

Bulletin of the Archaeological Society of Delaware

**A Summary Of Archaeological Excavations At 36CH3
White Clay Creek Valley, Chester County, Pennsylvania**

Elwood S. Wilkins, Jr. and Ronald A. Thomas



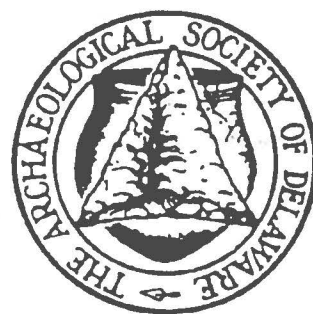
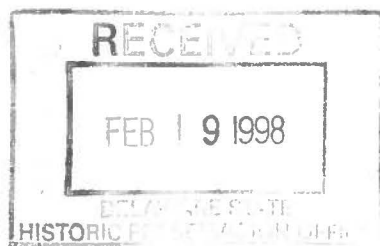
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Elwood S. Wilkins, Jr. and Ronald A. Thomas

During the late 1950's, archaeological excavations were undertaken at a relatively undisturbed area of 36CH3, a large aboriginal site, containing the documented location of "Indian Town", referred to as "Opasiskunk". The excavated area of 36CH3, located along the White Clay Creek in Chester County, Pennsylvania, had remained protected from agricultural disturbance due to its being isolated from adjoining fields by a mill race. Since early testing had revealed the presence of cultural-bearing strata in excess of 24 inches below the surface, all excavation proceeded by 3 inch arbitrary levels. In addition to thousands of artifacts ranging from the "Transitional" through the Late Woodland Period, excavation recorded a range of aboriginal features. The major occupation appears to have been as a Minguannan Complex camp. No evidence of "Contact Period" occupation was found within excavated contexts. The current, report, is designed to present an overview of the site and the archaeological data contained therein.

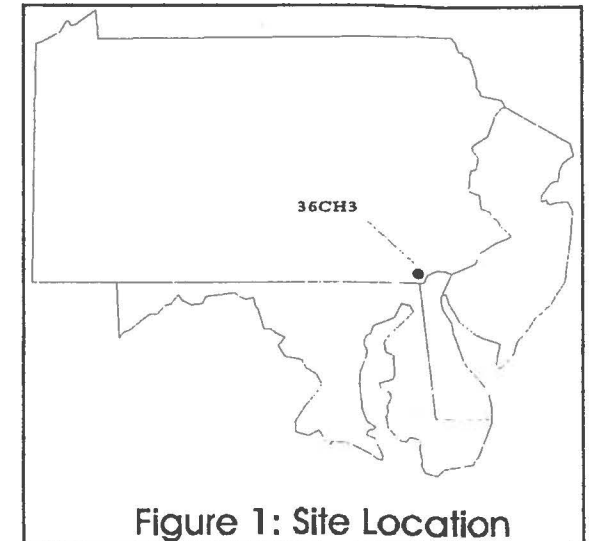


Figure 1: Site Location

History of the Investigations

Site 36CH3 (previously referred to as the Minguannan Site), is located in a Piedmont Flood Plain setting in London Britain Township, Chester County, at the southeastern corner of Pennsylvania (Figure 1). The site sits immediately on the banks of the White Clay Creek within a protected area surrounded by intensively cultivated fields. The senior author, Elwood S. Wilkins, began surface collecting Indian artifacts within the White Clay Creek valley around 1935. He, along with fellow collectors, among whom was Walter Ginn, a local auto mechanic, had discovered the site after a series of floods exposed and washed out artifacts within the plowed fields. Among the notable artifacts recovered at that time from Opasiskunk were triangular projectile points, aboriginal pottery, white clay pipe stems and gun flints. When it was learned that the integrity of the site might be threatened, Wilkins requested and received permission from the landowners (the Woodworth Family) to conduct systematic excavations. The site was subsequently visited by Dr. Frank Speck, Cultural Anthropologist from the University of Pennsylvania, together with a class of his students. A student of Frank Speck at the time, John Witthoft, later the Pennsylvania State Archaeologist, provided guidance to Wilkins throughout the entire span of the excavations. Analyses of selected portions of the excavated collection have been conducted by students of Dr. Jay F. Custer of the University of Delaware Center for Archaeological Research.

The archaeological excavations described herein were conducted primarily by the Wilkins family under the direction of Elwood S. Wilkins, Jr., an avocational archaeologist. As a member of the Archaeological Society of Delaware (ASD), Mr. Wilkins was occasionally assisted by fellow society members. The period of excavation lasted from October 9, 1955 to October 12, 1959 (Wilkins 1978) and was terminated only after portions of the densely occupied site had been

excavated and it was determined that the remaining portions were no longer under threat of destruction. The excavated portion of the site was wooded and separated from the adjacent agricultural fields by a mill tail race. The work focused on this small, relatively well-preserved portion (4,240 square feet) of a much larger site covering four to five acres and which had been greatly disturbed by "...the construction of the mill race, by agricultural activities, and by the periodic flooding of the White Clay Creek in historic times" (Wilkins 1974).

Project Location and Environment

The Opasiskunk site is situated on the west bank of the West Branch of White Clay Creek (Plates 1 & 2), south of its confluence with the Middle Branch and just above its confluence with the East Branch in southern Chester County, Pennsylvania (Figure 2). A few miles to the north, the East Branch is joined by Broad Creek, another major Piedmont stream draining a relatively large valley. Less than two miles to the south is the Pennsylvania-Delaware state line. The southeasterly-flowing White Clay creek drains the Piedmont uplands, subsequently entering the Coastal Plain where it meets the Christina River in Delaware. The site lies approximately 10 km north of the Fall Line, which separates the predominately erosional Piedmont Zone from the predominantly depositional Coastal Plain province (Spoljaric 1972:3). Streams are deeply incised into the High Coastal Plain and the topography is gently rolling (Custer 1983:25). The Piedmont Plateau is in a transitional area between the northeast-trending Appalachian highlands and the Atlantic Coastal Plain and also between broad latitudinal climate zones. Holocene pollen profiles nearest to the study area are from Tannersville Bog and Long Swamp in eastern Pennsylvania (Watts 1979), and Criders Pond in southern central Pennsylvania (Watts 1979).

The site sits on a well-drained flood plain composed of outwash from Conagree loam, Chester and Manor soils (Figure 3) which developed in higher elevations on gneiss and schist rock. The elevation of 36CH3 is at 150 feet above sea level while elevations atop nearby ridges exceed 400 feet. The site is at the upstream edge of an unusually broad flood plain. It sits approximately six to eight feet above the bed of the White Clay Creek and has witnessed numerous flooding episodes during modern times.

Some archaeological studies suggest that the climate of the Delmarva Peninsula and New Jersey coastal plain after 5,000 years B.P. was quite variable (Curry and Custer 1982; Custer 1989:176-184; Custer and Watson 1987; Stewart 1983). Woodland period archaeological sites have been reported buried below wind-blown sediments, which implies that the climate was relatively dry and forest cover in the region was relatively sparse at times. Fresh water was apparently a critical resource, so prehistoric people frequently camped along streams and near seasonal ponds (Custer and Bachman 1986).

Prehistoric Overview

The prehistoric archaeological record of southeastern Pennsylvania can be divided into three major periods (Custer 1989):

Paleo-Indian Period (ca. 14,000 - 8,500 years B.P.)

