artifacts were identified. Eighty-three percent of the artifact assemblage is made up of flakes, 24 percent of which exhibit cortex. Other artifacts include one late stage biface reject, one core, one fire-cracked rock, and two pieces of shatter.

When all of the sites in the Snow's Branch Complex are considered together, it is clear that there is a relative abundance of flakes at the site, nearly one-third of which exhibit cortex. Therefore, it appears that local cobbles were an important supplementary source of materials for tool manufacture. The presence of cores and shatter as well as tools among the various flakes indicates that tool manufacture and resharpening were important activities at the site. The presence of ceramics and fire-cracked rocks along with the likelihood of prehistoric cultural features provides evidence of past habitation of the site, and diagnostic artifacts place that habitation in the Woodland Period. However, the absence of artifacts in deep levels of the subsoil and the generally low levels of artifacts produced by the sites suggest that habitation may well have been transient rather than long term. This pattern is consistent with one of the settlement models noted for the Slaughter Creek Complex (to which the Townsend ceramic from the assemblage dates) which equates seasonal camps with the micro-band base camps of earlier complexes (Custer 1986b:144). However, since these sites have been disturbed by chisel plowing and are largely confined to the plow zone and since there is an absence of definable features and significant quantities of artifacts, these sites are not considered to be eligible for listing on the National Register of Historic Places, and no further work is recommended.

Conclusions and Recommendations

In summary, all five sites in the Snow's Branch Complex are not considered to be eligible for listing on the National Register of Historic Places. No diagnostic artifacts were recovered from intact non-plow zone contexts and no cultural features were located in undisturbed contexts. Thus, no further work is recommended for sites 7K-A-105, 7K-A-106, 7K-A-107, 7K-A-108, and 7K-A-109.

MIDDLE LEIPSIC RIVER VALLEY ARCHAEOLOGICAL DISTRICT

7K-C-203, 7K-C-204, 7K-C-194, 7K-C-194A, and 7K-C-195 comprise the Middle Leipsic River Valley Archaeological District. The district is located along the Leipsic River between Smyrna and Dover in Kent County (Figure 2). The sites are situated on low rises surrounded by swampy areas of very poorly drained silty loam soils of the Johnston series (Matthews and Ireland 1971). The limits of the sites appear in Figure 35.

The study area consists of a 6-meter (20-foot) high bluff on the south side of the Leipsic River and a low 1.5 meter (4-foot) terrace on the north side. The fields on both banks, which are separated from the stream channel by thin lines of trees and shrubs, are currently used for no-till corn agriculture. A large section of the south bank contains an historically unplowed woodlot which lies just to the east of the 1988 proposed right-of-way and contains about 12 acres. Some sheet erosion is evident in the fields on the south side and the eroding B horizon can be observed in several places within sites 7K-C-203 and 7K-C-204. The river channel is now heavily constricted by siltation and weed growth, most of which has occurred within the past 50-60 years, according to local residents.

Phase II investigations of the Middle Leipsic River Valley sites were intensive. Therefore, the discussion of the sites will be presented in discrete sections pertaining to particular topics of investigation.

Previous Research

Prior to the 1985 survey conducted by the University of Delaware Center for Archaeological Research, five prehistoric archaeological sites were known from the Leipsic River drainage and all of these sites were known from surface collections (Figure 36). 7K-C-40 and 7K-C-94 are located on Dyke Branch about 5.0 kilometers (3.1 miles) southeast of the project area. The Bureau of Archaeology and Historic Preservation site files show that these macro-band base camps yielded Woodland I and Woodland II artifacts, including steatite bowl fragments, Wolfe Neck and Hell Island ceramics, Woodland I stemmed points, a Jack's Reef point, and Woodland II triangular points. 7K-C-6, located on Alston Branch just north of the town of Cheswold, contained triangular points and appears to be a Woodland II base camp. 7K-A-15 and 7K-A-16 lie on the north bank of the Leipsic River about

FIGURE 35

Middle Leipsic River Valley Archaeological District (7K-C-203, 7K-C-204, 7K-C-194, 7K-C-195, 7K-C-194A)

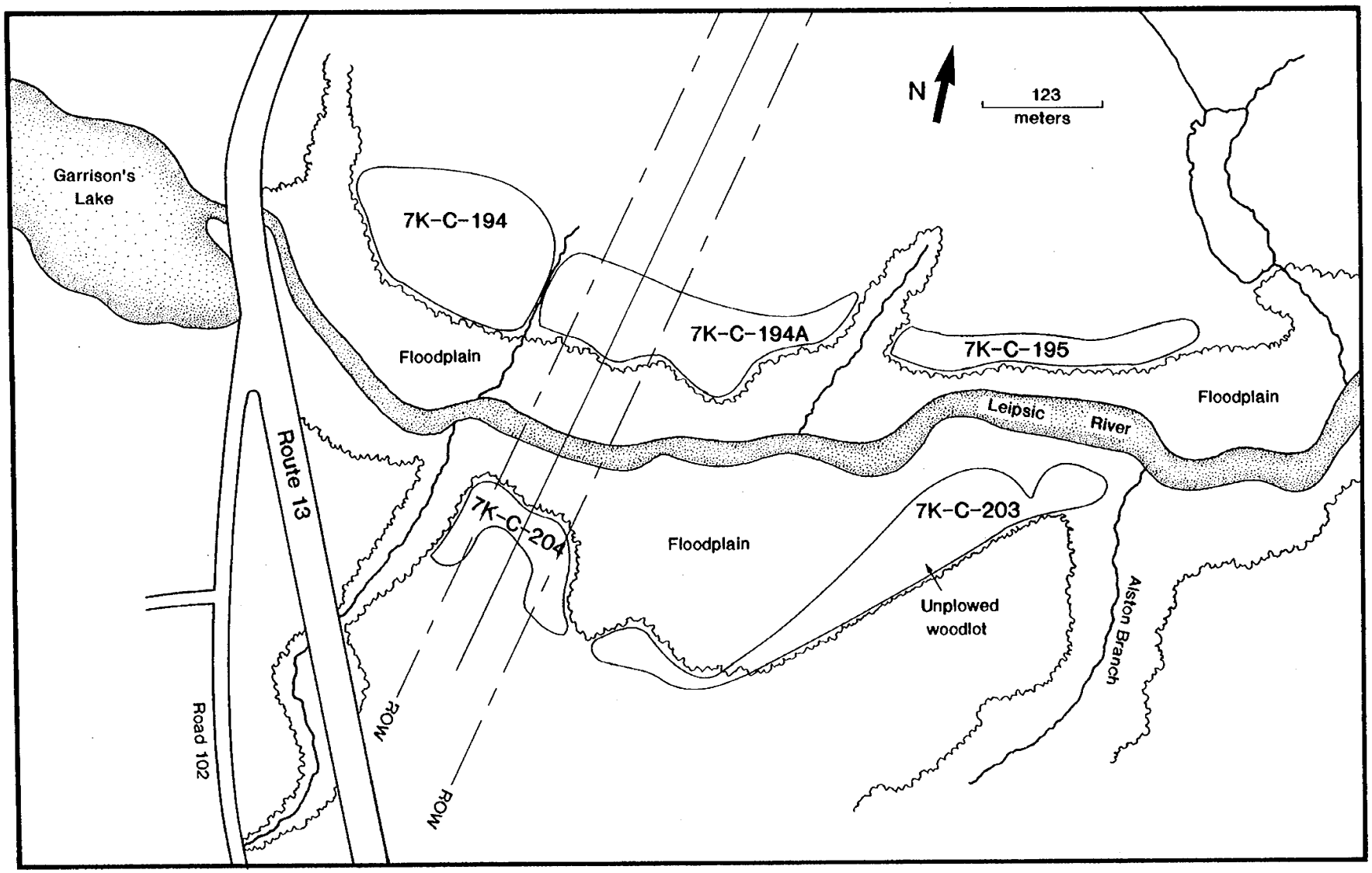
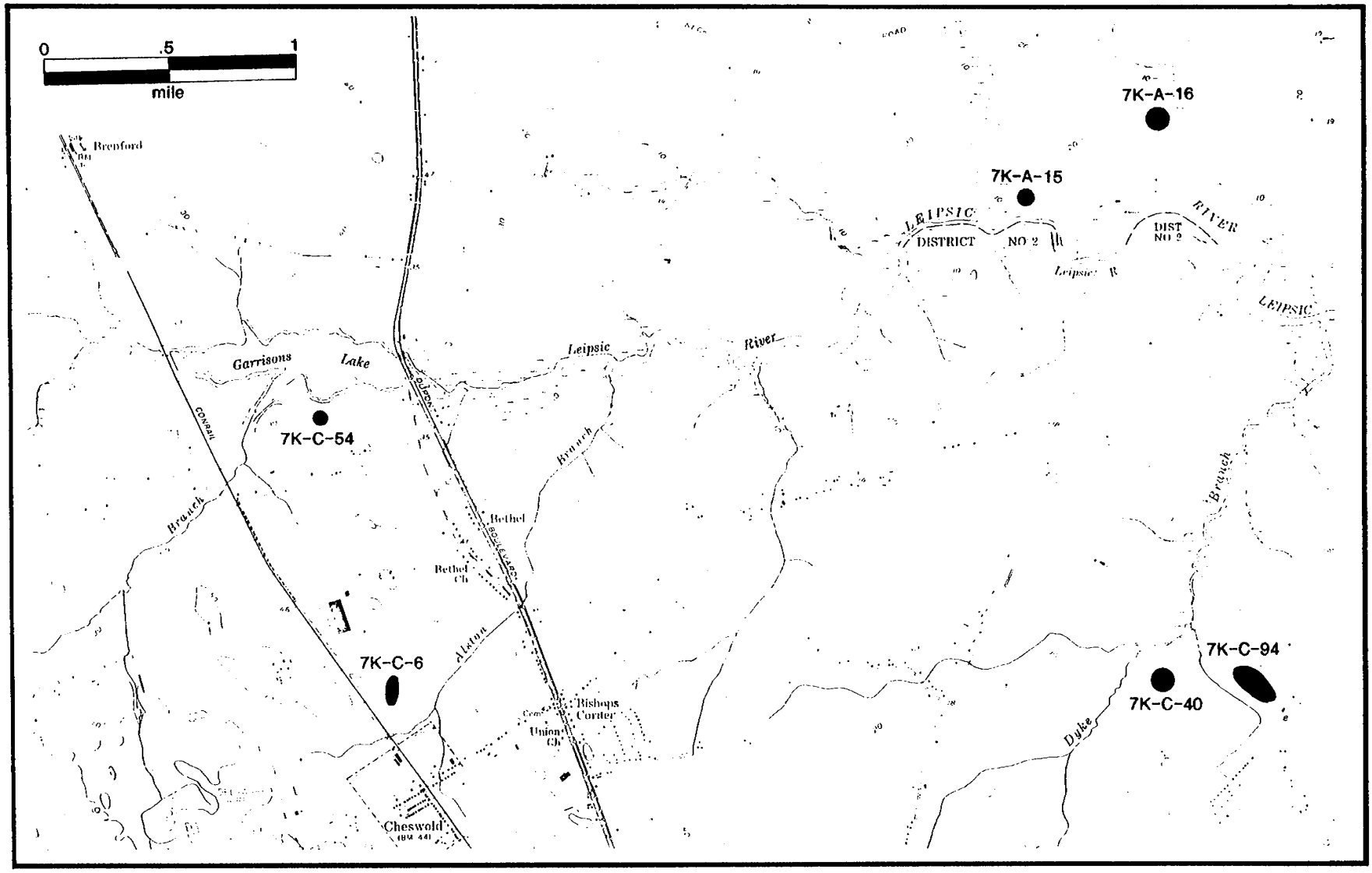


FIGURE 36

Leipsic River Crossing – Prehistoric Sites Recorded Prior to 1985



two miles downstream from the project area, and surface-collected material from these sites include a contracting stem point, a Jack's Reef point, nondiagnostic bifaces, cores, and debitage. The function of these two small sites is unknown, although they may be procurement sites.

The 1985 Planning Survey for the Delaware 1 Relief Route Corridor (Custer, Bachman, and Grettler 1986) resulted in the location and identification of over 130 new sites from the Leipsic River drainage. These sites ranged in age from the late Paleo-Indian Period through the Woodland II Period and included multicomponent macro- and micro-band base camps and procurement sites. Some of the larger multicomponent sites measured 20 to 40 acres in size and many contained "exotic" lithic materials including argillite and rhyolite.

In 1985-86, four sites from the current project area were identified (Custer, Bachman, and Grettler 1986). 7K-C-194 lies on the north bank of the Leipsic River northeast of its confluence with an ephemeral tributary and produced flakes and fire-cracked rock dispersed over a large area covering several acres. This site was thought to be a base camp. 7K-C-195, which was found downstream on the same side of the river at another ephemeral stream confluence, contained two Woodland II Killens Ware sherds, a core, debitage, and fire-cracked rock and was also thought to be a base camp. 7K-C-203 and 7K-C-204 were found on the south side of the river and produced low amounts of debitage and fire-cracked rock. All of the sites were found by pedestrian surveys which were conducted when the ground surface visibility was quite low (less than 5 percent). As a result, the sites' boundaries and constituent cultural components were not well understood and further work was recommended.

Phase I Summary

After an alignment shift was made to the east in the final proposed right-of-way in early 1988, an additional pedestrian survey was made of the project area. Although the fields were still in no-till corn, the survey was conducted at a different time of the year and surface visibility had improved to an overall average of about 30 percent. 7K-C-194A, which was found at this time on the north bank between C-194 and C-195, produced nondiagnostic grit-tempered ceramics, stemmed and ovate bifaces, debitage and fire-cracked rock and appeared to be another base camp. This site had gone unrecorded in 1985 due to poor surface visibility, but by early 1988 these conditions had improved to a level where artifacts could be observed. Thus, five prehistoric sites (7K-C-194, 7K-C-194A, 7K-C-195, 7K-C-203, and 7K-C-204) are now known to lie in the vicinity of the proposed right-of-way for the Leipsic River crossing (Plates 1 and 2).

Phase II Summary

Excavation Strategy

The Phase I surveys in the project area had located several sites; however, all but one were found entirely in no-till cornfields with very limited surface visibility and none of the sites had been subjected to any form of subsurface testing. One site, 7K-C-203, was located partially in no-till cornfield and partially in unplowed woodlot. The total number of cultural components present at each site was unknown and although tentative limits had been assigned to each site, they were assumed to be imprecise due to the restrictions of poor ground surface visibility, lack of subsurface investigations, and the presence of the large woodlot on the south bank which obscured surface visibility. The Phase I (surface collection) data suggested that these sites may extend up and down the river on both sides of the drainage in a continuous line with only minor breaks caused by ephemeral streams or swampy areas. Therefore, a primary goal of the Phase II excavations was to determine whether there was a continuous site distribution, or there existed one or more gaps in the site distribution through which the proposed highway could be placed without adversely affecting the buried cultural resources. A second major research issue was the determination of the frequency and distribution of subsurface features within the site limits. The surface-collected artifacts (ceramics, biface tools, fire-cracked rocks, and debitage) suggested that the sites were base camps, and subsurface prehistoric features, including pits, hearths, post molds, and other features, could be expected at such sites. However, sections of the sites also appeared to be adversely affected by deforestation and agriculturally-induced erosion. Consequently, Phase II excavations were designed to determine the presence and extent of subsurface prehistoric features and to see if there was any spatial, temporal, and cultural correlation between them and the surface collected artifacts.

