INTERPRETATIONS

This section presents interpretations of the excavation data, as described above, from Phase I, II, and III archaeological studies at the Snapp Site. These discussions focus on site chronology, distributions of artifacts and features across the site, and activity areas within the site. Specific analyses regarding functional uses of features, stone tool technology, ceramic technology, and fire-cracked rock artifacts at the site will also be presented.

Site Chronology

Diagnostic lithic artifacts, ceramics, and radiocarbon dates all provide chronological data and are discussed below. The distribution of features with diagnostic artifacts across the site also reveals information on the history of the site's occupation and this distribution is also discussed.

Diagnostic Lithic Artifacts. The diagnostic lithic artifacts from the plowed field and the woodlot will be discussed separately. Dates noted for diagnostic projectile points are based on summaries of chronological data for the Delmarva Peninsula (Custer 1984, 1989). Figure 60 shows the diagnostic projectile points found within plow zone test units in the cultivated field. A corner-notched Kirk/Palmer variant (Figure 60A) is present and indicates an occupation during the later portion of the Paleo-Indian Period (ca. 8000 - 7000 B.C.). Three stemmed points (Figure 60B - 60D) were also found. Various types of stemmed points were used during the Archaic-Woodland I Periods and are not always particularly diagnostic (Custer 1989:147-156). However, more recent review of unpublished stratigraphic data from southeastern Pennsylvania (Custer 1994) indicates that some stemmed point forms are more diagnostic of certain time periods within the Archaic-Woodland I intervals than previously thought.

FIGURE 60

Points from Plow Zone Test Units--Cultivated Field

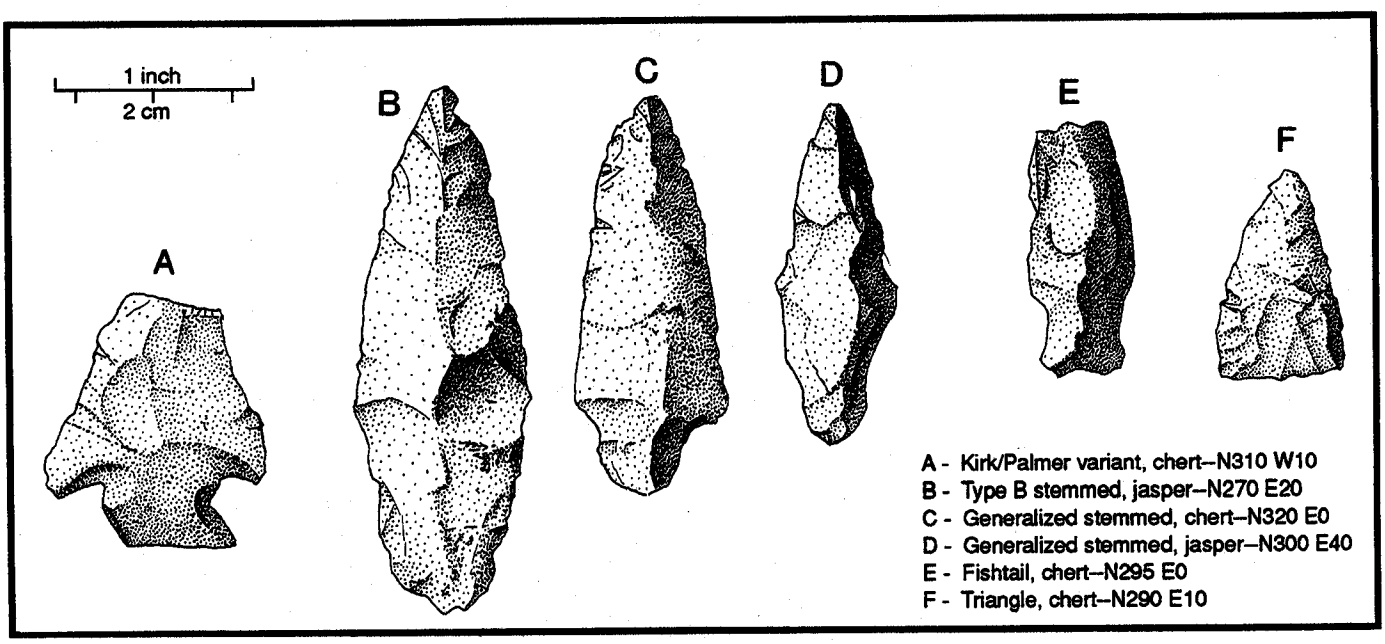
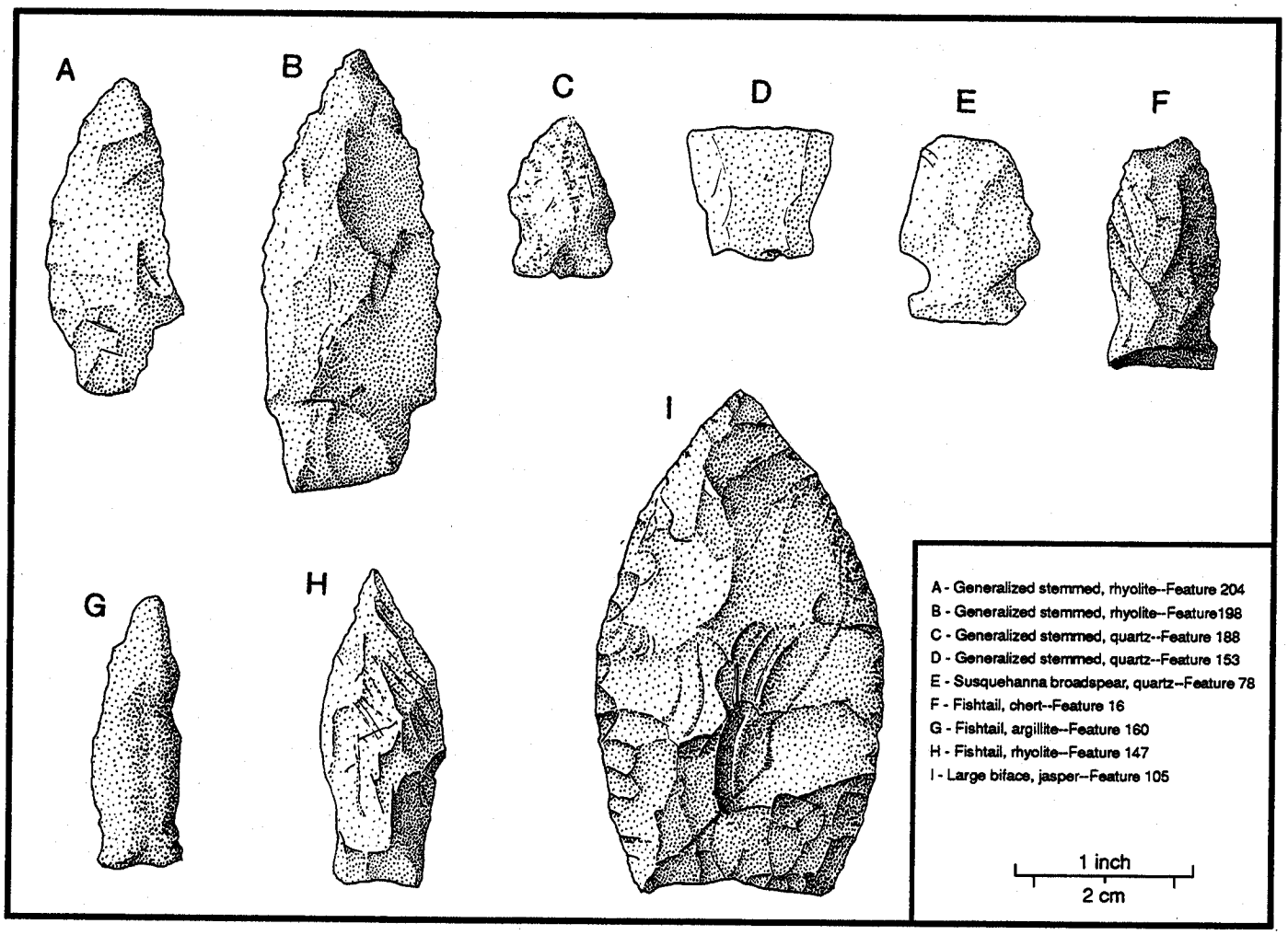


FIGURE 61

Points from Features--Cultivated Field

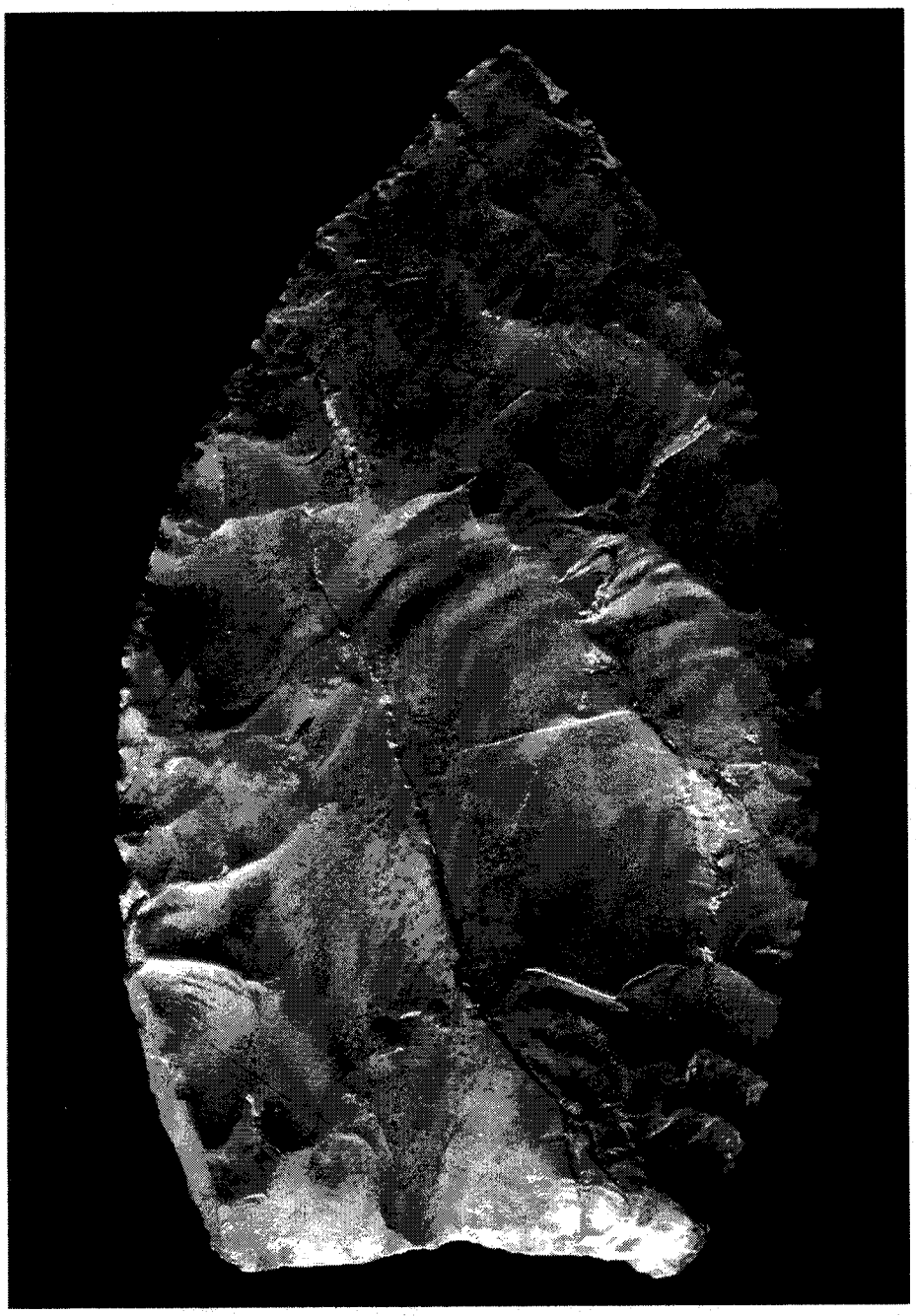


The points illustrated in Figures 60C and 60D are not particularly diagnostic and indicate occupations dating to any time during the Archaic-Woodland I time periods. The point illustrated in Figure 60B is a variant of a Poplar Island form (Ritchie 1961:44-45; Type B-Kent 1970) which indicates an occupation during the later portion of the Clyde Farm Complex and Wolfe Neck Complex (ca. 2500-500 B.C.). A fishtail point (Figure 60E) is present and represents an occupation ca. 1200-500 B.C. (Kinsey 1972:430-433). Finally, a triangular point is present (Figure 60F) and this point dates to the Woodland II Minguannan Complex (ca. A.D. 1000-1600 - Custer 1989:300-302).

