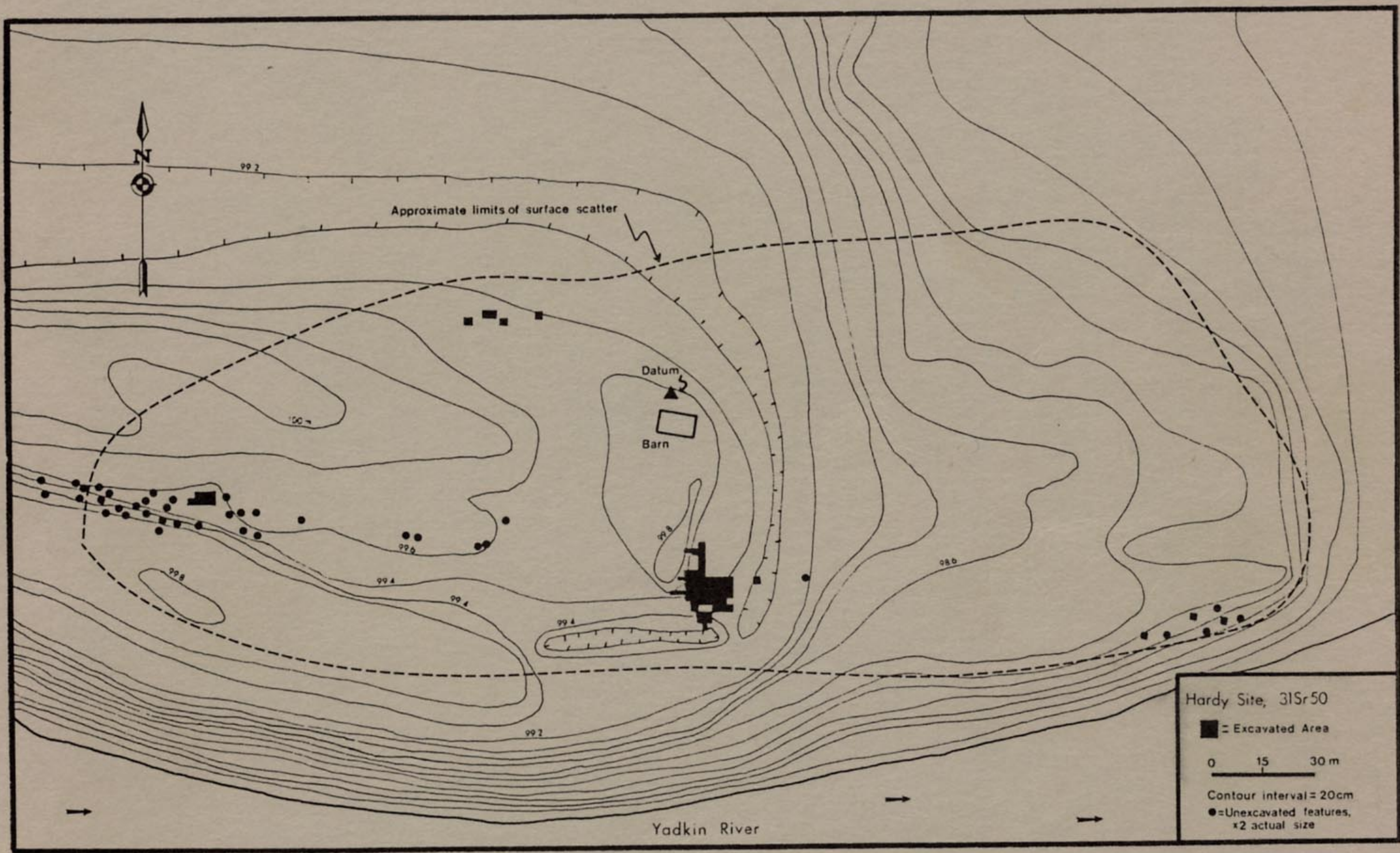
ARCHEOLOGICAL INVESTIGATIONS IN THE YADKIN RIVER VALLEY 1984-87



by

J. NED WOODALL

with a contribution by

DAVID S. WEAVER

WAKE FOREST UNIVERSITY
ARCHEOLOGY LABORATORY

1990

NORTH CAROLINA ARCHAEOLOGICAL COUNCIL
PUBLICATION NO. 25

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December 1988

PARTIALLY FUNDED BY A SURVEY
AND PLANNING GRANT FROM THE NATIONAL PARK SERVICE
ADMINISTERED BY THE NORTH CAROLINA DIVISION OF
ARCHIVES AND HISTORY.

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ABSTRACT

Excavations at two Late Woodland sites in the Yadkin River valley of North Carolina yielded data on numerous features, especially trash pits and burials. At least four components are represented in the two sites, ranging from ca. A.D. 1000 to A.D. 1600. Ceramic analysis indicates several trends through time suggesting an increasing emphasis on cooking (as opposed to storage) and on the use of small decorated bowls to reflect increasing social differentiation among the Yadkin villagers. Both processes are viewed as consequences of an altered subsistence pattern responding to the availability of domesticated beans and a minor climatic shift. Lithic raw material distribution appears to conform to two models, one operative below the Great Bend shoals of the river, the other above. Additional data on settlement patterns and lithic resource procurement are provided by a site survey program covering 13km in Surry and Yadkin counties. The survey located 42 archeological sites, of which 13 are recommended for further test excavations.

FOREWORD

This report concerns archeological studies conducted in the Great Bend area of the Yadkin River valley in 1984, 1986 and 1987. These investigations are a continuation of a long-term research project begun in 1973 with the initial excavations at the Donnaha site (31Yd9) in Yadkin County. Additional studies along the Yadkin River Valley are planned for at least the next 10 years. The general focus of the research is the Late Woodland period of A.D. 1000-1600. In the Yadkin Valley those 600 years are characterized by a settled mode of life, with the majority of the population living in small towns and hamlets scattered up and down the floodplain of the river and its tributaries. Inhabitants of those villages practiced an economy based on a mix of hunting, gathering of wild foods, and cultivation of domestic plants, including corn and squash and, after A.D. 1200, beans. In many ways the Great Bend villagers can be considered a conservative lot, at least when compared to their contemporaries to the south and west. They produced no earthen temple mounds as seen in the lower Yadkin drainage at the Town Creek site or in the mountain counties of North Carolina; they did not participate to any appreciable extent in the trade or production of exotic commodities required by more complex cultures to mark the superior status of certain social ranks; and they definitely did not create social systems with a class of privileged persons to administer a specialized economy, as was the case elsewhere in the Southeast. What they did was to maintain a stable adjustment to their surroundings in respect to the basic economic pattern, while most of the Southeast was undergoing the most dramatic cultural changes in its long history. Our research has been directed at understanding this remarkable system, its internal dynamics and its relationships to external cultural systems.

An earlier study discussed some of the processes that produced the Late Woodland pattern described above, including its economic and social stability (Woodall 1984). In the few years since we have carried out three more seasons of fieldwork and thousands of hours of data analysis, and now see that the cultures were not completely immune to change. There were alterations over the 600 years, yet no substantive shift in the basic cultural structure, as though the pattern established by A.D. 1000 was only being fine-tuned in accordance with subtle changes in the natural and human environment. An example of this is provided later in this report through inferences from observed changes in ceramic attributes.

Archeology measures change through space as well as through time, and the Great Bend project has revealed variation during the Late Woodland in regard to site location. Villages located below the bend and above it show some intriguing differences in village size, burial practices, pottery decoration and the kinds of lithic raw material present on the sites. Those may be due to differences in past behavior patterns or to differences in the preservation of the archeological remains, and this report details some of our efforts and results in understanding the causes of the variation. Our attention is focused on three major factors that likely were influential: (1) the shoals of the Yadkin River, and the obstacle they created to easy communication; (2) the differences in topography of the floodplain habitat, with relatively large bottoms below the shoals, and small ones above; and (3) the proximity of the Late Woodland villages above the shoals to the distinctive contemporary cultures of the Appalachians. Interpretations offered in this report invoke the first two factors but not the third, because to date we have not found any evidence of contact with the prehistoric Cherokee of the Blue Ridge, or with the poorly understood cultures of the upper Catawba River drainage and the New River valley.

Because the Great Bend research is oriented toward the Late Woodland, there is little discussion of the preceding culture history of the region. The study area clearly has a long history; distinctive artifacts of the Archaic stage (8000 B.C.- 300 B.C.) occur in our Woodland sites either because of a previous occupation there or because Late Woodland Indians collected those tools and carried them onto the sites. One clear instance of the latter practice is seen in Burial 64-7 at the Hardy site. But apart from the sporadic occurrence of Archaic stage spear points on Woodland age sites, the Archaic has little relevance to the study presented here and is not reviewed in any detail; an account can be found in Coe's classic study (1964).

In the Yadkin Valley the Woodland period begins ca. 300 B.C. with the initiation of ceramic production. The Woodland traditionally is divided into three sub-periods--Early, Middle, and Late--and the Early Woodland is the least known of these. Present evidence suggests it was little different from the preceding Archaic save in the use of pottery, but by A.D. 600 a significant change had occurred. The sedentary life-way mentioned above had become characteristic of the region and the pottery also had changed somewhat from the Early Woodland Yadkin Series to the Middle Woodland Uwharrie Series. By A.D. 1000 further evolution of pottery making resulted in production of the Dan River Series, marking the beginning of the Late Woodland. A discussion of the ceramic changes, and the inferences they allow, is provided in Chapter Four of this report. Other accounts of the northwest Piedmont's Woodland experience can be found in Coe (1964), Abbott et. al. (1986) or Woodall (1984). While this report was being prepared a companion study was being conducted by Rhea Rogers Marshall on the Hardy site ceramic inventory. Her work (1988) is cited heavily here; it presents additional detail on the pottery assemblage as well as the history of the Hardy site and environs.

Finally I alert the reader that this report was compiled for use by my professional colleagues and also by the many lay persons who have shown interest in our work generally and in the McPherson and Hardy sites in particular. It is not an easy task to satisfy both groups. For professionals I have prepared the requisite description of what was found, to be used as a data corpus for comparative studies. Also the inferences drawn are directed toward current interpretive questions of professional archeologists and these I trust will stimulate debate and direct additional research efforts. The lay reader in turn will find portions of the report unduly tedious and overly detailed and this I regret without apology, because knowledge of the past is built upon such minutiae. The impatient reader can safely skip the descriptive sections and learn the gist of the research by consulting the narrative discussion.

J. Ned Woodall
Wake Forest University
December, 1988

Acknowledgements

Any successes of the Great Bend research are due to the interest, support, cooperation and hard work of dozens of people, only some of whom can be mentioned here. Prominent among supporters are the Surry County Historical Society and the Surry County Committee for America's 400th Anniversary, which provided us with funding, logistical aid and their morale-boosting interest in our work. In particular I thank Marion Venable for her continuing assistance during the two seasons of Surry County field work and her liaison work with the historical society. Additional funding was made available by the National Park Service through a 1987 Survey and Planning Grant, administered through North Carolina's Division of Archives and History. Wake Forest University provided a research leave for me, and the University's Graduate Council granted funds to assist in preparation of this manuscript. Additional funds were provided by the Lindsay P. Morris Memorial Fund for Archeological Studies.

The field work was only possible because of the interest of the landowners. Betty and Grover McPherson, Polly and Howard Hardy, and Graham Atkinson gave permission for our use of their property, and numerous landowners in Surry and Yadkin counties allowed access to their land by our survey crew. Among the latter group I would single out Billy Joe Smith for his help in contacting his neighbors on our behalf and generously assisting our survey party in compiling lists of landowners and leasees.

The 1984 field work at the McPherson site was done by John Davis, Barbara McCann, Owen Murdock and Rhea Rogers; my field assistant was Michele Vacca. In 1986 the Hardy site excavations were directed by Cheryl Claasen and me, again with Michele Vacca assisting. Student workers were Tammy Church, Kelly Collis, Jeffrey Crews, Sarah Horton, David Johnson, Christopher Kelly, Lee Little, Walter Norris, Lyle Torp, Howard Weaver III, Sean Wehunt, David Wildman and Matthew Wilkerson. In 1987 the field crew was Margaret Brown, Michael Featherstone, Anne Lowry, David Midyette, Jolie Phifer and, part-time, Georgianne Bogdan and Betty Veatch. That year the survey crew was John Davis and Rhea Rogers, both of whom also served as field assistants during the excavations.

The laboratory staff assisting on various phases of the analysis and report preparation include Lyle Torp and David Midyette (artifact cataloging), John Davis (computer work and photography), Rhea Rogers (ceramic analysis), Jack Secrest (lithic analysis), Erica Sanborn (laboratory management) and Dana Ender and Cristal Robinson (word processing). I am especially mindful of the contribution of Ms. Rogers to the interpretations offered here regarding ceramic change and the cultural processes responsible. Our many hours of discussion and debate on this topic produced these results, a joint product.

Dozens of others have assisted in various ways providing services, information and the pleasure of their interest in our work. I am grateful to Charlie Hardy, Roland Callicut (and all that Gatorade!), John Mitchell, Henry Shore, Ruth Minick, Ray Kuhn, Mark Mathis and Steve Claggett. Finally, wherever they are, I remember with affection our Siloam compadres Jose', Little Jose', and Adrian. Vayan con Dios, amigos.

CHAPTER ONE: INTRODUCTION

This report is divided into five chapters, each presenting a different facet of Wake Forest University's continuing research on the Great Bend region of the Yadkin River valley. The following two chapters contain reports of excavations conducted at two Late Woodland sites in 1984, 1986, and 1987. The fourth chapter is a presentation of various models, hypotheses and an occasional speculation concerning prehistoric events and trends affecting aboriginal groups in the Great Bend region. The final section details the results of an archeological survey completed in 1987 in Surry and Yadkin counties.

Background. Archeological research by Wake Forest's Archeology Laboratories began in the winter of 1973 with initial excavations at the Donnaha site (31Yd9), in Yadkin County (Figure 1; Woodall 1984). Donnaha is a very large Late Woodland site with a thick midden and numerous features. Excavations were continued in 1975 and 1982, providing data on material culture, human remains and subsistence patterns (Woodall 1984; Mikell 1987; Hancock 1986; Vacca, in preparation; Phillips and Weaver 1979). In recognition that the Donnaha site needed to be understood in a larger regional context, a survey of the Yadkin Valley was begun in 1974 and extended in 1975, reaching from the Davie County line upstream to the mouth of the Little Yadkin River (Fig. 1; Woodall and Claggett 1974; Woodall 1975). The survey results, coupled with data from the Donnaha site, allowed several cautious interpretive statements regarding regional Late Woodland trade networks, social organization and settlement systems (Woodall and Abbott 1983; Barnette 1978). One pattern detected by the survey was a bimodality of site size during the Late Woodland, with large sites like Donnaha appearing at 6-12km intervals and small "hamlets" interspersed. In order to gain a better understanding of the contents and structure of these hamlets, and to allow meaningful comparisons with sites like Donnaha, excavations at a typical small site were carried out in the summer of 1984. Results of that work are presented here as the McPherson site excavations. By the summer of 1986 our attention was focused on a section of the Yadkin Valley above the Donnaha site and above the Great Bend proper, in southern Surry and northern Yadkin counties. Previously, all our survey and excavation had occurred below the mouth of the Little Yadkin River, with the Donnaha site very near

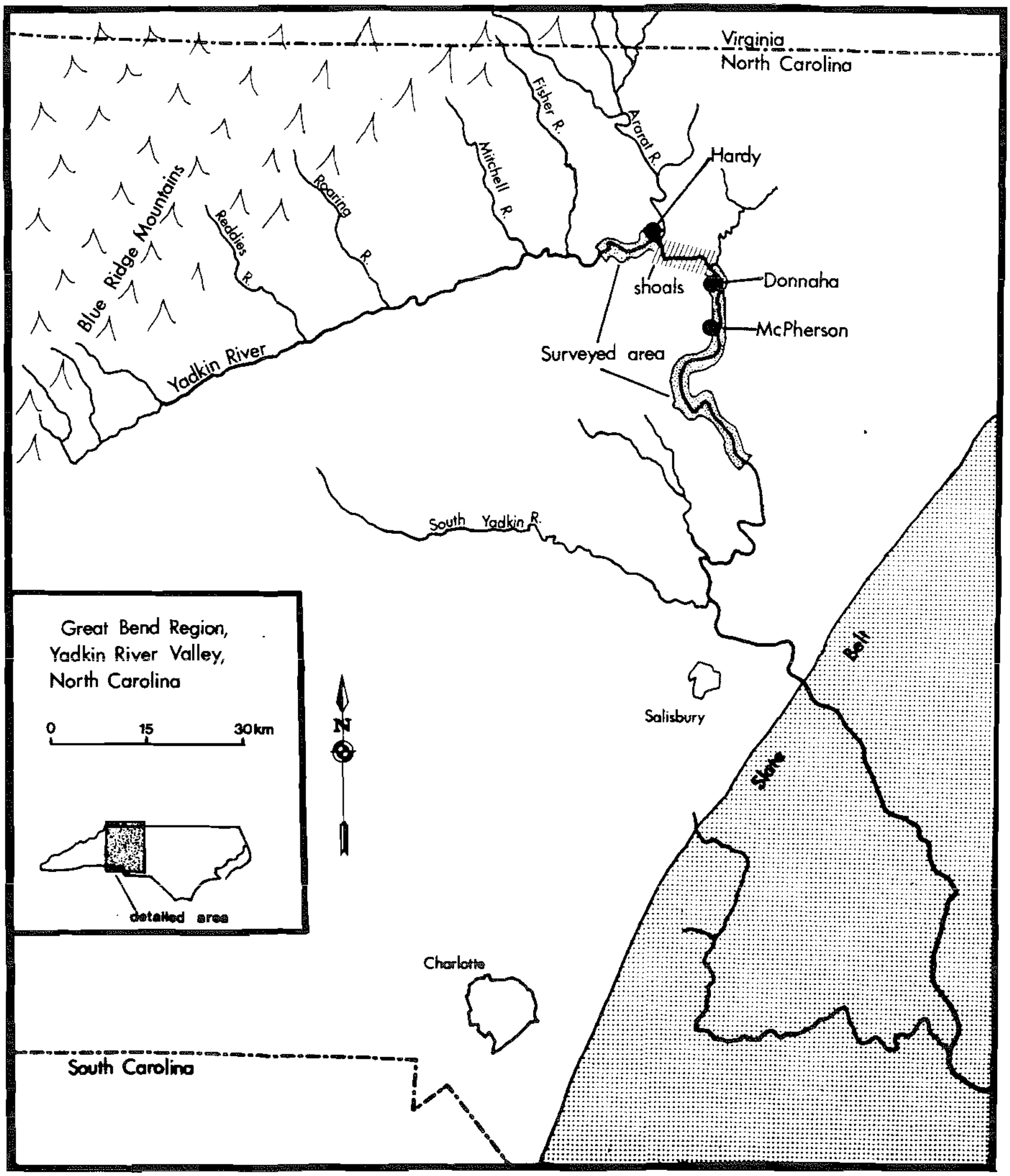


Figure 1. Great Bend, Yadkin River Valley; surveyed areas and excavated sites.

the upstream terminus of our study area. The exchange network of which Donnaha was a major component clearly was oriented down river of that site. The acquired lithic raw materials were quarried some 40km or more downstream, the marine shell found at Donnaha originated to the east, and certainly the stylistic elements of Donnaha ceramics found close affinity with the sherds of other Late Woodland sites of the downstream survey area. All of these patterns are dealt with in more detail in Chapter Four of this report; at present it is enough to understand that Donnaha has a distinctly "downstream" cast to its material culture, reinforcing the view that it was part of a system integrated economically and perhaps socially which extended some 25km down the river (the extent of our survey). Above Donnaha and the Little Yadkin/Yadkin confluence the river valley is markedly constricted, and its waters are made nearly impassable for much of the year by shoals and rapids. These shoals are reduced above the mouth of the Ararat River, where we began work in 1986.

One of the general research questions guiding the project was "How does the natural barrier to riverine transport (and in fact to pedestrian movement, at least if one attempts to follow the river closely) affect social intercourse between sites upstream and downstream of the shoals?" More precisely, did the exchange system which operated to introduce high-quality lithic raw material to Donnaha penetrate the shoals, or did there exist an economic barrier? How did the shoals affect the distribution of stylistic elements on ceramics, if at all? If the Surry County riverine sites were not part of the Donnaha exchange sphere, did those sites interact with other source areas, and if so, which? Finally, to what extent did the distinctive archeological complexes of the Appalachian Mountains affect the piedmont Siouan cultures of the upper Yadkin Valley?

These questions are refined and treated later in this report using data from our Surry/Yadkin county survey and excavations. In order to gather those data, a Late Woodland site was selected in 1986, located just above the Yadkin/Ararat confluence. This locale, the Hardy site (31Sr50), was partially excavated in the summer of 1986 by a joint Appalachian State University-Wake Forest University field school. In the summer of 1987 an additional 4 1/2 weeks were spent there by the Wake Forest field school. As was the case with the Donnaha site work, it was obvious that a larger context was essential for understanding the Hardy site. In 1987, concurrent with the field school, a survey was undertaken covering the Yadkin floodplain from the Ararat upstream to the village of Rockford, a total of 13km. That survey was partially funded by a Survey and Planning grant from the Department of the Interior, National Park Service, and administered by the North Carolina Division of Archives and History. The results are reported in the final chapter of this report.

The Yadkin River. The archeological remains and events which produced them occurred along the Yadkin River, and much of the explanation offered for those events focus on the fluvial and geological character of the Yadkin; it now seems that the nature of the stream has strongly conditioned the social makeup of its Late Woodland people. The river heads in Watauga County--actually, in the parking lot of an inn at Blowing Rock (Rogers 1982)--on the eastern face of the Blue Ridge Mountains. The river then flows to the east north-east, following the Brevard Fault marking the interface of the Blue Ridge Belt and the Inner Piedmont Belt. This uncharacteristic route (for southeastern rivers are supposed to flow southeast) changes at Rockford, where the Brevard Fault divides and forces the river directly through the Sauratown Mountains Anticlinorium, resistant rock of metagraywacke and muscovite-biotite schist (Brown 1985). Floodplains, composed of alluvium of the Congaree (Davis and Goldston 1937) and Buncombe series (Roger Leab, personal communication) are narrow and "patchy" in this section, and absent altogether in the extreme southeastern corner of Surry County, the area of the shoals.

Shoals in the study area appear at several points, especially at Rockford and Siloam, but they are most abundant and difficult to navigate along a 5km reach immediately above the river's prominent bend to the south (Fig. 1). Currently part of this area is encompassed within Pilot Mountain State Park. Steep valley edges encroach on the stream here, and the river bed is strewn with boulders, shifting sand bars and flotsam. At low water levels the river is almost impossible to negotiate, and at high water the sector is a churning, swirling torrent which would be equally difficult and doubly dangerous. In the early 19th century a canal was begun to circumvent the shoals and allow commercial river travel to continue upstream, but the attempt was ultimately abandoned.

Two hydrographic consequences of the shoals are significant for the area's archeological remains. When the river is in flood stage the constriction of its bed acts as a partial dam, forcing water over the narrow bottomlands of Surry and northern Yadkin counties. Because the floodplains are narrow and broken by ridges extending into the bottomland, the water velocity is not always reduced when the river leaves its banks. Rather than the even sedimentation seen farther downstream, the result is increased erosion of the alluvial soils (and their archeological contents) in some areas, filling in others nearby. Exceptions occur where there is the occasional relatively broad floodplain, especially if a corresponding floodplain lies opposite to accommodate some of the flow. The setting of the Hardy site is one example of this happy combination. Local farmers complain that construction of the W. Kerr Scott Dam at Wilkesboro has exacerbated the ongoing cutting and filling of the floodplains, whereas the

U.S. Water Resources Council contends that it has reduced flooding (U.S. Water Resources Council 1981:54). In some cases local farmers regularly use bulldozers to remove heavy sand deposits from their fields following a flood, pushing the alluvium into nearby low spots gouged by the same flood. Certainly the rate of erosion and filling is much higher now than in the prehistoric past due to extensive clearing and tilling of the uplands (Trimble 1974). Many archeological sites in our survey area clearly have been severely damaged, destroyed, or so deeply buried as to escape detection.

A second consequence involves the floodplains and sites below the shoals, where floodplains generally are broader and less frequently interrupted by encroaching ridge toes. Here the more open bottoms accept the alluvium carried in suspension through the shoals, and little erosion occurs except when a temporary obstacle occurs in the river or on its banks (e.g. the erosion at Donnaha caused by the ferry-keeper's house; Woodall 1984). To summarize, the 10km. above the shoals exhibit floodplains subject to rather drastic episodes of cutting and filling; the downstream 10km are characterized by slowly aggrading floodplains with only occasional cutting.

Physiography and Geology. The western or upstream portion of the study area, ending at the Surry County village of Rockford, is only 20km from the Blue Ridge escarpment, which is easily visible on a clear day rising dramatically above the more gently rolling hills of the western Piedmont. The Blue Ridge, composed of ancient sedimentary and metamorphic rock, abuts the Inner Piedmont Belt along the Brevard Fault (and the Yadkin River--see above). The western edge of the Piedmont is characterized by metamorphic rock, chiefly schist and gneiss (excepting the shoals area--see above). The northeast to southwest-trending Blue Ridge cants down to the northeast, while the Piedmont slopes down to the east. Surry County, especially along its western margin, is the most elevated and most rugged part of the Piedmont province. The Blue Ridge escarpment rises 2000 feet above the Piedmont at the interface, and here the slopes range from 70 to 90 percent. The northwestern Piedmont only averages about 1000 ft. in elevation (Rockford=900 feet; Siloam=900 feet) and the Yadkin leaves Surry County at 800 feet above sea level. Thus while the western Piedmont does exhibit sharp relief, especially along the many watercourses, the elevations vary (generally) less than 100 feet. Needless to say the different elevations of the Blue Ridge and the inner Piedmont dramatically affect temperature and rainfall (Davis and Goldston 1937:3-5). The relatively low relief of the Piedmont has allowed the Yadkin, except where constrained by atypical geological formations, to meander slightly and create its floodplain of narrow, patchy bottomlands along either bank. The farther downstream one goes the less relief is present, and thus the wider the floodplains. This is apparent again in comparing the portions of the study area lying above and below the shoals.