PLATE 1

Aerial Photograph of the Middle Leipsic River Valley Project Area

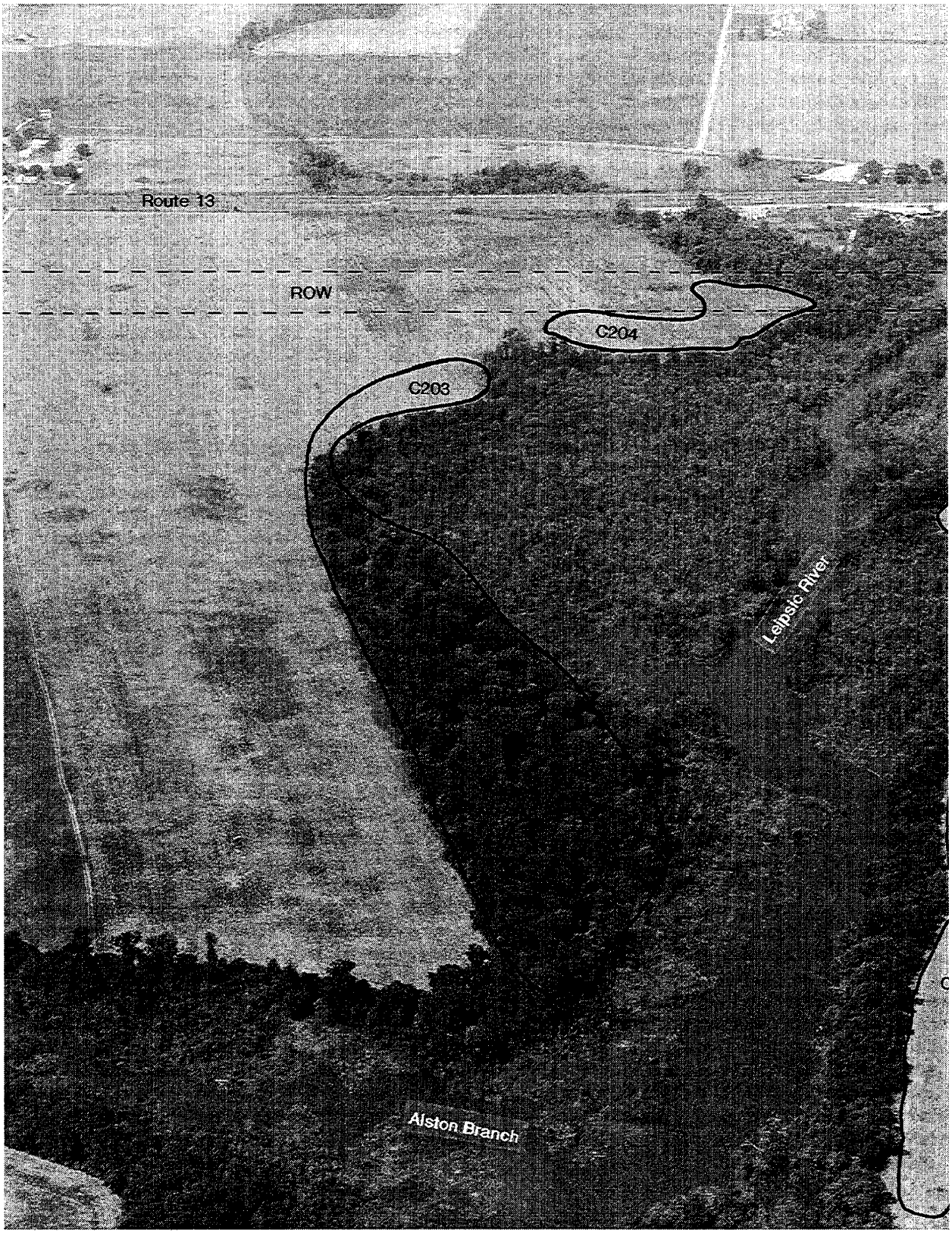
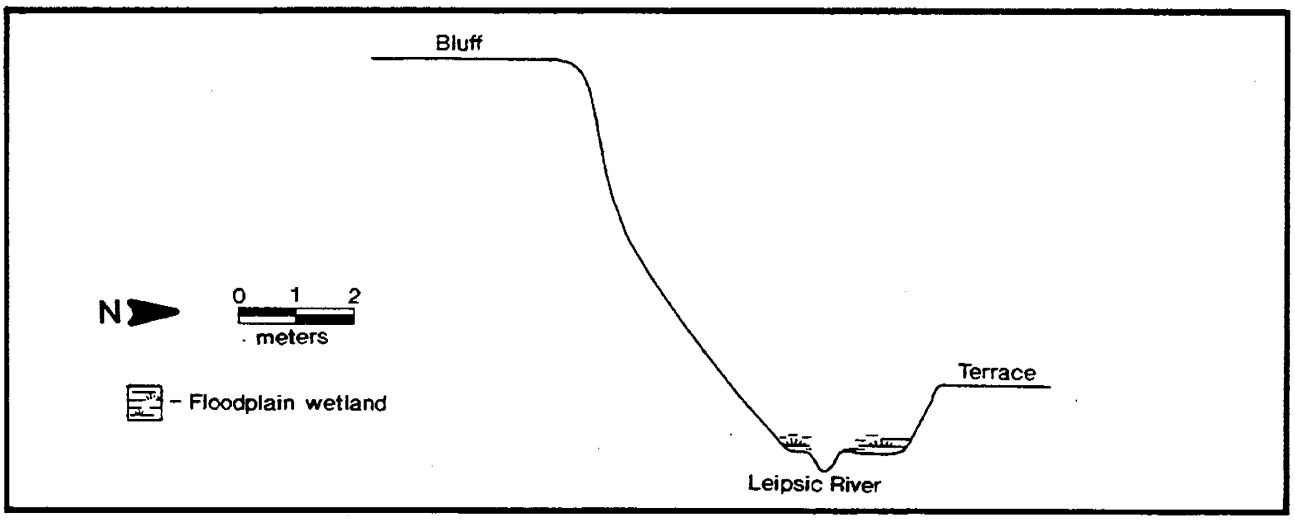


PLATE 2

Aerial Photograph of the Middle Leipsic River Valley Project Area

FIGURE 37

Profile of the Middle Leipsic River Valley Landscape, Looking West



The excavation strategy included the definition of the limits of the sites and the determination of the presence, integrity, areal extent, and cultural affiliation of subsurface prehistoric features in order to assess the sites' eligibility for listing on the National Register of Historic Places. An additional pedestrian survey was conducted at all of the sites during Phase II, and these walkovers served to better define the limits of each site and confirm the previous estimates of their size. A systematic Phase II shovel test pit (STP) grid was laid out within the limits of sites 7K-C-203, C-204, and C-194A and later extended to include sites 7K-C-194 and 7K-C-195 (Figure 35). The shovel test pit grid was designed to accomplish several goals: 1) sample plow zone artifact densities to verify horizontal site limits; 2) indicate cultural complexes present by the range of artifacts recovered in the shovel test pits; 3) note subsurface soil anomalies or artifact concentrations which might be indicators of subsurface features; 4) record the natural stratigraphy as an indicator of prehistoric occupation and the degree of erosion or other disturbance present in the fields; and 5) determine the recovered artifact and feature densities present at the site and serve as a guide for additional Phase II excavation.

The shovel test pit grid was extended upstream and downstream from the proposed centerline of the 1988 alignment shift. For the north bank sites (7K-C-194, 7K-C-194A, and 7K-C-195), these lines were labeled A, B, C, and D (Figure 35). Several 1m x 1m test units were also used for this purpose. One dozen of these units were placed east of the proposed centerline (CL) and five were placed on or west of the centerline. In addition, several units were placed southeast of CL Station 602 at a previously defined concentration of artifacts. The horizontal and vertical controls allowed for the subsequent placement of additional 1m x 1m test squares. These units were placed over any shovel test pit which produced quantities of artifacts in the plow zone, any artifacts in the subsoil, or an anomalous subsoil profile which suggested that the shovel test pit may have penetrated a prehistoric feature. The data gathered from the test units and the surface collection were then used as a guide to direct further excavation along the north bank. One-by-one meter test units were subsequently placed at these locations. Standard excavation techniques were used for both the shovel test pits and the test units.

Topography and Stratigraphy

The topography of the north and south banks of the Leipsic River are markedly different. The bank on the north side is 1.0 to 1.5 meters above the floodplain while the south bank is 5.0 to 6.5 meters high and the slope averages 20 percent (40 degrees) (Figure 37). The published soil types are roughly the same. The USDA Soil Survey for Kent County, Delaware shows that Sassafras loam and Sassafras sandy loam are the predominant soils in the project area (Mathews and Ireland 1971: 21). Because all of the project area on the north side of the Leipsic River

was in plowed field, all of the test units exhibited a plow zone varying in depth from 19 cm to 52 cm, while the average was 27 centimeters. The plow zone was underlain by red-brown or yellow-brown sandy clays, sandy silts, or occasional coarse red sands. The varying, undulating character of the subsoil suggested that the prehistoric land surface may have been slightly rolling and that erosion and redeposition caused by deforestation and modern agriculture has had a moderate leveling effect upon these original surface contours.

The stratigraphy on the south side of the Leipsic River was similar, although erosion was apparently a greater factor in the agricultural fields on this side. The eroding B-horizon, which contained large chunks of ironstone, could be observed at the crests of most of the rises. Shovel test pits placed in these fields revealed plow zones of widely varying depths (anywhere from 14 cm to 50 cm thick) underlain by various coarse orange sands and clays containing gravels and cobbles. Shovel test pits in the historically unplowed woodlot exhibited an organic level averaging 9 cm in depth underlain by yellow fine sands and silty sands. At a depth of 40 cm to 70 cm below surface, coarse red gravelly sands were usually encountered. When one compares the depths of the subsoils in the unplowed woodlot to those in the plowed fields on the south bank of the Leipsic River, it is apparent that at least 30 cm of soil has been lost to erosion since deforestation and the introduction of modern agriculture.

Excavation Results

7K-C-194

A total of 22 shovel test pits were placed at 20 meter intervals along the north bank of the Leipsic River within site 7K-C-194 (Figure 38). A typical soil profile of the site is shown in Figure 39. These test pits were placed in two parallel lines and included A-4 through A-14 and B-8 through B-18. Several shovel test pits produced prehistoric flakes and fire-cracked rocks in either the plow zone or the subsoil, and B-18 yielded three Woodland I contracting stem and notched jasper points from the plow zone. A summary catalog of artifacts recovered at the site is shown in Table 6. The distribution of artifacts in the shovel test pits across the site was fairly even and the surface collected artifacts from the 1985 survey (Custer, Bachman, and Grettler 1986) indicate that the site extends north of the riverbank for over 100 meters. The site is bounded on the west and south by the Leipsic River floodplain and is separated from site 7K-C-194A on the east by an ephemeral stream. The testing conducted at the site showed that it had been heavily utilized by prehistoric peoples as artifacts were recovered from both plow zone and subsoil strata. In addition to attempting to determine the site's eligibility for listing on the National Register of Historic Places, a further goal of testing at this site was to determine whether a "window" existed through which the right-of-way could be inserted without disturbing the cultural deposits. Since no such "window" was found, there was no shift of the right-of-way and this site remains out of the zone of vulnerability. Therefore, no further testing of the site is warranted at this time.

7K-C-194A

7K-C-194A extends from the ephemeral stream which forms the boundary of 7K-C-194 eastward approximately 400 meters to a small unnamed drainage. During excavation of site 7K-C-194A, it became apparent that the stratigraphy varied between places where the subsoil consisted of a thin stratum of yellow-brown silty sands (Horizon B1) underlain by pebbly coarse orange sands with little silt or clay (Horizon B2) and places where the pebbly coarse orange sands lay directly beneath the plow zone. The yellow-brown silts contained both artifacts and features while the coarse orange sands contained only the tops of truncated features. Apparently, the topography of the site during the Woodland I Period, the major period of the site's occupation, was gently rolling. However, the slopes were not so severe that occupation could not have occurred on both higher and lower areas across the terrain. Further discussion of this subsoil and its relationship to buried artifacts at all five sites will be discussed later in this report.

The initial step in excavating the site was to lay out three lines of shovel test pits along the riverbank (Figure 40). These lines included shovel test pits A-1 through A-3, B-1 through B-7, and D-1 through D-10. The plow zone of shovel test pit B-4 produced a small Woodland I stemmed point and an unmodified rhyolite flake. Shovel test pit D-1 contained a triangular point and a nondiagnostic ceramic sherd. Shovel test pit B-4 also came down upon a soil anomaly which was eventually labeled Feature 18. Over half of the remaining shovel test pits

FIGURE 38

Middle Leipsic River Valley Archaeological District - Site 7K-C-194, Limits of the Site and Location of all Phase II Tests

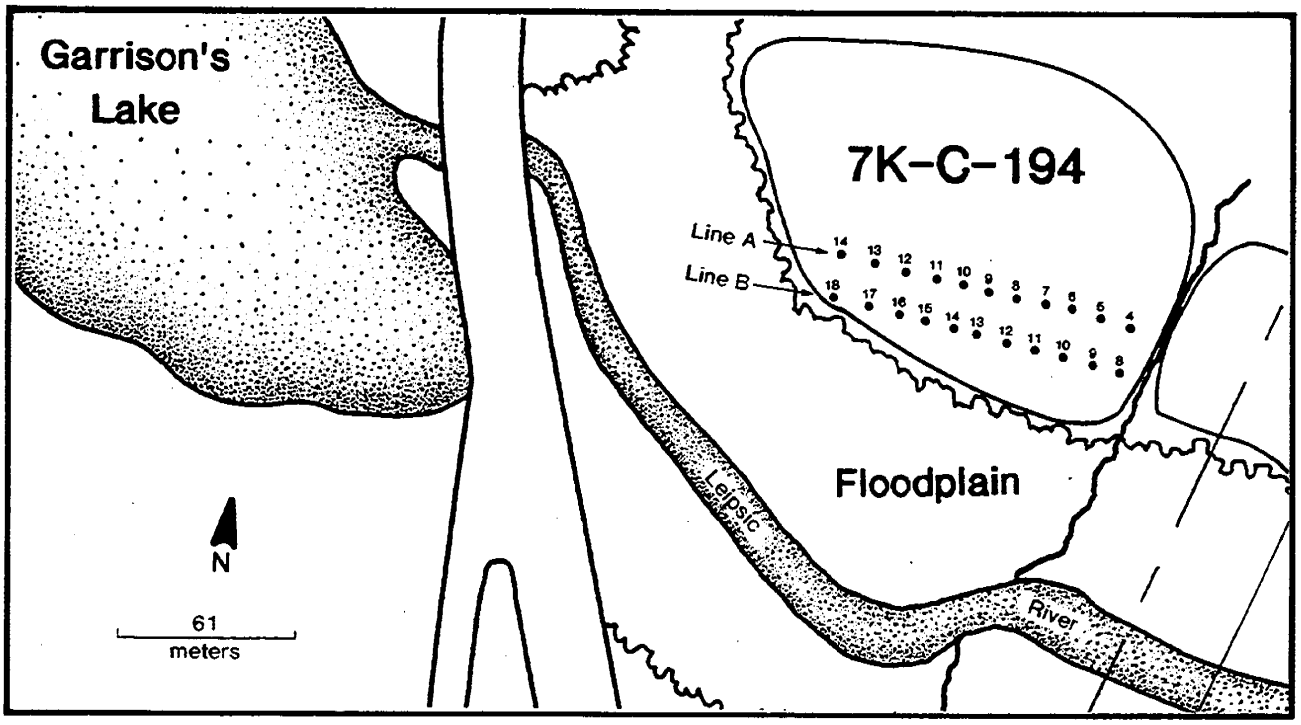


FIGURE 39

Site 7K-C-194 - Representative Soil Profile from STP B-12

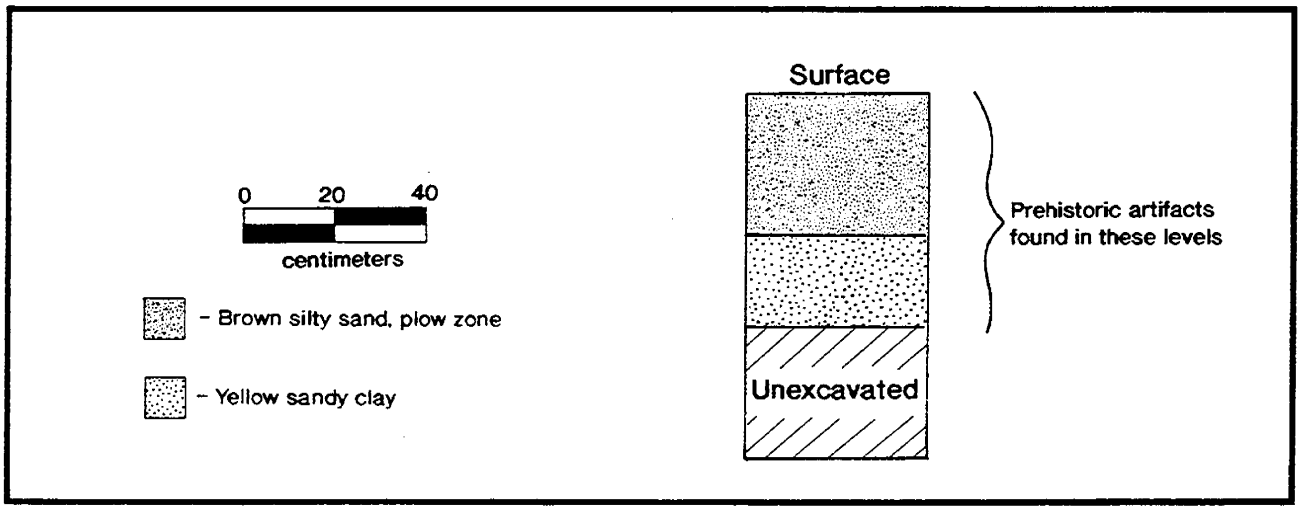


TABLE 6

SITE 7K-C-194 PREHISTORIC ARTIFACT SUMMARY

	Qtz.	Chert	Jas.	Rhy.	Chal.	Total
Flakes	7(1)	8(1)	16(6)	3	1	35(8)
Woodland I Points	---	---	3	---	---	3
ESBR	1(1)	---	---	---	---	1(1)
Other Bifaces	---	---	2	---	---	2
Misc. Stone Tools	---	---	1(1)	---	---	1(1)
Shatter	1(1)	---	---	---	---	1(1)
Total	9(3)	8(1)	22(7)	3	1	43(11)

	Total Count	%
Quartz	9(3)	20.90
Chert	8(1)	18.60
Jasper	22(7)	51.20
Rhyolite	3	7.00
Chalcedony	1	2.30
Total		100.00

KEY:
Qtz. - Quartz
Jas. - Jasper
Rhy. - Rhyolite
Chal. - Chalcedony
ESBR - Early Stage Biface Reject
Misc. - Miscellaneous
( ) - Cortex

1 Fire-cracked rock

produced nondiagnostic bifaces, flakes, cores, and fire-cracked rock (FCR). Most of the artifacts were found in the plow zone, but occasional flakes were found in the subsoil.

A total of 17 1m x 1m test units (units 4 and 7 through 22) were placed to investigate the site limits (Figure 40) and many of these units contained artifacts. While all of the test units produced debitage, Test Units 11 and 22 contained early stage biface rejects (ESBR) and Test Unit 19 contained a Koens-Crispin argillite broadpoint. A summary catalog of all prehistoric artifacts recovered at the site appears in Table 7.