Figure 61 illustrates the projectile points and one large biface found in excavated sub-surface features in the cultivated field. Stemmed points are present (Figure 61A - 61D); however, none of these varieties are particularly diagnostic and at best indicate occupations during the Archaic-Woodland I periods. Nonetheless, it should be noted that the point base shown in Figure 61D, which is the stem portion of a large slightly contracting stem variety (Type D-Kent 1970; Custer 1994) is associated at the Snapp Site with a radiocarbon date of 2120 ± 70 B.P. (Beta-56803) which has a calibrated range of 350 - 72 B.C. with an intercept value of 138 B.C. A small Susquehanna broadspear is present (Figure 61E) and dates to ca. 1500-1000 B.C. (Kinsey 1972:427- 430). Three fishtail points (Figures 61F - 61H) are present with a date range of ca. 1200-500 B.C. A particularly interesting artifact is a jasper biface

PLATE 36

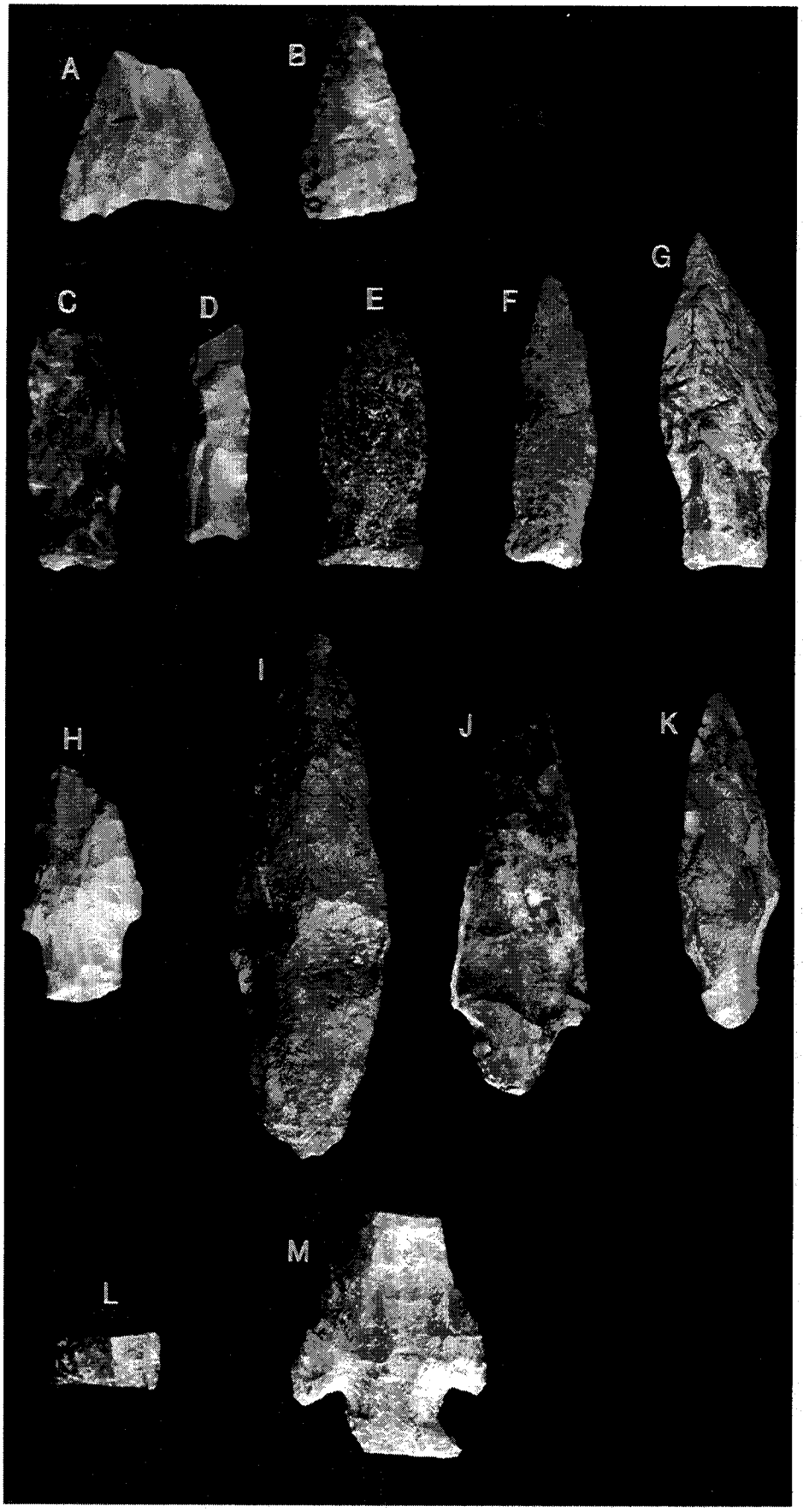
Webb Complex Biface
(ca. A.D. 600 - 1000) - Feature 105



(Figure 61I, Plate 36) found in Feature 105. Similar bifaces have been found at the Island Field site (Custer, Rosenberg, Mellin, and Washburn 1990:157-161) where they are associated with a range of radiocarbon dates between A.D. 600- 900. A charcoal sample from Feature 105 yielded a date of 1410 $\pm$ 70 B.P. (Beta-56802) which has a calibrated range of A.D. 576-666 with an intercept value of A.D. 642.

PLATE 37

Projectile Point Chronology



1 inch
2 cm

Woodland II
(A.D. 1000-A.D. 1600)

A-Jasper triangle
(woods, surface)

B-Chert triangle
(N290 E10, plow zone)

Woodland I
(3000 B.C.-A.D. 1000)

C-Chert fishtail
(N295 E0, plow zone)

D-Chert fishtail
(N337 W37, level 4, woods)

E-Chert fishtail (Feature 16)

F-Argillite fishtail (Feature 160)

G-Rhyolite fishtail (Feature 147)

H-Jasper Type D stemmed
(N346 W21, level 4, woods)

I-Jasper Type B stemmed
(N270 E20, plow zone)

J-Chert Type B stemmed
(N320 E0, plow zone)

K-Jasper Type B stemmed
(N300 E40, plow zone)

Paleo-Indian
(10,000 B.C.-6500 B.C.)

L-Jasper fluted point
(N344 W34, level 4, woods)

M-Chert Kirk/Palmer
(N310 W10, plow zone)

FIGURE 62

Points from Test Excavations--Woodlot

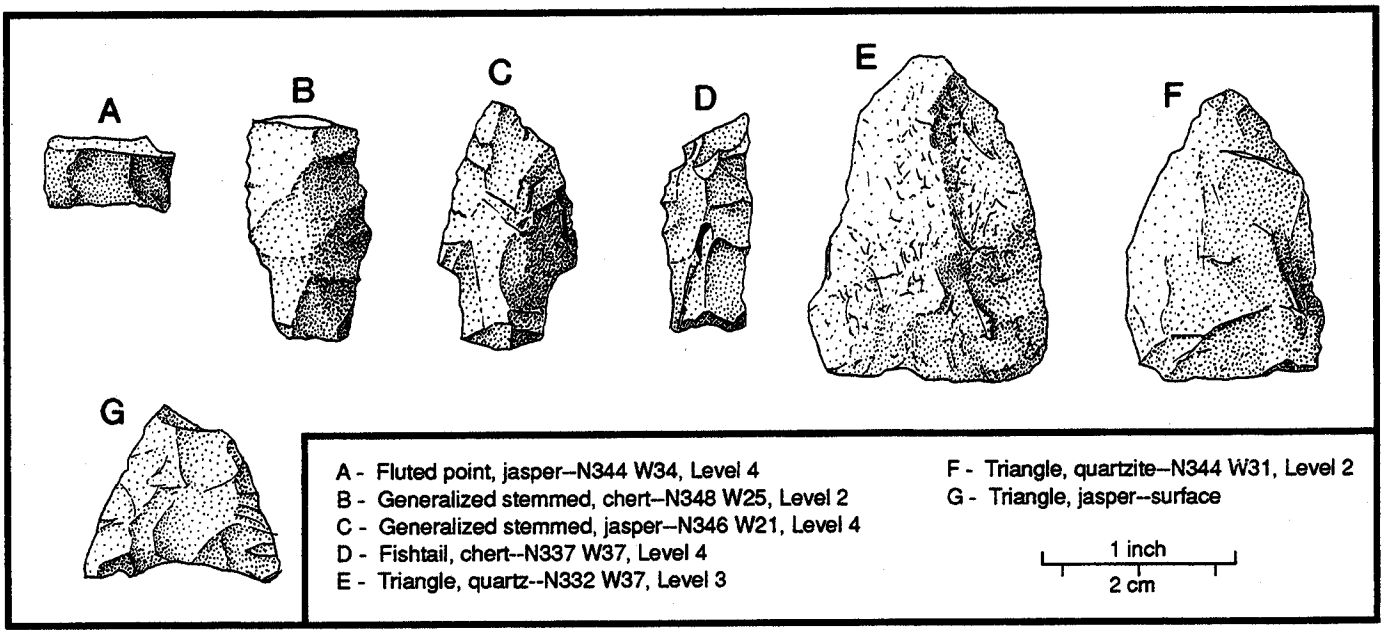


Figure 62 shows the diagnostic points found in test units within the wooded area of the site. The basal fragment of a Paleo-Indian fluted point (Figure 62A) was found in one test unit and indicates an occupation between 9500 and 8500 B.C. Two stemmed points (Figure 62B - 62C) are present, and have limited diagnostic information. A fishtail point (Figure 62D) dating to ca. 1200-500 B.C. were also present. Three triangular points (Figure 62E - 62G) indicate a Woodland II occupation (ca. A.D. 1000-1600).

Figure 63 shows the composite chronological data that can be determined from the projectile point assemblage and Plate 37 shows the projectile point chronology. Almost the entire time range of Delaware prehistory is represented with the exception of the Paleo-Indian/Archaic transition and the initial parts of the Archaic Period. The diagnostic point assemblage is too small to allow any assessments of settlement intensity through time based on these data alone.

Diagnostic Ceramics. A wide range of ceramics, which are more sensitive chronological markers than most projectile point types, were found at the Snapp Site and Table 6 lists the types present, their dates based on associations with radiocarbon dates at other sites on the Delmarva Peninsula (Custer 1989), and their distribution in the cultivated field and woodlot. The composite chronological data from the ceramics is summarized in Figure 63 and shows a continuous span of site occupations through the entire Woodland Period.

Unlike the projectile point data, the ceramic data are numerous enough to analyze with regard to the intensity of settlement at the site through time. Sherd counts could be used to assess settlement intensity through time; however, many of the ceramics from the site occur very early in the sequence of ceramic development, are quite friable, and do not preserve well. Consequently, simple sherd counts

FIGURE 63

Composite Diagnostic Artifact Data

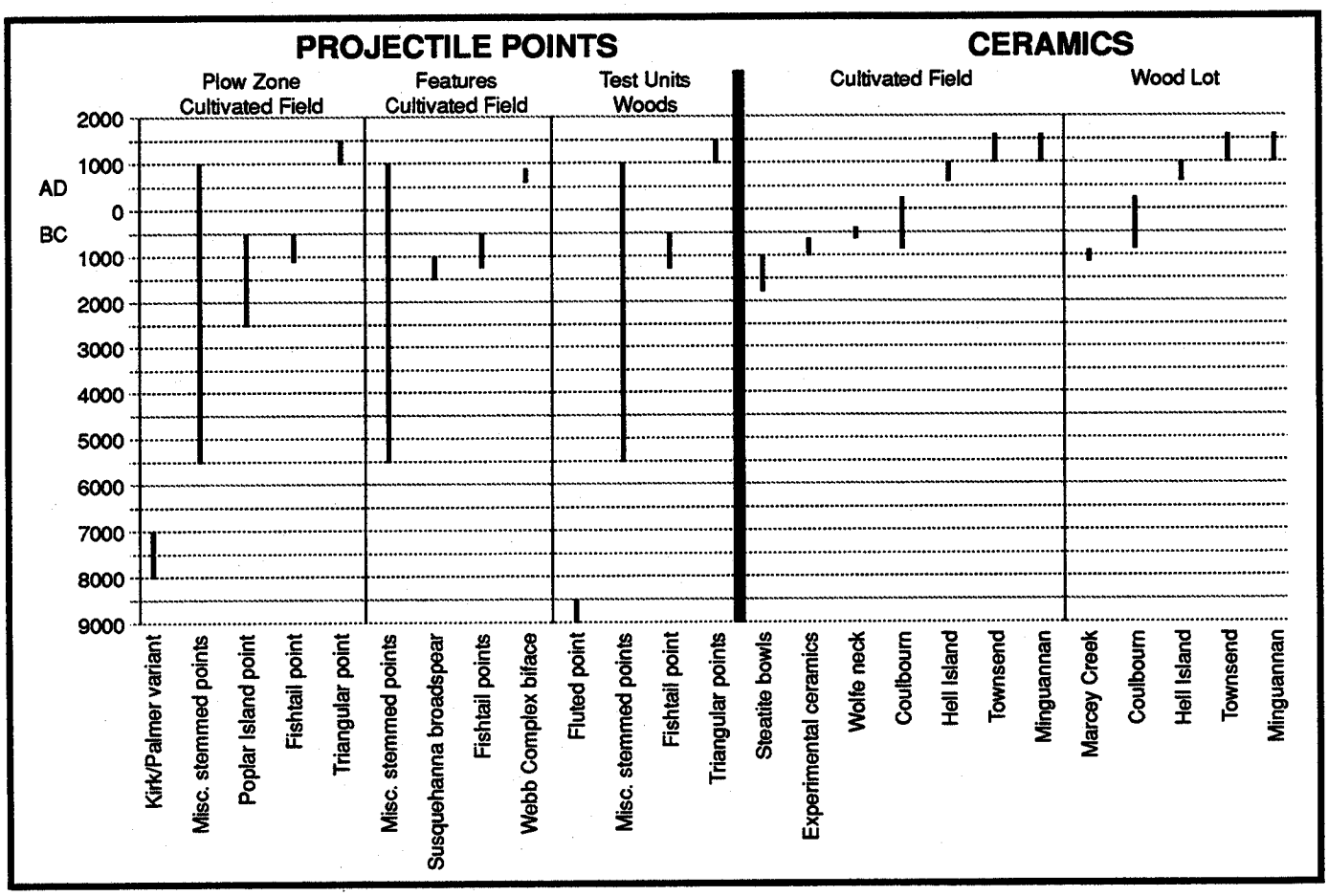


TABLE 6

Ceramic Types from the Snapp Site

CERAMIC TYPE	DATES*	CULTIVATED FIELD	WOODS
Soapstone Bowl	1700 BC - 1200 BC	Yes	No
Marcey Creek	1200 BC - 900 BC	Yes	Yes
Dames Quarter	1000 BC - 700 BC	Yes	No
Ware Plain	1000 BC - 700 BC	Yes	No
Wolfe Neck	700 BC - 400 BC	Yes	No
Coulbourn	800 BC - AD 200	Yes	Yes
Hell Island	AD 600 - AD 1000	Yes	Yes
Townsend	AD 1000 - AD 1600	Yes	Yes
Minguannan	AD 1000 - AD 1600	Yes	Yes