There is one rather particular feature of the area's geology that looms large in its archeological record, namely the availability and distribution of natural stone suitable for stone tool production. All Late Woodland sites of the area evidence at least two gross classes of raw material in use. One is quartz, usually white quartz which outcrops widely and frequently in veins across most of the Piedmont and may be considered ubiquitous in its availability (Goodyear, House and Ackerly 1979:42). Although usually readily available, quartz presents problems for the tool maker in that its crystalline structure prevents, or at least inhibits, the conchoidal fracturing that allows predictable results in the knapping process. While some perfectly adequate tools can be produced, small, thin and symmetrical items--particularly projectile points--are difficult or impossible to make unless the quartz is unusually free of internal defects and especially fine-grained (House and Ballenger 1976:126, 132). Abundant in Late Woodland sites also is stone of volcanic origin including rhyolite, dacite, andesite, various vitrified tuffs, fine-grained basalts and argillites. These materials vary in regard to degree of crystallization, metamorphism, inclusions and of course chemical structure, but they share a common origin and are here grouped as felsite or felsic rock. Many such deposits are well-suited for tool production, free of the undesirable qualities of the quartz. They are, however, limited in their natural distribution, being confined to the Carolina Slate Belt of the eastern Piedmont, a smaller area in the extreme northwestern corner of the state (the Mt. Rogers area) and the Grandfather Mountain area just west of the Brevard Fault, in Watauga County at the headwaters of the Yadkin River (Rankin 1967; Brown 1985; Ayres 1983:2). In addition, other sources nearer the western portion of the study area are reported from southern Virginia (John D. Davis, personal communication). Most Late Woodland sites of the area include minor amounts of chert, including chalcedony and jasper. At least some of the chert had its origin in the Ridge and Valley Province west of the Blue Ridge Mountains, while the jasper occurs sporadically in isolated areas of the Piedmont and elsewhere. The nearest known source of jasper is in the Danbury vicinity (Stokes County, N.C.) 40km northeast of the Great Bend. There are several known outcrops of soapstone in the study area, in the flanking uplands of the river valley (Woodall 1984:8). Finally, quartzite, used primarily in an unaltered form and usually appearing in Late Woodland sites as fire-cracked rock, is generally available in the bed of the Yadkin and its tributaries.

Reconstruction of the biotic environment maintained in the Great Bend area in Late Woodland times recently has been reviewed by Mikell (1987) and his excellent summary will not be repeated here. Suffice it to say that between A.D. 1000-1500 there existed a wide variety of plant and animal resources, many now extinct in the area, along with the known cultigens maize, beans, squash (or gourd) and sumpweed. Major faunal species represented in Late Woodland sites are white-tail deer, wild turkey, box turtle, fish and fresh-water shellfish.

To summarize the above discussion, the Great Bend area divides into two zones, one below the shoals of the Great Bend, the other upstream of the shoals. Late Woodland sites below the shoals exhibit a rather high degree of intersite similarity in ceramic style, and all appear to be part of an exchange network involving the importation of high-quality felsic raw material from the Carolina Slate Belt. Whether the shoals acted as a barrier to commodity exchange and/or other forms of cultural contact was the general question we sought to answer in 1986 and 1987, and the resultant data and results are presented in the pages following.

CHAPTER TWO: THE McPHERSON SITE, 31Yd41

Location and Site Description

The McPherson site, like most Late Woodland sites in the study area below the shoals, lies on the right or west bank of the Yadkin in Yadkin County. On this side of the river, the bottomland forms a narrow (ca. 200-300m), sinuous band from the southern terminus of the Donnaha bottomland tract 4km above McPherson to a point 7km south (downstream), divided into individual plots by tiny spring-fed tributaries from the uplands. One such tributary, deeply entrenched, marks the northern boundary of the site (Fig. 2). South of the site some 500m, in the same bottom, is a very large Late Woodland site known for many years by collectors as Steelman's Bottom or Steelman's Place (Rights 1957:Pl. 30). Conversations with local informants Robert Matthews and the late Henry Cornelius indicate that the large site nearby has been pillaged badly during this century, most recently with the aid of mechanized earth-moving equipment.

In the upper end of the bottom, the McPherson site is buried in a natural levee of Buncombe sandy loam which now stands 1m above the backswamp. The levee declines regularly on both sides, and the Yadkin River flows 30m east of the eastern site margin, the river following a course nearly due south. When originally discovered by the 1974 survey the only surface indication of the site was along the backswamp slope of the levee where overbank alluviation has not buried the midden. Subsequent excavations and subsurface testing defined the buried site; it is 35m north-south and 45m east-west, an approximate oval straddling the levee crest and totalling approximately 1300 sq. meters or .13ha. Because the site is buried, and its limits defined by discernable midden staining in the auger tests, this is a conservative estimate; if it had been exposed, plowing and fluvial processes would have produced a larger scatter, but by any measure McPherson qualifies as a small site, a second mode of our bimodal site patterning in the study area.

The sandy soils of the levee yield to heavy clays and poorly drained soils of the backswamp, here arrayed in a strip 100m in width paralleling the levee, and together they form a total floodplain width of 260m (Curle 1962:Pl. 21). The backswamp today is heavily wooded, as are the banks of the tributary to the north and the Yadkin to the east, giving an effect of a narrow cul-de-sac of loose sandy alluvium. Beyond the backswamp rise steep hills with soils of the Cecil series, now badly gullied in many areas. Preservation of organic detritus in these soils is generally

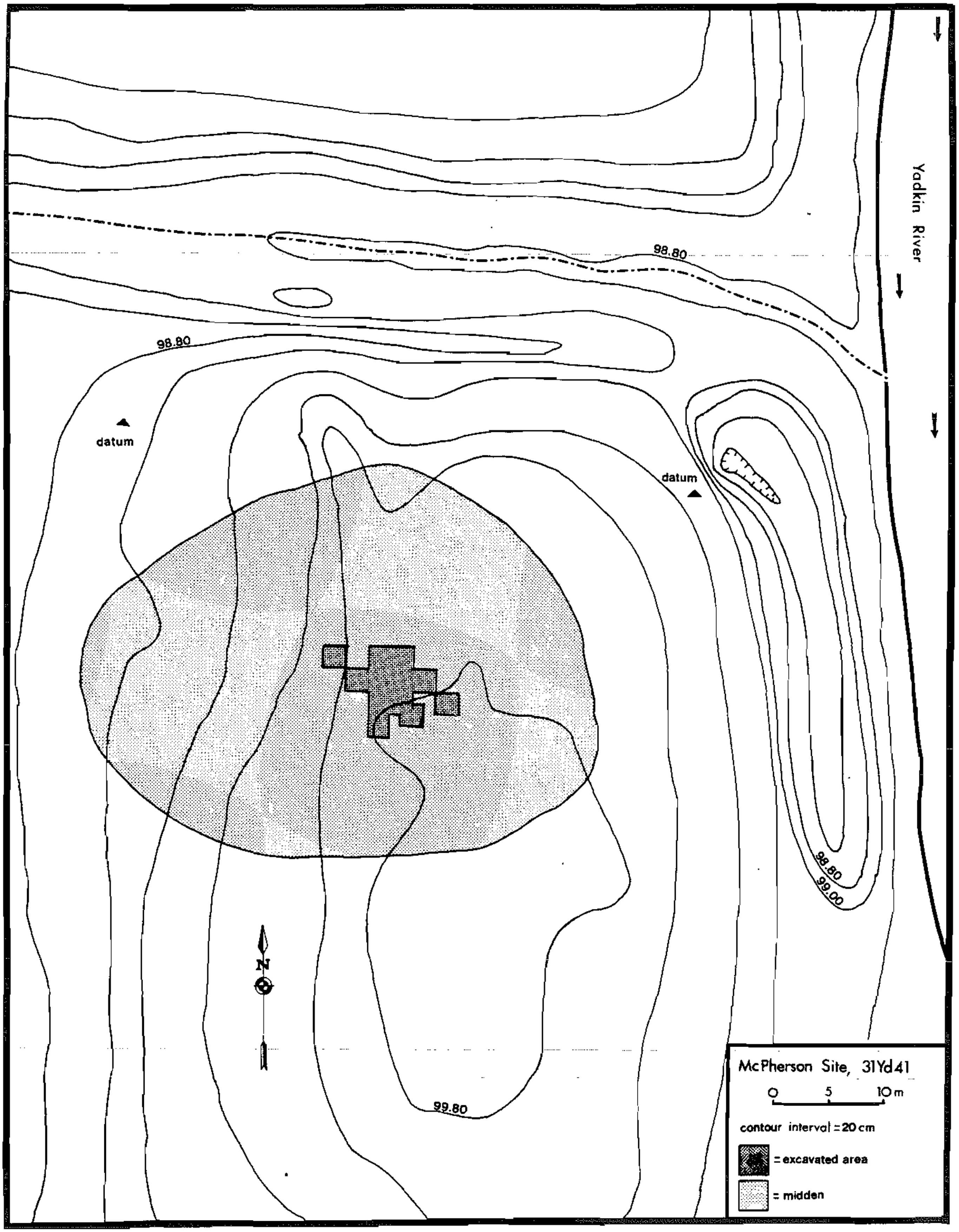


Figure 2. The McPherson Site, 31Yd41. Site boundaries and excavated area.

poor. Seventeen soil samples from various elevations in the excavation units were tested for pH, and for most of these (n=15) the readings ranged from 5.1 to 6.5. In only two instances did the readings register above 7.0; once from the top of the midden (pH 7.4) and once, more predictably, in pit 11-7 below the shell lens (pH 7.4).

Methods

Prior to excavation a grid system was established with the central stake designated N100E100(m), and two permanent datum points were set in the wooded area around the site. These served as grid reference points as well as vertical datums, with datum 1 designated as 100m elevation. The basic excavation unit was a 2m square, and ultimately $47m^2$ was excavated, ca. 3.5 percent of the site area (Fig. 2). The culturally sterile, plowed overburden was removed without screening. Once the top of the midden was encountered the soil was removed in 15cm levels and passed through 1/4 inch mesh by dry screening. Features--primarily aboriginal trash pits--were removed as separate units either as a single provenience or, in the case of internal stratigraphy, as several units. Soil was taken from these pits--generally a 20-liter sample--for flotation processing, and additional samples were obtained from various levels of the midden. All features, unit floors and wall profiles were mapped to scale and photographed, and a contour map of the site also was constructed. All specimens and documentation currently are housed at the Archeology Laboratories of Wake Forest University.

Stratigraphy

The typical wall profile of a 2m square at the McPherson site would reveal a 40-50cm. deposit of sterile sand containing the modern plow zone, resting on a very dark midden stratum ca. 45cm thick, which in turn grades into a sterile brown sandy loam (Fig. 3). Below the loam are rather regular strata of sandy clays and silty sands and clay, all culturally sterile, obvious products of alluviation. Excavation to 2.2m revealed no cultural materials below the midden except in aboriginal pits clearly originating in the midden or in the occasional animal burrow (Fig. 4). The midden has not been plowed except in a few instances where very shallow plow strike marks were observed. More commonly, the plow zone was separated from the midden by a 5-15cm thick band of tan sterile sand.

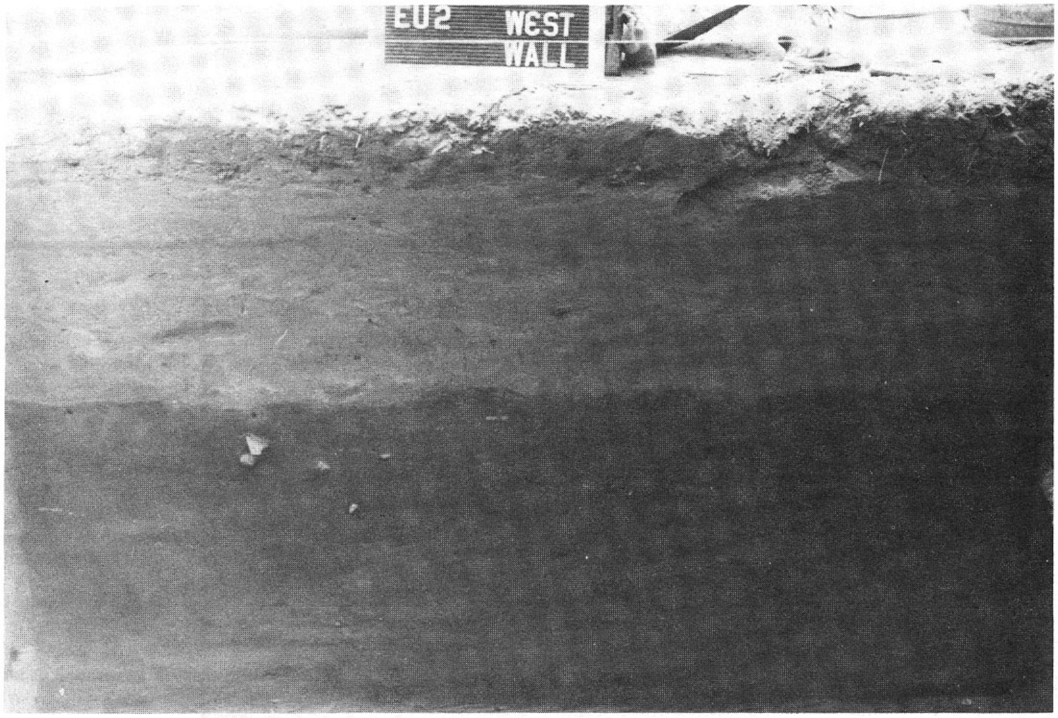


Figure 3. Profile of the west wall, E.U. 2.
The McPherson Site, 31Yd41.

The top of the midden soil follows the current surface relief, sloping gently down toward the backswamp area. This indicates that a levee was present during the aboriginal occupation, though 50-100cm lower than today. The ancient levee was built of a more loamy sand, suggesting the overbank flooding was more gentle, and materials in suspension were finer than the coarse sands laid down during the historic period. Within the midden the densest concentration of artifacts was in the upper 15cm; below this artifacts decline sharply in frequency but there is no correspondingly abrupt change in soil color or texture. This lack of precise correspondence between artifact density and soil staining in turn suggests that the occupation occurred on a soil of high humic content, probably produced by an alluvial thicket or alluvial forest (Duke Power 1974:2.7-2; Oosting 1942). If the midden stratum is in part a paleosol, then the site limits as determined by soil color may be a product of preservation. The present site may be a remnant of a much larger occupation, the evidence of which has been destroyed by river action. I do not believe this is the case, but additional controlled excavation along the estimated site perimeters would be required for confirmation.

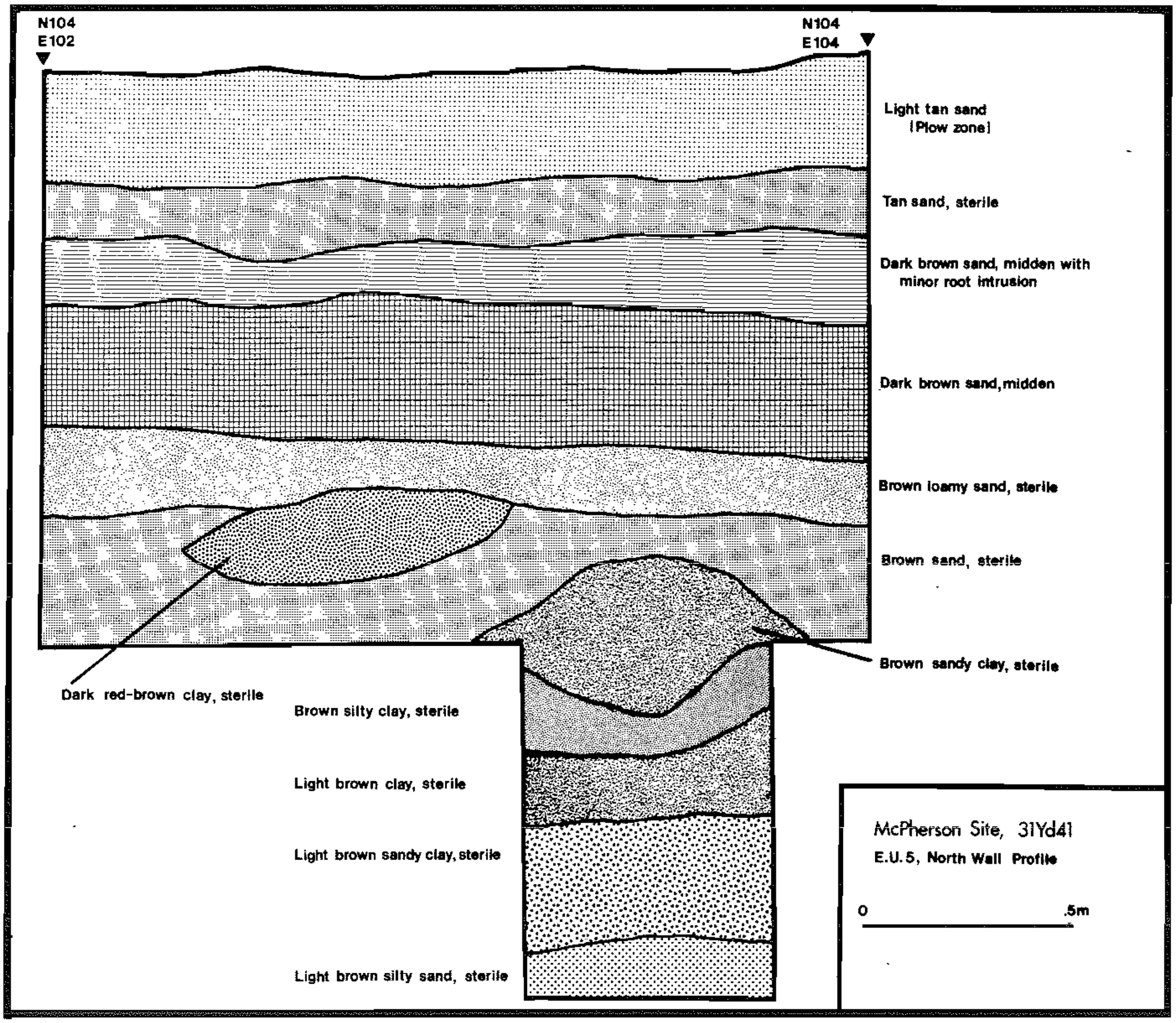


Figure 4. Profile of the north wall, E.U. 5.
The McPherson Site, 31Yd41.

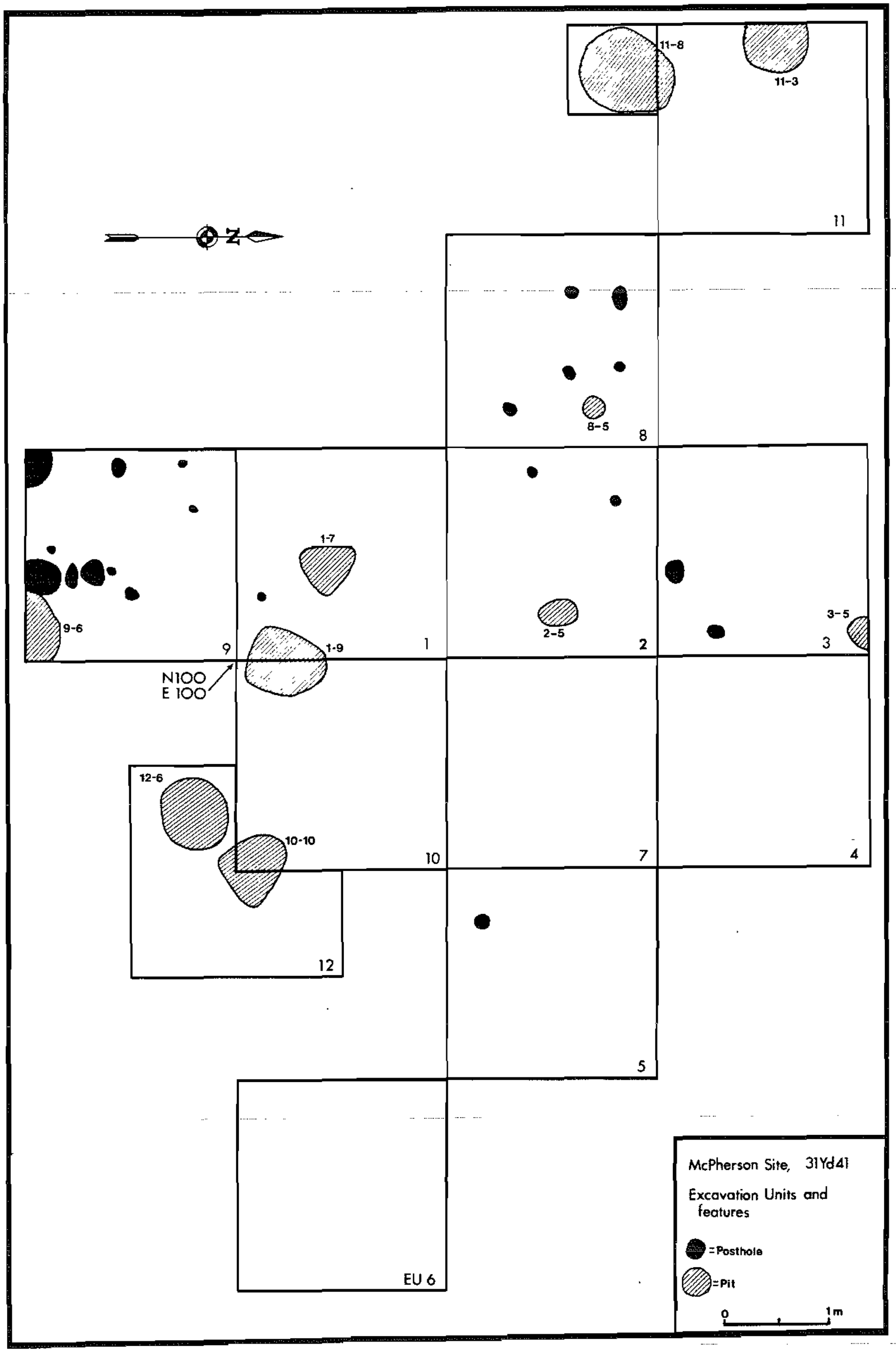


Figure 5. Excavation Units and features.
The McPherson Site, 31Yd41.

Feature Descriptions

The McPherson site features consisted of postholes and trash pits (Fig. 5), the latter varying in their size and contents. The so-called "trash pits" are a common part of Piedmont Late Woodland sites and thus far have defied explanation. They may be abandoned storage pits later filled with refuse (although there is very little evidence for this) or they may indeed have been excavated as trash receptacles (Woodall 1984:56-57; Dickens 1985). Detailed study of the trash pits at the Donnaha site has been largely unsuccessful in creating new, or adequately testing old, middle range theoretical concepts relating this archeological phenomenon to particular behavioral sets. One exception is some success by Vacca (n.d.) in detecting evidence of seasonality in refuse-filled pits. As did Dickens (1985), she found that most of the refuse-filled Donnaha pits selected for study were probably filled in the late summer or fall. To add the McPherson pits to the regional data base, a short description of these features follows.

Pit 1-7. Cordiform in flat plan, then changing to circular, this feature exhibited slightly sloping sides and a flat bottom. It was first detected at 80cm below surface as mottled soil in the dark midden matrix, and bottom was reached at 105cm below surface. The pottery from this pit is Dan River series, var. Dan River (Gardner 1980), and at least one rimsherd measures 8cm x 10cm, suggesting it was deposited directly in the pit (not the midden, where trampling would have reduced its size). This same specimen has its lip created by grinding an old break, apparently along a coil line, an example of aboriginal recycling (Fig. 6p). The animal bone assemblage contains deer and box turtle, including a complete carapace with the ribs and vertebrae abraded to fashion a "turtle-shell bowl," a common artifact on Late Woodland sites of the area..

Pit 1-9. This pit was oval in flat plan with strongly insloping sides and a flat floor, ending at 110cm below surface. The pit was first observed at 88cm below surface when a concentration of bone was detected. Ceramics are Dan River var. Dan River. The animal bone is deer, including several teeth articulated with the maxilla; charred hickory nut shell also is present. As before, several of the sherds are unusually large, suggesting deposition in a pit directly after breakage.

Pit 2-5. An oval, basin-shaped pit, this feature was detected at 85cm below surface, and continued to 112cm. In the dark midden soil it was marked by a concentration of deer and turtle bone fragments, and continued as a dark stain beneath the general midden stratum. The pottery is Dan River var. Dan River; the bone is of turtle, turkey and deer (including an antler fragment).

Pit 3-5. This feature was not fully exposed by E.U. 3 (Fig. 5), and thus was only partially excavated. The pit was detected first at 80cm below surface, in the dark brown sand beneath the midden--it ended at 120cm below surface. In profile the pit's west wall sloped out markedly, expanding the pit's dimension east-west from 25cm as first observed to 52cm just above its floor, which was flat. Ceramics are of the series Dan River var. Dan River. The animal bone includes several complete and broken deer teeth.

Pit 8-5. This tiny pit measured only 23cm in diameter when first observed at 94cm below surface, just below the midden stratum; it continued only 10cm. In cross-section it was basin-shaped, its floor slightly dished. The pit contained very little cultural material, primarily deer bone fragments.