Of the 21 bifaces recovered from surface and subsurface contexts at 7K-C-194A, nine are diagnostic, and all but one (a jasper triangle) of these are stemmed and notched forms associated with the Woodland I Period (ca. 300 B.C. - A.D. 1000) (Plate 3). One argillite Fox Creek point, a small argillite Koens-Crispin broadpoint, and a side-notched point were noted, along with several small stemmed points. Eighteen of the twenty-one bifaces (86%) were manufactured from local quartz, quartzite, and cryptocrystalline materials. The other three (14%) were of the non-local argillite material, and although the biface sample is very small, the percentage suggests that there was a notable secondary reliance on non-local materials for biface tool manufacture. When contrasted with the total debitage from the site, the percentage of middle and late stage bifaces of the non-local materials (28%) is

FIGURE 40

Middle Leipsic River Valley Archaeological District - Site 7K-C-194A, Location of all Phase II Tests

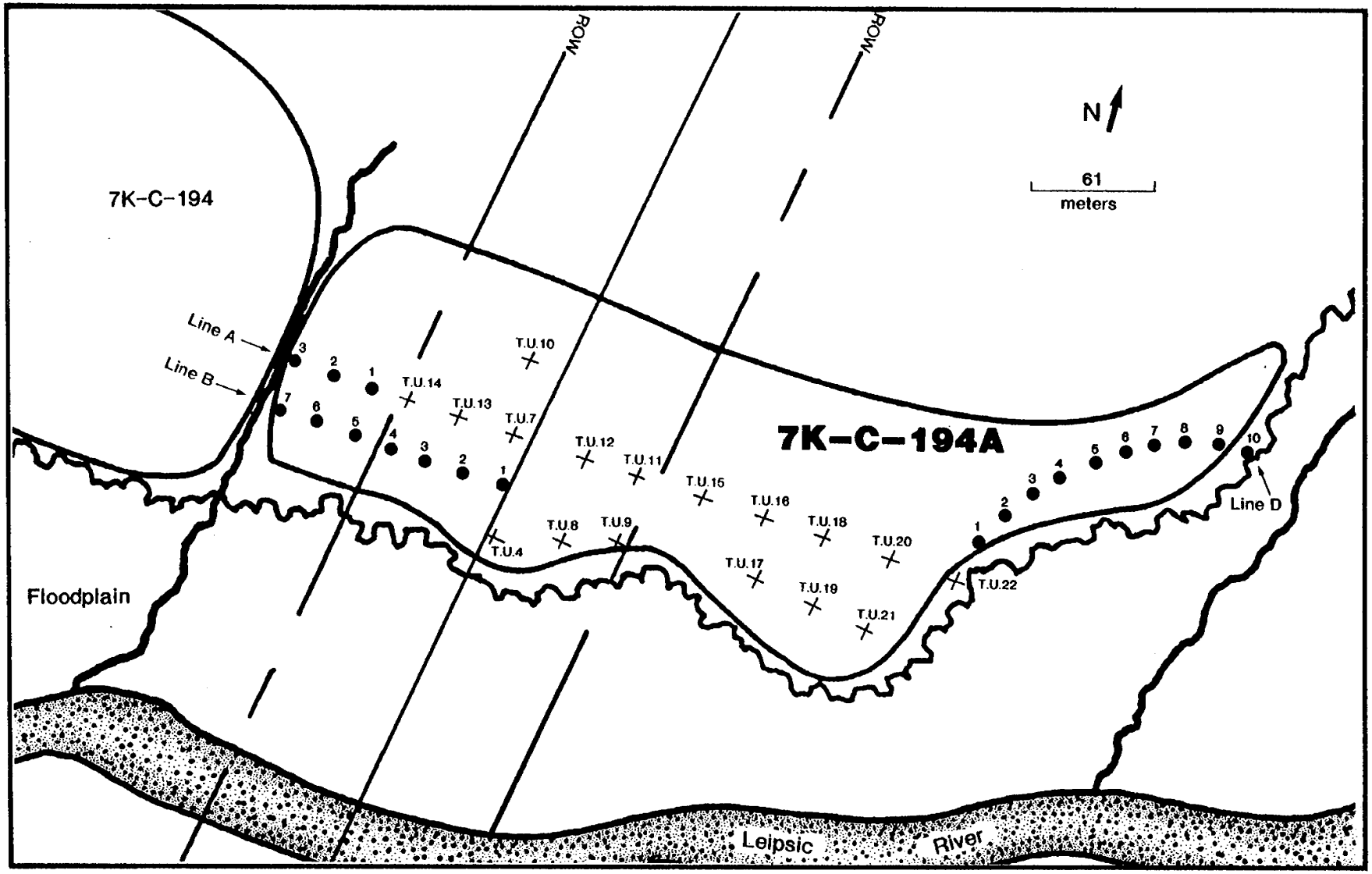


TABLE 7

SITE 7K-C-194A PREHISTORIC ARTIFACT SUMMARY

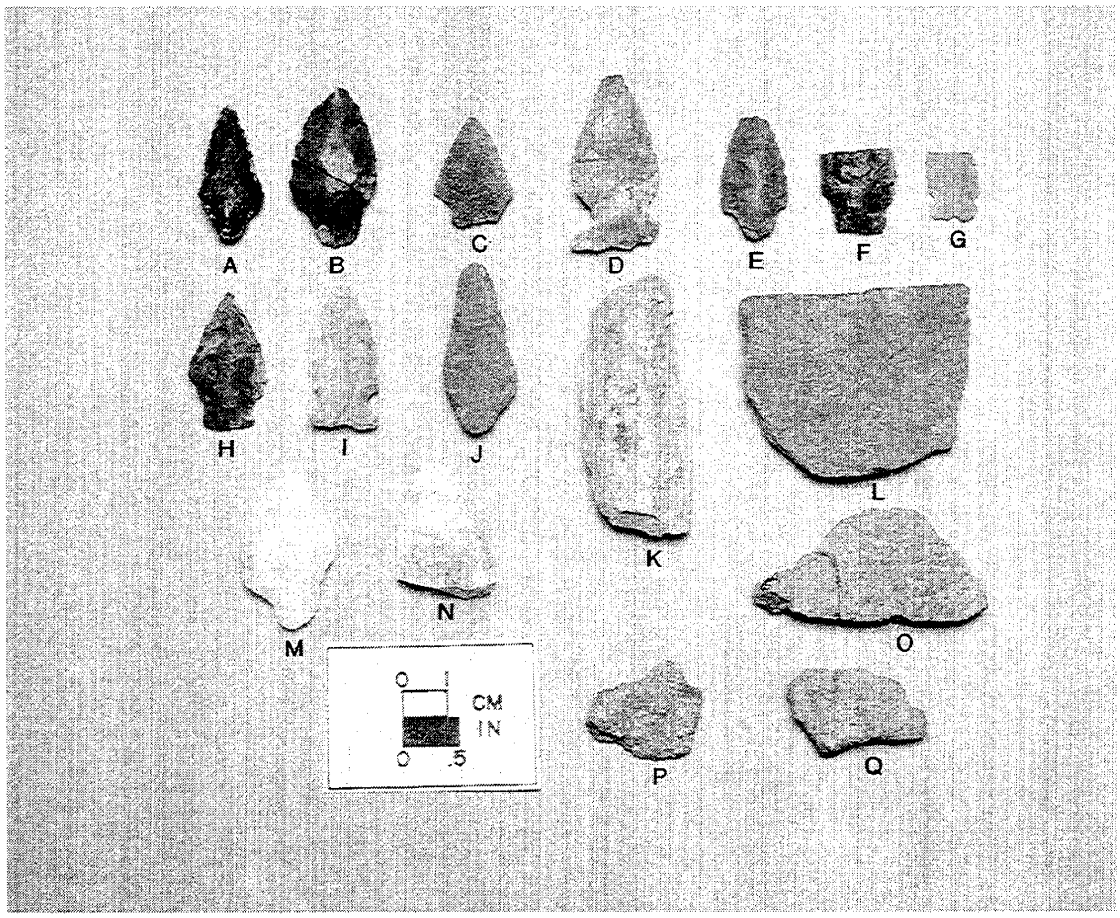
	Qtzte.	Qtz.	Chert	Jas.	Rhy.	Arg.	Ir.	Chal.	Other	Total
Flakes	132(39)	394(94)	212(37)	700(208)	87(15)	15(1)	2	35(2)	20(2)	1597(398)
Util. Flakes	2(2)	---	1	---	---	---	---	---	---	3(2)
Flake Tools	1(1)	2(2)	5(1)	3(1)	1(1)	---	---	---	---	12(6)
Woodland I Points	---	---	---	6	---	2	---	---	---	8
Woodland II Points	---	---	---	1	---	---	---	---	---	1
ESBR	---	1	1	2(1)	---	---	---	1	---	5(1)
LSBR	---	---	2	---	---	---	---	1	---	3
Other Bifaces	1	1	---	1	---	1	---	---	---	4
Misc. Stone Tools	1	1	3(2)	1	---	---	---	---	1(1)	7(4)
Shatter	7(4)	132(33)	---	---	---	---	---	---	1	140(37)
Cores	2	8	---	6(2)	---	---	---	---	---	16(2)
Total	146(46)	539(129)	224(40)	720(213)	88(16)	18(1)	2	37(2)	22(3)	1796(450)

Total Count

Lithics	**#**	**%**	**Non-Lithics**
Quartzite	146(46)	8.10	17 Groundstone tools
Quartz	539(129)	30.00	317 Fire-cracked rocks
Chert	224(40)	12.50	5 Minguannan ceramics
Jasper	720(213)	40.10	1 Townsend ceramic
Rhyolite	88(16)	4.90	2 Coulbourn ceramics
Argillite	18(1)	1.00	1 Wolfe Neck ceramic

PLATE 3

Selected Artifacts from Sites 7K-C-194, 7K-C-194A, 7K-C-195



A. Woodland I jasper point from Test Unit 3, Level 1
B. Woodland I japser point from Test Unit 5, Level 1
C. Woodland I argillite biface from Test Unit 19, Level 1
D. Woodland I jasper notced point from surfact
E. Woodland I jasper stemmed point from Shovel Test Pit B-18
F. Woodland I jasper stemmed point from Shovel Test Pit B-18
G. Woodland I argillite notched point from Shovel Test Pit B-18
H. Woodland I jasper point from Test Unit 24, Level 1
I. Woodland I jasper point from Test Unit 54, Level 1
J. Woodland I argillite point from Shovel Test Pit C-4
K. Rhyolite biface from Test Unit 54, Level 1
L. Nondiagnostic argillite biface fragment from surface
M. Woodland I quartz point from Feature 1, Level 2
N. Nondiagnostic chert point fragment from surface, near Test Unit 44
O. Woodland I steatite tempered ceramic from Feature 17, Level 5
P. 2 rejoined Woodland I Coulbourn sherds from Test Unit 48, Level 1
Q. Woodland I Wolfe Neck sherd from feature 1, 50 cm below surface

disproportionately high. Of total flakes from the site (1,597), rhyolite and argillite comprise only five percent (rhyolite: 87 flakes, 5% of total debitage; argillite: 15 flakes, 1% of total debitage). It is also interesting to note that all of the argillite and rhyolite flakes found at the site are quite small. Over 90 percent are less than 2 cm in size and appear to be secondary and tertiary stage thinning and resharpening flakes. Thus, it appears as if the primary reduction of the non-local materials occurred elsewhere. Given the amount of excavation conducted at the site to date and the complete absence of large flakes of argillite and rhyolite, it is likely that the early stage reduction took place on another site. The primary reduction site is unknown, of course, but it could have been at the Barker's Landing, Coverdale, or one of the other large Barker's Landing Complex sites located in the St. Jones and Murderkill drainages 19 km to 27 km (12 to 18 miles) to the south (Custer 1984b).

Another clue to the locus of reduction may be site 7K-C-255, located approximately 3.2 kilometers (2.0 miles) downstream on the south bank of the Leipsic River. The site was tested archaeologically by UDCAR in 1985 (Custer, Bachman, and Grettler 1986:80) and a single 1m x 1m test unit placed at the site exposed a section of a large pit feature which extended down to 1.63 meters below the surface. The excavated section of the feature contained over 230 flakes of gray-green argillite, many of which are large (5-6 cm), unmodified waste flakes. About 30 flakes of cryptocrystalline materials were also recovered. This preference for argillite is similar to that found at the Barker's Landing Complex sites mentioned above. The scant data available does not establish a connection but it is possible that 7K-C-194A is related to the reduction site at 7K-C-255.

All of the bifaces from 7K-C-194A show extensive use, are asymmetric in cross-section, and possess steep edge angles, suggesting they were frequently resharpened. Some are plano-convex in cross-section, a profile which is typical of an industry based upon split cobble reduction. Several bifaces are probably "discards," or artifacts that have been exhausted by continual use and resharpening. Twenty-six percent of the local lithic debitage (380 of 1475 flakes) exhibit cortex, a figure which suggests that at 7K-C-194A, there was a strong dependence on cobble resources which were supplemented by non-local materials like argillite and rhyolite.

Features

The following brief summary of the features found at 7K-C-194A includes only those which were fully or partially excavated during the Phase II work. Several other apparently cultural and noncultural soil features were exposed, mapped, photographed, and left in situ. Test Units 1 and 2 were placed southeast of CL stake 602. The plow zone of Test Unit 1 contained a few artifacts, while the plow zone of Test Unit 2 contained nearly 100 lithic artifacts, including two modified flake tools, debitage, and fire-cracked rocks. A soil stain with charcoal became apparent in the southwest corner of Test Unit 2 at the top of the subsoil and subsequently the topsoil of three adjacent 1m x 1m squares was removed. These units were opened to the south, southwest, and west of Test Unit 2 and were labeled Test Units 3, 5, and 6 (Figure 41). This excavation succeeded in exposing a larger area of Feature 1, an apparently oval feature extending even further to the south for an undetermined distance. The northern end of the feature was sectioned and excavated and the section line extended about 150 cm across the exposed portion of the feature (Figure 42). The feature fill extended down to a depth of 103 cm below surface and consisted of a medium brown sandy silt flecked with charcoal.

Artifacts recovered from the fill of Feature 1 provide some insight to both temporal and functional definition of the feature. Two diagnostic Woodland I artifacts were found: a sherd of Wolfe Neck ceramics in Level 5 (40-50 cm below the surface of subsoil) which has been dated elsewhere in Delaware to between 505 B.C. and 290 B.C. (Custer 1984a), and a lobate stemmed quartz biface from Level 3 (20-30 cm below the surface of subsoil). The point was heavily resharpened, had suffered a diagonal medial fracture, and may have been a discarded biface. A unifacially retouched flake was recovered along with 95 unmodified flakes, including several of argillite and rhyolite. Also found were carbonized wood and nut hulls and two kilograms (4.4 lbs.) of fire-cracked rocks. In Levels 6 and 7 of the feature, along the section line, several hearth rocks with charcoal were found at 85 cm to 95 cm below surface (Plate 4). Unfortunately, no diagnostic artifacts were found in direct association with the hearth. The feature was only partially defined and excavated and thus any conclusion about its size and function is premature. At the very least, it is a large pit feature and the pit's size, the presence of the Wolfe Neck ceramic sherd in the fill, and the hearth in the floor all suggest it may be a Wolfe Neck Complex house pit.