*Source: Custer 1989:166-176

PLATE 38

Marcey Creek Ceramic Vessel from Feature 193

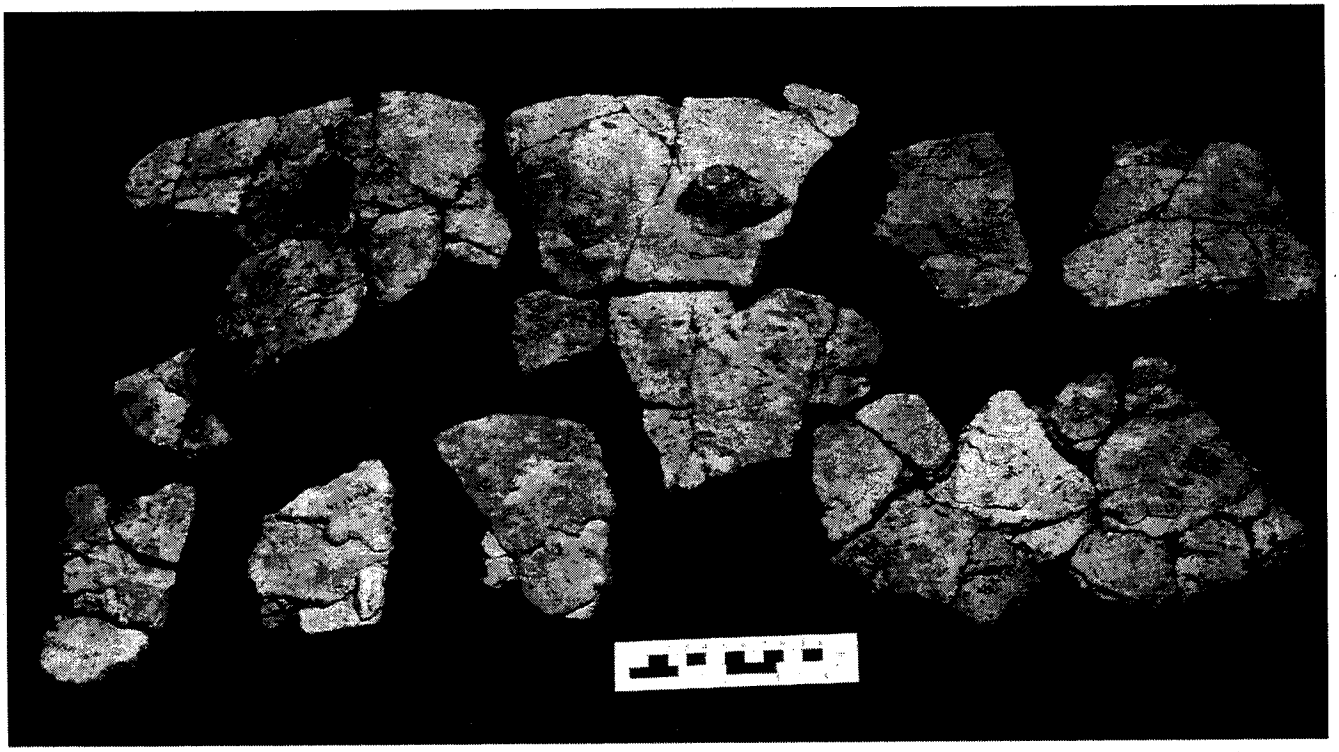


TABLE 7

Distribution of Ceramic Types Among Features

CERAMIC TYPE	NUMBER OF FEATURES	PERCENTAGE
Soapstone Bowl	1	2.0%
Marcey Creek	20	37.0%
Dames Quarter	10	18.5%
Ware Plain	3	6.0%
Miscellaneous Experimental Wares	10	18.5%
Wolfe Neck	3	6.0%
Coulbourn	1	2.0%
Hell Island	6	10.0%
Total	54	100.0%

PERCENTAGE

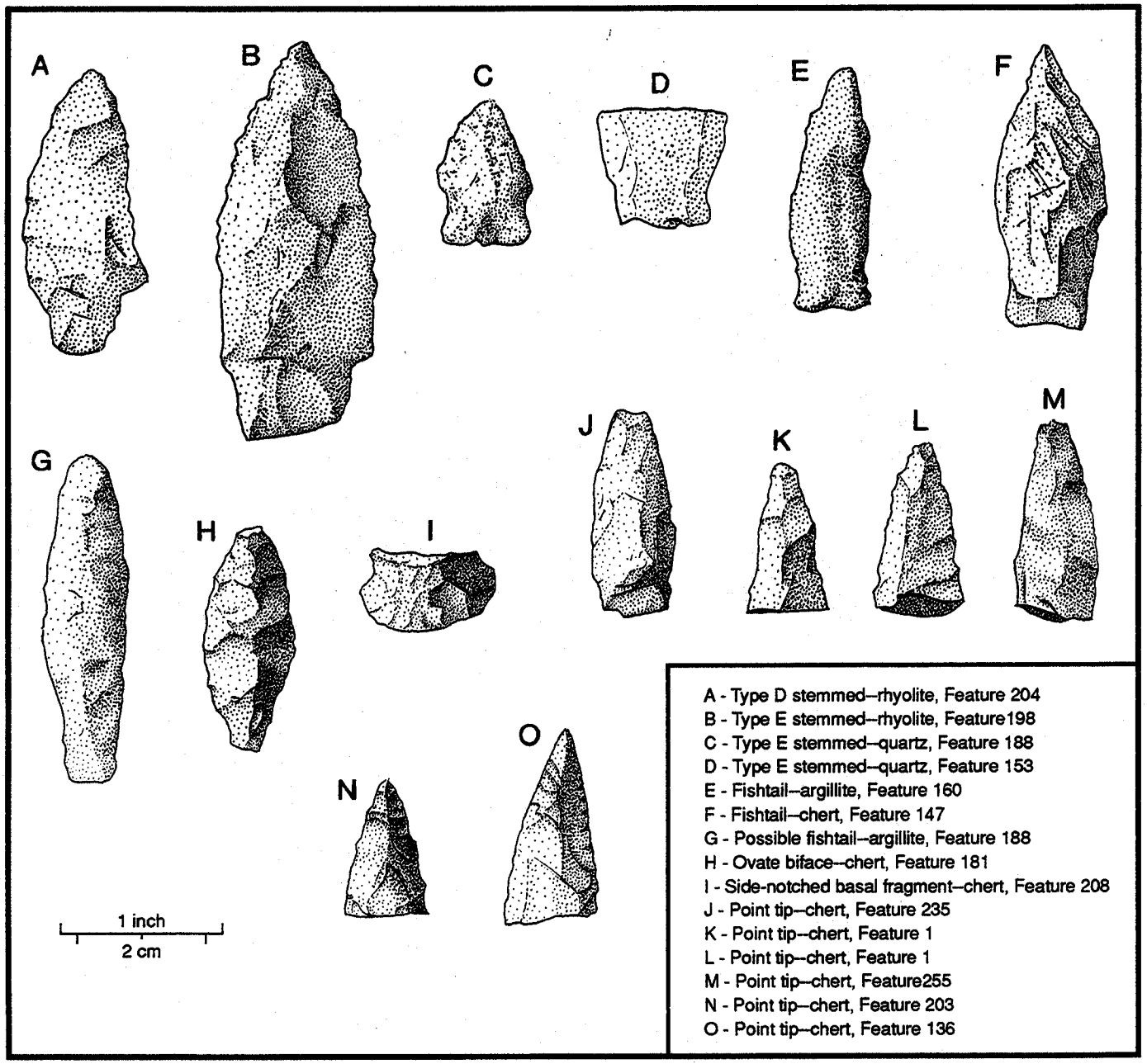
Steatite	2%
All Experimental Wares	80%
Wolfe Neck/ Coulbourn	8%
Hell Island	10%

could be badly biased by preservation factors. The poor preservation of early ceramics also limits the possibility of vessel reconstruction and minimum vessel counts even though one large section of a Marcey Creek vessel dating to ca. 1000 B.C. (Plate 38) was recovered.

An alternative method for assessing settlement intensity through time via chronological analysis of ceramics is to consider the distribution of various ceramic types among the features. Out of a total of 54 features with pottery, only five contained anomalous associations of ceramics from disparate time periods. In all five cases, the feature was assumed to date to the later time period with accidental inclusion of earlier artifacts in feature fill. Table 7 shows the frequencies of features with each ceramic type and it can be seen that Marcey Creek, Dames Quarter, and other miscellaneous Experimental Wares account for more than 80 percent of the features containing identifiable ceramics. Although only slightly more than 25

FIGURE 64

Points Associated with Experimental Ceramics

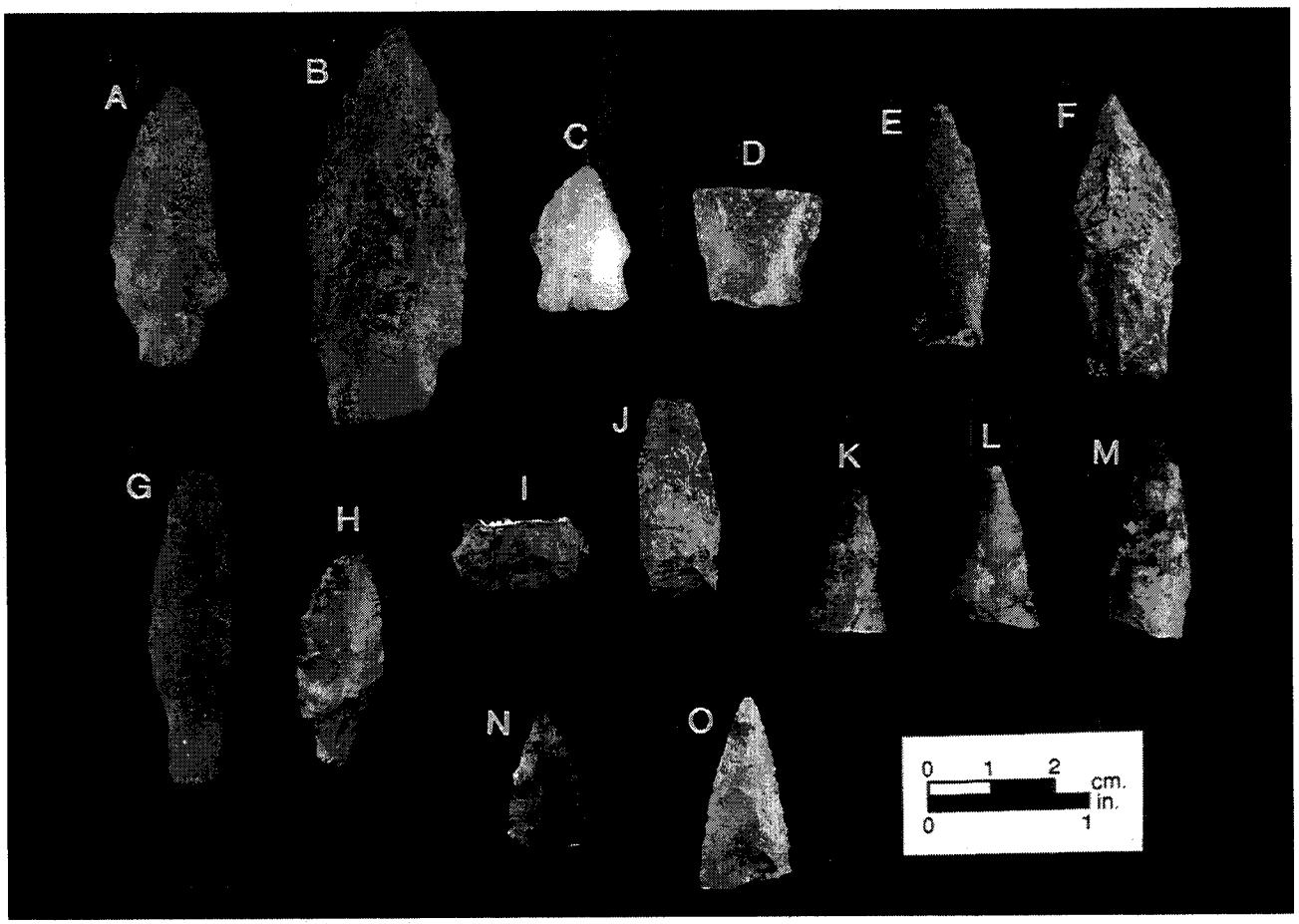


percent of the site's features contained identifiable ceramics, the sample is still large enough to suggest that the most intensive occupation of the site occurred between 1200 B.C. and 700 B.C. at the end of the Clyde Farm Complex.

