

RESULTS

This section of the report will first detail the findings of the excavations at 7NC-A-17. Presentation of the results will be organized into six categories: stratigraphy, excavated artifacts, features, floated artifacts and ecofacts, wood analysis, and blood residue analyses.

STRATIGRAPHY

The Phase I/II test excavations at 7NC-A-17 recovered artifacts from intact soils, especially in the vicinity of Test Unit 1, 2, and 4 (Figures 4 and 7). Geomorphological analysis (Pizzuto 1986) indicated that alluvial processes may have buried the artifacts in Test Unit 1 and slopewash, or related colluvial activities, buried the artifacts in Test Units 2 and 4 (Appendix

IV). Subsequent historical analysis suggested that the area around Test Unit 1 may have been disturbed by natural stream channel movements and the historic construction of an ice pond. Therefore, no data recovery excavations were undertaken in this area.

Test Units 2 and 4 were the focus of excavations because they had yielded numerous artifacts and are within the proposed DelDOT right-of-way. Excavations around these units revealed a more complex stratigraphy than originally noted. Figure 8 shows a series of profiles for a north-south transect of the site and Figure 9 shows an east-west transect. Along the eastern boundary of the site there is an irregular layer of modern fill consisting of an orange-brown sandy, schisty clay with gravels. This fill layer is probably derived from the construction of Route 7 and was capped by an organic humus layer of varying thickness.

Beneath the fill layer in some areas, and beneath the humus layer in other areas, was a buried plowzone which contained both prehistoric and historic artifacts. No diagnostic prehistoric artifacts were found in the plowzone and the historic artifacts consisted of coal, metal fragments, and miscellaneous redware indicative of late 19th and 20th century field scatter. The ultimate source of these plowzone soils is colluvial deposition from adjacent slopes. Beneath the plowzone is a yellow-brown silty-clay soil derived from the in situ weathered schistose limestone bedrock. This soil is classified in the Glenville silt loam series and the inferred origin of the soils is confirmed in the Soil Conservation Service soil survey for New Castle County (Matthews and Lavoie 1970).

