BACKGROUND INFORMATION

In order to understand the methods utilized in the test excavations at 7NC-E-46, it is necessary to look at the general prehistory of northern Delaware. Previous research and the cultural context of the site will also be considered.

Regional Prehistory*

The prehistoric archaeological record of northern Delaware can be divided into four blocks of time: The Paleo-Indian Period (ca. 12,000 B.C. - 6500 B.C.), The Archaic Period (6500 B.C. - 3000 B.C.), the Woodland I Period (3000 B.C. - A.D. 1000), and the Woodland II Period (A.D. 1000 - A.D. 1650). A fifth time period, the Contact period, may also be considered and includes the time period from A.D. 1650 to A.D. 1750, the approximate date of the final Indian habitation of northern Delaware in anything resembling their pre-European Contact form. Each of these periods is described below.

Paleo-Indian Period (12,000 B.C. - 6500 B.C.) - The Paleo-Indian Period encompasses the time period of the final disappearance of Pleistocene glacial conditions from Eastern North America and the establishment of more modern Holocene environments. The distinctive feature of the Paleo-Indian Period is an adaptation to the cold, and alternately wet and dry, conditions at the end of the Pleistocene and the beginning of the Holocene. This adaptation was primarily based on hunting and gathering, with

*This summary of the regional prehistory is abstracted from Custer (1983a).

hunting providing a large portion of the diet. Hunted animals may have included now extinct megafauna and moose. A mosaic of deciduous, boreal, and grassland environments would have provided a large number of productive habitats for these game animals throughout Delaware, and watering areas would have been particularly good hunting settings.

Tool kits of the people who lived at this time are oriented toward the procurement and processing of hunted animal resources. A preference for high quality lithic materials has been noted in the stone tool kits and careful resharpening and maintenance of tools was common. A lifestyle of movement among the game attractive environments has been hypothesized with the social organizations being based upon single and multiple family bands. Throughout the 5500 year time span of the period, the basic settlement structure remained relatively constant with some modifications being seen as Holocene environments appeared at the end of the Paleo-Indian Period.

Numerous Paleo-Indian sites are noted for northern Delaware including hunting and processing sites near Hockessin and adjacent to the Wilmington Medical Center (Custer, Catts and Bachman 1982), possible quarry sites near Iron Hill, and isolated point finds.

Archaic Period (6500 B.C. - 3000 B.C.) - The Archaic Period is characterized by a series of adaptations to the newly emerged full Holocene environments. These environments differed from earlier ones and were dominated by mesic forests of oak and hemlock. A reduction in open grasslands in the face of warm and wet conditions caused the extinction of many of the grazing

animals hunted during Paleo-Indian times; however, browsing species such as deer flourished. Sea level rise is also associated with the beginning of the Holocene Period in northern Delaware. The major effect of the sea level rise was to raise the local water table, which helped to create a number of large swamps, such as Churchmans Marsh. Adaptations changed from the hunting focus of the Paleo-Indians to a more generalized foraging pattern in which plant food resources would have played a more important role. Large swamp settings such as Churchmans Marsh supported large base camps as indicated by the remains at the Clyde Farm Site. A number of small procurement sites in favorable hunting and gathering locales are also known in northern Delaware.

Tool kits were more generalized than earlier Paleo-Indian tool kits and showed a wider array of plant processing tools such as grinding stones, mortars, and pestles. A mobile lifestyle was probably common with a wide range of resources and settings utilized on a seasonal basis. A shifting band-level organization which saw the waxing and waning of group size in relation to resource availability is evident.

Woodland I Period (3000 B.C. - A.D. 1000) - The Woodland I Period can be correlated with a dramatic change in local climates and environments that seems to have been a part of events occurring throughout the Middle Atlantic region. A pronounced warm and dry period set in and lasted from ca. 3000 B.C. to 1000 B.C. Mesic forests were replaced by xeric forests of oak and hickory, and grasslands again became common. Some interior

streams dried up, but the overall effect of the environmental changes was an alteration of the environment, not a degradation. Continued sea level rise also made many areas of the Delaware River and Bay shore the sites of large brackish water marshes which were especially high in productivity. The major changes in environment and resource distributions caused a radical shift in adaptations for prehistoric groups. Important areas for settlements included the major river floodplains and estuarine swamp areas. Large base camps with fairly large numbers of people are evident in many areas of northern New Castle County such as the Delaware Park Site, the Clyde Farm Site, the Crane Hook Site, and the Naamans Creek Site. These sites supported many more people than previous base camp sites and may have been occupied on nearly a year-round basis. The overall tendency was toward a more sedentary lifestyle.