Pit 9-6. This feature was only partially excavated; it was first defined at 76cm below surface, in the midden, where it exhibited a color difference with the midden matrix. The pit floor was at 105cm below surface; walls were sloped gently in, and the floor was flat. Ceramics are Dan River var. Dan River. The bone fragments and charcoal were small and scattered through the fill. This pit was found in a portion of the midden riddled with postholes, and at 91cm much of the central part of E.U. 9 was covered with pieces of charcoal.

Pit 10-10. This pit was first noted at 85cm below surface, continuing to 115cm below surface; it was basin-shaped in cross-section. Ceramics all are classified as Dan River var. Dan River. The bone is primarily the remains of an immature deer.

Pit 12-6. First visible at 85cm below surface this pit continued to 105cm below surface. The walls sloped slightly in, and the floor was flat. Ceramics are Dan River var. Dan River. Omitted from the Miscellaneous Rock category in Table 1 is a single slab of micaceous schist weighing 2.8kg; this piece is well-smoothed on one face, apparently from use as a nether grinding stone.

Pit 11-3. This pit was detected at 65cm below surface, and continued to 91cm below surface. The walls varied from vertical to outsloping (i.e., bell-shaped or undercut), and the floor was flat. The pit was detected by its slightly darker fill and a concentration of animal bone (including an articulated snake skeleton), but immediately below was a mass of mussel shell forming a lens within the pit fill up to 13cm thick. Below the shell the ordinary midden soil fill continued to the floor. The ceramics are classified as Dan River var. Dan River. One unusual sherd was present on

TABLE 1: Contents of Trash Pits, McPherson Site 31Yd41

	Pot-sherds*	Proj. Pts/ Fragments	Other Stone Tools	Debitage	Bone (g.)	Shell (g.)	Charcoal (g.)	Misc. Rock (g.)
1-7	19	1	0	11	47.4	0	9.7	186
1-9	170	1	2	25	210.5	0	36.7	239
2-5	24	0	0	5	41.1	0	.8	41
3-5	17	0	0	1	7.9	0	.2	8
8-5	0	0	0	0	11.6	0	1.1	0
9-6	8	0	0	5	2.0	0	.2	135
10-10	19	0	0	4	50.0	0	4.5	651
12-6	41	0	0	7	1.1	0	1.4	407
11-3								
11-8	201	0	9	7	722.5	>2400**	28.6	299

* Includes "sherdlets", pieces with greatest dimension <1.1cm.

** This is a sample of total--remainder discarded in field.

the floor of the pit: a large basal section of a plain flat-bottomed bowl. Animal bone was very well preserved and includes deer, turkey, frog, box turtle and fish, in addition to the snake (probably a fortuitous association). On the pit floor was a mass of turkey bone, a cluster of 21 carpometacarpals, 11 left, 10 right.

Pit 11-8. Immediately west of the 11-3 pit was another similar feature, 11-8. The pit was observed first at 67cm below surface, and continued to 100cm. The walls are straight and the floor is flat. Like pit 11-3, this also contained a large lens of mussel and fresh-water snail shell in the pit fill. The ceramics are Dan River var. Dan River; several sherds are so similar to specimens from 11-3 that they almost certainly are of the same vessel, although no cross-mends were found. The animal bone is very well preserved and includes deer, turkey, box turtle and fish; one piece of bird bone (turkey?) has been worked by scoring and snapping the long bone at either end.

Postholes. As shown in Figure 5, our excavations revealed several stains which appear to be postholes, although attempts to find any patterning to these were unsuccessful. Several of the stains were vertically sectioned, and those exhibited the requisite straight sides and flat or tapered bottom. While it is likely one or more structures is represented the data are inconclusive.

Feature Discussion

This section allows me to draw the reader's attention to several characteristics of the McPherson features, some of which seem significant for the interpretive comments offered later in this report. First, it is obvious that the McPherson trash pits are consistently small and shallow. All of the measurable pits are less than 1m in flat plan (Fig. 5), and most are only 20-30cm deep. While it may be the case that the original depth is greater than our measure because that portion of pit fill lying in the midden stratum was not detected, this would add only 20-40cm at most to their depth, well below the average trash pit at Donnaha. Perhaps related to this attribute is the paucity of cultural materials in the pits, and the fact that the pits are relatively scarce (i.e., relative to the large Donnaha site). At Donnaha every excavation unit located within the midden contained one (and usually several) trash pit outlines, whereas at McPherson several units contained none at all (Fig. 5). Mussel shell usually was abundant in the pits at Donnaha, whereas the McPherson site has only two pits with shell lenses, probably not a consequence of differential preservation. Finally, the ceramics from the pits are remarkably similar in attributes useful for relative dating. Taken together it would seem that McPherson is a single-component site probably occupied by one or a few household for less than 100 years.

The Artifacts: Ceramic Assemblage

A total of 3760 potsherds was recovered at the McPherson site. In order to determine the nature and extent of change through time in ceramics represented by the deposits, a sample of 1107 was selected for analysis. These specimens all were body sherds (rimsherds were removed for a separate study--see below), and all were from the midden rather than the features. Excavation units 1, 3, 4, 7, 9 and 11 were chosen for detailed study. Previously units 1, 2, 5, 6 and 8 had been analyzed in regard to interior/exterior surface treatment (Rogers 1984), and that analysis is combined with this; E.U.1 was included in both studies to determine replicability of the surface treatment identification. The midden deposit in each unit was excavated in three arbitrary strata, each 15cm thick, and sherds selected for analysis were designated lower, middle and upper midden zones.

The dominant vessel type used at McPherson was a net-impressed jar tempered with varying amounts of sand and the occasional piece of crushed quartz, hematite or schist. Most of the net-impressed vessels were brushed on the exterior after the net-impressions were applied (Fig. 6f) and often the net/brush effect was partially obliterated by further smoothing. This process would sometimes almost smooth the textured surface leaving only the deeper knot impressions, producing a dimpled surface which mimics punctations. On larger sherds it was observed that the smoothing of the net impressions was complete on parts of the vessel, and only the striations left by subsequent brushing were seen. It is not surprising then to see that "brushing" is the second most frequent surface finish found among body sherds and in at least some cases "net impressed" and "brushed" sherds likely are from the same vessel. Plain or smoothed surfaces are the third most common, with cord-impressed and stamped sherds also present in very low frequencies (Table 2). None of the stamped sherds was large enough to reveal a complete motif but most show a set of curvilinear concentric lines (Fig. 6g,i), a common but minor treatment in late prehistoric Yadkin Valley sites. Three stamped sherds bear a set of rectilinear lines, probably part of a nested squares or nested diamonds element (Fig. 6h) decidedly not common in the region and similar to the Pee Dee ceramics (Joffre L. Coe, personal communication). A single simple-stamped sherd was identified (Fig. 6j) and one worked sherd was found (Fig. 6o).

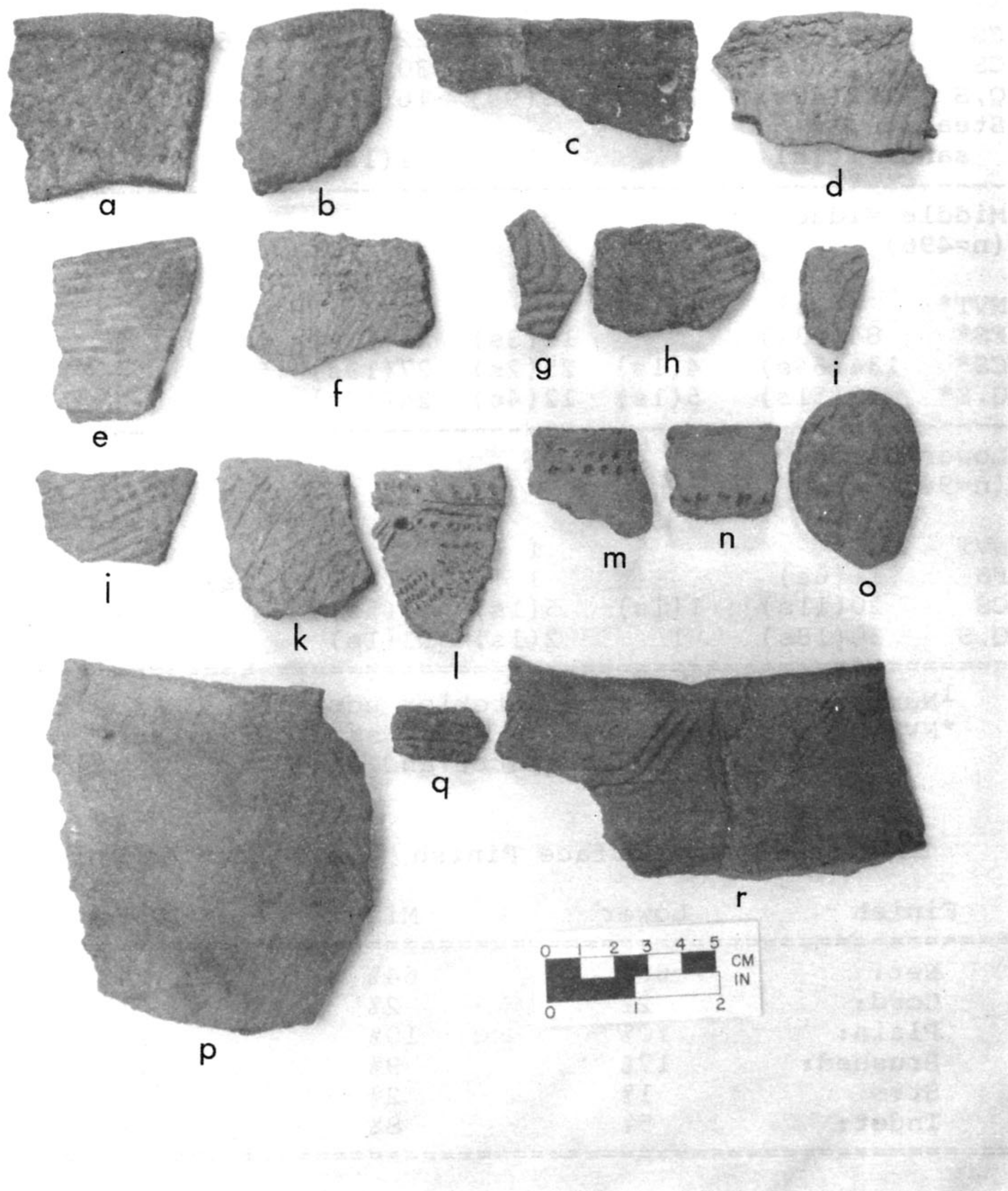


Figure 6. Ceramic artifacts, the McPherson Site, 31Yd41.
b, lower midden; a, h, m-o, ,q, r, middle midden;
e-g, i-k, upper midden; c, Pit 11-8; d, Pit 1-9;
l, Pit 10-10; p, Pit 1-7.

TABLE 2: Body Sherds by Surface Finish and Temper, McPherson Site, 31Yd41

	Net	Cord	Plain	Brushed	St.	Indet	(?)
Upper Midden, (N=517)							
NVT			2				
FS	75(34s)[1]	2(1s)	34(4s)	22(11s)	6(6s)		
CS	131(60s)	4(1s)	37(7s)	30(21s)		3	
Q,S	122(49s)	2(1s)	25(9s)	16(10s)	1(1s)	2	
Steatite, sand	1(1s)		1	1(1s)			
Middle Midden (n=496)							
NVT*	4(1s)	1(1s)					
FS*	84(43s)		12(3s)	21(12s)	1(1s)	7	
CS*	134(64s)	4(1s)	25(2s)	27(19s)	5(2s)	24	
Q,S*	93(51s)	5(1s)	12(4s)	24(17s)	4(1s)	7	2(1s)
Lower Midden (n=94)							
NVT			1				
FS	11(6s)		1	8(6s)	1(1s)		
CS	20(11s)	1(1s)	5(1s)	5(5s)		4	
Q,S	30(18s)	1	2(1s)	3(1s)		1	

[1]Number of sherds with interior scraping.
*NVT=no visible temper, FS=fine sand,CS=coarse sand,Q,S=crushed quartz and sand

Body Sherds by Surface Finish (all midden deposits)

Finish	Lower	Mid	Upper
Net:	65%	64%	64%
Cord:	2%	2%	1.5%
Plain:	10%	10%	19%
Brushed:	17%	9%	13%
St:	1%	2%	1.4%
Indet:	5%	8%	1%

In sorting the sample by temper (as shown in Table 2) it was clear that almost all fell into one of three categories: fine sand (grains <2mm), coarse sand, and crushed quartz and sand. Most sherds were difficult to classify, however, because all three materials were present in varying amounts; these were grouped according to the relative abundance of one or another aplastic inclusion. It was frequently observed that large particles of white quartz were included in the paste, which at first glance looked like the "crushed quartz temper" characteristic of Uwharrie and Dan River var. Dan River wares. On closer inspection, however, many of these quartz pieces have rounded edges, no doubt a result of using very coarse sand in preparing the paste. It seems that McPherson site potters were obtaining river sands of varying size and, if some particles were deemed too coarse, the batch was pounded to reduce these large pieces and the resultant mixture then added to the clays. In addition to the broken quartz there also was an occasional piece of hematite and schist, sometimes rounded, sometimes broken. Three sherds contained particles of soapstone along with sand. It is clear that in reducing or choosing tempering material, particles less than 5mm in diameter were desired, a marked distinction with the earlier Uwharrie series sherds of the region.

Sherd color ranges from buff (rare) to orange (rare) to dark grey-brown (common); Munsell chart colors 10YR/3 and 10YR/4 would characterize the bulk of the sample. Interiors are dark brown to black, no doubt a result of inverting the vessel for firing. The paste is also dark, usually black or dark brown, also a result of firing in a reduced atmosphere. Hardness is between 2 and 3 on the Moh's scale. The paste generally is well-mixed, with some clumping of temper particles observed and an occasional lamination or void.

An obvious if impressionistic result of the analysis reflected in Table 2 is the remarkable homogeneity of the McPherson ceramic assemblage, particularly in regard to technological attributes and surface treatment. In comparing the contents of the three arbitrarily-defined midden levels, little directional variability is observed in exterior surface treatment or tempering agents. Also, there is no correlation of surface finish with temper in any level or overall, although this may be a result of the small sample size for some categories. There is one exception to the homogeneity of the assemblage, noted both by Rogers' (1984) analysis of the EU 1, 2, 5, 6 and 8 sample and my study of the EU 1, 3, 4, 7, 9 and 11 sample. From the lower to upper portion of the midden the frequency of interior scraping striations steadily decreases, from 57% (lowest midden level) to 49% to 42% (upper midden level). This is partially correlated with the frequency of plain exteriors, which increases in the uppermost midden level; plainware consistently has a lower incidence of interior scraping than other surface treatments. With plain sherds removed from consideration, however, the trend is still present. Interior scraping of net-impressed sherds declines from 57% to 50% to 44%. This pattern is especially interesting in that it seems to occur within a restricted time period; how restricted is not at all clear, but certainly the other parallel to the lip in two; another has arcing lines pendant from the lip; a fourth has no determinate pattern, perhaps because of its breakage. Lip treatment is present on two, punctation on the lip in one and diagonally incised--falling left to right--on the other (Fig. 6k,m). Three sherds have a single (two) or double line parallel to the lip (Fig. 6q); lips are flattened and notched, perpendicular to the rim (one), diagonal left-right (one), right-left (one). One large rim bears sets of three curving parallel lines arcing left and right below the lip (Fig. 6r)--the lip is rolled to the exterior. Incising combined with punctations occurs on five sherds, all part of the same vessel. The pattern is complex involving clusters of circular punctations, lines of lunate punctations, double parallel horizontal lines encircling the rim and arcing lines enclosing punctations (Fig. 6l). This vessel has a rounded plain lip. At least nine vessels are represented in this subgroup and interestingly at least four are portions of bowls. The others could be from bowls or jars. Plotting the provenience of decorative attributes vertically and horizontally revealed no pattern.

Despite the lack of intrasite patterning of individual attributes, the rims as a group exhibit a number of consistencies which may be indexing one or several social and cultural processes. This is explored more fully in Chapter Four, but a reader who has worked through the descriptions deserves a synoptic generalization. During the McPherson site occupation the majority of vessels produced were net-impressed jars, about half finished by notching the top of the flattened lip with a thin implement held at a diagonal to the rim producing the "falling right to left" incision This treatment might be joined with diagonal lines drawn down and to the left from the lip (an example is shown in Fig. 6k). If a plain jar was produced no lip treatment was added beyond flattening the clay and if the vessel was brushed the lip could be notched or left plain, as with the net-impressed ware. The smaller bowls received special attention, however. Made with a plain (i.e., fully smoothed) exterior, they were embellished with parallel incisions encircling the rim, punctations around the rim (or both) or punctation or incision pendant to the lip. Lips might be notched or left plain.

A final observation on the McPherson ceramics is that measurable rims indicate rather small vessels were being made, or at least vessels with small orifices. Seven rim sherds were large enough for measurement using a curve fitting method (Plog 1985). If a very small bowl with an estimated diameter of 4.3cm is ignored the remainder range from 10cm to 20.1cm, with a mean of 16.4cm. A previous study of the McPherson assemblage used 81 rims, i.e. all those with a length of > 2cm (McCann 1984). Using small rims is fraught with difficulties (Plog 1985), particularly with Yadkin Valley vessels which often exhibit less-than-perfect rim symmetry. Because accurate measurement in most cases was not feasible three categories were created by McCann: large, with a projected rim diameter of 28-40cm; medium, 12-24cm; and small, < 12cm. Large was represented by 30 sherds, medium by 39, and small by 12. (Because the vessel circumference increases as the square of its diameter, it is obvious that large vessels are likely to be over-represented in a rim sherd collection.) In comparing surface treatment between the three groupings there is a clear tendency for the smaller vessels to have plain surfaces, while the incidence of net-impressing increases markedly with vessel size (33% to 56% to 67%).

Using the decorative attributes (and absence of decoration) listed above a diversity index was computed using the rim sherds. The statistic has been described by Lieberson (1969) and applied to ceramic assemblages by Dickens (1980) and Wilson (1983). For the McPherson assemblage there are 22 attribute states with an N=204 (this is greater than the number of rim sherds; the population described consists of individual attributes, not sherds, and several sherds exhibit more than one decorative attribute. The following attributes were used for computing the diversity index:

1. Incised diagonal, falling right to left
2. Incised, curvilinear
3. Incised line(s) parallel to lip
4. Incised, curvilinear with punctations
5. Punctated, horizontal lines
6. Punctated, vertical lines
7. Punctated, no (apparent) pattern
8. No decoration, plain
9. No decoration, net-impressed
10. No decoration, brushed
11. No decoration, stamped
12. No decoration, cord-marked
13. Notched lip, falling left to right, top of lip
14. Notched lip, falling right to left, top of lip
15. Notched lip, perpendicular, top of lip

16. Notched, front (exterior) of lip

17. Notched diagonally lip, opposite directions, top of lip

18. Surface finish continued on lip

19. Punctated lip, top of lip

20. Notched diagonally lip, opposite directions top of lip

21. Surface finish continued on lip

22. Punctated lip, top of lip

The diversity index is .816. This statistic is highly responsive to the number of attribute states used in the sherd classification; "lumping" reduces the index, "splitting" increases it. For that reason the McPherson index of .816 is not comparable to those computed by Wilson (1983) for Dan River sites inasmuch as I have collapsed certain categories (e.g., punctations) and divided others (e.g. rim notches). In fact, the index tells nothing about the internal variability of the McPherson collection either, because the statistic can be altered by splitting or lumping. If, for example, each sherd was assigned to a separate group--possible if additional variables such as interior scraping, lip shape, thickness, or color were introduced--then the index would be 1.0, or completely heterogenous. The opposite would occur if all were grouped together on, say, the basis of sandy paste. The index is useful however for quantifying the degree of similarity with other sites using the same variable set, and will be so used later in this report.

Lithic Assemblage

Analysis of the McPherson lithic assemblage was confined to formal tools, primarily projectile points, and raw material counts of the debitage. In addition retouched flakes were tabulated, but for reasons explained below it is likely that inventory is incomplete.

Projectile points. A total of 63 complete or fragmentary projectile points were found, including partially finished specimens and preforms. Among completely thinned (finished) specimens small triangular points dominate with 25 examples; 24 of type Caraway (Fig. 7a-x) and one Yadkin (Coe 1964). Three stemmed points include a Gypsy (Fig. 7cc; Oliver 1981), a contracting stem specimen (Fig. 7y), and a crude point with weak shoulders (Randolph

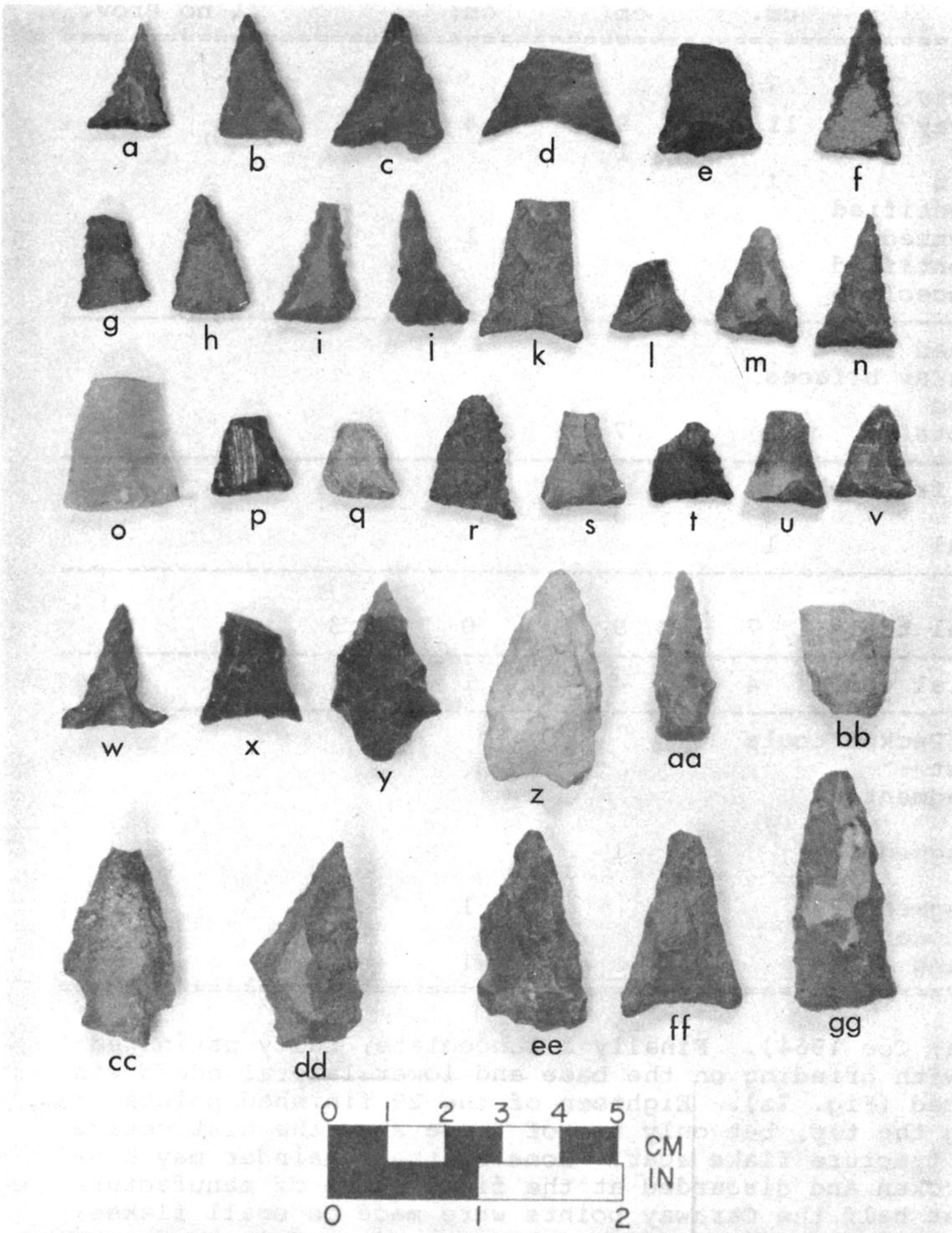


Figure 7. Lithic tools, the McPherson Site, 31Yd41. a, g, aa, dd, lower midden; b, d, h-j, l, o-q, x, cc, ff, middle midden; c, f, k, m, n, r-w, z, upper midden; e, Pit 1-7; y, bb, ee, Pit 1-9; gg, surface

TABLE 3: Lithic Tools Provenience, McPherson Site, 31Yd41

Midden:	0-15 cm.	15-30 cm.	30-45 cm.	Feature	Surface & no Prov.
Thinned Proj. Pts.					
Caraway	11	8	4	1	
Gypsy		1			
Yadkin	1				
Unidentified Stemmed			1	1	
Unidentified lanceolate					1
Unthinned triangular bifaces (Aborted proj. pts.)	7	7	7	1	1
Biface fragments					
Tips	4	6			
Medial	1				
Other bifacial tools	7	9	0	3	
Unifacial tools	4	4	1	1	
Ground/Pecked tools					
Gorget fragment(?)					
Celt fragment(?)		1			1
Pipe fragment(?)			1		
Nutstone				1	
Milling stone			1		

Fig 7aa; Coe 1964). Finally a lanceolate, fully patinated point with grinding on the base and lower lateral edges was recovered (Fig. 7z). Eighteen of the 29 finished points are missing the tip, but only two of these show the distinctive impact fracture flake scar. Some of the remainder may have been broken and discarded at the final stage of manufacture. At least half the Caraway points were made on small flakes; only a minimal amount of retouch was used, and in some cases the retouch was predominantly unifacial. Twenty-two of the Caraway points are of rhyolite, one of andesite and one of chalcedony.