FIGURE 8

Hockessin Valley Site North-South Profile Transect

23

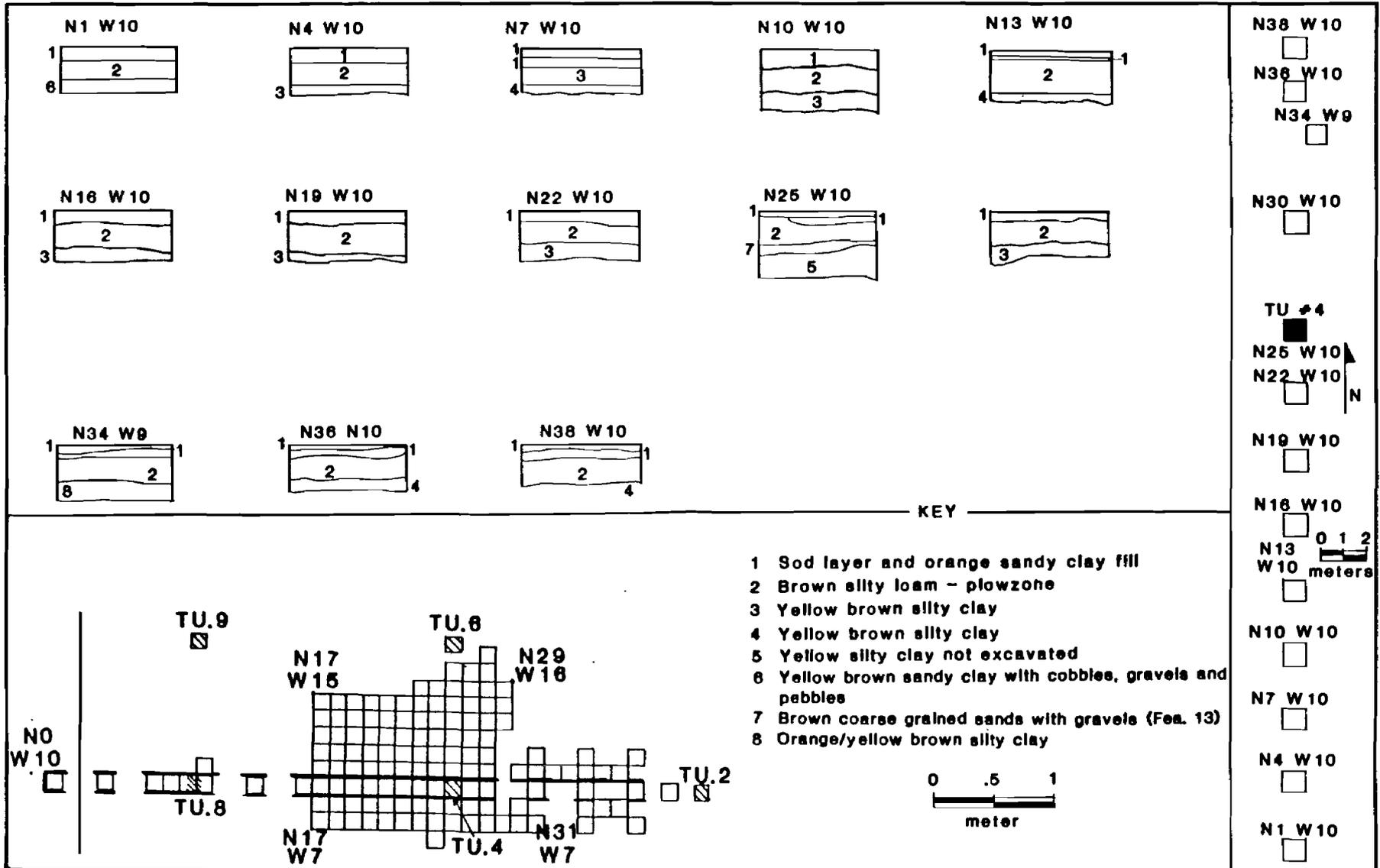


FIGURE 9

Hockessin Valley Site East-West Profile Transect

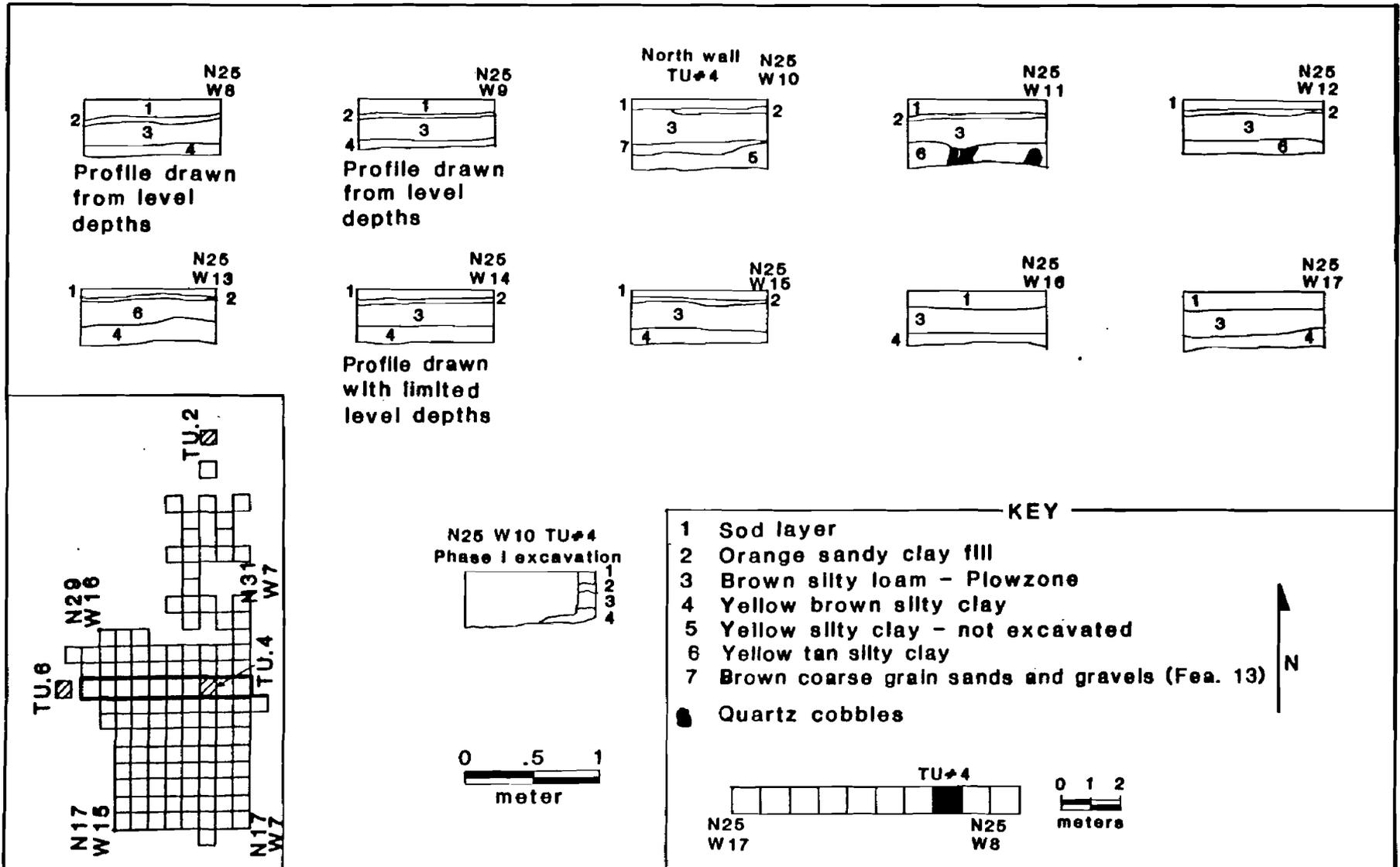


FIGURE 10

Hockessin Valley Site Soil Deposition Sequence

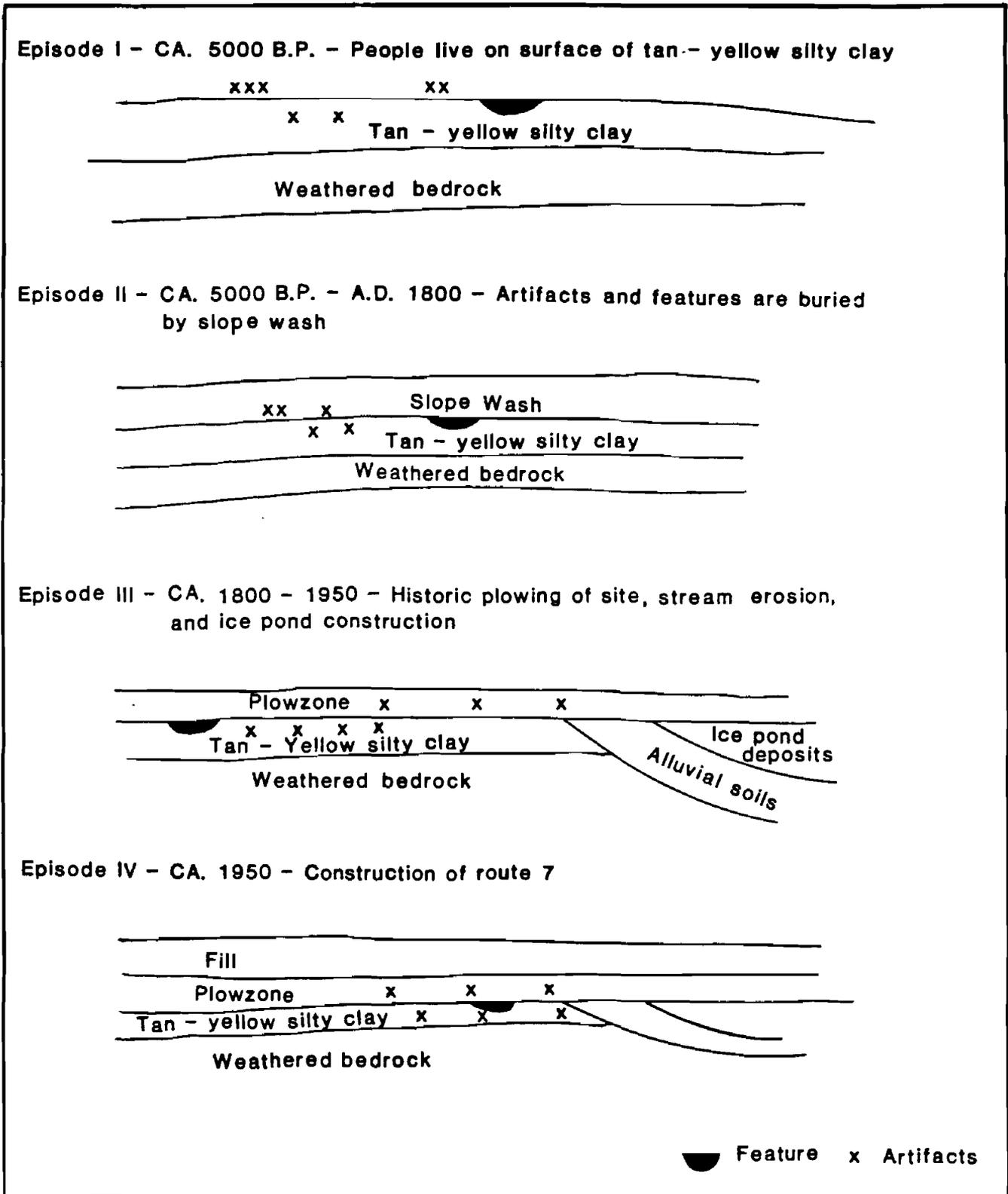


TABLE 4

HOCKESSIN VALLEY SITE SUMMARY CATALOGUE OF PREHISTORIC ARTIFACTS

	quartzite	quartz	chert	jasper	ironstone	chalcedony	other	TOTAL
flakes	42(6)	116(10)	19(1)	41(2)		14	1	233(19)
utilized flakes		1						1
flake tools		1(1)		1(1)				2(2)
ESBR	2	3(1)						5(1)
LSBR		2		1				3
other bifaces		2		2	1			5
misc. stone tools		4(2)						4(2)
shatter	7(1)	14						21(1)
cores		4(1)		1				5(1)
TOTAL	51(7)	147(15)	19(1)	46(3)	1	14	1	279(26)

groundstone tools: 1 quartzite hammerstone

KEY:

(#) = # of flakes with cortex
 ESBR = early stage biface reject
 LSBR = late stage biface reject
 misc. = miscellaneous

TABLE 5

HOCKESSIN VALLEY SITE FEATURE SUMMARY

Feature #	Provenience	Portions	Samples Collected-Excavated			Cultural Definition
			F	C	O	
1	N26W10	all	x			postmold
2	N26W10	E, W 1/2	x	x		postmold
3	N24W14	E, W 1/2	x			postmold-post tip
4	N25W15	E, W 1/2	x			postmold-post tip
5	N24W13	E, W 1/2	x			unknown
6	N24W13	no feature	--NONE--			no feature
7	N23W9	N, S 1/2	x			postmold
8	N26W15	all	x	x		small basin shaped - unknown
9	N23W12,N24W11, N24W12,N24W13 N25W11,N25W12	N, S 1/2	x	x	FCR	hearth
10	N23W10	E, W 1/2	x			postmold
11	N24W12	E, W 1/2	x			unknown
12	N23W14,N23W15 N24W14,N24W15 N25W14,N25W15	N, S 1/2 10cm arbitrary level	x	x		unknown
13	transect from N23W7 to N28W13	NONE	--NONE--			water run-off channel or rodent burrow
14	N21W12	no feature	--NONE--			no feature
15	N20W12	E, W 1/2	x			root or rodent
16	N20W12,N21W12	N, S 1/2	x			postmold
17	N18W8	E, W 1/2	x	E 1/2 only		postmold
18	N19W13	N, S 1/2	x	x		tree root

TABLE 5 (cont.)

Feature #	Provenience	Portions	Samples Collected-Excavated			Cultural Definition
			F	C	O	
19	N19W12	all	x			unknown - postmold
20	N19W11,N19W12	all	x			unknown - postmold
21	N19W11	all	x			unknown - postmold
22	N19W12,N18W12	all	x			rodent or root
23	N22W13	N, S 1/2	x	x		postmold
24	N25W17	NW, SE 1/2	x	x		unknown - historic postmold
25	N27W13,N27W14	all	x			postmold
26	N21W8	NW, SE 1/2	x			unknown - historic postmold
27	N32W9	E 1/2	x			historic - post

Key: F - flotation
C - carbon
O - other

Discovery of features, including a hearth (see description presented below), at the plowzone/subsoil interface, and recovery of prehistoric artifacts from the first 10cm of the subsoil indicate that this interface was a landscape upon which people lived approximately 5000 years ago. The resulting features and artifacts were then buried by colluviation and later partly disturbed by plowing. Nonetheless, some of the artifacts and features remained in undisturbed context. Later, construction of Route 7 deposited a discontinuous layer of fill across the site. Figure 10 shows the sequence of soil deposition at the site.

