



FIGURE 12— Feature 3, Test Unit 20, at 38LX5. A number of clusters of sandstone were encountered in the subplow-zone deposits and appear to be of Archaic or Early Woodland age.

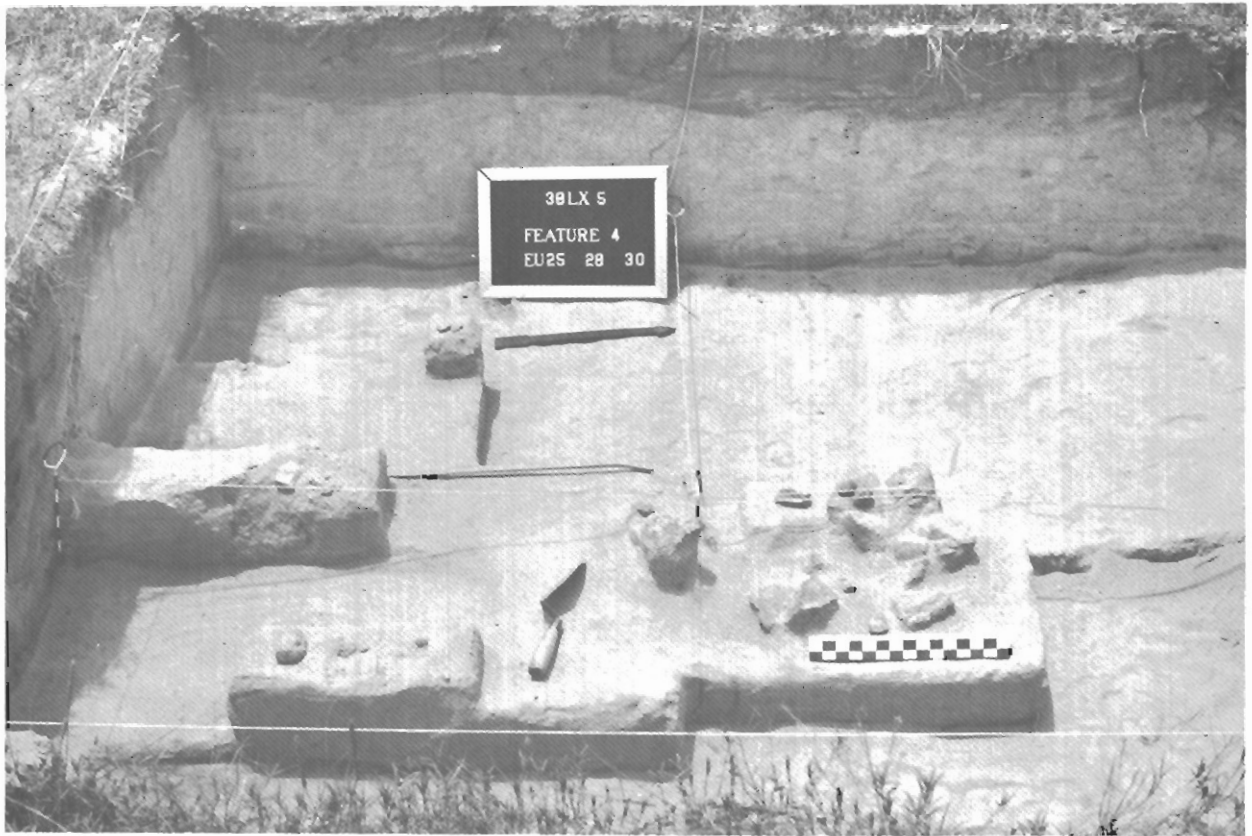


FIGURE 13— Feature 4, Test Units 25, 28, and 30 at 38LX5. A number of fragments of sandstone, flakes, and a blade-like tool were found, possibly the remains of an early hearth and working floor.

flake (7.3 grams), and two ferruginous sandstone abraders (219.2 grams, 466.1 grams). Three two gallon flotation samples were taken from around the rocks comprising the cluster, producing 2.95 grams of charcoal (Samples 9-11 from 38LX5; Chapter 8). Upon examination, this material was found to include pine, conifer (sp?), and oak wood charcoal. The feature is tentatively interpreted as a Middle Archaic hearth and working/living floor. No diagnostic artifacts were found in direct association, but three Morrow Mountain-like forms (Figure 9:aa, cc, ff) were found in the same units at -58 cm, -29 cm, and from 42 to 60 cm, respectively.