The overall tool kits show some minor variations as well as some major additions from previous Archaic tool kits. Plant processing tools became increasingly common and seem to indicate an intensive harvesting of wild plant foods that may have approached the efficiency of horticulture by the end of the Woodland I Period. Chipped stone tools changed little from the preceding Archaic Period; however, more broad-bladed knife-like processing tools became prevalent. Also, the presence of a number of non-local lithic raw materials indicates that trade and exchange systems with other groups were beginning to develop. The addition of stone, and then ceramic, containers is also seen. These items allowed more efficient cooking of certain types of food and may also have functioned as storage for surplus food

resources. Storage pits and house features during this period are also known from the Delaware Park Site and the Clyde Farm Site. Social organizations also seem to have undergone radical changes during this period. With the onset of relatively sedentary lifestyles and intensified food production, which might have produced occasional surpluses, incipient ranked societies may have begun to develop, as indicated by the presence of extensive trade and exchange and some caching of special artifact forms. By the end of the Woodland I Period a relatively sedentary lifestyle existed in northern Delaware.

Woodland II Period (A.D. 1000 - A.D. 1650) - In many areas of the Middle Atlantic, the Woodland II Period is marked by the appearance of agricultural food production systems; however, in northern Delaware there are no indications of such a shift. The settlements of the Woodland I Period, especially the large base camps, were also occupied during the Woodland II Period and very few changes in basic lifestyles and artifact assemblages are evident. Intensive plant utilization and hunting remained the major subsistence activities up to European Contact. Similarly, no major changes are seen in social organization for the Woodland II Period of northern Delaware.

Contact Period (A.D. 1650 - A.D. 1750) - The Contact Period is an enigmatic period of the archaeological record of northern Delaware which began with the arrival of the first substantial numbers of Europeans in Delaware. The time period is enigmatic because few Native American archaeological sites that clearly date to this period have yet been discovered in Delaware,

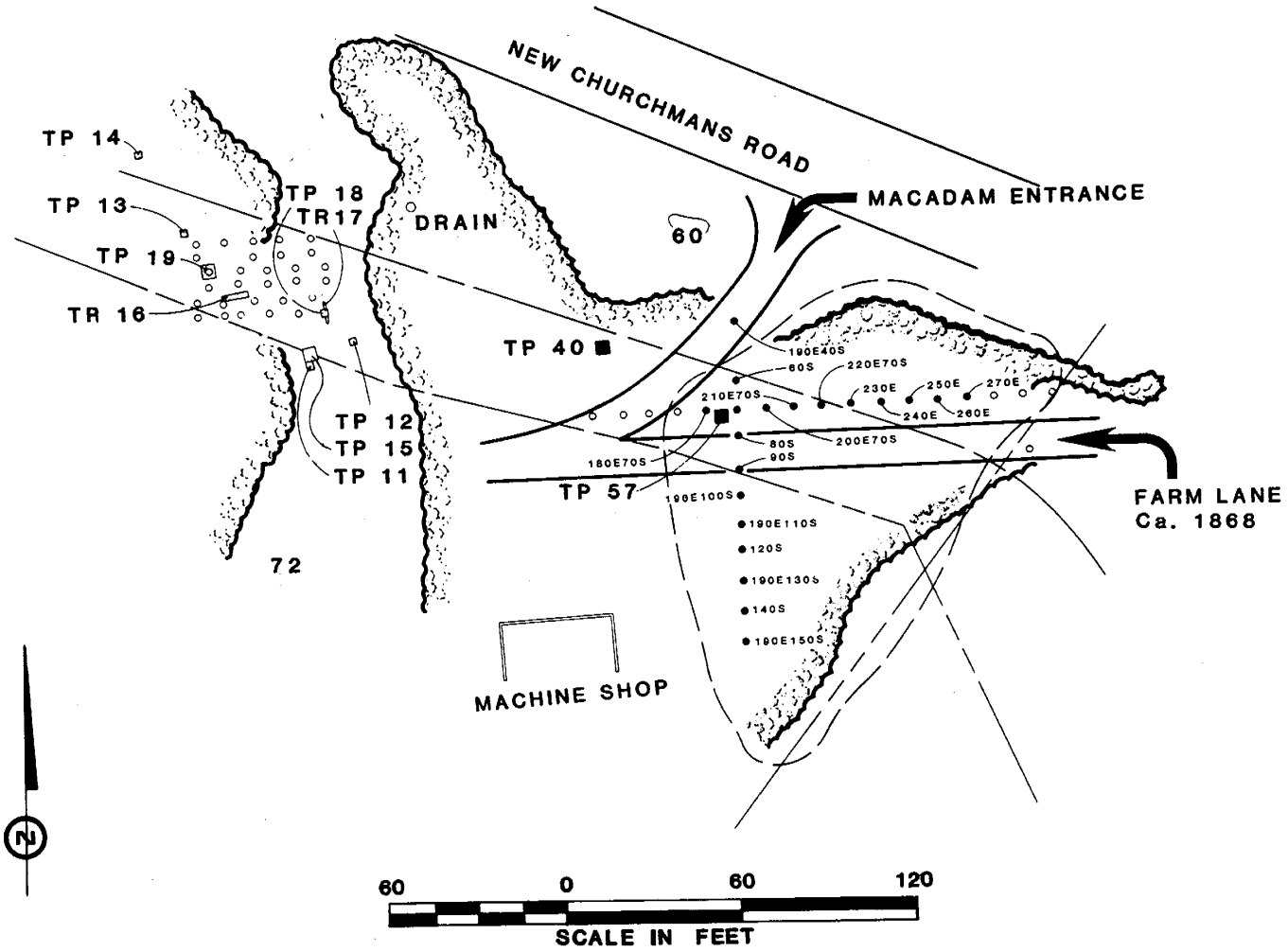
although numerous Contact Period sites are evident in southeastern Pennsylvania. It seems clear that Native American groups of Delaware did not paricipate in much interaction with Europeans and were under the virtual domination of the Susquehannock Indians of southern Lancaster County, Pennsylvania. The Contact Period ended with the virtual extinction of Native American lifeways in the Middle Atlantic area except for a few remnant groups.