Projectile Point and Ceramic Associations. The Clyde Farm Complex time period (ca. 3000 - 1000 B.C.) is characterized by a variety of projectile point forms (Custer 1989:147-153). Within the time period of use of experimental ceramics (ca. 1200 - 700 B.C.), which is also the time period of the most intensive use of the Snapp Site, fishtail points are the only really diagnostic and distinctive point

PLATE 39

Points Associated with Experimental Ceramics

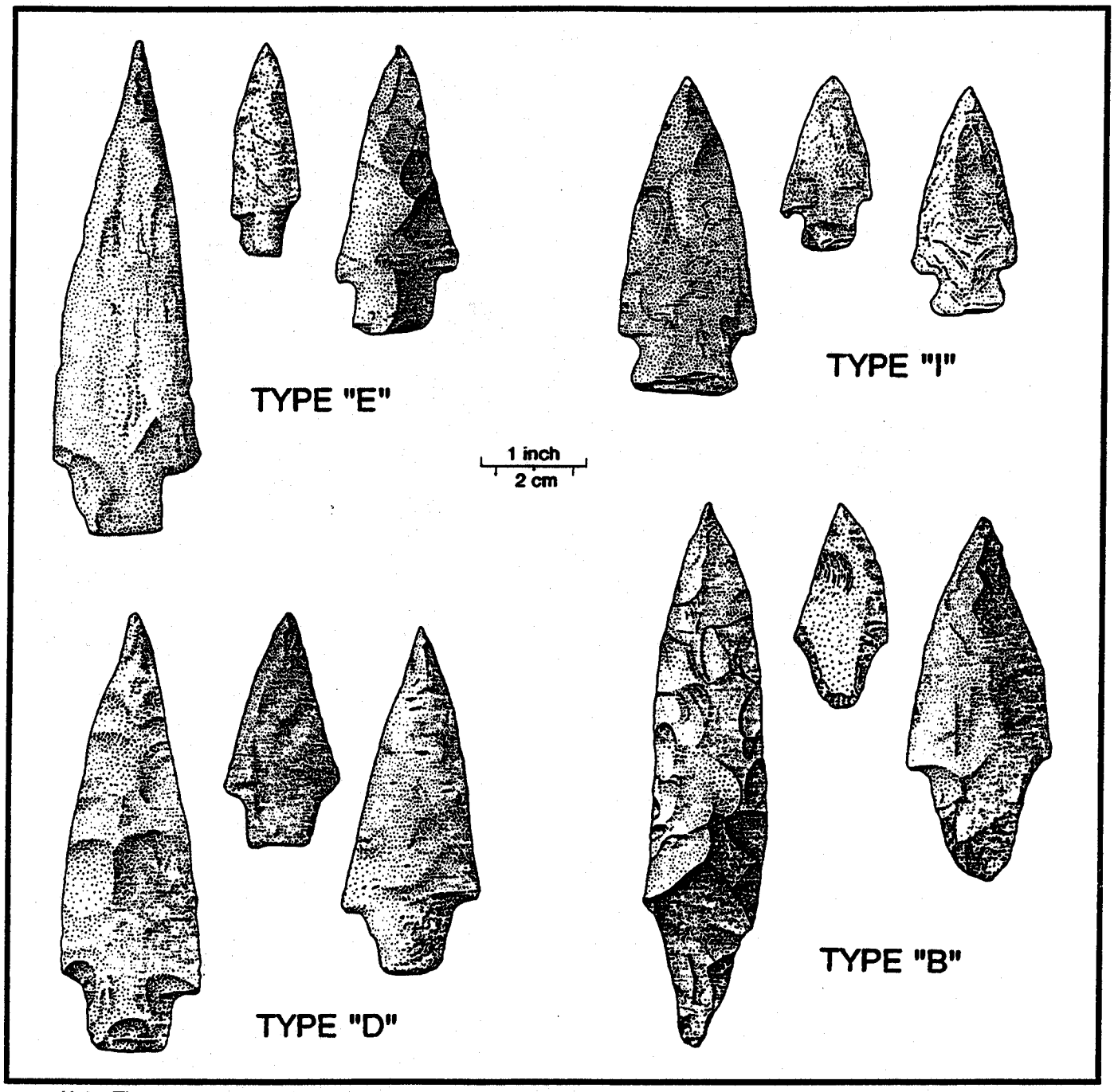


A - Type D stemmed--rhyolite (Feature 204)
B - Type E stemmed--rhyolite (Feature198)
C - Type E stemmed--quartz (Feature 188)
D - Type E stemmed--quartz (Feature 153)
E - Fishtail--argillite (Feature 160)
F - Fishtail--chert (Feature 147)
G - Possible fishtail--argillite (Feature 188)
H - Ovate biface--chert (Feature 181)
I - Side-notched basal fragment--chert (Feature 208)
J - Point tip--chert (Feature 235)
K - Point tip--chert (Feature 1)
L - Point tip--chert (Feature 1)
M - Point tip--chert (Feature 255)
N - Point tip--chert (Feature 203)
O - Point tip--chert (Feature 136)

style. Examples of fishtail points in association with Experimental ceramic types are present at the Snapp Site (Figures 61F - 61H); however, other point types are present as well. Figure 64 and Plate 39 show the varied point types found in association with Experimental ceramics along with the fishtail points.

Stemmed points (Figure 64A - 64D, 64G, Plate 39A - 39D, 39G) are present and vary in shape and size. Figure 65 shows a series of stemmed point types identified by Kent (1970) at the Piney Island site in southeastern Pennsylvania and some of these types are present in the Snapp Site assemblage. The specimen shown in Figure 64A (Plate 39A) is an example of Type "D" (Figure 65) which is found in contexts dating to ca. 5500 - 1000 B.C. at Piney Island. Three examples (Figures 64B - 64D, Plates 39B - 39D) are similar to Type E (Figure 65) which has a similar time span to Type D. The presence of these point types in association with Experimental ceramics at the Snapp Site shows that their time range can be expanded up to 700 B.C., into the initial part of the Woodland Period.

FIGURE 65
Stemmed Point Types



Note: These projectile point illustrations are based on type specimen collections from southeastern Pennsylvania maintained at the Archaeology Section, State Museum of Pennsylvania, Harrisburg, Pennsylvania

TABLE 8
Radiocarbon Dates

LAB NUMBER	DATE	CALIBRATED RANGE*	FEATURE	ASSOCIATED ARTIFACTS
56802	1410 BP ± 70	A.D. 576 (642) 666	105	Webb biface (Figure 61I; Plate 36)
56361	1150 BP ± 80	A.D. 775 (889) 984	142/193	Marcey Creek pot (Plate 38); Hell Island ceramic sherd
56803	2420 BP ± 70	B.C. 350 (170,138,130) 72	153	Stemmed point (Figure 61D, 64D)
56360	1640 BP ± 70	A.D. 262 (411) 531	206	Marcey Creek pottery

* Using computer program CALIB (Stuiver and Reimer 1986).

The base of a large side-notched point (Figure 64I, Plate 39I) is present in the Snapp Site assemblage and is very similar to the Harihokake Side-Notch type. This point type was defined by Hummer (1991:151- 152) based on assemblages from the Williamson site in the Middle Delaware Valley where they are found in association with Experimental ceramics and radiocarbon dates ca. 1300-800 B.C. The specimens shown in Figure 64G, 64H, and 64J (Plates 39G, 39H, 39J) are difficult to characterize due to breakage (Figure 64J, Plate 39J) or weathering (Figure 64G, Plate 39G) and are illustrated to show the full range of point variability of points in the Snapp assemblage in association with Experimental ceramics. A series of point tips are also included in Figure 64 (64K - 64O, Plates 39K - 39O). These tips are in no way diagnostic, but are included to show that narrow-blade point forms are present in association with Experimental ceramics as well.

Radiocarbon Dates. Four radiocarbon dates were obtained from features at the Snapp Site and are listed in Table 8 along with their calibrated ranges and associated artifacts. Dates Beta-56802 and Beta-56803, match well with known ages of associated diagnostic artifacts and are believed to be valid radiocarbon dates. Date Beta-56361 is associated with two pottery types (Hell Island and Marcey Creek) of widely varied age (Table 6). The radiocarbon date is consistent with those for Hell Island pottery (Custer 1989), but is too late for Marcey Creek pottery which dates to ca. 1000 B.C. Consequently, this radiocarbon date shows the later predisturbance of an earlier pit feature. Date Beta-56360 is also much too late for Marcey Creek pottery and is either a bad date or an example of younger charcoal intruding into an older feature.

Distribution of Dated Features. The distributions of dated features were analyzed to see if areas of the site occupied during limited time periods could be discerned. Figure 66 shows the general distribution of features with diagnostic ceramics, diagnostic projectile points, or both. Figure 67 shows the distribution of dated features of the various Woodland I complex occupations at the site. Four main occupations can be noted: 1) A Clyde Farm complex occupation dating to the time period of the use of Experimental ceramics (ca. 1200-700 B.C.); 2) a Wolfe Neck Complex occupation (ca. 700 B.C.- A.D. 0); 3) a Webb Complex occupation (ca. A.D. 700-1000); and 4) a Woodland II occupation (ca. A.D. 1000-1600). Seven dated activity areas and feature clusters were then delineated based on the proximity of dated features (Figure 68, Attachments I and II, Plate 40). Clyde Farm feature clusters from ca. 1200-700 B.C. are the most numerous and largest. Later Webb Complex and Woodland II clusters are present, but are smaller. Figure 68 also shows that much of the site consists of a mix of features of unknown age.

The configuration of related feature clusters and the mix of features of unknown age indicates that the Snapp Site was a periodically reused base camp and not a single, large village. It is impossible to know if any of the separate Clyde Farm feature clusters, were used contemporaneously. However, the ceramic and feature shape variability suggest separate non-contemporaneous occupations of the clusters. The small size of the Webb Complex and Woodland II Period occupations suggest individual, single occupations. Further research of the frequencies of occupations within feature clusters is presented later in this report.

Plow Zone Artifact Distributions

Figure 69 shows the distribution of artifacts recovered from plow zone excavation units in the cultivated field and the highest artifact densities are found along the western edge of the site. This high artifact density area does not correspond with a high density of sub-surface features (Figure 34). In fact, the artifact distribution and feature distribution show little correlation as can be seen by comparing

Figure 69 with Figure 34 and Attachment II. Nonetheless, the artifact concentration in the southeast corner of the site in the vicinity of N235 E40 is correlated with a cluster of sub-surface features. An especially high concentration of artifacts is present in the southwest corner of the site in the vicinity of N260 W10. This artifact concentration consists primarily of fire-cracked rock (Figure 70) and is not associated with any sub-surface features. For the most part, the general plow zone artifact distribution does not seem to be reflective of the distribution of features. The extensive erosion of the site, previously noted in this report, has probably greatly altered the plow zone artifact distribution as a whole.

Figures 71 and 72 show the distribution of lithic artifacts exclusive of fire-cracked rock. These distributions are somewhat more reflective of the feature distributions. However, the concentration of features in the central portion of the site (E10-E50, N270-N310) is not reflected in the lithic artifact distributions. An artifact concentration in the northwest corner of the site (N300 W20) is associated with a cluster of Clyde Farm Complex features (Figure 68). A similar association is also present in the northeast corner of the site (N330 E30). However, the northern end of the site is located downslope

from the remainder of the site and the extensive erosion may have been the cause of the artifact concentrations in these areas. In this case, the association of the artifact concentration and the features may be fortuitous.

A concentration of lithic artifacts is also present in the west central section of the site (N290 E0) and this concentration is associated with activity areas of Woodland I and Woodland II ages (Figure 68, Plate 40). The presence of this concentration in an eroded section of the site may indicate that the

disturbance of plow zone artifact distributions is not as great as originally thought and the artifact concentration/feature cluster associations in the northern portion of the site may represent cultural patterning, not post depositional erosion disturbance.

Analysis of Feature Functions

It is difficult to identify the functions of all prehistoric soil pit features. The functions of some pit features are apparent though the application of ethnographic analogies or from artifacts and ecofacts found in the pits. However, determination of the functions of other types are more problematic. This section of the report reviews the inferred functions of the varied types of pit features at the Snapp Site.

