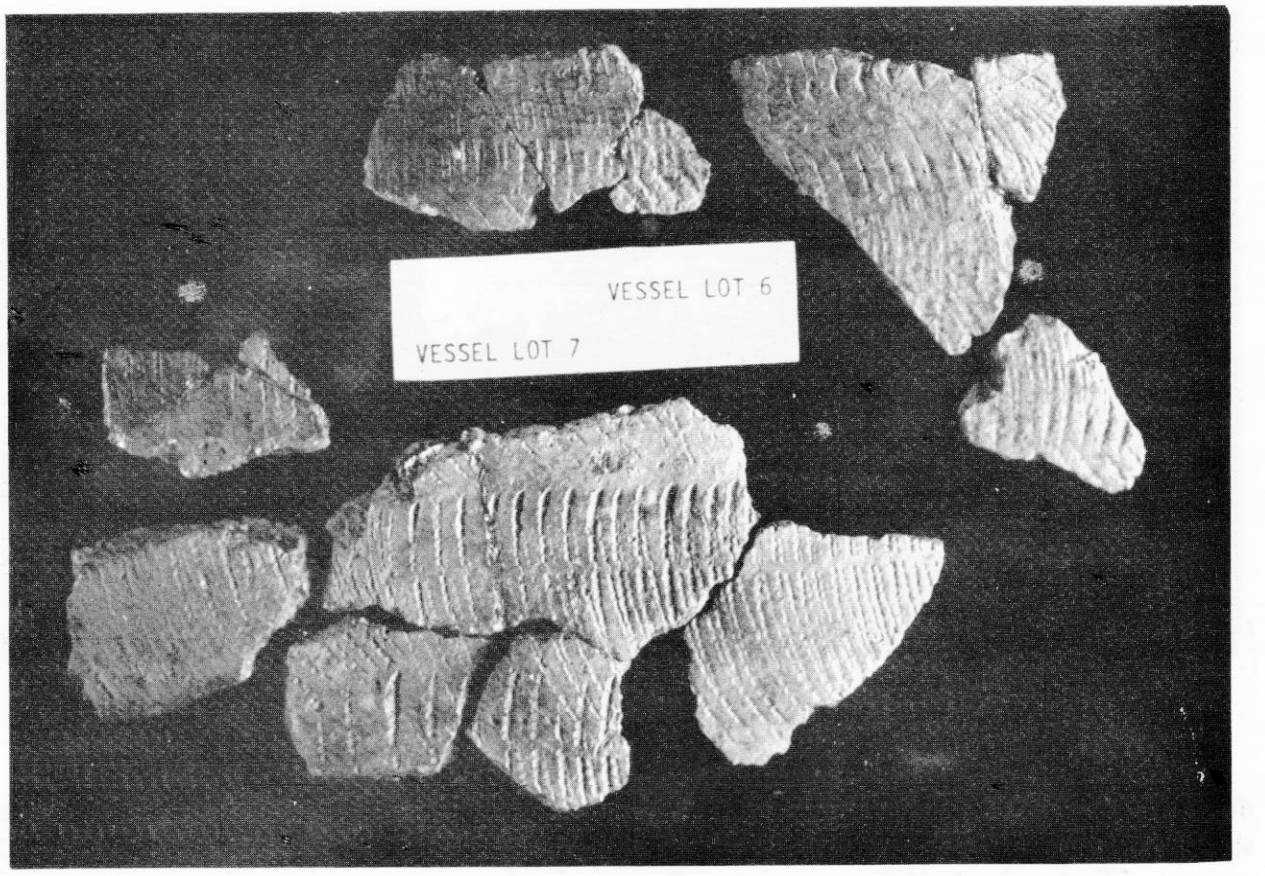

Figure 14. The dentate-rocker stamped sherds of vessel lots 6 (above) and 7 (below).

