EXCAVATION RESULTS

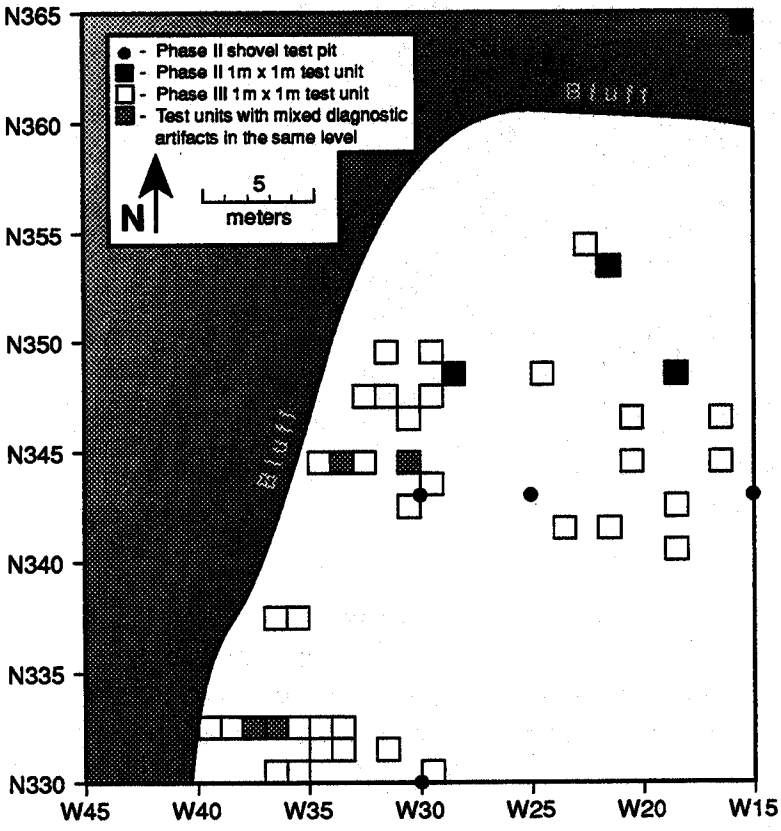
In reporting the results of the Snapp Site excavations, we have separated the presentation of the basic excavation results from our interpretations of those data. Although it is virtually impossible to provide an unbiased presentation of the excavation data without some form of interpretations, we do feel that presentation of the raw data is important. The following section of this report presents the basic results of the Phase III excavations of the Snapp Site. The excavation data from the woodlot area and cultivated field areas of the site are presented separately.

Excavation Results - Woodlot Area

This section of the report describes the results of excavations in the woodlot section of the Snapp Site. Phase II excavations had shown that no additional excavations were necessary in the woods to the west of the cultivated field, but additional excavations were undertaken in the woods to the north of the field (Plate 4, Figure 16).

FIGURE 16

Excavation Units in Northern Woodlot



Stratigraphy. Considerable differences were observed in the soil stratigraphy among the three terraces tested in the Snapp woodlot area. The first terrace (Plate 4 - T_1) was the man-made edge of the Chesapeake and Delaware Canal and was not tested. The second terrace (Plate 4 - T_2) consisted of two main soil horizons (Figure 17). The lower horizon was an organic medium brown silty sand which was covered with a very thin humus composed of organic matter. No artifacts were recovered from either soil horizon. This soil profile is recent in age and has been disturbed by modern activities associated with the canal.

The stratigraphy of the third terrace (Plate 4 - T_3) consisted of five main soil horizons (Figure 18). The first soil horizon was a dense humus of organic matter which ranged from 0 meters to .15 meters in thickness across the terrace. Beneath the humus, the soil was a dark gray brown sandy loam with much organic material and varied from .10 meters to .24 meters in thickness . The third soil horizon of the terrace was a light brown to medium brown sandy loam which ranged from .10 meters to .80 meters in thickness. Deeper extensions of this soil were found in the northwestern portions of the terrace. Toward the eastern portions of the terrace, the sandy soil horizons graded into yellow-brown clays.

FIGURE 17

Soil Profile from Terrace 2--Woodlot Excavations

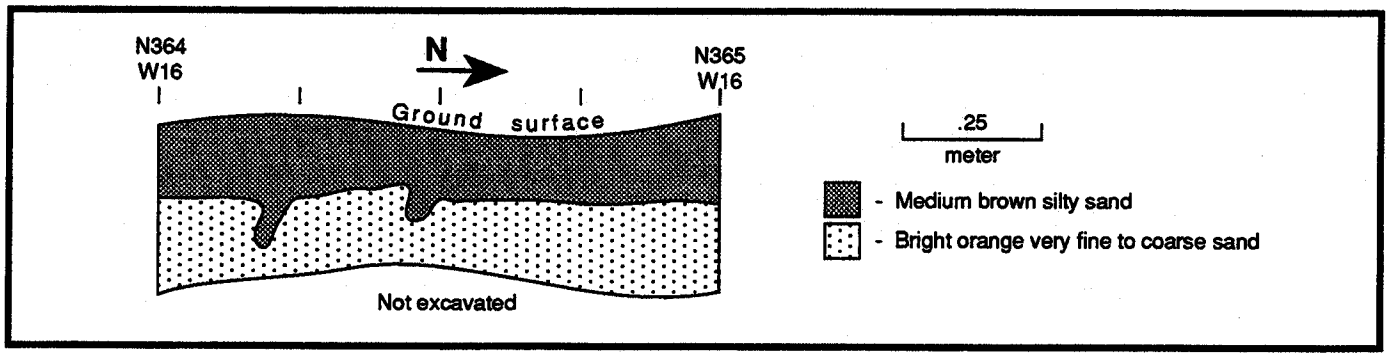
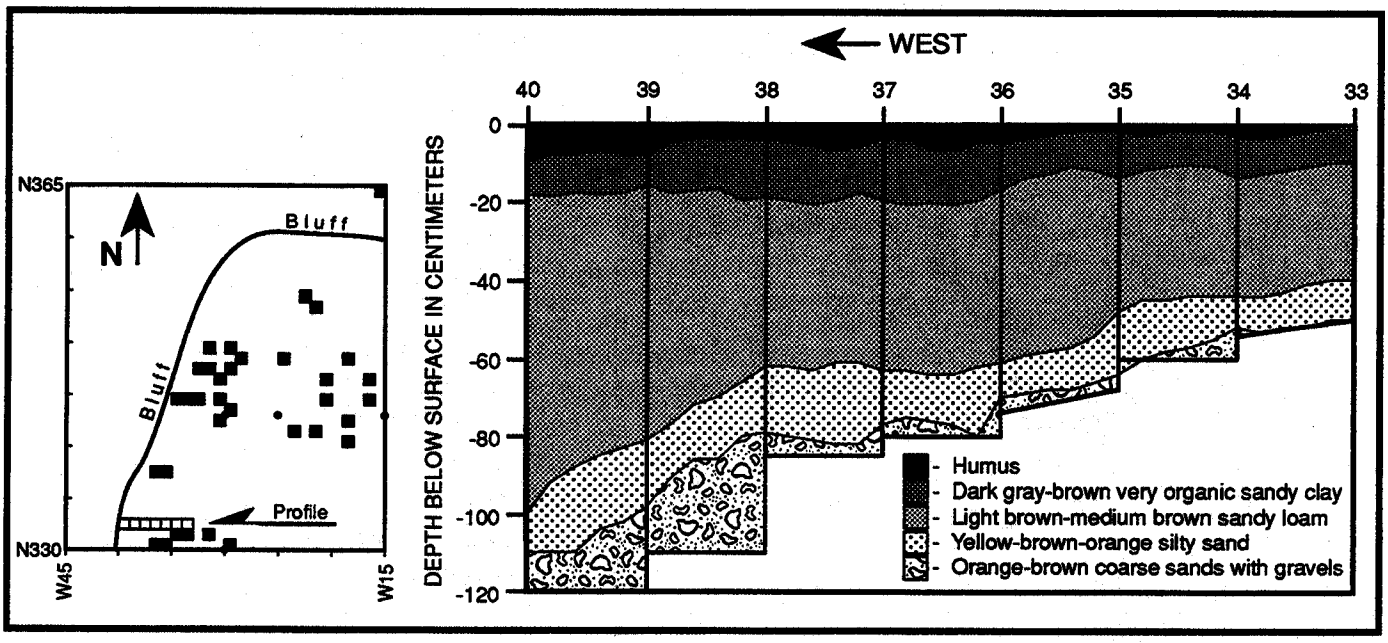