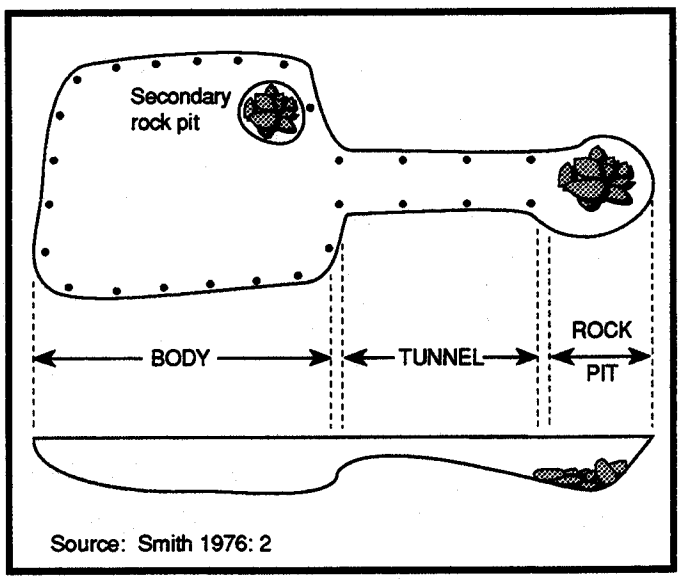
The earlier discussion of the classification of feature types (Figures 25 - 27) related feature Types 1 and 2A to the completely preserved house exemplified by Feature 153 (Type 12), and Types 8 and 11 may also be portions of houses.

Feature types 3, 4, 5, 9, and 10 are identified as pits that were first used as either processing or storage pits outside of houses. Some of these pit features have charcoal and fire-cracked rocks associated with them and may have functioned as earth ovens. Earth ovens were used to roast foods by burying heated rocks along with the foods to be cooked. Type 7 features have very large amounts of fire-cracked rocks associated with them (Plate 28) and probably functioned as earth ovens or hearths.

Type 6 features (Figures 26, 45 - 47, Plates 22 - 27) are quite unique and have never been encountered at prehistoric archaeological sites in Delaware before the Snapp Site excavations. In some ways, Type 6 features look like "keyhole" structures found at Late Woodland sites of the Susquehanna River Valley in north central Pennsylvania (Smith 1976). Pennsylvania keyhole structures are composed of three general sections: body, rock pit, and tunnel (Figure 73) and all three sections of the keyhole structure are semi-subterranean. The "body" appears as a large rectangular depression with rounded corners and is either straight sided with a flat bottom or saucer shaped with sloped walls. The body is usually approximately .3 meters deep and is also the largest portion of the keyhole structure. Protruding from the short side of the body is a trough-like depression, the tunnel. The inside edges of both the body and the tunnel are encircled with post molds. The tunnel connects the body to the rock pit. The rock pit is a smaller, deeper depression containing high concentrations of fire-cracked rock and often charcoal. Unlike the body and the tunnel, the rock pit has no apparent post molds. The complete Pennsylvania keyhole structure can range from 1.82 meters to 3.35 meters in length. The body may also contain a smaller excavated pit with fire-cracked rock in one of the corners closest to the tunnel. No fire reddened or hardened soils have been observed in rock pits of keyhole structures (Smith 1976).

FIGURE 73

Pennsylvania Keyhole Structure



Source: Smith 1976: 2

Contrary to Binford et al. and their (1970; Smith 1976:11) interpretation of similar features at the Late Woodland LaMotte site of Hatchery West in the Carlyle Reservoir, Illinois, as winter domiciles for nuclear families, Smith (1976) suggests that the keyhole structures found in north central Pennsylvania may have functioned as sweathouses, or sweatlodges. Because of the lack of domestic artifacts, entry ways obstructed by fire-cracked rock, the feature size, the location of keyhole structures on the periphery of sites, and, most importantly, the presence of keyhole structures at sites where longhouses seem to predominate as a standard house type, Smith argues against keyhole structures as houses (Smith 1976). Smith also eliminates the possibility of keyhole structures as smokehouses based on numerous ethnographic accounts describing foodstuff smoking conducted on outdoor racks.

Although the Type 6 features at the Snapp Site are more circular than elongated, they do exhibit similar physical characteristics to the keyhole structures found in north central Pennsylvania. Cross-section profiles of Type 6 features bear striking resemblances to those of keyhole structures (Figures 46 and 47). The "hump" in the floor of a Type 6 feature (Plates 26 and 27) resembles the beginnings of the junction of the tunnel to the body of the keyhole structures. Secondly, like the keyhole structures, the overall feature shape is saucer-like. Thirdly, one side of Type 6 features is often deeper than the other, and as stated earlier, this deeper half often contains higher concentrations of fire-cracked rock. Interestingly, keyhole structures tend to be found where a standard house structure is observed. Like the differences between keyhole structures and domicile features present at the Pennsylvania sites, the Snapp Site also contains a semi-subterranean house pattern which is unlike Type 6 features.

A survey of ethnographic data shed additional light on the function of Snapp Type 6 features. There are numerous accounts of sweatlodge structures throughout native cultures of North America, and these sweathouses may or may not be semi-subterranean. The heat source of a sweatlodge can be a woodfire, steam produced by heated rocks, or a combination of the two (Curtis 1970; Lowie 1935). Unlike the keyhole structures and the Type 6 features, these ethnographic accounts consistently describe tendencies of heating sources to be located toward the center of the sweatlodge and not off to one side. It was also customary for the participants to bathe in a nearby water source after a sweat. It should be noted that the Snapp Site is located in close proximity to the former Saint Georges Creek.

If the source of heat is through the production of steam by pouring water over heated rocks, the rocks are usually heated in external hearths located outside of the sweatlodge. To test this impression, the proximity of Type 6 features to pit features with greater than 85 pieces of fire-cracked rock was examined (Figure 74). All but two Type 6 features were in relatively close proximity to other pit features with high concentrations of fire-cracked rock or concentrations of fire-cracked rock in plow zone soils.

Other proposed sweatlodges have also been identified in the archaeological record (Quattran and Cremin 1988; Barfield and Hodder 1987). Excavations at the Shilling site (20KZ56), Kalamazoo, Michigan, uncovered a large Early Woodland saucer shaped shallow feature (4.2 m x 2.2 m) with high concentrations of charcoal, fire-cracked rock, and remnants of possible structural posts. Comparison of this feature to identified roasting pit features of nearby sites revealed considerable differences between the roasting pits and Shilling Feature 2. Unlike the roasting pits, the Shilling feature lacked characteristics common to roasting pits such as surrounding areas of oxidized soils where rocks may have been heated, presence of quantities of occupational debris around the feature, and evidence of fauna or flora processing (Quattran and Cremin 1988). However, the function of this feature as a sweatlodge could not be positively determined.

Archaeological excavations at the Cob Lane site in Birmingham, England uncovered a large burnt mound with large quantities of fire-cracked rock dated to ca. 1200 B.C. (Barfield and Hodder 1987). Like the keyhole structures of Pennsylvania and the Shilling feature, this mound also lacked artifacts associated with food processing or common settlement debris. This mound was also in close proximity to a nearby stream and was also tentatively identified as a sweatlodge.

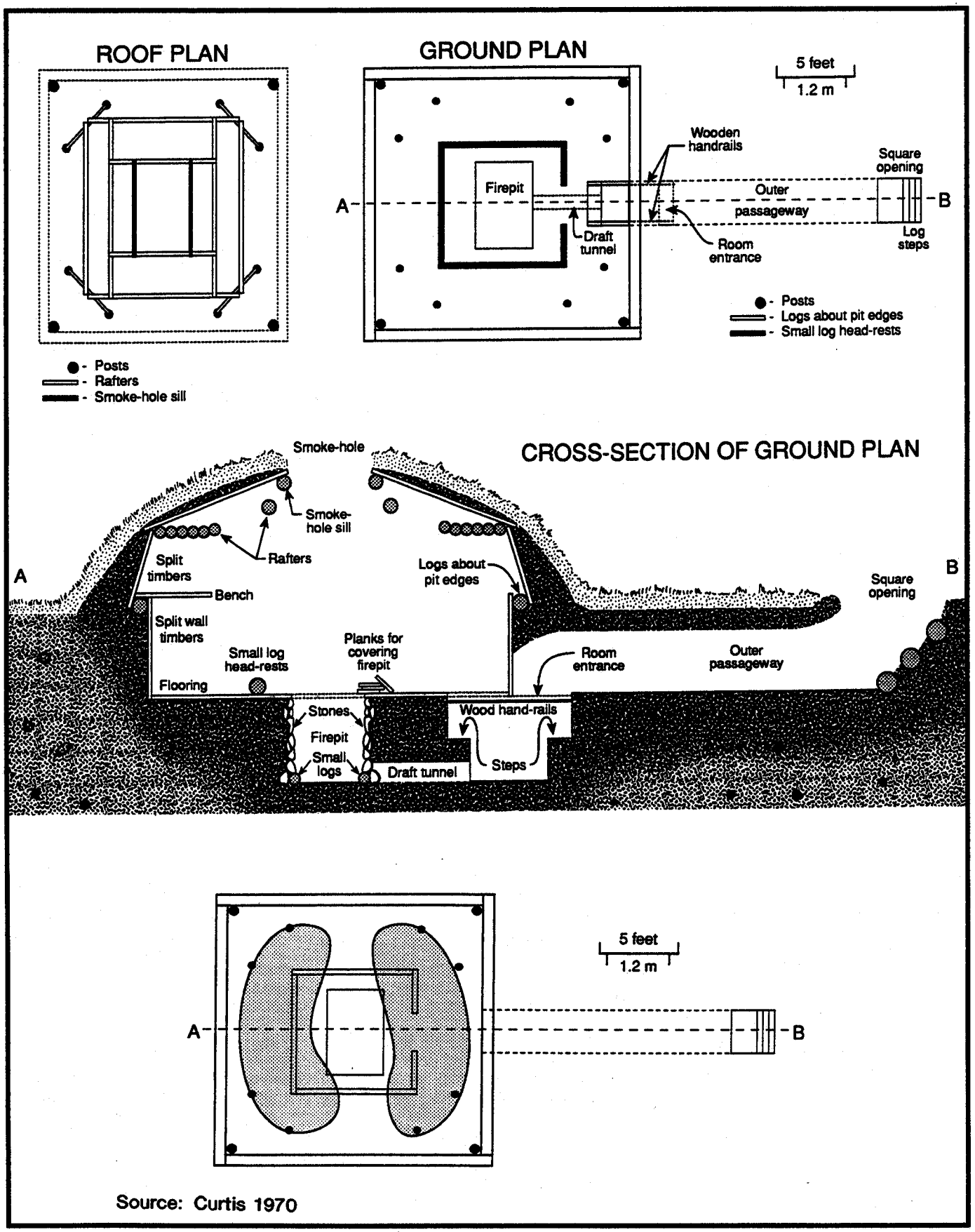
The presence of large quantities of fire-cracked rock both within the Type 6 features and in pit features in close proximity of the Type 6 features clearly indicate remains of the purposeful heating of stones at the site. Whether or not the Type 6 features were associated with such activities cannot be definitively determined. However, the lack of substantial amounts of charcoal in the Type 6 features and the presence of burnt earth indicate that the stones were heated prior to their deposit into the Type 6 features. In addition, the dearth of floral and faunal remains or household artifacts further suggests that these features were not used for common domicile functions such as roasting or refuse pits. Although these data may be convincing, it cannot be conclusively determined from the archaeological research of the Snapp Farm Prehistoric site whether or not these Type 6 features once functioned as sweatlodges. Moreover, all of these accounts do not completely fit with the ethnographic data. For example, the ethnographic data indicate that stones used in a "sweat" often contain a ritualistic connotation and are often disposed of elsewhere. Our purpose here is not to argue for the case that the Snapp Type 6 features once functioned as sweat or steam lodges, but instead, to present options in assessing these unusual pit features. However, the similarities of the Snapp Site Type 6 features to sweatlodge features at other sites and the ethnographic record does not eliminate the possibility of these features serving a ceremonial or ritualistic function at the Snapp Site.

It is also possible that Type 6 features are remnants of semi-subterranean houses. Ethnographic material on the Nunivak cultures in Alaska (Curtis 1970) describe men's houses which bear structural similarities to the Snapp Type 6 features (Figure 75). The basic Nunivak men's house layout closely resembles a Pennsylvania keyhole structure. The dwelling is semi-subterranean and is 18 feet square and four feet deep. Entrance into the house is through an underground tunnel that leads down into a pit. The opposite end of this pit leads to the main section of the house above. A sunken fire pit lined with stones is located in the center of the main chamber at the same depth of the entrance pit. Floor boards often cover the fire pit. A small draft tunnel is excavated straight from the fire pit straight through to the entrance pit. Logs are used to support the bulk of earth which is "suspended" and separates the entrance chamber and the fire pit.

The center section of the Snapp Type 6 features may be collapsed remnants of such a structural feature and served as a structural support for floor boards or mats (Figure 75). Consequently, the feature fill observed in the profiles of the center section of the Snapp Type 6 features may be filled-in remains of a structure section similar to the draft tunnel. If so, this portion of the feature's close proximity to a fire source may also explain its different soil matrix. This type of house structure would also seem to maximize the utility of a single heat source. The draft tunnel leading from the fire pit to the entrance chamber would provide the firepit with a fresh air source, allow transfer of heat to the entrance chamber, and provide an additional outlet for smoke to escape. In sum, Type 6 features may be either sweatlodges or remains of special subterranean houses. Further research is needed to more clearly identify their function.