#### Feature 6

The most unusual find of the excavations, a cluster of probable Middle Archaic bifaces designated Feature 6, was made while cleaning the first block unit (Figure 14). Sammy T. Lee, the project backhoe operator, was shovel skimming at the edge of the block when he flipped up six bifaces (Figure 14: a,b,e,g,i,o). Careful cleaning revealed another five immediately below the surface, within a one meter diameter area. The area about the cluster of eleven bifaces was expanded for several meters, to check for additional artifacts or features. In all, thirteen intact bifaces, one biface fragment, and a large ovate bifacial knife were found in an area 1.5 m (E/W) by 2.5 m (N/S), at depths of from 24 to 34 cm below the ground surface. A small quartz biface basal fragment (Figure 14:l) was also recovered, at -17 cm, immediately below the base of the plowzone, and may not be associated with the main cluster. A second biface fragment (Figure 14:n) was located two meters southwest of the main cluster, at approximately the same depth. This specimen, while similar in general morphology to many of those in the cluster, was heavily worn in appearance and may have been an intentionally discarded (exhausted) form. With the exception of the large ovate knife and the small fragment (Figure 14:m,l), all of the remaining bifaces resemble Morrow Mountain type forms, suggesting a Middle Archaic date for the cluster (Coe 1964, personal communication).

The 15 specimens making up the feature (Figure 14: a-j, m-q) were characterized by a mint (unused) appearance. Only one of the 15 bifaces was broken, and most exhibited sharp working edges. These facts, and the clustered nature of much of the assemblage, suggest an intentional cache or possibly a burial situation (cf. Morse 1975). That is, all or most of the bifaces included in Feature 6 appear to be contemporaneous, and may reflect a lost or cached tool kit, or possibly grave goods about a burial. The fill from a three meter block around the bifaces was screened, and all encountered

artifacts were plotted. No bone fragments were detected, not even tiny fragments found occasionally elsewhere in the deposits, reducing the likelihood that the bifaces reflected grave furniture. The number of bifaces in this area, it should be emphasized, was highly unusual; other subplowzone levels on the site rarely yielded more than a single biface in a comparable volume of fill.

A cluster of ferruginous sandstone (Figure 15) was located one and one half meters due west of the center of the one meter diameter area from which 11 of the 15 bifaces came. Four gallons of fill from this rock cluster, which was at almost exactly the same depth below the surface as the points, was floated and the entire charcoal (approximately four grams) submitted for radiocarbon dating. The resulting determination, 3520 BC - 170 (RL - 1036), may give a rough approximation of the age of the cluster. The 38LX5 radiocarbon date is in rough agreement with, although 500 to 1000 years later than, radiocarbon dates for similar forms found elsewhere in the southeast (Chapman 1976:8). Two other two gallon flotation samples were collected from immediately around the 11 bifaces found within one meter of each other (Samples 31, 32; Chapter 8). These samples produced only minute traces of charcoal, which upon analysis was found to be pine and coniferous wood charcoal.

The bifaces comprising Feature 6 were not found lying flat, but were oriented at a variety of angles (Figure 16). All nine of the 15 points found after the initial six were flipped up, were piece plotted; five tips were oriented roughly southwest, one northeast, two southeast, and the large ovate biface to the west. The main axis of the points dipped up or down from 10 to 50° from the horizontal, and the large biface was found on edge. The seemingly haphazard orientation of the assemblage suggests a moderate amount of disturbance, or else original deposition in an other than flat arrangement (scattered over a burial?).

The 15 bifaces comprising Feature 6 are tentatively assumed to comprise an assemblage, the result of a single behavioral event. The feature may reflect an intentional cache, a burial situation, or the loss of a tool kit. Given the area incorporated within Feature 6 (3.75 m<sup>2</sup>), it is admittedly possible that one or a few of the bifaces may pre or post date the main concentration. Two specimens (Figure 14: 1,n), as discussed previously, are assumed to be unrelated. Over the remainder of the assemblage, however, it is difficult to justify the exclusion of any of the specimens, given the basic similarity in condition (usable).

The bifaces comprising Feature 6 exhibit a moderate amount of variation in size and weight, but exhibit a surprising