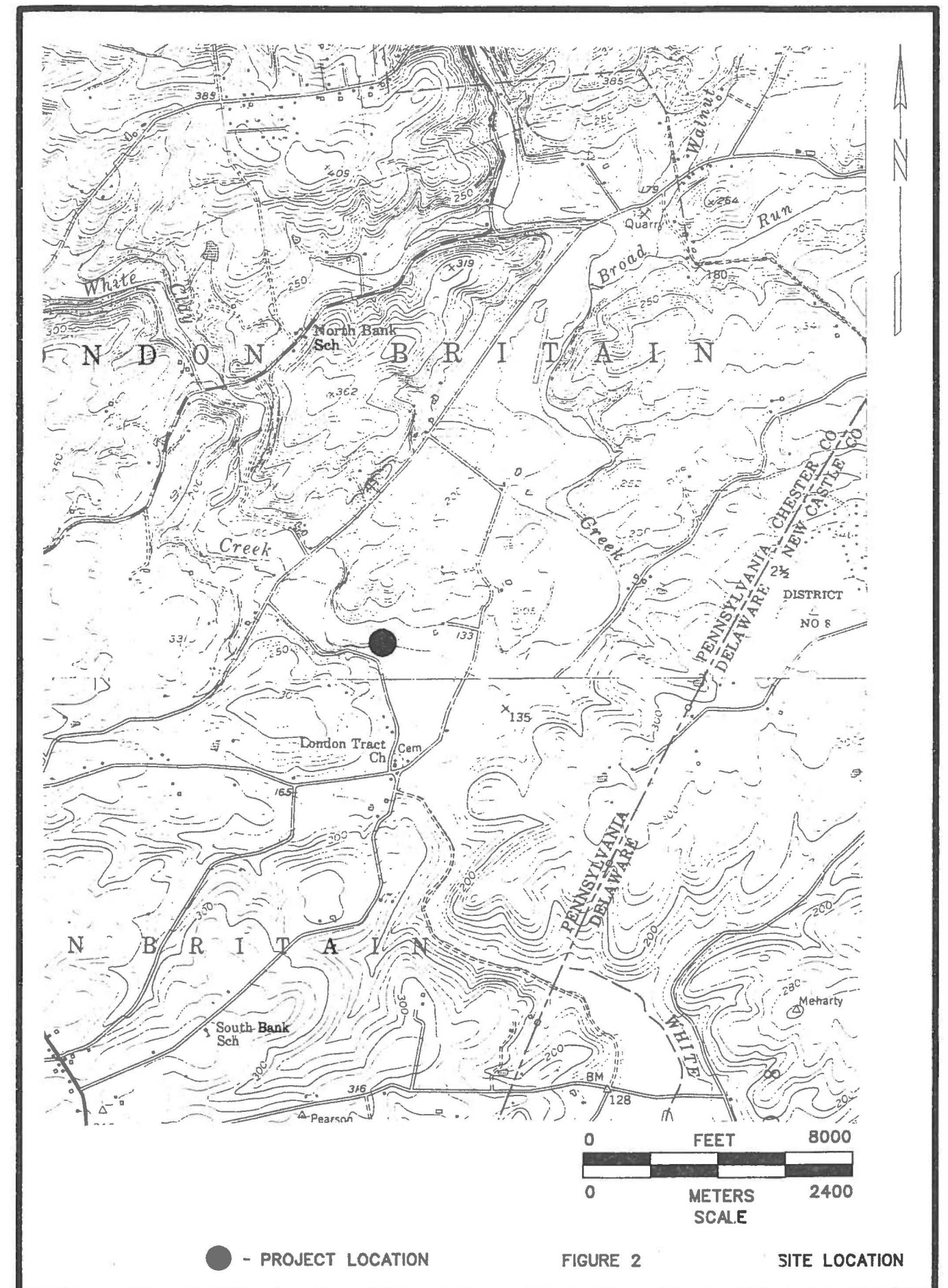


FIGURE 2 SITE LOCATION

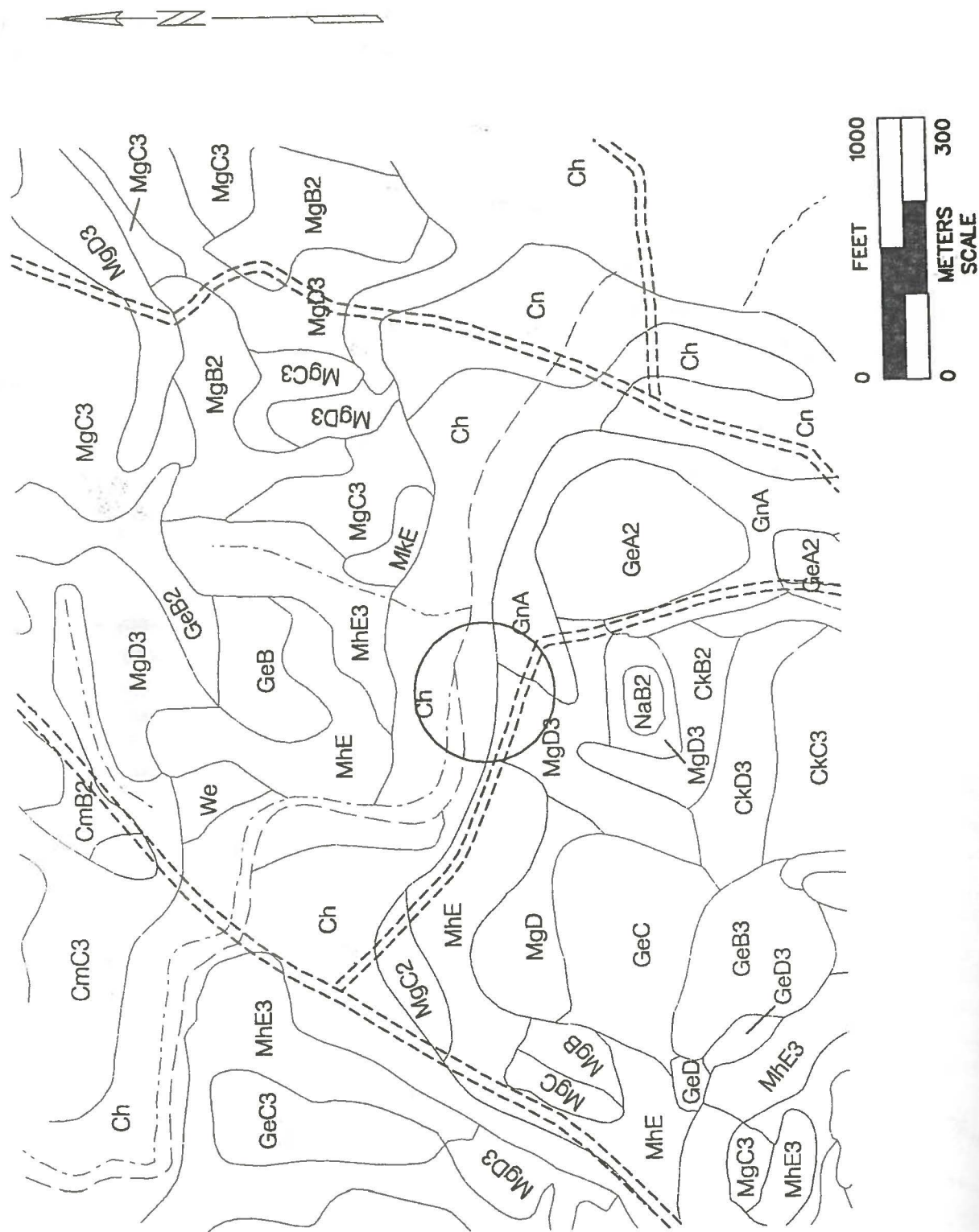


FIGURE 3 : SOILS OF WHITE CLAY CREEK VALLEY

Native Americans first inhabited the Chester County area sometime after 14,000 years B.P., based on dates from Paleo-Indian period sites in the eastern United States (Custer 1989:81-86) beginning during the recession of the last glaciation. Paleo-Indian groups probably lived mainly by hunting animals that roamed the shifting woodland and grassland mosaic of vegetation on the landscape at the time. Game animals may have included musk ox, caribou, moose, and the extinct mastodon; however, modern game animals, such as white-tailed deer, were also present in the region. Paleo-Indians probably led a wandering existence in small family groups (Custer 1989:95-98). The Paleo-Indian stone tool kit was designed primarily for hunting and processing animals. Careful resharpening and maintenance of tools was common because of a preference for high quality, fine-grained, and often colorful, lithic material. Distinctive fluted points, characteristic of the early Paleo-Indian period, show the preference for high quality stone (Custer 1984b).

Fresh water became a more critical resource for both game animals and the hunters who stalked them as solar warmth increased. Late Paleo-Indian period sites dating to after 10,000 years B.P. are relatively rare in Delaware and in the Mid-Atlantic region in general. The known sites are often small and ephemeral, indicating transitory occupations and a low population densities (Custer 1989:120-121).

The types of Paleo-Indian sites known to the south of 36CH3 are quarry reduction camps, base camp maintenance stations, and hunting sites. The riverine settings of the White Clay Creek and its major tributaries would be the expected locations for base camps (Custer 1989), while poorly-drained interior swamps and bogs would be the expected locations for maintenance and hunting sites. Bedrock outcrops in the nearby Broad Run valley and to the south around Iron Hill in Delaware and Red and Gray Hill in Cecil County, Maryland provided the high quality jasper and chalcedony raw materials that were preferred for tool manufacture (Custer and Galasso 1980).

Archaic Period (8,500 - 3,000 years B.P.)

The beginning of the Archaic period in Delaware is marked by major changes in human adaptations (Custer 1989:122). By 9,000 years B.P., solar radiation had reached a maximum, and northern species of plants and animals had migrated northward out of the Mid-Atlantic region. Temperate plant and animal species were more common, and climate patterns had become more like those of the present. Few Archaic sites have been excavated in the area, so what is known is largely extrapolated from other nearby areas (Custer 1989:127-129). The major change in adaptations is reflected in a wider variety of tools in the Archaic tool kit, suggesting that Archaic period peoples exploited a wider array of plants and animals than did their Paleo-Indian predecessors.

During the Archaic period, human adaptations became more generalized, and foraging for plant food resources was an important activity. Archaic period tool kits were less specialized than the earlier Paleo-Indian tool kits and included a wide variety of plant processing tools, such as grinding stones, mortars, and pestles. A seasonal, mobile lifestyle exploiting a wide range of resources and settings was probably common. The archaeology suggests that band size probably changed as seasonal resources became available throughout the year. A study of Archaic site distributions (Custer 1986a) found that despite the changes in adaptations between the Paleo-Indian and Archaic time periods, the types of places chosen for occupation were similar, but Archaic sites occur in a wider variety of settings.

Archaic period sites appear to have been occupied for longer periods of time, perhaps on a seasonal basis by flexible kinship-based groups (Custer 1989:129). Exchange of stone tools tied together people across large areas of the eastern United States, providing a basis for the more elaborate exchange networks established at the end of the Archaic Period (Custer 1989:140).

Early Woodland Period (3,000 - 1000 years B.P.)

Archaeologists working in the eastern United States (Ritchie 1965, Witthoft 1953) have recognized a Transitional Period which witnessed major subsistence and settlement patterns changes as well as the acceptance of various technological advances which greatly modified the Archaic pattern of life and led to a series of cultural phases referred to as the Woodland Pattern.

The Early Woodland Period has been correlated with dramatic changes in local climates and environments that occurred throughout the Mid-Atlantic region (Custer 1984a, 1989). Although Custer considers warmer and dryer conditions as one cause for the cultural changes seen, in actuality, the climate was becoming cooler and moister (Joyce 1988; Stevens 1991). Continued sea-level rise brought extensive brackish water marshes with high biological productivity within reach of the present coastline. Thus, Early Woodland period settlement patterns reflect a much more extensive use of the landscape and higher population densities. The overall tendency during the Woodland I period was toward a more sedentary lifestyle with increasing population densities. Many sizeable base camps occupied by large numbers of people occur in many areas throughout the general area. The sites were occupied by many more people than earlier base camp sites and may have been occupied almost year-round. From large base camps, smaller task or kin groups exploited the surrounding countryside, establishing smaller base camps and procuring and processing food at small campsites. Woodland period sites are, thus, very common in the region.

Early and Middle Woodland tool kits show some minor variations, as well as some major additions, compared with Archaic tool kits. Plant processing tools became increasingly more common, indicating intensive wild plant harvesting for food. Chipped stone tools changed little from the preceding Archaic period; however, broad-bladed, knife-like processing tools increased in number and woodworking tools became more common. Also, the presence of non-local lithic raw materials indicates that regional trade and exchange systems were beginning to develop (Custer 1989). Caching (storage) of special artifact forms may also signify the development of class differences in the societies. Soap stone, and then ceramic, containers were also added to the material culture. These durable containers allowed more efficient cooking of some types of food, and also made storage of food surpluses possible.

Late Woodland Period (1,000 - 350 years B.P.)

In some areas of the Mid-Atlantic region, agriculture and large-scale village life mark the Late Woodland Period (Custer 1986). In southeastern Pennsylvania, northeastern Maryland and northern Delaware, what are referred to as Woodland II period subsistence patterns are similar to those of the earlier Woodland manifestations, but small amounts of cultivated plants were added to the diet. In general, settlement patterns changed little (Custer and DeSantis 1986:54-58).

Changes in ceramic technologies and projectile point styles make Late Woodland Period archaeological sites distinctive. Triangular projectile points appeared in stone tool kits immediately before the beginning of the Late Woodland Period, and by 1,000 years B.P., triangular projectile points are the predominant styles found. Late Woodland ceramics fall within the Minguannan series (Custer 1984a), a ceramic type defined on the basis of material from 36CH3. The distribution of Minguannan pottery is not well-established, but it is concentrated in southeastern Pennsylvania, northeastern Maryland, and northern Delaware. The appearance of more complex decorations, including incised lines and cord-wrapped stick impressions, distinguish Late Woodland period ceramic styles from earlier Woodland Period ceramics.

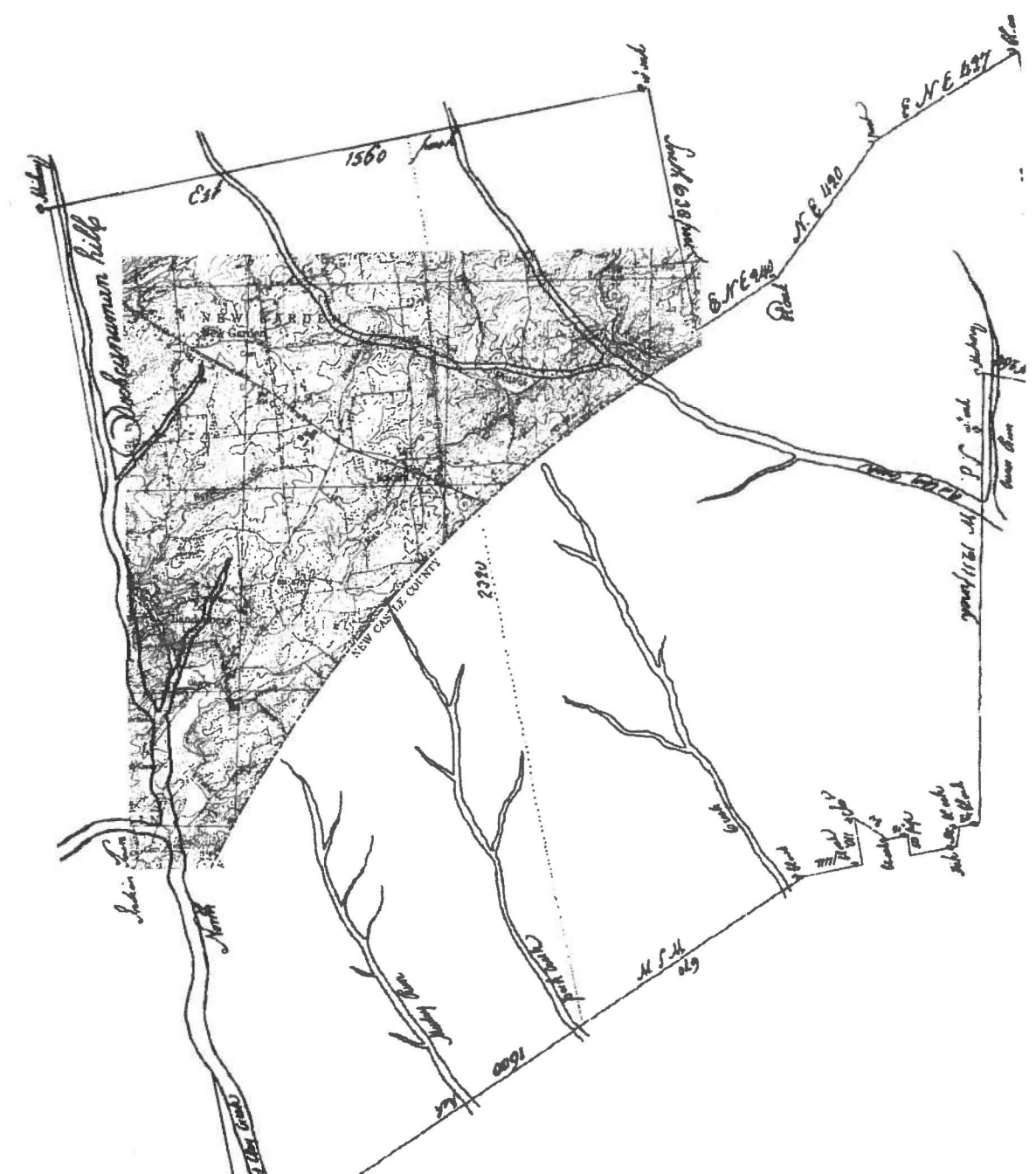
Contact Period (A.D. 1650 - A.D. 1750)

The archaeological record of the Contact period, which began with the first substantial European settlements along the Atlantic Coast, is enigmatic. Only a few possible Contact period, Native American archaeological sites have been identified in the general area although the Middle Atlantic region was heavily populated. Local groups were dominated politically by the Susquehannock Indians of southern Lancaster County, Pennsylvania (Kent 1984), who monopolized the fur trade. Numerous Contact period sites are known in southeastern Pennsylvania and on the Maryland Eastern Shore (Davidson 1982; McNamara 1985; Davidson, Hughes, and McNamara 1985). Despite documentary accounts that suggest otherwise (e.g. Lindstrom 1925; Dahlgren and Norman 1988), Native American groups in Delaware may not have interacted much with the European colonists. However, a recent re-examination of artifact collections from Delaware (Fithian 1992) has found evidence of Contact period interaction between Native Americans and Europeans. The lower White Clay Creek drainage would be a likely place for aboriginal contact with the Europeans settled at the mouth of the Christiana River in the mid-seventeenth century, as is indicated by the finds at 7NC-E-42 (Custer 1984). Archaeological evidence of these sites is not extensive, making each recognized site extremely important to our understanding of this important cultural period (Davidson 1982; McNamara 1985; Davidson, Hughes, and McNamara 1985).