Previous Research and Regional Setting of 7NC-E-46

The prehistoric archaeological resources that were studied in this project are part of a multi-component site that also included an extensive historic occupation (O'Connor et al 1983). During the testing program for the historic component, numerous prehistoric artifacts were recovered from shovel tests and 5' x 5' squares. Figure 2 shows the extent of prehistoric artifacts recovered during the Phase II testing program. These artifacts included waste flakes from the manufacture and resharpening of stone tools, rejected and discarded bifaces, projectile points, and ceramics (O'Connor et al 1983: Appendix 2). The ceramic sherds were quite small, but were tentatively identified as Wolfe Neck ware. Projectile points and late stage bifaces included stemmed points. Based on the ceramics and projectile point styles, the site was thought to date to the initial portion of the Woodland I Period; either from the Clyde Farm Complex or the Wolfe Neck Complex (ca. 3000 B.C. - 500 B.C.). The range of tools and general artifacts recovered from the test excavations was limited and the extent of the site was not large (see Figure

FIGURE 2

PHASE II TEST RESULTS AND SITE MAP



KEY:

□ & ■ – TEST PIT/TRENCH

○ & ● – SHOVEL/POST HOLE TEST

□ & ○ – HISTORIC ARTIFACTS

□ & ● – PREHISTORIC ARTIFACTS

— — — — – PREHISTORIC COMPONENT LIMIT

——— – ——— – PROPOSED R/W

——— – – ——— – CONSTRUCTION LIMIT

——— – – – ——— – NATIONAL REGISTER BOUNDRY

2). Based on these observations, the Hawthorn site was thought to represent either a small micro-band base camp or a limited activity procurement site.

The test excavations also showed that the prehistoric artifacts had good contextual integrity and came from a relatively intact landscape. Figure 3 shows profiles recorded from the major test units and notes the stratigraphic position of buried artifacts. Examination of the profile by pedological consultants indicated that the profile had been intact for at least 5000 - 6000 years. The buried horizons that contained artifacts included a disturbed plow zone and an intact B-horizon that had been buried by relatively recent (post-1820) slope wash and historic fill. In sum, the test excavations revealed the presence of a buried, intact micro-band base camp/procurement site dating to somewhere between 3000 B.C. and 500 B.C.

The Hawthorn site takes on special significance when it is considered in relation to other known sites from the surrounding area. Figure 4 shows the comparably dated sites from the surrounding region. The region depicted in Figure 4 is interesting in that it contains a high diversity of environmental zones. Adjacent to the Fall Line, the division between the Piedmont Uplands and the Coastal Plain, the region under consideration includes both relatively low relief landscapes of the Coastal Plain and the high relief Piedmont Uplands. Table 1 describes the environments found in each zone over the past 10,000 years. In addition to the environmental diversity noted in Table 1, the presence of the White Clay Creek and Christina