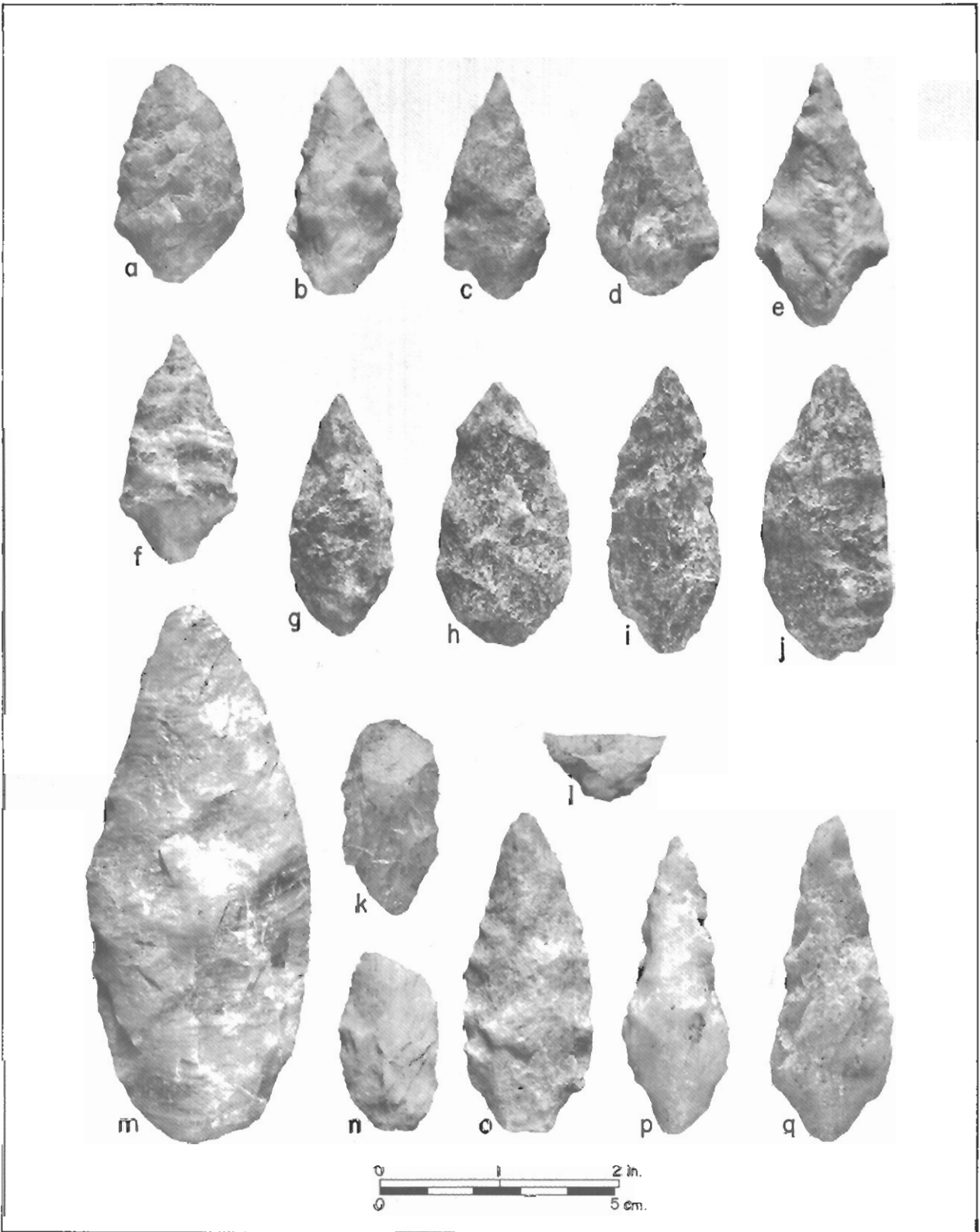


FIGURE 14 – Hafted bifaces from Feature 6, 38LX5. Most of the bifaces fit within Coe's (1964) Morrow Mountain II or III types. The fill of a nearby rock cluster found at the same depth produced a radiocarbon date of 3520 B.C.  $\pm$  170 (RL-1036), supporting a probable Middle Archaic age for the assemblage. Bifaces a, b, e, g, i, o were discovered during shovel skimming and came from an area about 50cm in diameter. The remainder were plotted in situ. Eleven bifaces (a-g, i, o-q) came from an area under one meter in diameter, with bifaces h, j, and m 0.25, 1.0, and 1.5 meters to the north of this cluster, respectively. Bifaces k and n were 0.40 and 2.0 meters to the west; n exhibited heavy use-wear damage, unlike the other specimens, and may not be related. The biface basal fragment (l) was found immediately below the plowzone 1.5 meters NNE of the main cluster, and may also be unrelated.



FIGURE 15— Rock cluster one meter to the west of and at the same level as the Feature 6 biface concentration at Site 38LX5. Charcoal gathered from around this cluster yielded a date of 3520 B.C.  $\pm$  170 (RL-1034).