FIGURE 18

Soil Profile from Terrace 3--Woodlot Excavations

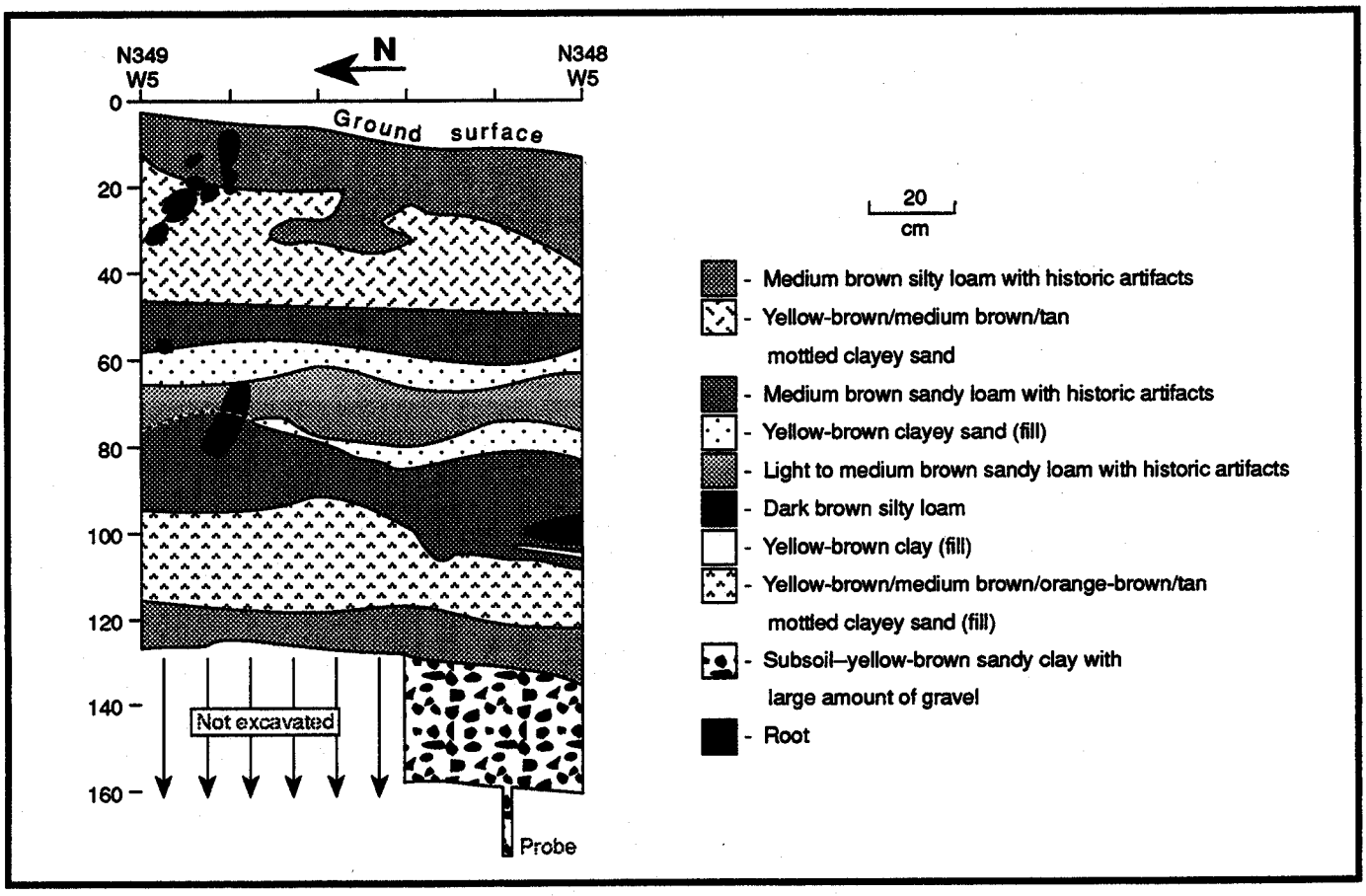


The fourth soil type of the terrace consisted of a yellow-brown-orange silty sand ranging from .10 meters to .30 meters thick. Toward the eastern portions of the terrace, the sand in this horizon also graded into yellow-brown clays. The final soil horizon was a sterile bright orange brown coarse sand with some gravels which graded into a bright orange brown compacted clay toward the eastern sections of the terrace.

Except for the sterile orange sand and clay subsoils, all soils yielded both prehistoric and historic artifacts. The majority of the historic artifacts originated from the upper soil levels; however, some were found in deeper levels as well. Associations of diagnostic prehistoric artifacts, specifically projectile points and ceramic types, of varying ages within the same soil levels indicated that this terrace was

FIGURE 19

Soil Profile from Terrace 4--Woodlot Excavations



heavily disturbed. For example, both a basal fragment of a Paleo-Indian fluted point (Figure 62A), dating to ca. 9500 - 8500 B.C., and Hell Island ceramic sherds, dating to ca. A.D. 600 - 1000, were recovered from the same level of one test unit (Unit N344 W34 - Level 4). Consequently, formation of the soils on this terrace, especially the third soil horizon, were concluded to be a result of episodes of slopewash. The disturbed context of the terrace prevents complete assessment of the functional and spatial uses of this area of the site during prehistoric times.

The stratigraphy of the fourth and southernmost terrace (Plate 4 - T_4) was heavily disturbed and consisted of numerous alternating levels of medium brown loams, clayey soils, and sand fills (Figure 19). The various fill levels of this terrace were probably related to road construction or attempts to construct a berm to prevent soil loss from the cultivated field area. The loam soils seem to be results of episodes of slopewash. Both prehistoric and historic artifacts were found interspersed throughout all of the soil horizons of this terrace.

In sum, the profiles of the excavation units in the woodlot north of the plowed field (Plate 4) showed that this area of the site was badly disturbed by erosion and modern construction activities associated with the maintenance of the Chesapeake and Delaware Canal. No further excavations were conducted in this area. Nonetheless, some of the artifacts from the woodlot excavations are of interest in spite of their poor context, and are described below and in later sections of this report.

TABLE 2

Summary Catalog of Artifacts from Phase III Excavations

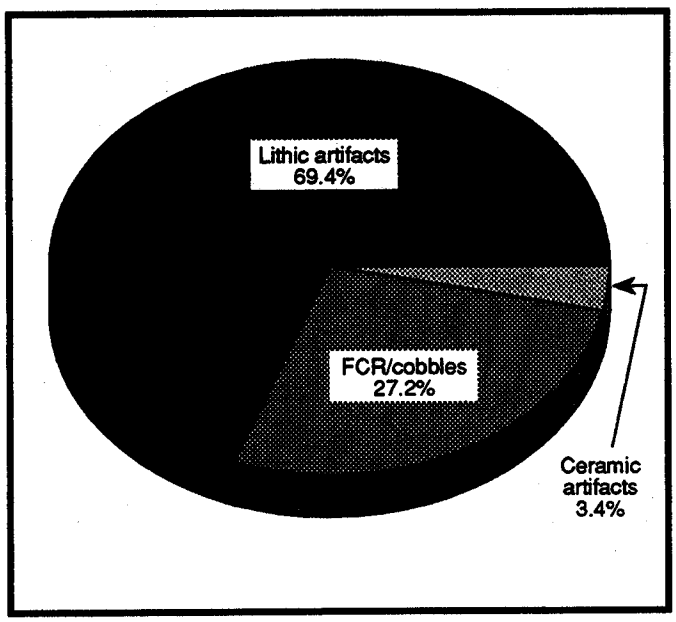
ARTIFACTS	WOODLOT TEST UNITS	CULTIVATED FIELD AREA: EXCAVATED. FEATURES	CULTIVATED FIELD AREA: PLOW ZONE
FLAKES (CORTEX)			
Quartzite	411 (13)	255 (64)	41 (14)
Quartz	129 (20)	542 (78)	138 (19)
Chert	351 (69)	1410 (280)	716 (112)
Jasper	563 (124)	1450 (670)	451 (128)
Rhyolite	1	15	5
Argillite		32	17
Ironstone	5	9 (1)	4 (2)
Other	3	25 (12)	1
UTILIZED FLAKES (CORTEX)			
Quartzite	2		1 (1)
Quartz	4 (1)	7	4
Chert	24 (6)	37 (2)	17 (4)
Jasper	16 (7)	36 (17)	16 (9)
Rhyolite		(15)	
FLAKE TOOLS (CORTEX)			
Quartzite	1 (1)	6 (4)	1 (1)
Quartz		8 (2)	9 (1)
Chert	4 (2)	15 (7)	7 (4)
Jasper	11 (5)	12 (8)	4 (1)
Rhyolite		1	1
Argillite	1		
PALEO POINTS			
Jasper	1		1
ARCHAIC POINTS			
WOODLAND I POINTS			
Quartzite			
Quartz		3	1
Chert	2	4	5
Jasper	2	1	3
Rhyolite		3	
Argillite		2	2
Other			1
WOODLAND II POINTS			
Quartzite	1		
Quartz	1		
Jasper	1		
Chert			1
EARLY STAGE BIFACE REJECTS			
Quartzite		1	
Quartz		4 (2)	2
Chert	2	3 (3)	3 (1)
Jasper	2 (1)	4 (2)	1 (1)
LATE STAGE BIFACE REJECTS			
Quartzite	1	1	
Quartz	1		
Chert		2 (1)	3 (1)
Jasper	2 (2)	1	
Other		1	
OTHER BIFACES			
Quartzite	1		
Quartz	2	4	2
Chert	1	9	3
Jasper	5	5	6
Rhyolite			
Argillite	2	1	
Ironstone			
Other	1	1	1
MISC. STONE TOOLS			
Quartzite	2		
Quartz		3 (2)	2 (1)
Chert		2 (1)	
Jasper	2 (1)	11 (9)	3 (2)
SHATTER			
Quartzite	10 (2)	40 (4)	
Quartz	43 (13)	252 (33)	5 (2)
Chert	8 (6)	27 (13)	74 (13)
Jasper	15 (4)	61 (40)	3 (1)
Rhyolite	1		9 (5)
Argillite		1	
Ironstone		5	
Other		9 (5)	
CORES			
Quartzite	2	1 (1)	4 (1)
Quartz	1 (1)	7 (5)	7 (4)
Chert	1	2 (1)	8 (8)
Jasper	3 (2)	5 (4)	3 (2)
CERAMIC SHERDS	80	430	3
FIRE-CRACKED ROCK AND LARGE COBBLES			
Count	644	7181	2599
Weight (kg)	44.504	1762.7	210.5
TOTAL	2366 (280)	11947 (1286)	4188 (338)

Note--A complete catalog of all artifacts recovered from the Snapp site (7NC-G-101) is on file at the University of Delaware Center for Archaeological Research.