Evidence exists that suggests that 36CH3 may have been the location of a Contact Period aboriginal village, the Opasiskunk Site. The area entered the historical literature through an Indian land sale by the Lenape Chief Kekerappan to William Penn. The following is taken from a deed dated to 1683.

I, Kekerappan of Opasiskunk, for me and my heirs and assignees, do hereby give and grant unto William Penn, Proprietary & Governor of the Province of Pennsylvania, and his heirs and Assignees, that half of all my land betwixst Susquehanna and Delaware, which lyeth on the Susquehanna side: and I do hereby further promise to sell unto him at the next spring, at my return from hunting, the other half of my land at an reasonable rates as other Indians have done also to sell in this River: In witness and word of I have put unto ...my hand and seal at Philadelphia - 10th of 1683 - Kekorappan, his mark. - in witness the.... Jaffe Cock, (and Esopkaick his mark and Phillip...iniss...

A land plat which accompanied this sale, (Figure 4), which took place on October 10, 1683, gives the location of an "Indian Town". By overlying the land plat on a modern topographic map of a portion of Chester County (Figure 5), it is strongly suggested that "Opasiskunk" was located at 36CH3. Subsequent error, by an early writer, Albert Cook Myers, mis-identified the location of the



Leni Lenape village of Minguannan as being near a Quaker Meeting house close to the border of Pennsylvania, Maryland and Delaware and this term was picked up by various scholars. In reality, the Minguannan village site was located in the upper Delaware River valley near the border of Pennsylvania, New Jersey and New York.

Field Investigation Procedures

Excavation methodology used at the Opasiskunk Site was, for its time, meticulous and exact. The initial task was the establishment of a grid system used to provenience excavated data (Figure 6). This was completed by October 2, 1955 with the help of George Jackson and Elmer A. Jones, both professional surveyors. A 150 foot north-south base line was established at North 78 Degrees West running parallel to the White Clay Creek at a distance of approximately 50 feet. A mill race ran to the west, 30 feet from the center line. A datum point was established at the edge of the cultivated field to the southwest of the wooded and preserved portion of the site and all measurements were taken from that point. A secondary datum consisting of a 6 foot stainless steel rod was subsequently placed near the roadway (ESW assisted by Andy Olivier). A large nail set at the base of a Beech tree at the northern edge of the site (150 feet north and 20 feet east of the datum point), served as a bench mark from which all stake heights were measured using a line level. Depths were read by line level from the top of the designated stake.

The initial step was to clear a path to the planned excavation area using machinery. A small bulldozer was used to remove the underbrush, stopping short of the occupation area, which was cleared by hand. In order to determine the depth of cultural deposits and to guide the future excavations, the investigators troweled and examined existing soil strata profiles along the eroded banks of the White Clay Creek. Excavation began along the east-west base line and proceeded generally north along the banks of the White Clay Creek. Only four units were excavated to the west of the north-south base line. Excavation proceeded in ten foot units (Plates 3 & 4), each designated by the number north of and either left or right of the datum point. Thus, the ten foot unit with its southwest corner at the datum point was designated 1R0, while that with its southeast corner at the datum point was designated 1L1 (Figure 5). A total of 83 ten foot squares were assigned provenience designations in anticipation of eventual excavation. Of these, 49 were within the site and were excavated.

After removing the leaf mold the excavation proceeded down through the site in three inch levels with the final level dug as a single unit six inches into subsoil. As many as 8 levels were excavated within certain units (Table 1). When recognized, soil features were assigned designations and excavated separately from the arbitrary soil levels. Feature locations were recorded and photographs were taken throughout the period of excavation. As agreed to with the landowner, a limited number of excavation units were opened at a time and then backfilled after completion.

Table 1: Units Excavated to Maximum Level

Designation of Levels Reached	PZ to L- 2	L- 3	L- 4	L- 5	L- 6	L- 7	L- 8
Number of Units	1	2	4	7	15	15	5

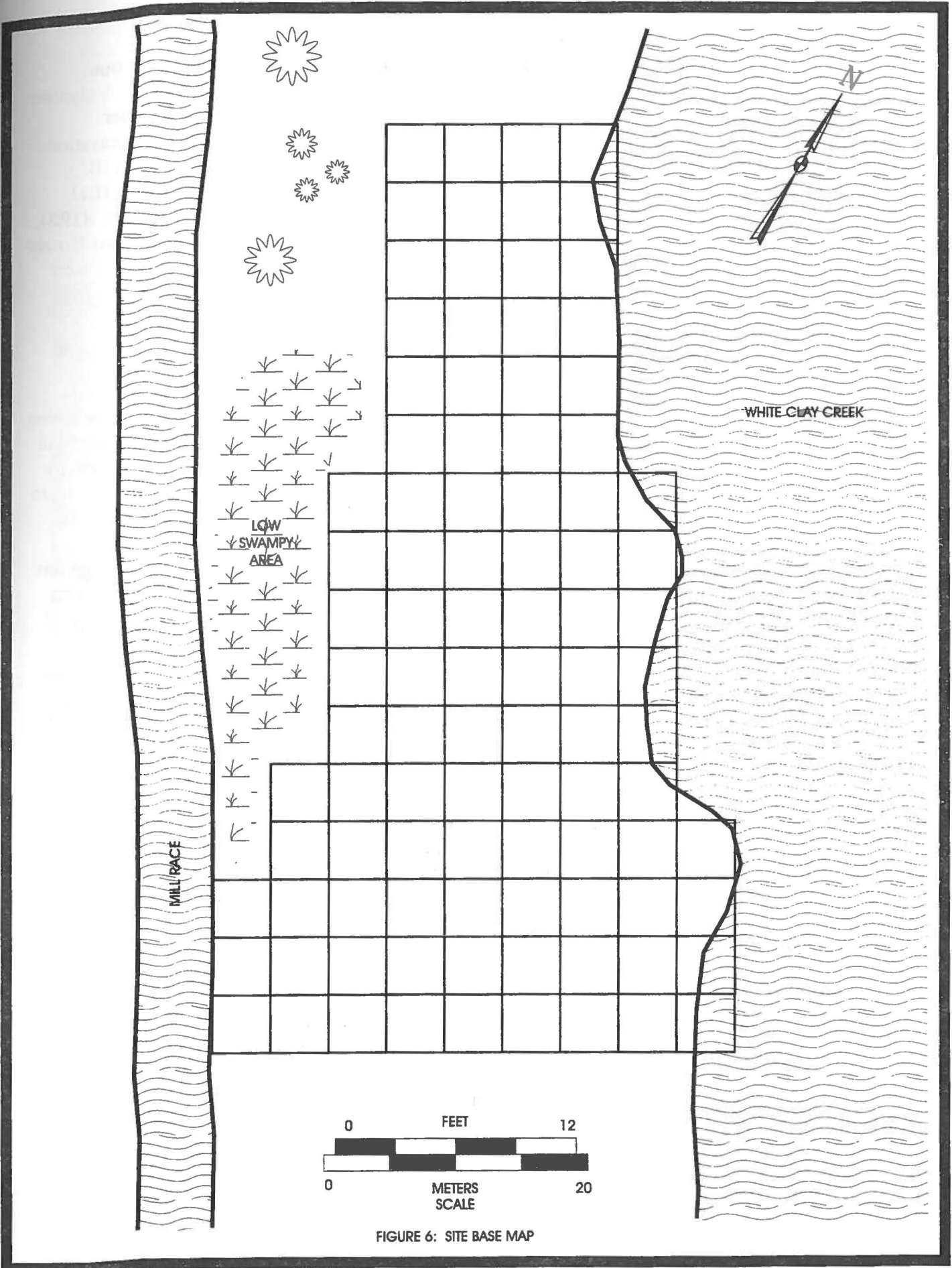


FIGURE 6: SITE BASE MAP

PLATES

Due to the desire to keep the area backfilled, as arranged with the landowner, only one excavation area was opened at a time and then backfilled immediately upon its completion. Volunteer crew members were assigned selected units which they completed before moving on to other assignments (**Plate 5**). Among the volunteers (with units excavated) participating in the excavations were Marie Wilkins, Clarence Wilkins (1R1 plus others), Allen G. Schiek, Bradley Millard (1R1), William Akerman (1L3), James and Marianne Akerman (1L3), Duke and Emily Alexander (1L1), Harry and Dean Simpson, George Jackson (1R3), Annis Jackson (1R3), George Jackson, Jr. (1R3), George Reynolds, Wilmer Aist, John Kraus (3L3), Robert Kraus, Phillip Kraus (3L3), Robert Hoaris (3L3), Richard Quick (1R1), Frank Mishenko, Andy Olivier and Sophia Pyle. All other units were dug by the Wilkins family.

Soil Levels & Strata

Although the site contained discernable natural soil strata, excavation at 36CH3 was conducted with hand tools in arbitrary 3" levels, measuring from the top of the ground and continuing to depths in excess of 22 inches in places. This procedure was used as a precaution, since upper soil levels were uneven, due to tree falls, rodent activity and modern disturbances due to human activity. The top most levels were identified by their excavators as ranging from humus soils, to plow zone, to "disturbed". Large amounts of river cobbles were found throughout the upper deposits, with lesser amounts apparent in the lower strata. Artifacts were frequently encountered throughout the top strata, but soil features were only occasionally recognized (6 of 51 in Levels 1 and 2). Although this may have been due to recent disturbances at the shallower depths, it is possible that the uppermost soils consisted of recent alluvium, transported into the site through recent flood action, exacerbated because of the clearing of land surfaces in the West Branch due to agricultural activity.

Excavations continued into subsoil strata and were carried downward as long as cultural evidence was being encountered. The deeper cultural levels were found throughout the site and were usually identified as "yellow sand". Five of the units had as many as eight levels. Fourteen were recorded as having seven levels and another fourteen as having six levels.

Typical excavation unit profiles are shown in **Plates 6, 7 & 8**. Composite north-south and east-west profiles through the site (**Figure 7**) show the depth of the upper levels and of the subsoil strata that were found to contain archaeological material. As can be seen, the excavators appear to have encountered undulating strata with pockets of deeper material at various locations.

Cultural Features

Features were identified throughout the excavated area from the top most to the lowest of excavated levels. Aboriginal cultural feature functions were identified by field personnel, primarily on the basis of their distinct soil characteristics, although some were inferred on the basis of the contiguous positioning of artifacts within a limited area. In addition to the identification of soil features, investigators recorded heavy concentrations of fire-cracked rock, probably relating to dispersed hearths used for food preparation activities such as pot boiling and fish processing.



Senior Author - Elwood S. Wilkins, Jr.