FIGURE 16— Four of the fifteen bifaces comprising Feature 6, 38LX5, shown *in situ* in the soft powdery sands.

conformity in working edge angle (measured halfway along the cutting/blade edge), and in proximal haft width and blade shoulder width. The working edge angles range from 50 to 80 degrees, with a mean of 60 degrees, suggesting a multi-task functional use (cf. Wilmsen 1970:70). The large ovate biface had the most acute edge angle, 50 degrees, arguing for use as a knife, a form it strongly resembles. Excluding the large ovate biface, the remaining 14 specimens have similar shoulder widths ranging from 2.0 to 2.8 cm, with a mean of 2.4. Proximal haft element width (after Ahler 1971: 22) also varies little over the assemblage, ranging from 0.7 to 1.1 cm, with an average width of 0.84 cm. The similar hafting and edge angle measurements observed over this otherwise moderately diverse assemblage suggest similar function and a standardized hafting procedure. The observed variation in blade morphology probably reflects earlier and later stages of resharpening.

A moderate amount of fire-cracked rock and ferruginous sandstone (1355.0 and 648.6 grams, respectively), and quartz (29 pieces, 38.6 grams), chert (3 pieces, 0.3 grams), and quartzite (2 pieces, 0.9 grams) debitage, together with some fired clay (4.0 grams), gneiss or schist (3 pieces), four possible ferruginous sandstone abrader fragments, and two retouched flakes, were found in the fill of the three meter block opened around the point cluster. Given the volume of fill examined about the feature, the amount of material recovered is not unusual. The incidence of fire-cracked rock and ferruginous sandstone is considerably higher than expected (based on an average of 55.9 grams of ferruginous sandstone and 189.7 grams of fire-cracked rock in the subplowzone levels of the random one by two meter test units), although the debitage figures are close to the average over the site (based, for example, on an average of 17.7 grams of quartz in the subplowzone levels of the random one by two meter units). Thus, the general Feature 6 area may have been characterized by more hearth/burning activity, and perhaps the same or less reduction/manufacturing activity, than comparable areas elsewhere on the site.

#### Feature 7

Feature 7 was defined on the basis of an extensive scatter of plain coarse sand/grit paste pottery over an area 8 m (N/S) by 6 m (E/W) at the south end of Block Unit 1. The scatter was located immediately below the plowzone, and appears, upon inspection, to represent the breakage of a single large vessel. All of the 83 sherds exhibit near-identical paste, thickness, and surface finish, and a number of cross-mends were noted. The original vessel appears to have been a large

jar, roughly 50 cm in diameter at the rim. Only a small fraction of the total vessel was recovered, and depth and basal configuration could not be determined. A probable conoidal or rounded base is inferred, however, from the absence of abrupt base or shoulder fragments. The remainder of the vessel fragments may have been removed by the backhoe, and some may be beyond the unit, as well, in unexamined deposits, since the feature was located near one end of the block. The artifacts comprising the scatter are recorded in the appendix volume under a controlled surface collection category for Block Unit 1. In addition to 83 plain sherds from the apparent vessel, a number of fragments of debitage, fire-cracked rock, and three pieces of check stamped sand paste pottery, were also found at this level, and may be associated. Feature 9, an Early Woodland hearth, is located just north of the scatter and may also be associated.

#### Feature 8

Feature 8 was a charcoal stain observed in the floor and west profile of excavation Unit 25. Originally thought to be an aboriginal pit, the stain was found upon partial excavation to be a fairly recent tree stump.

#### Feature 9

Feature 9 was characterized by a diffuse circular charcoal stain roughly a meter in diameter located in the center of Block Unit 1. Three one by two meter units (EU's 39, 41, and 43) were opened around the feature, and yielded four Deptford linear check stamped (sand paste) and one plain (coarse sand/grit) sherd. Three of the linear check stamped sherds were recovered within the fill of the feature. Two stemmed, vaguely Thelma-like bifaces (Figure 9:s), were recovered 30 cm and 1.0 meter southeast of the stain, at a depth of 7 cm below the level at which it was first noted. These two points may or may not be associated with the feature, although the forms are similar to those reported with Deptford pottery from elsewhere in the southeast (Milanich 1971:175-176).

Twelve gallons of fill from the feature were removed and floated, and several larger pieces of charcoal were handpicked during excavation. The charcoal from these samples was submitted for ethnobotanical analysis, and was found to contain pine and other conifer wood charcoal, and a small quantity of hickory nutshell (Samples 12-16 from 38LX5; Chapter 8). Ten grams of charcoal from Sample 14, material obtained from floating 10 gallons of the feature fill, were submitted for radiocarbon analysis and produced

a date of 860 BC  $\pm$  120 (RL - 1037), a figure somewhat earlier than expected for Deptford materials in this part of the Atlantic southeast.