Excavated Artifacts. Over 2300 prehistoric artifacts were recovered from the final test unit excavations of this area (Table 2). Lithic artifacts comprised over half, approximately 69 percent, of the total artifact assemblage (Figure 20). In addition to large quantities of debitage, a wide variety of projectile points, utilized flakes and flake tools, bifaces, and cores were recovered. Ceramic artifacts totaled only 3.4 percent (Figure 20) of the woodlot assemblage and included Marcey Creek, Coulbourn, Hell Island, Townsend, and Minguannan wares. The remainder of the assemblage, 27.2 percent, consisted

FIGURE 20

Artifact Relative Frequencies from Woodlot Excavations



of fire-cracked rock fragments. The artifact assemblage from the excavated units in the woodlot is a mix of materials deposited in the woodlot via erosion. The only additional data to be gained from their analysis is chronological information and these data are noted later in the report.

Excavation Results - Cultivated Field

Excavations in the plowed field at the Snapp Site (Plate 4) comprised the major field research effort and the following sections describe the results of those excavations. Figure 21 shows the distribution of the plow zone excavation units.

Stratigraphy. The stratigraphy of the cultivated field area of the Snapp Site consisted of two major soil horizons (Figure 22). The first soil horizon, Horizon I, was an eroded plow zone that varied from .15 meters to .40 meters in thickness across the entire field. This soil contained prehistoric artifacts as well as some historic artifacts. Directly below Horizon I, was a sterile, yellow-orange brown sandy clay, Horizon II. Below Horizon II, approximately .6 meters below ground surface, the soils gradually decreased in clay content to become coarse yellow or orange sands.

Large pockets of coarse Pleistocene gravels and sands of the Columbia Formation (Jordan 1964) were observed just beneath Horizon I and within Horizon II soils, predominately in the northeastern section of the site area. To some extent, these gravels were also observed in the upper Horizon I plow zone soils. The presence of these gravels, at and close to the surface, indicates that the site has been subjected to heavy erosion and that there is no possibility for buried landscapes to be present. The only