FIGURE 3

SITE STRATIGRAPHY FROM PHASE II TESTING

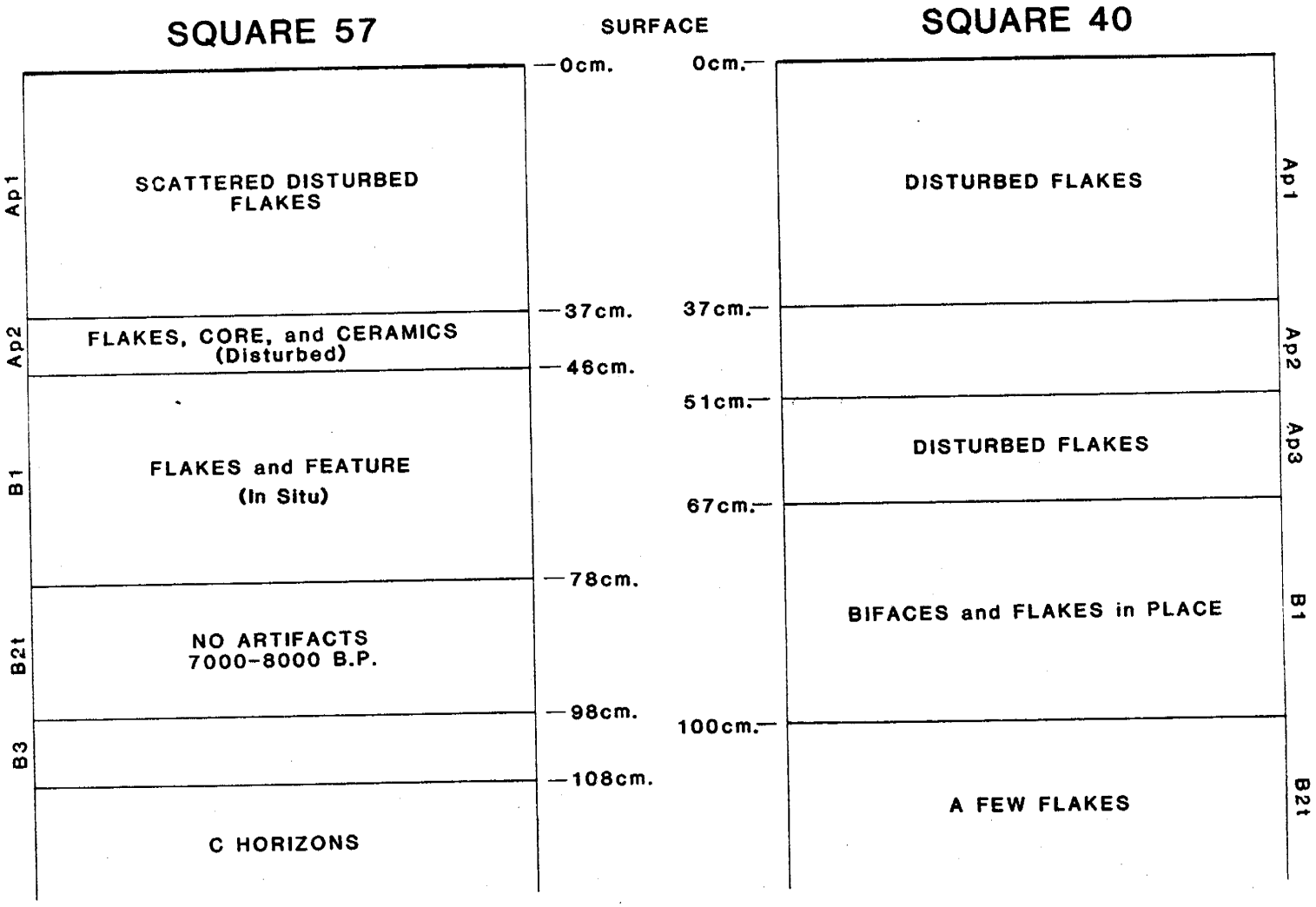
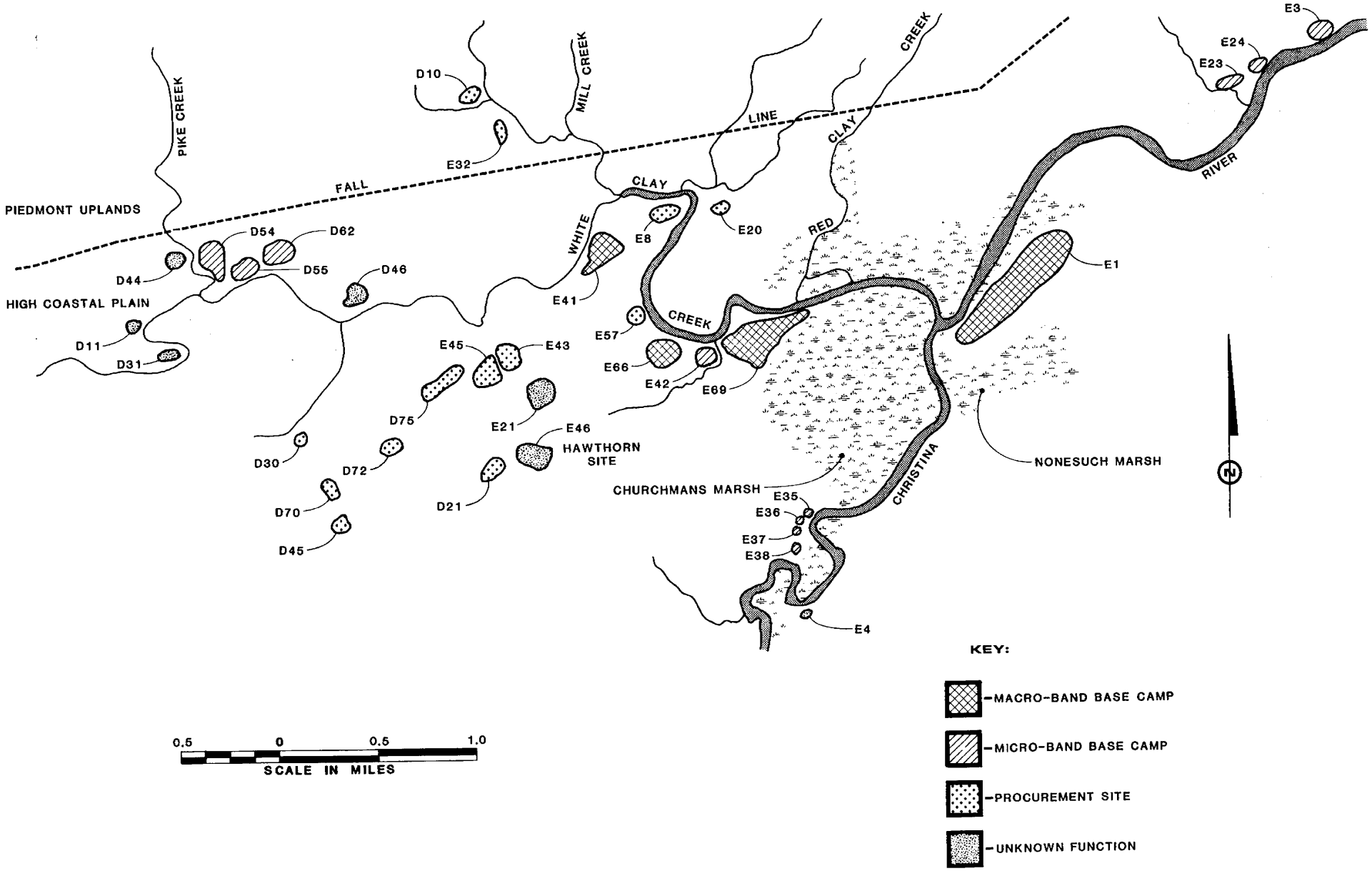