EXCAVATED ARTIFACTS

The general catalog of all artifacts recovered from the excavation of 7NC-A-17 is on file at the Island Field Museum and is organized by individual excavation units (Appendix III). Table 4 shows a summary catalogue of the prehistoric artifacts. Analysis of these artifacts will be presented in the discussion of lithic technologies, settlement patterns, and activity areas.

FEATURES

A total of 28 features were identified during the final excavations at the Hockessin Valley Site. Table 5 lists a summary of the features and Figure 11 shows their location. Individual descriptions of selected features are presented below and plan views and profiles of all features are provided in Appendix V.

Features 1-4, 7, 10, 23, and 25 are a series of prehistoric postmolds arranged in a roughly circular shape (Figure 12 and Plate 1) and these postmolds are believed to be the remains of a prehistoric house. Figure 13 shows the cross-sections of these postmolds, which were defined on the basis of small dark circular stains, some with charcoal flecking, seen in the surrounding yellow-brown silty clay subsoil. Feature 2 contained the largest amount of charcoal among all of the house-related postmolds and was submitted for radiocarbon dating; however, there was insufficient carbon material for a date. The only artifacts found in the structure-related postmolds are a series of quartz and chert flakes found in the flotation samples from

FIGURE 11
Hockessin Valley Site Feature Map

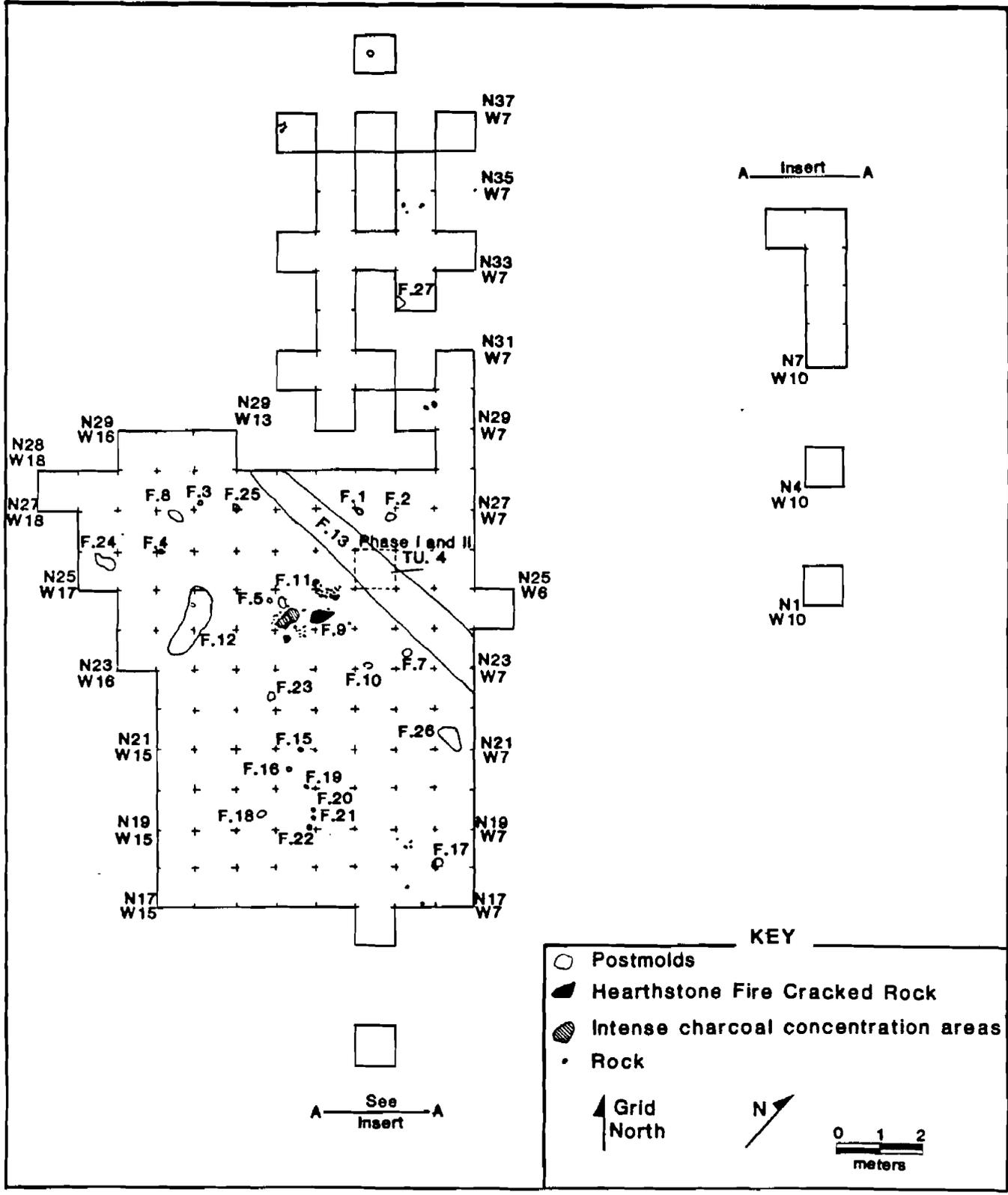
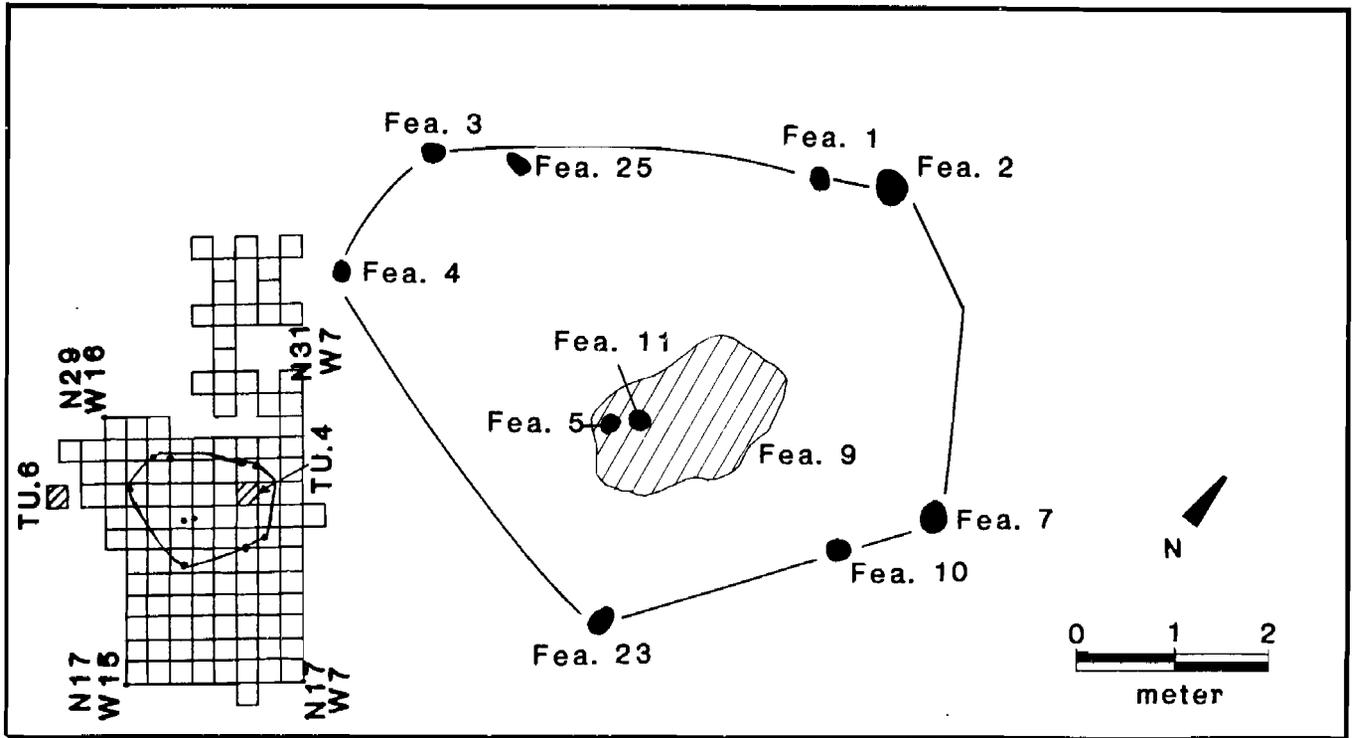


FIGURE 12
Hockessin Valley Site House Pattern



Features 1 and 23. It should be noted that more postmolds may have been present but could have been destroyed by Feature 13, a modern disturbance which cross-cuts the house (Figure 11).