#### FIRE-CRACKED ROCK AND UNMODIFIED FERRUGINOUS SANDSTONE

A total of 2500 pieces of fire-cracked rock weighing 26,884.8 grams were recovered from 38LX5 from 1974 to 1978, together with 1322 pieces of unmodified ferruginous sandstone weighing 12,934.7 grams. The spatial distributions, of both materials were examined over the surface, plowzone, and subplowzone levels on the site, in an effort to locate aboriginal hearth and working areas. The two artifact categories had similar distributions, with pronounced concentrations in the southern, west-central, and northeastern areas of the site (Figure 17). These concentrations were observed in all levels, and appear to reflect repeated aboriginal selection for the highest area of the knoll, and for relatively flat areas in proximity to and overlooking the small stream below the site.

While the spatial distributions of fire-cracked rock and ferruginous sandstone over 38LX5 were similar in both plowzone and subplowzone levels, the absolute quantities of each material differed markedly (Table 2). In the random excavation sample units almost four times as much fire-cracked rock, by weight, came from subplowzone as opposed to plowzone proveniences. Unmodified ferruginous sandstone, in contrast, was fairly evenly distributed between the two proveniences. The stratigraphic data suggest that fires or hearth activity, a probable source for much of the cracked rock, were more common on the site during earlier (Archaic through Early Woodland) occupations than during the later, Woodland through Mississippian periods. The relatively even stratigraphic distribution of ferruginous sandstone, in contrast, suggests similar patterns of use over time, and possibly comparatively greater use during later occupations. Given the near equivalence of the plowzone and subplowzone assemblages, by weight, this might be the case, although as will be discussed later, a majority of the possible modified ferruginous sandstone tools on the site came from subplowzone proveniences.

The fire-cracked rock recovered was predominantly quartz, with some sandstone and other, unidentifiable materials present in small quantities. Some of this material may reflect hammerstone or other cobble tools that either broke in use and were discarded, or else were recycled as cooking/hearth stones (House 1975, Michie 1978). Ferruginous concretions have been documented in local soils, although not specifically



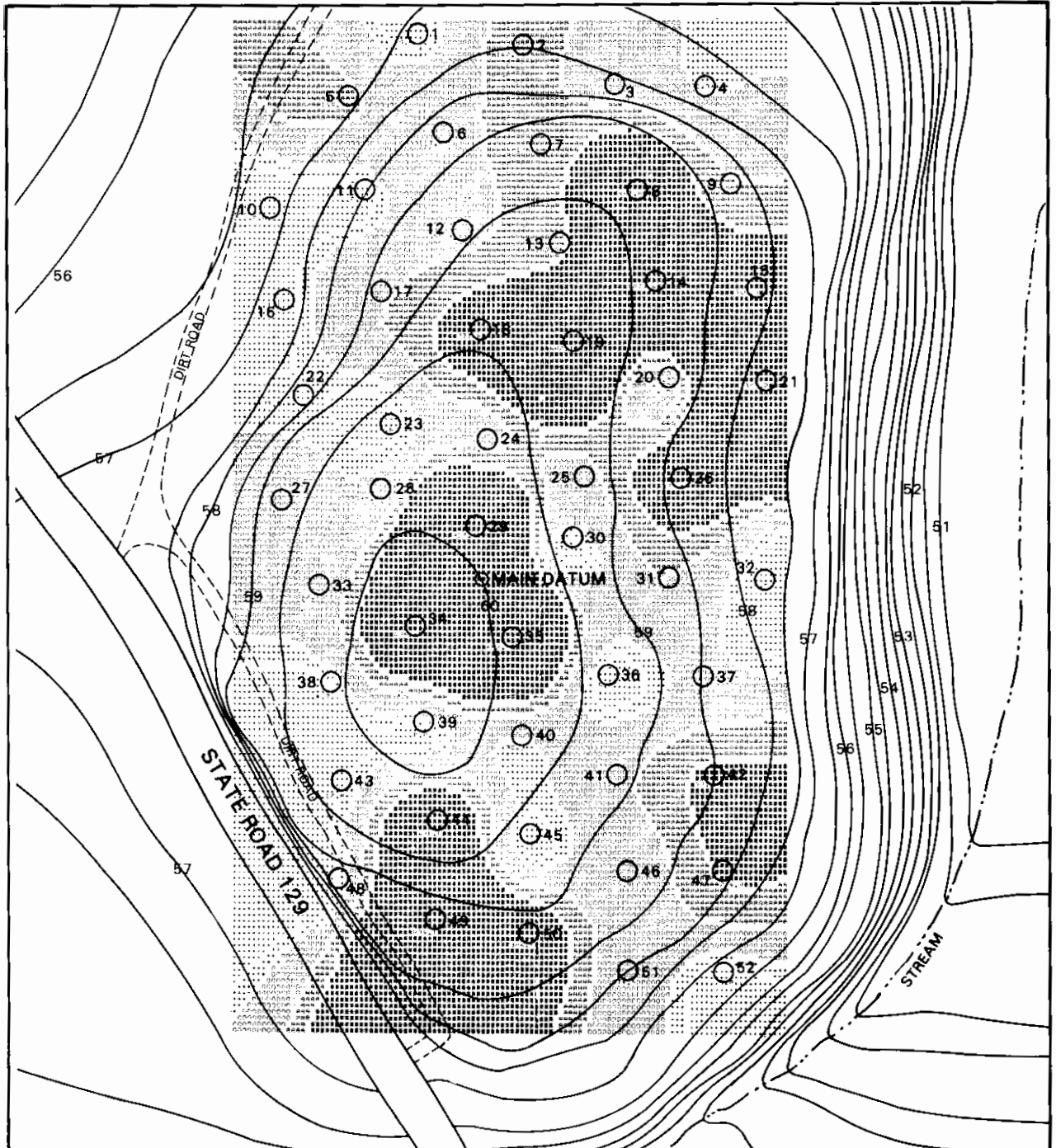
the types that characterize site 38LX5 (Chapter 3, Lawrence 1976). Because of their highly weathered state, it is not possible to conclusively document use-wear patterning on any of the unmodified specimens. The uneven distribution of the ferruginous sandstone over the site, in concentrations with other artifacts, argues for aboriginal use of the material, possibly for abrading functions or for red pigment (cf. Anderson, Lee, and Parler 1979:64-65).