FIGURE 4

REGIONAL SITE LOCATIONS



River, which parallel the Fall Line, provides permanent high-order water sources. Even more important is the presence of Churchmans Marsh. Initially a freshwater swamp which began to develop approximately 9000 years ago, the marsh became brackish, and a highly productive environmental zone, at least 5000 years ago (Custer 1982a). The juxtaposition of the Fall Line ecotone, the two high order drainages, and the tidal marsh zone make this region one of the most productive in all of northern Delaware for hunting and gathering populations. Finally, it should be noted that the region contains extensive Pleistocene cobble deposits

Table 1

Summary of Regional Paleoenvironments

Environmental Episode[a]	Piedmont Uplands[b]	Coastal Plain[c]
Late Glacial (pre-8000 BC)	boreal forest, poorly drained bogs and swamps	mosaic of grass-lands, deciduous forest, and boreal forest
Pre-Boreal/Boreal (8000 B.C. - 6500 B.C.)	boreal forest with some xeric grasslands	boreal forest with xeric grasslands
Atlantic (6500 B.C. - 3100 B.C.)	mesic oak-hemlock forest	mesic oak-hemlock forest with extensive swamps
Sub-Boreal (3100 B.C. - 800 B.C.)	xeric oak-pine forest	xeric oak-pine forest with some grasslands and extensive marsh
Sub-Atlantic (800 B.C. - A.D. 1600)	oak-chestnut forest	oak-chestnut forest and extensive marsh

[a]from Custer 1983a: Chapter 1
[b]from Custer and Wallace 1982
[c]from Custer 1982a

(Jordan 1964). These cobble deposits contain abundant lithic materials of sufficiently high quality for tool manufacture (Custer and Galasso 1980) and their presence adds to the attractiveness of the area for prehistoric hunters and gatherers.

During the period postdating 5000 B.C., the region depicted in Figure 4 was the focus of relatively intensive occupation. Three of the sites noted in Figure 4 (Clyde Farm - 7NC-E-6, Delaware Park - 7NC-E-41, and 7NC-E-1) would be classified as macro-band base camps, which are habitation sites for relatively large populations composed of multiple social units (Custer 1982a; Thomas 1981). These sites were probably occupied by relatively sedentary groups as evidenced by finds of remains of house structures and storage/refuse pits. The major, and most sedentary occupations occurred during Woodland I times, between 3000 B.C. and 1000 A.D.; however, less intensive occupation continued throughout the Woodland II Period up to European Contact.

A number of micro-band base camps, habitation sites of smaller social units, are also present in the local region. These sites are characterized by a smaller size than macro-band base camps, but they still exhibit a wide range of tool types. Of the micro-band base camps shown in Figure 4, several were occupied during Woodland I times including 7NC-E-3, 7NC-E-23, and 7NC-E-24 (Delaware Section of Archaeology 1975), while others contain both Woodland I and Woodland II components, such as 7NC-E-42 (Custer 1982a), 7NC-E-35, 7NC-E-36, 7NC-E-37, and 7NC-E-38. A final set of micro-band base camps (7NC-D-54, 7NC-D-55, 7NC-D-62) is associated with extensive cobble deposits and was occupied