Vessel lots 3, 4, 5, and 6 cannot be separated stratigraphically or horizontally, and must be considered to be an assemblage used and discarded in a limited span of time. Vessel lot 2 is located in a different spot, roughly 1 meter south and southwest of Feature 6, and in shallower depths (68 to 86 cm below datum). Vessel lot 2 can thus be considered younger in age than vessel lots 3,4,5 and 6, by a few years to a few centuries.

Vessel lots 7 and 8 are distinguished by smoothed exteriors and scraped interiors, fine to medium quartz grit with none exceeding 2.9 mm in diameter, a tendency for interior and exterior surfaces to spall and separate from each other, shallow to very shallow rocker dentate stamping on leather hard surfaces, fine dentate stamps ranging up to 4.2 cm long and narrow (0.75 - 1mm wide) with evenly spaced rectanguloid teeth 1 to 2.5 mm long with 0.5 mm gaps, a motif consisting of horizontal series of dentate rocker stamped designs with the tool held roughly vertical, which overlap with series above and below, and firing in an oxidizing atmosphere that produces an orange exterior, tan interior and light grey paste.

Vessel lots 5 and 6 are generally similar to vessel lots 7 and 8 in decoration but differ in other respects by several small attribute changes. These include: coarser quartz grit constituents (up to 4.2 mm and 3.12 mm respectively), smoothing of both interior and exterior walls, and better consolidation so that spalling is markedly reduced. In all other respects, vessel lots 5 and 6 are similar to vessel lots 7 and 8. The coarser grit and better consolidation of vessel lots 5 and 6 may indicate a different date of construction than vessel lots 7 and 8, or may simply represent the idiosyncrasies of a