#### UNMODIFIED DEBITAGE

A total of 2756 pieces of unmodifieddebitage, including 22 cores, were recovered from 38LX5, and were sorted by raw material and decortication/reduction stage (Table 4). By both count (N = 1217, 44.16 percent) and weight (N = 1759.7 grams; 58.86 percent), quartz is the most common unmodified raw material found at the site. Rhyolite (N = 743, 26.96 percent) and chert (N = 629, 22.82 percent) were present in lesser quantity, while only small amounts of quartzite (N = 94, 3.41 percent) and slate (N = 73, 2.65 percent) were recovered. Examining the average size, and incidence by reduction stage, of each raw material indicates different patterns in the aboriginal use of quartz and, to a lesser extent, quartzite, when compared with chert, slate, and rhyolite.

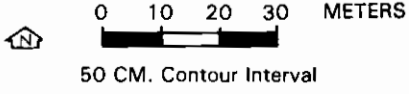
The average size of the quartz ( $\bar{x} = 1.45$  grams) and quartzite ( $\bar{x} = 1.36$  grams) unmodifieddebitage is considerably larger than that observed for chert ( $\bar{x} = 0.76$  grams), rhyolite ( $\bar{x} = 0.77$  grams), and slate ( $\bar{x} = 0.64$  grams). The incidence of later stage manufacturing reduction debris, as measured by percent of interior flakes and FBRs, is also somewhat higher for chert (82.4 percent), rhyolite (84.5 percent), and slate (98.6 percent) than for quartz (75.9 percent) or quartzite (78.7 percent), although the difference is not as pronounced as for average size.

The reduction/stage figures (Table 4) indicate that proportionally more later stage stoneworking activity employing chert, slate, and rhyolite is occurring on the site than occurs with quartz or quartzite. Part of this patterning is unquestionably due to the nature and natural occurrence of each of these raw materials. Quartz is a local, readily available raw material that occurs in cobble form in Fall Line river and stream channels, and on eroding surfaces. All of the other materials, in contrast, are imports from considerably greater distances. Much of the chert, for example, appears to come from the lower Savannah River in Allendale County, over 80 miles away, while the quartzite may have come from the lower Santee River. The slate and rhyolite probably



MAP SOURCE: C.A.I. Field Survey, 1978.

ELEVATION	56.0	57.0	58.0	59.0	60.0	61.0	62.0
FREQUENCY	1	1	1	1	1	1	1
DISTRIBUTION OF DATA POINTS	.....	.....	.....	.....	.....	.....	.....
SYMBOLS	.....	.....	.....	.....	.....	.....	.....