FIGURE 75

Nunivak Subterranean House and Type 6 Features



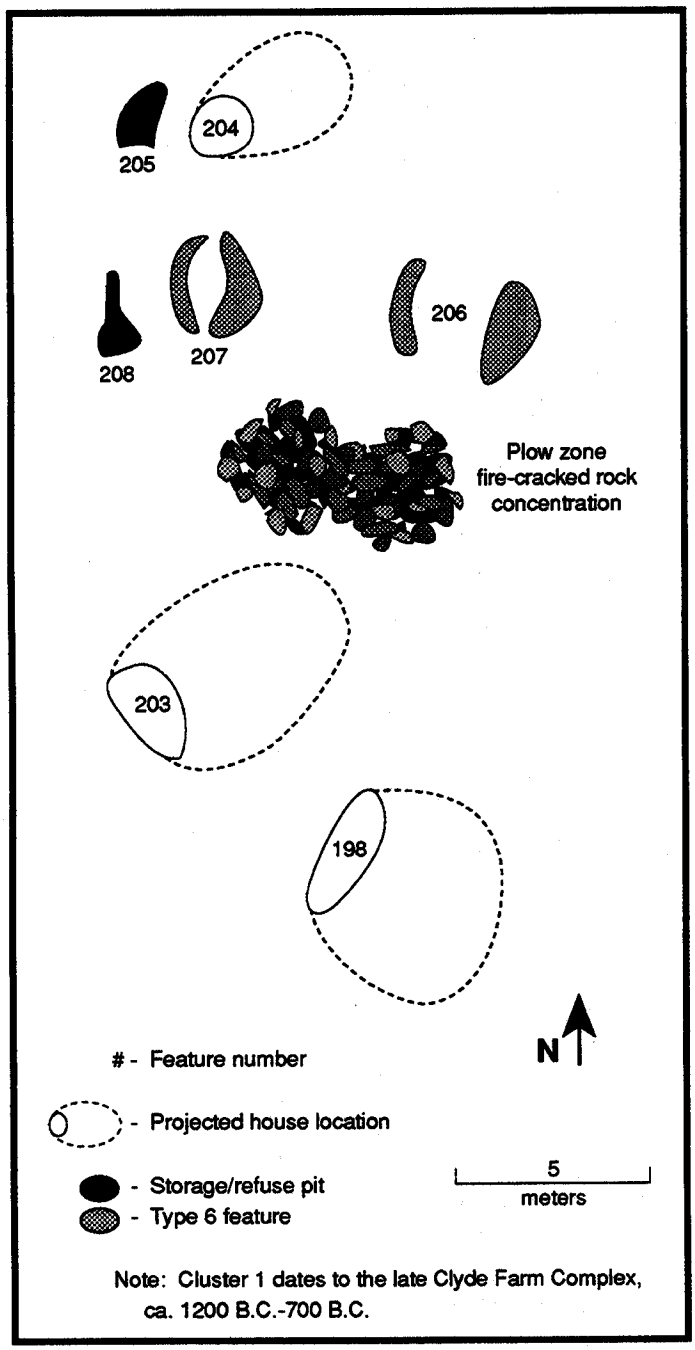
Source: Curtis 1970

Analysis of Feature Clusters

Features dating from different time periods and features of unknown ages are mixed together across the Snapp Site. This distribution of evidence of varied occupations makes it difficult to assess the internal settlement patterns at the site. However, the feature clusters noted in Figure 68 and Plate 40 provide one way to evaluate either individual occupations, or multiple related occupations from limited time periods, at the site. Each of the feature clusters noted in Figure 68 and Plate 40 will be discussed below. The distributions of all features across the entire site will be discussed in the next section of this report. Attachments I and II show the locations of feature clusters and can be used as references for this discussion.

FIGURE 76

Cluster 1 Feature Distribution



Note: Cluster 1 dates to the late Clyde Farm Complex, ca. 1200 B.C.-700 B.C.

Cluster 1. Cluster 1 is located in the northwest corner of the site and dates to the later portion of the Clyde Farm Complex (ca. 1200 - 700 B.C.). Table 9 lists the various types of features found in all of the feature clusters. Table 10 lists each of the features in Cluster 1 and notes their types. Figure 76 shows the distribution of features within Cluster 1. Three features (198, 203, and 204) are clearly the remains of houses and their potential outlines and orientations are noted in Figure 76 where possible. Features 206 and 207 are Type 6 features that may be either

TABLE 9

Number of Feature Types within Feature Clusters

FEATURE TYPE	CLUSTER 1	2	3	4	5	6	7
1	2	4	1	2	7		3
2					1	1	
3							
4		6					
5							
6	2		3		5		
7	2				3		2
8					1	2	
9		1	1		3		
10					1	1	2
11	1			3	2	2	
12		1			1		
Total	7	12	5	5	24	6	7

pithouses or sweat lodges. It is important to note that none of these features overlap and, therefore, they may have been occupied contemporaneously. Features 205 and 208 are storage/refuse features.

TABLE 10

Cluster 1 Feature Types

FEATURE	TYPE
198	11
203	1
204	1
205	7
206	6
207	6
208	7

Fire-cracked rocks were found in numerous features (Table 11) and a large concentration of fire-cracked rock was present in the plow zone artifact distribution in the central part of the cluster (Figure 76). It is possible that the fire-cracked rock concentration in the center of the cluster is a large hearth that had been disturbed by plowing and erosion. Large "platform hearths" have been reported from comparably dated sites elsewhere in the Delaware Valley (Kinsey 1972: 253; Cavallo 1987) and these hearths are believed to be related to the communal processing of anadramous fish or certain types of plant foods. The fire-cracked rocks from these concentrations are also thought to possibly represent stones used in hot-rock boiling for the rendering of oils from nuts or fish (Cavallo 1987; Ozker 1982).

TABLE 11

Cluster 1 Summary Artifact Catalog

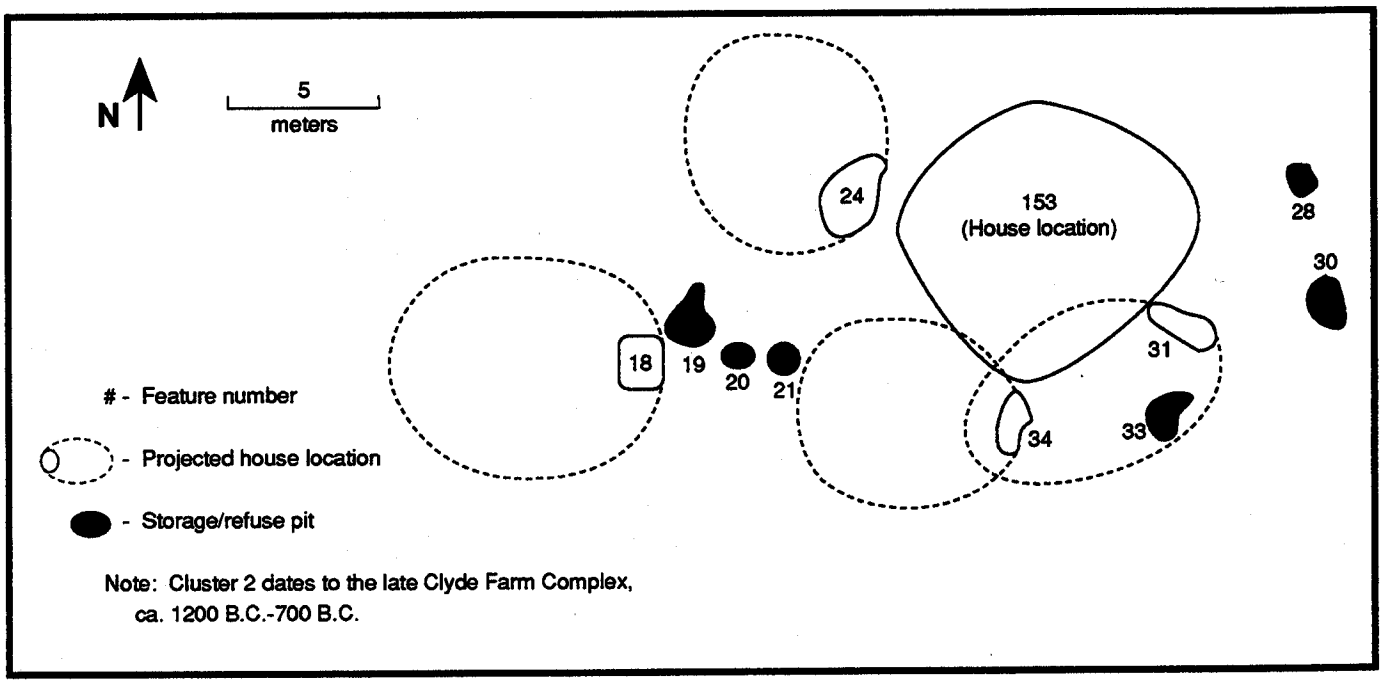
ARTIFACTS	FEATURE 198	FEATURE 203	FEATURE 204	FEATURE 205	FEATURE 206	FEATURE 207	FEATURE 208
Flakes	127 (34)	403 (153)	103 (13)	17 (4)	28 (12)	23 (8)	11 (3)
Utilized flakes	4	2 (2)	3	1			
Flake tools				1 (1)	1	1 (1)	
Paleo points							
Archaic points							
Woodland I points	1		1				
Woodland II points							
Early stage biface rejects							
Late stage biface rejects				2 (1)			
Biface fragments		1					
Miscellaneous stone tools							
Shatter	99 (2)	6 (5)			2	14 (7)	1
Cores	1 (1)			1			
Hammerstone/misc.							
CERAMIC SHERDS							
Marcey Creek	2				1		
Barnes Cluster	1	3					2
Unidentified			3			1	2
Fire-cracked rock	440 [23.22]	36 [4.03]	11 [0.72]	4 [0.5]	46 [2.7]	138 [9.1]	39 [1.72]
Cobble count	3 [0.26]						
TOTAL	638 (37)	451 (160)	121 (13)	26 (6)	78 (12)	177 (16)	55 (3)

( ) - Artifacts with cortex [ ] - Weight in kilograms

Note: Cluster 1 Dates to the late Clyde Farm Complex, ca. 1200 - 700 B.C.

FIGURE 77

Cluster 2 Feature Distribution



If the fire-cracked rock concentration in the center of Cluster 1 is a communal resource processing area, then it is possible that Features 198, 203, and 204 are the remains of houses that were clustered around the central processing area to allow the occupants to cooperate in communal processing activities. If the two Type 6 features (206 and 207) are also houses, rather than sweat lodges, then at least three, and possibly five, houses in this cluster may have been occupied contemporaneously. Similar clusters of potentially contemporaneously occupied houses have been identified for the same time period at the 522 Bridge Site on the Shenandoah River in northwestern Virginia (McLearen 1991) and at numerous sites along the James River near Richmond (Mouer 1991). In sum, Cluster 1 seems to represent a cluster of Clyde Farm Complex houses and related storage and processing facilities that were occupied and used by nuclear families who settled together for the communal processing of resources. Following the scenario of seasonal usage of houses presented earlier in this report, this gathering of nuclear families would have spanned the late summer through spring. The communal processing activities could have focused on plant food resources of the late summer and fall, anadramous fish resources of the spring, or both.

Cluster 2. This feature cluster (Figure 77) includes Feature 153, the well-preserved house with post molds (Figure 30) along with a number of other features of varied types (Table 12) dating to the same time period of occupation as Cluster 1 (ca. 1200 - 700 B.C.). Including Feature 153, a total of 5 houses are present (Features 153, 31, 34, 18, and 24). Three of these houses overlap (Features 31, 34, and 153) and were clearly not occupied contemporaneously. The preservation of the post molds in Feature 153 and the large number of artifacts associated with the feature (Table 13) do suggest that it was the most recently occupied of these three overlapping houses. Although numerous storage, refuse, and processing features are present in the cluster, there are no signs of communal processing areas as

TABLE 12

Cluster 2 Feature Types

FEATURE	TYPE
18	1
19	4
20	4
21	4
24	1
25	4
28	4
30	9
31	1
33	4
34	1
153	12

TABLE 13

Cluster 2 Summary Artifact Catalog

ARTIFACTS	FEATURE 18	FEATURE 21	FEATURE 31	FEATURE 34	FEATURE 153
Flakes	3 (2)	2 (1)	15 (5)	3 (3)	568 (139)
Utilized flakes			1		7 (5)
Flake tools					1
Paleo points					
Archaic points					
Woodland I points					1
Woodland II points					
Early stage biface rejects					
Late stage biface rejects					2
Biface fragments					1 (1)
Miscellaneous stone tools					1 (1)
Shatter			2 (2)		12 (4)
Cores					
Hammerstone/misc.					
CERAMIC SHERDS					
Marcey Creek	1				3
Dames Quarter					
Unidentified					
Fire-cracked rock	4 [0.449]	3 [0.058]	5 [0.455]		134 [23.41]
Cobble count			1 [0.120]		69 [29.24]
TOTAL	8 (2)	5 (1)	24 (7)	3 (3)	799 (149)

Note: Features 19, 20, 24, 25, 28, 30, & 33 had no artifacts.
Cluster 2 dates to the late Clyde Farm Complex, ca. 1200 B.C. - 700 B.C.