FIGURE 41

Middle Leipsic River Valley Archaeological District - Site 7K-C-194A, Location of Additional Phase II Tests and Feature Excavation Areas

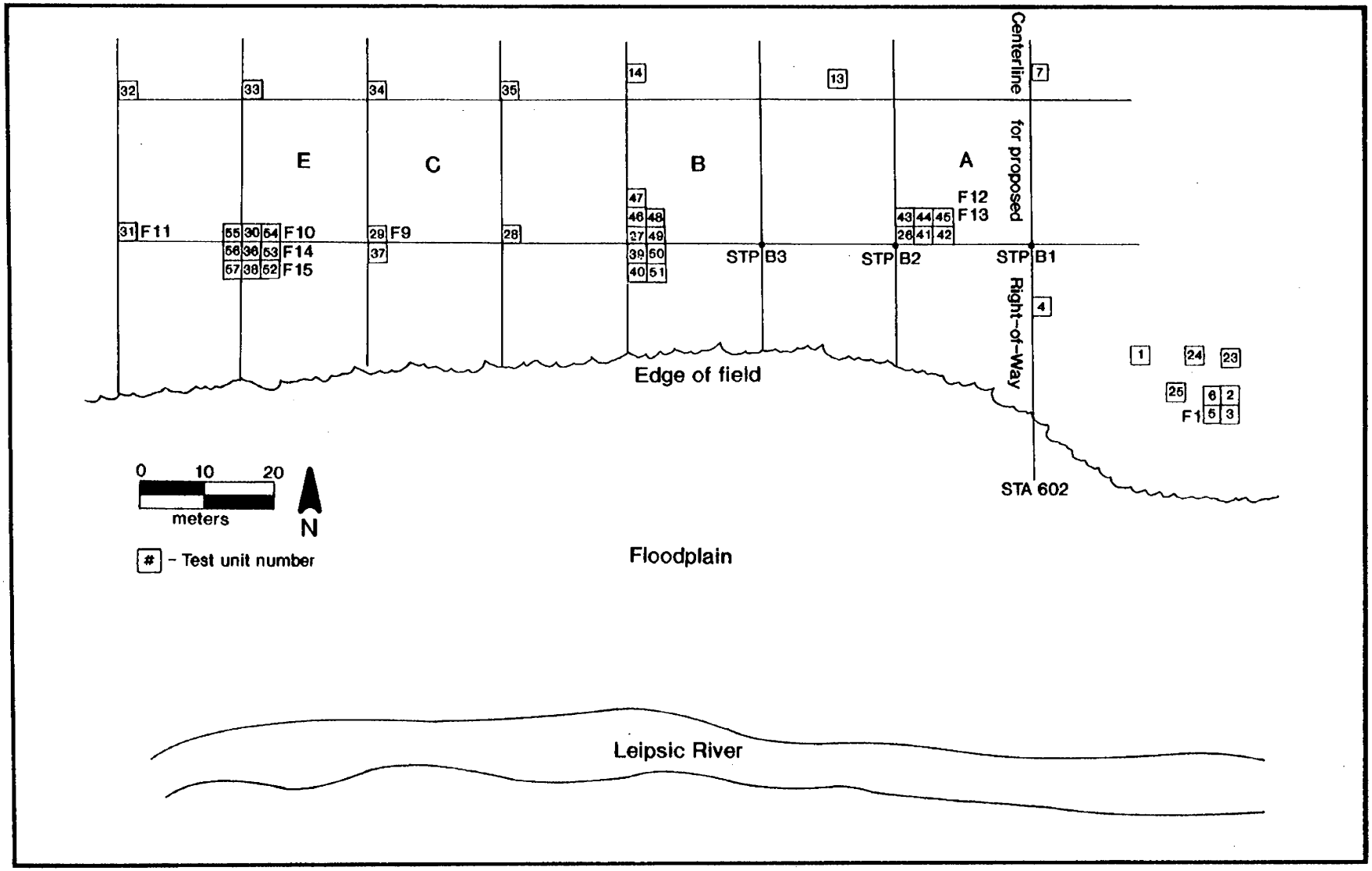
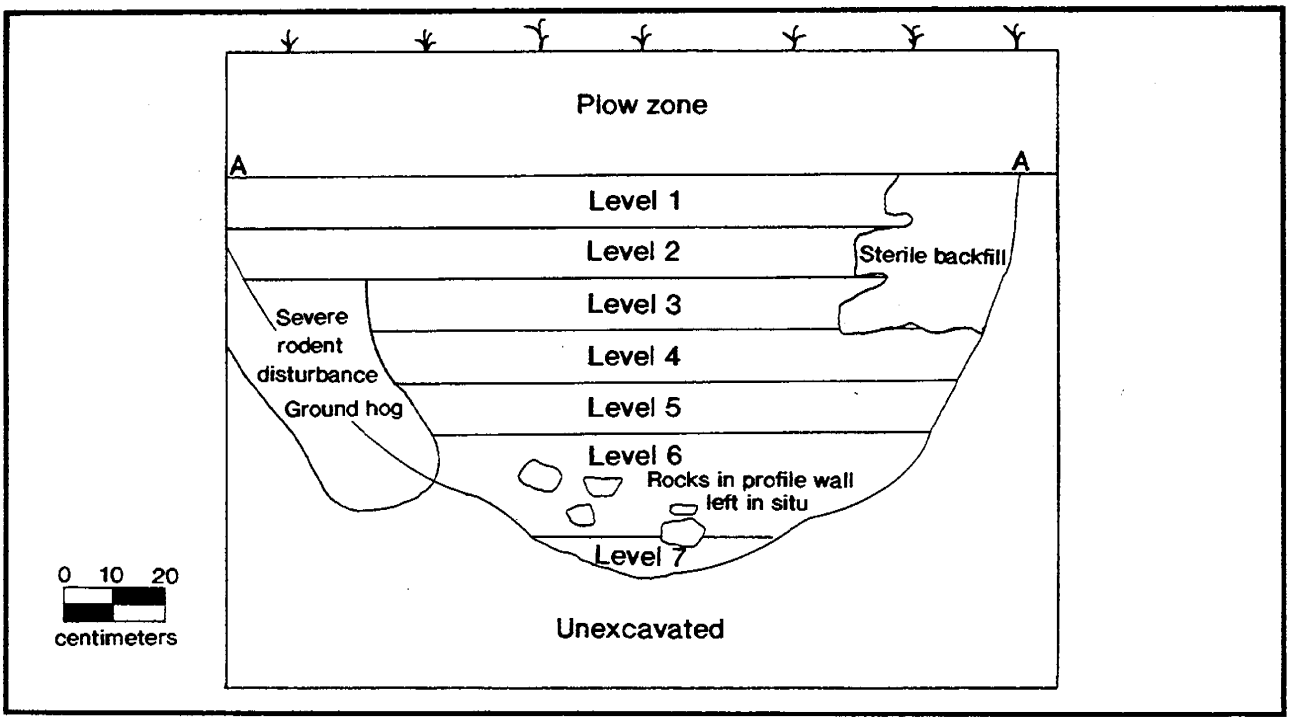


FIGURE 42

Middle Leipsic River Valley Archaeological District - Site 7K-C-194A, Profile of Feature 1, North Half



Feature complex "A" is located northeast of STP B-2 and is located in six contiguous 1m x 1m test units, numbered 26, 41, 42, 43, 44, and 45 (Figures 41 and 43). Test Unit 26 was excavated first and three levels of soil which contained several dozen flakes, but no diagnostic artifacts, were removed and sifted before a portion of a soil pit feature (Feature 8) was found at 45 cm below surface. The remaining five units were opened up in an effort to more clearly delineate this feature and in the process, four more prehistoric features (nos. 12, 13, 17, and 20) and an historic square post mold (Feature 19) were recorded. Due to their physical clarity and high charcoal content, a decision was made to excavate only Features 12, 13, and 17.

Feature 12, circumscribed by Feature 13, was excavated first, and was found to be a small, circular pit feature which measured about 40 cm across and 13 cm deep (Figures 43 and 44). It contained only charcoal and its function is unknown. Feature 13 was a kidney shaped pit feature about 170 cm long and its western half was sectioned (Figures 43 and 45). Only flakes and charcoal were recovered and the function of this feature also remains unknown. Feature 17 extends nearly the length of the south wall of this contiguous 2m x 3m unit and extends into the unexcavated wall of Test Unit 42 (Figure 43). The visible portion measures 2.5 meters in length but little about its true size could be determined from this partial view. It was initially identified in the top of Level 2 and the uncovered section was excavated in arbitrary 10 cm levels (Figure 46). No cultural stratification was identified within the fill of the feature section excavated. The north feature wall was located and was followed to a depth of 1.68 meters below surface, where it intersected the vertical south walls of the adjacent unexcavated test units. The actual bottom of the feature (to the south in the adjacent units) was not reached. Approximately 10-20 artifacts were found in every ten-centimeter level of the feature fill. These artifacts include a nondiagnostic early stage chert biface found at 63 cm below surface as well as utilized flakes, debitage, fire-cracked rocks, and charcoal flecks and chunks. In addition, a steatite-tempered sherd, probably Marcey Creek, was found at 1.0 meters below surface. Since only a small portion of this feature was excavated, it is nearly impossible to determine its true size. Preliminary evidence suggests that the feature is potentially very large, and the recovered artifacts in good context

PLATE 4

Site 7K-C-194A, Feature 1, North Half

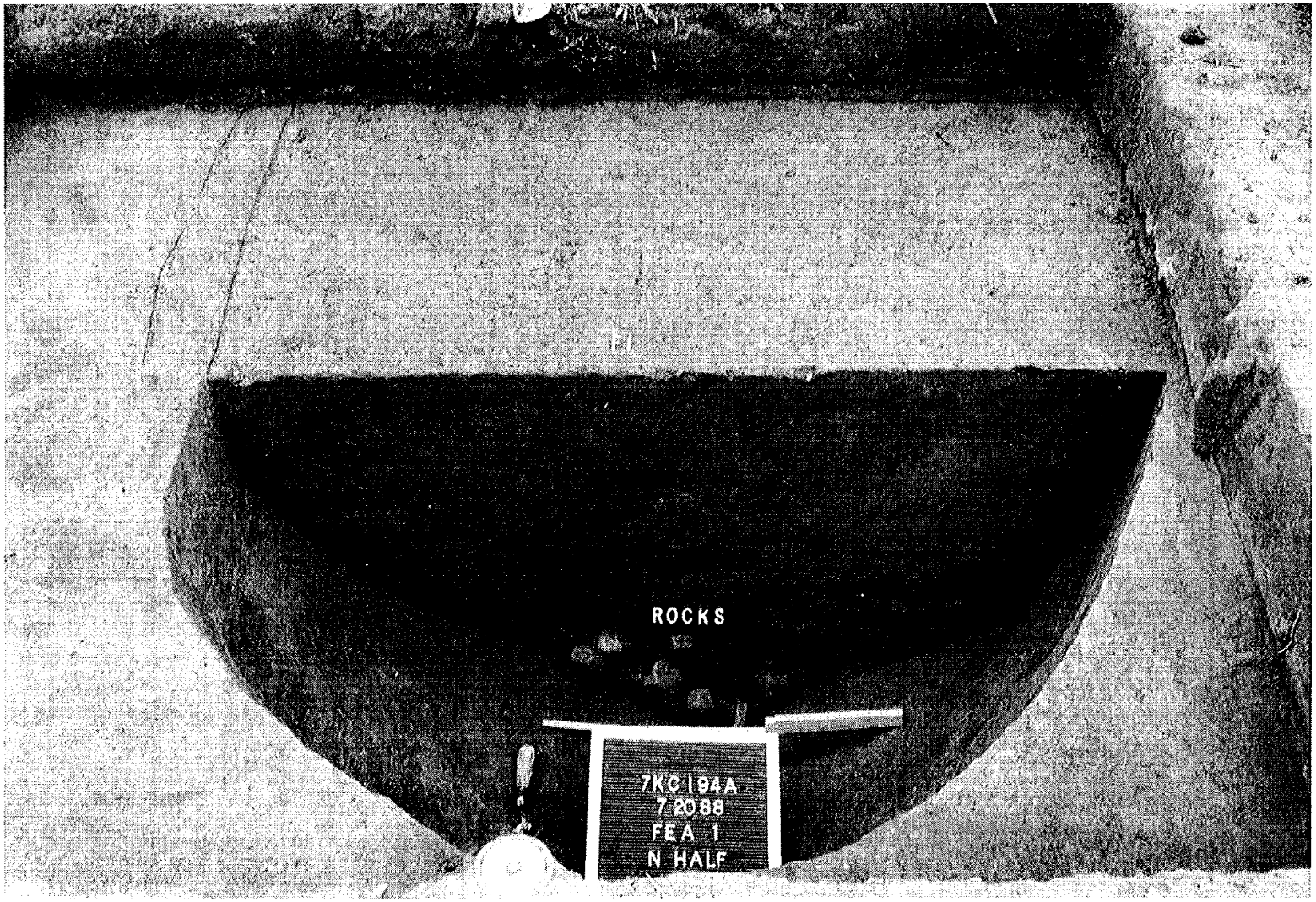
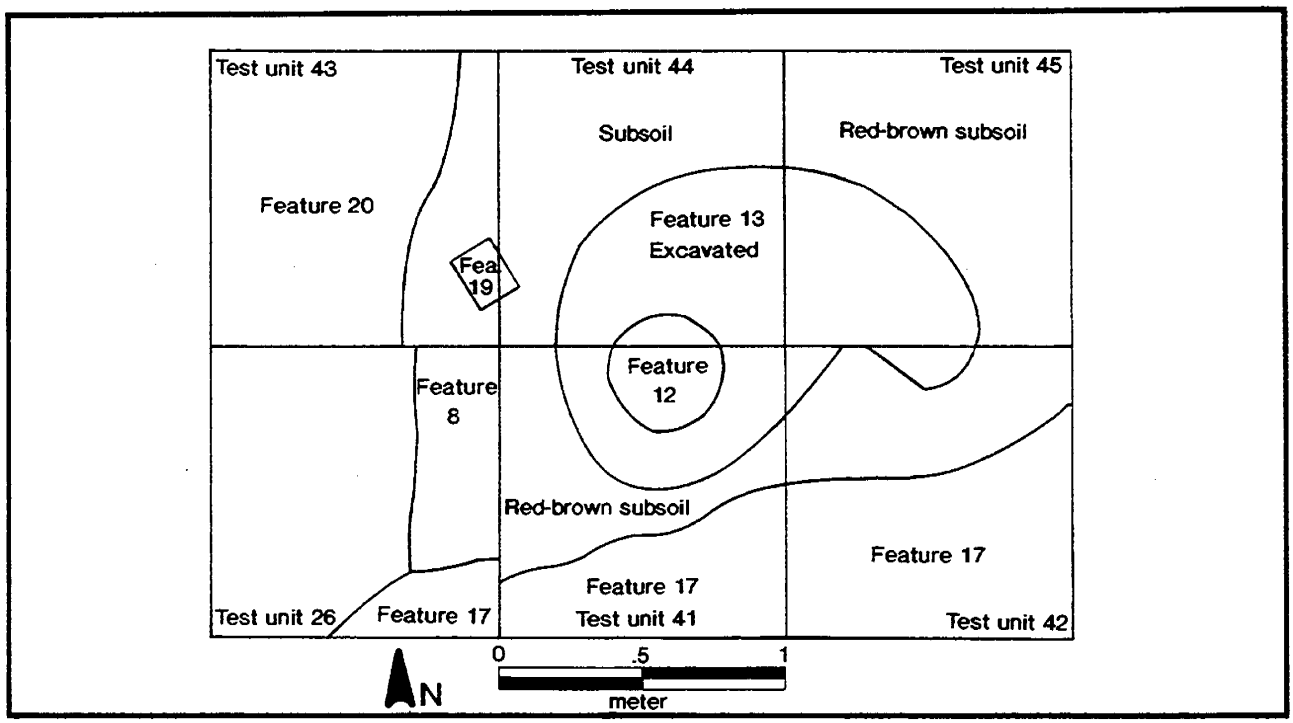


FIGURE 43

Middle Leipsic River Valley Archaeological District - Site 7K-C-194A, Feature Complex A, Plan View



suggest it may be a house pit. The Marcey Creek ceramic is diagnostic of the Clyde Farm and Barker's Landing complexes of the Woodland I Period, and since no Marcey Creek house pit features have ever been excavated in Delaware, this feature offers outstanding potential for revealing information about prehistoric life during Clyde Farm/Barker's Landing times. In summary, feature complex "A" contains a probable large Marcey Creek house pit feature adjacent to several pit features dating from the Woodland I Period.

Feature complex "B" is located 40 meters to the west in the vicinity of STP B-4 and included contiguous Test Units 27, 39, 40, and 46 through 51 (Figures 41 and 47). Features 16 and 18 were located in this area along with several notable artifacts which indicate an associated living floor. As noted previously, it had been suspected that STP B-4 had been excavated into a feature, which was eventually labeled Feature 18 and exposed in Test Units 27, 39, 40, 50, and 51. Partially exposed during excavation, this ovate soil pit feature measured about 2 meters in width and the irregular bottom extended down to a maximum depth of 85 cm below surface. The feature fill consisted of sticky, gray, slightly sandy clay in a coarse red sandy subsoil (Figure 48). Recovered artifacts include

FIGURE 44

Middle Leipsic River Valley Archaeological District - Site 7K-C-194A, North Wall Profile of Test Unit 41

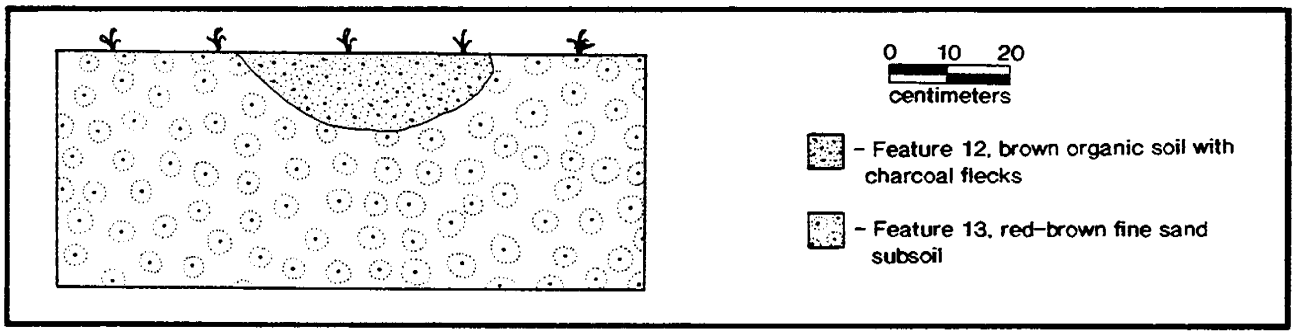


FIGURE 45

Middle Leipsic River Valley Archaeological District - Site 7K-C-194A, Profile of the North Half of Feature 13

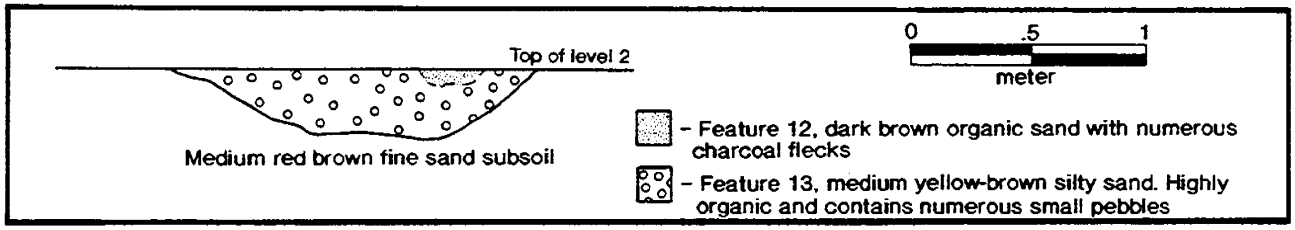


FIGURE 46

Middle Leipsic River Valley Archaeological District - Site 7K-C-194A, Profile of the South Wall of Test Units 26, 41, and 42 Showing Feature 17