Plate 1 - 36CH3 from Across White Clay Creek



Plate 2 - Site Area Fronting on White Clay Creek



Plate 3 - Unit Excavation in Progress



Plate 5 - Volunteer Excavation Team

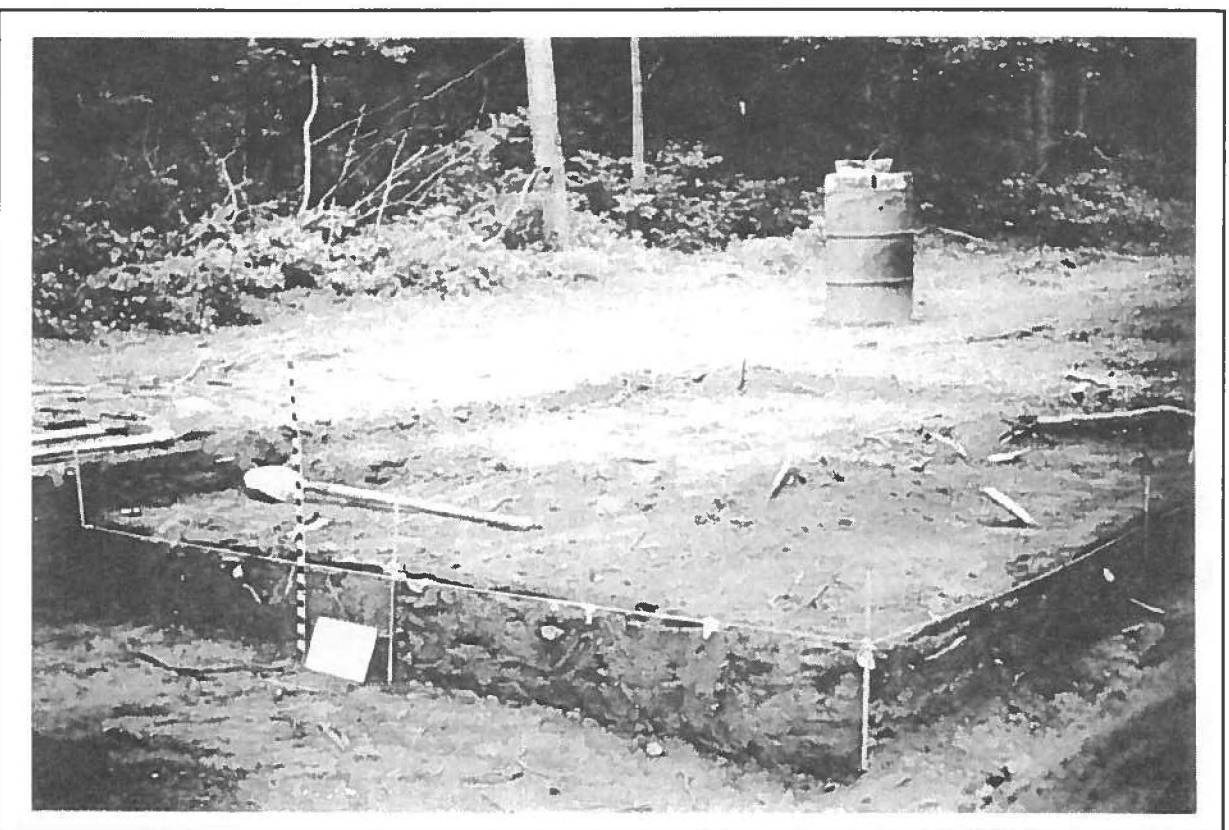


Plate 4 - Excavation Units 13R1 & 13R2



Plate 6 - Typical Profile Cut - Unit

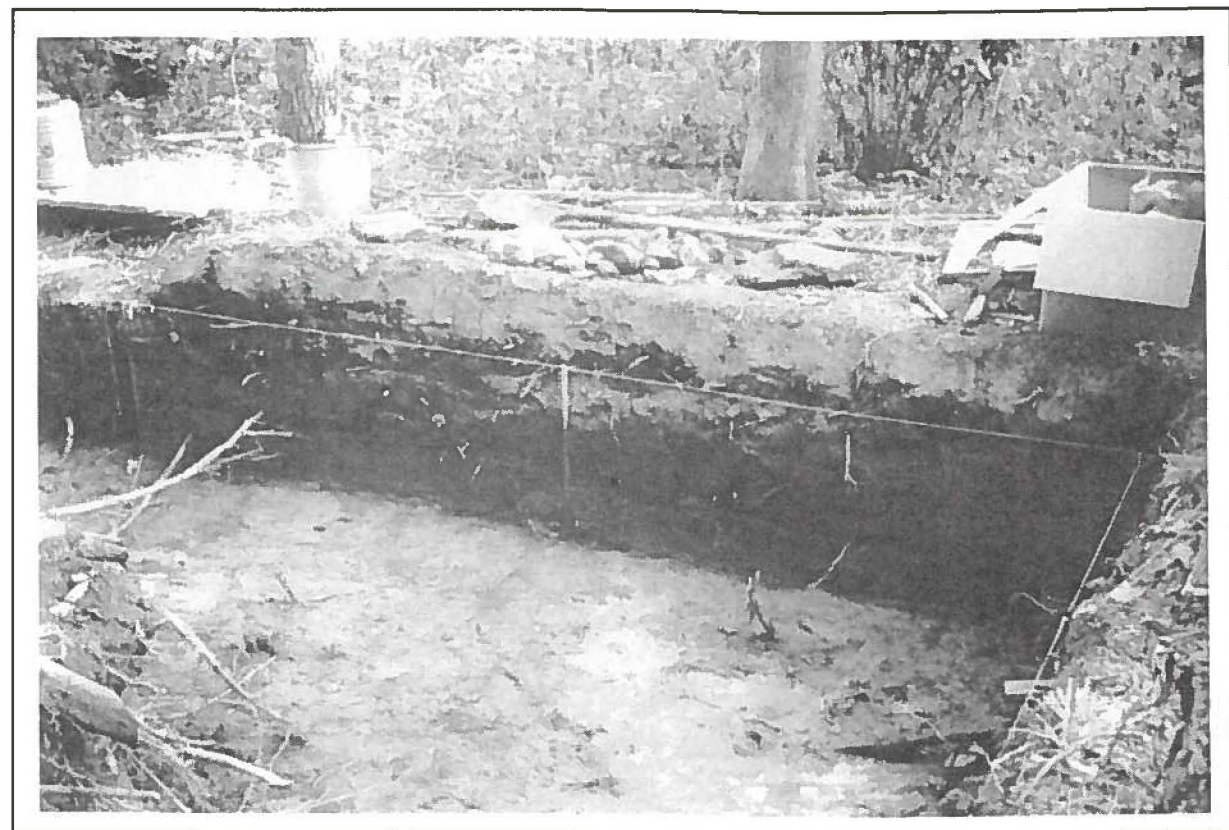


Plate 7 - Typical Profile Cut - Unit

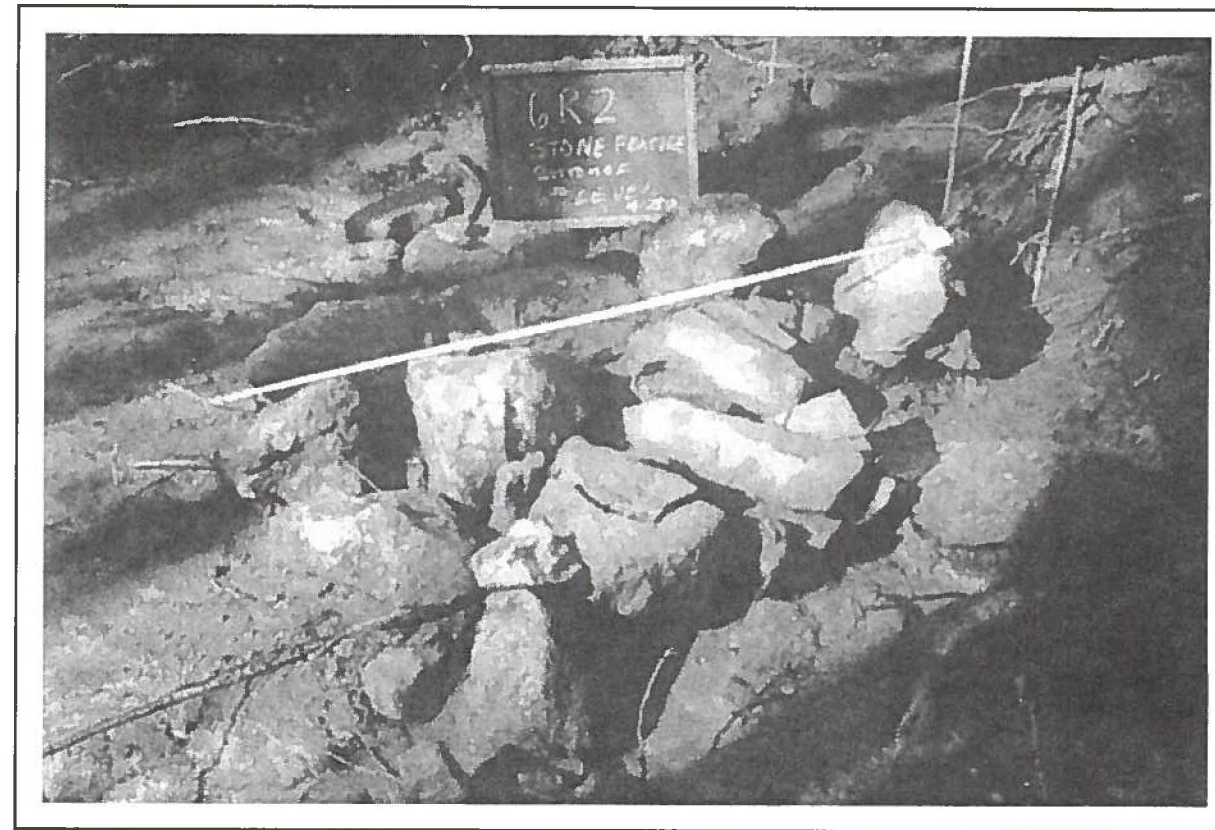


Plate 9 - Hearth Feature - Unit 6R2

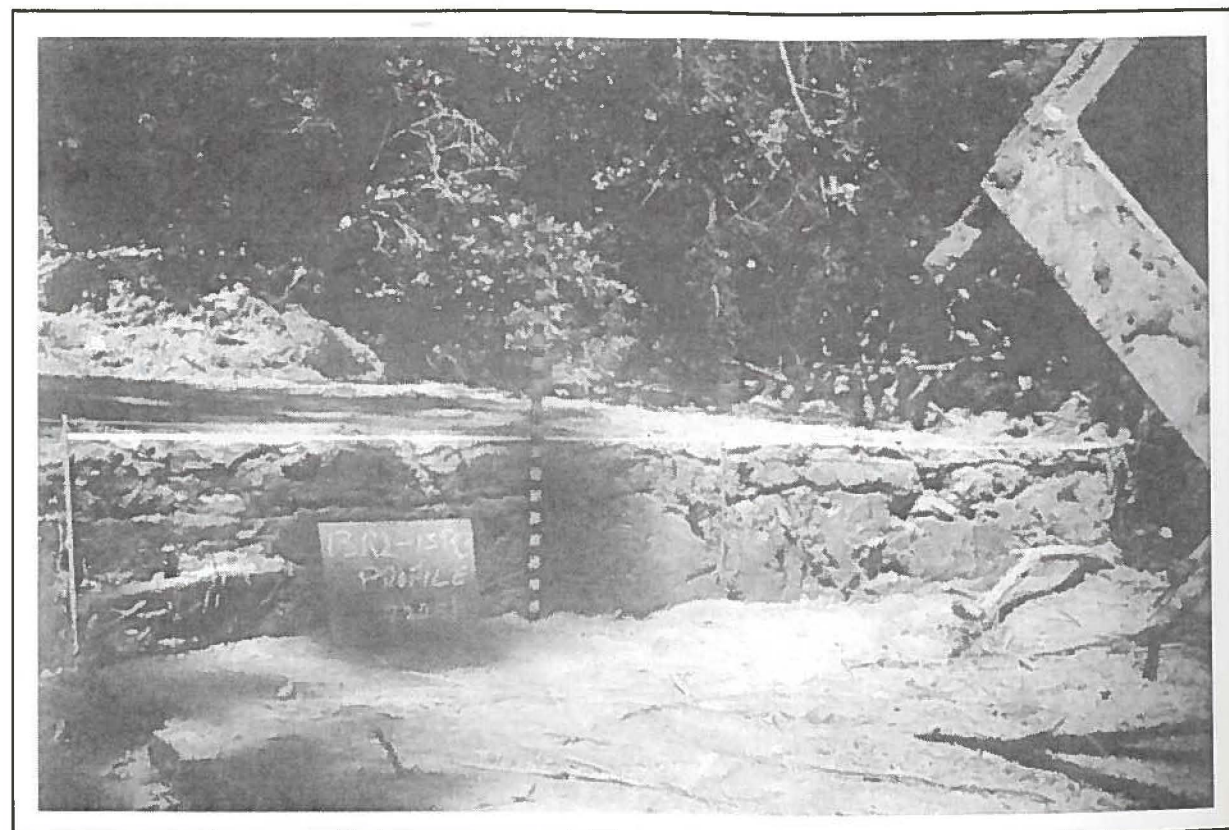