Another 23 specimens are crude triangular bifaces most, perhaps all, representing projectile points abandoned during manufacture (Fig. 7dd-gg). Three of these apparently snapped during the thinning process, while the remainder have prominent ridges or protuberances which denied thinning as shown by frequent hinge fractures. Twenty-two are of rhyolite, one of jasper. In addition 10 tips of pointed bifaces were found, and one medial section of a biface. Almost certainly all are portions of triangular projectile points; all are of rhyolite. Interestingly, on one of the tips an attempt was made to thin the piece at the break, presumably to rejuvenate it for use as a projectile point; that effort removed a patina already formed over the tool fragment.

Other Bifacial Tools. This group of 19 is a miscellany of small broken bifacially retouched flakes, possibly projectile points fragments (Fig. 7bb); narrow pieces, ovate or lenticular in cross-section (drill fragments); and asymmetrical flakes, broken and whole, with varying amounts of bifacial retouch. Only two whole pieces have clearly been deliberately shaped, one a thin ovate biface and the other a long narrow piece, plano-convex in cross-section. All but the last (of jasper) are made of rhyolite.

Unifacial Tools. Ten flakes have received small amounts of unifacial retouch on one or two edges. All are of rhyolite.

Debitage. A total of 2438 pieces of debitage was tabulated, including all specimens from the three arbitrary midden levels and the features, omitting only surface materials and other unprovenienced pieces. Using these materials, cores were separated, then flakes, blades and chips. Blades were defined as any flake with a length greater than twice its width, while chips were simply any whole or broken flakes, shatter or spalls passing through a half-inch screen. Each of these categories was divided by raw material using three categories: felsite (including rhyolite, andesite, dacite and argillite, the last not technically a felsite), quartz, and other (a category represented by a single jasper flake). Table 4 indicates the distribution of these materials.

It must be noted that every excavation unit produced a quantity of lithics simply labeled "miscellaneous rock"--this includes small pebbles, pieces of schist and gneiss, chunks of quartz and quartzite which may or may not be of cultural origin. Because of the irregular fracturing properties of quartz, especially low-grade quartz with frequent bedding planes and impurities, it is likely that this miscellaneous rock contains some debitage, and thus the quartz debitage reported in Table 4 would be a conservative account of the total present.

A second characteristic of the debitage is the small size of the flakes, especially the felsite specimens. Actual measurements were not performed, but it was very rare to find a felsite flake measuring three cm or more in any dimension, and only one fragmentary felsite core was recovered. Also the percentage of the total comprised of felsite does not change appreciably from top to bottom of the midden (50% to 51% to 52%); although felsite is only 32% of the total from features the sample is rather small.

Finally, I would point out the striking contrast between raw material percentages in the debitage and in the tools. It is probable that some of the quartz debitage are in fact tools, made inconspicuous by the nature of the raw material. If these are present they would fall in the categories of "other bifacial tools" or unifacial tools, i.e., casually retouched flakes. (Indeed this is the only reasonable explanation for the abundant quartz debitage.) It is improbable that any formal quartz tools, especially those with induced symmetry, escaped detection. Considering the fact that 50 percent of the debitage is quartz, there clearly was a strong bias toward the felsites for production of projectile points. The scarcity of felsite cores suggests that this material was imported as flakes or blanks (finished tools are unlikely given the high frequency of aborted points), whereas the locally available quartz was carried in as nodules for on-site reduction.

Table 4: Debitage provenience, McPherson Site, 31Yd41

Midden:	0-15 cm.	15-30cm.	30-45cm.	features
felsite flakes	90	90	47	13
felsite blades	12	3	0	0
felsite chips	401	371	160	11
quartz flakes	116	98	43	16
quartz blades	4	3	0	0
quartz chips	384	350	147	36
felsite cores			1	
quartz cores	8	15	9	9
other		1		

<u>Ground Stone and Pecked Stone.</u> These artifacts were rare at the McPherson site, represented by only five specimens. One is a fragment of polished banded slate, a thin tabular piece possibly part of a gorget. A very small piece of soapstone exhibits a concave side and may be a pipe fragment, and a polished piece of argillite may be part of a celt. In addition to these were found a nutting-stone and a milling-stone, the latter shaped into a rectangular slab by pecking.

Bone

No analysis of the faunal (or floral) remains has been performed. Bone was poorly preserved, but recognized in the field were remains of deer, turkey, box turtle, shellfish, fish (including catfish) frog and snake. Plant remains identified are acorn and hickory nuts.

In feature 11-9 was found an unusual concentration of bone, namely 21 carpometacarpals of turkey. All 21, 11 left and 10 right, rested in a cluster measuring only 10cm by 4cm directly on the pit floor, so tightly packed that the entire group was removed as a near-solid block of bone. Four of these exhibit cut marks, two on both proximal and distal ends and two on the distal end only. None show evidence of burning.

It is not unusual to encounter carpometacarpals of various birds in high frequency in archeological sites, often in contexts suggesting the attached flight feathers served as ritual or social markers. Such use is suggested for wingtips of various kinds including owls, ducks, eagles and turkeys (Parmelee 1957, 1958, 1959, 1963, 1977). That the McPherson bones were defleshed (and of course defeathered) when deposited is indicated by the packing of the bones, the cut marks on the distal ends, and the absence of terminal phalanges (despite washing the surrounding pit fill through parachute cloth). Using a freshly killed wild turkey and stone tools, I replicated these marks by cutting at both ends of the carpometacarpal, then lengthwise down the diaphysis of metacarpal II. The result was removal of a nearly square patch of skin with the flight feathers attached: the phalanges remained embedded in the skin removed.

Flight feathers and the skin likely were used to ornament various items or used as fans, both well-documented in the regional ethnographic literature (e.g., Strachey 1953:72; Speck 1931:91, 129). A second purpose may also have been served, however, namely the pinioning of live turkeys to allow simple confinement prior to consumption. Amputation of one wing at the ulnar/metacarpal I articulation is used today to restrict the range of stocked wild turkeys (Vernon Christianson, personal communication). If a small group such as the occupants of the McPherson site captured several birds, perhaps by netting a flock as documented by ethnographic data (Wright 1915), pinioning would allow at least short-term redress of seasonal protein shortfalls--the birds could be restrained by the simplest corral of sticks or brush until eaten. Such a practice may also explain the several ethnographic references to "tame turkeys" kept by Indians (e.g., Lawson 1952:156-57; Strachey 1953: 79; Kalm 1770:209).

CHAPTER THREE: THE HARDY SITE, 31Sr50

Location and Site Description

The Hardy site is situated on the north bank of the Yadkin River less than one kilometer above the mouth of the Ararat River. This is upstream of the Great Bend's shoals, and here the Yadkin is flowing west to east and receiving several major tributaries from mountains to the north, of which the Ararat is the last before the shoals (Fig. 1). The Hardy Bottom, named after its late owner Howard Hardy, marks the downstream terminus of an expansive reach of floodplain extending from the Ararat upstream to beyond the mouth of Cardiff Creek. Several small creeks transect the floodplain, and a paved highway, bridge and railroad embankment serve to interrupt the expanse. Today the Hardy Bottom tract (23 ha) is bounded by Hogan Creek on the west, an intermittent unnamed drainage on the east, the Yadkin River on the south and a railroad embankment, skirting the uplands, on the north. The Hardy site occupies the final floodplain of appreciable size on the left bank of the Yadkin before it enters the shoals. There is a tract on the right bank opposite the mouth of the Ararat and extending in a narrow band along the Yadkin for some three km, but that land has been heavily scoured by the river. Thus, the Hardy site represents the first intact Woodland site to be encountered above the shoals of the Great Bend.

When first surveyed in January 1984, the site exhibited artifacts scattered along the crest and flanks of the levee paralleling the river. The land here has been cultivated for over 100 years, and it also has experienced periodic inundation, erosion and alluviation. In recent years this has prompted use of heavy equipment to fill low areas by cutting the levee crest, and the frequency of flooding seems to be increasing. The minor floods, however, usually spare the levee, with waters tending to flow across the lower backswamp area near the railroad bed and reenter the river channel at the eastern end of the site. In any case the Hardy site has undergone deflation to an unknown extent. As described below, an intact midden occurred only in a small area in the central portion of the site. The continuing cultivation has almost eliminated the relief of the backswamp slope of the levee, and no doubt has reduced the gradient of the riverine slope. While impossible to reconstruct with any accuracy, similar but less disturbed settings elsewhere in the area suggest the levee once could have stood a meter or more above the backswamp to the north.

No recent soil survey has been completed for Surry County. An old survey indicates the Hardy Bottom is composed of Congaree fine sandy loam, an alluvial soil (Davis and Goldston 1937). While not shown on the soil maps, the sandy loam deposits are backed by heavier soils, probably Congaree silt loam, in the old backswamp. That portion of the bottom currently is drained by artificial ditches, but in prehistoric times likely remained low and wet during most of the year. Some additional soil has probably been washed in as colluvium from the uplands to the south, composed of Cecil clay loam, a heavy soil produced by decay of the parent schist and gneiss (Davis and Goldston 1937; Espenshade et al. 1975). The pH of the levee soils ranged from 4.6 to 5.5 except, of course, in cultural features, where basic readings occasionally were produced by concentrations of shell or bone.

Methods

A second survey of the site was conducted in the spring of 1986, and excavations began in early June of that year. A datum with an arbitrary elevation of 100m was set near a tobacco barn located in the center of Hardy Bottom, and a contour map was constructed using an alidade and plane table (Fig. 8). The levee was planted in corn at that time and surface visibility was reduced, but based on the previous surveys a series of 2m squares was begun northwest of the barn. These failed to show the anticipated midden deposits below the plow zone, and this prompted use of shovel tests, 50cm square pits penetrating the plow zone, which ultimately revealed a thin intact midden south of the barn, on a slight elevation of the levee. Ultimately, 48 contiguous excavation units were completed here, producing the block shown in Fig. 9 and 10a. In each unit the plow zone was removed and dry screened through quarter-inch mesh, and the floor and walls then troweled and examined for features. Black and white and color photographs were made of the floor, and a scale drawing completed. Baulks were left standing between the excavation units for maintaining profiles across the area, although some of these were removed later to fully expose features (Fig. 10a). The midden soil was removed in one or two arbitrary levels, depending on its thickness. Near the central portion of the central block the midden was up to 20cm thick, and 10cm levels were used; elsewhere the midden was thinner, and typically one 10cm level was dug, then a second removed the remainder (if any) of the midden. Features were assigned separate proveniences and removed either as a unit or, in the case of internal stratification of some pits, as several provenience units. Flotation samples were routinely taken from features as were soil samples for pH testing.

The summer of 1986 was the driest of this century in the northwest Piedmont, and perhaps for that reason we were convinced that our excavations had adequately sampled the site, at least that portion with integrity remaining. The

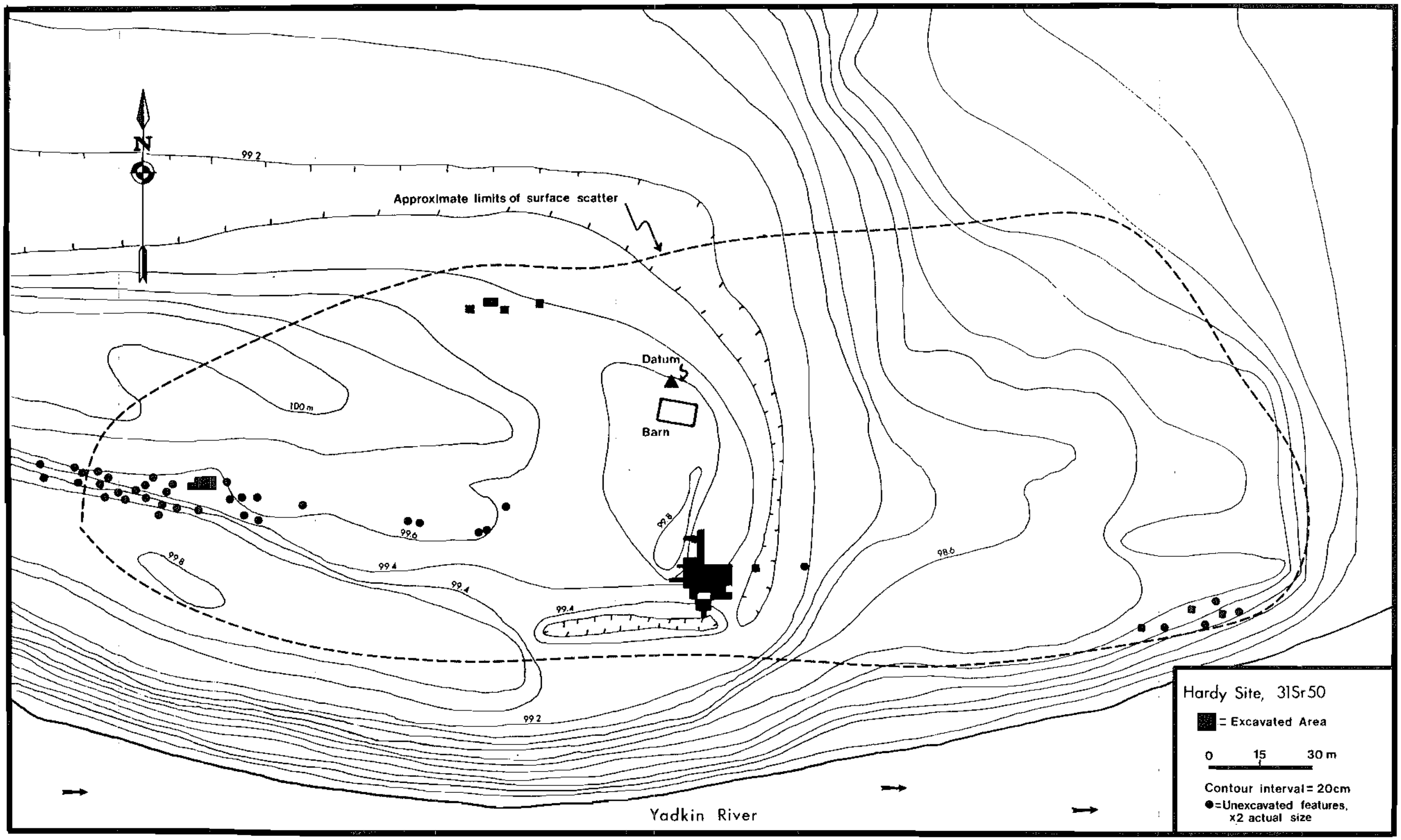


Figure 8. Site boundaries and excavated areas. The Hardy Site, 31Sr50.

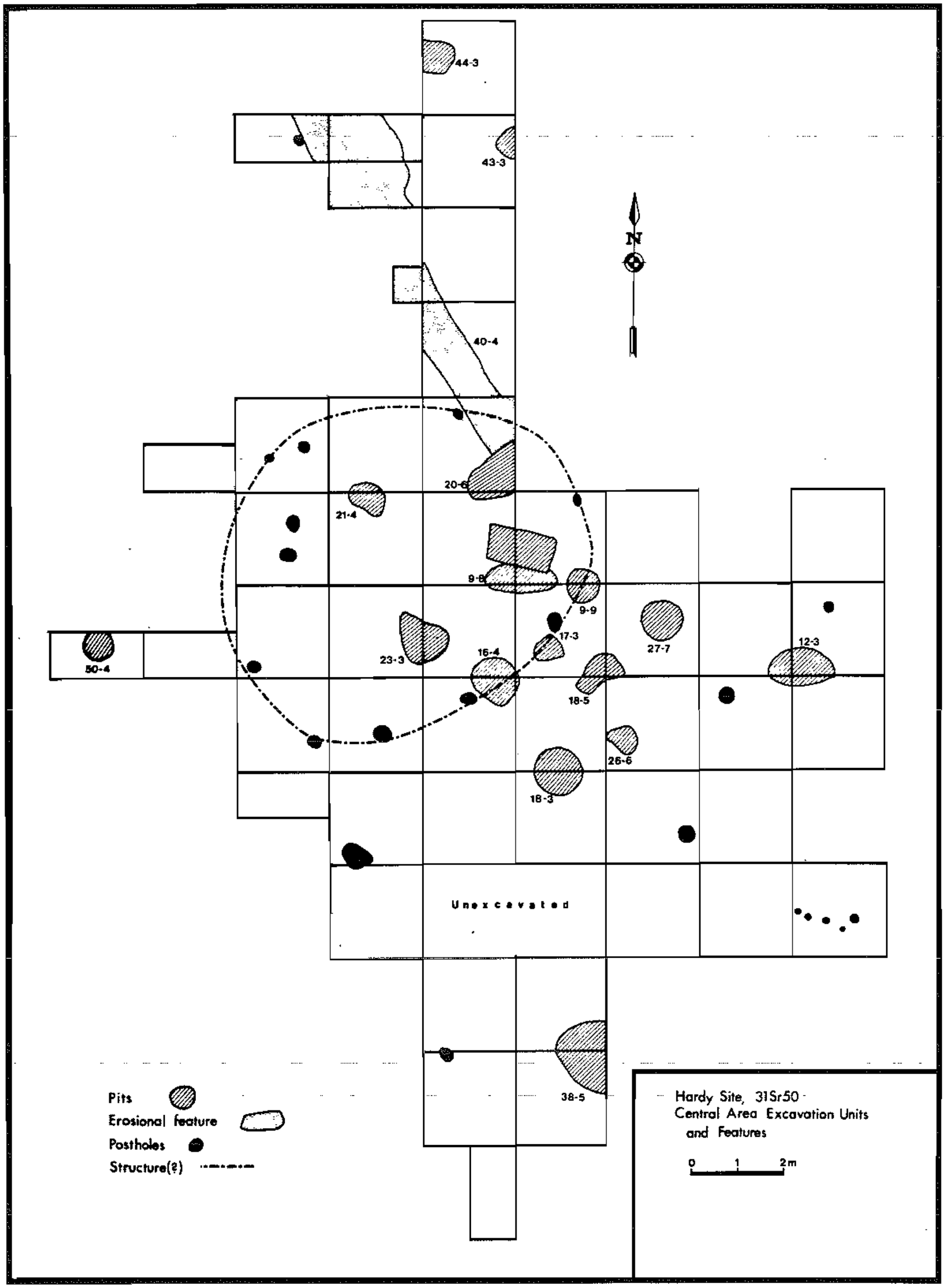


Figure 9. Central block excavations and features.
The Hardy Site, 31Sr50.

summer of 1987 began with excavations west of the Hardy Bottom, in the central portion of the larger floodplain of which Hardy was the eastern section. While those excavations (at 31Sr51) were in progress, and following the first June rain, I returned to Hardy at the behest of a local collector. The land had not been planted, and pioneer weeds had been sprayed with herbicide to allow near-ideal visibility over the levee. At the west end of the site's surface scatter, and at the east end, were readily visible clusters of dark circular stains containing concentrated midden debris, clearly exposed trash pits. Apparently the flooding in the early spring of 1987 had scoured the bottom so that disking later that spring exposed the features. Because the pits, or at least their upper 30cm, would be destroyed by the next plowing the crew was moved back to Hardy to excavate the features.

Three two-meter squares were excavated in the eastern pit concentration and seven contiguous squares in the western group, with one square placed just east of the 1986 block where a single pit feature was evident (Fig. 8). Excavation methods were as previously described, although removal of the plow zone exposed no midden, only the features clearly outlined against the sterile sandy loam of the natural matrix.

Stratigraphy

The stratigraphy of the Hardy site was very simple, consisting of the plow zone, a thin midden (in the central block excavation area), and underlying sterile strata of sands, sandy loam and sandy clay. Frequently, the midden overlay or was interrupted by pits dug into the sterile sands and filled with either ordinary midden refuse, human burials or--in one instance--a horse burial of recent vintage. In a few instances there was no discernable boundary between the midden and the pit fill, with the midden zone simply continuing down into the pit. More often the pit fill was notably lighter in color than the midden and was distinguished from the surrounding sterile matrix only by charcoal flecks, some staining and an occasional artifact (Fig. 10b).

In the central block the midden proper was represented by a very dark brown sandy loam which graded into the underlying sterile yellow or yellow-brown sandy loam; the interface zone was mottled, slightly stained and yielded occasional artifacts. In the field this lower stratum was called the "weak midden" and probably was produced by trampling, percolating water and other cultural and natural agents. A similar phenomenon was present on the periphery of the midden, where the distinctive dark soil gradually yields its color until it cannot be differentiated from the sterile levee deposits.

a

b

Figure 10. a, central block excavations; b, profile of south wall, E.U. 20. The Hardy Site, 31Sr50.

Several stains left by tree roots were observed in the profiles, especially in the central block, and an erosional gulley filled during the aboriginal occupation was found on the north side of the central block. Rodent burrows were numerous and easily identified in the profiles, though in flat plan can be exasperatingly similar to postholes. Postholes were either sectioned or troweled to verify vertical placement and symmetry.

Outside the central block area the stratigraphy consists of the plow zone over sterile yellow-brown sandy loam. The fact that the surface dispersion of artifacts occurs over such a large area strongly suggests that cultural activities were not confined to the three areas exhibiting features today. Levee deflation may have erased midden deposits elsewhere within the surface scatter area, but it seems unlikely that subsurface features also were destroyed. Features at the east, west and central areas extended up to a meter below the plow zone, and the topography is such that if similar features were present elsewhere in the vicinity they also would be visible. It is even less likely that exposed features elsewhere on the site escaped detection because, in addition to the systematic surface collection conducted and the nine dog leash samples, the site area was criss-crossed on foot dozens of times during the 1987 work when visibility was excellent. It is most probable that there were three areas of site use involving the excavation of pit features: one at the east end, one in the central block area, and the third--this one more lineally dispersed--at the west end. Whatever aboriginal activities are associated with pit excavation thus apparently had three intrasite loci. Either other activities produced the more expansive surface scatter, or it was produced by the recent farming activities, or both.

Feature Descriptions

The aboriginal features at the Hardy site consist of trash pits, postholes and human burials. Study of time-sensitive ceramic attributes, carbon-14 dates and one item of European manufacture strongly support the presence of at least three diachronic occupations at the site, each discrete in the location of features within the Hardy Bottom. In consideration, the excavated features briefly described below are grouped by intrasite location (see Fig. 8).

Eastern Excavations. Of the seven features visible on the ground surface, three were excavated by three 2m squares situated to either bisect the feature (E.U. 56) or expose it completely.

Pit 56-4. Because it was bisected this pit was not totally visible in flat plan, but if symmetrical (as others were) it would measure 1.6m in diameter, an approximate circle. In profile it was slightly bell-shaped, with a flat floor 1.05m below surface. In cross-section, the fill revealed several lenses of very dark midden soil alternating with lighter brown fill, presumably the result of periodic infusion of refuse loads while the pit was incrementally filled. There is stratigraphic evidence of the collapse of the western portion of the "overhang" created by the bell-shaped excavation. Potsherds are predominately net-impressed (90 percent) and tempered with varying amounts of sand and crushed quartz--most or all are Dan River var. Dan River. A 20 liter flotation sample from this pit yielded remains of Zea mays, Quercus (oak), and Carya (hickory) nutshell; animal bone, though well-preserved, is fragmentary and has not been studied. The only clearly recognizable species is Odocoileus virginianus (white-tailed deer).

Pit 57-2. Although visible clearly on the surface as a circular feature, a 2m square (E.U. 57) placed over this feature revealed the presence of two pits. The second is 57-4, a more recent feature which intersects 57-2 on its northeastern side. Pit 57-2 is circular, 1.2m in diameter and extends from the surface to 115cm below surface, one of the deepest features encountered. The walls are nearly vertical and the pit floor slightly basin-shaped. The ceramics are net-impressed (83%) or brushed (7%), along with a few plain and complicated stamped sherds. Scraped interiors and sand-plus-crushed-quartz temper, along with a high incidence of net-impressing, place these specimens in the Dan River var. Dan River class. Mussel shell and bone fragments are present in the pit fill, with deer and box turtle represented. Numerous fragments of fire-cracked quartzite river cobbles were scattered through the fill, but there is no evidence of burning in the pit. The upper 15cm of fill from the pit yielded four complicated-stamped sherds; two others were recovered from the plow zone of EU 57. Just before we began our 1987 excavations a collector visited the site and gathered 30-odd complicated stamped sherds from a dark feature stain somewhere in the vicinity of EU 57. Most of those sherds later were refitted to make about one-fourth of a complicated-stamped jar, and one of the feature 57-2 sherds also fits this vessel section. It is thus highly probable that 57-2 contained a complicated stamped vessel, perhaps a "pot-bust", in its upper fill, and that this was unearthed by the plow in the spring of 1987.

Pit 57-4. This feature was discovered after removal of the plow zone, and is located in the northeast quadrant of EU 57, having been originally excavated through a portion of 57-2. Despite its more recent origin it was not visible on the surface, no doubt a consequence of its lightly-stained fill. The pit is roughly circular and 1.4m in diameter, ending at 110cm below surface. In profile the pit walls are very slightly outsloping and the pit floor is flat. Artifact contents include 87 potsherds, predominately net-impressed (72 specimens), 74 of which are tempered with crushed quartz (16) or crushed quartz and sand (58). Animal bone fragments, debitage and charcoal were found through the fill but were more concentrated in distinct lenses, probably representing incidents or periods of intensified discard. Mussel shell was present only in the uppermost portion of the feature, where its concentration suggests a discrete discard episode.