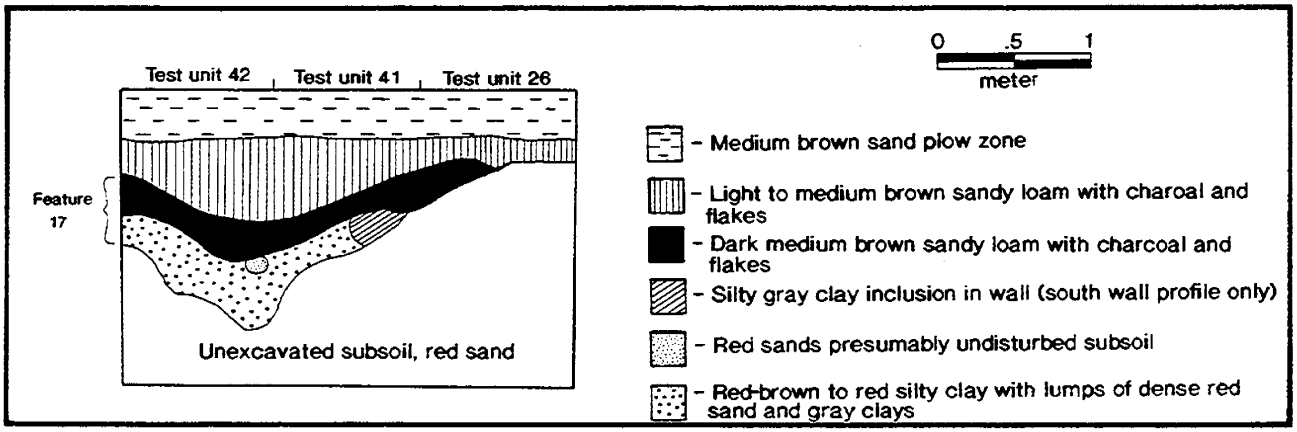


FIGURE 47

Middle Leipsic River Valley Archaeological District - Site 7K-C-194A, Feature Complex B, Plan View

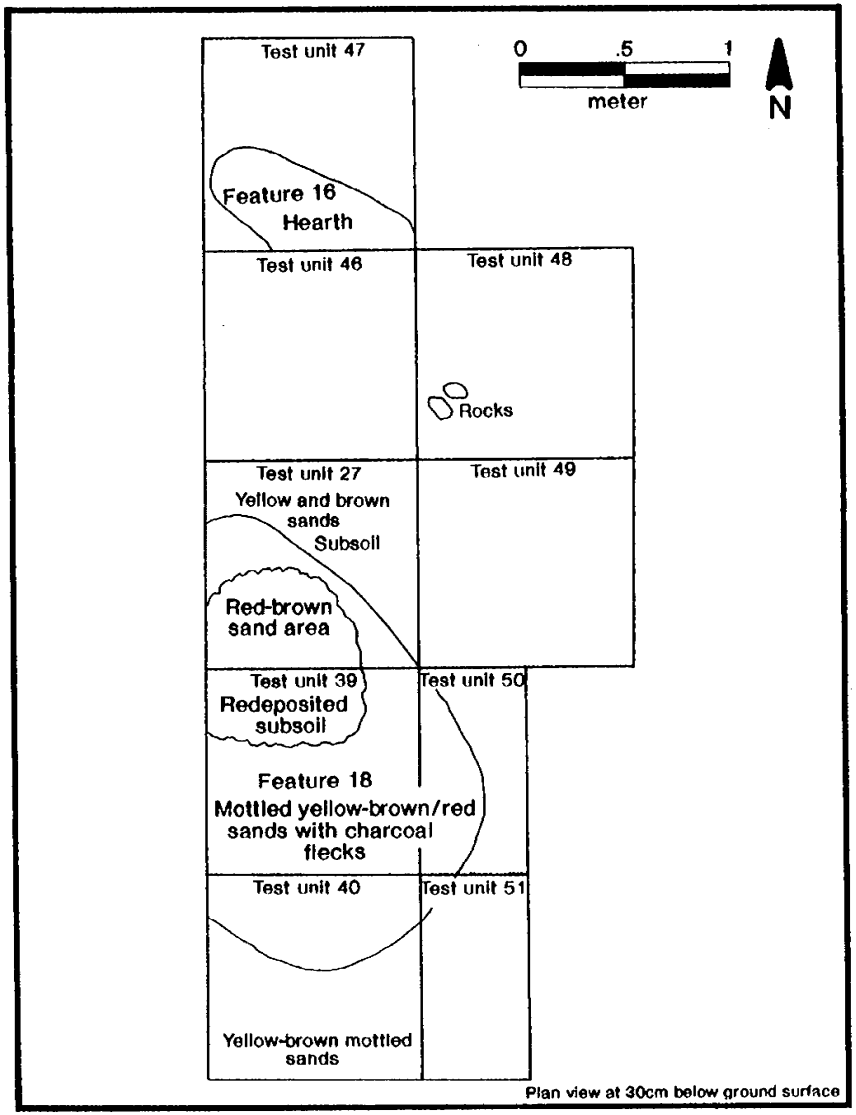
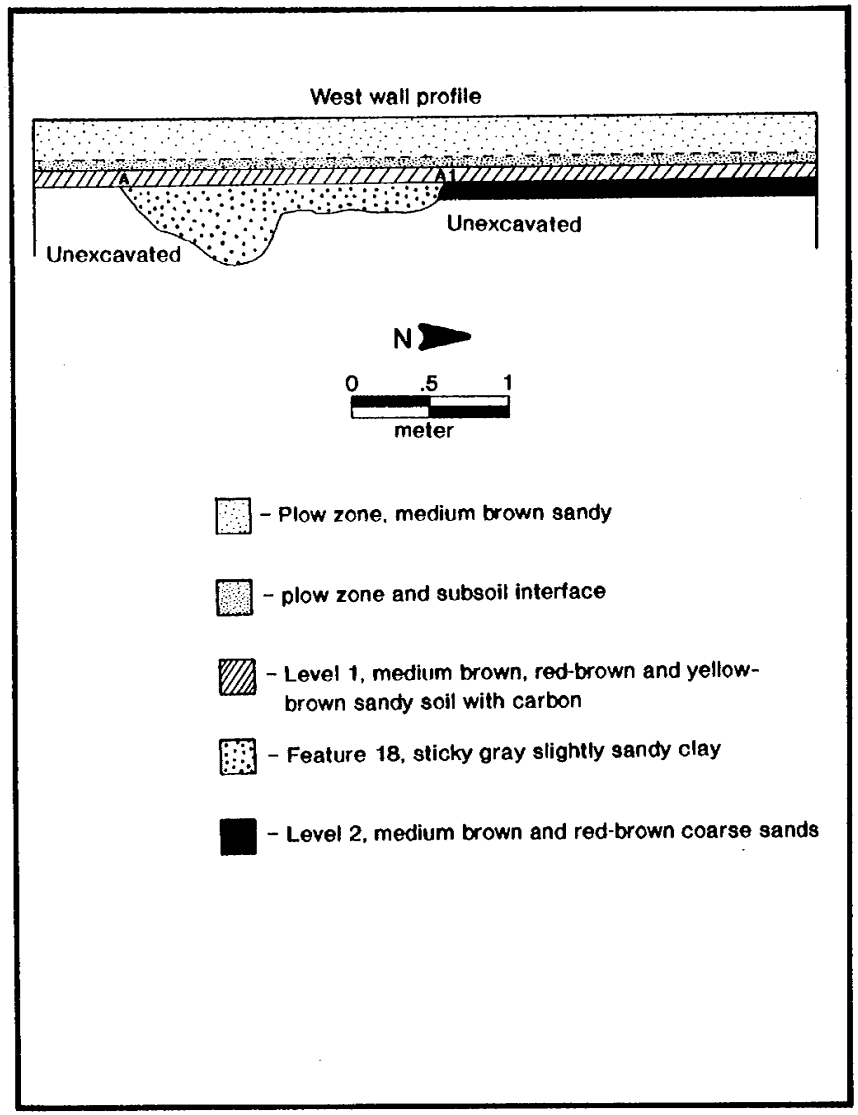


FIGURE 48

Middle Leipsic River Valley Archaeological District - Site 7K-C-194A, West Wall Profile of Test Units 40, 39, 27, 46, and 47 Showing Feature 18



a quartz core, a chert flake tool, four sherds of Marcey Creek ceramics, 32 flakes, two pieces of fire-cracked rock, and wood charcoal. The feature appears to be another Clyde Farm/Barker's Landing Complex pit of undetermined function.

Only 1.5 meters north of this pit is an intact hearth, which was labeled Feature 16 (Plate 5). This 40 cm x 70 cm cluster of 13 rocks (total weight of 1930 g/4.25 pounds) contained oak wood and hickory nut charcoal fragments, three flakes, a battered quartz pebble, and another piece of steatite-tempered ceramic. Just a few centimeters to the south, in Test Unit 46, two small contracting stem bifaces were found in the top of the subsoil at the same level as the hearth and the steatite-tempered sherd. The adjacent unit (#48) produced a third contracting stem point at the same level, along with more charcoal. Interestingly, the plow zone of Test Unit 48 contained two sherds of Coulbourn ceramics (associated with the Delmarva Adena Complex) as well as three cores, a flake tool, and debitage. Thus, it appears as if feature complex "B" contains a disturbed Delmarva Adena Complex component in the plow zone which overlays an intact Clyde Farm/Barker's Landing component in the subsoil.

Feature complex "E" was located near STP B-7, 30 meters to the west of area "B" (Figure 49). Nine contiguous test units were dug in this location: numbers 30, 36, 38, and 52 through 57. Three soil pit features were identified (Features 10, 14, and 15) but none of them could be clearly identified as cultural. Feature 10 was a broad, shallow, partially exposed pit which, in section, measured two meters across but only 10 to 15 centimeters deep. Features 14 and 15 were small pit features which intruded into Feature 10 to depths of 20 cm and 10 cm respectively. Feature 10 contained 14 flakes and three fire-cracked rocks; Feature 14 contained just one quartz flake; Feature 15 contained no artifacts. All three features contained wood charcoal, but the total recovered material is too low in number to enable a clear determination of their origin from cultural activities.

To summarize the feature representation at 7K-C-194A, it appears that a Clyde Farm/Barker's Landing Complex component containing steatite-tempered ceramics, contracting stem points, cores, flake tools, hearths, and datable oak wood and hickory nut charcoal is present at the site in soil pit features and at least one adjacent living floor. A Wolfe Neck component is also present in the excavated material from Feature 1, a possible house pit which contains a hearth. In addition to hearths, there may be other house pit features and storage features present. In addition, the presence on the site of Coulbourn ceramics (Delmarva Adena Complex), Minguannan ceramics (Minguannan Complex), Townsend ceramics (Slaughter Creek Complex) and a triangular point (either Minguannan or Slaughter Creek) suggests that some of the features present on the site may be attributable to other prehistoric cultural complexes. The presence of house pit features, hearths, storage pits, and ceramics suggest that the site served as a multi-component, micro- or macro-band base camp. However, a clearer determination is not possible at this time and will be contingent upon the results of further excavation of the site.

Floated Artifacts And Ecofacts

Soil flotation samples were extracted from the subsoil proveniences excavated during the Phase II investigations and preliminary results are available from 27 samples which were tested for this report. These samples were taken from Features 1, 11, 16, 17, and 18 and Test Units 27, 46, 47, 48, and 49, and were selected because the soil contexts were intact and each provenience was associated with diagnostic artifacts. All samples contained charcoal in varying amounts from "trace" up to nearly 26 grams. Carbonized nut hull fragments, carbonized seeds, and lithic debitage were present in nearly every sample. Bone fragments and shell fragments were found occasionally.

Lithic materials in the form of debitage were recovered in 22 of the 27 samples and totaled 138 flakes weighing 5.81 grams. All of this debitage consisted quartz and cryptocrystalline materials; no small rhyolite or argillite flakes were found. However, since argillite and rhyolite flakes were found in the field-screened excavated portions of these proveniences, some stages of reduction of these materials did take place at these locations.

Wood Analysis

Carbonized woody plant remains from Feature 16 (hearth) and from the upper subsoil levels in the adjacent Test Unit 46 at 7K-C-194A were analyzed by Lucinda McWeeney of Yale University (Appendix III). These samples were derived from the following proveniences: 11 samples from Feature 16; 13 from Test Unit 46, Level 2; and six

PLATE 5

Site 7K-C-194A, Feature 16, Hearth Area

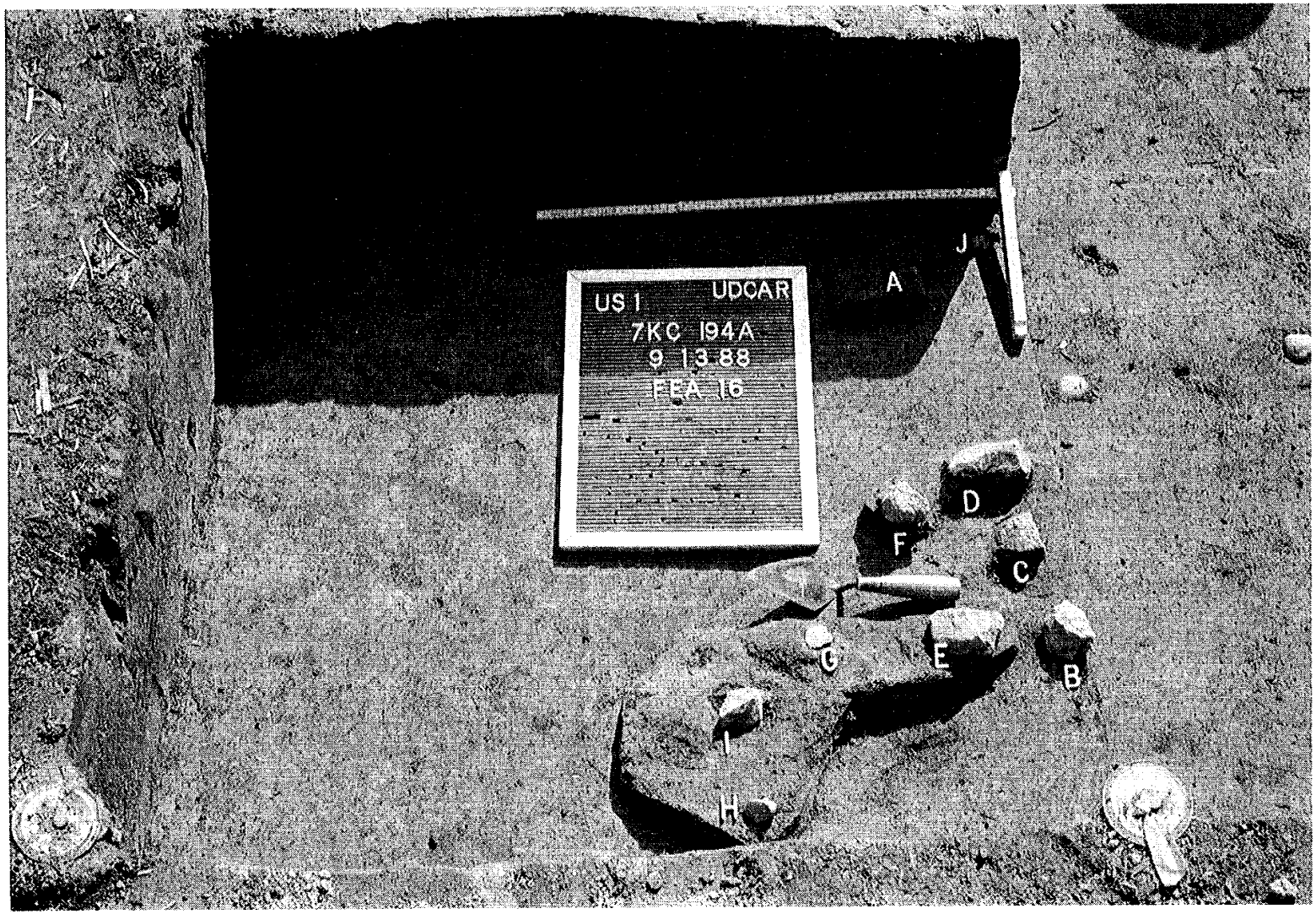
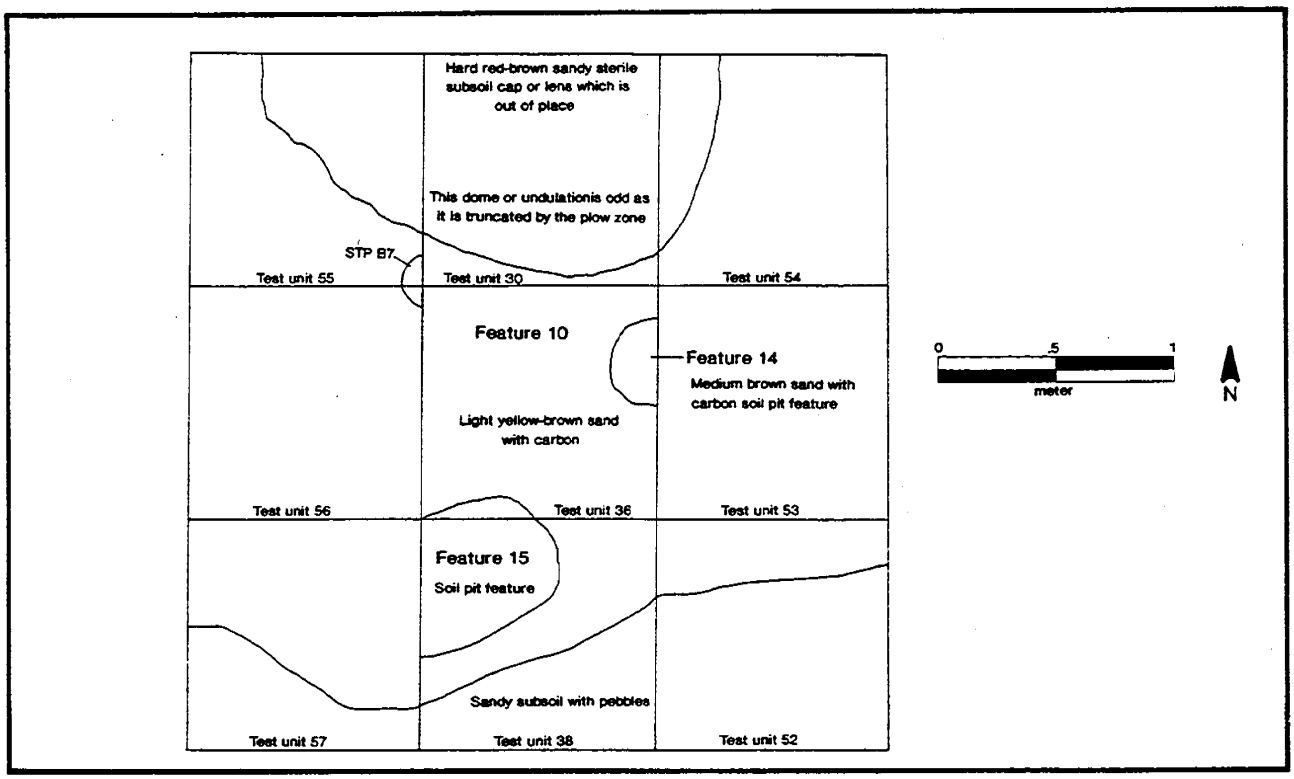