FIGURE 21

Plow Zone Excavation Units in Cultivated Field

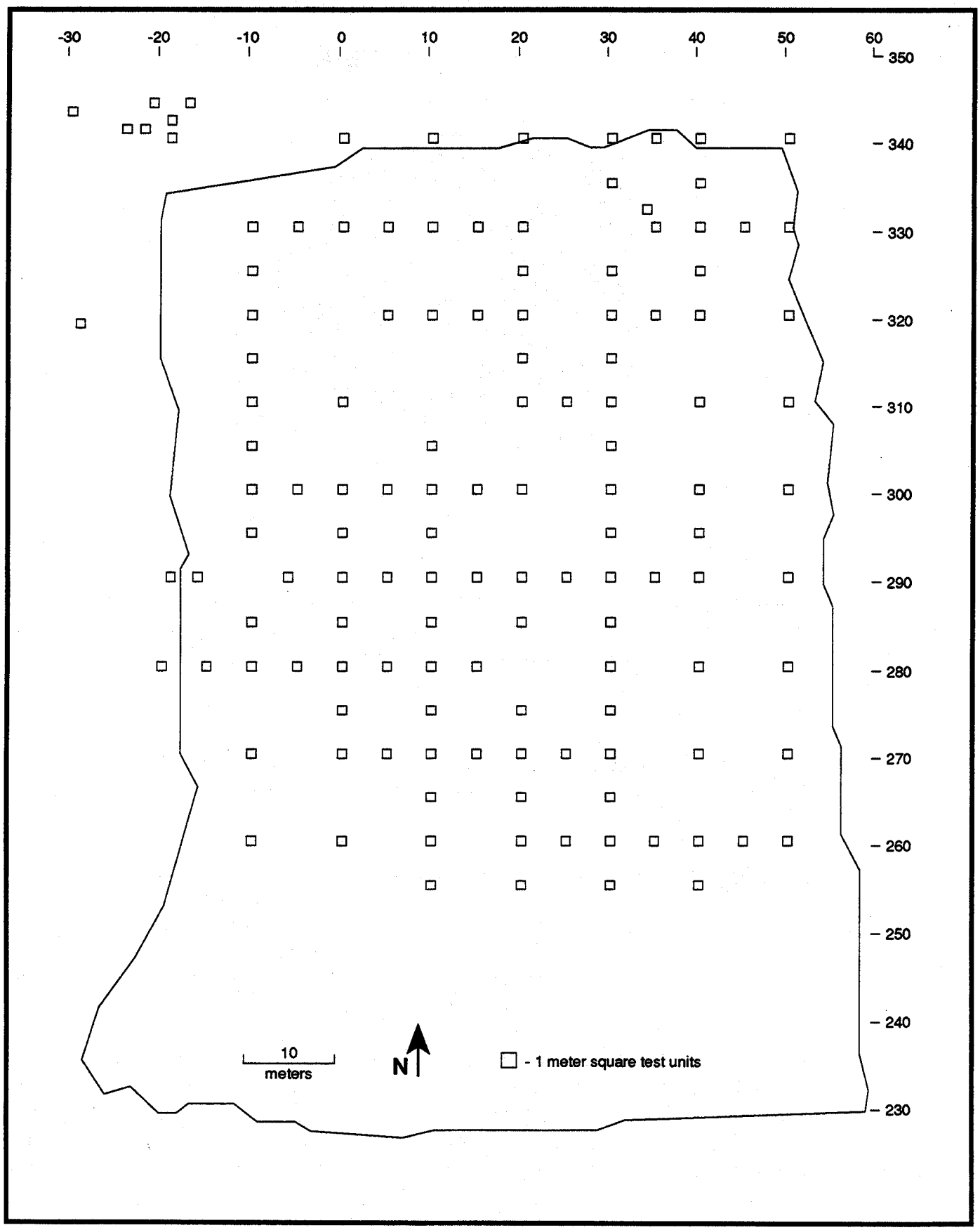


FIGURE 22

Soil Profile from Cultivated Field

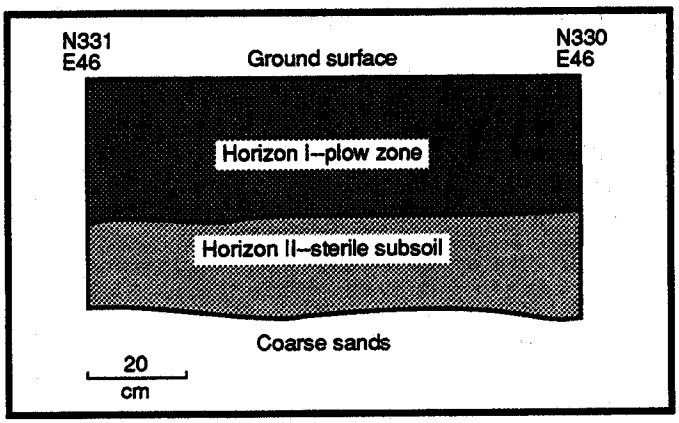
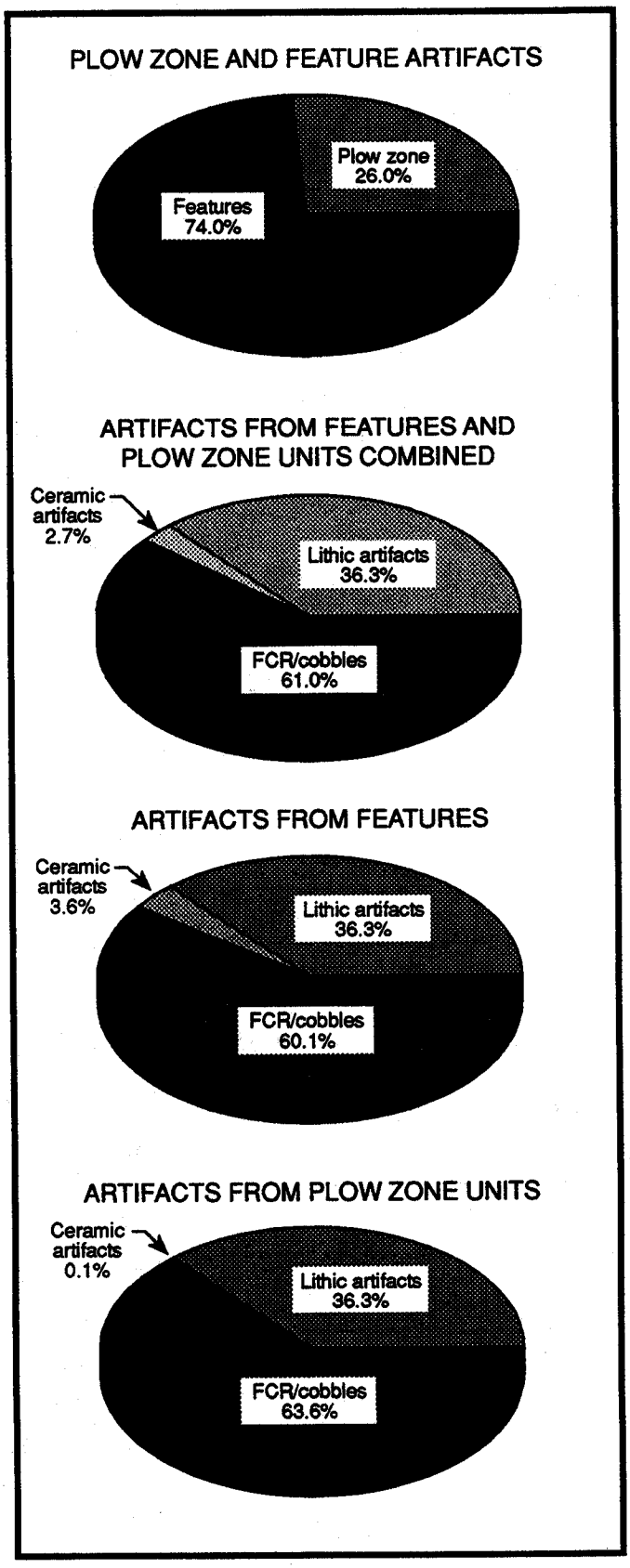


FIGURE 23

Artifact Relative Frequencies from Cultivated Field Excavations



artifacts found in soils beneath the plow zone soils were found in pits, or features, dug by the site's prehistoric inhabitants. Descriptions of these pits are presented after a general description of the artifacts found in the cultivated field.

Excavated Artifacts. Summary catalogs of all artifacts recovered from the plow zone and feature excavations in the cultivated field area of the Snapp Site are presented in Table 2. A complete catalog is on file at the University of Delaware Center for Archaeological Research. Of the approximate 16,100 artifacts, 26.0 percent were recovered from plow zone soils and 74 percent were recovered from feature soils (Figure 23). Over 61 percent of the total artifacts consisted of fire-cracked rock fragments. Fire-cracked rock fragments comprised 63.6 percent of the plow zone assemblage and 60.1 percent of the feature assemblage (Figure 23).

Lithic artifacts recovered from the cultivated field excavations included debitage, utilized flakes and flake tools, cores, bifaces, and projectile points of various lithic materials. These artifacts comprised 36.3 percent of the total assemblage, 36.3 percent of the plow zone assemblage, and 36.3 percent of the feature assemblage (Figure 23). The majority of the ceramic artifacts, 27 percent of the total assemblage and only .1 percent of the plow zone

assemblage (Figure 23), were recovered from feature excavations. Ceramic artifacts comprised 3.6 percent of all artifacts recovered from features and included numerous sherds of Marcey Creek, Experimental, Wolfe Neck, Coulbourn, Hell Island, Townsend, and Minguannan wares as well as a single steatite bowl fragment.

Artifacts and Ecofacts from Flotation. A small variety of artifacts and ecofacts were collected from flotation analysis of feature soils of the Snapp Site (Table 3). The micro-debitage assemblage (<1/4 inch) includes small flakes and shatter of quartzite, quartz, chert, and jasper. Other artifacts recovered from flotation analysis included two small shell beads from Feature 153 (Figure 24). Numerous charred seeds were recovered from the flotation; however, the majority of these seeds were unidentifiable. Features which did yield identifiable seeds averaged counts less than two seeds. Table 4 shows a summary of the seed remains and more detailed analysis of the seeds is presented later in this report. A small number of bone fragments were also recovered from the cultivated field area of the site. One calcined turtle carapace fragment was recovered from Feature 152.

Excavated Features. This section presents detailed descriptions of feature excavations in the cultivated field area of the Snapp Site. Plate 9 shows an aerial view of the site soon after the plow zone was stripped, and the black plastic squares cover individual pit features that have yet to be excavated. The features were identified as soil discolorations in the sub-soil matrix. Plate 10 shows the site after extensive feature excavations had taken place, and the holes in the ground are the excavated pit features. Attachments I and II also show feature locations at the site and are meant to be used as reference guides for this report.

TABLE 3

Summary Catalog of Artifacts and Ecofacts from Flotation

FLAKES	
Quartzite	1
Quartz	21
Jasper	32
Chert	43
SHATTER	
Quartzite	1
Quartz	15
Jasper	8
Chert	2
CARBON (g)	296.37
CHARRED SEEDS (Including charred spores)	602
BEADS	2(Feature 153)
BONE	
Unidentified	4
Fish	1(Plow zone)
Turtle	1(Feature 158)
Turtle	1(Plow zone)
Turtle: calcinated	1(Feature 152)
Opossum	2(Feature 135)

Note--A complete catalog of all artifacts recovered from the Snapp site (7NC-G-101) is on file at the University of Delaware Center for Archaeological Research.

FIGURE 24

Beads from Flotation--Feature 153

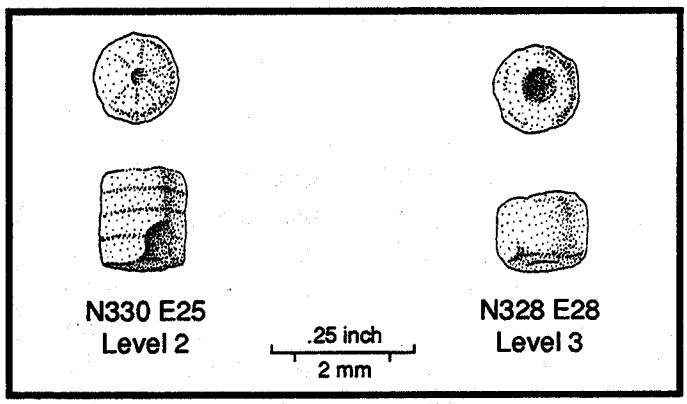


TABLE 4
Charred Floral Remains from Flotation

Feature	# Seeds	#Nut
8	1	1
35	0	2
55	1	0
56	1	0
59	0	1
62	0	8
63	3	0
71	1	0
85	1	0
92	1	0
96	1	0
98	2	0
102	1	0
130	2	0
134	5	0
145	2	1
147	2	0
152	4	0
153	35	16
153 Post 2	1	0
153 Post 3	0	1
153 Post 11	1	0
153 Post 21	1	0
153 Post 30	3	0
154	1	0
156	1	0
158	0	1
160	4	1
165	1	0
175	1	0
193	5	1
196	1	0
198	5	5
203	1	0
204	1	0
205	4	1
207	15	0
214	5	0
220	8	2
225	0	1
227	3	0
230	1	4
Total	**126**	**46**

	#	Features Represented	Species Represented
Samples with charred plant remains	89	45	N/A (seed, nut)
Samples with identifiable remains	9	3	19

Features with Identifiable Charred Remains

Feature 33

2 Copperleaf
3 Pigweed
1 Spurge
1 Lambsquarter
1 Raspberry
8 Total

Feature 153

3 Thimbleberry
1 Greenbriar
3 Chenopodium
1 Bayberry
1 Smartweed
1 Dayflower
1 Eastern Burninbush (Post 14)
11 Total

Feature 230

2 Ragweed
1 Smartweed
2 Total

All cultural features encountered at the Snapp Site were classified in accordance with a typology of prehistoric pit features of Delaware developed by the University of Delaware Center for Archaeological Research staff for use in Delaware. This pit feature typology is based upon initial research on pit feature shapes conducted at the Delaware Park Site (Thomas 1981) and was initially devised to classify pit features at the Leipsic Site (Custer, Riley, and Mellin 1994). Five basic pit shapes were recognized (Types 1-5, Figure 25) with a sixth shape (Type 2A, Figure 25) being a variant on one of the five basic types. Additional feature types were added to this existing typology to categorize features found at the Snapp Site which were not represented in the original typology. These additional feature types included a rather complex feature type consisting of two parts (Type 6, Figure 26), a variety of basin-shaped pit

PLATE 9

Aerial View of Site After Stripping of Plow Zone

Note: Individual features are under the black plastic squares.