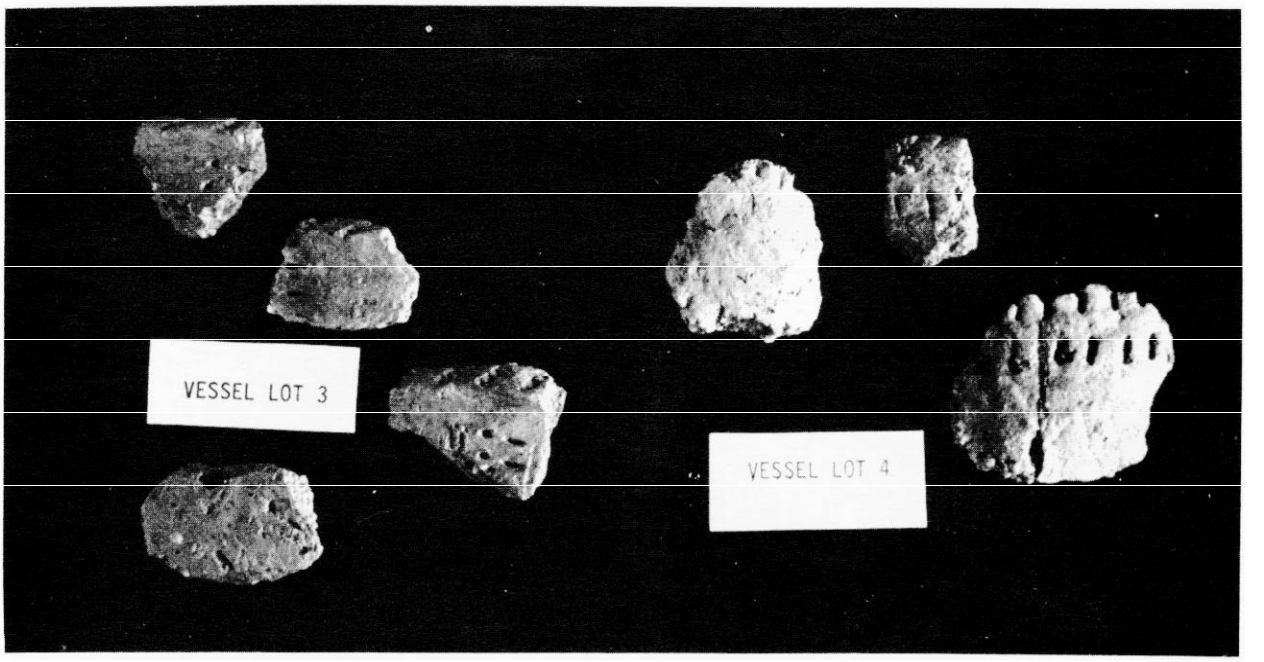

Figure 15. Sherds of vessel lots 3 and 4.

different maker of contemporary date. Several sherds of vessel lot 5 were recovered from the basal portions of Feature 7; one of these sherds was the pointed base. Exterior dentate rocker stamping continued to within 4 cm of the exterior bottom. In addition, some sherds of vessel lot 5 show wear along one edge, which suggests that the broken fragments has been picked up and used for a scraping function.

The decorative motif and tools utilized on vessel lots 3 and 4 (Figure 15) are different from the above-described earlier vessels. Distinctive attributes include: grit up to 8 mm in diameter, clear evidence of coil fractures with well consolidated sherds, combinations of dentate stamps and punctates such as fingernail impressions or oblique dentate stamps across lips and/or deep narrow punctates alternating with large undecorated areas on the neck, and a dentate stamp with fewer (5 per cm) deeper notches more widely spaced (1 mm apart).

The decorative tool used on Vessel lot 2 (Figure 16) is another example of a stamp with irregular widely spaced teeth. No punctates are visible on extant fragments, but the broadly spaced rocker dentate stamping is supplemented by scraped lines along the lower parts of the exterior. The majority of the temper is medium or coarse grit, with the largest particle 5.75 mm across. The final finish has a burnished look indicating a consistency slightly wetter than "leather hard" at the time of final decoration. The dentate tool and finish suggest the character of the "trailed" dentate stamped pottery characteristic of the end of the Middle Ceramic period (CP5). The depths of in situ vessel lot 2 sherds (68 to 86 cm) indicate that the vessel was broken and deposited on a soil surface available after Feature 6 (depths 95 to 113 cm) had been covered by flood deposits.

Vessel Lot 1 in Association with Feature 2 (N106E18)

All but 4 of the 131 sherds attributed to vessel lot 1 (Figure 17) were recovered in the southern 50 cm^2 quads of R9T1 Testpit 5 dug in the fall of 1987. The four additional sherds were found in a scatter