FIGURE 49

Middle Leipsic River Valley Archaeological District - Site 7K-C-194A, Feature Complex E, Plan View



from Test Unit 46, Level 3. Wood from these samples consisted of varieties of oak (Quercus sp., oak, Erythrobalanus group). These include northern red oak, pin oak, black oak, shumard oak, and scarlet oak. No conifers were present in any of the samples. All of the nut hulls were hickory, mostly Carya sp., which suggests that hickory nuts were being processed at the site and that oak was preferred for firewood. The presence of the nuts implies a late summer through early winter occupation of the site.

These observations also pose some other interesting questions. Why is only oak wood present as firewood? Why isn't hickory, which makes excellent firewood, or some other wood present? Since firewood is presumed to be gathered from the environment (presumed oak-hickory dominated forest) in the form of dead wood, it appears as if the prehistoric inhabitants chose dead oak wood over other species. Since oak trees bear their nuts at the same time of the year as hickory trees bear theirs, why are acorns absent from the site? Were acorns processed in a different fashion and/or at a different location on the site? Biases of preservation and the small observed sample size could combine to obscure the answers to these questions.

Blood Residue Analysis

A total of 226 tests for hemoglobin residue were made on artifacts from site 7K-C-194A. In addition, 135 tests for contamination were made on 51 background soil samples. All of the background tests were negative (no contamination is evident). The artifacts tested included a scraper, two bifaces, and 202 unmodified waste flakes from a variety of shovel test pits, excavated subsoil levels, and Features 1, 9, 10, 13, 17, and 18. All of the blood residue tests on the lithic artifacts were negative. These results indicate only that blood residues are no longer present on tools from the site; however, the sample size is too small to draw meaningful conclusions at this time.

Site Function and Chronology

The presence of semi-subterranean house pits and related features, the large size of the site, and the presence of ceramics, possible storage pit features, abundant debitage, and late stage bifaces at 7K-C-194A suggest that the site served as a macro-band base camp. However, because neither macro-band nor micro-band base camp configurations of middle Woodland I times are well understood, it is difficult to conclude whether this site represents one, both, or neither type. It is also difficult to know whether the Wolfe Neck and Barker's Landing Complex components each represent a single event occupation or several re-occupations. In either case, there could certainly be more house pit features present which could represent different families within the band, and all of these features could yield dates for both of these complexes. Woodland I Coulbourn ceramics and Woodland II Minguannan and Townsend ceramics and triangular points were recovered from surface and plow zone contexts at 7K-C-194A, 7K-C-195, and 7K-C-203, and although no Delmarva Adena, Minguannan, or Slaughter Creek Complex features were identified during the Phase II excavations, the potential exists for them as well.

Based on diagnostic artifacts, the site was initially occupied by about 1200 B.C. and possibly earlier if the stemmed and notched points are used as indicators. The site appeared to have been used periodically during the ensuing 1200 years and then was abandoned for practically all of the first millennium A.D. (based upon the recovery of just one Mockley sherd and the complete absence of Hell Island ceramics and Fox Creek and Jack's Reef bifaces). Human occupation reoccurred around A.D. 975 and continued for an undetermined time in the Woodland II Period.

Argillite/Rhyolite Utilization

Briefly discussed above is the disparity between the percentage of rhyolite and argillite present in the tools versus that present in the debitage recovered from 7K-C-194A. It appears as if the tools may have been manufactured elsewhere and transported to the site, and the previously noted comparison with 7K-C-255 offers one possible reduction locus. In this scenario, large quantities of argillite, for example, could have been brought down the Delaware River and Bay and part way up the Leipsic River to 7K-C-255 for reduction. From that site, tools could have been taken further up the drainage on water or on foot by individuals or groups. One of their destinations may have been site 7K-C-194A. Further excavation at 7K-C-194A may shed light on the question of argillite/rhyolite usage in the drainage. Recovered data can serve as a basis for future excavations in the drainage, for comparison with sites in the St. Jones and Murderkill drainages to the south where heavy reliance upon these exotic lithic resources has been observed, and for addressing earlier questions regarding the potential social significance of the importation of these materials (Custer 1984a).

Activity Areas and Site Settlement Pattern

The level of excavation completed at site 7K-C-194A is too limited to present a definitive summary of the activity areas and settlement pattern at the site. However, some areas of the site have seen more intensive use than other areas and these will be discussed and compared below. The two partially excavated house pit features, Feature 1, containing the Wolfe Neck sherds, and Feature 17, containing the Marcey Creek ceramics, apparently have different immediate surroundings. Feature 1 is isolated and no other features were found adjacent to it. Feature 17 is apparently much larger, and several smaller features (nos. 12, 13, and 20) lie adjacent. Only a portion of the ground surrounding Feature 17 was excavated, and it is thus difficult to extrapolate the feature density from the excavated to the unexcavated portion of ground surrounding the house pit. However, the potential exists for more features surrounding Feature 17 and for more Barker's Landing or Clyde Farm Complex house pits or house pit/feature clusters in the same general vicinity.

The artifacts and features associated with these two house pit features suggest generalized domestic activities. Since the majority of the artifacts were recovered from the plow zone, no intact chipping features, food processing, or other activity areas can be inferred.

Feature 16, the hearth located in the subsoil in Test Unit 47, was intact, contained datable charcoal and nut hulls, and appeared to be the focus of a Barker's Landing Complex activity area. The nearby subsoil yielded Marcey

Creek ceramics and three stemmed points, the latter lying between Feature 16 and Feature 18, a large soil pit feature of undetermined function.

Thus, there were at least three feature clusters found during the Phase II excavations at site 7K-C-194A and all of them suggest that domestic activities were conducted over a period of from a few days to perhaps several weeks in length. The large features which are presumed to be house pits would suggest a stay of weeks rather than days.

Variability of Prehistoric Houses

The presumed semi-subterranean house pit features from 7K-C-194A can be compared to other excavated features found in the region. A feature found at the Carey Farm site (7K-D-3) measured about two meters across and contained Coulbourn ceramics, large numbers of aquatic and terrestrial animal remains (turtle, beaver, muskrat, dog, and deer), and a hearth on the pit floor (State Historic Preservation Office (SHPO) files 1977). Coulbourn ceramics were dated to 375 B.C. at the Wolfe Neck site (Artusy 1976; Griffith 1981). Thomas (1981) obtained a date of 3800 +/- 100 B.P. (1850 B.C.) from a circular house pit at the Delaware Park site near Stanton, Delaware. The pit contained a hearth and a cache of nondiagnostic bifaces buried in one wall and measured about 4 meters across. Thomas (1981) also noted interior and exterior post molds and a possible entranceway to the feature.

Custer, Watson, and De Santis (1987) identified a household cluster at the Clyde Farm site (7NC-E-6A) which included a semi-subterranean house pit measuring 2 meters across and 40 centimeters in depth; a storage pit (later trash pit) containing debitage, fire-cracked rocks, and Dames Quarter and Selden Island ceramics; and a hearth radiocarbon dated to 2955 +/- 90 B.P. (1005 B.C.). The hearth also contained debitage, an argillite stemmed point, and a sherd of Dames Quarter pottery. This cluster is roughly contemporaneous with the Barker's Landing Complex features from 7K-C-194A and is a few hundred years earlier than the Wolfe Neck house pit (Feature 1) at 7K-C-194A. The Clyde Farm household cluster appears to be similar to the features excavated on the bank of the Leipsic River and may serve as a comparative model for any further excavations at 7K-C-194A.

Custer and Hodny (1989) uncovered a ring of post molds surrounding a hearth at the Hockessin Valley site (7K-A-17) in northern New Castle County, Delaware. The ring measured roughly 5m x 7m and charcoal from the hearth was radiocarbon dated to 3255 +/- 99 B.C., considerably earlier than the other sites discussed above. Custer and Hodny believe that the interior hearth implies a cold weather habitation. The small tent ring structure found at the Hawthorn site, 7NC-E-46, also in New Castle County, is believed to be a temporary structure (occupation of a few days duration) associated with a procurement/staging site (Custer and Bachman 1984). A radiocarbon date of 2250 +/- 75 B.C. was obtained from a pit feature at the site (Custer 1987).

Most of the semi-subterranean house pit features reported from the Mid-Atlantic date from the Woodland II Period (Kinsey and Graybill 1971; Kraft 1975; Artusy and Griffith 1975; Doms et al. 1985) and are much later than those found above. In fact, no verified Wolfe Neck or Barker's Landing Complex house pits have ever been dug on the Delmarva Peninsula, and the Leipsic River sites have the potential to yield significant information about lifeways and settlement patterns for both of these cultural complexes. They can also serve as a basis for comparison to other Woodland I house pit features found in the region, as a background for other sites attributed to these complexes, and as a basis for understanding the prehistoric adaptation in the Leipsic drainage.

7K-C-195

Flakes, fire-cracked rocks, and Woodland II ceramics had been surface collected from this site during the 1985 survey (Custer, Bachman, and Grettler 1986:72). In 1988, a single line of shovel test pits was placed along the bank in order to test for the limits of the site. The units were labeled C-1 through C-21 and were excavated at 20-meter intervals (Figure 50). Representative soil profiles of the site are shown in Figure 51. Shovel test pit C-4 produced a contracting stem argillite point. Five of the 21 units contained flakes and fire-cracked rocks, and a Koens-Crispin argillite broadpoint and a core were found on the surface in the vicinity of STPs C-1 and C-2. A summary catalog of prehistoric artifacts recovered at the site appears in Table 8. No other work was conducted on this site.

FIGURE 50

Middle Leipsic River Valley Archaeological District - Site 7K-C-195, Location of all Phase II Tests

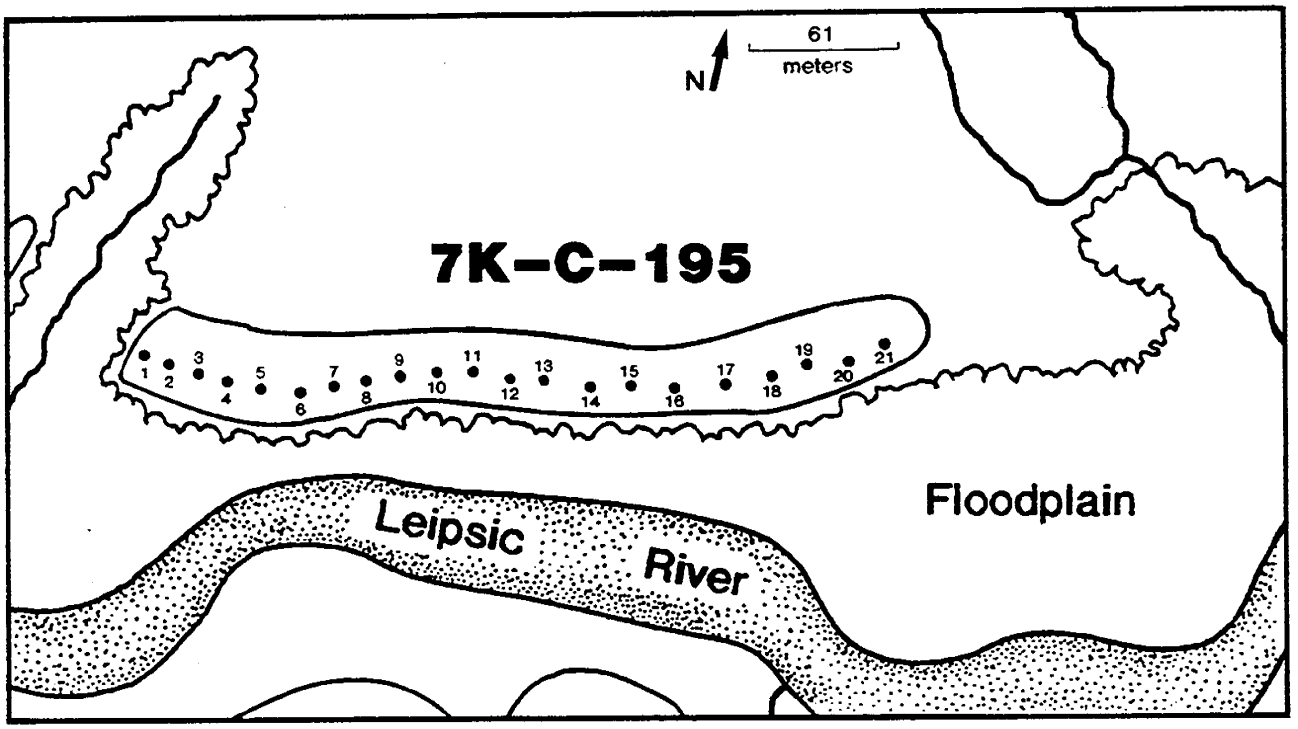


FIGURE 51

Middle Leipsic River Valley Archaeological District - Site 7K-C-195, Representative Soil Profiles from STPs C-4 and C-16

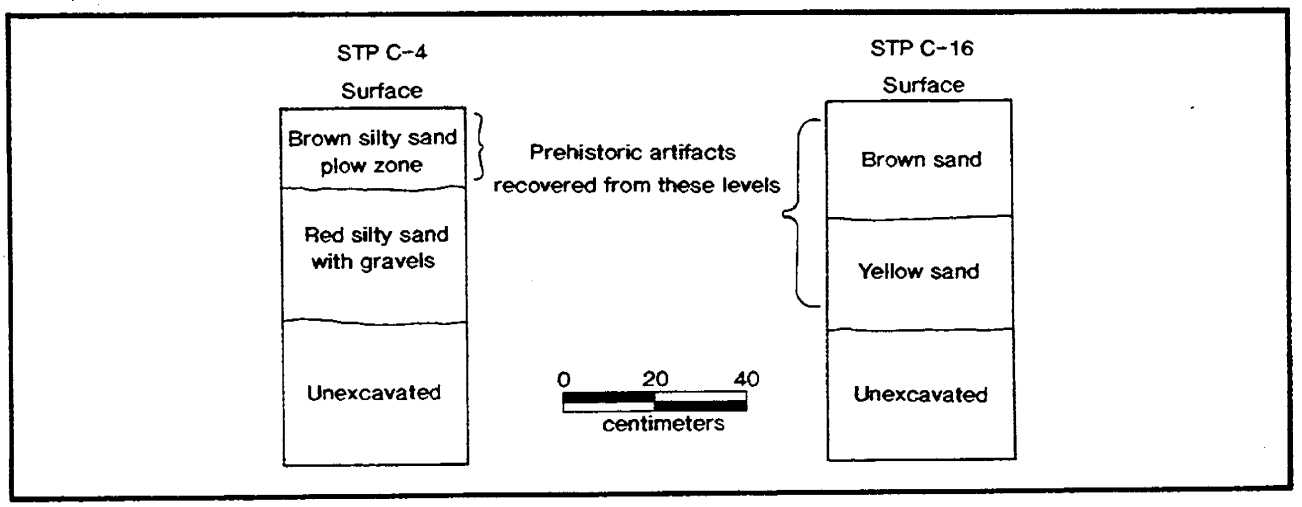


FIGURE 52

Middle Leipsic River Valley Archaeological District - Site 7-K-C-203, Rhyolite Koens-Crispin Broadpoint

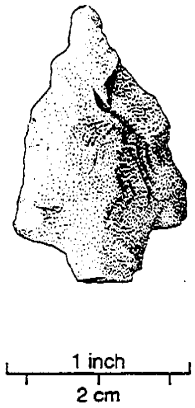


TABLE 8

SITE 7K-C-195 PREHISTORIC ARTIFACT SUMMARY

	Quartz	Jasper	Argillite	Total
Flakes	1	3(1)	---	4(1)
Woodland I Points	---	---	1	1
ESBR	---	1(1)	---	1(1)
Other Bifaces	---	---	1	1
Cores	---	---	1	1
Total	1	4(2)	3	8(2)

	Total Count	%
Quartz	1	12.50
Jasper	4(2)	50.00
Argillite	3	37.50
Total		100.00

KEY:
ESBR - Early Stage Biface Reject
( ) - Cortex

2 Fire-cracked rocks

One of the primary goals of the excavations at 7K-C-195 was to ascertain the extent of the intact cultural deposits east of the proposed centerline for the Relief Route to determine if there existed a "window" through which the right-of-way could be inserted without disturbing those deposits. The testing conducted at the site located artifacts in test pits across the expanse of the shovel test pit line, indicating that the site had been heavily utilized by prehistoric peoples. Therefore, no "window" was found at the site during the Phase II excavation and no alignment shift was made. The site, therefore, remained outside of the zone of potential disturbance, and no further work was conducted.