Plate 8 - Typical Profile Cut - Unit 13R-2/13R-3



Plate 10 - Limestone Hearth Feature - Unit 4R4

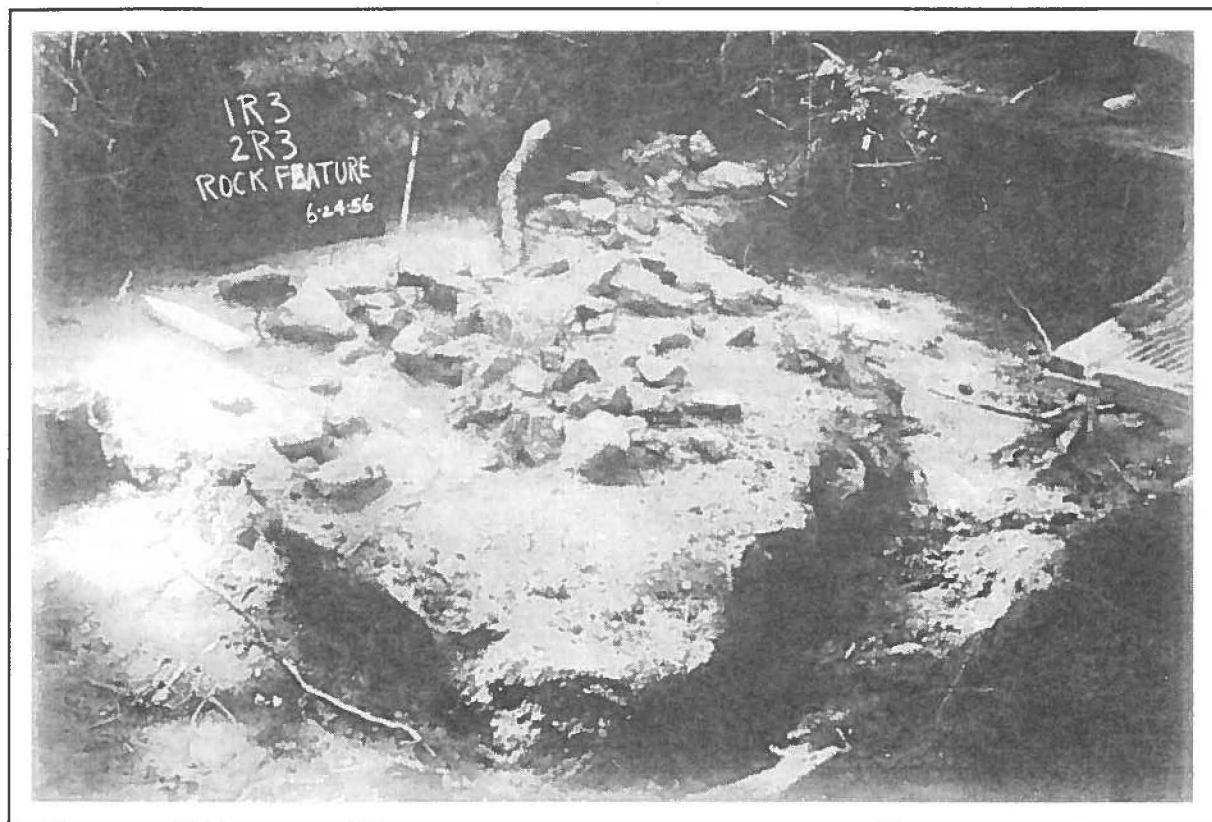


Plate 11 - Hearth Feature - Unit IR3/2R3



Plate 12 - Scattered Ceramic Sherd Feature

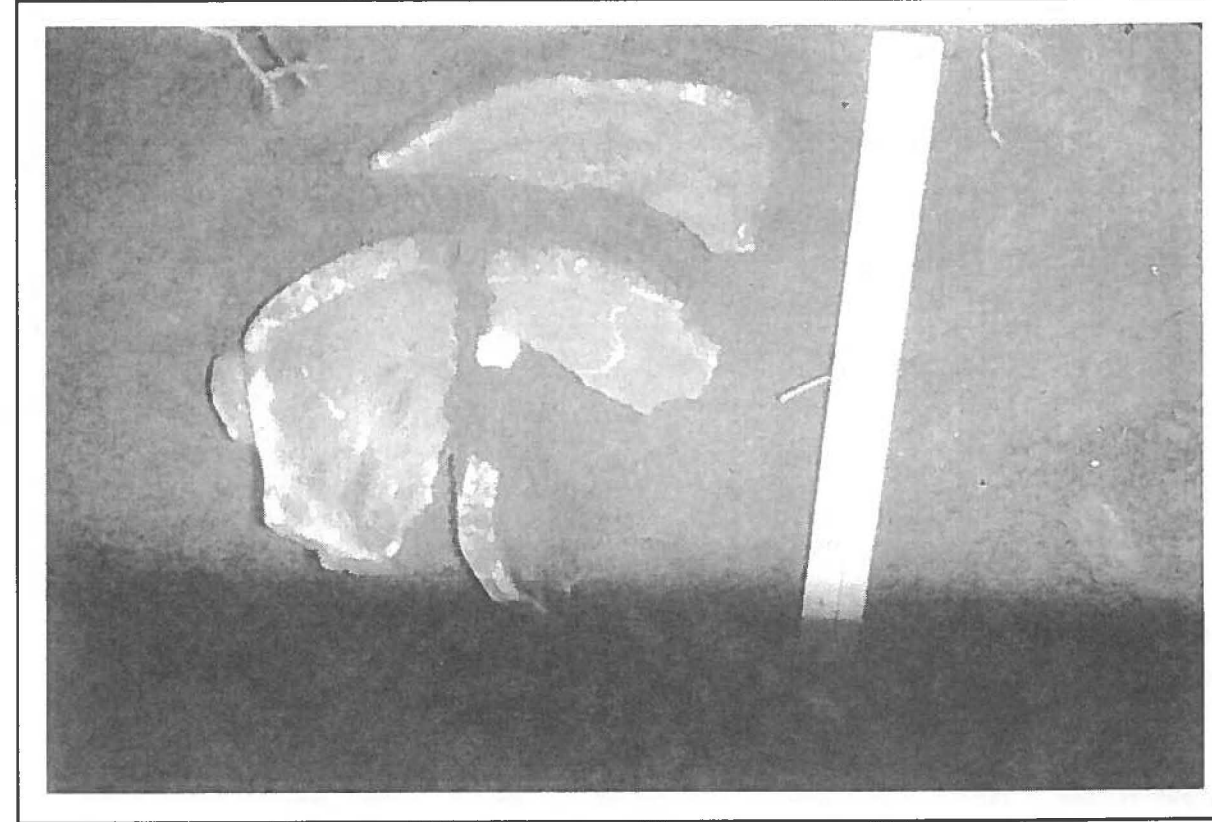


Plate 13 - Large Fragment Steatite Sherd Feature

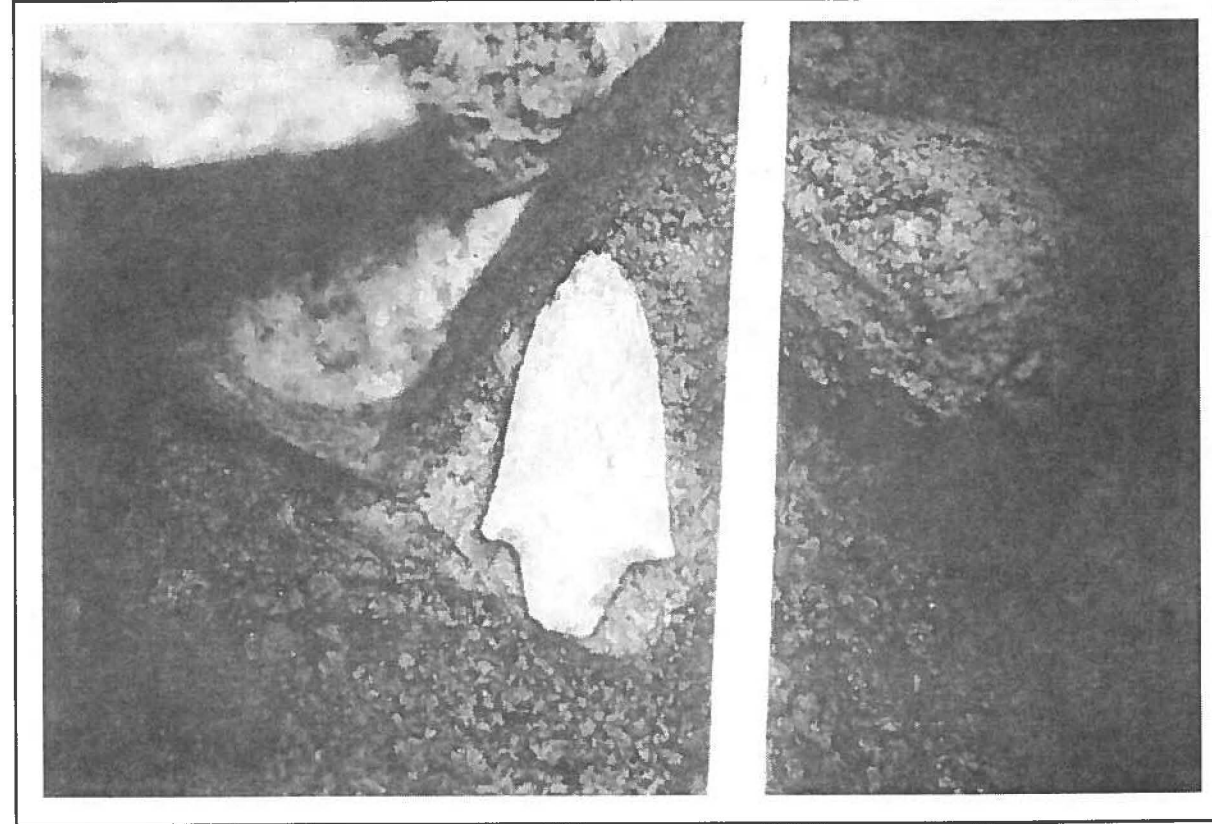


Plate 14 - In Situ Lithic Artifacts

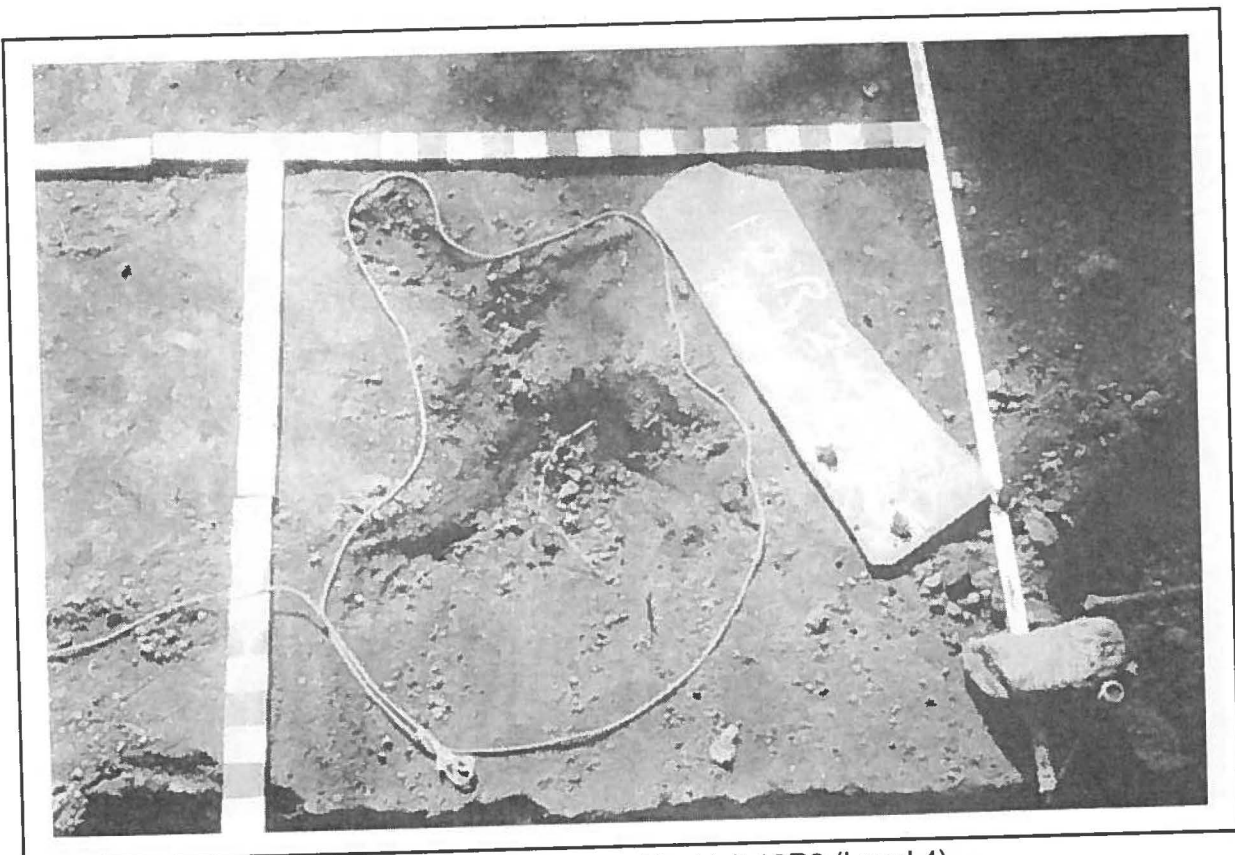


Plate 15 - Pit Feature #3 - Unit 12R2 (Level 4)