Pit 58-2. This pit was visible as a stain on the surface. Removal of the plow zone showed it measured approximately 1.1m in diameter. Its walls were moderately bell-shaped in profile and the floor basin-shaped at 98cm below surface. The fill consisted of dark midden soil containing sherds, debitage, fire-cracked rock, bone and charcoal, but this refuse alternated with bands of light near-sterile soil suggesting either slumping of the pit walls or deliberate back-filling between discard episodes. As with other pits in the eastern site sector, the ceramics from 58-2 are mainly net-impressed (145 specimens of a total 216), while seven others show combination of net-impressing and brushing, net-impressing and punctations, or net-impressing and incising. The remainder are plain or brushed. The sherd temper is crushed quartz (28), crushed quartz and sand (137), coarse sand (24), or fine sand (18); nine sherds have no visible temper. The ceramic assemblage is typical of the early Dan River series, i.e. Dan River var. Dan River. Though fragmentary animal bone was well-preserved, the only recognized species is deer. Interestingly, mussel shell is completely absent. A C-14 sample from 77cm below surface in this pit yielded the date of 1,030 B.P.+70 (Beta 22871), corrected to A.D. 885-1155 (Klein et al. 1982).

Pit 58-3. This pit lay adjacent to 58-2 on its southwestern edge. The pits were tangential, so they cannot be relatively dated (i..e., no overlap). Pit 58-3 was not fully exposed by our excavations, but if symmetrical it measured about 1m in diameter immediately below the plow zone. Its walls are slightly out-flaring (bell-shaped) and the floor is flat. The pit is shallow, only 58cm deep, and its fill is lightly stained and homogenous. Artifacts were sparse, consisting of 28 potsherds (recovered from approximated one-half the pit), 21 of which were net-impressed, three complicated stamped (not the same stamp as specimens from 57-2) and the remainder brushed. Tempering was crushed quartz, quartz and sand, or coarse sand. In addition, debitage, animal bone and abundant charcoal were found.

Central Excavations. As described previously the central excavations were undertaken in the summer of 1986. At that time none of the features ultimately exposed could be detected on the surface; our effort was prompted by the intact midden observed in the shovel tests. Ultimately, 48 excavation units were opened, exposing 16 pit features, along with numerous postholes. Most of these were grouped within a 20 meter circular area corresponding roughly to the extent of the intact midden (Fig. 9).

Pit 9-8. This was an oval feature, 1.4m east-west and (probably) ca. 80cm north-south. The northern portion had been destroyed by an intrusive horse burial in the late 19th century. The pit walls were straight and the floor slightly dished, nearly flat, at a depth of 87cm below surface. The pit fill was a dark brown midden-stained sandy loam, flecked with charcoal. Potsherds, debitage, fire-cracked rock and animal bone were contained in the fill. Included in the ceramic assemblage are a punctated vessel lug, the conoidal base of a Dan River net-impressed vessel, and a miniature vessel (Fig. 12f), all found in the upper portion of the pit fill. Of the other 17 sherds, 14 are net-impressed, one is plain and two are basal sherds with unidentified surface treatment. Crushed quartz and sand is the dominant tempering medium. Fragmented animal bone, fire-cracked rock and minor amounts of debitage were scattered through the fill. Charcoal also was present, and a combined sample from the fill yielded a C-14 date of 720 ±60 B.P. (Beta-22870), corrected to A.D. 1225-1340, at a 95% confidence range (Klein et al., 1982) or A.D. 1260-1280 at a 67% range (Stuiver 1982).

Pit 9-9. This shallow pit, extending only to 55cm below surface, is unusual in that the upper 10-15cm of undisturbed fill was a hard clayey sand stained a distinct red from heat and containing fire-cracked rock, burned bone fragments, charcoal and seven sand-tempered, net-impressed sherds. A few quartz and felsite flakes also were present. The soil adjacent to the pit and the pit fill below the reddening shows no sign of heat, and the red fill seemingly entered the feature after it had cooled. The lower portion of the pit was almost sterile, containing only minor amounts of charcoal. In flat plan the pit measured 70cm x 80cm; its walls were nearly vertical and the floor slightly concave.

Pit 12-3. This is a large oval pit measuring 1.5m east-west and approximately .8m north-south; only the northern two-thirds was exposed and excavated. In profile the feature suggests two pits are represented, one dug to 63cm below surface and a later, deeper pit to 75cm below surface, the latter obliterating the eastern portion of the earlier pit. The first pit had a straight wall on its west side and its floor was flat; the second pit was bell-shaped, also with a flat floor. The presence of two overlapping features was detected only after the combined features had been excavated and the cross-section could be observed in profile. Thus the artifacts of both were mixed by aboriginal digging and again by the archeological excavations. Recovered items include 71 sherds, 75 percent of which were net-impressed with the remainder brushed, plain or unidentified. Debitage, tool fragments, fire-cracked rock and charcoal (including hickory nut fragments) were relatively abundant, especially in the upper portion of

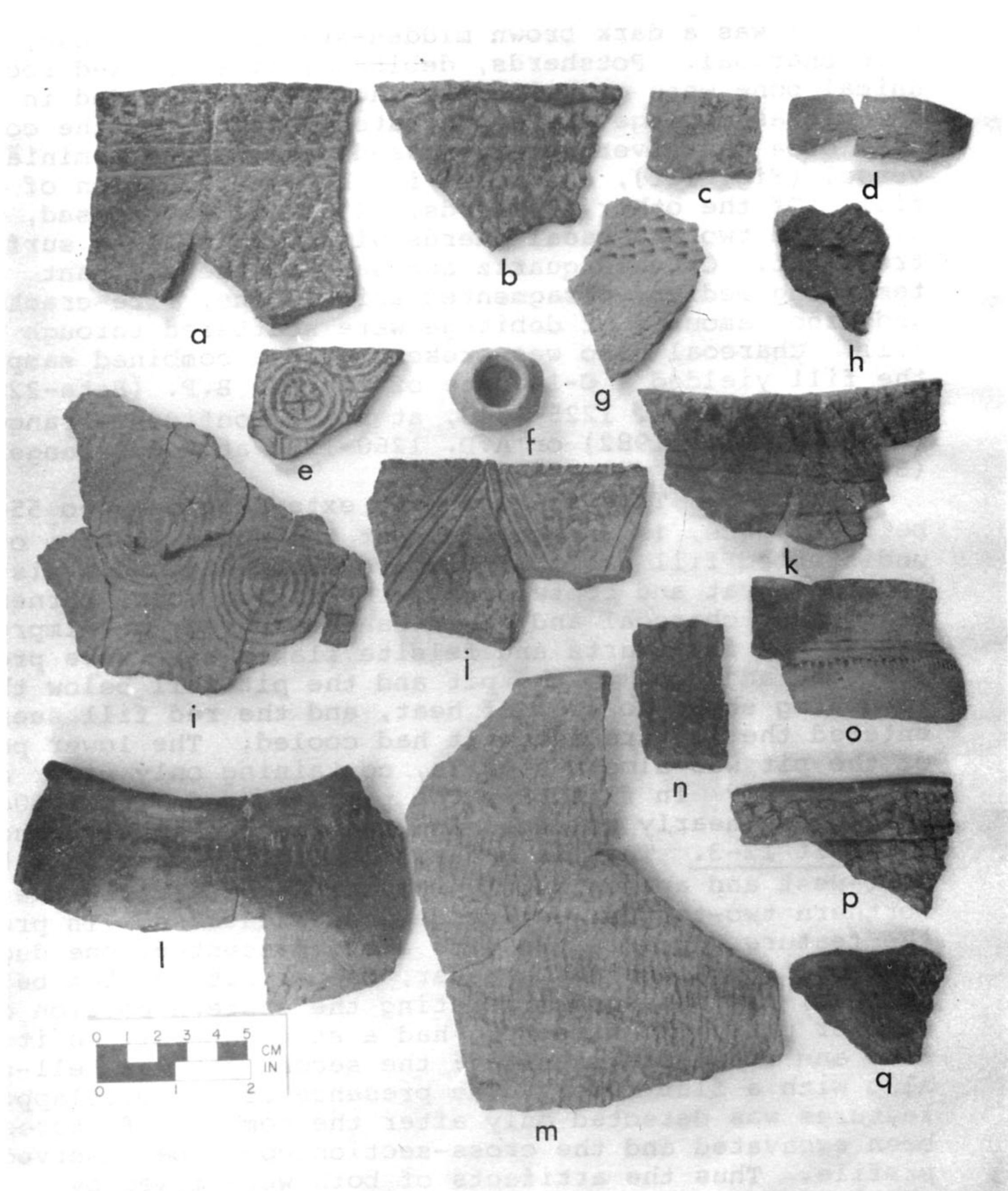


Figure 11. Ceramic artifacts from the Hardy Site, 31Sr50, a, Pit 57-4; b, Pit 57-2; c, d, Pit 56-4; e, i, plow zone eastern sector; f, Pit 9-8; g, h, Pit 58-2; j, m, midden, central sector; k, o, Pit 16-4; l, Feature 40-4; n, p, q, Pit 65-2.

the pit(s). Included among the refuse is a small piece of wattle-impressed daub and burned animal bone (very fragmented).

Pit 16-4. This is a small oval refuse-filled pit 1m x .8m, basin-shaped (i.e., the pit walls slope strongly inward), with a floor at 80cm below surface. It is capped by the midden and likely represents an early feature of the central area. The fill was stained dark by refuse, which included 36 sherds plus several others which could be refitted to make a single vessel section. That vessel is cord-marked, while the others are net-impressed, brushed or unidentified basal sherds. Temper is crushed quartz and sand, or coarse sand; three sherds also contained fine particles of soapstone. Also present were charcoal, animal bone fragments, debitage, and a cylindrical clay object, probably a fired coil fragment were also recovered.

Pit 17-3. A shallow refuse pit, 17-3 measured 60cm in diameter and ended at 58cm below surface. In profile the pit was basin-shaped, and its fill contained small amounts of fragmented animal bone, charcoal, debitage and potsherds. Of the 10 sherds, eight could be refitted as portions of two vessels, so a maximum of four vessels is represented, all net-impressed. Temper was fine sand in one, coarse sand in another, and crushed quartz and sand in two.

Pit 18-5. Like pit 9-9, this feature was marked by a lens of burned clayey sand, red-brown in color. Because the matrix adjacent to the pit was unaltered it appears the burned soil entered the feature as refuse from a hearth clean-up. The feature was oval, 1.3m x .6m, and extended to only 45cm below surface. Artifacts include eight net-impressed sherds tempered with coarse sand, minor amounts of fire-cracked rock, debitage and charcoal. Also present were a dozen very small, irregular-shaped bits of fired clay containing crushed quartz and coarse sand, presumably tempering agents. A .22-caliber cartridge casing also was found, likely carried by rodent activity.

Pit 18-3. This is a circular pit, 90cm in diameter, which extended to 95 cm below surface. In cross-section it was bell-shaped with a flat floor. Its original excavation occurred after the midden stratum had formed, and thus it likely dates to the later portion of the central area occupation. A total of 73 potsherds was in the fill, 53 of them net-impressed, three brushed, two plain and the remainder unidentified. In descending order of frequency tempering agents were crushed quartz and sand, coarse sand only, crushed quartz only, and fine sand. Along with the pottery were found debitage, burned and unburned animal bone, charcoal, fire-cracked rock and several broken stone tools.

Pit 20-6. The deepest of the central area features, this pit was not completely exposed by the excavations but apparently was an oval ca. 1.4m x .7m, extending to 1.38m below surface. It was slightly bell-shaped in cross-section with a concave floor. It was capped by the midden suggesting it is one of the older features in the central area. Although the western wall of the pit was clearly defined, its northeastern edge was merged with another feature, this being a wide linear stain that continued to the northwest at least seven meters. Described below as feature 40-4, this is a filled gully or ditch which either was present when 20-6 was created or formed shortly afterward. Lenses of midden-stained soil were continuous from the gully and the interior fill of 20-6. In addition to the potsherds the pit contained a turtle shell bowl, fire-cracked rock and miscellaneous unburned pebbles, debitage, poorly preserved pieces of animal bone, mussel shell and charcoal. Refuse was concentrated in lenses of dark organic-stained soil separated by brown sandy loam strata, with the densest concentration of material near the pit floor. The potsherds consist of 115 specimens, some of them large, and 90 percent tempered with varying amounts of crushed quartz and sand; the remainder contain coarse sand (9 percent) or no visible temper (1 percent). All of the sherds, except two plain specimens, are net-impressed or brushed over net-impressing; the entire assemblage fits well in the Dan River series var. Dan River.

Pit 21-4. This feature may not be of cultural origin. It appeared as a faint stain beneath the midden zone and was bisected by our excavations. It was approximately circular, 60cm in diameter; the stain was no longer observed at 58cm below surface. Its vertical edges were equally difficult to define but seem to be vertical or nearly so. The fill contained a single sherd, four pieces of debitage and 13 miscellaneous stones. The sherd is plain and tempered with fine sand.

Pit 23-3. This was a oval basin-shaped pit 1.1m in diameter capped by the midden stratum. The walls sloped inward strongly to a slightly concave and irregular floor at 72 cm below surface. Fourteen sherds were present, all net-impressed and tempered with crushed quartz and sand (11), coarse sand (two), or crushed quartz (one). There also were found a small amount of debitage, fire-cracked rock and two pieces of daub along with abundant charcoal.

Pit 26-6. A poorly defined, faintly discolored circular stain 50cm in diameter marked this small feature. It appeared to represent a basin shaped pit with its floor 85cm below surface. Only three tiny sherds, six small stones and 2.2g of charcoal were found in its fill.

Pit 27-7. This feature was first observed directly under the plow zone, appearing as a darker stain in the dark midden soil. At 63cm below surface the stain had a waisted or "figure-8 shape" created by the pit proper, 80cm in diameter, and a shallower connecting basin on its western edge. The latter likely represents slumping of the pit wall or a crude step which provided easy access to the pit, not unlikely given the pit's depth of 143cm below surface. The bottom of the pit contained a 10-14cm thick layer of sterile compact gray clay, unfired but very hard. Artifacts in the fill included 49 potsherds, debitage, fire-cracked cobbles and miscellaneous rock, daub, 60 grams of charcoal and a small amount of fragmented bone. The sherds are net-impressed (36), brushed (two) or plain (four); seven were unidentifiable. Temper is mainly crushed quartz and sand, although seven contain only coarse sand, one only quartz, and one fine sand. The ceramic assemblage is classified as Dan River var. Dan River.

Pit 38-5. The largest feature found in the central sector, 38-5 was a bell-shaped pit bisected by our excavations. It was 1.6m in diameter immediately below the plow zone and extended to 130cm below surface. In cross-section the walls expand only slightly and the floor is uneven but approximately flat. A total of 24 sherds were recovered, several of them very large. Twenty-three are net-impressed and one cord-marked; temper is crushed quartz and sand in 16, coarse sand in five, and single sherds reveal crushed quartz, fine sand, or no visible temper. As before, the assemblage is considered Dan River var. Dan River. Additional material in the pit fill includes stone tools and debitage, complete and fire-cracked river cobbles, miscellaneous rock and charcoal. These materials tended to occur in lenses or concentrations; the pit fill also revealed lighter lenses of nearly sterile soil, either slump or backfill.

Pit 43-3. Only partially excavated, this was a circular pit 50cm in diameter and 70cm deep. It was basin-shaped in cross-section. The fill was almost sterile, yielding only six tiny pieces of fired clay, possibly daub, and a few miscellaneous rocks.

Pit 44-3. Larger than 43-3 but also nearly sterile, this pit was only partially excavated. It was approximately circular, 80-90cm in diameter, with in-sloping walls and a slightly concave floor at 95cm below surface. Three tiny potsherds, four pieces of debitage, one bone fragment and several miscellaneous rocks were present in the fill, along with a minor amount of charcoal.

Pit 50-4. Another partially excavated feature, this was a flat-bottomed slightly bell-shaped pit extending to 110cm below surface. It was observed directly below the plow zone (the midden stratum is practically non-existent in this area) where it was 1m in diameter, characterized by heavily stained fill. A total of 38 potsherds was recovered; many of these are large, and all net-impressed, the net applied over brushing in three cases. A few pieces of debitage, some poorly preserved animal bone, charcoal flecks and fire-cracked rock also were present. The incidence of scraped interiors on the sherds, coupled with a high frequency of crushed quartz and coarse sand in the paste, indicate the feature dates to the earlier portion of the Dan River sequence. The sherds, and much of the fire-cracked rock, were clustered in a horizontal band about midway of the pit's depth suggesting a single depositional episode. Above and below that band the fill contained charcoal and only the occasional artifact, although the soil remained prominently stained.

Feature 40-4. This feature likely does not have a cultural origin, but it was utilized as a refuse receptacle by the Hardy site inhabitants. First observed in EU20 as an ill-defined stain trailing north from pit 20-6, the several units excavated to the north revealed portions of a linear feature with an undulating floor and sides that were irregular but generally in-sloping. The northern terminus was not located, but enough was exposed to indicate the stain represents either an erosional feature or an unidentified cultural feature subsequently altered by erosion, then filled with the common mix of midden debris. It could not be detected southeast of feature 20-6. The feature depth varied from 76cm to 112cm, with a width of about 1m. The fill contained 84 sherds, unusually abundant animal bone, fire-cracked rock and a small amount of debitage. Charcoal was frequent in most of the fill.

Postholes. Numerous small circular stains were apparent beneath the plow zone. Those that showed a symmetrical and vertical orientation in cross-section were identified as postholes and are shown in Fig. 9. These features typically terminated at 50-80cm below surface and contained few or no artifacts. Often, the stains were difficult to discern in the surrounding matrix, and it is possible some were overlooked despite the close attention given each level of each square. The only pattern apparent is the rough circle of posts indicated by the dotted line in Fig. 9. This is identified as a structure, probably a house, although beyond the approximate symmetry of the posthole pattern there is no supporting evidence. No hearth was present, nor a discernable floor and/or features, although it is likely that floor features were destroyed by deflation and that we observed only the subfloor portion of the postholes. If they represent structural components the postholes are very widely spaced, ca. 2m-3m apart, whereas Siouan structures elsewhere exhibit postholes at 30cm to 1m intervals (Petherick 1987; Lewis 1951:318; Ward 1983:74). On the other hand, in 1701 Lawson observed that the Indian "cabins" were constructed by placing posts "about two yards asunder, in a Circular Form" (Lawson 1709:177).

Western Excavations. Surface stains indicative of plowed trash pits were thickly clustered in the western portion of the Hardy Bottom (Fig. 8), allowing seven 2m squares to be placed contiguously to expose and excavate nine pits (Fig. 12), including seven trash pits and two human burials. There was no midden here; the plow zone was simply stripped to show the fill of the features, usually clearly limned against the sterile sand matrix.

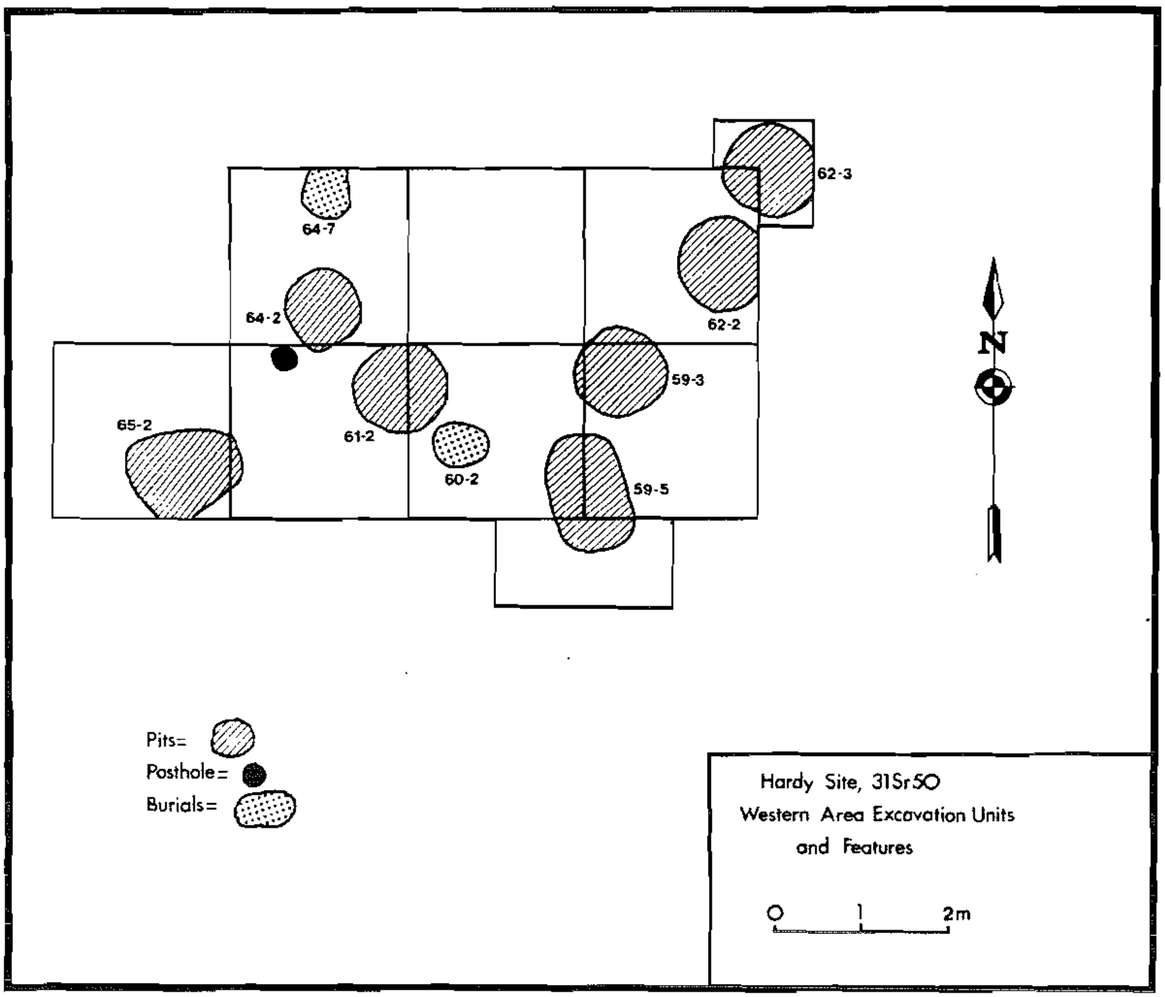


Figure 12. Western block excavations and features. The Hardy Site, 31Sr50.

Pit 59-2. This feature was oval in plan view, 103cm x 94cm, and extended from immediately below plow zone (i.e., 38cm below surface) to 102cm. It had vertical walls and a flat floor. The pit fill was variable, suggestive of loading or discrete discard episodes. Potsherds, charcoal, river pebbles and cobbles, and minor amounts of debitage and shell were present in these lenses. Only nine sherds were present in this feature but include net-impressed (3), brushed (3) and plain (1) body sherds, and a single net-impressed, pinched rim. One sherd is not identified regarding surface treatment. The assemblage is assigned to Dan River var. Stokes.

Pit 59-5. Oval in plan view, this pit measured 1.35m north-south and .95m east-west. It was bell-shaped in cross-section with a slightly dished floor 71cm below surface. In the central portion of the pit fill the soil was stained nearly black by a concentration of charcoal in and around a group of sherds which, when refitted, compose about three-fourths of a large plain jar. The charcoal included charred maize kernels, squash seed and rind fragments, hickory nut and acorn fragments. Wood charcoal from the concentration yielded a C-14 date of 340 ±70BP (Beta-22502), corrected to A.D. 1420-1650 at a 95% confidence interval (Klein et al. 1982). Debitage, stone tools, bone, shell, and miscellaneous rock were present in the fill, especially in the darker lens. The bone includes deer, turtle, turkey and fish remains including gar, along with a bone awl which, apart from the turtle shell bowls, is the only piece of worked bone from the site. The potsherds include net-impressed (10), plain (three), brushed (two) and cord-marked (one) specimens which, in toto, are classified as Dan River var. Stokes. Temper is predominantly fine sand.

Pit 61-2. This pit is circular, 1m in diameter, with its bottom 1.04m below surface. The floor is flat but the walls are undercut, producing a bell-shaped cross-section. Because of this, pit 61-2 and the burial pit 60-2 (discussed below) almost, but not quite, intersect; at 60cm below surface the two features are much closer than seen in Fig. 11. The pit fill was homogenous in its staining, the dark brown soil producing sherds, debitage, one stone tool, charcoal, one fragment of burned bone and a high frequency of fire-cracked cobbles and miscellaneous rock. The cobbles were most common on the pit floor and along the lower portion of the pit wall. There was no indication that the soil in or adjacent to the pit had been heated, however, although it is not clear whether the sand would register such heating. The 26 potsherds are net-impressed (six), brushed (11), cord-marked (three) or plain (four), with two unidentified. THe temper commonly is very fine sand, and the assemblage is classified Dan River var. Stokes.

Pit 62-2. Another circular pit, this feature measured 1.05m in diameter and 70cm below surface in depth. The pit walls were straight and the floor was nearly flat, slightly dished. After stripping away the plow zone this feature was delineated by fill that was slightly lighter in color then the surrounding soil, a contrast to the other features in this area which contained fill darker, usually markedly darker, than the sterile matrix adjacent. When excavation began this light fill soon gave way to a very dark lens of midden soil, which in turn changed to near-sterile fill just above the floor, the entire sequence embracing only 30cm. Artifacts were scarce, consisting of fire-cracked rocks, four tiny potsherds, debitage, charcoal and small miscellaneous stones. The ceramics were too small for classification.