7K-C-203

This site was originally defined as a surface scatter of flakes and fire-cracked rock in the cornfield on the south bank of the Leipsic River (Custer, Bachman, and Grettler 1986:72). In March of 1988, a second pedestrian survey resulted in the recovery of the first diagnostic artifact from the site: a rhyolite Koens-Crispin broadpoint (Figure 52).

The excavation strategy for 7K-C-203 consisted of a series of shovel test pits laid out along the bank in order to better define the site limits (Figure 53). These shovel test pits extended from the western edge of 7K-C-204 eastward through 7K-C-203 and into an historically unplowed woodlot which extended along the south bank of the Leipsic River from the known limits of 7K-C-203 to the confluence of the Leipsic River and Alston Branch, a northeasterly-flowing major tributary. The woodlot measured approximately 500 meters (1700 feet) in length and covered about five hectares (12 acres). The shovel test pits were set at 15 meter (50 feet) intervals and numbered S-1 through S-62 running east to west from the above-mentioned confluence to the western edge of the site (Figure 53). Shovel test pits S-1 through S-41 were located in the unplowed wooded section and the remainder in the plowed field.

Based upon the distribution of artifacts in the shovel test pits, 1m x 1m test units were later excavated in and adjacent to the shovel test pit line (Figure 53). Three units were placed in the woodlot and four within the cornfield. Thirty-three of the 62 shovel test pits contained flakes and/or fire-cracked rocks and an argillite contracting stem point was recovered from Level 2 (subsoil) of Test Unit S-3. Test Unit S-1 was placed on the high ground southwest of the confluence of the Leipsic River and Alston Branch. The undisturbed upper humus level averaged only 7 cm in depth and was underlain by approximately 64 cm of yellow-brown silty sand (Figure 54). Debitage (57 flakes of various materials), fire-cracked rocks, and carbon flecking were found throughout the 64 cm thick stratum. Underlying this stratum were 36 cm of sterile orange and orange-brown silts and sands. Test Unit S-2, located 60 meters to the west above a ravine draining to the Leipsic floodplain, contained a similar, although somewhat compressed stratigraphy (Figure 55). Flakes and fire-cracked rocks were found in the yellow sand down to a depth of 50 cm below the surface and in the interface of this soil and sterile red coarse sands. Test Unit S-3, located 40 meters to the west on the opposite side of the same ravine, produced an argillite contracting stem projectile point, a point tip, numerous flakes, and fire-cracked rocks from the light brown sandy silt down to a depth of 70 cm below surface (Figure 56). Although no intact hearths or perceptible pit features were found in any of these units, the presence of tools, debitage, and fire-cracked rocks at such depths indicates an occupation of some temporal duration and that features may be present in undisturbed contexts. A summary catalog of total prehistoric artifacts recovered from the site is shown in Table 9.

One of the goals of the excavations at 7K-C-203 was to ascertain the extent of the intact cultural deposits east of the proposed centerline for the Relief Route to determine whether there existed a "window" through which the right-of-way could be inserted without disturbing those deposits. The testing conducted at the site located artifacts in both plow zone and subsoil strata, indicating that it had been heavily utilized by prehistoric peoples. Therefore, since no "window" was found during the initial stages of the Phase II excavation, no further work was conducted.

FIGURE 53

Middle Leipsic River Valley Archaeological District – Site 7K-C-203, Location of all Phase II Tests

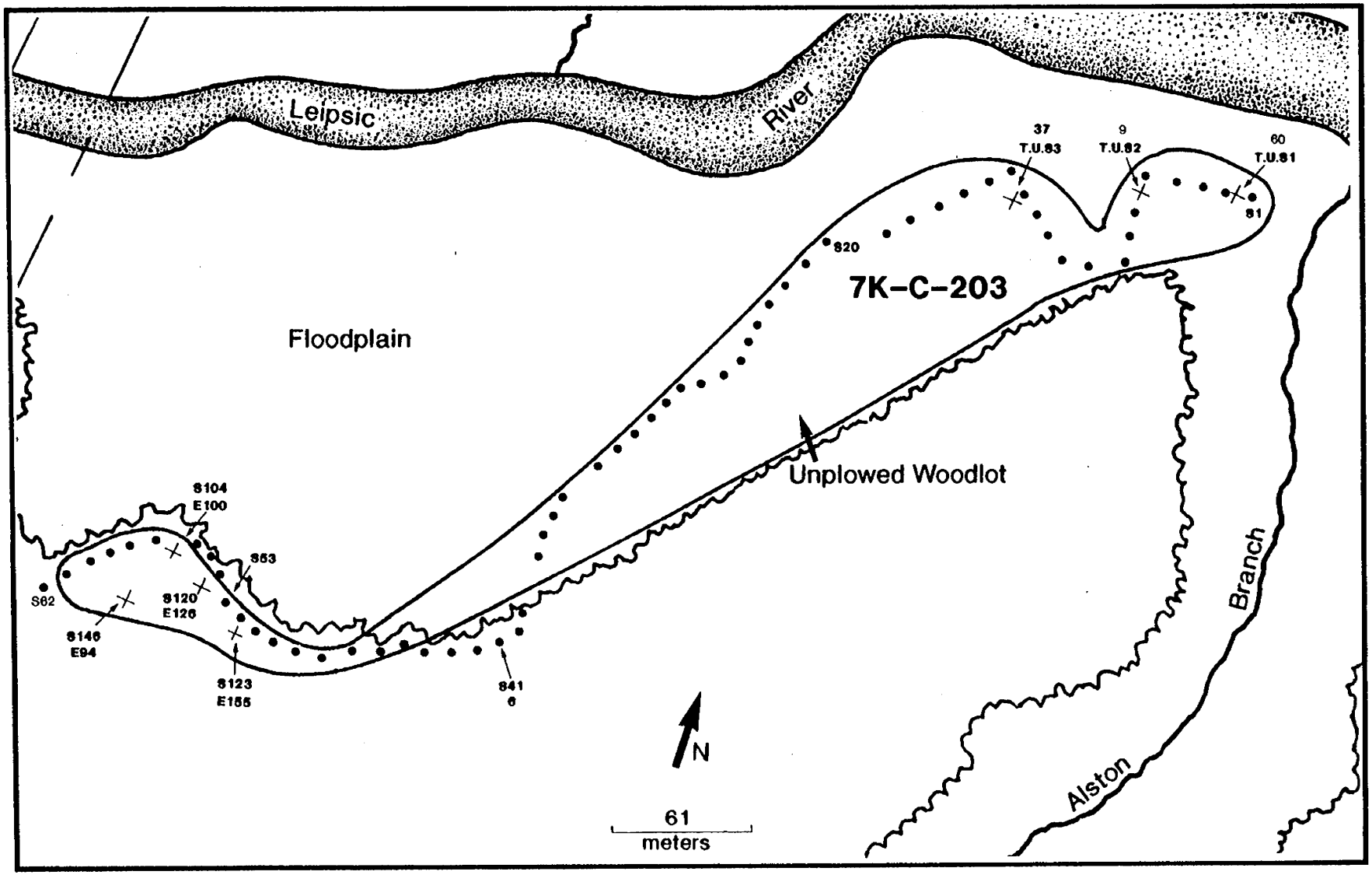


FIGURE 54

Middle Leipsic River Valley Archaeological District - Site 7K-C-203, North Wall Profile of Test Unit 1

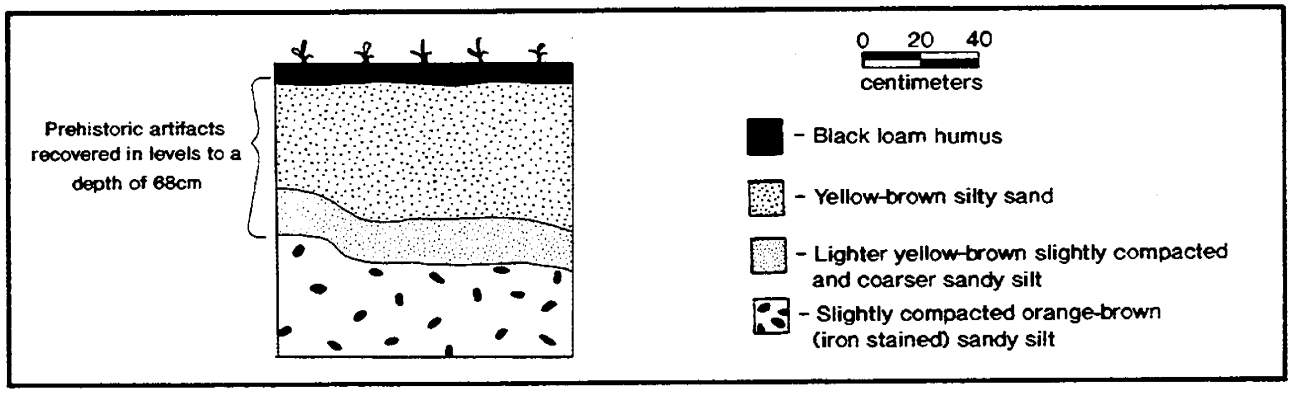


FIGURE 55

Middle Leipsic River Valley Archaeological District - Site 7K-C-203, West Wall Profile of Test Unit 2

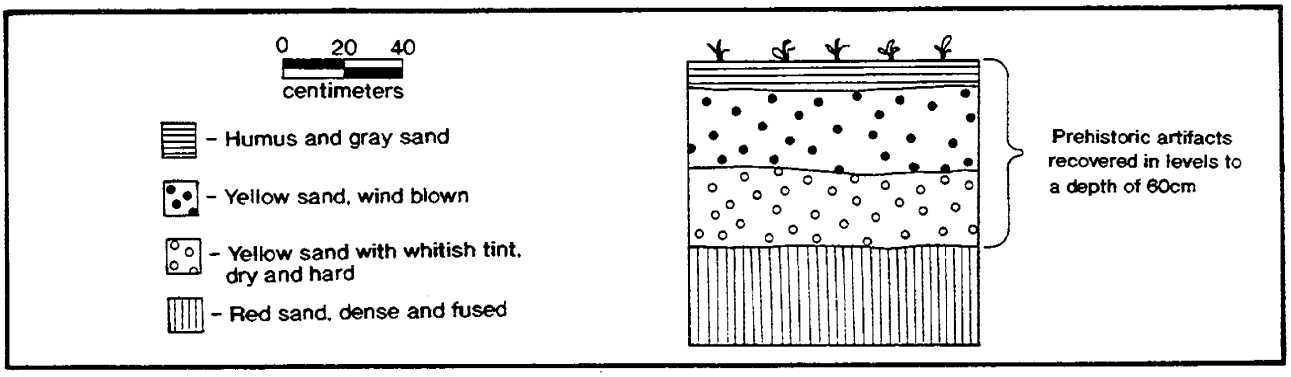


FIGURE 56

Middle Leipsic River Valley Archaeological District - Site 7K-C-203, North Wall Profile of Test Unit 3

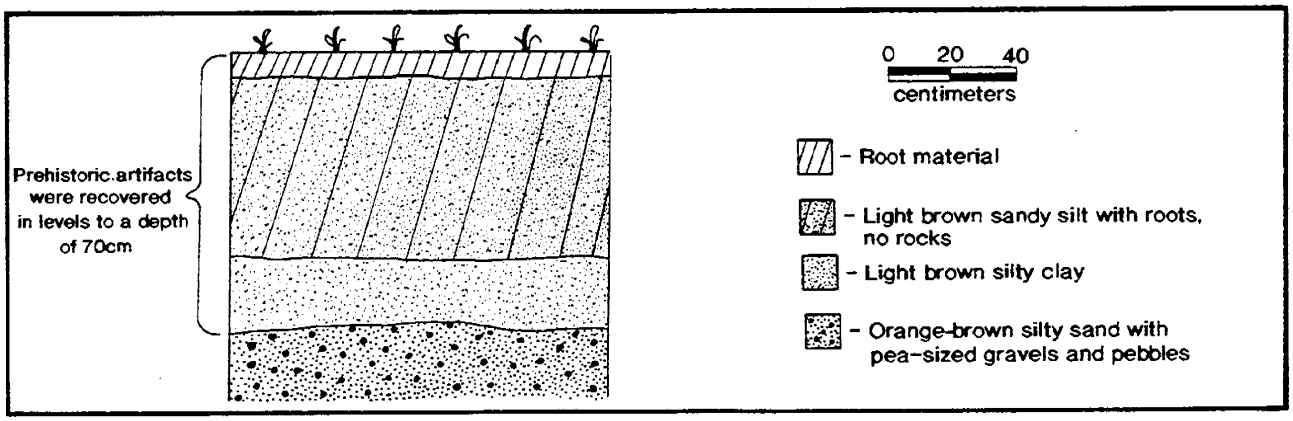


TABLE 9

SITE 7K-C-203 PREHISTORIC ARTIFACT SUMMARY

	Qtzte.	Qtz.	Chert	Jas.	Ir.	Chal.	Rhy.	Arg.	Other	Total
Flakes	8(5)	35(12)	16(5)	85(35)	4	11(3)	---	---	1	160(60)
Flake Tools	---	1(1)	---	1	---	---	---	---	---	2(1)
Woodland I Point	---	---	---	---	---	---	1	1	---	2
Other Bif.	1	---	---	---	---	---	---	---	---	1
Total	9(5)	36(13)	16(5)	86(35)	4	11(3)	1	1	1	165(61)

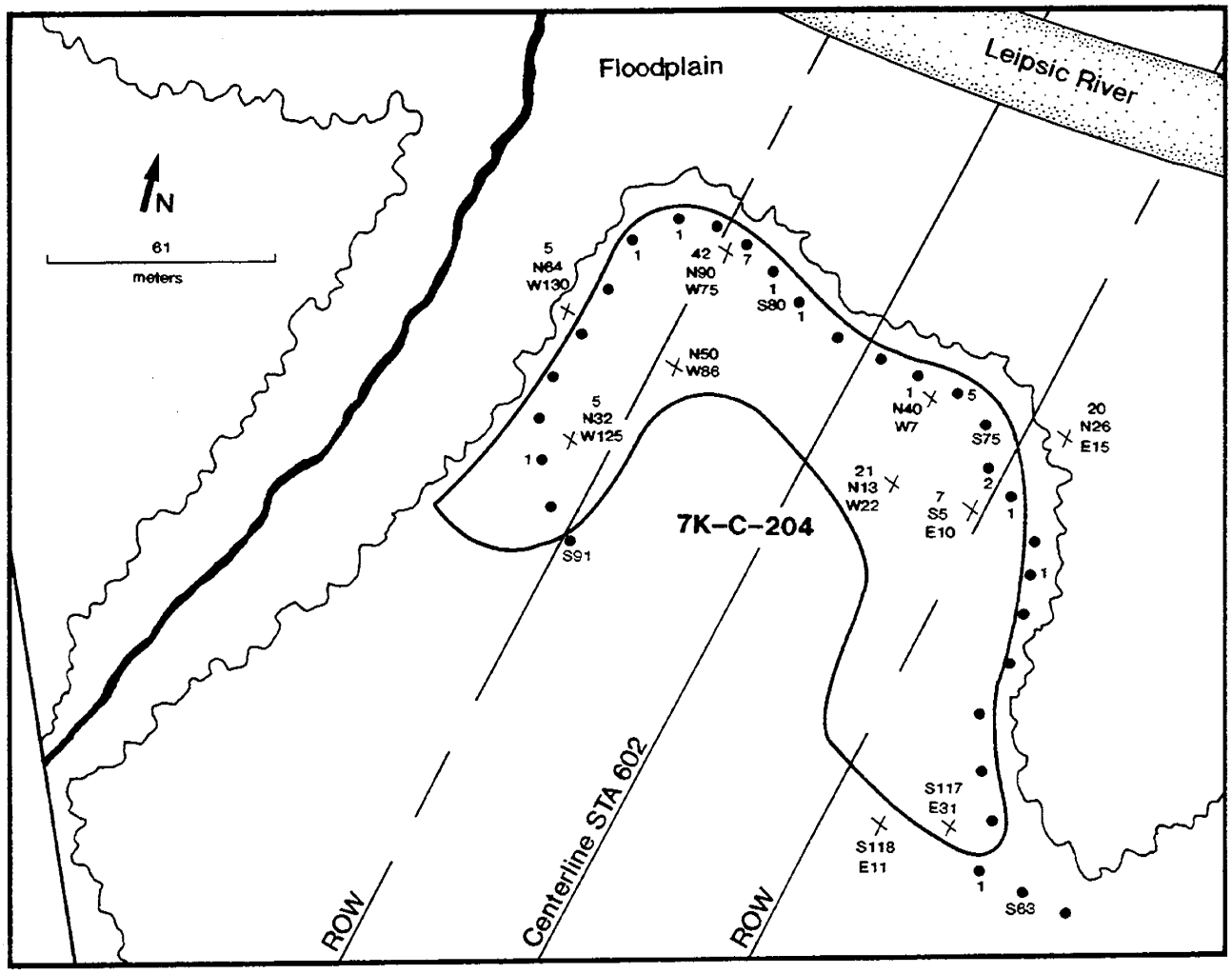
	Total Count	%
Quartzite	9(5)	5.50
Quartz	36(13)	21.80
Chert	16(5)	9.70
Jasper	86(35)	52.10
Ironstone	4	2.40
Chalcedony	11(3)	6.70
Rhyolite	1	.60
Argillite	1	.60
Other	1	.60
Total		100.00

KEY:

Qtzte. - Quartzite
Qtz. - Quartz
Jas. - Jasper
Ir. - Ironstone
Chal. - Chalcedony
Arg. - Argillite
Bif. - Biface
( ) - Cortex

FIGURE 57

Middle Leipsic River Valley Archaeological District - Site 7K-C-204, Limits of the Site and Location of all Phase II Tests



7K-C-204

Shovel Test Pits S-63 through S-91 and ten 1m x 1m units were excavated within 7K-C-204 (Figure 57). Twenty-one total artifacts were recorded from the 29 excavated shovel test pits. A corner-notched jasper point was found in the plow zone of STP S-72, a heavily resharpened Susquehanna broadpoint was found in the plow zone of S-73, a nondiagnostic argillite biface tip was recovered from S-75, and a hammerstone was found in S-89. The remaining artifacts were flakes and fire-cracked rocks. A summary catalog of all prehistoric artifacts recovered at the site appears in Table 10. All artifacts were located in the plow zone and the subsoils often contained heavy gravels and clays suggesting widespread soil deflation, probably as the result of agriculture. A typical soil profile from the shovel test pits is shown in Figure 58.