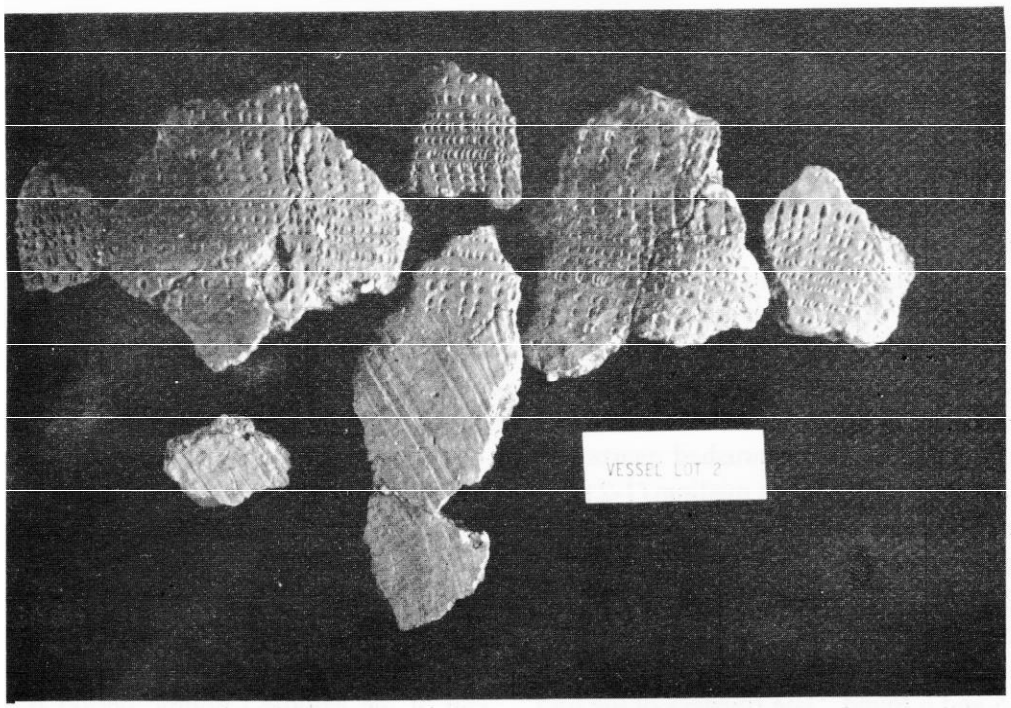

Figure 16. Vessel lot 2, dentate rocker stamped.

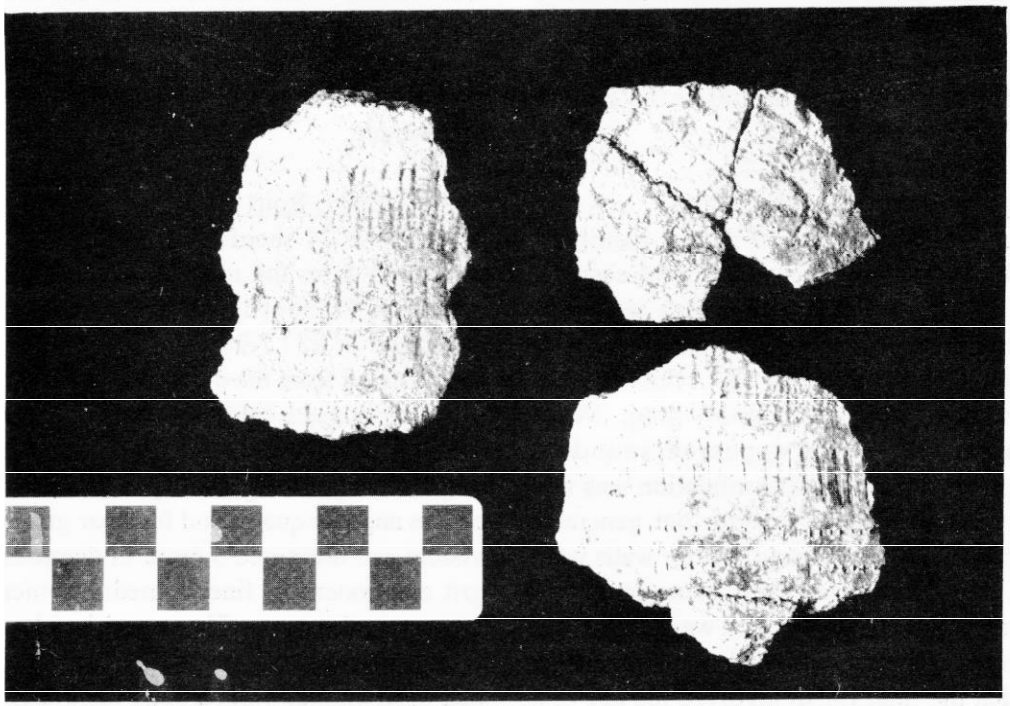

Figure 17. Vessel lot 1, with dentate stamping and a cris-cross pattern on the collar, associated with Feature 2.

adjacent to the Feature 2 hearth, but outside the perimeter of a line of postholes located northeast of Feature 2. The rimsherds show an unusual crisscross dentate stamped pattern beginning in a zone immediately below the lip. The lip itself has been indented or crimped on alternate sides using finger pressure to form a scalloped perimeter. Five parallel lines of dentate stamping appear below the crisscross pattern. The lower sections of the exterior are decorated with vertically oriented dentate rocker stamping and areas of plain (undecorated) smooth finish.