Pit 62-3. This is also a circular shallow feature, only partially exposed and excavated. It was 1.25m in diameter with a dished floor at 60cm below surface; pit walls were straight. The fill was only lightly stained except near the pit center, where a darker lens of midden soil was apparent. The fill contained debitage, potsherds and minor amounts of charcoal, fire-cracked rock and bone. Twenty tiny, irregular lumps of fired clay also were recovered; at least four of these bear clear stick impressions, probably wattle, while four others contain tempering material identical to the potsherds. Fifteen potsherds were found. There were brushed (five), net-impressed (three), cord-marked (two), or net-impressed and brushed (one); four specimens are unidentified. Temper is coarse sand (six specimens) or crushed quartz and sand (nine specimens). This assemblage is classified as Dan River var Dan River.

Pit 64-2. This pit was nearly circular in plan, 80cm in diameter, and extended to 50cm below surface, only 8cm below the plow zone. In cross-section it was basin-shaped, with slightly in-sloping walls and a concave floor. The fill was the typical dark brown midden soil with lenses of yellow-brown sandy loam, common in the trash-filled pits near the floor. Potsherds, debitage, charcoal, and miscellaneous rock were present, along with a few pieces of very friable bone. Also found were two tiny bits of fired clay, irregular in shape, one with stick impressions. Only two sherds were large enough to detect surface treatment; one was net-impressed, one cord-marked. Both most closely resemble Dan River var. Dan River.

Pit 65-2. An oval feature in plan, this feature was not completely exposed and excavated. It measured 1.30m east-west and (estimated) 1.40m north-south. The walls slope inward to a dished floor, present at 76cm below surface. The fill showed alternating lenses of lightly stained and darker stained sand, with artifacts most abundant in the dark strata. Artifacts were dense in this feature. Pottery, debitage, charcoal and fire-cracked rock were found, along with comparatively well-preserved animal bone. Over 100 pieces of unmistakable daub were found, along with a clay pipe fragment and a small cylinder of fired clay, possibly a coil segment. Also present was a cylinder of rolled copper 1.7cm in length and 2-2.5mm in diameter with walls .25mm thick. A total of 89 potsherds was recovered; 57 are net-impressed, six are plain, three cord-marked, one corn-cob impressed and two brushed, with 20 unidentified. Temper is fine or coarse sand in most cases with some crushed quartz added in nine specimens. The assemblage is readily classifiable as Dan River var. Stokes.

Burial 60-2. This is the burial of a child, 2-3 years of age (Appendix A), interred in an oval pit 65cm east-west and 50cm north-south. In cross-section the burial pit was basin-shaped, 65cm deep. The skull was at the east end of the grave, facing west, and a conoidal based vessel, complete except for a small break on its rim, rested adjacent to the skull on the south side. Only the upper torso of the child is represented; the entire western half of the grave was devoid of skeletal remains, and there is no evidence of post-burial intrusion which could have disturbed the burial. The vessel was tipped at about 30^{o} to the west. Beneath its western side and extending under the base was a small mat of charred fibrous matter ca. 10cm in length and 1cm thick. This has not been analyzed. The vessel itself is a small jar, 14cm tall, with a orifice 13.7cm in diameter. Its exterior was textured by net impressions, then smoothed to largely obliterate the markings; the rim is flaring, corncob-impressed, with a flattened lip. This vessel is almost identical in size and shape to those found in the Fredericks site burials of ca. 1680-1710 (S. Davis 1987:Pl 8.7).

Included in the burial fill, probably inadvertently, were minor amounts of debitage and two sherds, one eroded, the other plain. Both are sand-tempered. These sherds, along with the burial vessel, resemble most closely the Dan River var. Stokes ware.

Burial 64-7. Although not completely exposed in 1987, this adult burial occurred in an oval pit 45cm east-west and (estimated) 80-200cm north-south. Pit walls were vertical, the floor flat. The skull was at the south end of the grave, face to the east. The postcranial remains were so badly decayed that burial posture could not be determined with certainty, but the skeleton probably was semi-flexed or extended. Adjacent to the skull to the southwest was a compact mass of primary and secondary flakes and cores, 60 in total (Fig.13a,c), along with an Early Archaic Kirk point (Fig. 13b). The lithics occurred within the space of 10cm x 20cm. At the southeast edge of the cache, and directly south of the skull were two diaphyses of very large avian tibiotarsals; one intact end on each bone shows they have been grooved and snapped to remove the epiphyses. After excavation of the lithics a linear array of bone was found directly beneath the cluster, oriented parallel to the long axis of the cache. This line was comprised of at least 26

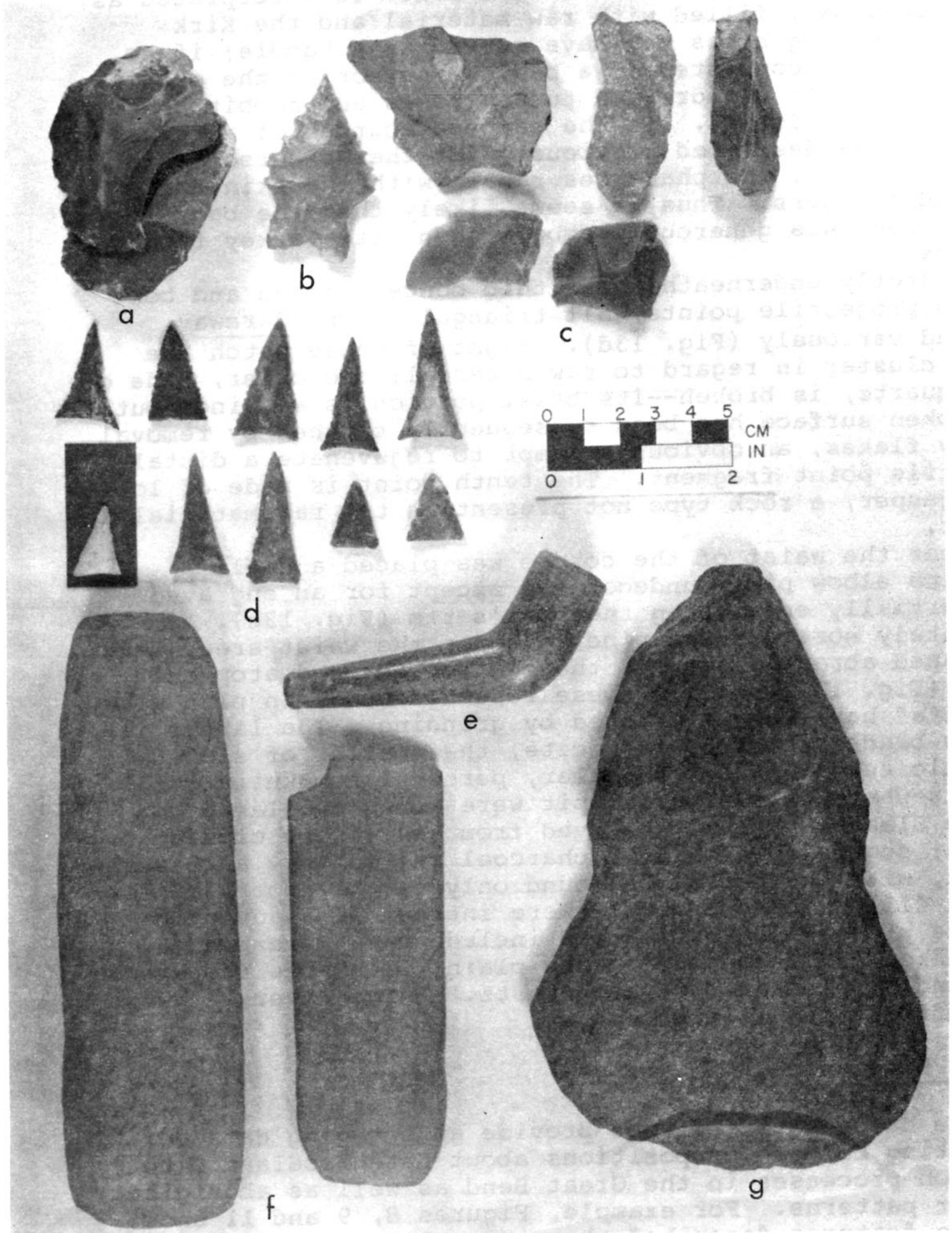


Figure 13. Lithic tools and debitage, The Hardy Site, 31Sr50.
a-f, burial 64-7; g, lower midden, central sector

phalanx I turkey bones, drilled through the metacarpal facet; one ilium of a cottontail rabbit, (Sylvilagus floridianus, undrilled; one small mammal bone, drilled; and the incisor tooth of a beaver (Castor canadensis), unworked. This entire assemblage--lithics and bone--is interpreted as a decorated bag, filled with raw material and the Kirk point. The long bones may have served as a handle; if so, the decoration consisted of a beaver incisor at the opening of the bag, with the drilled turkey bones and rabbit bone sewn or tied below it. If the carpometacarpus of a turkey is skinned as described previously for the McPherson site bone assemblage, the phalanges remain with the skin and attached feathers. Thus it seems likely that the bag, if such it was, was generously embellished with turkey flight feathers.

Directly underneath the lithic concentration and bone were 10 projectile points, all triangular type Caraway, oriented variously (Fig. 13d). Eight of these match the lithic cluster in regard to raw material; one other, made of white quartz, is broken--its basal portion is missing--but the broken surface has been subsequently thinned by removal of tiny flakes, an obvious attempt to rejuvenate a distal projectile point fragment. The tenth point is made of low-grade jasper, a rock type not present in the raw material cluster.

Near the waist of the corpse was placed a small soapstone elbow pipe, undecorated except for an engraved line partially encircling the bowl's rim (Fig. 13e). Immediately north of the pipe, also at the waist area, were two shaped abrading stones, the smaller stacked atop the larger (Fig. 13f). While these resemble celts in plan view, the "bits" have been flattened by grinding. The larger is of flow-banded rhyolite or dacite, the smaller of slatey rhyolitic tuff (J. Robert Butler, personal communication).

Elsewhere in the burial pit were found two large felsite flakes, probably removed from the lithic cluster by rodents; scattered debitage, charcoal and pottery also were present, with the potsherds found only in the upper 1m of the pit fill. These probably were introduced inadvertently when the pit was backfilled and include net-impressed (5), cord-marked (3), brushed (1) and plain (1) sherds tempered with sand or sand and crushed quartz. A Dan River var. Dan River affiliation is apparent.

Feature Discussion

The Hardy site features provide an engaging data set for testing certain propositions about Late Woodland site formation processes in the Great Bend as well as aboriginal behavior patterns. For example, Figures 8, 9 and 11 show that the features described above are clustered in the portions of the site previously labeled as the eastern, central and western sectors. For several reasons it can be argued that these clusters are real, i.e. they are not created by differential N-transforms (Schiffer 1976) of an archeologically homogenous site. This point is crucial to the understanding of the site and thus is elaborated here; a much more detailed account is provided in Marshall (1988), from which the following points are excerpted. First, it is extremely unlikely that features exposed on the surface were not detected and mapped. As previously described, conditions in 1987 gave near-perfect surface visibility, and the area of surface artifact scatter was walked repeatedly, casually and systematically. It seems equally unlikely that features lie buried, unexposed by plowing, in the "empty" regions of Figure 8. The five 2m squares excavated northwest of the barn failed to detect such features. Also, it seems that most features in the western sector have lost half or more of their integrity to the plow, the truncation occurring only 20-40cm above the pit floor (assuming an original depth of ca. 1m such as found in the central sector). Because the area between the western and central sectors is at the same elevation or higher, it seems unlikely that the pits have been completely erased by plowing. It would be more probable that the truncation would occur higher in the feature. Finally it should be noted that the large central sector excavation block reveals a distinct reduction in feature frequency in the peripheral squares, i.e. those outside the midden area, suggesting the clustering here at least is not an artifact of preservation.

Further archeology will test this view. For present purposes it is assumed that the clusters of features represent discrete activity sets segregated in time and space or in space alone, i.e., they are diachronic or synchronic. It is also assumed that the activity sets are associated with a permanent (year-round or longer) residential structure or structures (based on the probable structure associated with the dense feature cluster in the central sector and the occurrence of wattle-impressed daub in the western sector pits). Finally it assumed that the same basic economy was in use in the three areas, i.e., mixed hunting-gathering-horticulture (based on similar floral and faunal remains from the three sectors).

Two data sources support the view that the three sectors represent sequential occupations. A seriation of ceramics from the features indicates that the eastern, central and western sectors are distributed in time from early to late respectively (Marshall 1987). Secondly, a series of C-14 samples was submitted for analysis, one from each sector. The age ranges do not overlap at the 95% confidence interval, corrected by dendrochronology correlation using the conversion tables of Klein et al (1982). Those dates, reported above, also indicate a eastern-central-western occupation sequence.

One additional exercise was performed on the data in an attempt to demonstrate approximate contemporaneity of features within a sector. Using the central sector potsherds recovered from feature contexts, cross-mends were sought between pit contents. It was assumed that pits in use at the same time were more likely to receive sherds from the same vessel than pits separated by time. Clearly, a vessel's sherds scattered in a sheet midden can be incorporated in pits of very different ages, but the large size of the sherds used in the cross-mends gave confidence that these, at least in most cases, represent primary or secondary refuse (Schiffer 1976). Table 5 is a tabulation of features which contained sherds which could be refitted to form portions of the same vessel. No cross-mends were found (though sought) in features of different sectors.

TABLE 5: Distribution of Vessel Sherds in Features, Hardy Site, Central Sector

Feature No.	Sherds Refitted From:
9-8	16-4, 20-6
9-9	-
12-3	20-6, 18-3
16-4	38-5, 9-8, 20-6
17-3	-
18-5	-
18-3	38-5, 12-3, 20-6, 23-3
20-6	50-4, 12-3 18-3, 9-8, 16-4
21-4	-
23-3	38-5, 18-3, 27-7
26-6	-
27-7	23-3
38-5	18-3, 16-4
43-3	-
44-3	-
50-4	20-6
40-4	16-4

Additional confidence in this test of contemporaneity was provided by the redundancy of the method. On the other hand the cross-mends are contradicted as indicators of contemporaneity by the stratigraphy of pits 18-3 and 20-6; the former truncates the midden, the latter is capped by midden. Either the midden did not form at the same time in these two areas or 18-3 contains refuse originally deposited in the midden, not in the pit.

Despite weaknesses inherent to each method, the seriation, radio carbon dates and cross-mends, in conjunction with the apparent spatial clustering of features, support the view of at least three non-contemporaneous occupations at the site. For that reason the artifact descriptions that follow deal with each of the three areas in turn.

The Artifacts: Ceramic Assemblage

A separate study of the Hardy site pottery currently is available (Marshall 1988), and that analysis will not be repeated here. The objectives of this section are to provide an overview of the assemblage and describe the intrasite variation. With one exception (the stamped vessel from the eastern sector described below) the Hardy ceramics fit comfortably within the late prehistoric Siouan tradition of the North Carolina Piedmont. The pottery is predominately net-impressed. Other surface treatments, in descending order of frequency, include brushed (often brushed over net-impressing), plain, cord, fabric, and corn cob impressed. Interior surfaces are either scraped with a serrated tool or smoothed, but often the smoothing is incomplete revealing traces of the prior scraping. Temper is crushed quartz and/or sand; the latter varies both in its abundance and size. Vessel shape, when this can be determined, consists mainly of jars with a flaring or straight rim and a rounded or conoidal base.

Some of these attributes have been used as temporal indicators because they shift in frequency through time as demonstrated in the rare stratified site (e.g. the McPherson site, this volume; Woodall 1984:76-77; Davis 1987:187; Claggett and Cable 1982: 101-106) or by radiometric dating (Simpkins 1985: 80-82). Temper size and vessel thickness are correlated and likely are related variables (Davis 1985) both probably attributable to a dietary shift after A.D. 1000 which incorporated maize and, after A.D. 1200, beans. Those foods may have required increased cooking time, encouraging production of thinner walled vessels for enhanced heating effectiveness (Braun 1983; Schiffer and Skibo 1987). The surface treatment of vessel interiors and exterior surface treatment may also be indexing the same or other uses of the vessels, but no middle range theory currently is available to link that archeological phenomenon to extinct behavioral systems. This is unfortunate because the rate of change in those variables is so slow (covering at least 600 years), and occurs over an area so large as to certainly embrace otherwise disparate social groups, that the changing attributes likely are responding to a common and directional alteration in the human ecology critical for interpreting the cultural evolution of the Piedmont.

TABLE 6: Surface Treatments of Body Sherds from Features, Hardy Site, 31Sr50 [unid. sherds omitted]

Prov.	Net	Bshd	Pln	Cd	Fab	Cob	Oth	Scrpd	Smthd
Eastern									
56-41	61	4	2					56	11
57-2	83	9	1				1*	82	11
57-4	72	6						56	22
58-2	152	4	13					111	51
58-3	21	1						20	2
Sub total	382	24	16					325	97
Central									
9-8	46	1	4		1			36	16
9-9									
12-3	53	4	2				4	53	3
16-4	23	2	3	2				15	11
17-3	3							3	1
18-5									
18-3	47	5	2					46	5
20-6	99	14	1					91	6
21-4									
23-3	14							10	4
27-7	31	2	4					24	13
38-5	22			1				15	8
50-4	35	3						35	3
40-4	58	8	5			2	1**	58	10
55-2	39	5	1					38	5
Sub total	471	44	23	3	1	2	5	424	85
Western									
59-2	3	3	1					5	2
59-5	8	2	3	1				4	10
61-2	5	10	3	3				10	7
62-3	3	6		2				7	4
64-2	1			1				2	
65-2	51	1	6	3				16	42
60-2	1***		1					1	1
64-7	5	1	1	2				8	1
Sub total	77	23	15	12				53	67

* Complicated stamped
** Incised
*** Complete vessel

For the objectives of this study the ceramics serve to place the three sectors of the Hardy site on a time line. Without understanding the underlying processes creating the attributes' trajectory of change it is almost impossible to determine whether the changes are regular through time and space, or alternatively whether they are halted or reversed by particular activity sets. In Table 6 is shown the distribution of two of the variables, exterior and interior surface treatments. Only identifiable body sherds are entered in the table (hence the disparity in number when compared to the previous feature descriptions), and some of these were eroded on the interior surface so treatment could not be discerned.

The data suggest that the three site sectors are not coeval if our "time line" discussed above is regular and directional. Plain ware increases, east to west across the site, from 2.8 percent to 4.2 percent to 11.8 percent. Interior smoothing varies from 23 percent in the eastern sector to 16.7 percent in the central to 55.8 percent in the west. While the eastern and central areas are ambiguous, the two variables contradictory in their patterning, the western sector clearly postdates the other two. A third variable set, temper size, is shown in Table 8 (sherd totals in tables 7 and 8 are not the same because unidentified surface treatments are omitted in Table 6).

The temper particles as shown in Table 7 indicate differences between the three areas but no pattern that convincingly indicates an east-to-west, early-to-late trend. This may be a result of the small sample sizes created by the several categories. If, for example, the categories "Coarse Sand," "Quartz and Sand" and "Quartz" are lumped in each sector, thereby combining sherds containing large particles of mineral temper, the east and central areas produce 94 percent and 95 percent coarse-tempered sherds respectively, while the west end produces 77 percent. Again the east and central areas are more similar, with the western sector standing apart. The several variables--surface finish, interior scraping and temper size--may be indexing the same behavior variable, a variable that is changed in amplitude in the terminal prehistoric period, as represented by the west end pits. This possibility is discussed in the conclusions section of this report.

Apart from potsherds, the only ceramic artifacts found at Hardy were a few aboriginal pipe stem fragments. Ten were recovered, all simple cylinders or truncated cones, and all broken, with no apparent distributional patterning within the site. Also in all three parts of the site were found small pieces of wattle-impressed daub. Daub was most abundant in the western area but also represented in most of the refuse pits. In pit 65-2, for example, some 330 pieces were found. The frequent occurrence of daub, and its wattle impressions, disallows an interpretation other than its use in construction of houses, a building technique completely absent from investigated sites below the shoals.

TABLE 7: Temper of Body Sherds from Features, Hardy Site, 31Sr50

Provenience	NVT	FS	CS	Q,S	St.,S	Q*
Eastern						
56-4	3	1	6	57		6
57-2			8	72		15
57-4	1	1	10	56		16
58-2	9	18	24	137		28
58-3			10	10		8
Subtotal	13	20	58	332		73
Central						
9-8		2	4	45	4	2
9-9						
12-3			20	47		1
16-4			11	20	3	
17-3			1	2		
18-5						
18-3		3	13	34		6
20-6	3		10	103		
21-4		1				
23-3			2	11		1
27-7		1	7	32		1
38-5	1	1	5	15		1
50-4			1	34		3
40-4	4	3	7	61	1	2
55-2		1	13	35		
Subtotal	8	12	94	439	8	17
Western						
59-2			1	6		1
59-5	1	6	1	6		2
61-2		1	2	20		1
62-3			6	9		
64-2			1	1		
65-2	6	17	29	21	4	6
60-2		1	1			
64-7	1		1	7		
Subtotal	8	25	42	70	4	10

* NVT=no visible temper; FS=fine sand; CS=coarse sand; Q,S=crushed quartz, sand; St., S=steatite, sand; Q=crushed quartz

Bone Assemblage

The only bone artifact from the Hardy site consists of an awl fashioned on a splinter of deer metatarsal. It was found in pit 59-5.

Lithic Assemblage

For present research purposes the lithic analysis consists of a description of the formal tools and a study of the raw materials represented in the debitage. No wear pattern or edge angle study has been done; utilized flakes and retouched flakes have not been isolated by close study of the debitage assemblage, although those noted in the sorting process have been tabulated below. For the site as a whole formal tools consist almost exclusively of complete or fragmentary projectile points. While the flakes have not been systematically studied under magnification, personal observations accumulated by the washing and sorting of thousands of pieces strongly suggest that other tool classes (e.g., utilized flakes, retouched flakes) are rare in the Hardy lithic assemblage. Other stone implements also are rare, excepting the ubiquitous fire-cracked rock and cobble manuports, some of which may have served as hammerstones.

Eastern Sector. A total of 32 complete or fragmentary formal tools was recovered in the eastern excavations. While the distal fragments are ambiguous regarding original tool form, all other specimens are readily identifiable as small triangular arrow points. Two specimens are identified as "aborts." This refers to pointed bifaces that apparently were abandoned during the manufacturing process due to the inability of the maker to satisfactorily reduce the point's thickness. These typically have one or more "knots," areas of unusual thickness exhibiting numerous step fractures from unsuccessful thinning attempts.

TABLE 8: Tool Provenience, Eastern Sector, Hardy Site, 31Sr50

Provenience	PP,Abort	PP,Basal Fragment	PP,Distal Fragment	PP,Complete	Other
Plow zone	1	4	4	4	1*
56-4	1	2		2	
57-2		2	1	1	
57-4		1	1	1	
58-2		1	4		
58-3			1	1	

* Retouched felsite flake

The dimensions of the complete specimens, and the measurable portions of broken ones are presented in Tables 10 and 11 below.

TABLE 9: Dimensions of Complete Projectile Points, Eastern Sector, Hardy Site, 31Sr50

Provenience	Length	Width
Plow zone	1.85cm	1.55cm
	2.00	1.50
	2.70	1.6o
	2.65	2.05
Pit 56-4	2.80	1.50
	3.10	1.61
Pit 57-2	2.05	1.70
Pit 57-4	2.60	2.10
Pit 58-3	2.80	2.70
n = 9	X = 2.51, s.d. = .43	X = 1.81, s.d. = .40

TABLE 10: Width of Projectile Points (aborts and basal fragments only), Eastern Sector, Hardy Site, 31Sr50

Provenience	Width
Plow zone	1.9
	2.0
	2.0
	2.0
	not measurable
Pit 56-4	1.4
	2.5
Pit 57-2	1.6
	1.7
Pit 57-4	1.8
Pit 58-2	2.0
n = 10	X = 1.89, s.d. = .30

Width of complete points,aborts and basal fragments
n = 19 X = 1.85, s.d. = .34

All of the eastern sector tools, complete and fragmentary, are made of non-local raw material, either felsic rock such as vitric tuffs, rhyolite or crystal tuff, or a black lustrous chert (probably Knox chert).

Debitage consists of felsite or (rarely) chert flakes, chips or cores and quartz flakes, chips or cores. Cores or core fragments of non-local raw material were very rare.

The quartz no doubt originated from veins present in the clay uplands adjacent to the Hardy Bottom. A prominent vein was observed in a plowed upland field across the river, and others likely are present on the Surry County side as well. The vein quartz varies in its color and fracturing properties, but a high percentage of the eastern sector debitage is a very fine milky quartz exhibiting conchoidal fracture. Despite its seeming suitability for producing formal tools the absence of such, coupled with the abundance of debitage, suggests that most or all of the quartz flakes were used as unmodified or minimally modified cutting/scraping tools. The nature of the material is such that edge damage, or even edge retouch is difficult to detect and may have gone unnoticed in our analysis.

If we have underestimated the number of quartz tools it is equally or more likely we have over-estimated the amount of quartz debitage. Because of the irregular fracture on some of this material it is not always possible to distinguish flakes or cores from rock broken unintentionally by heat or by using a quartz nodule for pounding. Although our cataloging used a conservative approach for the quartz debitage, requiring either a bulb of percussion (positive or negative), a striking platform or flake scars on the dorsal flake side, it seems probable that a small portion of this class may be unintentional by-products of other cultural practices. It is highly unlikely that any was introduced into the site by natural processes.