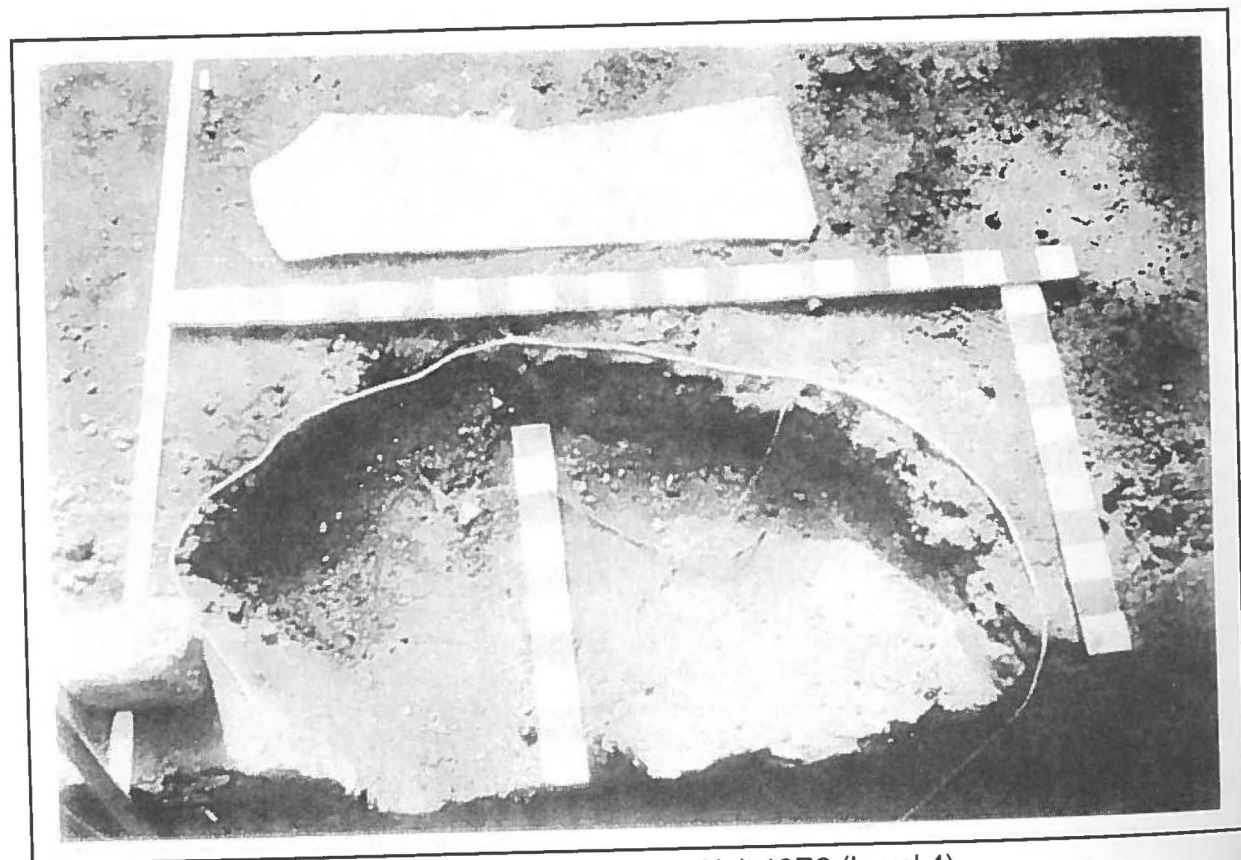
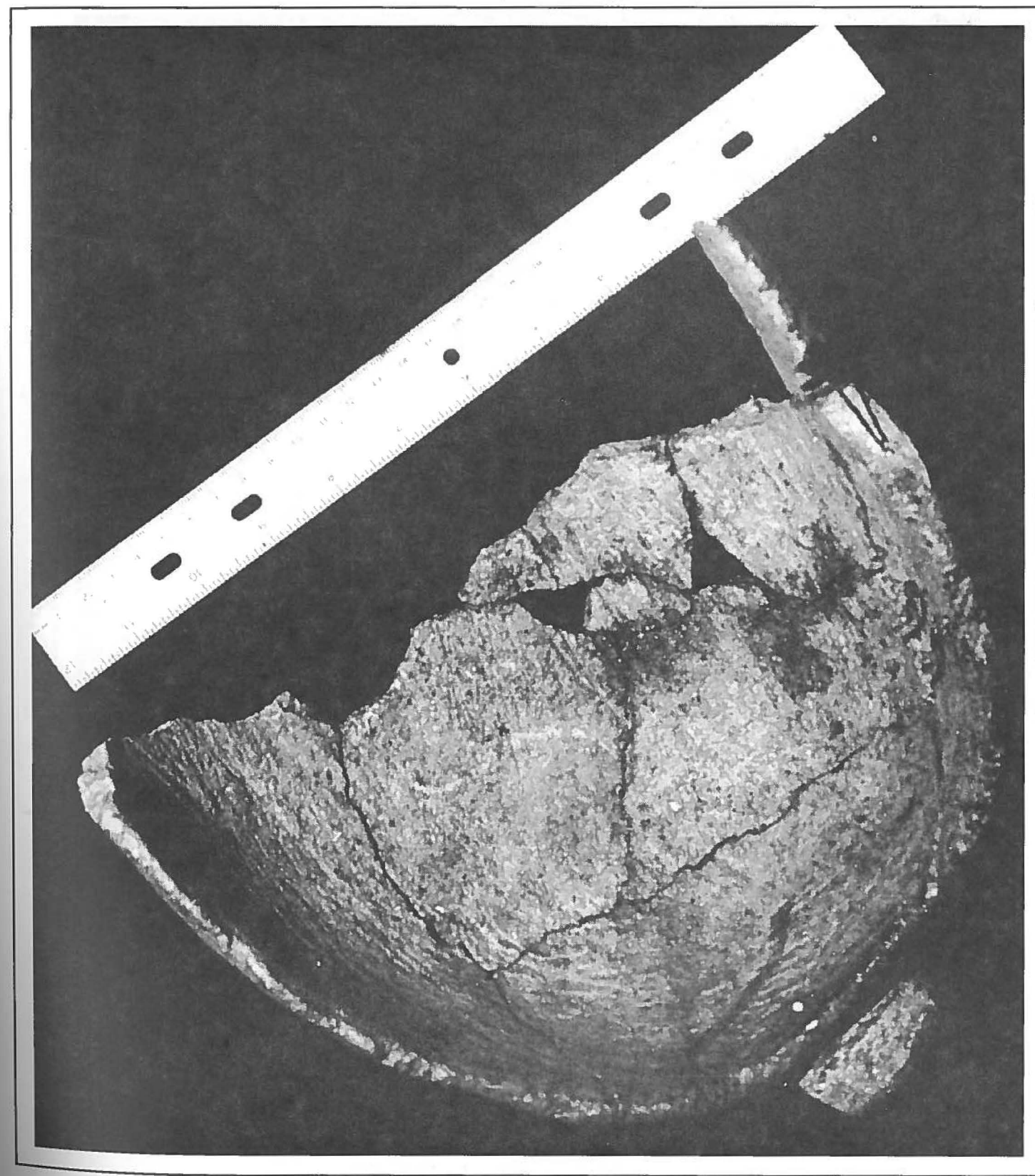


Plate 16 - Pit Feature #4 - Unit 12R2 (Level 4)