PLATE 10

Aerial View of Site After Feature Excavations

Note: The holes in the ground are the excavated features.

FIGURE 25

Basic Feature Types

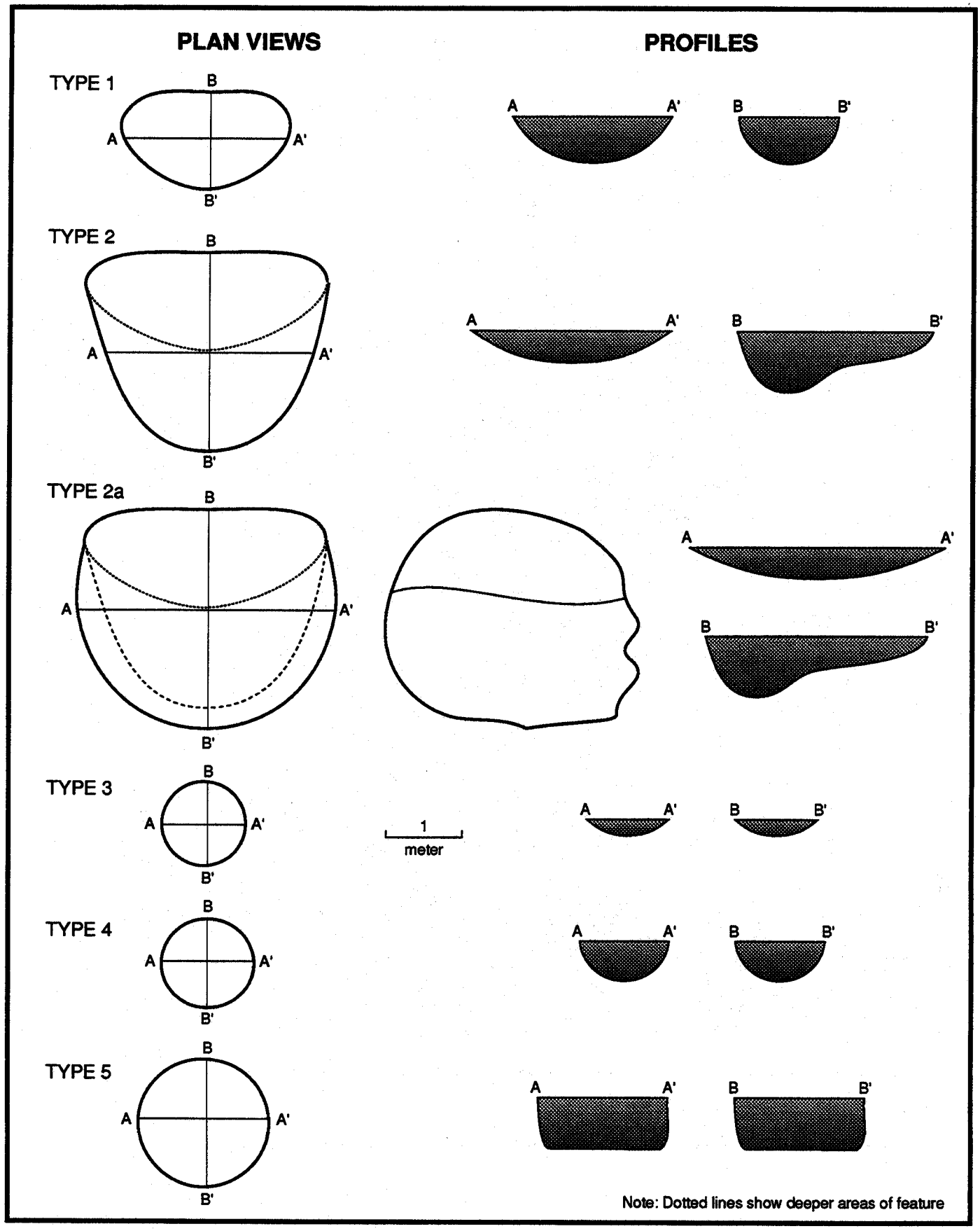
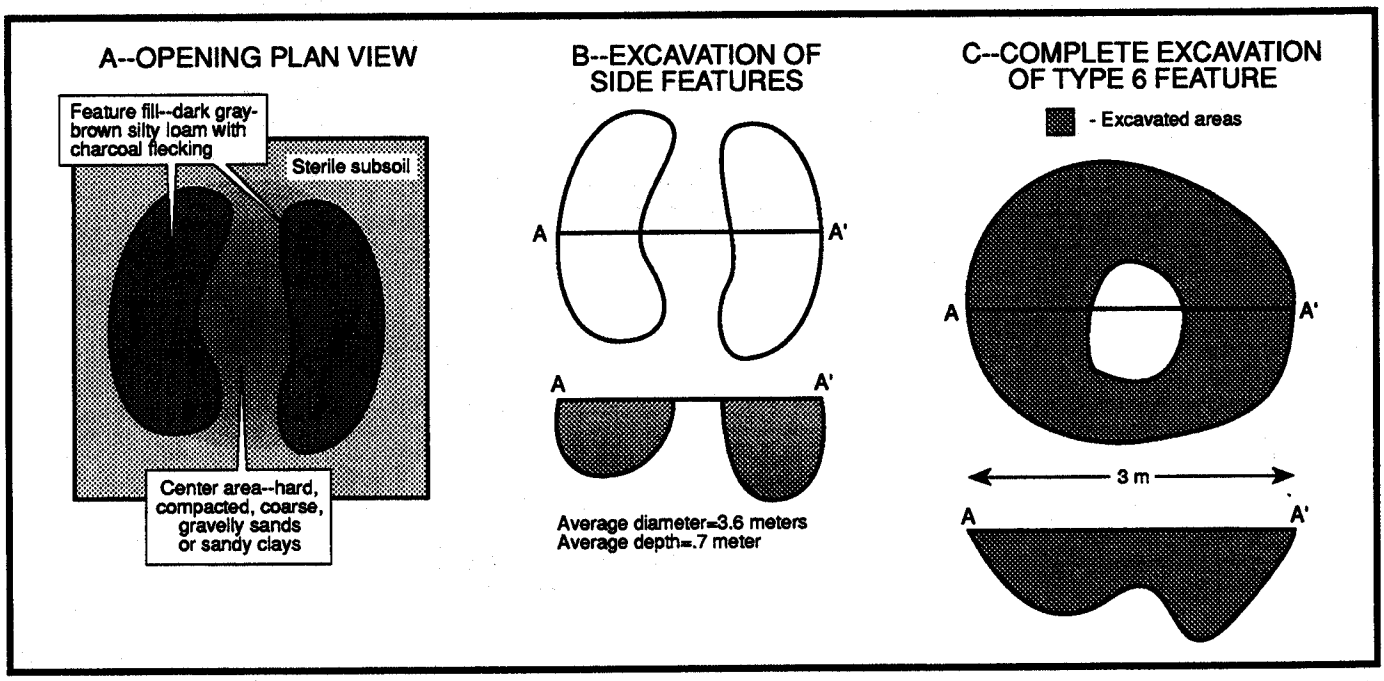


FIGURE 26

Type 6 Feature Morphology



forms (Types 7-11, Figure 27), and another complex feature form (Type 12, Figure 28) which includes post holes and other types of pit features. Complete listings of all cultural features, their types, and their dimensions are presented in Appendix I.

Although the feature typology is based primarily upon feature's shapes, inferences of feature function are a part of the feature typology and need to be considered, especially with regard to Types 1, 2, 2A, and 12. These feature types are thought to be remains of prehistoric houses, and a brief review of the study of prehistoric houses in the central Middle Atlantic region is provided here to provide background information for description of these features at the Snapp Site.

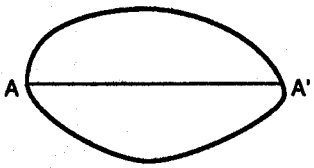
With few exceptions, such as the Clyde Farm I Complex house pattern discovered at the Hockessin Valley Site in the Delaware Piedmont (Custer and Hodny 1989), post molds and post holes are rarely associated with prehistoric house features in Delaware. In contrast, prehistoric houses from most other areas of the Middle Atlantic region are nearly exclusively defined on the basis of post mold patterns (e.g., Kinsey and Graybill 1971; Custer, Hoseth, Cheshaek, Guttman, and Iplenski 1993). Archaeological signs of posts are thought to be absent in most of Delaware because the sandy soils of the Coastal Plain allow for rapid water movement through soil profiles, and this rapid water movement destroys small post stains via leaching of their organic constituents. In the few cases where post molds have been found prior to excavations at the Snapp Site, they are usually located within disturbed feature soils where the soil textures have been altered through human intervention (e.g., Island Field Site - Griffith and Artusy 1975; Leipsic Site - Custer, Riley, and Mellin 1994), or in the clayey soils of the Piedmont which preserve organic stains more readily (e.g., Hockessin Valley Site - Custer and Hodny 1989).