TABLE 11: Lithic Debitage, Eastern Sector, Hardy Site, 31Sr50

Provenience	Non-Local* Flakes	Non-Local Cores	Quartz Flakes	Quartz Cores
Plow Zone	202		187	1
Pit 56-4	79	1	91	3
Pit 57-2	29	0	36	0
Pit 57-4	15	0	26	0
Pit 58-2	183		168	1
Pit 58-3	31	1	8	0

* Includes felsites, argillite, chert, chalcedony and jasper

Comparing Tables 9 and 11 shows a weak correlation between whole, aborted or fragmentary projectile points, and debitage. More interesting is the high frequency of non-local debitage either differentially patinated or bearing some amount of cortex. Not all the debitage was examined for this trait, but the two largest samples, from pits 56-4 (29 percent) and 58-2(19 percent) revealed such surfaces; the felsite core from 56-4 also exhibited cortex on one surface. A similar phenomenon was observed at the Donnaha site where cortex occurred on 26 percent and 28 percent of debitage from two plow zone samples (n=8828) and 29 percent from pit 40-3 (n=309) (Eppley 1984:101-102). It thus appears that the non-local raw material present at both sites was introduced, at least in part, as nodules rather than quarry blanks or prepared cores.

A second characteristic of the debitage is the high frequency of extremely small, thin "retouch" flakes. One measure of this is the comparison of the non-local and local (quartz) debitage by weight and count: for 56-4 the weight (core excluded) was 18g vs. 264g; average weight for a non-local flake = .23g, for a quartz flake = 2.9g. For 58-2 the weights are 41g and 126g, with non-local flakes averaging .23g, quartz flakes .75g. The relative weights in the other pits vary widely, possibly a result of sample size, but the quartz flakes are larger in all dimensions, particularly in thickness. This is interpreted as evidence for differential use patterns of the two raw material classes: non-local stone was used to produce symmetrical tools thinned by bifacial retouch, and local quartz was used to generate sharp-edged flakes for expeditious use.

Ground stone artifacts are represented by only two specimens, small thin curved pieces of soapstone. These probably are portions of a pipe bowl with a delicately notched lip. One piece is from pit 58-2, the other from pit 58-3.

Central Sector. The central block of excavation units yielded 134 projectile points, including fragments and aborts. The proveniences of these specimens are shown in Table 12. Specimens found in disturbed contexts, or otherwise of uncertain provenience are included in the plow zone tabulation.

The great majority of the projectile points and diagnostic point fragments are typical small triangular arrow points of the Late Woodland (Fig. 14a-w). Also typical, however, is the presence of stemmed specimens, some Archaic and likely carried into the site by the Late Woodland occupants (Fig. 14x-hh). Both sets of specimens are included in Table 12; stemmed point provenience, by type, is separated in Table 13.

Using only triangular points complete enough for one or both measurements, along with aborts seemingly completed except for final retouch, Table 15 provides length and width measurements.

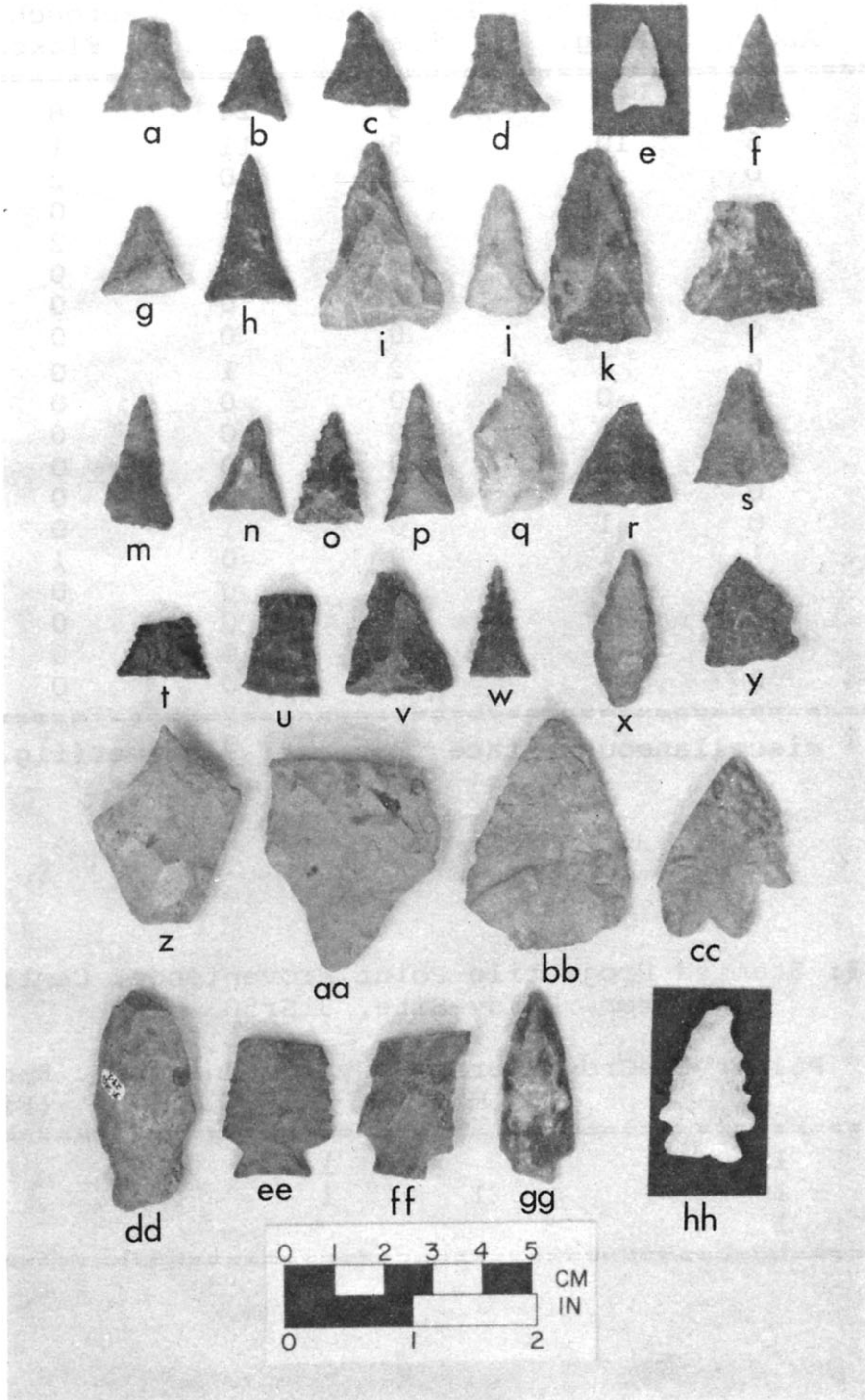


Figure 14. Lithic tools, central sector, The Hardy Site, 31Sr50. a, u, aa, ff, lower (weak) midden; b, e, n, p, r, bb, dd, upper midden; c, d, Pit 12-3; f-h, m, o, q, t, w, x, cc, ee, gg, plow zone; i-l, s, z, hh, Pit 18-3; v, Pit 27-7; Feature 40-4.

TABLE 12: Lithic Tool Provenience, Central Sector, Hardy Site, 31Sr50

Prov.	PP Abort	PP, Basal Frag.	PP, Distal Frag.	PP, Comp.	Retouched Flakes	Other
Plow Zone	18	19	9	24	8	1[4]
Midden	6	10	5	11	1	1[1]
Pit 9-8	0	0	1	0	2	
Pit 9-9	0	0	0	1	0	
Pit 12-3	0	1	1	1	2	
Pit 16-4	1	0	0	0	0	
Pit 17-3	0	0	0	0	0	
Pit 18-5	0	0	0	0	0	
Pit 18-3	6	1	2	1	0	1[3],1[2]
Pit 20-6	0	0	0	0	0	
Pit 21-4	0	0	0	0	0	
Pit 23-3	0	0	0	0	0	
Pit 26-6	0	0	0	0	0	
Pit 27-7	0	1	0	1	0	
Pit 38-5	1	1	0	0	1	
Pit 43-3	0	0	0	0	0	
Pit 44-3	0	0	0	0	0	
Pit 50-4	0	0	0	0	0	
Feature 40-4	0	0	0	0	0	

[1] burin; [2] miscellaneous biface fragment; [3] graver(fig. 14); [4] drill

TABLE 13: Stemmed Projectile Point Provenience, Central Sector, Hardy Site, 31Sr50

Provenience	Palmer	LeCroy	Morrow Mt.	Gypsy	Unident.	Randolph (Fig. 14x)
Plow Zone	1			1		1
Midden	1		1	1	2	
Pit 18-3	1					

TABLE 14: Projectile Point Attributes, Central Sector, Hardy Site, 31Sr50

Provenience	Length	Width	Raw Material	State
Plow Zone	2.0	1.5	Felsite	C
		1.2	Felsite	B
		1.4	Felsite	B
	2.8	1.4	Chalcedony	A(m)
			Felsite	A
		2.7	Felsite	A
	3.5		Felsite	A
	2.3	1.6	Chalcedony	C
	2.5	2.1	Felsite	A(m)
		1.7	Felsite	B
	2.4	1.6	Felsite	C
	2.7	1.6	Felsite	C
	2.3	1.5	Felsite	C
	1.4	1.3	Felsite	C
	2.6	1.5	Felsite	A(m)
	2.9	1.5	Quartz	A(m)
	2.3	1.5	Felsite	C
	1.7	1.7	Felsite	C
	1.9	1.7	Felsite	C
	2.0	1.7	Felsite	C
		1.9	Felsite	A
		1.9	Chert	B
	2.2	1.3	Felsite	C
	1.8	1.1	Felsite	C
		2.2	Felsite	B
	2.1		Felsite	C*
		1.8	Felsite	B
		1.5	Felsite	B
	2.3	1.4	Felsite	C
	2.2	1.5	Felsite	C
		1.5	Felsite	B
	2.2	1.6	Felsite	C
		1.3	Quartz	B

TABLE 14 (cont.):

Provenience	Length	Width	Raw Material	State
Plow Zone		1.3	Quartz	B
		1.9	Felsite	B
	2.0	1.7	Felsite	A(m)
		1.5	Felsite	B
	1.4	1.3	Felsite	C
	1.8	1.3	Felsite	C
	1.8	1.5	Felsite	C
		1.5	Quartz	B
		1.6	Felsite	B
	2.7	1.7	Felsite	A
	2.3	1.3	Felsite	C
	2.0	1.4	Quartz	C
Midden		1.9	Felsite	B
	1.8	1.1	Quartz	C
		1.8	Felsite	B
	2.7	1.6	Felsite	C
	1.8	1.4	Felsite	C
	2.0	1.5	Felsite	C
	2.2	2.0	Felsite	C
	1.7	1.2	Felsite	C
		1.7	Felsite	B
		1.5	Felsite	B
		1.6	Felsite	B
	2.5	1.6	Felsite	C
	1.8	1.0	Felsite	C
	1.9	1.3	Felsite	C
	2.7	1.1	Felsite	A(m)
	2.7	1.1	Felsite	A(m)
		1.5	Chalcedony	B
Pit 9-9	1.8	1.5	Felsite	C
Pit 12-3	1.9	1.7	Felsite	C
		2.0	Felsite	B
Pit 18-3	3.6	2.1	Felsite	A(m)
	4.0	2.0	Felsite	A(m)
	3.8	1.5	Felsite	A(m)
		1.7	Felsite	A(m)
	1.5	1.9	Felsite	A(m)
	2.7	1.6	Felsite	C(unifacial)
Pit 27-7	2.6	2.2	Felsite	C
		1.5	Felsite	B
Pit 38-5		1.9	Felsite	B
		1.6	Felsite	A(m)

C = Complete; B = Basal fragment; A = Abort;
m = Abort measured * = corner missing.

Using only complete (C) points the following means and standard deviations were computed: length X = 2.07, s.d. = .39(n=36); width X = 1.49, s.d.= .25 (n=35).

When measurable (m) aborts from Table 14 are included in the calculations, and basal fragments included in the width computations, the following statistics can be derived: Length X = 2.25, s.d = .58, (n=47); Width X = 1.56, s.d. =.27, (n=71).

Remaining are distal fragments of projectile points or drills, basal fragments missing a corner, complete or fragmentary points aborted early in the manufacturing sequence, retouched flakes, and miscellaneous tool fragments. The provenience and raw material for these items are reported in Table 15.

TABLE 15: Other Lithic Tools, Central Sector, Hardy Site, 31Sr50

Provenience	Raw Material	Tool Type	n
Plow Zone	Felsite	PP, Distal frag.	8
	Chalcedony	PP, Distal frag.	1
	Chalcedony	PP, Medial frag.	1
	Felsite	PP, Medial frag.	2
	Felsite	PP, Basal frag.	4
	Felsite	Abort	6
	Chalcedony	Abort	1
	Quartz	Abort	1
	Felsite	Drill fragment	1
	Chert	Retouched flake	1
Midden	Felsite	PP, Distal frag.	3
	Quartz	PP, Distal frag.	1
	Chalcedony	PP, Distal frag.	1
	Felsite	PP, Medial frag.	2
	Felsite	Abort	5
	Felsite	Retouched flake	1
	Felsite	Burin	1
Pit 9-8	Felsite	PP, Distal frag.	1
Pit 9-9	Felsite	Abort	1
Pit 12-3	Felsite	PP, Distal frag.	1
Pit 16-4	Felsite	Abort	1
Pit 9-9(move)	Felsite	Abort	1
Pit 18-3	Felsite	Drill frag.	1
	Felsite	PP, Medial frag.	1
	Felsite	Abort	1
	Quartz	PP, Distal frag.	1
Post Mold 30-6	Felsite	PP, Distal frag.	1
	Quartz	Abort	1
Pit 38-5	Felsite	Retouched flake	1

For present purposes, debitage was sorted by provenience and raw material, the latter using the categories of local (quartz) and non-local (various felsites, argillite, chert, chalcedony and jasper). These data are shown in Table 16.

A sample of the debitage was examined to determine the relative frequency of cortex-bearing flakes. Using excavation units 9-51, the total flake assemblage from every third unit was examined--a total of 1071 flakes including 494 of non-local material and 577 of quartz. Of the non-local specimens 68, or 14 percent, had some cortex on the dorsal surface; of the quartz flakes 77 or 13 percent exhibited some cortex. Four of the five felsite cores possessed some cortex as well, as did one quartz core. Also, as seen in the eastern sector, the great majority of the non-local material appears as tiny flakes, presumably the by-products of tool retouch and thinning.

TABLE 16: Lithic Debitage, Central Sector, Hardy Site, 31Sr50

Provenience	Non-Local Flakes	Non-Local Cores	Quartz Flakes	Quartz Cores
Plow Zone	577	2	876	2
Midden	423	1	451	
Pit 9-8	5		12	
Pit 9-9	5		3	
Pit 12-3	11		1	
Pit 16-4	19	2	22	1
Pit 17-3			1	
Pit 18-5	2		3	
Pit 18-3	33		29	
Pit 20-6	12		72	
Pit 21-4	4		4	
Pit 23-3	1		3	
Pit 26-6				
Pit 27-7	3		19	
Pit 38-5	9		10	
Pit 43-3	4			
Pit 44-3	4			
Pit 50-4	7			
Pit 55-4	60		60	
Feature 40-4	7		7	

Among the remaining lithic specimens is a chipped stone hoe, polished by wear on its working edge and smoothed in the side notches, presumably to prevent cutting the hafting bindings. The straight edge seen in the upper right in Figure 14g is not a break, but a natural cleavage plane of the dark gray slate. This is the only (recognized) hoe recovered in the Great Bend research area. There also was found a large flat river cobble, abraded on both sides, apparently as a consequence of milling or smoothing activities. The hoe was found in pit 18-3, while the possible milling stone was recovered from the generalized midden deposit.

Western Sector. A total of 22 formal stone tools was recovered from the western sector, with half found accompanying Burial 64-7. The 18 triangular arrow points are listed in Table 17.

Using the point sample in Table 17 the following means and standard deviations were computed: length X=2.69, s.d.=.68 (n=13); width X=1.58, s.d.=.19 (n=17). Comparison of these statistics with those of the central and eastern sectors should be done with the realization that 10 of the 18 points were burial offerings and thus likely had a different use-rejuvenation-discard trajectory than those occurring in other contexts, and/or were produced for a purpose (burial) which may have influenced their size and shape in comparison to more "utilitarian" points.

TABLE 17: Projectile Point Attributes, Western Sector, Hardy Site, 31Sr50

Provenience	Length	Width	Raw Material	State
Plow Zone	2.5		Felsite	B*
		1.6	Felsite	B
		1.2	Felsite	B
Pit 59-5	1.7	1.5	Quartz	C
		1.4	Quartz	B
		1.8	Felsite	B
			Felsite	B*
Burial 64-7 fill	3.0	1.8	Felsite	C
Burial 64-7	2.6	1.6	Felsite	C
	3.1	1.6	Felsite	C
	2.8	1.8	Felsite	C
	3.3	1.7	Felsite	C
	3.5	1.8	Felsite	C
	3.3	1.8	Felsite	C
	1.9	1.3	Quartz	C
	1.9	1.3	Felsite	C
	3.6	1.5	Felsite	C
	1.8	1.6	Jasper	C
Pit 65-2		1.6	Felsite	B

* Corner missing, width not measurable

Not listed above are three Archaic points, a quartz Morrow Mountain, an aborted chalcedony side-notched point from the plow zone, and the Kirk point, made on heat-treated chert, found among the mass of lithic raw material accompanying Burial 64-7. Finally, a small thick biface fragment, possibly an aborted projectile point, also was found in the plow zone, along with the distal tip of a felsite projectile point, and a distal fragment of a quartz point from 59-5.

TABLE 18: Other Lithic Tools, Western Sector, Hardy Site, 31Sr50

Provenience	Raw Material	Tool Type	n
Plow Zone	Quartz	P.P.,Morrow Mountain	1
	Chalcedony	P.P., Side-notched	1
	Felsite	Biface fragment	1
	Felsite	P.P., distal fragment	1
Pit 59-5	Quartz	P.P., distal fragment	1
Pit 61-2	Felsite	Retouched blade	1
	Quartz	Scraper	1
Burial 64-7	Chert	P.P., Kirk (Fig. 14b)	1

Of interest is the single quartz triangular point included in the cache of points with Burial 64-7. The point was manufactured from the distal portion of a larger point; it is listed as complete because the thick base, at the old break, has been slightly thinned by the removal of several flakes, obviously an attempt to rejuvenate the fragment.

A total of 1447 pieces of lithic debitage was found in the western excavations. The provenience of these items is shown in Table 19.

TABLE 19: Lithic Debitage, Western Sector, Hardy Site, 31Sr50

Provenience	Non-Local Flakes	Non-Local Cores	Quartz Flakes	Quartz Cores
Plow Zone	293	1	414	
Pit 59-2	14		12	
Pit 59-5	23		99	
Pit 61-2	63		29	
Pit 62-2	20		9	
Pit 62-3	59		21	
Pit 64-2	7		33	
Pit 65-2	68		107	1
Burial 60-2	1		4	
Burial 64-7 fill	78		33	
Burial 64-7	32	27		

Of the debitage in the plow zone, 16 percent of the non-local flakes and five percent of the quartz exhibit some cortex. From the feature pit fill (trash pits and the burial pit), 14 percent of non-local flakes had some cortex, and six percent of the quartz flakes had cortex. These percentages are comparable to those from the other two sectors of the site; the non-local material consistently reveals a higher incidence of cortex. The collection of raw material accompanying Burial 64-7 clarifies this pattern. Of the 59 flakes and cores comprising the burial pit collection, 51, or 86 percent, had cortex on one or more surfaces. These are large flakes or cores; upon reduction it appears likely that 10-20 percent of the resultant debitage would possess some cortex. In short, it is hypothesized that the non-local stone, primarily lithic tuff, silicious breccia and rhyolite, is being imported into the Hardy site in a form similar to that of the Burial 64-7 cache, i.e., as cortex-covered nodules, or as large primary or secondary flakes. The nodules are from about 4cm to 8cm in their greatest dimension and are not water-rolled, but clearly were collected as nodules and not quarried from an outcrop or vein. In contrast, the local quartz probably was obtained as large blocky boulders or chunks, components of veins still visible in the vicinity.

CHAPTER FOUR: DISCUSSION

One goal of the Great Bend project is to detect variation in archeological patterning that may be attributable to variation in social organization, and to infer systems of economic interaction related to social organization. That discrete social groups existed in the region seems clear enough; the ethnographic record contains numerous Piedmont "group names" which, judging by their spatial distribution, linguistic variation, behavior differences and even phenotypic traits (real or imagined) constitute tribal level societies in Service's (1971) taxonomy (Lawson 1709; Mooney 1894; Swanton 1936). For archeology the problem is to determine how these units are reflected in their archeological remains. This is of considerable interest because the formation of discrete social units, and the maintenance of a degree of social autonomy, must be responsive to regional processes of human ecology, including acquisition of lithic raw materials.

The definition of social units in the archeological record has generated much interest and much controversy since Longacre's (1964) pioneering study, and has led archeologists to examine the role of material culture in the maintenance of social identity (Nelson 1985). Ceramics created within a social group by non-specialists or part-time specialists are the most frequently used artifact class for detecting social units in the archeological record. There are several reasons for the focus on pottery by archeologists. One is the survivability of fired clay; another is the fact that ceramic production is an additive process whereby an infinite, or at least very large number of attribute states may be generated by the potter, inviting the addition of elements not necessarily related to the technological use of the vessel. Another reason is the short use-life of vessels due to their fragility, resulting in large sample sizes for the archeologist to use in pattern detection. Still another is a demonstrable link between ceramic attributes and the social persona in certain ethnographic contexts (Graves 1985). Because of this link Graves states "If such factors as vessel size, function, and form can be held constant, it may be possible to plot the distribution of relatively contemporaneous prehistoric communities making pottery and to study relationships among these communities on the basis of design structure variability" (1985:31). This, of course, is the goal of the current research.

There are two major obstacles to utilizing ceramic remains in this manner, either or both of which may be pertinent to the late prehistoric Woodland cultures of the North Carolina Piedmont. First of all, there is no *a priori* reason for assuming that ceramics always and necessarily are primary vehicles of social information (Hodder 1986:3). I use the modifier primary because clearly ceramics from our Woodland sites, or ceramics from any site for that matter, are the manifestations of learned behavior contracted within a social group (i.e., they are a cultural phenomenon). Current efforts at stylistic analysis seek more than this, however, in that certain ceramic attributes may function as symbolic indicators of the user's social allegiance and different levels of style units may be indexing different levels of the maker's egocentric social referents (Hill 1985:376). Thus, analysis of stylistic elements, of the array of elements into designs, and of the array of designs on a vessel may each be informing on different levels of a person's social network such as family, clan, and tribe. But while all this may be happening it is not necessarily happening. In any cultural system since the Lower Paleolithic one suspects there are myriad opportunities provided by culture for expression of group identity. These can include sitting posture (Cheyenne), bead color preferences (Blackfoot), hair style (Hopi), clothing (just about all groups) or even ceramics (Eastern Pueblos). A compromise position, but it seems a defensible one, is that all material culture items carry some social message but in greatly varying degree of informational content and clarity.

The second obstacle lies in defining which attributes within an artifact class will produce a pattern useful for studying inter-group relationships. Even if the archeologist is assured that the potsherds carry social information of whatever sort--and I have not engaged the question of social interaction vs. information exchange (Plog 1980; Plog and Braun 1984)--there is still the task of isolating relevant variables of those sherds. Once we omit those attributes responsive to vessel function and regional ceramic technology, keeping for analytical purposes those we perceive as stylistic, that still leaves a broad array of attributes for consideration. Which of these are indexing social processes of whatever level? All? Certainly not, unless we are dealing not with a culture at all but an inchoate mob, because no two sherds are the same in regard to all non-technological variables. Wobst (1977) has suggested visibility is one criterion, based on the common-sense notion that social information must be observed in order to transmit its message, though even that concept has been criticized (Plog 1983).

For the Great Bend research three excavated sites were used in an attempt to detect and interpret stylistic variation in ceramics: 31Yd41, the McPherson site; 31Yd9, the Donnaha site; and 31Sr50, the Hardy site. It was assumed that stylistic elements present on the rim sherds were responding to social processes, and a comparison of the frequencies of the various elements at the three sites was carried out. Definition of the elements was "fine-grained", but nevertheless certain degrees of variation within each element category were tolerated. An example is found in the

McPherson site report where 17 design elements are listed. An example is the first element, "Incised diagonal falling right to left." Rims with incised lines oblique to the lip, and extending down to the left, were counted in this category. The number of such lines was ignored, however, as was the length and width of the lines. This was necessary given the fact that the analysis is based altogether on sherds, and these seldom are large enough to assure a complete design element is being observed. Other variables which may have a stylistic component were ignored though observable (e.g., rim shape and lip form) because there is at least a possibility that the former is responsive to vessel function (Shapiro 1984) and the latter fails Wobst's visibility test. Also tabulated were rims with no decoration, e.g., no decoration, plain, or no decoration, net-impressed. Nineteen attributes or states were defined for McPherson on 202 rimsherds; an additional 202 sherds from Donnaha yielded 25 states (six new states were added); and five others were added from the Hardy rimsherd assemblage of 178 specimens, drawn only from the central and eastern components for approximate contemporaneity with Donnaha and McPherson. Using this attribute listing the between-site diversity (Lieberson 1969) was computed for each pairing. The results were: McPherson-Donnaha, Ab=.867; Donnaha-Hardy, Ab=.8739; and McPherson-Hardy, Ab=.8323.

These results are difficult to interpret within any reasonable model of Late Woodland settlement patterns or social interaction, and at least part of the difficulty must lie with the instrument by which assemblage affinity is measured, the "diversity index." In all three sites well over half of the rims fall into the "none" categories. Inclusion of these inflates the sample size but reduces the percentage of the several categories of decorated rims, often to a point where their individual contribution to decreasing the Aw (within-site diversity) is negligible. In other words, a high frequency of "none, net-impressed" and "none, brushed" in all three assemblages reduces diversity between sites to about .9, and the very low percentages of the 10-15 defined design elements do not reduce this appreciably beyond that, even though design elements may be shared or unshared. Of course one could lump all the low-frequency design elements from each site together as residuals (Lieberson 1969: 861), but this would obscure the variability being sought.