The roughly circular area outlined by the postmold pattern measures 7m x 5m enclosing an area of approximately 25 square meters. The size of this area falls well within the range of sizes of other prehistoric houses identified in the Middle Atlantic region and more detailed comparison is provided in the final section of this report.

The identification of these postmold features as a house is enhanced by the presence of a hearth feature (Feature 9) in the center of the structure (Figures 11 and 12). Feature 9 was defined by a large concentration of fire-cracked rock and

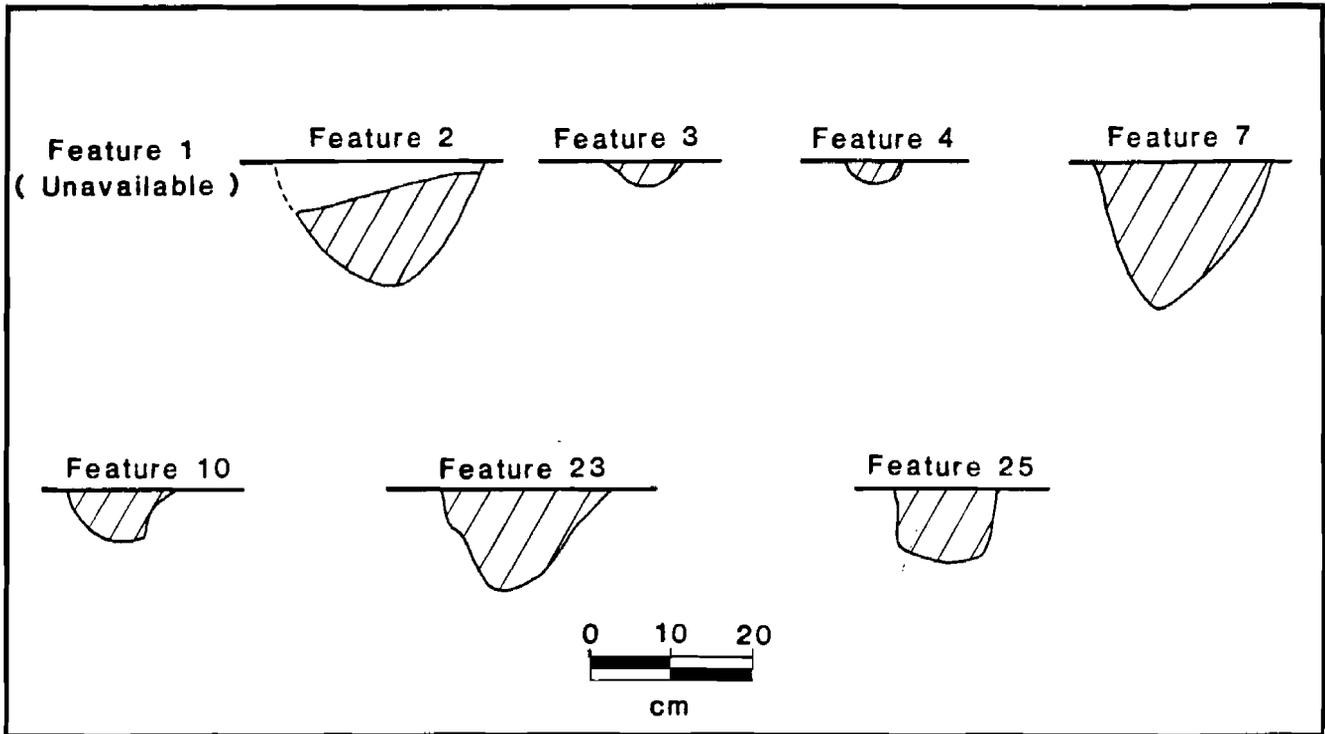
PLATE 1

Hockessin Valley Site House Pattern
(Features 1-4, 7, 10, 23 and 25)



FIGURE 13

Hockessin Valley Site Postmold Profiles from House Pattern



charcoal (Figure 14 and Plate 2). Most of the hearth was uncovered just below the plowzone/subsoil interface and had been disturbed by past agricultural activities. The heaviest concentration of charcoal was found in the western portion of the hearth. A sample of charcoal from the hearth was submitted for radiocarbon dating and returned a date of 5205 B.P. (3255 B.C.) \pm 70 years (UGa-5715). A correction factor of \pm 29 years is added due to carbon isotope ratios. The resulting date is 3255 B.C. \pm 99 years which would place the house structure at the beginning of the Clyde Farm Complex of the Woodland I Period.

A total of 16 flakes were recovered from screening of the south half of the hearth - Feature 9, and an additional 65 quartz