The grit is fine to coarse crushed quartz and mica, with a concentration in the medium (1-2 mm) to coarse grit (2-5 mm) sizes. The dentate stamp has narrow width rectanguloid teeth with consistently thin gaps (0.5 mm). The teeth, however, vary in number from 5 to 7 per cm. The relatively fine dentate stamping tool is similar to tools used on vessel lots 5 and 6 found. The fineness of the tool even suggests that vessel lot 1 may be older than vessel lots 2 through 8, but not by much, assuming that dentate stamping tools got coarser over time. In fact, the associated radiocarbon dates show that vessel lot 1 is most likely to be 200 years or more older.

Vessel Lot 10, Associated with Feature 9

Vessel lot 10 consists of seven crumbled potsherds, located about 1 meter east of the east end of Feature 9, a probable hearth which was only partially excavated. All belonged to one vessel with an unusually dense temper of fine white quartz, mica and orange quartz and possibly grog. Many of the quartz fragments appeared rounded, suggesting a sand temper. Consolidation was fair with good adhesion on the exterior but generally crumbly on the interior. No good interior walls were recovered. The vessel was fired in an oxidizing atmosphere and has relatively thick walls. Evidence of flattening on the exterior and fabric impressions indicates that the final finish involved the use of a fabric wrapped paddle. The fabric, in this case, consists of very fine obliquely twined netting made with S-twist cordage that left impressions .44 mm (single) to .88 mm (doubled) wide, spaced about 3 to 4 mm apart.

The very dense sandy grit and thick sherds argue against placement in the Late Ceramic period, when fabric impressed decoration appears on thin walled, fine grit tempered vessels. Fabric impressed vessels are characteristic of Vinette I ceramics, but these often feature a coarser grit than vessel lot 10. This vessel may belong in either CP1 or CP2 (Petersen and Sanger 1989).

Vessel Lot 9, Associated with Feature 10

Vessel lot 9 is represented by a single sherd. Attributes include medium crushed quartz grit, fair consolidation (somewhat crumbly), and dentate rocker stamping on the exterior. The decorative stamp is wide with trapezoidal sharp edge dentates spaced widely apart. The interior has eroded. The dentate stamp alone places this vessel near the latter end of the Middle Ceramic period (CP5?). The stamp is similar to that used for vessel lot 2, the most recent vessel lot described for the "Big Pit" area, and may possibly be the same stamp. However, differences in temper between the two vessel lots indicate that two different vessels are represented.

Vessel Lot 11, from the bridge pier

Of the 74 sherds of vessel lot 11, two were recovered from the undisturbed fill of Feature13. Another 51 sherds came from the adjacent plowzone in E37 N209 and N211. The remaining sherds came from the plowzone in the western edge of the proposed bridge pier foundation. The 74 sherds attributed to vessel lot 11 weighed a total of 65g. The major temper component was medium and coarse angular quartz and feldspar grit. The largest visible grit measured 3.6mm in diameter. A minor grit component of fine to medium mica was also present in the paste. The vessel had been built up with coils and smoothed while still wet. The walls had been thinned from a body thickness of 8mm to 5.5mm at the lip. There was some separation between interior and outer walls, indicating a vessel integrity ranging from fair to poor. Lip and exterior

surfaces were orange brown in color, indicating exposure to an oxidizing atmosphere while being fired. The interior walls were grey to dark grey while the paste was dark grey to black, indicating a reduced atmosphere in the firing process. Thus, the finished vessel was probably fired upside down.