The ten 1m x 1m test units were placed near the most productive shovel test pits to verify the artifact densities and gather additional information about the prehistoric adaptation. A total of 107 artifacts, including four nondiagnostic flake tools and unifacially worked flakes, were recovered from these ten units and all artifacts except two small flakes were from the plow zone. No features were found and the stratigraphy was similar to that

TABLE 10

SITE 7K-C-204 PREHISTORIC ARTIFACT SUMMARY

	Qtzte.	Qtz.	Chert	Jas.	Arg.	Chal.	Other	Total
Flakes	10(6)	34(4)	26(8)	36(12)	---	8	1	115(30)
Util. Flakes	---	---	---	2(2)	---	---	---	2(2)
Flake Tools	---	1(1)	---	---	---	---	---	1(1)
Woodland I Points	---	---	---	2	---	---	---	2
ESBR	---	1(1)	---	---	---	---	---	1(1)
LSBR	---	---	---	---	1	---	---	1
Other Bifaces	---	---	---	1	1	---	---	2
Total	10(6)	36(6)	26(8)	41(14)	2	8	1	124(34)

	Total Count	%
Quartzite	10(6)	8.10
Quartz	36(6)	29.00
Chert	26(8)	21.00
Jasper	41(14)	33.00
Argillite	2	1.60
Chalcedony	8	6.50
Other	1	.80
Total		100.00

KEY:

Qtzte. - Quartzite
Qtz. - Quartz
Jas. - Jasper
Arg. - Argillite
Chal. - Chalcedony

Util. - Utilized
ESBR - Early Stage Biface Reject
LSBR - Late Stage Biface Reject
( ) - Cortex

1 Hammerstone
2 Fire-cracked rocks

recorded in the shovel test pits (Figure 59). Because no artifacts or features were found in any of the subsoil contexts excavated from 7K-C-204, no further work is recommended at the site.

Interpretations

Artifacts and Subsoil Stratigraphy

The subsoil consisted of a yellow-brown fine silt or sand (Horizon B1) over a coarse orange sand with gravels and pockets of clay (Horizon B2). The distribution of these soil types was plotted across the study area and compared to the artifact distribution in the shovel test pits at all five sites and Test Units 4 and 7 through 22 of 7K-C-194A (Figure 40). These units were used for the comparison because they were regularly spaced within the apparent site limits. Later units were excavated in areas of artifact concentrations, and due to that bias, were not used for comparison. Of particular interest were those units which contained prehistoric artifacts in the undisturbed

FIGURE 58

Middle Leipsic River Valley Archaeological District - Site 7K-C-204, Representative Soil taken from STP S-73

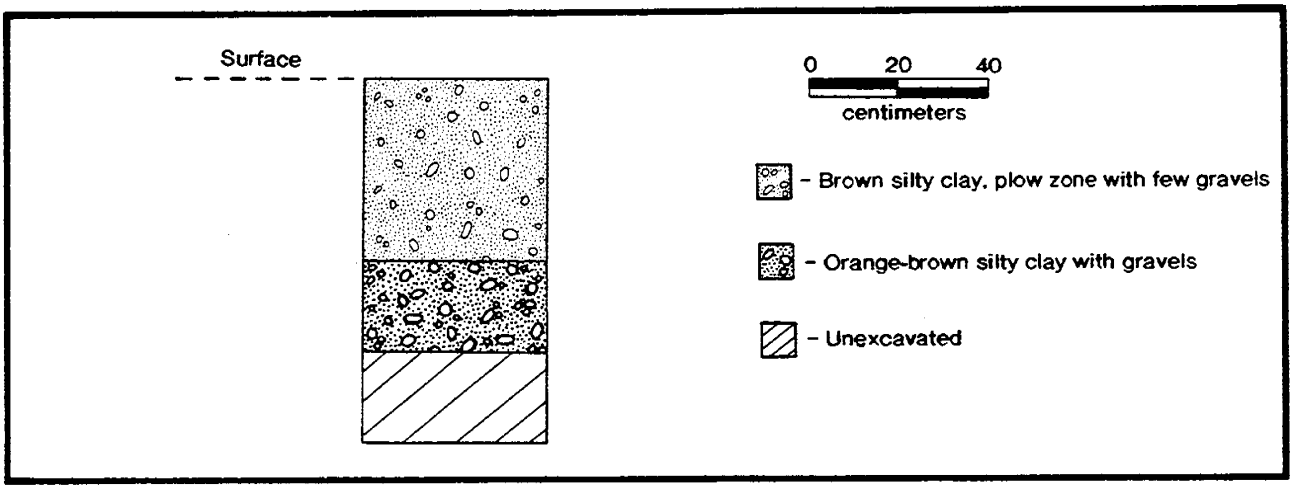
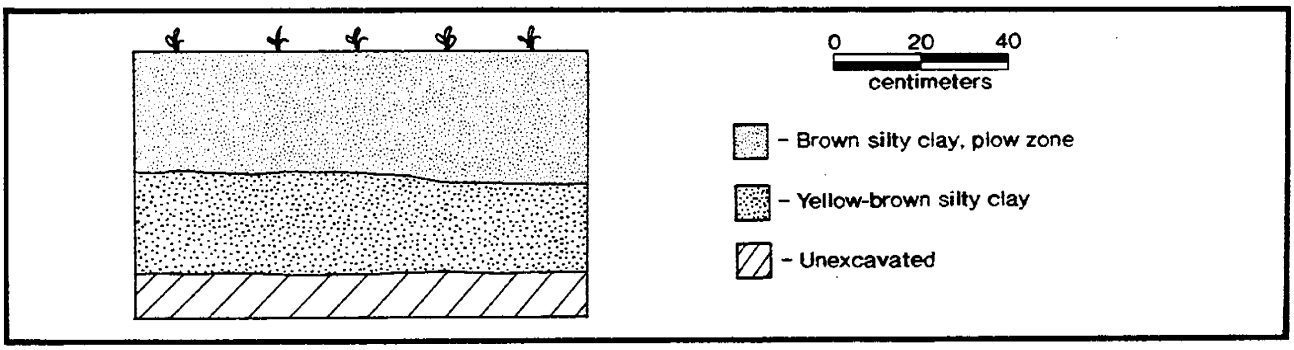


FIGURE 59

Middle Leipsic River Valley Archaeological District - Site 7K-C-204, Representative Soil Profile from the East Wall of Test Unit N26E15



stratum B1. Twenty-one of the 80 shovel test pits and units placed on the north bank contained artifacts in the subsoil. When these 21 were examined, it was found that in 16 cases (76%) the artifacts were contained in B1 and in five cases (24%) they were found in B2 lying directly beneath the plow zone. Of 47 units on the north bank containing stratum B1, 11 (23%) contained prehistoric artifacts. Of 33 units containing stratum B2, just three (9%) contained artifacts.

On the south bank of the Leipsic River (7K-C-203 and 7K-C-204), Shovel Test Pits S-1 to S-91 were examined and the results were even more pronounced. Twenty-four units contained artifacts in the subsoil, and in 22 (92%) of these units, the artifacts were found in stratum B1. Of the 52 units containing the B1 soils, 22 (42%) produced artifacts from that subsoil, while of the 39 units containing B2 subsoil, only two (5%) yielded artifacts from that subsoil. Most of the productive units on the south side of the Leipsic River were in the unplowed woodlot which forms the eastern section of 7K-C-203, and the units in the cultivated fields (western section of 7K-C-203 and all of 7K-C-204) were far less productive than their counterparts on the north bank.

Thus, it appears that a large part of the prehistoric occupation at these sites can be defined by the distribution of the B1 subsoils. In these subsoils at 7K-C-194A, where the majority of this soil was exposed through excavation, it is the only subsoil type which contains intact hearths and associated living floors or activity areas in undisturbed contexts. The stratum B2 subsoil contained no living floors or hearths. However, the same relationship cannot be shown for pit features at the site. Although many of the pit features are associated with the B1 silts and sands, many others were found in places where the B2 subsoil lay directly beneath the plow zone. Pit features were found starting at the top of the B1 silts, somewhere within the B1 stratum, or at the top of the B2 stratum where B1 soils were absent. In all cases, the pit features extended into the B2 subsoil.

Site Chronology

All five of the sites investigated for this report contain cultural components of the Woodland I Period of prehistoric occupation. In addition, Woodland II components are present at 7K-C-194A and 7K-C-203. The most common diagnostic point types are the small Woodland I stemmed and notched points which are characterized by narrow to medium blade widths and straight and contracting stems or shallow corner and side notches. Most are less than five centimeters in length, although originally they may have been much larger because most show evidence of considerable resharpening. These points first appeared around 3000 B.C. and were in use for about 3,500 years. Thus, by themselves, they are only very general temporal markers. Broadpoints were found on both sides of the Leipsic River at 7K-C-194A and 7K-C-203. These bifaces appeared in Delaware around 2200 B.C. and continued to be used for about 1200 years.

Coastal Plain ceramic technology evolves much more rapidly, and stylistic variations are more specific markers of site chronology. Marcey Creek ceramics, the earliest form known for the Coastal Plain, were found at several proveniences at 7K-C-194A and are generally thought to date to about 1200 - 900 B.C. (Artusy 1976:2). Wolfe Neck ceramics were recovered from Feature 1 and have been radiocarbon dated at other sites to the time period from 505 B.C. to 290 B.C. (Custer 1984a:182). The plow zone of Test Unit 48 at 7K-C-194A contained two sherds of Coulbourn ceramics which have been dated to 375 B.C. +/- 60 at the Wolfe Neck site and 290 B. C. +/- 60 at the Wilgus site (Custer 1984a:182). Artusy (1976:3) projected a date of about 400-100 B.C. for this ware. Finally, a Woodland II triangle point was found at 7K-C-194A and several sherds of Woodland II ceramics were recovered on both sides of the river. Shell-tempered Townsend sherds, dated to A.D. 975 +/- 60 at the Slaughter Creek site (Custer 1984a:181), were found at 7K-C-203 and 7K-C-194A and grit-tempered Minguannan sherds at 7K-C-194A.

The total number of artifacts, as well as diagnostic varieties, are far fewer from the south side of the Leipsic River. A total of 322 artifacts were recovered from all contexts on the south side, including 10 bifaces. Of the bifaces, six are of local quartz, quartzite, and cryptocrystalline materials, three are of non-local argillite, and one is of non-local rhyolite. This breakdown is similar to that from the north side. Four of the 10 are diagnostic of the Woodland I Period: a heavily resharpened rhyolite Koens-Crispin broadpoint from the surface of 7K-C-203, a heavily resharpened jasper Susquehanna broadpoint from the plow zone of STP S-72 at 7K-C-204, a jasper corner-notched point from the plow zone of STP S-73 at 7K-C-204, and an argillite contracting stem point from Level 2 (subsoil) of Test Unit 203. Only one of the six bifaces produced from local materials shows cortex, but it is likely that the same reliance on local cobble materials was present on the south side of the river.

Although the sample of prehistoric ceramics from the south side is small (just 7 sherds total), the breakdown is quite different from the north side. While only seven of 18 sherds from the north side are from the Woodland II Period, six of seven from the south side are from that period. These sherds are either grit- or shell-tempered examples of Minguannan (one exhibiting smoothed- over cord impressions) and Townsend ceramics. The remaining sherd is a piece of plain Mockley ware. Although one triangular point was found from the north side of the river, none were recorded from the south side.

A total of 275 flakes were found from all contexts on the south bank. As on the north bank, jasper and quartz were the most common lithic materials (69% of total). The remainder were quartzite, chert, ironstone, and chalcedony. Interestingly, no flakes of argillite and rhyolite were found on the south bank. This sample is small, but it serves to reinforce the assertion made above for the north bank that the bifaces of non-local materials

(argillite and rhyolite) were reduced elsewhere and brought to these sites as middle and late stage bifaces. The percentage of debitage which exhibits cortex is 33 percent (90 of 275), a figure which is comparable to the north side.

Nearly all of the artifacts found in the excavated shovel test pits and 1m x 1m test units from the no-till fields on the south side of the Leipsic River were recorded from the plow zone. One diagnostic artifact was recovered from the subsoil (a contracting stem argillite point from Level 2 of STP S-3 of 7K-C-203) and an occasional small flake or fire-cracked rock were also found in the subsoil. Several of the units excavated in the historically unplowed woodlot which forms the east end of 7K-C-203 contained nondiagnostic artifacts in deeply buried, undisturbed subsoil contexts.

Conclusions

The Leipsic River drainage sites discussed in this report are the first such sites in the drainage to be excavated at this level of intensity. Aside from the limited surface collections from other sites and the limited excavation previously conducted at the aforementioned 7K-C-255, there is nothing else in the drainage with which to compare these five sites. Two other sites within the drainage produced diagnostic ceramics similar to those found at 7K-C-194A. Wolfe Neck sherds were surface collected from 7K-C-248 on the Dempsey Farm about 3 kilometers downstream on the south side of the Leipsic. Found nearby were the steatite tempered sherds at 7K-C-201, southwest of the Leipsic River/Alston Branch confluence and due south of the unplowed wooded section of 7K-C-203. At least one dozen other sites within the Leipsic drainage contained Woodland I broadpoints and stemmed and notched forms similar to those discussed above. These sites are found up and down the drainage and may be related temporally and culturally to the series of five sites excavated and reported here.

Besides intradrainage site comparisons, the excavation of these sites can address several questions regarding prehistoric adaptations on the Delmarva Peninsula. Probable house pits from the Wolfe Neck and Barker's Landing complexes were found at 7K-C-194A and these could be compared to house features found at sites in the Piedmont and on the Coastal Plain. These house pits range in age from 3255 B.C. at the Hockessin Valley site to longhouses from Woodland II Slaughter Creek complex sites (ca. A.D. 975-1345). The pits at 7K-C-194A can serve to fill in gaps in a preliminary sequence of Woodland I house types for the Delmarva Peninsula.

The reliance upon argillite and rhyolite as lithic sources had never been apparent in the Leipsic River drainage and the results from the Phase II work at these five sites suggest that there may be a reliance on both imported and local cobble resources. The percentage of use through time, tool types manufactured, and the methods of lithic reduction are all questions which could be addressed by excavations at the sites.

The Marcey Creek ceramics found at the Barker's Landing Complex hearth at 7K-C-194A were found in close association with heavily utilized contracting stem points and the cluster suggests that intact domestic and other specialized activity areas are recoverable from these sites. Barker's Landing Complex site activity areas have never been excavated or recorded and these features present the opportunity to both date and understand the prehistoric adaptation during that time.

The wood and nut charcoal analysis holds potential for understanding the seasonality of the sites and the dietary selection of its inhabitants. Although some questions remain about preservation at 7K-C-194A, the preservation of the carbonized remains is excellent and the data recovered during the Phase II excavations suggest definite preferences for the consumption of hickory nuts for food and the burning of oak wood for fuel. It is also possible that other plant remains can be recovered as well and future studies could lead to a greater understanding of the floral species utilized at the site.

Finally, the intact yellow-brown subsoils (B2 horizon) encountered in several areas at the site present an opportunity to study intact living floors and associated features from the Wolfe Neck and Barker's Landing complexes and would provide the first carefully excavated data on habitation sites from these complexes. It is also probable that radiocarbon dates would be obtained which would more accurately date both of these complexes and associated artifacts.