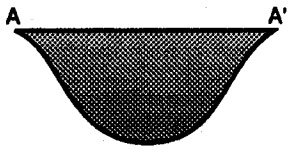
FIGURE 27

Additional Feature Types

PLAN VIEW **PROFILE**

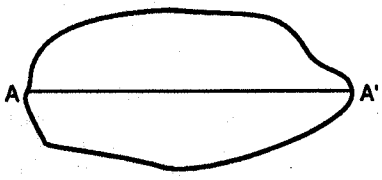
TYPE 7

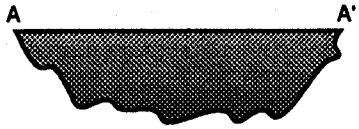




Average diameter (A-A')=1.8 meters
Average depth=.63 meter

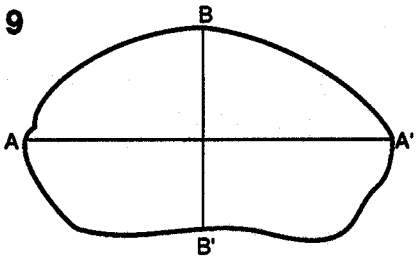
TYPE 8

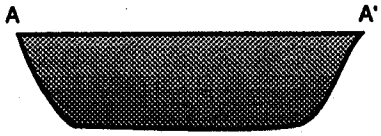




Average diameter (A-A')=3.16 meters
Average depth=.51 meter

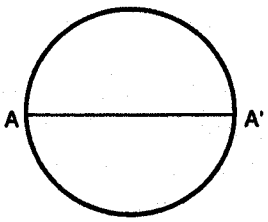
TYPE 9

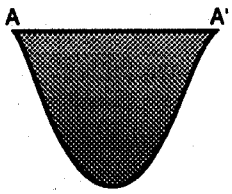




Average length (A-A')=1.9 meters
Average width (B-B')=1.6 meters
Average depth=.51 meter

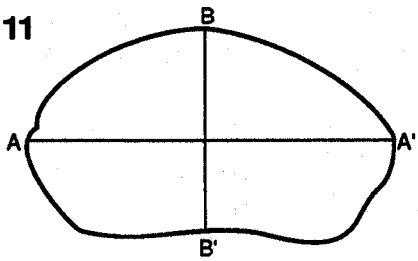
TYPE 10





Average diameter (A-A')=1.2 meters
Average depth=1.16 meters

TYPE 11

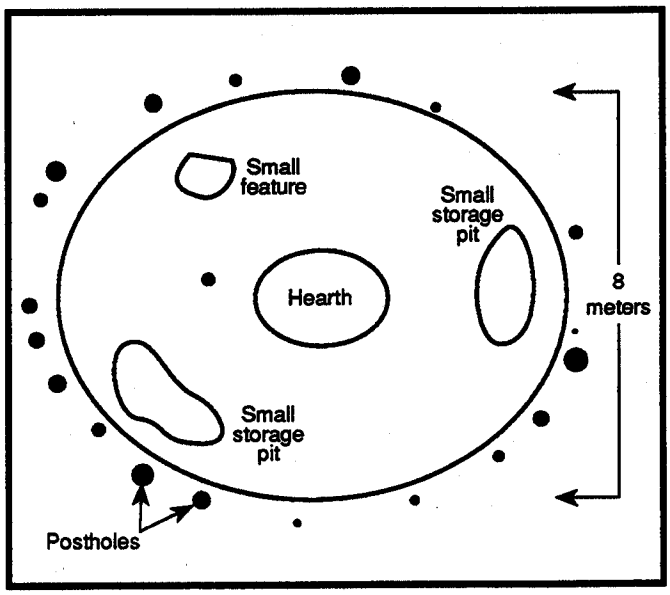


Average length (A-A')=1.98 meters
Average width (B-B')=1.56 meters
Average depth=.52 meter

Because most archaeologists expected houses in Delaware to look like the post mold patterns seen in other parts of the Middle Atlantic region, prehistoric houses had not been recognized in Delaware until Griffith and Artusy (1975) reported on a series of "pit houses" defined by large shallow features from a number of late prehistoric sites in the southern part of the state. Figure 29 shows plan views and profiles of some of the Woodland II Period houses described by Griffith and Artusy (1975). Even though some of these features clearly looked like houses and included some post mold features within them, such as the example from the Poplar Thicket Site (Figure 29C), their interpretation as prehistoric domiciles was greeted with skepticism by some members of the archaeological community.

FIGURE 28

Type 12 Feature Morphology



Probably because the term "pithouse" conjured up images of structures from the Southwest and Plateau cultures areas of Western North America, many archaeologists found it hard to believe that pit houses were used in the Middle Atlantic region. Furthermore, some archaeologists could not accept the idea that houses could be defined without post mold features, because most ethnohistoric descriptions of houses noted post-based wigwam-like structures that presumably would have left post mold stains (see overview of ethnohistoric data in Callahan 1985, 1986). Even when the taphonomic effects of Delaware's sandy soils were considered, many archaeologists were still unwilling to believe that these pithouses were indeed true houses.

With the excavation of a number of sites during the 1980s, similar pithouse features were recognized at other sites outside of Delaware (e.g., southeastern Pennsylvania - Custer 1994) and in contexts dating to time periods earlier than the late prehistoric dates (ca. AD 1200-1500) of the house features noted by Griffith and Artusy (e.g., Delaware Park - Thomas 1981). The excavations at the Delaware Park Site (Thomas 1981) were especially important because they represented the first time that pit houses were recognized outside of the southern Delaware area, and the first time that they were recognized on the basis of disruptions of the natural soil stratigraphy rather than by the presence of buried shell and organic materials.

Feature 153 from the Snapp Site, the only completely preserved version of a pit house in Delaware and a Type 12 feature (Figure 28), is especially important in understanding house features and is described below. Figure 30 shows the plan view and profile of Feature 153 and Plate 11 shows an aerial view of the feature during its excavation. Attachments I and II show its location in the northeast corner of the site.

An important aspect of this house is the fact that post molds were preserved (Plate 12) because the house was located at the foot of a slope, and slope wash over the centuries buried the features deeply enough so that plowing, erosion, and leaching did not destroy the post mold features. Figure 30