Final decoration was done with a dentate stamp about 2 cm long by 7 mm thick with very fine pointed teeth spaced about 6 per cm. Because the teeth impressions are very shallow and sometimes not visible at all, the dentate stamp itself may have been quite worn. The stamping was done with a rocking motion with closely set vertically aligned zigzag series up the exterior of the vessel. Deep oblique dentate stamping, set about 4mm apart, appears along the lip which was slightly rolled over on the inside. The interior wall was left smoothed though there is a suggestion of some dentate stamping on the interior wall just below the lip.

Vessel lot 11 has the fine tooth dentate rocker stamping characteristic of early Middle Ceramic period (CP-2) pottery but lacks the fine grit temper, thin walls and good vessel integrity usually found on earlier vessels during CP-2 (Petersen and Sanger 1989). For these reasons, we project a date between 1800 and 2000 BP for the vessel and the associated feature.

Summary of Vessel Lot Associations and Probable Dates

Vessel lot 10, associated with the undated ature 9 (shallowly buried in N236E30), is sibly the oldest ceramic vessel on the site, atively placed in CP1 (circa 3000 to 2050 B.P.) the basis of its resemblance to Vinette I vessels. mewhat younger in age, vessel lot 1 is associated th Feature 2 that was radiocarbon dated 2050±70 P. The vessel body is decorated with vertically ented dentate rocker stamping, but the neck of ie vessel exhibits an unusually complex cris-cross entate stamped pattern. Vessel lot 9 associated ith undated Feature 10 (again shallowly buried) ay be close in age to vessel lot 1, based on use of similar decorative tool. At least 4 vessels (vessel lots 3, 4, 5, and 6) associated with the multiple FCR features in The Big Pit are radiocarbon dated at 1840±80 B.P. The decorative heterogeneity in these four vessel (small punctates and fingernail impressions, dentate rocker stamping) must be contemporaneous. The latest vessel recovered at the site (vessel lot 2) is stratified slightly above the four vessel lots just mentioned. It too is decorated by dentate rocker stamping. Vessel lot 11 from the bridge pier pit must date just older than the suite of vessel lots 3 through 6.

With the exception of vessel lot 10, all the other vessels fall within CP2 or CP3, 2050 to 1350 B.P. (Petersen and Sanger 1989). These vessels exhibit contemporary heterogeneity, and no clear temporal trends in attributes of construction or decoration over time.

Lithic Artifacts

Because site 53.36 was lightly occupied, it yielded a small inventory of flaked stone. Tools included 2 endscrapers, 4 hammerstones, 1 possible abrading stone, 1 large fire-cracked rock with batter marks on top, and 2 small reddened cobbles (possibly FCR), one of which shows battering. Sixty-four pieces of debitage, mostly felsite, were recovered. Most of the lithic artifacts were associated with hearth Features 2, 9 and 10. Only a few pieces of debitage were located near the features in The Big Pit, but they were concentrated ex-situ on the riverbank slope with the sherds of several vessel lots. No worked lithics were recovered from the Bridge Pier pit.

While over 300 kg of fire-cracked rock were recovered from the features in the Big Pit, only one showed signs of intentional modification. This artifact is a large river cobble (4.1 kg) from the basal portions of Feature 7, which had been battered on the upper surface. It served presumably as an anvil stone.

Two artifacts were recovered in the redeposited soils of the riverbank at the Big Pit. A single trianguloid waterworn granitic cobble weighing 240g (53.36.396) was recovered in Stratum 6. This artifact showed battermarks at one