Stealtite Bowl in Situ

Reconstructed Selden Island Vessel

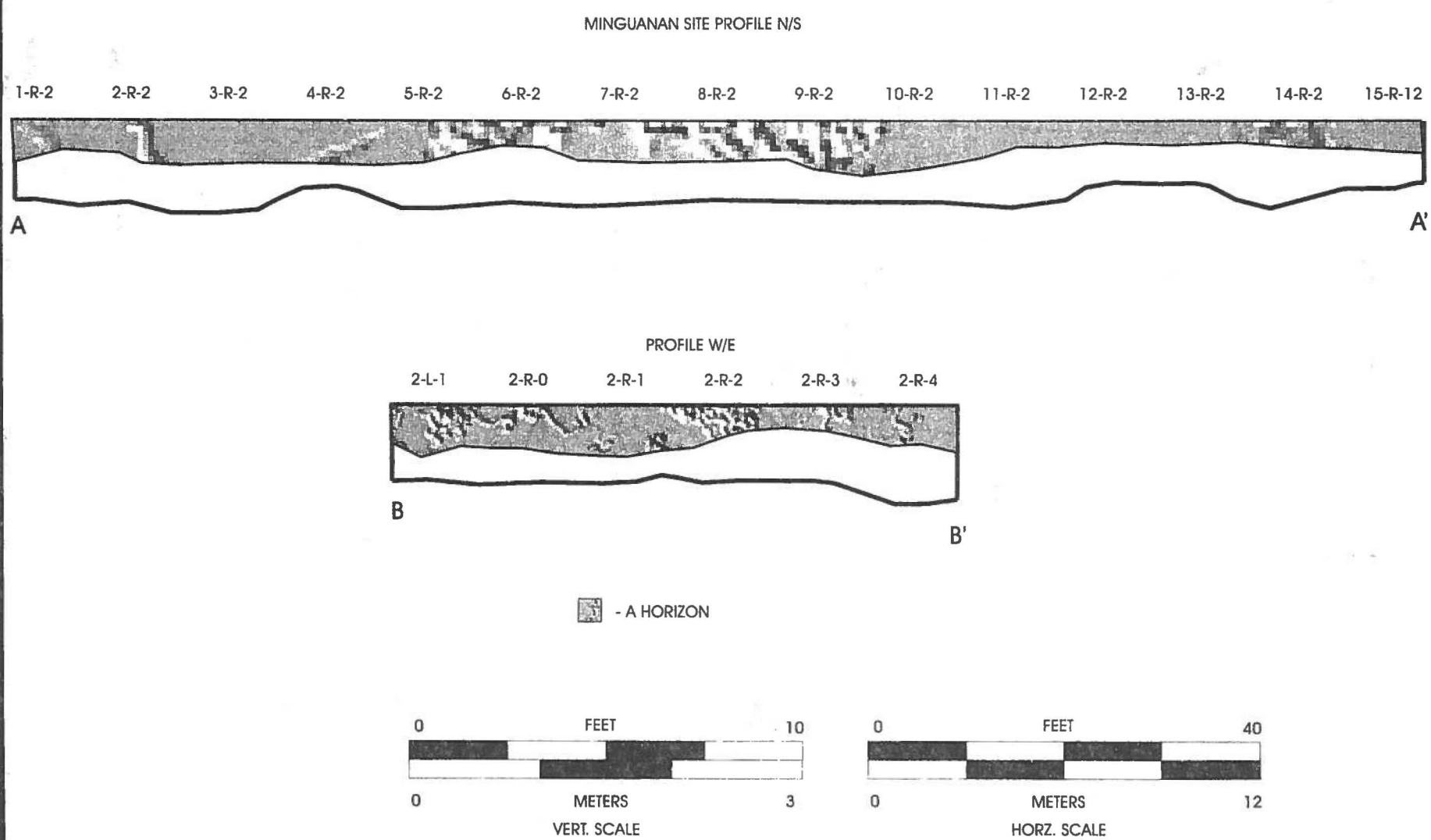
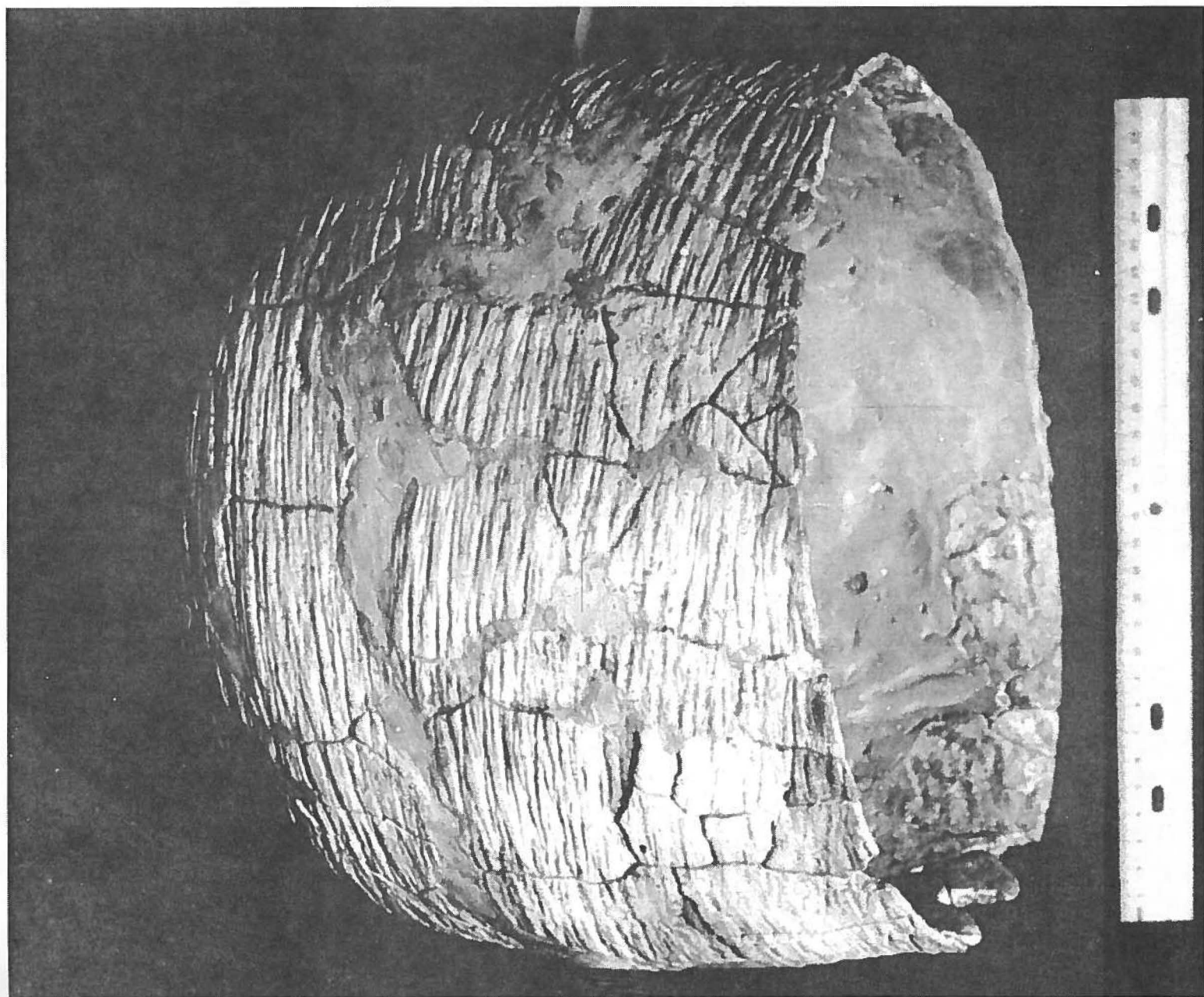
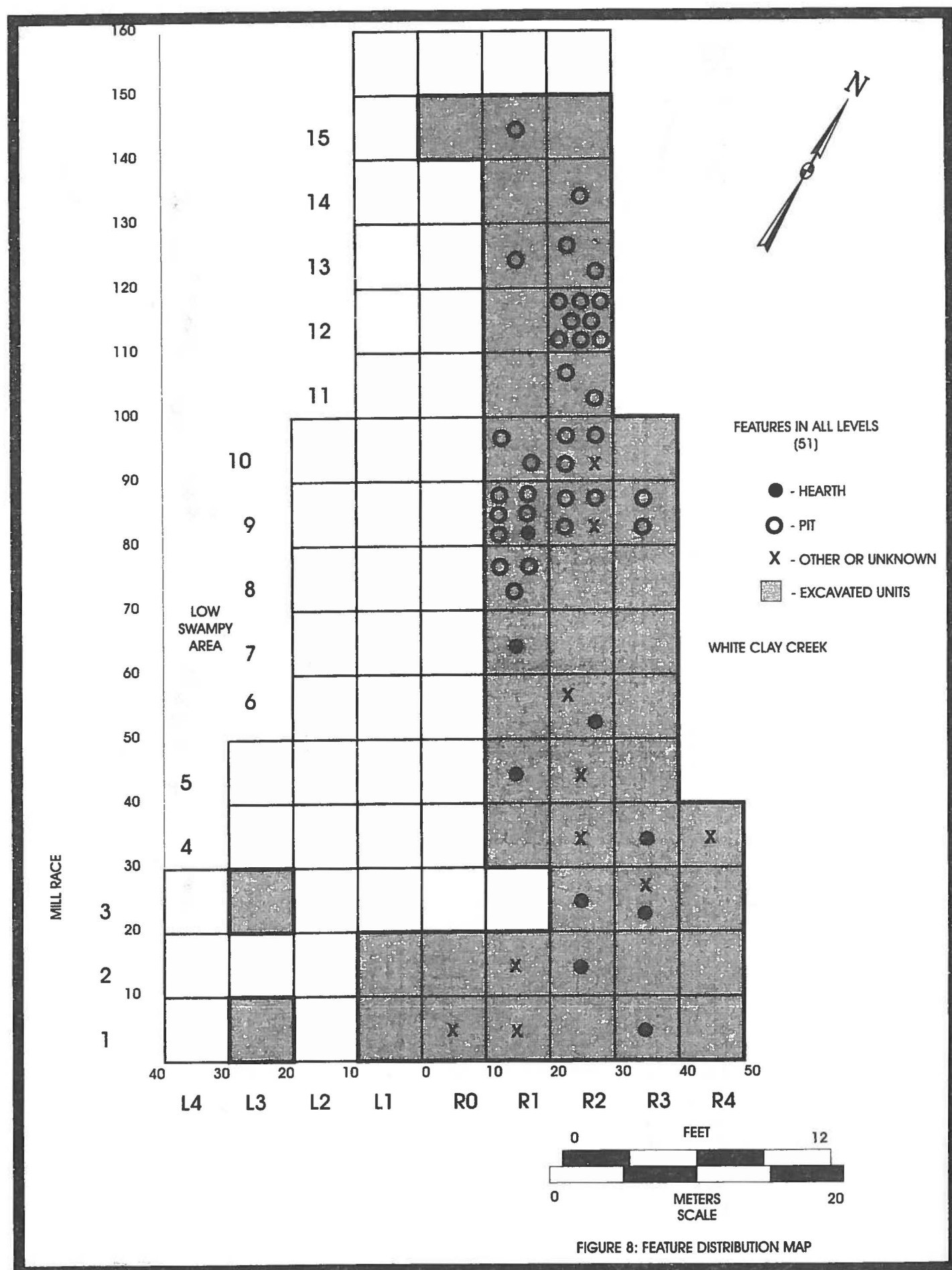


FIGURE 7 TYPICAL NORTH/SOUTH & EAST/WEST PROFILE CUTS



As can be seen on the project map (Figure 8), the spatial distribution of recorded features appear to be patterned rather than randomly distributed throughout the site. A very heavy concentration of "pits" is located along the bank of the White Clay Creek from about 70 to 130 feet north of the east-west base line. Within this 1200 square foot portion of the site were 34 "pits", a density of one pit per 36 square feet of surface area. In contrast, the density throughout the entire excavated portion of the site is less than one per 140 square feet of surface area. Four of the nine identified fire hearths are concentrated within three contiguous ten foot units to the south, with only one lying within the "pit" concentration

A total of 53 cultural features were recorded by the senior author from throughout the site (Figure 8; Table 2). Features were identified by a number of terms, some of which related to their inferred function. In general, the features can be categorized as 1) hearths, 2) pits, and 3) miscellaneous or unknown. Features were recorded in 28 of the excavated units. They were recognized at various levels during the excavation process from the top level down through Level 6. Table 2 records the various types of features within the levels where they were initially recognized.

Table 2
Feature Type and Vertical Distribution

LEVEL	HEARTH	PITS	MISC.	TOTAL
Top Zone				
Level 1	1	2	?	4
Level 2		1	1	3
Level 3	1	7	2	10
Level 4	2	15	2	18
Level 5	2	5	1	8
Level 6	3	4	3	9
Total	9	34	10	53

Hearths

At least nine fire hearths of various configurations were excavated at 36CH3. The shallowest of these was found within Level 3, indicating that others may have existed but remained unidentified due to disturbance in the shallower levels of the site. Two of the deeper hearth features were not uncovered until excavations reached as low as the top of Level 6 (Plate 9). One of these buried features, found within Unit 6R2, suggested a concave-bottom hearth pit, within which large rocks were fired-heated and heavily cracked during the cooking process. The hearths appeared to be contained rather than scattered. A second hearth type is represented by one found within Unit 4R4, which contained only tabular limestone, obviously calcined, and laying on what can be interpreted as a

flat living surface (Plate 10). A hearth in 1R3 also lay on a flat surface and was dispersed over an area covering perhaps five feet. The largest of the rock features (hearths) also consisted of fire-cracked rock lying on a relatively flat plane (Plate 11). Based on the size and configuration of these three features, it is unlikely that they could have been pit-contained cooking hearths.

It does not appear that any of the hearth features contained diagnostic artifacts. Although some of the hearths contained charcoal, project funding did not allow the ascertaining of C-14 dates for these hearths. Samples remain for future dating opportunities.

1R3	Feature 1, Level 6	5R1	Feature 1, Level 6
2R2	Feature 1, Level 4	6R2	Feature 1, Level 5
3R2	Feature 1, Level 1	7R1	Feature 1, Level 4
3R3	Feature 3, Level 3	9R1	Feature 4, Level 5
4R2	Feature 1, Level 1		

Miscellaneous

Among the ten miscellaneous features identified were several concentrations of artifacts including ceramics (Plates 12 & 13) and lithic artifacts (Plate 14). As with the non-pit hearth features, some of these concentrations can be interpreted as materials discarded on intact segments of living surfaces. Others seem to have consisted of concentrations of artifacts within limited areas (possible caches). This category also contained non-classified soil anomalies, some of which may have been of natural origin.

1R0	Feature 1, Level 5	5R2	Feature 1, Level 6
1R1	Feature 1, Level 3	6R2	Feature 1, Level 4
2R1	Feature 1, Level 2	6R2	Feature 4, Level 6
4R2	Feature 1, Level 6	3R3	Feature 1, Level 2
4R3	Feature 1, Level 3	4R4	Feature 1,

Pits

Thirty-four features were identified as pits, with as many as eight being recorded within a single 10' by 10' excavation unit (12R2). Pit features were encountered in shallow levels (Table 2), although the greatest number were not recorded until excavation reached Level 4. Pit features also ranged in size and configuration, with examples being recorded from the second to the sixth arbitrary excavation levels. Detailed feature drawings were not kept although photographs (color slides and black & white prints) were taken. While the cultural origin of some were questionable (Plate 15), others were of obvious aboriginal derivation (Plate 16).

The defined pit features varied greatly. Pit Feature 1 of 11R2 was defined in Level 4 and was defined as being oval in shape, approximately 40 inches in length and 20 inches wide. The pit appeared to be oriented in an northeast, southwest direction. Eight pit features were recorded within excavation Unit 11R2, each of which were relatively small and tended to be circular in configuration. These appear to have been defined on the basis of a discernable darker soil color than the surrounding "yellow sand". Pit 4, defined in 12R2 at Level 4, was approximately 20 by 14 inches, had a relatively

flat bottom. Feature 8 in the same unit was nearly circular and measured about 12 by 14 inches while Feature 3 was an amorphous stain measuring 10 by 20 inches.

8R1	Feature 1, Level 4	11R2	Feature 1, Level 4
8R1	Feature 2, Level 4	12R2	Feature 1, Level 3
8R1	Feature 3, Level 5	12R2	Feature 2, Level 4
9R1	Feature 1, Level 3	12R2	Feature 3, Level 4
9R1	Feature 2, Level 3	12R2	Feature 4, Level 4
9R1	Feature 3, Level 4	12R2	Feature 5, Level 4
9R1	Feature 5, Level 6	12R2	Feature 6, Level 4
9R1	Feature 6, Level 6	12R2	Feature 7, Level 4
9R2	Feature 1, Level 4	12R2	Feature 8, Level 4
9R2	Feature 2, Level 5	13R1	Feature 1, Level 6
9R2	Feature 3, Level 5	13R2	Feature 1, Level 3
9R3	Feature 1, Level 1	13R2	Feature 2, Level 2
9R3	Feature 2, Level 5	13R2	Feature 3, Level 4
10R1	Feature 1, Level 3	14R2	Feature 1, Level 3
10R1	Feature 2, Level 4	15R1	Feature 1, Level 1
10R2	Feature 1, Level 3	11R2	Feature 2, Level 4
10R2	Feature 2, Level 7	10R2	Feature 3, Level 5

Artifact Assemblage and Spatial Distribution

During the field investigations, excavators were instructed to individually bag and assign provenience and one or more catalog designations to the materials recovered from each excavation unit and arbitrary 3" level therein. This was done for each of the units excavated. The Wilkins collection from 36CH3 consists of 443 individual bag lots from different units, portions of units, individual levels within the units, and features. The contents of 294 provenience levels (as many as 8 levels in some of the units) and 53 cultural features were recorded.