FIGURE 29

Plan Views and Profiles of Woodland II Houses

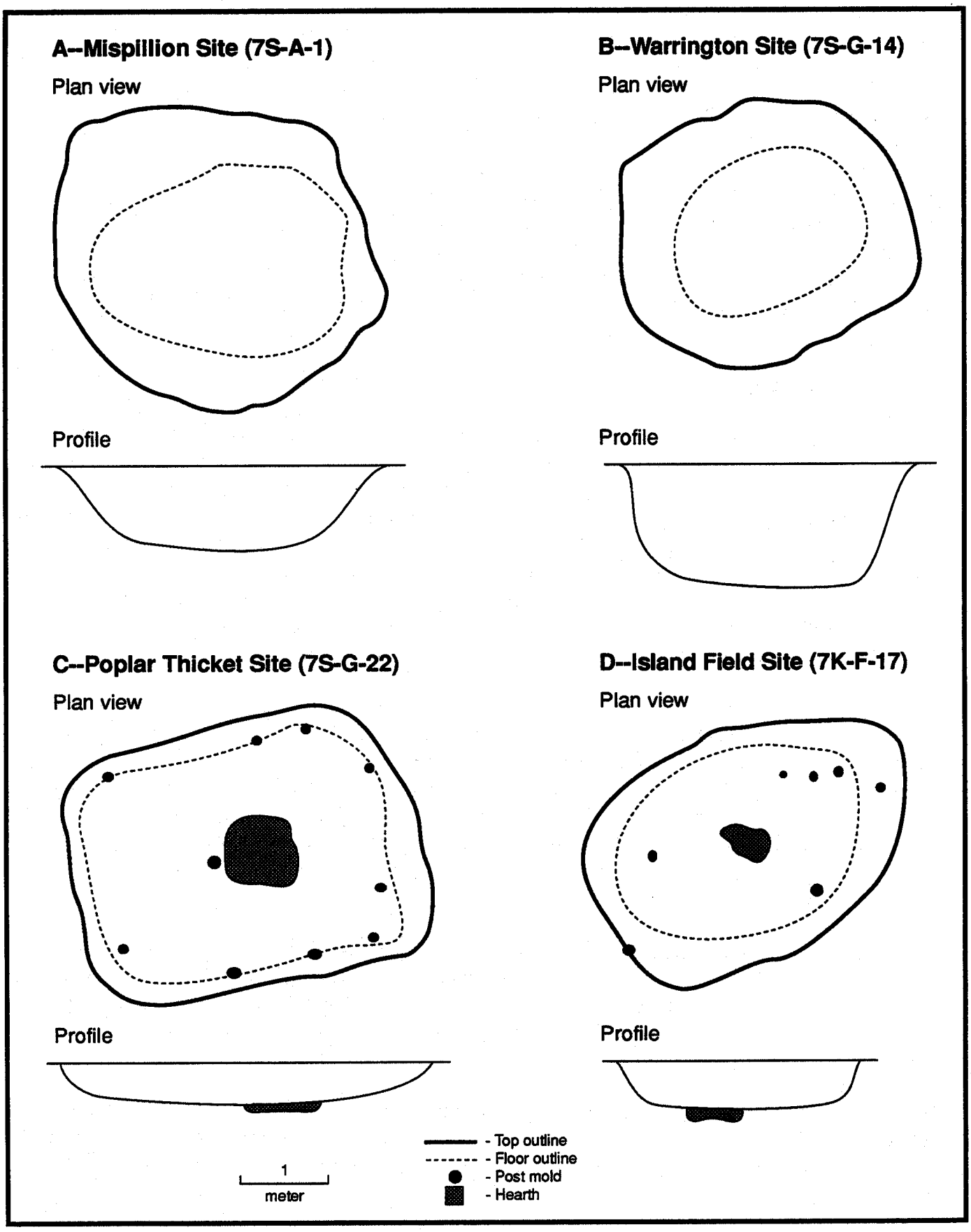
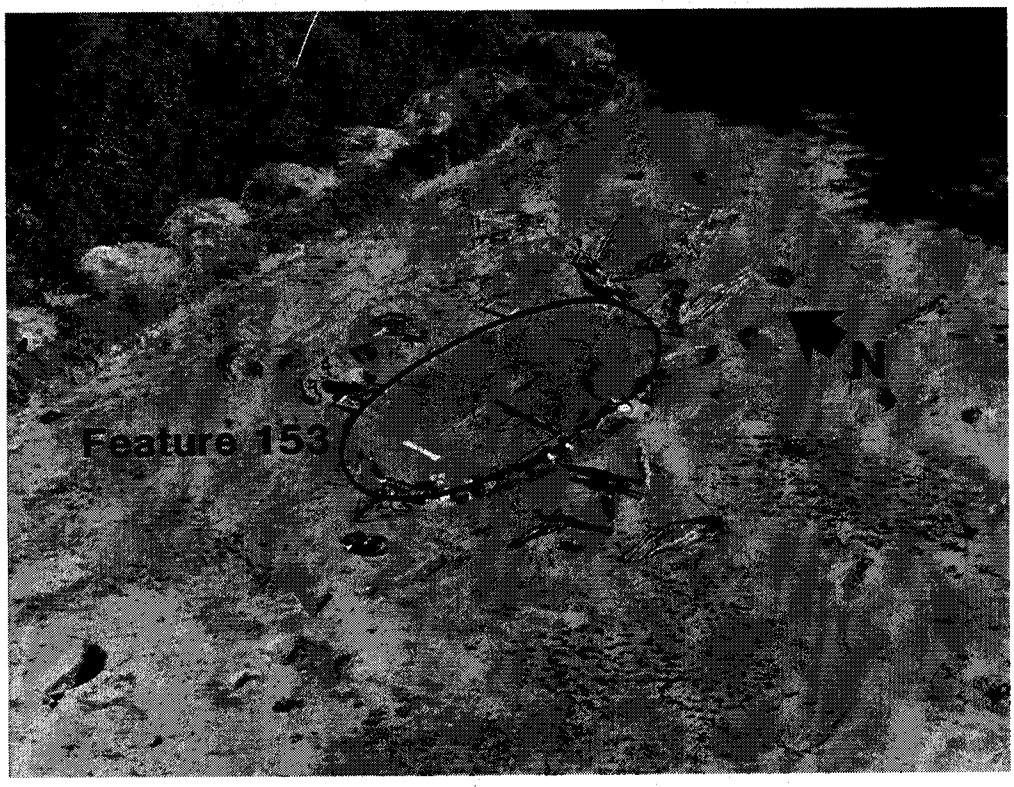


PLATE 11

Feature 153 During Excavations

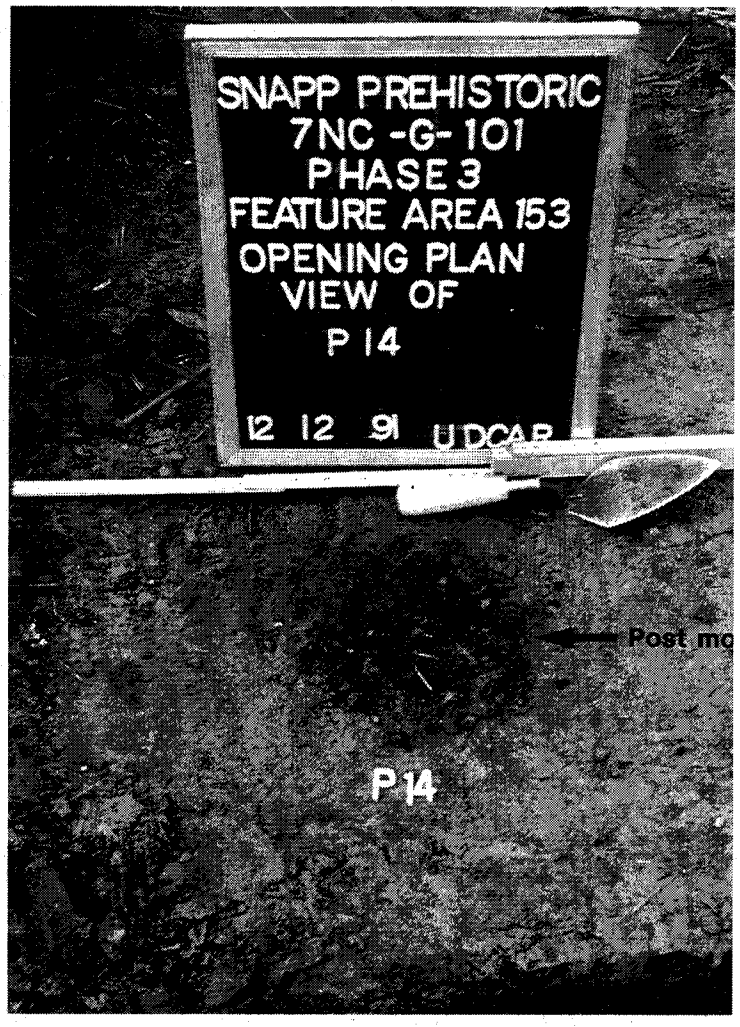


clearly shows that the posts for this house are located up to 3 feet (1 m) outside of excavated pit house. Thus, this feature shows that the size of the excavated "pit house" is not the size of the entire house. Rather, it represents only a portion of the house's total area. When the size of the complete house from the Snapp Site is considered, it is clear that it is as large as any of the other houses, defined solely by post molds, that have been found in other parts of the Middle Atlantic region (Figure 31). Therefore, if the other "pit houses" identified in Delaware are considered to be merely the excavated "basements" of larger houses, like the one at the Snapp Site, the issue of their size is a moot point.

Another interesting aspect of the house from the Snapp Site is the presence of deeper storage pits excavated into the "basement". These pits can almost be considered "sub-basements". Plates 13 - 15 show various views of Feature 153 during its excavation, and the basement and "sub-basement" can be seen. These "sub-basements" are shaped like a "D" and are usually placed along the short end of the houses. They contain artifacts, charred plant remains, and in one case a large sheet of bark that was either the covering for the pit, or a piece of the outer covering of the house (e.g., Leipsic Site - Custer, Riley, and Mellin 1994). It is assumed that these "sub-basements" were storage features within the house and that when the materials within the storage pit were consumed, the pit was used as a receptacle for household refuse. This refuse constitutes the artifacts that we find when these pits are excavated. Almost all of these storage pits lack any kind of internal stratification, indicating that they were used, and then filled, over a short period of time. The very fact that these features show signs of use as both storage and refuse disposal facilities implies a short-term use of the structures.

PLATE 12

Feature 153, Post 14



One gets the impression that food resources were stored in the "sub-basement" in the late summer and early fall, when most local plant food resources are most readily available in Delaware (see Thomas et al. 1975 for a review of the seasonal availability of wild food sources in prehistoric Delaware). These resources were then consumed by the house's inhabitants during times of low natural environmental productivity, probably the cold-weather months (Thomas et al. 1975). The use of the pits as refuse disposal facilities strongly implies that the house's inhabitants did not plan to reuse them for food storage. Consequently, the house and associated pit features were probably abandoned prior to the need for a new storage facility during the following winter. In this scenario, the pit houses would represent cold-weather dwellings occupied for a single year. This hypothesis is also supported by an excavated pit house in the Atlantic Coast Zone (7S-D-9 - Custer and Mellin 1987) which contained oyster shell remains that had been collected during the cold-weather months.