( ) - Artifacts with cortex
[ ] - Weight in kilograms

FIGURE 78

Cluster 3 Feature Distribution

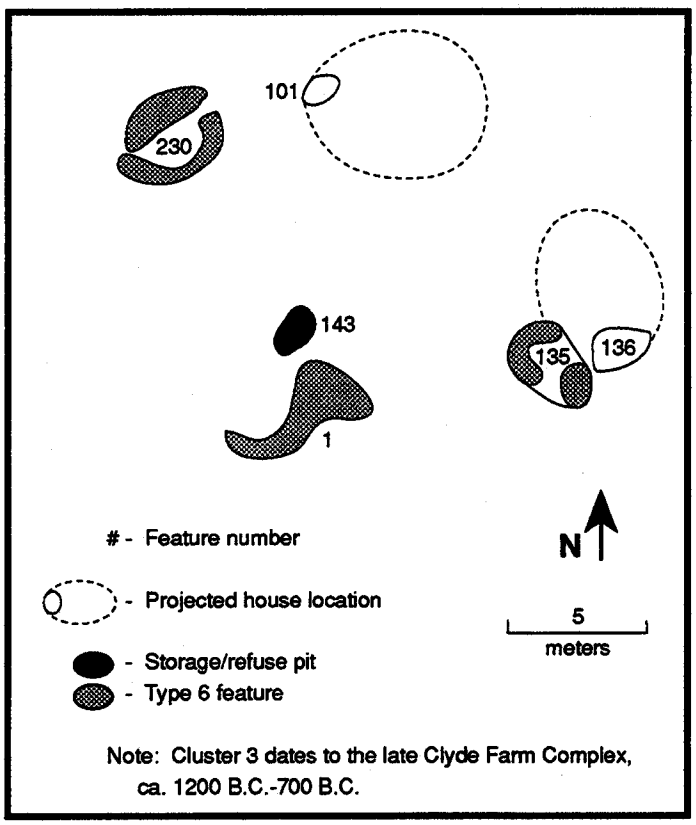


TABLE 14

Cluster 3 Feature Types

FEATURE	TYPE
1	6
101	1
135	6
136	1
143	9
230	6

there were in Cluster 1. Consequently, the overlapping nature of the houses in this cluster suggest that these houses were not occupied contemporaneously and that there were at least three occupations of this section of the site during the time period of the later portion of the Clyde Farm Complex.

Cluster 3. Cluster 3, which dates to the later portion of the Clyde Farm Complex (ca. 1200 - 700 B.C.), is located adjacent to two other feature clusters dating to later time periods (Figure 68; Attachments I and II) and includes two potential house features (Figure 78, Table 14). Three Type 6 features (Features 1, 135, 230) are also present and if they are houses rather than sweat lodges, five houses are present. Two pairs of the house features show overlap and this cluster shows signs of multiple occupations. Large numbers of fire-cracked rock are not present (Table 15) and no surface indications of communal processing activities are present. Thus, this cluster represents at least two individual occupations during the later portions of the Clyde Farm Complex.

TABLE 15
Cluster 3 Summary Artifact Catalog

ARTIFACTS	FEATURE 1	FEATURE 101	FEATURE 135	FEATURE 136	FEATURE 143	FEATURE 230
Flakes	413 (78)	4 (3)	39 (13)	28 (7)	46 (9)	46 (23)
Utilized flakes			1			2 (2)
Flake tools						
Paleo points				2 (1)		
Archaic points						
Woodland I points						
Woodland II points						
Early stage biface rejects			1 (1)			1 (1)
Late stage biface rejects						
Biface fragments	2			1		
Miscellaneous stone tools						3 (3)
Shatter	1		3 (1)		1	2
Cores	1 (1)		1	1 (1)		
Hammerstone/misc.						
CERAMIC SHERDS						
Marcey Creek	1					
Dames Quarter						
Unidentified				1		
Fire-cracked rock	167 [5.79]	3 [0.381]	163 [63.03]	65 [4.78]	9 [0.67]	86 [9.09]
Cobble count						
TOTAL	585 (79)	7 (3)	208 (15)	98 (9)	56 (9)	141 (29)

( ) - Artifacts with cortex [ ] - Weight in kilograms

Note: Cluster 3 dates to the late Clyde Farm Complex, ca. 1200 - 700 B.C.

Cluster 4. Figure 79 shows the distribution of the features in Cluster 4 and Table 16 lists the feature types. All five are house-related features and two pairs overlap (Features 102 and 146, 181 and 182). Cluster 4 is located adjacent to a large plow zone fire-cracked rock concentration and fire-cracked rock is present in many of the features (Table 17). This fire-cracked rock may be a large disturbed hearth that was the focus of communal resource processing, as was the case in Cluster 1. It is possible that some of the houses in this feature cluster were inhabited contemporaneously during the later portion of the Clyde Farm Complex and that the inhabitants used the communal processing feature. The overlap of some of the features does indicate that there was more than one occupation of this part of the site during the later part of the Clyde Farm Complex was present.

TABLE 16
Cluster 4 Feature Types

FEATURE	TYPE
102	11
145	1
181	11
182	1
183	11

FIGURE 79

Cluster 4 Feature Distribution

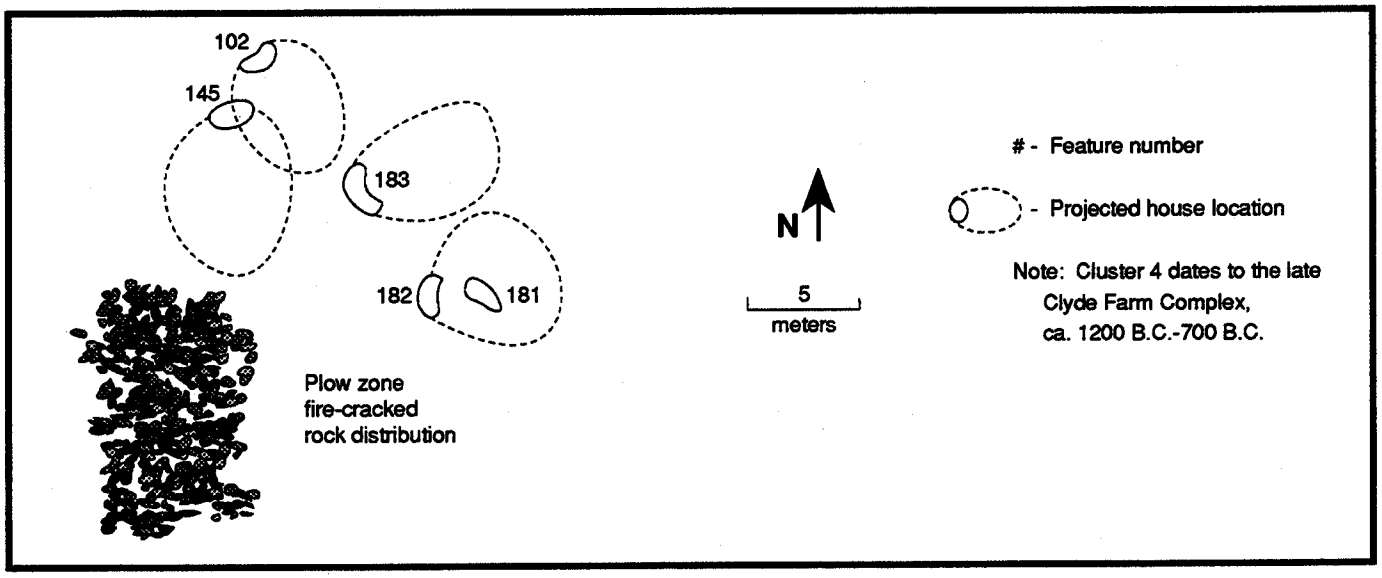


TABLE 17

Cluster 4 Summary Artifact Catalog

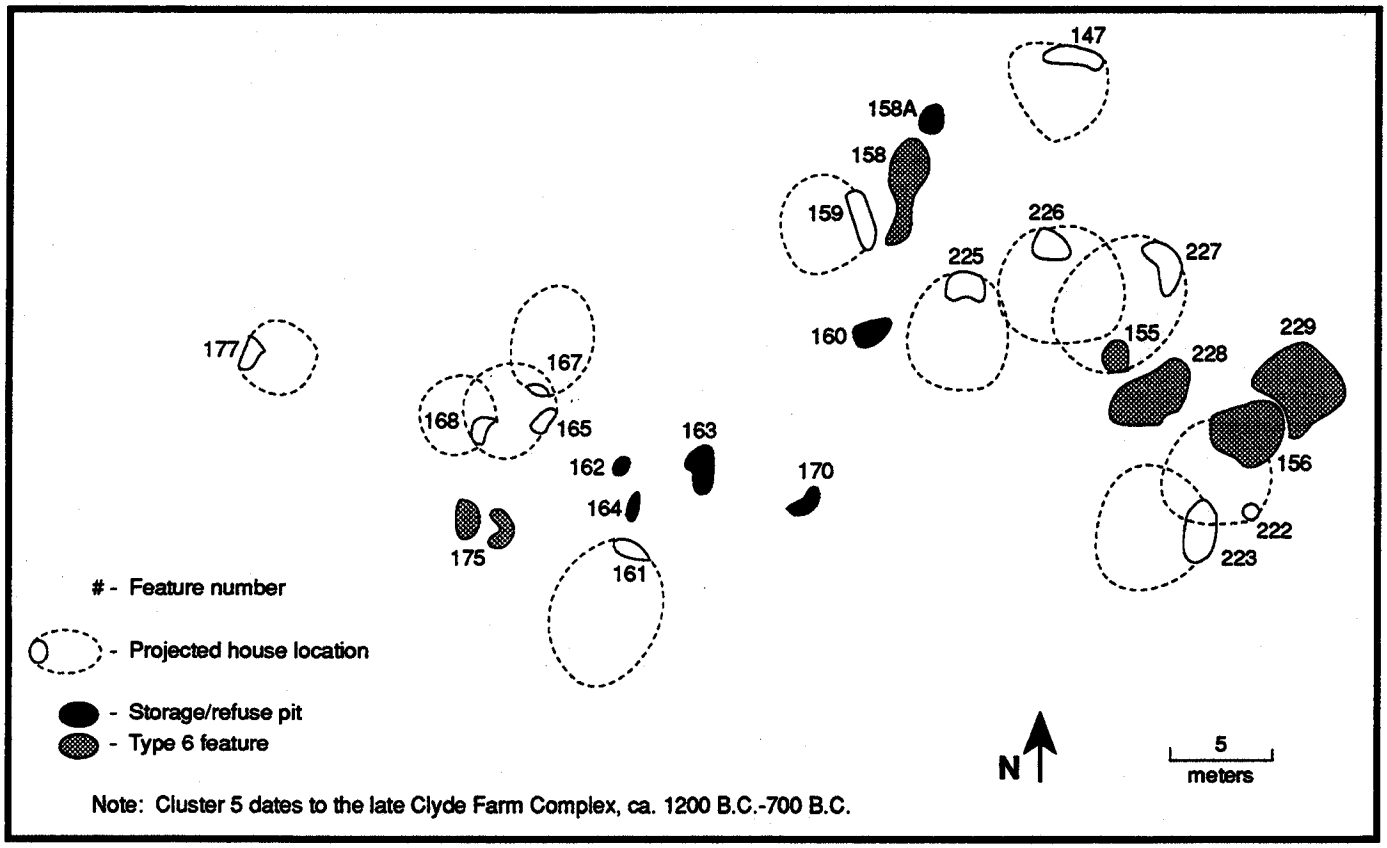
ARTIFACTS	FEATURE 102	FEATURE 145	FEATURE 181	FEATURE 182	FEATURE 183
Flakes	34 (15)	21 (8)	13 (1)	3 (1)	
Utilized flakes					
Flake tools			1 (1)		
Paleo points					
Archaic points					
Woodland I points			1		
Woodland II points					
Early stage biface rejects	1	1 (1)			
Late stage biface rejects		1	1 (1)		
Biface fragments			1		
Miscellaneous stone tools					
Shatter		1	3	4	
Cores					
Hammerstone/misc.					
CERAMIC SHERDS					
Marcey Creek	1	1			
Dames Quarter			1		
Unidentified					
Fire-cracked rock	22[16.45]	34 [2.95]	22 [1.53]	93 [6.28]	7[0.295]
Cobble count	4 [5.05]			1[0.046]	
TOTAL	62 (15)	59 (9)	43 (3)	98 (9)	7 (0)

( ) - Artifacts with cortex [ ] - Weight in kilograms

Note: Cluster 4 dates to the late Clyde Farm Complex, ca. 1200 - 700 B.C.

FIGURE 80

Cluster 5 Feature Distribution



Cluster 5. Cluster 5 is the largest feature cluster at the site (Figure 80) and contains the remains of 12 houses (Table 18). If the five Type 6 features in the cluster are houses rather than sweat lodges, then there are 18 houses in this cluster. Many of the houses overlap, especially in the northeastern and eastern ends of the cluster (Figure 80). Numerous storage/refuse pits are also mixed among the houses. Fire-cracked rock is present in some of the features (Table 19). The large number of overlapping house features indicates multiple occupations spanning the later portions of the Clyde Farm Complex.