FIGURE 14
Hockessin Valley Site Feature 9 Plot

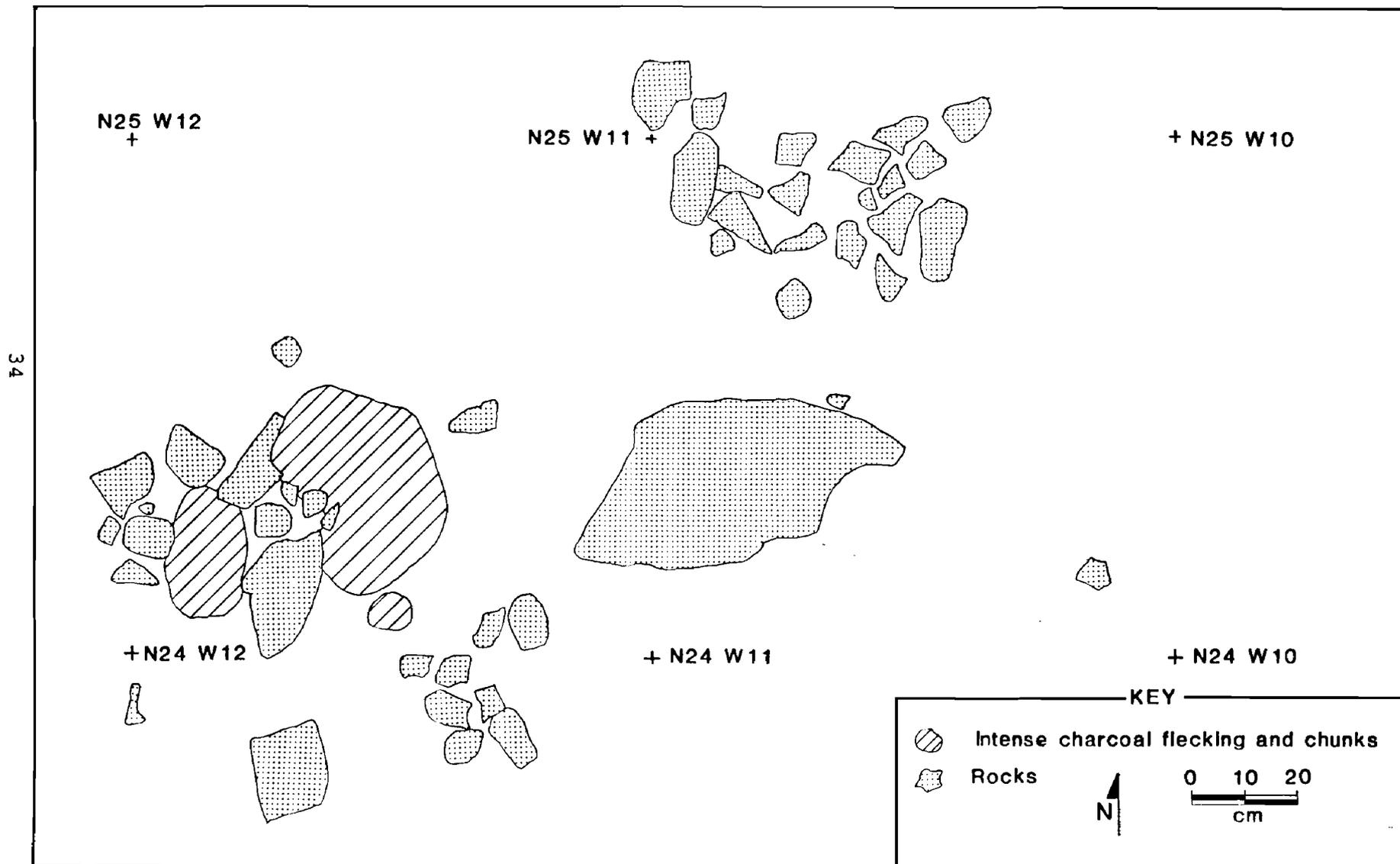


PLATE 2

Hockessin Valley Site Feature 9 - Hearth

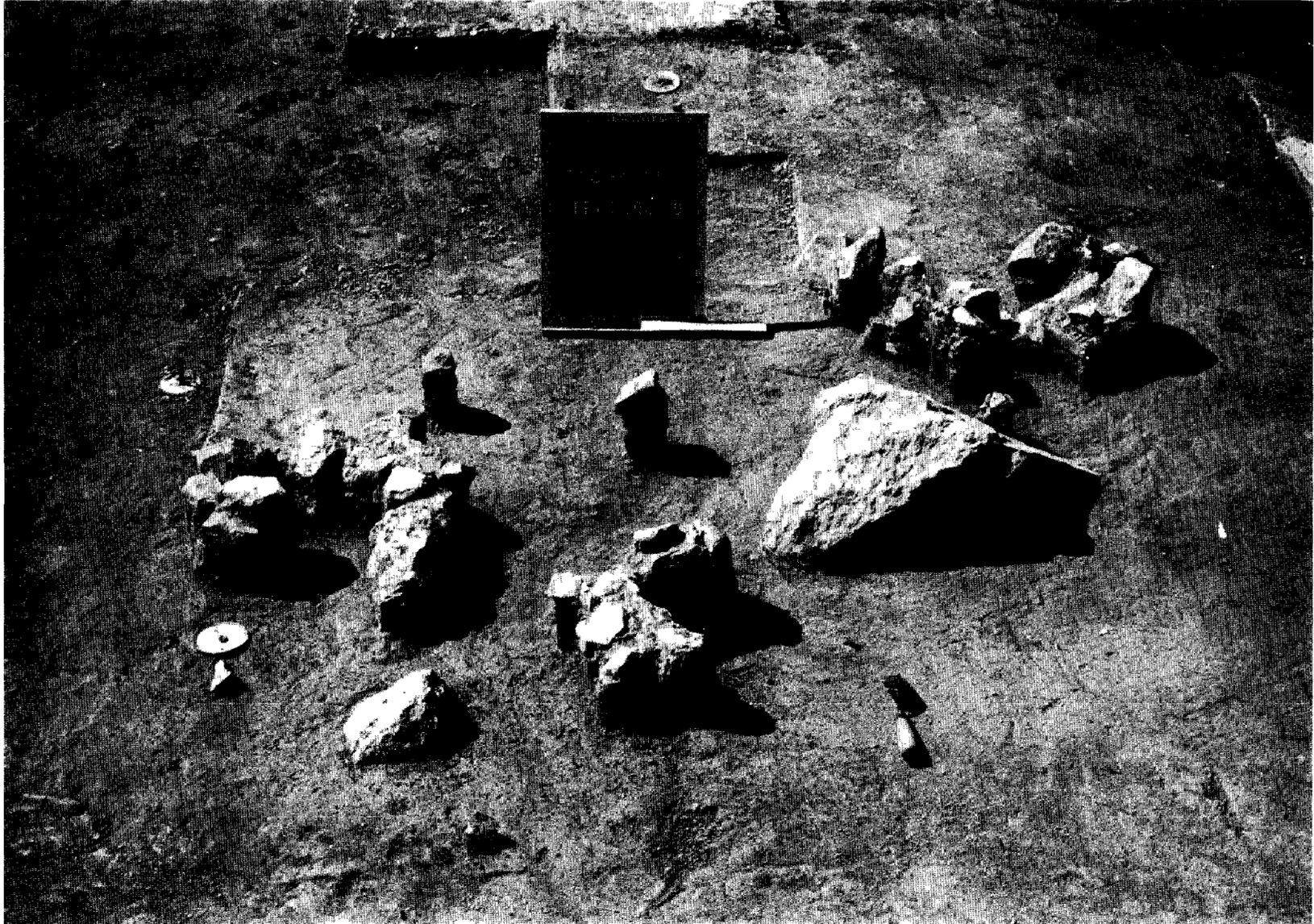
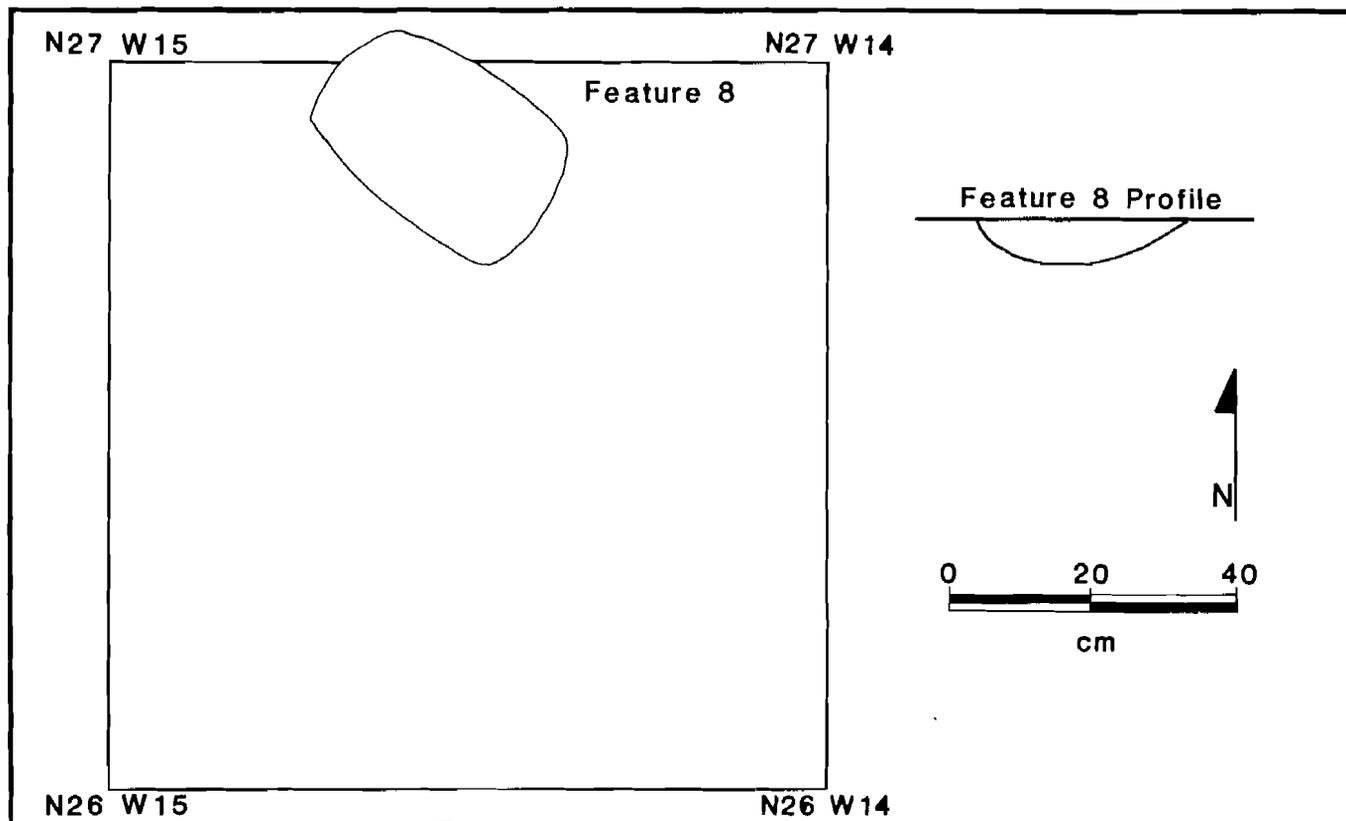


FIGURE 15

Hockessin Valley Site Feature 8 Plot and Profile



flakes and 1 jasper flake were recovered from flotation of the south half of Feature 9. Large amounts of wood charcoal was also present in the flotation from the feature and more detailed analysis of these materials is presented later in this report. A shallow circular stain (Feature 5) was also located adjacent to Feature 9 (Figures 11 and 12). To summarize to this point, a set of postmolds define a roughly circular house pattern with an interior hearth feature.