**SOUTHEAST COLUMBIA BELTWAY PROJECT**  
**SOUTH CAROLINA DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION**

**SITE 38LX5 BASE MAP**

**CONTROLLED GRAB SURFACE COLLECTION**  
**FIRE CRACKED ROCK – WEIGHT IN GRAMS**  
**FIGURE 17**



TABLE 4  
UNMODIFIED CORES AND DEBITAGE BY RAW MATERIAL  
SITE 38LX5: 1974-1978

	<u>Cores</u>	<u>Chunks</u>	<u>PDC</u>	<u>SDC</u>	<u>INT</u>	<u>FBR</u>	<u>Total Count</u>	<u>Total Weight</u>
Quartz	17	169	24	83	730	194	1217 ( 44.16)	1759.7 ( 58.86)
Chert	5	7	14	85	233	285	629 ( 22.82)	480.5 ( 16.08)
Rhyolite	-	21	10	84	453	175	743 ( 26.96)	574.4 ( 19.21)
Quartzite	-	6	6	8	72	2	94 ( 03.41)	128.1 ( 4.29)
Slate	-	1	-	-	67	5	73 ( 2.65)	46.7 ( 1.56)
Totals	22 (0.8)	204 (7.4)	54 (2.0)	260 (9.4)	1555 (56.4)	661 (24.0)	2956 (100.0)	2989.4 (100.0)

( ) = percent of each category

came from within the Piedmont; exploited sources for these materials are not currently known from within South Carolina.

The low incidence of early reduction stage debris over the chert, rhyolite, and slate assemblages is what would be expected if these materials were imported from a distance. Waste (cortical material) probably would have been removed near the source area, rather than carried long distances. The quartzite debitage, a material assumed to be extralocal in origin, does not conform to this general patterning, however, although it should be noted that the sample size is low. Some of the quartzite debris may therefore derive from nearby sources, rather than from the lower Santee. Orthoquartzites have been recorded as occurring within the South Carolina Piedmont (Overstreet and Bell 1965:22,25; Novick 1978), although aboriginally exploited sources remain undiscovered. Determining the origin of Fall Line area "quartzite", it should be emphasized, is an unresolved problem. The thin sectioning analyses reported here (Chapter 3), however, indicate that at least some of the site materials probably come from the lower Coastal Plain.

The 38LX5 quartz assemblage, with a moderate amount of chunk and cortical debris, suggests a local origin; some of the chunks may derive from bipolar cobble splitting, and the general difficulty of working this raw material. The average size of the debitage over each raw material category, particularly when coupled with the high incidence of FBRs in the chert (45.3 percent) and rhyolite (23.6 percent) assemblages, suggests that use of chert, slate, and rhyolite on the site may have been related to the final manufacture or upkeep of tools. The quartz and quartzite debitage, in contrast, suggests at least some local manufacture, although the moderate incidence of quartz FBRs (15.9 percent) also suggests some final manufacture/maintenance activity employing this material.

Comparison of plowzone and subplowzone proveniences at 38LX5 indicates some differential selection for specific raw materials over time (Table 2). Most quartz debitage (477.1 grams; 86.9 percent), for example, occurs in the subplowzone, suggesting greater use of the material during the Archaic than during the succeeding Woodland or Mississippian periods. Other raw materials are somewhat more evenly distributed, although the majority in every category occur in the subplowzone. Minimally, however, the stratigraphic evidence indicates decreased use of quartz, or increased use of other materials, in later times.

## BIFACIAL TOOLS

The 38LX5 assemblage included 25 arrows and fragments, 56 darts and fragments, and 50 bifacially worked artifacts and fragments that may have served as preforms, cutting/multi-task tools, or possibly finished arrow or dart fragments. Detailed measurements, and inferred typological affiliations for all of the specimens recovered in 1978, and most of the earlier forms, are included in the appendix volume. The use of the two hafted biface dart and arrow categories appears, on the basis of typology, to have separated Archaic and Early Woodland forms (Morrow Mountain, Savannah River Stemmed, Otarre Stemmed, Thelma) from later Woodland forms (Mississippian triangular, Uwharrie, and some small unknown stemmed forms). The condition of the arrows and darts at 38LX5 can be used to help infer site use patterns during these two periods, and the data do, in fact, suggest some apparent differences. Roughly equal numbers of dart bases (N = 15) and tips (N = 14) were found on the site, while twice as many arrow bases (N = 10) were recovered than arrow tips (N = 5). The small size of the arrow tips may have resulted in some loss during screening. The overall ratio of arrow bases to tips, however, suggests some breakage and tip loss away from the site, with bases brought back to the site and then discarded during rehafting operations (cf. Griffin 1974, House and Wogaman 1978). The dart fragment incidence, in contrast, suggests breakage and discard on the site itself.