TABLE 18

Cluster 5 Feature Types

FEATURE	TYPE
147	12
155	9
156	6
158	10
158a	6
159	1
160	7
161	11
162	7
163	7
164	9
165	1
167	11
168	1
170	9
175	6
177	1
222	1
223	2
225	1
226	8
227	1
228	6
229	6

TABLE 19

Cluster 5 Summary Artifact Catalog - Part 1

ARTIFACTS	FEATURE 147		FEATURE 155		FEATURE 156		FEATURE 158		FEATURE 158A		FEATURE 159	
Flakes	18	(4)	3		53	(15)	50	(8)	3	(3)	29	(6)
Utilized flakes	1	(1)	2	(1)			1	(1)				
Flake tools					1	(1)						
Paleo points												
Archaic points												
Woodland I points	1											
Woodland II points												
Early stage biface rejects												
Late stage biface rejects												
Biface fragments												
Miscellaneous stone tools	1	(1)										
Shatter	3	(2)	1	(1)	6		6	(1)				
Cores			1	(0)	1							
Hammerstone/misc.	1				1		1					
CERAMIC SHERDS												
Steatite bowl												
Marcey Creek	2											
Darnes Quarter	2											
Ware plain												
Unidentified							1					
Fire-cracked rock	45	[2.740]	65	[7.13]	34	[2.88]	33	[2.740]	17	[1.81]	4	[0.417]
Cobble count	8	[13.912]	3	[5.56]	2	[1.73]		[13.912]			2	[9.09]
TOTAL	82	(8)	75	(2)	98	(16)	88	(10)	20	(3)	35	(6)

( ) - Artifacts with cortex [ ] - Weight in kilograms

ARTIFACTS	FEATURE 160		FEATURE 161		FEATURE 162		FEATURE 163		FEATURE 164		FEATURE 165	
Flakes	16	(3)	8	(2)	1		2		4		1	
Utilized flakes												
Flake tools												
Paleo points												
Archaic points												
Woodland I points	1			(1)								
Woodland II points												
Early stage biface rejects												
Late stage biface rejects												
Biface fragments												
Miscellaneous stone tools												
Shatter							1	(1)	2			
Cores	1	(1)										
Hammerstone/misc.												
CERAMIC SHERDS												
Steatite bowl												
Marcey Creek	4								4			
Darnes Quarter												
Ware plain												
Unidentified												
Fire-cracked rock	99	[7.79]	37	[2.09]	1	[0.002]	39	[2.740]	10	[0.98]	3	[0.14]
Cobble count	1	[0.15]	1	[0.106]			2	[13.912]	5	[0.612]		
TOTAL	122	(4)	46	(3)	2	(0)	44	(10)	25	(0)	4	(0)

( ) - Artifacts with cortex [ ] - Weight in kilograms

Note: Cluster 5 dates to the late Clyde Farm Complex, ca. 1200 - 700 B.C.

TABLE 19 (Continued)

Cluster 5 Summary Artifact Catalog - Part 2

ARTIFACTS	FEATURE 167	FEATURE 168	FEATURE 170	FEATURE 175	FEATURE 177	FEATURE 222
Flakes		3 (2)	1 (1)	18 (8)	3	1
Utilized flakes				1		
Flake tools						
Paleo points						
Archaic points						
Woodland I points	1					
Woodland II points						
Early stage biface rejects						
Late stage biface rejects						
Biface fragments					1	
Miscellaneous stone tools						
Shatter					2	
Cores						
Hammerstone/misc.	1				1	
CERAMIC SHERDS						
Steatite bowl						
Marcey Creek				1	19	
Dames Quarter		1				
Ware plain						
Unidentified						
Fire-cracked rock	15 [0.966]	1 [0.073]		55 [6.663]	42 [5.517]	1 [0.055]
Cobble count	3 [2.7]			2 [5.91]	23 [18.18]	
TOTAL	20 (0)	5 (2)	1 (1)	77 (8)	82 (0)	2 (0)

( ) - Artifacts with cortex [ ] - Weight in kilograms

ARTIFACTS	FEATURE 223	FEATURE 225	FEATURE 226	FEATURE 227	FEATURE 228	FEATURE 229
Flakes	16 (9)	47 (14)	9 (3)	70 (17)	1	
Utilized flakes		1				1 (1)
Flake tools				6 (4)		
Paleo points						
Archaic points						
Woodland I points						
Woodland II points						
Early stage biface rejects						
Late stage biface rejects						
Biface fragments		1		2		
Miscellaneous stone tools				1 (1)		
Shatter		9		25 (4)		
Cores						
Hammerstone/misc.				2		
CERAMIC SHERDS						
Steatite bowl				1		
Marcey Creek						
Dames Quarter						
Ware plain						1
Unidentified	1	2		1		
Fire-cracked rock	38 [60.95]	44 [2.85]	8 [1.105]	170 [15.98]	10 [1.034]	[0.48]
Cobble count	3 [0.606]	1 [1.334]		37 [10.07]		2
TOTAL	58 (9)	99 (14)	17 (3)	315 (26)	11 (0)	4 (1)

( ) - Artifacts with cortex [ ] - Weight in kilograms

Note: Cluster 5 dates to the late Clyde Farm Complex, ca. 1200 - 700 B.C.

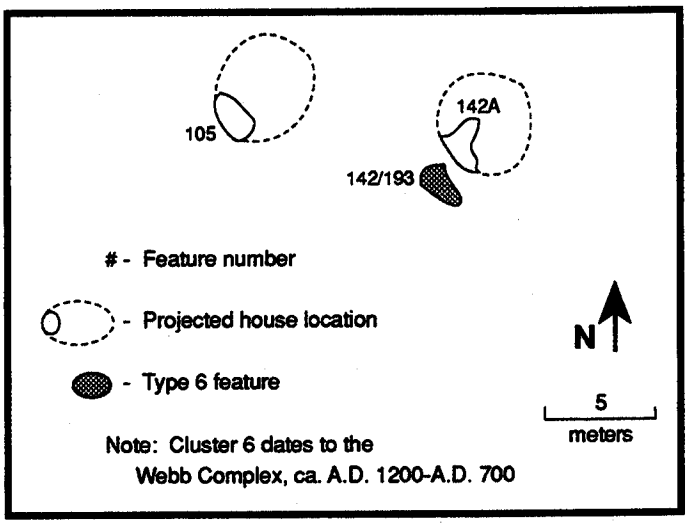
TABLE 20

Cluster 6 Feature Types

FEATURE	TYPE
105	11
142/193	2
142a	10

FIGURE 81

Cluster 6 Feature Distribution



Cluster 6. This feature cluster dates to the Webb Complex (ca. A.D. 400 - 900) and is the smallest of the clusters identified (Figure 81). This cluster is also located directly adjacent to Clusters 3 and 7. Two definite houses and one potential Type 6 house (Table 20) are present and two overlap at the eastern end of the site (Figure 81). Some fire-cracked rock is present in the features (Table 21), but no large surface concentrations are present. The small size of the cluster makes it difficult to interpret, but it is clear that at least two occupations during the Webb Complex were present.

TABLE 21

Cluster 6 Summary Artifact Catalog

ARTIFACTS	FEATURE 105	FEATURE 142	FEATURE 142A	FEATURE 212	FEATURE 218	FEATURE 231
Flakes	23 (3)	78 (28)	1	2 (2)	10 (3)	
Utilized flakes		5 (2)				
Flake tools						
Paleo points						
Archaic points						
Woodland I points	1					
Woodland II points						
Early stage biface rejects					1 (1)	
Late stage biface rejects						
Biface fragments						1
Miscellaneous stone tools						
Shatter		6 (1)				7 (4)
Cores		1 (1)		1		
Hammerstone/misc.						1
CERAMIC SHERDS						
Marcey Creek		229				
Dalton Gunter						
Hell Island		1			1	1
Unidentified						
Fire-cracked rock	12 [0.94]	145 [13.13]	3 [1.322]	3 [0.611]	21 [2.69]	129 [9.9]
Cobble count	1 [0.26]	6 [0.723]		3 [0.48]		55 [11.19]
TOTAL	37 (3)	471 (32)	4 (0)	9 (2)	33 (4)	224 (29)

( ) - Artifacts with cortex [ ] - Weight in kilograms

Note: Cluster 6 dates to the Webb Complex, ca. A.D. 600 - 1000.

Cluster 7. Cluster 7 dates to the Woodland II Period (ca. A.D. 1000-1600) and includes seven features (Figure 82, Table 22). At least three individual houses overlap in the southern section of the cluster and two houses overlap in the northern section. A very large Type 6 feature (Feature 195) with a large amount of fire-cracked rock (Table 23) is present in the cluster. The large amount of overlap among the features makes it difficult to interpret this feature cluster; however, it is important to note that at least three Woodland II occupations are indicated by the features that overlap in the southern section of this cluster.

The feature clusters at the Snapp Site provide some insights concerning the timing and duration of settlement at the site. Clusters 1 - 5 date to the later portion of the Clyde Farm Complex (ca. 1200 - 700 B.C.). Clusters 2-5 show overlapping features that indicate as many as three distinct occupations at four individual loci of the site during late Clyde Farm Complex times. These distinct occupations consisted of at least one nuclear family. The data from Cluster 1 show that the occupations could also have consisted of up to 5 nuclear families at any given time. It is impossible to know if the individual feature clusters were occupied contemporaneously. Therefore, the available data clearly suggest that at any given time during Late Clyde Farm Complex times, the Snapp Site could have been occupied by either a single nuclear family (four to eight people - Hassan 1981), or as many as five nuclear families (20 - 40 people). If any of the feature clusters were inhabited contemporaneously, then the site's population could have been larger. Furthermore, some of the undated house features could also date to this time period and could have raised the site's population still further. However, it is equally likely that the undated houses and house clusters were <u>not</u> occupied contemporaneously and are evidence of repeated occupation of the site by small groups over time.

FIGURE 82

Cluster 7 Feature Distribution

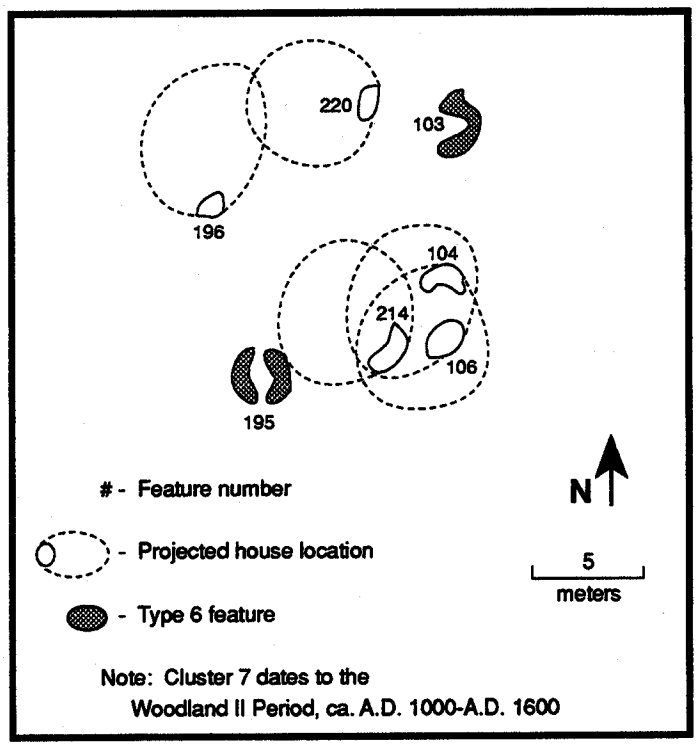


TABLE 22

Cluster 7 Feature Types

FEATURE	TYPE
103	6
104	1
106	11
195	6
196	1
214	11
220	1

TABLE 23

Cluster 7 Summary Artifact Catalog

ARTIFACTS	FEATURE 103		FEATURE 104		FEATURE 106		FEATURE 195		FEATURE 196		FEATURE 214		FEATURE 220	
Flakes	36	(13)	25	(5)	36	(6)	58	(13)	18	(4)	128	(25)	12	(6)
Utilized flakes	1	(1)					4		1	(1)	5	(1)		
Flake tools	1										2			
Paleo points														
Archaic points														
Woodland I points														
Woodland II points														
Early stage biface rejects														
Late stage biface rejects											1			
Biface fragments							1				1			
Miscellaneous stone tools														
Shatter	3						3	(2)	4	(2)	5		1	
Cores														
Hammerstone/misc.							1				1			
CERAMIC SHERDS														
Marcey Creek														
Dames Quarter											2			
Hell Island														
Unidentified														
Townsend	1				3		1				4			
Fire-cracked rock	68	[7.36]	13	[1.97]	19	[1.57]	114	[76.91]	39	[6.013]	66	[8.332]	22	[1.98]
Cobble count			3	[0.604]	1	[3.25]	128	[178.1]	3	[0.399]	9	[3.015]	7	[2.051]
TOTAL	110	(14)	41	(5)	59	(6)	310	(15)	65	(7)	224	(26)	42	(6)

( ) - Artifacts with cortex [ ] - Weight in kilograms

Note: Cluster 7 dates to the Woodland II Period, ca. A.D. 1000 - 1600.

The Webb Complex feature cluster (Cluster 6) dating to ca. A.D. 600 - 1000 also shows at least two separate occupations of at least one nuclear family in that particular section of the site. Similarly, the Woodland II feature cluster shows at least three non-contemporaneous occupations by individual nuclear families. The similarities in the size and nature of the various feature clusters from the Clyde Farm Complex, Webb Complex, and Woodland II Period times would indicate that the use of the site did not change greatly over time.

The types of features that make up the feature clusters described here suggest that the basic "household cluster" as defined by Flannery and Winter (1976) consisted of a house, usually with an interior storage pit, associated external pits that served as storage or processing facilities, and large fire-cracked hearths for communal resource processing (Figure 83- Version 1). If associated Type 6 features are sweatlodges, rather than houses, these special function structures may also have been part of the household clusters (Figure 83-Version 2). The fact that these basic components of household clusters remained the same over time suggests considerable continuity in patterns of use of domestic space over time in the High Coastal Plain of Delaware. Similar continuity of specific house forms has also been noted at the Snapp Site.