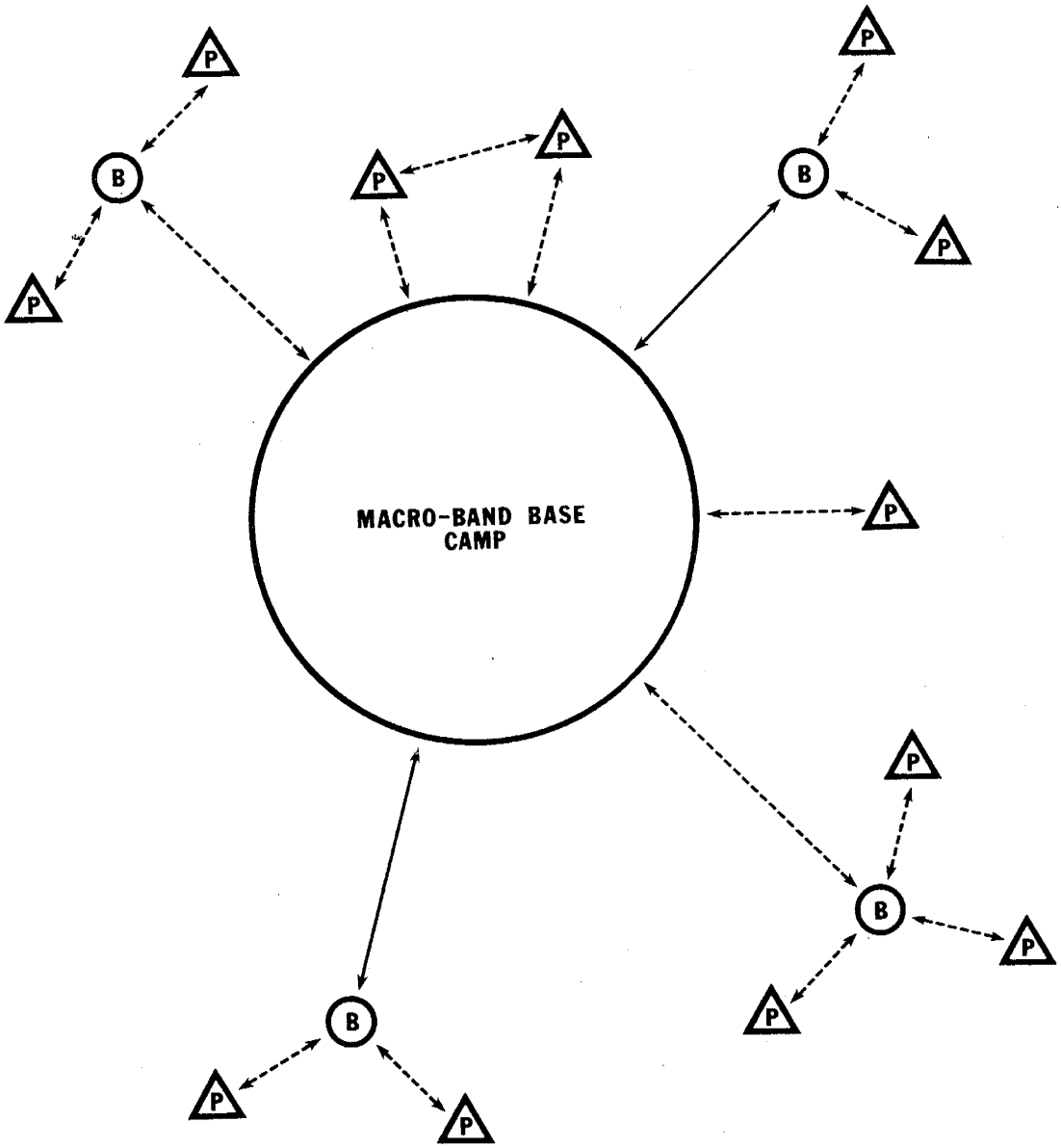
primarily through Woodland I times (Custer et al 1981). In general, the micro-band base camps tend to be located in environmental settings that are less productive than those of macro-band base camps. Micro-band base camps are located on lower order drainages, away from major stream confluences, or adjacent to some special resource setting. On the other hand, the largest macro-band base camps are located at the confluences of the highest order drainages or adjacent to the highly productive marsh zones along the major drainages.

Procurement sites, which are ephemerally utilized locations where resources were hunted or gathered, can also be identified in the region under discussion (Figure 4). Most of these sites are small surface scatters and some have been studied as parts of other DelDOT projects (Custer et al 1982; Bachman and Custer 1983; Thomas 1980). In general, these sites contain a limited range of tool types, they do not often contain many artifacts, and are located adjacent to poorly drained swampy areas that are good hunting locales.

It is generally thought that these sites were utilized by different segments of the same, or at least related social groups during various seasons of the year. Figure 5 shows the projected group movements and social relationships among the various site types within a single settlement system. During certain seasons of the year, large social units would congregate at the richest environmental settings to occupy macro-band base camps. From the macro-band base camps, some segments of the social units may have made forays to rich hunting and gathering locales where resources

FIGURE 5

WOODLAND 1 SETTLEMENT MODEL



KEY:

B – MICRO-BAND BASE CAMP

P – PROCUREMENT SITE

⟷ – GROUP RELOCATION

⇠⇢ – PERIODIC FORAY

were procured and processed. These locations would represent the procurement sites of the archaeological records. As resources became depleted in the area surrounding the macro-band base camps, due to either over-exploitation or seasonal changes in availability, groups may have broken up into smaller social units and moved to other locales to live in micro-band base camps. As resources were naturally replenished through seasonal changes, groups would then return to the macro-band base camp. This kind of adaptation to local environmental changes characterized most of the prehistoric societies in Delaware. However, in the area depicted in Figure 4, the macro-band base camps tended to be larger than those of other areas and they tended to be occupied for greater portions of the year. Apparently storage and the rich natural setting of the Churchmans Marsh area allowed for a greater degree of sedentism (Custer 1982a: 32-33).