Feature 153 includes an interior hearth (Plate 16, Figure 30). The presence of interior hearths is often seen as a sign of cold-weather occupations (Cordell 1984), and adds further support to the contention that these houses were cold-weather dwellings. In fact, Gilman (1987), based on a review of the ethnographic use of pit houses, has suggested that the mere presence of excavated pit house

FIGURE 30

Plan View and Profile of Feature 153

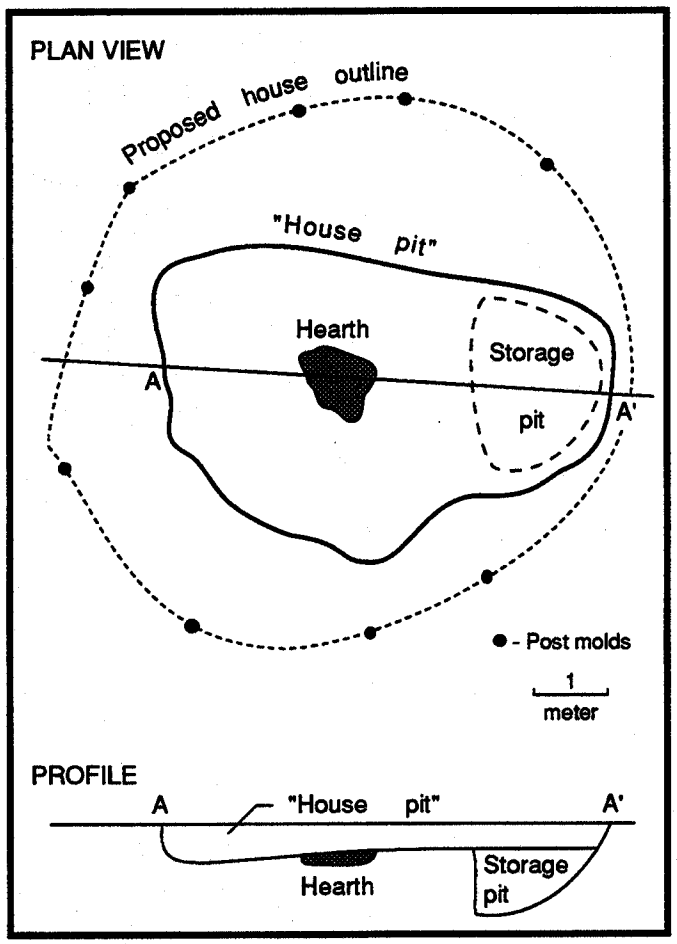


FIGURE 31

Comparison of House Feature Sizes

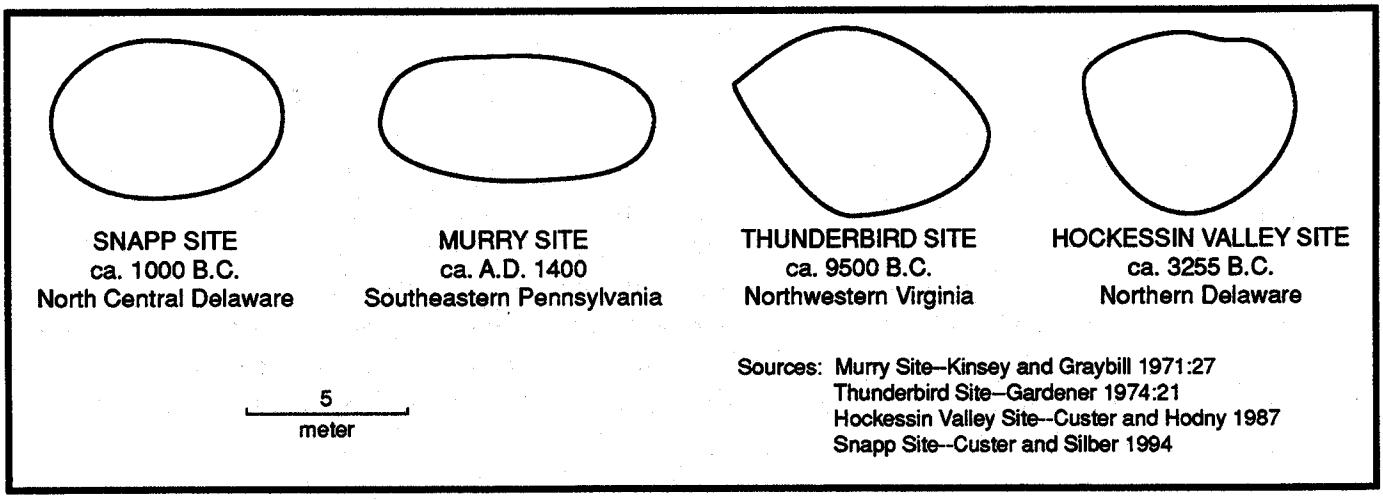
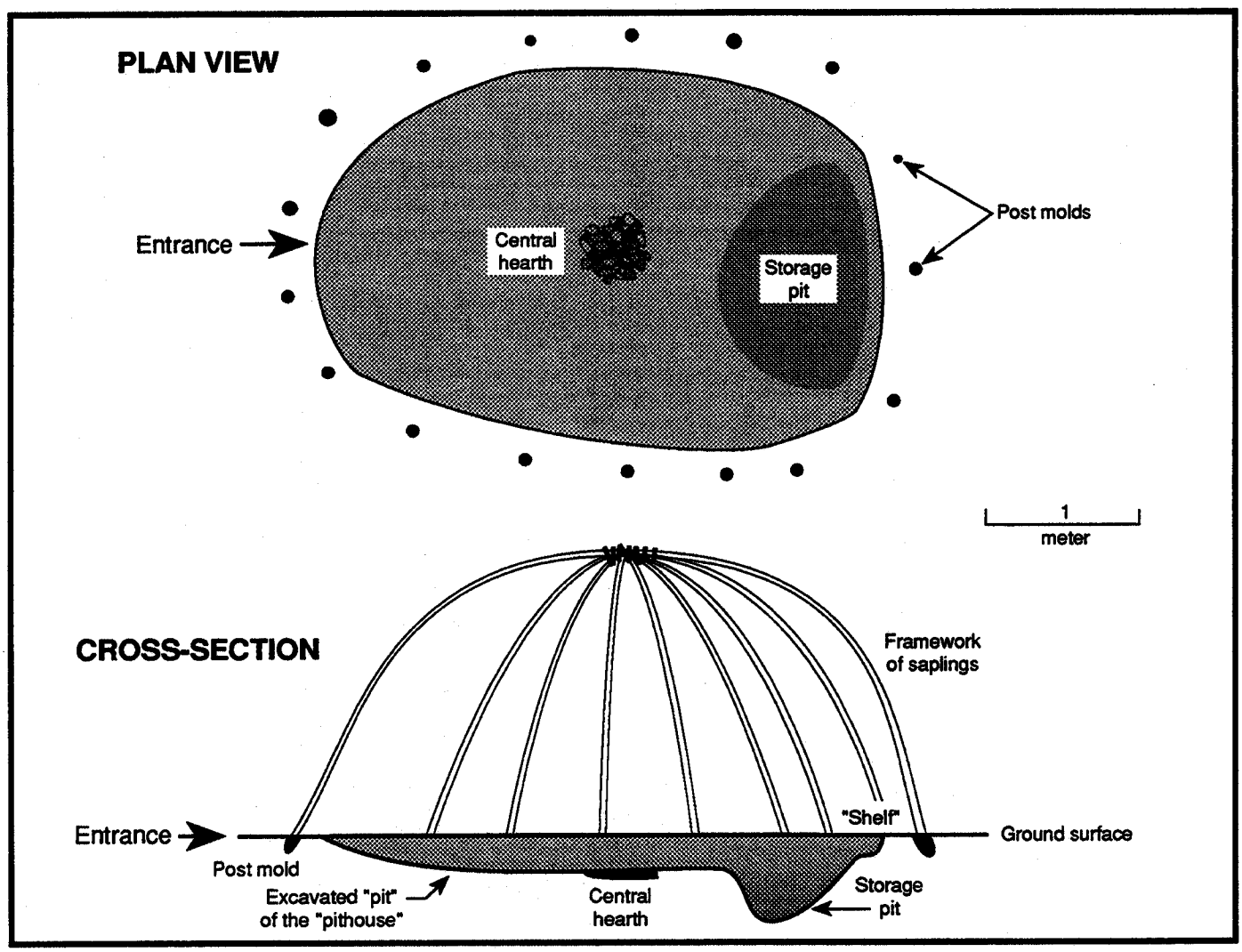


FIGURE 32

Reconstructed Pit House



architecture implies a cold-weather occupation. However, not all houses have interior hearths, even though almost all do have interior storage pit features. The houses without interior hearths may not have been inhabited during the cold weather months, but the presence of the interior storage pits may suggest otherwise.

Figure 32 shows a hypothetical reconstruction of a prehistoric pit house based on Feature 153 and various ethnographic examples from the Middle Atlantic and Northeast (e.g., Bock 1978:113; Conkey, Boissevain, and Goddard 1978:183; Feest 1978a:274, 278; Callender 1978:649, 651; see also Callahan 1985, 1986, and Thurman 1986). The typical house would be centered upon the excavated pit "basement" which is up to 3 meters long and 2.5 meters wide. The depth of the pit "basement," when identified archaeologically, varies between 0.25 meters and 0.5 meters. However, it is important to remember that these features cannot be identified at most archaeological sites until after the overlying plow zone soils are removed, and these plow zone soils can be between 0.3 meters and 0.5 meters deep. Therefore, these pit basements were deeper and larger in plan view at the time of their prehistoric construction than when we now see them.