Beyond size differences (darts are thicker, and usually larger and wider than arrows), some differences are apparent in the manufacture and use of the two tool forms. Quartz is the most common material selected in the manufacture of dart forms, occurring on 16 of 38 specimens (42 percent) for which raw material identification was possible (excluding the Feature 6 cluster, which was entirely of quartz). Only four of eighteen arrows (22 percent), in contrast, were composed of quartz. Arrow points were generally made on finer grained materials than darts, with nonlocal cherts or rhyolites the primary material selected. Use of these materials may have been required by the smaller size and generally better workmanship needed to complete an arrow as opposed to a dart. The working edge angles on the dart assemblage (N = 38;  $\bar{x} = 49.1^\circ$ ), taken halfway along the blade, are steeper than on the arrows (N = 18;  $\bar{x} = 41.1^\circ$ ), which also argues for a different functional use. The darts probably served as multipurpose tools, while the arrows may have served solely or primarily as projectile tips (cf. Ahler 1971).

Examining the 43 typologically identifiable bifaces recovered from 38LX5 indicates a clear pattern of selection for specific raw materials, at least for hafted biface manufacture, during specific time periods (Table 5). The Middle Archaic Morrow Mountain assemblage (N = 23) is almost entirely composed of quartz (N = 20; 87.0 percent), with only minor use of other raw materials, specifically chert (N = 1; 4.3 percent) and rhyolite (N = 2; 8.7 percent) indicated. Late Archaic and Early Woodland forms, (Savannah River, Thelma, Otarre, and Yadkin) in contrast, are less commonly made on quartz; rhyolite, chert, and quartz are all about evenly employed. Late Woodland and Mississippian types (Uwharrie, Pee Dee Triangular, Caraway Triangular) exhibit a similar pattern, with quartz and non-quartz materials about evenly employed.

The raw material selection preferences over time noted on the finished biface assemblage parallel the stratigraphic distribution of unmodified debitage on the site (Table 2). The high incidence of quartz usage for Middle Archaic Morrow Mountain forms, for example, is congruent with the predominantly subplowzone distribution of quartz debitage. The increased incidence of chert, rhyolite, slate, and quartzite debitage in the plowzone, correspondingly, is matched by an increased occurrence of these raw materials on typologically identifiable Late Archaic through Mississippian bifaces.

The "other" biface assemblage consisted of a variety of forms that included probable arrow or dart preforms (Figure 18:o,p,s) as well as combination cutting/scraping tools (Figure 18:t,v). The category was designed to accommodate bifacially worked specimens that did not fit formal hafted biface or other tool categories. Many of the specimens exhibited edge damage in the form of crushing, indicating use prior to loss or discard. The range in working edge angles over the assemblage (30 to 70°,  $\bar{x} = 49.0^\circ$ ) is similar to that observed on the dart forms, and argues for a similar multi-task functional orientation.

#### RETOUCHED FLAKES AND OTHER UNIFACIAL TOOLS

One hundred and thirteen unifacial tools were recovered in the 38LX5 assemblage, over all field seasons including 107 retouched flakes, four steeply chipped unifaces, one graver, and one spokeshave. Descriptive attributes for individual retouched flakes and the four steeply chipped unifaces are included in the appendix; Table 6 provides summary data for the 1978 retouched flake assemblage (N = 102).

TABLE 5

TYPOLOGICALLY IDENTIFIABLE HAFTED BIFACES BY RAW MATERIAL  
 SITE 38LX5: 1974-1978

Type	Raw Material						Total
	Quartz	Rhyolite	Chert	Slate	Quartzite		
Morrow Mountain I and II	20	2	1				23
Savannah River Stemmed				1			1
Thelma	2	3	1				6
Otarre	1	2	1		1		5
Yadkin	1	1	1				3
Uwharrie	1						1
Pee Dee Triangular					2		2
Caraway	1		1				2
TOTALS	26	10	5	1	1		43

TABLE 6  
SUMMARY DATA ON THE 38LX5 RETOUCED FLAKE ASSEMBLAGE

<u>Raw Material</u>	<u>Frequency</u>	<u>Total Weight</u>	<u>Average Weight</u>	<u>Average Edge Angle</u>	<u>Average # of Edges</u>
Quartz	55	165.6	3.0	41 <sup>o</sup>	1.8
Chert	39	109.7	2.8	33 <sup>o</sup>	1.9
Slate	3	49.3	16.4	49 <sup>o</sup>	2.3
Quartzite	2	39.7	19.9	44 <sup>o</sup>	2
Rhyolite	2	14.1	7.1	42 <sup>o</sup>	2.5
Other	1	64.3	64.3	40 <sup>o</sup>	2
Total	102	442.7	4.3	38 <sup>o</sup>	1.9