General Research Design

The major research question for the present project was to determine the role that the Hawthorn site would have played in this settlement system. Phase II research suggested that the site was a micro-band base camp; however, its role in the local settlement system was not clear. In the proposal for the Phase II research it was noted that it was not clear whether or not the large macro-band base camps of the area are seasonally revisited locations with related small-scale sporadically revisited micro-band base camps completing the settlement pattern. Fusion and fission of social units would accompany such a pattern and micro-band base camps would be expected to be miniature versions of the macro-band base camps. On the other hand, macro-band base camps

may represent sedentary occupations and the micro-band base camps may be special purpose camps that were visited for short periods of time for specialized resource procurement and processing activities. In this case, social organizations would be more stratified and less flexible. The micro-band base camps in this scenario might not contain all of the activities seen at a macro-band base camp or they may contain disproportionate numbers of special purpose tools. Thus, the main research goal of the excavations was to acquire sufficient data on artifact types and their distribution patterns, especially as they related to activity areas, to determine if the Hawthorn site contained a range of activities similar to those seen at the macro-band base camps. Table 2 lists the varied activity areas, artifacts, and features encountered at macro-band base camps and can be viewed as a checklist of attributes that should be present if the Hawthorn site is a micro-band base camp.

Specific Research Methods

In order to gather data that could be used to determine the functional classification of the Hawthorn site, it was necessary to open up a large number of contiguous excavation units. By exposing large areas, it was possible to examine the distribution of different tool categories, and thereby activities, through space at the site. Selection of the squares for excavation was based on the distribution of artifacts in test squares from the Phase II testing and earlier excavated squares from the data recovery program. Figure 6 shows a plot of the squares which