Catal-ogue #	Tool type	Material	Length	Width	Thick-ness	Weight gr.	Location	Comment, description
Feature2 Area								
343	Endsraper	yellow jasper	2.9	2.7	0.75	7.9	N106.23 E18.23 Str. 5 31cm b.d.	cortex flake, cortex ca. 50%, steep 75° angle on distal end. U-shaped notch on left lateral edge. Distal end and lateral edges exhibit intensive step-flaking wear/retouch.
535	Hammerstone	quartzite	10.3	5.6	1.7	153	N106E18 NWq Stratum 5	Dense quartzite, batter marks visible on distal end. Left lateral edge feels worn used as abrader.
Feature 9 Area								
530	Endscraper	chalce-dony	2.1	1.8	0.47	1.5	N244E30 NWq Stratum 3/4	cortex flake of mottled yellow grey-veined chalcedony. Distal angle: 65°, Cortex: 50%
518	Abrader?	local slate	13.6	9.5	1.5	366	N244E30 SWq Str. 3 53 cm b.d.	Large trapezoidal frag. of local bedrock slate, flakes removed from either corner of distal edge.
521	Hammerstone	quartzite	9.7	5.3	3.4	250	N244E30 NEq Stratum 3/4 interface. 43 cm b.s.	Very dense waterworn metamorphic with batter marks on both edges and near one end.
349d	Flake	quartzite	1.4	1.1	0.2	0.3	N246E30 SWq Str. 3 55 cm b.s.	Only flake recovered in Feature 9 area.

Table 1. Lithic artifacts from site 53.36. Measurements in centimeters.

apex. About a meter north, a felsite core with cobble cortex weighing 45g was recovered in Stratum 6 (53.36.533). Debitage consisting of 7 felsite, 2 quartzite flakes and 1 quartz flake was located in the Big Pit area. Five of these specimens, felsite flakes, including the only example with cortex, were scattered along the bank slope in N22E14.

The two endscrapers of exotic rock materials are the only lithic artifacts which exhibit skill in manufacturing. Both were found near hearths and in association with potsherds and debitage and/or other lithics. The working edge of the Pennsylvania jasper scraper (clearly associated with Feature 2, circa 2000 B. P.) shows considerable wear and a rounded profile, indicating that the edge was exhausted. An endscraper made of jasper was associated with Feature 9, and may thus date to the early Woodland.

Limonite/Red Ochre

Five samples of red ochre were obtained at 53.36. Three were among the rocks and charcoal of Feature 8, and weighed over 15 grams. A ½ gram sample was recovered from the possibly redeposited FCR pile, Feature 4. Another ½ gram sample was located within the arc of postholes north of the Feature 2 hearth.

Faunal Remains

Only 7 calcined bone fragments were recovered in the Big Pit despite careful excavation and flotation of feature fill. Each weighed between 0.1 and 0.2 g All appeared to be mammal bone fragments, but no species identification could be made. One fragment was part of the Feature 10 complex. The remaining 6 were located in strata 2 and the 3/4 interface associated with Feature 9. Six pieces of calcined bone were recovered from the Bridge Pier Pit. Four unidentified fragments weighing <0.1g were found in Feature 13 fill. A long bone fragment from a medium to large mammal (weight 0.6 g) was found in the buried B2 horizon. A maxilla fragment from medium/large rodent, probably muskrat (and too small for porcupine or beaver) came from the A2/B2 interface at 45-50cm bd. The presence of calcined bone in Feature 13 fill and in the A2/B2 interface within a 3 meter radius suggests that all the bone belongs to the CP-2 occupation associated with Feature 13. No other calcined bone was found.

SUMMARY

No Archaic cultural material was found in the site, despite deep testing along the river levee. The radiocarbon date of about 7500 BP from 3.4 m depth in the Bridge Pier pit proves that at least parts of the site contain sediments of Middle and Late Archaic age. Thus, the absence of Archaic settlement on this small portion of the Kennebec River bank cannot be attributed to lack of proper preservation context.

Ceramic period occupations contained few lithic artifacts, although ceramics were moderately frequent. Hearth features ranged from small to large, with repeatedly used large hearth and fire-cracked rock complexes. We suggest that the large fire-cracked rock complexes might have been a sweat bath. Seemingly, this portion of the river bank was lightly occupied, and may thus have been attractive for activities, such as sweating and solitary contemplation, done away from groups of people.

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