With two exceptions (Features 8 and 12) the remainder of the features at 7NC-A-17 listed in Table 5 and shown on Figure 11 are natural in origin, stray postmolds not associated with any

FIGURE 16

Hockessin Valley Site Feature 12 Plan View

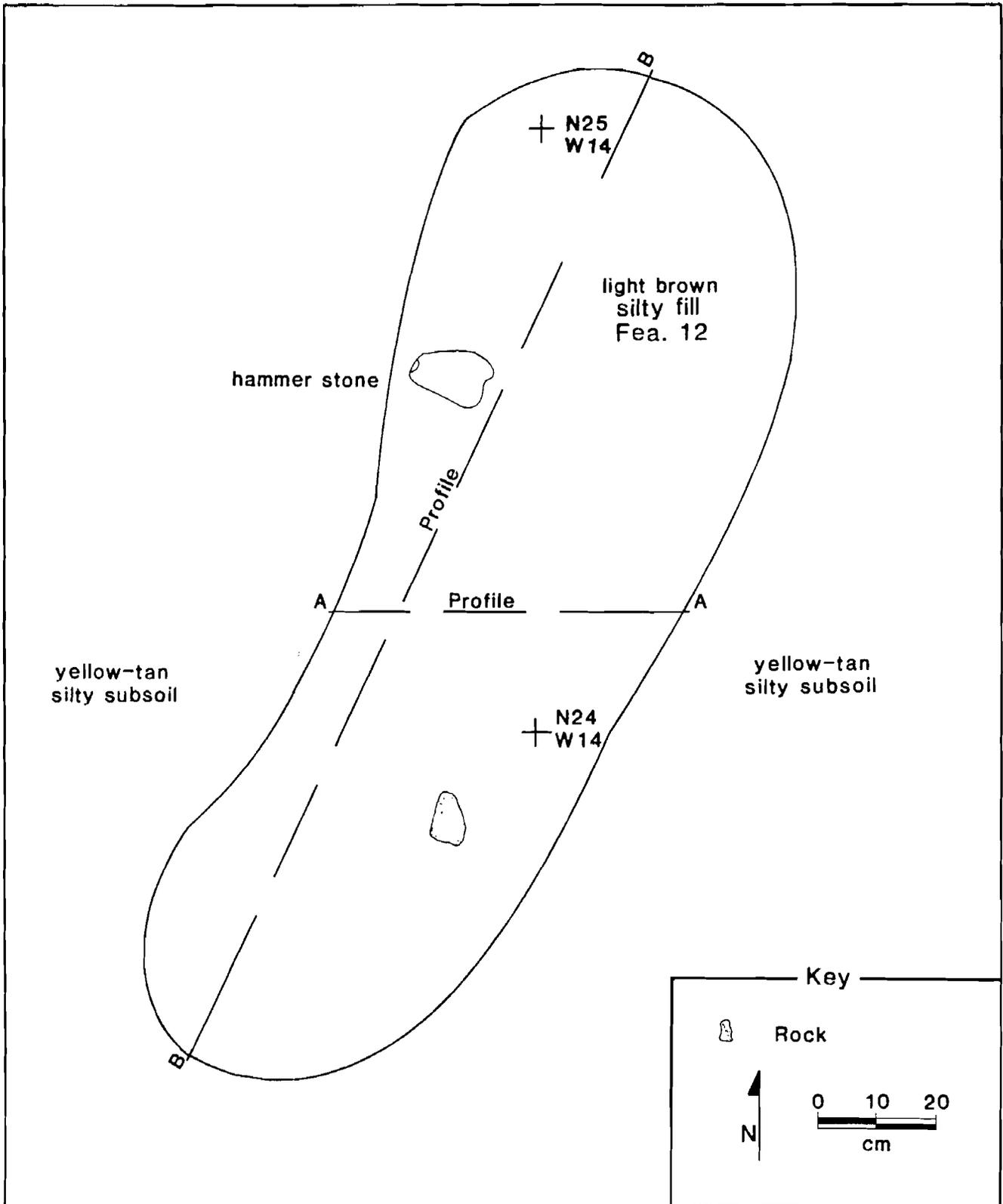
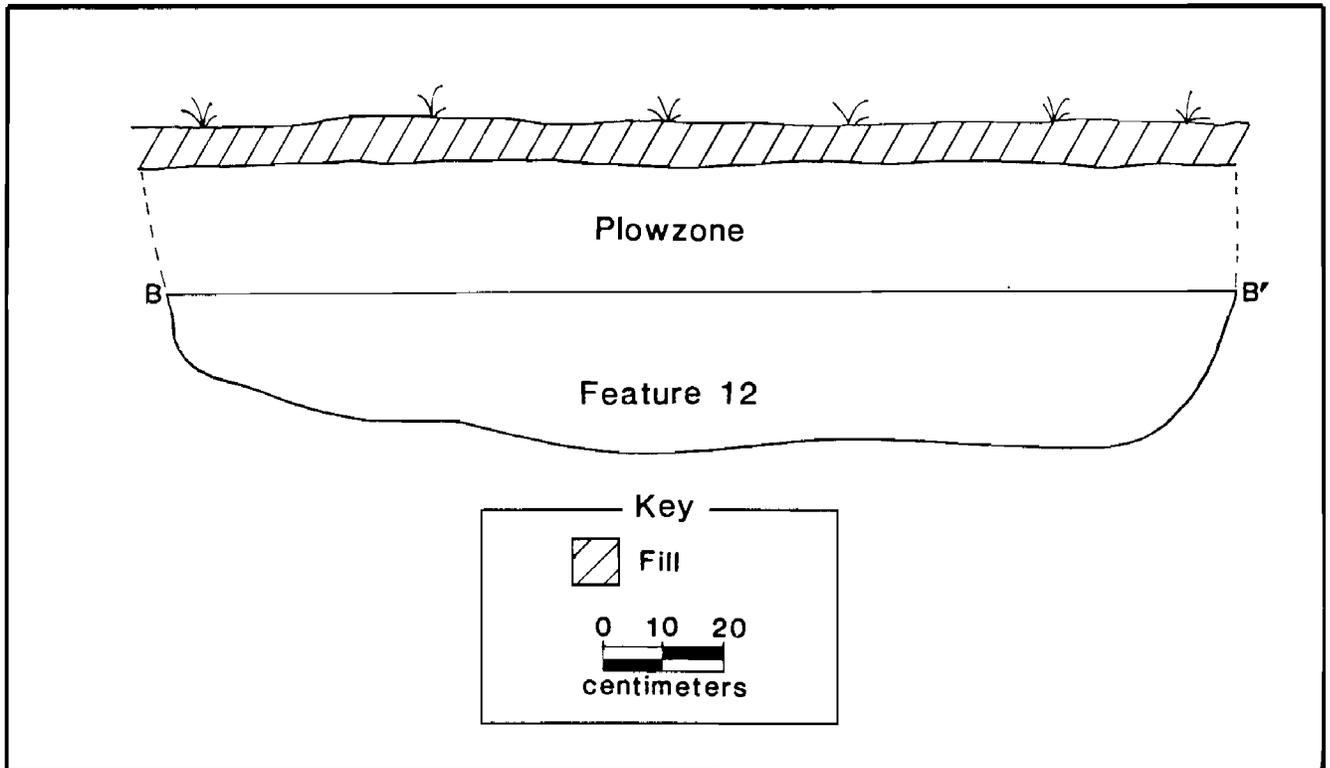