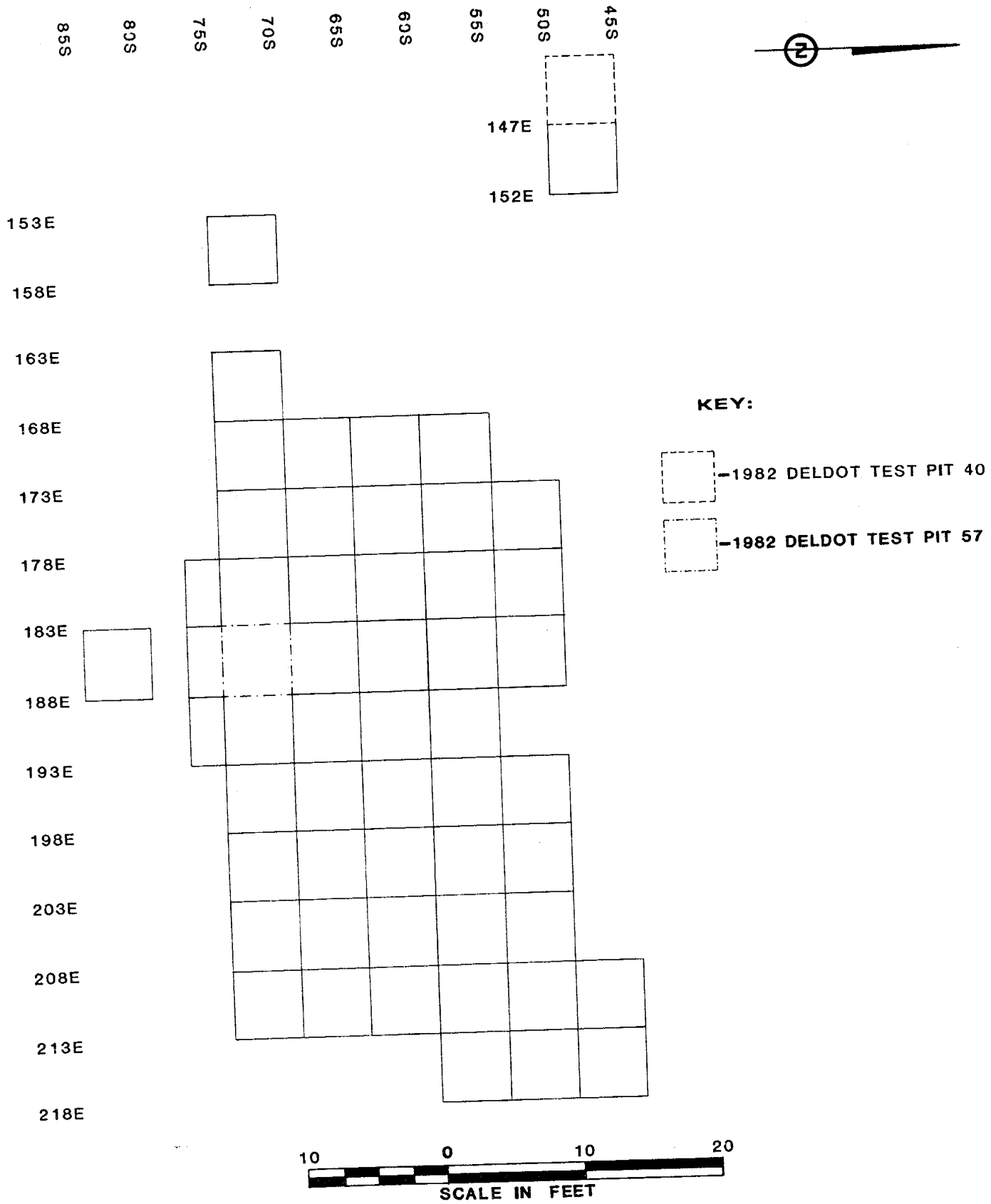
Table 2

Macro-Band Base Camp Attributes

Attribute	Present	Absent	Abundant	Scarce
living structures	x			
hearths	x			
storage features	x			
specialized tool production areas	x			
early stage bifaces				x
early stage debitage				x
late stage bifaces			x	
late stage debitage			x	
rejected tools				x
discarded tools				x
spatial segregation of tool production activities	x			
processing features and activity areas		x		
specialized ground stone tools				x
caches	x			
ceramics			x	

FIGURE 6

SITE MAP



were excavated in the data recovery program. The first squares excavated were adjacent to the test squares from the Phase II testing (Square 40 and Square 57). The square excavated adjacent to Test Square 40 contained only a very few artifacts and this observation coupled with the low number of artifacts recovered from Square 40 led us to abandon any further excavations in this area of the site. A series of squares in the 75S line were excavated adjacent to Test Square 57 in order to ascertain the changing stratigraphy of the site moving from the top of the knoll to the west down slope to the east. These squares recovered numerous artifacts and additional squares to the north of the trench were opened. Additional squares were opened to follow the artifact concentrations as they extended to the north. Excavations to the north were terminated when the number of artifacts recovered reached a low level. Analysis of stratigraphy showed that an older buried stream bank was present to the north of the site and this geomorphological feature provided a natural boundary for artifact distributions. Excavation units to the south of Square 57 did not recover many artifacts from the buried horizons and additional excavations were not undertaken in this area. The 218E line marked the eastern boundary of the site and was determined by the fact that an access road for adjacent construction project destroyed any buried sections of the site beyond this line to the east.

A 5' x 5' grid system was used at the site to control horizontal provenience and conformed with the grid used in the earlier phases of testing. In order to retain a finer degree of spatial control over artifact distributions, each excavation unit

was divided into 25 1' x 1' squares. These small squares provided the minimum provenience unit for all debitage and other non-diagnostic artifacts recovered. Each small square was troweled, or carefully shoveled, and any tools or diagnostic artifacts were mapped in place. All soil was screened through ¼" mesh. A standard flotation sample was taken from 1 subsquare of each level within every 5' square. A sample of cobbles was also retained for each square so that locally available raw materials could be compared to the raw materials reflected in the discarded and rejected tools found at the site.

Vertical provenience was retained by using 3" arbitrary levels within natural soil horizons. Because preliminary testing had shown that the upper layers of fill were disturbed and of relatively modern origin, these layers were removed without screening. The buried plow zone layer (see Figure 3) was removed as a single level and screened as a single unit within the 5' squares. Arbitrary 3" levels were excavated below the buried plowzone and each level was sloped with the natural slope of the bottom of the plow zone. All arbitrary levels within adjacent squares were sloped to conform with one another so that a single arbitrary level was contiguous across the site.

All artifacts were washed and marked using the accession system developed by the staff of the Island Field Museum. Lithic artifacts were sorted by raw materials and functional categories including projectile points/knives, bifaces, retouched flake tools, ground stone tools and debitage. Presence or absence of cortex was noted to study cobble utilization and bifaces were

sorted into discards and rejects, following the work of Callahan (1979), to study tool utilization patterns. Whenever possible, low-power magnification was utilized to study edge damage of tools to determine tool functions. Projectile points and ceramics were classified by standard culture historical types.

Flotation samples were processed using a water-powered flotation device with initial screening through window screen mesh for heavy fractions and silk bags for light fractions. All samples were then dried and run through nested sets of sieves. All samples were then sorted by hand and any seeds, charcoal, debitage, or other artifacts and ecofacts, were removed for further study and identification. Initial processing of the first sets of flotation samples revealed poor preservation of ecofacts and a low recovery rate for artifact classes such as debitage. Therefore, only a sample of the flotation samples were processed. The sample was chosen to provide coverage of the varied sub-areas of the site.

RESULTS AND INTERPRETATIONS

This section of the report will first detail the findings of the excavations at the Hawthorn site and then describe the interpretations of the findings. Presentation of the results will be organized into four categories: stratigraphy, excavated artifacts, features, and flotated artifacts and ecofacts. Interpretation of results will be organized into three topics: chronology, technologies, and activity areas.