Consideration was then given to the identification of the artifacts found. after which the investigators compiled an inventory of the entire collection. The artifact categories selected for the inventory were based upon temporally-recognized diagnostic tool types of the time (pottery and project points), assumed artifact functions (axes, adzes, scraper, knives, etc.), and, with lithic debris, raw material types. Artifacts recovered from each provenience unit was then inventoried, using a data sheet developed as noted above. Artifact counts were made for each of the 49 units,

Pottery

Aboriginal pottery was a major artifact category recovered during the excavations of 36CH3. Ceramics are primarily grit and sand tempered with a variety of smoothed and/or corded exteriors. Some are described in the field notes as containing crushed quartz or quartzite temper, while the majority are noted as having been tempered with sand. Rimsherds are often decorated with incised lines of various design motifs consisting of series of short lines or slashes. Several sherds from 36CH3 were identified by the field investigators as "Riggins". The site also contained specimens of other early container types including steatite vessel fragments and sherds of Marcey Creek, Selden

Island, and various thick net and cord-marked ceramic types subsequently identified as Wolfe Neck and Mockley Ceramics.

The earliest published reference to the field investigations conducted at 36CH3 was a report by the senior author, reporting on a Selden Island ceramic vessel (**Plate 17**) excavated from a recorded feature (**Wilkins 1978**). The vessel appears to have been recovered from a defined circular area, perhaps a living surface, at a depth of approximately two feet below the ground surface, rather than from a deep pit. Relatively large sherds, some lying flat and others at various slopes, were found scattered within a area of at least five feet in diameter. The senior author described the restorable vessel from 36CH3 as one of only three complete Selden Island vessels known. The paste consisted of clay tempered with crushed steatite fragments (5 to 12 mm). The 36CH3 vessel was "bag-shaped, and had a rounded bottom, formed by molding a large wad of clay, with sides formed from at least five added "fillets". It was speculated that each fillet was allowed to dry before another was built upon it. Based on the friable nature of the paste, it was estimated that the firing temperature was below 273 degrees Centigrade. Surface color varied from 10 YR 7/3 at the rim to 7.5 YR 6/6 at the base. Vessel height was 295 mm, with a maximum diameter at the rim of 316 mm. The rim thickness was 5 mm with an average body thickness of 9 mm. The vessel capacity was 14.6 liters (15.4 qts). Its exterior was impressed with a cord wrapped paddle with coarse, two strand, S-twist cordage, subsequently smoothed. The interior was "finger smoothed".

The earliest general discussion of ceramics from 36CH3 seems to be in unpublished research notes by John Witthoft, advisor to the senior author, who used the term Minguannan Ware to describe a series of grit-tempered Late Woodland ceramics found at the site. The ceramics from 36CH3 and similar nearby archaeological components have been subjected to description and analysis by Daniel R. Griffith, Delaware SHPO, and University of Delaware Professor, Jay F. Custer, who subsequently defined the Minguannan Ceramic Type (**Griffith & Custer 1985**). Custer had briefly discussed the ceramic type in Delaware Prehistoric Archaeology: An Ecological Approach (**Custer 1983**). Griffith and Custer defined four ceramic types within the Minguannan Series; Minguannan Plain, Minguannan Incised, Minguannan Corded, and Minguannan Compound Decorated. The following is taken from the General Description of Griffith & Custer (1985:10)

<u>Temper:</u>	Crushed grit and/or sand.
<u>Rim/Lip:</u>	Rims are perpendicular, everted, and inverted in order of decreasing frequency; modifications include modeling and appliques
<u>Rim Decoration:</u>	Broad line incising (1.5 mm - 3.0 mm wide) is the predominant technique; cord-wrapped stick impressions (pseudo cord) on lips and rims are also common, though less frequent than the broad line incising; thin line incising (less than 1.5 mm wide), and direct cord impressions are present, but uncommon
<u>Motifs:</u>	At present, 13 design motifs have been identified....
<u>Exterior:</u>	Smoothed, smoothed-over-corded, and fabric-impressed exterior surface treatments are present, in order of decreasing frequency. Proportion of the varied surface treatments appears to vary from site to site; however, the relative order of frequency remains the same.
<u>Interior:</u>	Interior surfaces are always smoothed.
<u>Vessel Wall Thickness:</u>	Maximum + 9 mm, minimum + 4.5 mm

<u>Dates:</u>	No radiocarbon dates are associated with Minguannan ceramics. At 7NC-E-42 (Custer 1983) Minguannan ceramics are associated with Late Woodland triangular projectile points in good context.
<u>Distribution:</u>	To date, Minguannan ceramics have been identified in collections from sites in the Piedmont Uplands and Fall Line Zone of northern Delaware, southeastern Pennsylvania, and northeastern Maryland...

Lithic Debris

Approximately 10,000 pieces of lithic debris were recovered during the excavation of 36CH3. The raw materials recorded included, grouped in relative order of frequency, 1) Broad Run Chalcedony, Newark Jasper, and Cecil Black Flint, all of the locally-available Delaware Chalcedony Complex (**Wilkins 1967**); 2) Pennsylvania Jasper (quarried) and Cobble/Pebble Jasper; 3) cobble quartz (milky & crystal) and quartzite; and 4) chalcedony, rhyolite, argillite and other materials. Wilkins (1974) has estimated that as much as 84% of the lithic material from 36CH3 was composed of types from the Delaware Chalcedony Complex. Many flakes had been fire-reddened. Flake debris included primary and secondary flakes and lithic "shatter". Among the material found throughout the excavation units were a variety of utilized flake tools including unifacial scraping and cutting tools as well as flakes with drill or perforating tips.

Lithic chunks/cores were frequently encountered, with most of the units and levels containing as many as several hundred items. These consisted of most of the same raw materials found in the form of flakes. The field inventory of Level 2 of excavation unit 11R2, for instance, listed the following raw materials; Newark Jasper, Cecil Black Flint, cobble jasper, cobble flint, milky quartz, crystal quartz, sugar quartz, soapstone, Wissahickon shist, vein chalcedony, hornblende, Pennsylvania jasper, and Onondaga chert. The manufacture and reworking of lithic tools appears to have been a major function carried out at 36CH3. References to exhausted cores were made in the field notes.

Projectile Points

Projectile points, both complete, refurbished, and broken, were found in all areas of the site and at various depths. The basic forms included triangular, stemmed, notched, ovate and lanceolate. Equilateral triangular projectile points of Cecil Black Flint seem to be the most prevalent form found at the site (Levanna Type), followed by other types of the Delaware Chalcedony Complex. As well as Quartz, Cobble Jasper, Pennsylvania Jasper and Quartzite. The senior author was able to identify four triangular points as being Cohansey Quartzite, a material outcropping in Salem County, New Jersey. No lithic debris of this material, however, was recovered. Triangles were found at all levels of the units excavated. Three Levanna-like specimens, for example, were recovered from Level 4 in excavation unit 11R1. One was of quartz, one of cobble flint and the third of Cecil Black Flint, Weights ranged from 3.0 to 4.3 grams and lengths averaged about 25 mm.

However, also found in large numbers were specimens of such non-triangular projectile point types as Susquehanna Broad, Perkiomen, Savanna River, lanceolate points of Newark Jasper and other materials, and several quartz bifurcates. The non-triangular specimens were also recovered

from levels 1 through 6. Two side notched points were recovered from the same level of 11R1 as the three Levanna triangles noted above.

Bifacial Tools

Many bifacially-flaked stone tools were found at 36CH3, including specimens manufactured and/or utilized as cutting and scraping tools, cleaving implements, perforators, etc. These are variously described in the field notes as large and/or heavy flake scrapers, ovate choppers, serrated knives, a steatite quarry chisel, etc.

Ground & Pecked Tools

There does not appear to have been a large number or variety of ground and pecked stone tools recovered at 36CH3. Among the items noted in the field records were a hornblende gneiss hone, a fragmentary rounded steatite object, abraders and pestles. A large number of local cobbles seem to have been utilized by the aboriginal occupants of 36CH3 as hammering tools, bipped nutting stones, sledges, anvils or lap stones, and for various other purposes. Most numerous were hammerstones ranging in size from 3.5 x 3 x 1.75 to 6 x 3.5 x 2 inches. Quartzite appears to have been the most frequently utilized lithic material for these tools. The larger cobble and slab tools ranged from 11.5 x 9 x 3 to 18 x 11 x 2.5 inches.

Fire-cracked Rock/Other

Extremely large amounts of fire-cracked and reddened rock occurred throughout the excavations. These were often found within discernable features, especially in lower levels. However, fire-cracked rocks, platform rocks, broken rocks, hematite and limestone slabs, etc. were found in most levels of all units excavated. Steatite sherds, slabs of feldspar, hornblende, fractured Wissahickon Shist, broken slabs of local marble, fragmented calcined bone, and charcoal were reported on numerous occasions. A major portion of a soapstone vessel was excavated from within a small cultural feature. The small, rounded bottom pot appears to have been manufactured from a high-quality, non-local steatite.

Summary & Discussion

Excavation of 36CH3, along the West Branch of the White Clay Creek, Chester County, Pennsylvania, was conducted in the last half of the 1950's by members of the Wilkins family of nearby Stricklersville, and by members of the Archaeological Society of Delaware. The excavations were supervised by avocational archaeologist, Elwood S. Wilkins, Jr., with advice from various professional archaeologists including John S. Witthoft, then Pennsylvania State Archaeologist. The site had been determined to contain a variety of cultural components from Archaic to Late Woodland and was documented as the general location of Opasiskunk, a 17th century Lenape village.

Although excavations at 36CH3 were completed more than thirty years ago, the data base acquired by the investigators constitutes one of the most important sources of archaeological data from Southeastern Pennsylvania. Approximately 6400 cubic feet of soil was hand excavated and screened from 49 whole or partial provenience units (4240 square feet) within a relatively intact core

of a much larger site, estimated by the senior author to contain four to five acres (Wilkins 1974). Provenience data on artifact distribution is extensive and exact, identified as to 3 inch level within each unit. The degree of precision of the excavation makes it possible to reconstitute the artifact placement within the entire site. Although a complete inventory and study of the artifacts recovered remains to be done, the material has been the subject of analysis by various individuals and is considered the "type site" for the definition of the Minguannan Ceramic Series (Griffith & Custer 1985) of southeastern Pennsylvania, northern Delaware and northeastern Maryland.

Although numerous cultural features were recorded within various levels of the deposits, identification and functional interpretation was less exact, due in part to heavy root growth and modern disturbance throughout the upper deposits. Soil conditions were more stable in lower levels and conducive to the discernment of feature configurations. Forty-five of the 51 features recorded were identified within the lower strata. Features ranged from fire hearths to various sizes and shapes of "pits" with the former seemingly concentrated in the southern portion of the site and the latter to the north (Figure 8). It can be speculated that, if any domiciles existed, they may have been away from the stream to the western edge of the site, i.e. areas in which fewer artifacts were encountered. Contents of features were often undiagnostic, although features containing a carved soapstone vessel (Transitional), a Selden Island pot (Early Woodland) (Wilkins 1976) and Minguannan-type ceramics, were recorded. Minguannan pottery is related by varying degrees to Riggins in New Jersey (McCann 1950) and Townsend in the lower Delmarva Peninsula (Blaker 19). It has been assumed that the majority of the features were associated with the Minguannan Complex.

Although 36CH3 was the location of a variety of cultural activities during the thousands of years during which it witnessed aboriginal activity, it has been primarily characterized as a Late Woodland macroband base camp of the Minguannan Complex, as defined by Custer (1983). Custer describes Minguannan Complex occupation sites in general as consisting of semi-sedentary camps with no evidence of house patterns, storage features, or defined midden areas that could be expected in sedentary villages. He suggests that they were used primarily by smaller social units whose settlement pattern consisted of the occupation of a series of habitation sites. Stewart, Hummer & Custer (1986) provide a detailed discussion of this settlement pattern in an article in which they reference a number of sites within the Piedmont Uplands, the Fall Line, Interior Swamps and the Coastal Plain of New Jersey, Delaware, Pennsylvania and Maryland, as components of the Minguannan Complex. As did Custer (1983), Stewart, Hummer & Custer (1986) suggest that sites of this complex usually occur at the same locations used by earlier peoples of Late Archaic through Middle Woodland periods, thus indicating that they maintained a similar socio-economic base.

Although further investigations at 36CH3 may contribute only limited information to the archaeological record, a detailed analysis of the artifact assemblage, both ceramic and lithic, from the Wilkins excavations should be undertaken and radio-carbon dating should be considered. Similar sites within the nearby White Clay Creek valley should be sought and subjected to excavation. Further concern with the question of the Opasiskunk "Indian Town" should be given. It is likely that important information about the chronological development, and ultimate disappearance, of aboriginal cultures within the Piedmont Uplands can yet be obtained from "protected" sites such as 36CH3.

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