FIGURE 17
Hockessin Valley Site Feature 12 Profile

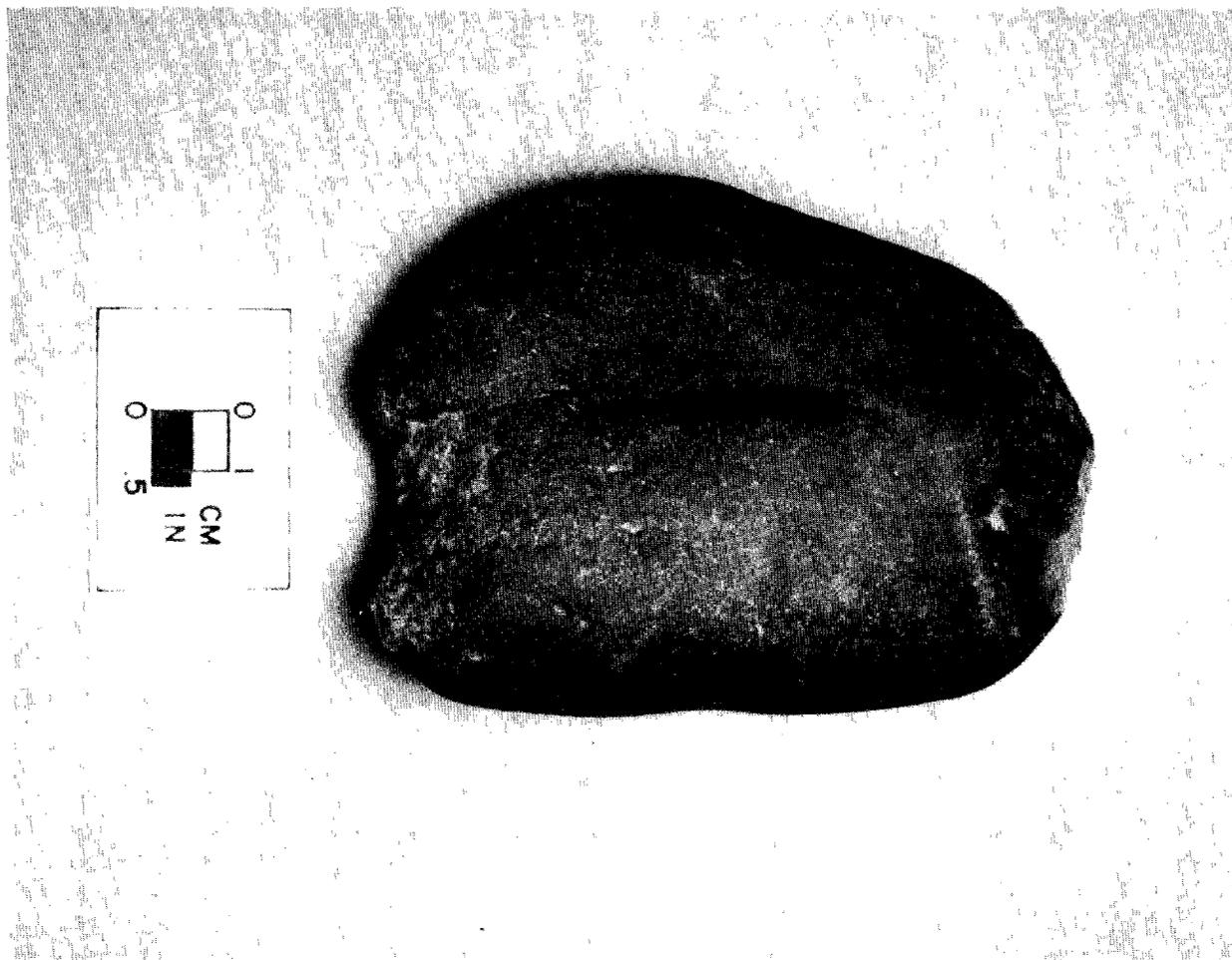


structures, or modern disturbances. Feature 8 is a squarish oval shaped soil stain and its plan view and cross-section is shown in Figure 15. No artifacts were recovered from this feature either from regular screening or flotation. A charcoal sample was taken from this feature and returned a date of 3255 \pm 100 years B.P. (UGa-5717) with a carbon isotope correction factor of 26 years. Feature 8 is not thought to be a cultural feature related to the house pattern because its radiocarbon date is considerably later than the hearth in the house, there are no artifacts in Feature 8, and Feature 8 cuts across the limits of the house structure.

Feature 12 was a large "kidney-shaped" feature (Figure 16). Profiles of the feature, (Figure 17), show a basin-shaped feature

PLATE 3

Hockessin Valley Site Hammerstone



with a depth of approximately 30cm. Feature 12 contained sufficient charcoal for a radiocarbon date and a date of 2915 \pm 115 B.P. (UGa-5716) with a carbon isotope correction factor of 38 years was returned. A hammerstone (Plate 3), quartz and jasper debitage, and large amounts of charcoal were found in the feature and it is believed to be of prehistoric cultural origin. However, given the fact that Feature 12 is approximately 2300 years younger than the house structure the two features are not related to the same occupation of the site. The date of Feature 12 (960 B.C. \pm 153 years) would place it within the Wolfe Neck Complex of the Woodland I Period.

FLOTATED ARTIFACTS AND ECOFACTS

A variety of artifacts and ecofacts were recovered from the flotation samples taken from features at 7NC-A-17. Table 6 provides a summary of the artifacts and ecofacts recovered and Table 7 lists the raw materials found among the debitage recovered from the flotation.

Large quantities of charcoal were found in many of the features, especially Feature 9; however, seeds and other ecofacts are rare. Only two charred seeds (a wild grape seed from Feature 8 and a chenopodium seed from Feature 24) and a charred hickory nut fragment from Feature 9 were recovered. This sample of ecofacts is too small to make any statements concerning seasonality of site occupation or plant resource utilization.

The presence of debitage in most of the flotation sample indicates that retouching of tools took place across the site. The large quantity of debitage in Feature 9 also indicates that

TABLE 6

HOCKESSIN VALLEY SITE FLOTATION RESULTS

Feature	Weight of Charcoal (gm)	Weight of Flakes (gm)	Number of Flakes
1	3.11	2.51	12 (1 brick)
8	1.29		
9 S 1/2 Lv. 2	24.72	200.17	67
12 NE area 0-10cm	.07	.24	18
12 NE area 10-20cm	4.24	5.02	42
12 S 1/2 10-20cm	1.13	7.59	5
12 N 1/2 20cm-bottom	3.99	.46	15
12 S 1/2 20-30cm	1.13	25.56	7
18 N19W13 N 1/2 orange yellow clayey silt	1.97	.02	1
18 N 1/2	4.90	.44	5
23 N 1/2	1.12	.01	2
23 S 1/2	.16	.80	9
24 NW 1/2	1.85	.70	16
26 NW 1/2	31.96	26.58	10
26 SE 1/2	12.76	47.46	6

tool edge retouching took place within the structure. Quartz is the main raw material in the flotation debitage assemblage as was the case for the total site debitage assemblage. Jasper is the major cryptocrystalline material in both debitage assemblages; however, jasper is only a very minor component of the debitage compared to quartz.

TABLE 7

HOCKESSIN VALLEY SITE DEBITAGE FROM FLOTATION

Feature	Quartz	Jasper	Chert	Chal- cedony	Other	Total
1	10(1)	1	1			12(1)
9 S 1/2 Lv. 2	65(2)	1			1	67(2)
12 NE area 0-10cm	10	8				18
12 NE area 10-20cm	30	8	3	1		42
12 S 1/2 10-20cm	5					5
12 N 1/2 20cm-bottom	13	1		1		15
12 S 1/2 20-30cm	6	1				7
18 N19W13 N 1/2			1			1
18 N 1/2	4				1	5
23 N 1/2	1				1	2
23 S 1/2	8		1			9
24 NW 1/2	15	1				16
26 NW 1/2	10					10
26 SE 1/2	6					6
Total	183	21	6	2	3	215

WOOD ANALYSIS

Samples of charred wood from various features were submitted to Lucinda McWeeney of Yale University for identification based on internal sections which reveal the woods' cellular structure. Appendix VI lists the results of these identifications and analyses.

Samples from two postmolds (Features 1 and 23) and the hearth in the house structure (Feature 9) were analyzed. The

wood from the postmolds were limited in their species identification, as would be expected, with only hickory (Carya), identified at the family level present in Feature 1 and a variety of oak (Quercus), and possibly walnut (Juglans) present in Feature 23. A variety of woods were present in the hearth (Feature 9), as would be expected. Included within the hearth are varieties of walnut (Juglans), oak (Quercus), hickory (Carya), and American beech (Fagus grandifolia). In sum, the identification of wood species from features underscores their identification and functional interpretation.

BLOOD RESIDUE ANALYSIS

A program of testing of stone tools for the presence of blood residues was undertaken at 7NC-A-17. Protocols described by Custer, Ilgenfritz, and Doms (1988) were followed and 422 control tests of soils and naturally occurring rocks were undertaken. A total of 103 of the control tests yielded positive results, indicating that contamination of tests and false positive tests are a problem at the site. Figure 18 shows the location of site areas with potential contamination and although the contaminated areas are found throughout the site, there are some site areas, including part of the house pattern, where contamination of tests and false positive readings are not a problem. Therefore, if positive blood residue test results were obtained from tools outside the area of potential contamination, the test results were interpreted as indicating that blood residues were present on the tool. If a positive blood residue test was obtained from within an area of potential contamination,

FIGURE 18
Hockessin Valley Site Blood Control Test Plot

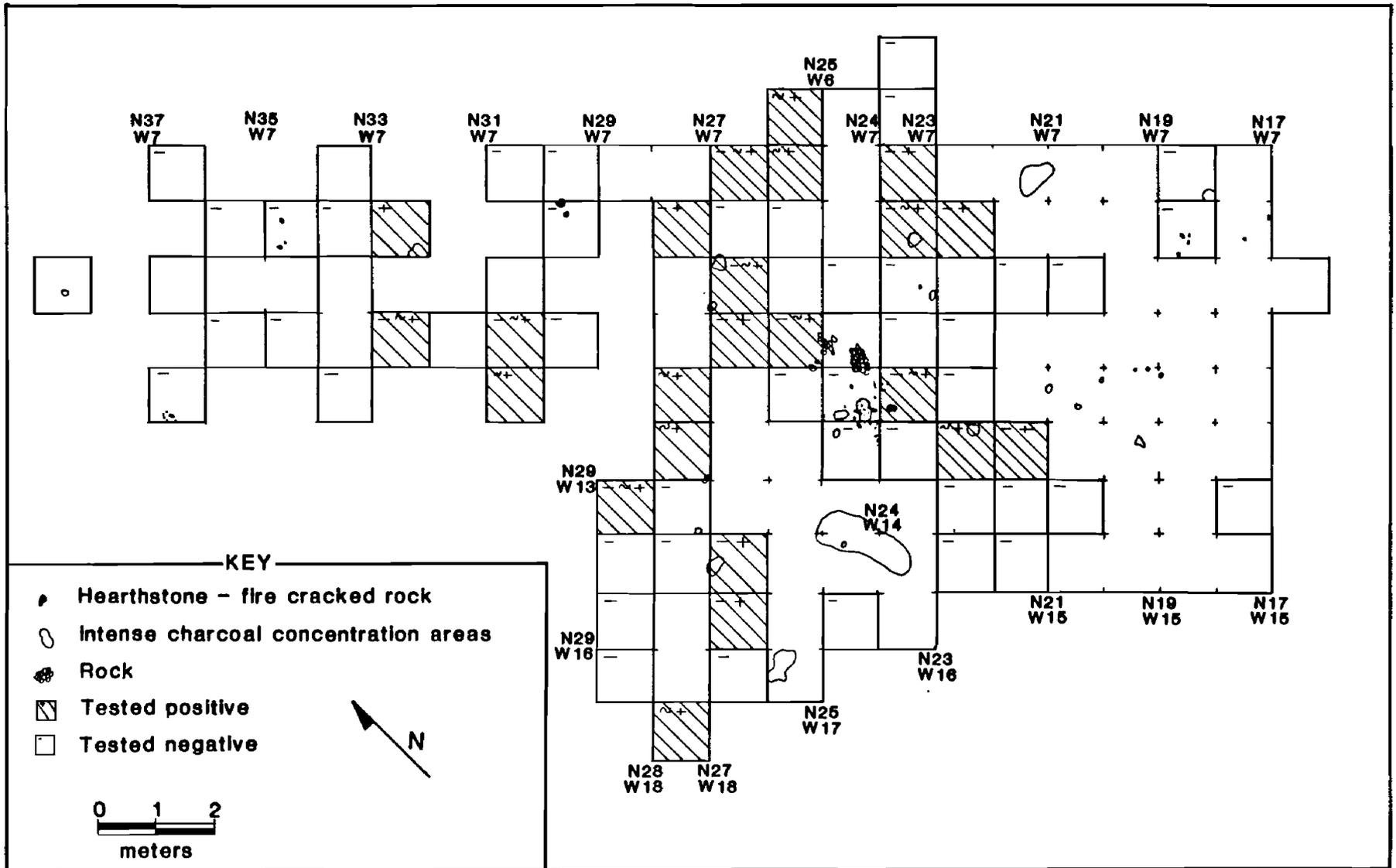


TABLE 8

HOCKESSIN VALLEY SITE BLOOD RESIDUE TEST RESULTS

All artifacts listed below had positive blood residue test results and were not in areas of potential contamination.

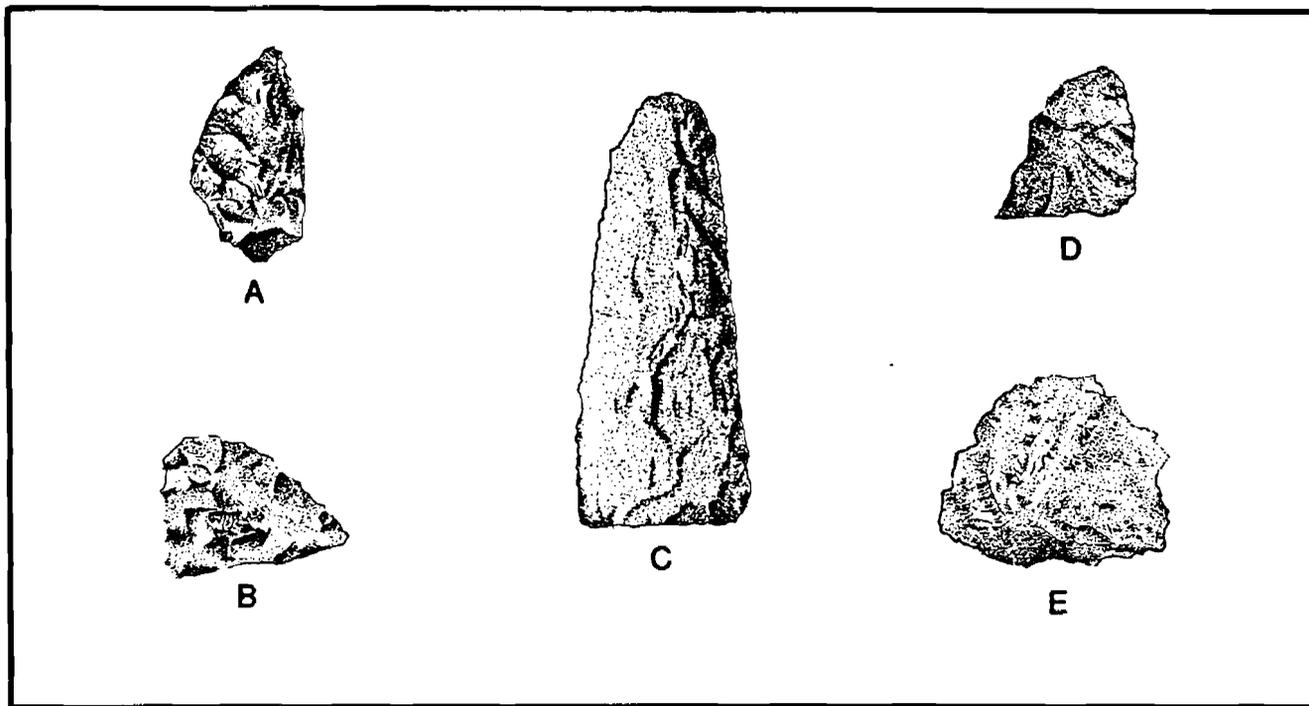
Tool	Provenience	Illustration
Jasper biface tip	N25W12, Level 3	Figure 19B
Chalcedony flake	N29W8, Level 1	-----
Quartz flake tool	N24W10, Level 1	-----
Quartz flake tool	N36W10, Level 1	-----
Quartz scraper	N35W9, Level 1	Figure 20B

or from a square adjacent to such an area, the test result was not counted.

A total of 377 tests were run on 264 artifacts and only 7 artifacts yielded positive test results. Of these 7, 2 artifacts with positive test results were discounted due to possible contamination. Table 8 lists the artifacts with positive results and notes their provenience. The presence of blood residues on one biface fragment suggests that discarding of tools which had been broken in use, probably either as hunting weapons or processing tools, took place at the site. The presence of blood residues on quartz flakes and tools may indicate that tools made at the site from locally available materials were used for processing game animals.

As a final note on analysis of blood residues, it should be noted that the incidence of preserved residues is quite low (2%). The clayey soils of 7NC-A-17 are ideal for blood residue preservation and even in the face of relatively high chances of

FIGURE 19
Hockessin Valley Site Bifaces



contamination and false positive readings the incidence of positive readings is low. This situation only enhances the reliability of the positive readings that were obtained (see Custer, Ilgenfritz, and Doms 1988:102-103).