The problem may stem from differences in vessel form and function, and from the differential use of vessels as media for social messages. If, as Wobst (1977) has suggested, artifacts (vessels) used in different cultural contexts also are differentially visible there may be a related difference in their use as conveyors of social information. At all three sites about half the rimsherds are surface textured and undecorated (e.g., the "no decoration, net-impressed" category); as shown in the McPherson site study, and noted at other Siouan sites (S.

Davis 1987), there exists a correlation between vessel size and surface treatment. If large storage jars and large utilitarian cooking vessels are represented by most or all of our textured but undecorated rims, such wares may not have been used as vehicles for stylistic elements because of low visibility, sooting, or their infrequent public use. If, then, the undecorated rims are omitted from consideration the diversity indices are: McPherson-Donnaha, .91, McPherson-Hardy .93, and Donnaha-Hardy .94. These results conform to a prediction based on the existence of an impediment to communication between Hardy and Donnaha, but the minor difference in the scores is far from convincing.

Using the data set shown in Table 20 a phi-square similarity coefficient matrix was generated using the SPSS-X Proximities subroutines. The resultant similarity coefficients are: McPherson-Donnaha .3714, McPherson-Hardy .5304, and Donnaha-Hardy .5009 (where 0= no relationship between ceramic attribute frequency and site provenience and 1= perfect relationship). Again using the Table 20 data set, a multidimensional scaling was performed and a dissimilarity coefficient matrix was created using the squared Euclidean measure. The results were McPherson-Donnaha 961.9999, McPherson-Hardy 2896.9995, and Donnaha-Hardy 2632.9995. Both tests therefore support a close similarity between Donnaha and McPherson and much less similarity between either of those sites and Hardy.

Despite the difficulty of quantifying differences between the rimsherd assemblages, tabulation of design elements does reveal some marked differences between the sites (Table 20). For example, oblique lines incised below the lip are found in 16 rims at McPherson and Donnaha but none at Hardy; at Hardy 25 lips are notched or incised on the outer edge, but this occurs on only seven sherds at McPherson and Donnaha, where notching or incising the top of the lip is common. Also, at Donnaha and McPherson the vessel's surface treatment often extends onto the lip, but never at Hardy. Thus, there does appear to be a degree of spatial clustering of certain stylistic attributes within the Great Bend area, but several other equally clear traits operate to confound formulation of a behavioral model--as middle range theory--to explain that patterning.

First must be considered the remarkable gross similarity of the ceramic tradition of the region. At least from the Davie County/Yadkin River juncture to Rockford in Surry County, the dominant late Woodland vessel is a jar textured by net-impressions or brushing, often both (brushing over net usually). About half the rims from any assemblage exhibit some form of lip treatment, with incising or notching being the most common. By A.D. 1200, possibly earlier, plain-surfaced vessels appear and increase in frequency; these generally are small bowls or jars and usually carry some stylistic motif on the rim. This same pattern can be seen at the Hardy site, where plain sherds account for 12 percent of the total ceramics from the very late western sector features, but only four percent in the central and eastern features. It is those motifs that seem most appropriate for conveying social information, but here the second confounding trait appears, namely the variability of the design elements. There is little consistency in the elements or motifs within a site or within the region, although I pointed out some exceptions to this above. The most common trait found is the unique one, seemingly allowing the potter free play with his/her imagination within a range of societal norms so broad as to evade definition by the archeologist. The intrasite similarities noted above (e.g., oblique lines below the lip) may represent simply micro-traditions belonging to a local residential unit, probably kin-based. The Yadkin River shoals area may have acted as a sufficient barrier to communication to allow the Hardy group above to "drift" in their local tradition to produce the detected variation. It was not an adequate barrier, however, to fracture the distinctive and overarching Piedmont Siouan pattern which gives the ceramics their apparent social anonymity.

In the preceding pages, special attention has been given to the recovered ceramics from the McPherson and Hardy sites. It has long been recognized in North Carolina, as in most ceramic-producing archeological provinces, that changes through time in ceramic attribute states provide a tool for ordering archeological assemblages in terms of their relative or, in some instances, sidereal age. In the North Carolina Piedmont, however, there has been no attention given to explaining the direction of the observed changes in terms of the dynamics of the cultural systems which produced them. It is the purpose of this section to provide such an explanation in the form of a model which (a) accommodates the present archeological data corpus and (b) which can be used to generate testable hypotheses for confirming, rejecting or modifying the model.

The model as presented below is based on archeological sites in the northwest North Carolina Piedmont, principally on remains recovered in the Yadkin Valley and immediate environs. While I believe it has much wider applicability none is claimed at this point; the processes invoked by the model are wholly indigenous to the Yadkin Valley, there being no necessity to attribute change to atheoretical historical events, documented or postulated, outside the area.

Fifty years of archeology in the Piedmont have disclosed that several ceramic attributes change over time. These attributes can be perceived as sets or combinations of attributes which are correlated, suggesting not all are independent variables. Some are independent (or at least less dependent), however, changing through time at a different rate. Because of this, it is clear that comparative ceramic studies for cross-dating purposes must be approached using ceramic assemblages, not individual

TABLE 20: Design Element Frequencies on Rim Sherds 31Yd41, 31Yd9, and 31Sr50.

Variable	31Yd41 n	31Yd9 n	31Sr50 n
Incised diag., falling rt to left	4	7	0
Punctated horizontal	2	11	3
Punctated vertical	1	1	0
Notched falling left to rt.	6	10	6
Notched, perpendicular	9	12	7
Notched, falling rt. to left	23	13	8
Surface finish on lip	9	6	1
Incised curvilinear	1	0	0
None, plain	41	3	9
None, net	66	4	77
None, brushed	29	2	9
Notched, opposite direction	1	0	1
Notched on front of lip	1	6	31
Punctated lip	1	3	2
Incised curvilinear w/punctation	1	0	0
None, cord	1	9	0
None, stamped (comp.)	4	0	0
Punctated, no pattern	1	3	0
Incised parallel to lip	3	10	2
Incised lip	0	0	0
Folded rim	0	2	10
None, simple stamped	0	2	0
Incised vert. pendant	0	2	0
Incised vertically	0	2	0
Incised diagonal falling left to rt.	0	5	1
Pinched rim	0	3	3
Incised, angular/intersecting	0	0	1
Incised, no pattern	0	0	2
None, fabric	0	0	1
Punctate clusters	0	0	1
Zoned punctations	0	0	1

types or (even worse) individual attributes. Certain attribute states do tend to covary when associated at the sherd level but not necessarily at the assemblage level. This recognition, coupled with the persistent association of different attribute states on sherds from single features, indicates that the Siouan pottery of the Yadkin Valley was undergoing change in at least two dimensions. One is the shift in the relative frequency of vessel classes (e.g., bowls, storage vessels, cooking pots), with each class having its own requirements of attribute combinations. A second dimension involves change _within_ each class, probably responding to technological changes prompted by the cultural evolutionary rewards for greater production and use efficiency and the shifting demands placed on each vessel class. My perception of the processes involved has been influenced by the analysis of Donnaha ceramics performed by Vacca (1989) and Marshall (1988).

Illustration by a hypothetical example might be as follows: imagine three vessel forms in use by A.D. 1000 in the Yadkin Valley - serving bowls, storage jars and cooking pots. Each of these classes has its own range of variability in temper, thickness, size, shape, surface finish, etc., with the combination of attribute states determined by vessel function. If through the period A.D. 1000-1600 storage becomes a more important activity than previously then that vessel class waxes in relative frequency but the other classes remain in use, albeit at a lower percentage in the material culture (and ultimately in the archeological record). While these processes are in effect there also are shifts in the way each vessel class is made. For example, our storage vessels might exhibit more thoroughly mixed paste at 1400 than at A.D. 1000.

It is the objective of the model to present all the variables as dependent upon a single underlying causal process, while at the same time accounting for the differential rate of change. The following attributes are those used as time-sensitive indicators for ceramic assemblages (not sherds):

Exterior Surface Treatment. Although this attribute is one of the most readily identified by the archeologist, it is also one of the least sensitive indices of age; the several attribute states fluctuate in frequency in a "punctuated equilibrium." The earliest wares, appearing in the last centuries before Christ, are fabric impressed. By A.D. 600 that surface treatment is replaced by cord-marking, which is waning by A.D. 1000 in favor of net-impressed surfaces. Net-impressing continues to the Historic or Contact period (ca. A.D. 1700), but after A.D. 1200 there is an increase in the frequency of plain-surfaced vessels, and both surface treatments (net and plain) are correlated with vessel shape.

Interior Surface Treatment. In regard to the rate of change this attribute resembles the previous. The earliest ceramics are carefully smoothed on the interior; after A.D. 600 interior surfaces are predominantly scraped with a comb-like implement leaving highly visible striations horizontal to the vessel rim. After A.D. 1200 there is an increase in interior smoothing following the scraping but smoothed interiors never completely replace scraped (and unsmoothed) interiors. At times the interior smoothing was sufficiently vigorous to "float" finer clay particles to the interior surface producing a very slick, burnished effect.

Tempering Agents. From beginning to end the Yadkin Valley ceramics are typified by mineral temper. Time-transgressive change occurs in the size, type and preparation of the mineral inclusions and, to a lesser degree, the abundance of the particles in the paste. The earliest wares contained sand and some crushed rock, the most notable of which is quartz. Particles are medium to large, 2mm-5mm the common range, with occasional pieces 7mm or more. By A.D. 800 medium to coarse sand (greater than 2mm) was added along with the crushed quartz. After A.D. 1000 some sherds reveal little or no crushed quartz, only sand, and the proportion of such sand-tempered sherds increases in assemblages through time after that date. Particularly after A.D. 1400, the sand temper becomes finer (<2mm), with no visible temper present in some specimens. Throughout the sequence, however, some crushed quartz-tempered sherds are present, at least up to A.D. 1650. The sand tempered specimens, and especially the fine sand tempering, are positively correlated with smoothed surfaces (exterior and interior) and thinner vessel walls.

Wall Thickness. The scarcity of whole or reconstructed vessels makes this variable difficult to quantify for any part of the ceramic sequence because the vessel size and portion of the vessel represented by a potsherd affects its thickness. Large vessels contribute disproportionately to the potsherd assemblage because they yield more sherds. Also, as will become clear later, the sherd sampling error for a particular site likely can affect this variable. With these caveats in mind, it seems that there is an increase, then decrease in sherd thickness through time if sherd thickness is obtained by averaging an assemblage. More specifically, the early wares (pre-A.D. 0) yield body sherds in the 6mm-9mm range. Between A.D. 600-1000 Yadkin Valley ceramics are thicker, with most measuring 8mm-12mm (J. Davis 1985). After A.D. 1000, and particularly after A.D. 1200, there is an increase in thin-walled vessels, most falling in the 6-8mm range. Wall thickness in the latest samples is positively correlated with temper size and vessel size. This trend is well-represented in the Hardy site sherds: averages for the three sectors are eastern, 7.0mm (n=118); central, 6.8mm (n=113); and western, 6.3mm (n=55).

Paste. Apart from the size and source of temper particles there are other attributes visible in the sherd cross-section. Color is one example but that attribute is of limited utility as an index to age. The earliest ceramics usually exhibit a fully oxidized sherd core; between A.D. 600-1000 cores are dark, at least on the interior half (vessels were inverted for firing, resulting in this characteristic), while after A.D. 1000 there is a steady increase in lighter core colors. Any particular assemblage is highly variable, however, and marked differences can be observed in portions of the same vessel due to vagaries of the firing process, including placement of fuel. Of greater value is a study of the fabric of the clay itself. Early in the ceramic sequence the clay is well-mixed with a homogenous distribution of aplastics.

Between A.D. 600-1000 the clay tends to have a "blocky" or laminated appearance in cross-section and shows clumping of the temper particles. After A.D. 1200 there is a distinct trend toward a thoroughly mixed paste, with a resultant decrease in the pores, voids and lacunae created by ineffectual kneading. The homogenous paste, with even distribution of temper, is most marked in thin-walled sherds with fine temper.

Vessel Form. Whole vessels, or even restorable ones, are very rare in collections from the Great Bend area. Generalizations regarding vessel size and shape are based on those few vessels and analysis of rim sherds using a curve-fitting method. The earliest vessels appear to have been wide-mouthed jars or bowls, height unknown, but with an orifice diameter of 20-30cm. Between A.D. 600-1000 ceramic assemblages are comprised almost entirely of large jars, conoidal in shape with orifice diameters of more than 20cm. Vessel shoulders, if present at all, are weakly expressed and rims are either straight or gently flaring. This vessel shape, which can be viewed as the standard Great Bend jar, continues to at least A.D. 1600. After A.D. 1200 it is altered slightly in shape. The base is less markedly conoidal but may tend toward rounded, and it is increasingly found with smaller bowls as well; these are 10-20cm in diameter, either simple and unrestricted or, much less commonly, carinated. It is these bowls that most frequently carry decoration on their rim. Interestingly the only vessel found as burial furniture in the Great Bend area is a typical conoidal-based jar. However, the specimen is very small compared to midden or trash pit examples, measuring only 11cm in height. The possibility that this vessel may have been especially produced for the interment should not be overlooked.

To the archeologist attempting to treat the Great Bend ceramic variables as associated sets for typological classification a problem immediately arises, one reminiscent of that faced by physical anthropologists in grappling with the definition of human races. The most inclusive taxons (whether human races or pottery series) often show more internal variability than is found between taxons. When subraces or types are created as more restricted units the classification system has little or no utility beyond a simple descriptive function. A fuller understanding of processes underlying human physical variability has been gained using the clinal approach, where individual traits have been studied in their spatial distribution and associated ecological variables. It is an analogous approach that is to be followed here, except that I have used ceramic attributes as traits and tracked their distribution through time, not space. The task at hand is to describe (or model) a set of processes which account for observed changes. Those processes in turn must be attributable to a changing man-land relationship occasioned by either alterations in the natural environment or alterations in the cultural systems to increase energy flow, or minimize energy loss, through the system.

In order to define our set of processes it is essential that the ceramic variables be understood in terms of their function within the technological subsystem of the culture producing them. To use again the biological analogy, each trait must be viewed in terms of its contribution in maintaining the system within a particular range of environmental and cultural conditions. Recently archeologists have shown a renewed interest in ceramic technology in order to construct these sorts of bridging arguments or middle-range theories (Steponaitis 1981; Bronitsky and Hamer 1986; Schiffer and Skibo 1987; Braun 1985). Not all of the variables I have listed have been the subject of such concerns, nor have Piedmont ceramics been the focus of such studies. For that reason, and because the present data set has some unfortunate gaps in the temporal trajectory of ceramic variability (most notably the period 0-A.D. 600) the model presented here is general. Also the scarcity of C14 dates from Great Bend sites makes suspect the timing of events and trends, although probably not the sequencing.

In the earliest of the Great Bend ceramics are found a battery of attribute states suggesting the vessels were designed with heating effectiveness and portability as primary concerns. The vessels are small, thin and well-fired, producing a lightweight product resistant to impact and an efficient heat conductor, able to withstand repeated thermal shocks related to the cooking-cooling cycle (Schiffer and Skibo 1987). The smoothed interiors would enhance cooking efficiency by reducing porosity of interior surfaces and inhibiting the capillary flow of liquids to the exterior surface (Hane Palmour, personal communication). While few of the early vessels' shapes can be estimated, the small sample available suggests an unrestricted form so that portability may have been enhanced by vessel nesting. Settlement patterning during the period 300 BC-0 AD, augmenting the data from the sherds, encourages a view of a mobile population of low density. The vessels likely were used for preparing small portions of wild foods, presumably by boiling.

After A.D. 600 changes in several of these attributes indicate a shift in the functional objectives of the potter, emphasizing volume while maintaining a degree of thermal shock resistance. The large particles of aplastic inclusions provide structural support for the sides of these larger vessels (Rye 1981:27) while inhibiting crack propagation (Bronitsky and Hamer 1986:97); the thicker vessel walls simply reflect the larger average size of the vessels. The minimal care given to thorough preparation of the clay, with subsequent temper clumping and laminations in the clay matrix, suggest that ease of manufacture and large vessel size were acquired at the expense of heating efficiency and impact resistance (Schiffer and Skibo 1987:607). The scraped interiors created a rough, porous surface which would expose liquid contents to capillary action and loss of fluids, especially water. (Larger molecules, including saturated fats found in animals or certain nuts would be less affected.) While sites of the period A.D. 600-1000 are not frequent in the Yadkin Valley, when found they exhibit characteristics of full sedentism (storage or trash pits, human burials, postholes, dense concentrations of midden debris, etc.). The pottery produced was, for the most part, designed for long-term storage, probably of seasonal foodstuffs. Protection from the elements, and from vermin attracted to permanent settlements, would be a major benefit of these vessels. They could be closed by a lid fastened below the (often) everted rim (Shapiro 1984). Cooking probably occurred in these vessels, and the weaknesses of the large thick jars were, no doubt, discovered by the potters--the accumulation of sherds must have been apparent then as now--but there is no evidence that the occasional vessel failure was costly enough to encourage production of more efficient culinary utensils.

By AD 1000 another vessel form began to be produced in the permanent riverine settlements, now far more numerous than before. These new vessels included relatively small bowls (ca. 10cm-20cm in diameter at the orifice), with plain exteriors and carefully smoothed interiors. Vessel walls were thin, usually less than 7mm, and the paste was tempered with fine sand. Some of these were large enough to have functioned as cooking utensils for which they would be admirably suited (Bronitsky and Hamer 1986). The most striking aspect of these vessels, however, is the frequency with which they are decorated. The decoration is confined to the rim area and includes a variety of motifs produced by incising, pinching, punctation or applique (rarely). In addition to the small bowls, a large vessel also was made. Similar in size to the storage jars, these have a fine sand-tempered paste, relatively thin walls and a carefully smoothed interior. Exterior surfaces seldom are decorated although they may be plain--like the small bowls--and the base is rounded rather than markedly conoidal. Although the coarse-tempered, net-impressed jars continue to be used, it is the increasing popularity of the small bowls and the large cooking vessels that produce the steady decrease in the average wall thickness of ceramic assemblages. More importantly, however, it is the increase in the activity sets prompting the use of those vessel classes that characterizes the changing cultural patterns of the Great Bend between A.D. 1000-1600. Current evidence supports the view that the shifting popularity of certain attributes, and combinations of attributes, is indexing changes in the technology and social organization. Following middle range theories cited above, it now appears possible to link the observed ceramic changes to the systemic alterations of the Great Bend Woodland.

Prior to the Christian era ceramic production was embedded in a long standing Archaic culture pattern involving seasonal shifts of residence or, in a few instances, a central-based wandering or logistical settlement strategy (Binford 1980). Ceramics were used primarily as cooking or serving-eating utensils, not storage, and were marked by little or no decoration. Because of the low population density of the region, bands of food collectors were integrated within and between social units by kinship alone.

Beginning sometime between A.D. 600-900 a different settlement pattern came into use, with permanent villages located at widely spaced locations along the Yadkin floodplain. Maize was being grown (Newkirk 1978) and, along with native nuts and seeds, represented a seasonal foodstuff requiring storage vessels adequate to deter the vermin infesting the larger and more permanent communities. Cooking was carried out in similar but smaller vessels, although the length of cooking time required by the available foodstuffs, coupled with the alternative method of parching or broiling directly over the flames, reduced the demand for vessels with high thermal shock resistance. The result was the production of large, thick, crushed-quartz tempered vessels, parabolic in cross-section, which likely found their principal use as storage containers. Impact and thermal shock resistance were compromised in order to produce these vessels, which if decorated, carry some lip notching and/or sets of simple parallel incisions on the vessel shoulder. There is no evidence of occupational packing along the Yadkin. In fact, the villages were few in number though often rather large (up to one hectare in areal extent). Social integration was by kin ties, probably augmented with extra-kin relationships between individuals of different villages reinforced by commodity exchange, especially lithic raw material.

Around A.D. 1000 or shortly thereafter, the settlement pattern changed: the interstitial bottom lands previously unoccupied are now used, with villages large and small scattered evenly along the river. Domesticates include squash, corn, sumpweed (Iva), and beans (after A.D. 1200) with wild foods continuing as major components of the diet. These changes are related to a general population increase in the Great Bend area, creating a feedback loop or deviation amplifying systemic relationship. The introduction of beans likely removed or at least weakened population size restraints imposed by reliance on wild animals for protein, especially the amino acid lysine. Because the replacement food was a domesticated plant the larger population remained ecologically tethered to the floodplains, with native cultigens such as Iva added as an enrichment of that ecological setting, increasing its variety of available foods. The resultant population density increase created a reliance on the domesticates, the single class of foodstuffs which could be effectively controlled for productivity. The greater use of cultigens, especially those grown on the droughty levee soils, may have been further encouraged by a climate shift at the beginning of the Pacific I climatic episode (Bryson and Wendland 1967). Increased westerly winds would result in a cooler and wetter summer climate, a trend which ultimately produced the "Little Ice Age" of A.D. 1550-1850(West 1968:208; Tickell 1986). The effects of these dietary, demographic and settlement shifts on the local ceramic industry were both technological and social.

The technological effect was the production of vessels more resistant to impact and thermal shock, while increasing their thermal conductivity. Temper particle size decreases, but a continuing use of quartz, particularly sand <2mm in size, indicates continuity with the indigenous ceramic tradition. The vessels are thinner than before, ca. 6-8mm, (allowed by the smaller temper particles), with enhanced thermal conductivity and a well-mixed but permeable paste which would minimize thermal shock (Rice 1987:237). Vessel interiors often were smoothed to reduce porosity or leakage. Such vessels descriptively are classified as Dan River var. Stokes; functionally they are cooking vessels. The attribute changes noted after A.D. 1200 are a direct result of a new concern with cooking efficiency created by the increased dietary role of beans and hard starchy seeds (especially Iva), requiring lengthy heating for gelatinization (Braun 1983, 1987). As noted for the Illinois River region by Buikstra, Konigsberg and Bullington (1986), availability of the resultant gruel as a weaning food may have increased the birthrate, adding further impetus to the feedback loop proposed above. Exterior surface treatment, an attribute not directly influenced by these functionally related attributes, changes little; net-impressing continues to dominate the assemblages.

Storage vessels continue to be produced, and these have the thick walls, large temper particles and conoidal bases of vessels made during the preceding period. The paste generally is better mixed than before, however, and coarse sand more often substitutes for crushed quartz. These are classified descriptively as Dan River var. Dan River. These vessels usually are net-impressed or roughly smoothed on their exteriors.

The same processes affected the social and ideological subsystems and are reflected in another aspect of the ceramic industry. Local populations were less mobile than before, a result of an increased dependency on particular parcels of arable land and the increased population packing of the river valley. As groups were anchored to certain sectors of the valley, territories likely became more clearly defined (Champion et al. 1984:147).

The role of ceramics in the definition of social units has recently been debated in the literature, a controversy summarized by Hill (1985). For present purposes it is not essential to choose between the "social interaction theory" and the "information exchange theory." Either could have been operative in the Great Bend because both are predicated on the existence of emically identified social units and, by implication, boundaries separating such groups. Beginning around A.D. 1000 a second vessel class was present in Great Bend assemblages, comprised of small bowls with a fine paste, thin walls (sometimes) and smoothed interior and exterior surfaces. Decorations are often found on exterior rims. Most or all usually are classified as type Dan River var. Stokes. It is my contention that these were serving or eating utensils which have high visibility and thus are most likely to perform as vehicles for social messages. The appearance of these artifacts in the archeological record indexes increased social differentiation within the Great Bend region, a consequence of increased social territoriality.

To summarize the above, I suggest that ceramic change after A.D. 1000 occurred in response to two processes, one dietary and culinary, the other social, but that both processes were set in motion by a combination of demographic and horticultural shifts created by a minor climatic fluctuation and the availability, via diffusion, of a single tropical domesticate-- beans. The model thus far fails to account for two archeological data sets, however: (a) the high intrasite variability of stylistic motifs, and (b) the marked decline in the frequency of stylistic motifs after ca. A.D. 1600.

As previously outlined, the current ceramic database from the Great Bend reveals no congruence between particular design elements or motifs on the bowls and their location at particular archeological sites, nor is there a single instance where similar elements (with "similar" liberally defined) are found at different sites. If indeed the bowls are transmitting a message concerning the social orientation of the makers, then apparently the Great Bend was the New World's "Tower of Babel." One way of reconciling this pattern, or lack of pattern, to the "territory marking" aspect of the model is to posit that the vessels were moving out of their locus of origin, and that any particular archeological site might contain a variety of such instruments of communication representing messages from several nodes in the social network of that recipient locus. Given the low frequency of this vessel class in excavated assemblages it is no surprise that decorated bowl sherds are rare in surface survey collections, and the Great Bend excavations to date have sampled only three sites. In other words, if some of the recovered vessels were carried into the sampled sites this would produce the apparent heterogeneity in our database. Wobst (1977) has pointed out that the utility of artifact-encoded messages includes the fact that message emission (i.e., production of the bowl decoration) may be temporally and spatially separate from that message's reception. Only further excavation in the region will reveal whether there is indeed the expected replication of designs between assemblages. However, this explanation is made more attractive by the small size of the Great Bend villages. If our interpretation of the Hardy site is correct, i.e., that it represents at least three separate components, and if even the large Donnaha site was created by spatially overlapping components, then any particular occupying group likely was small enough that social information encoded on vessels would have little utility because such information would already be known to the site occupants (Wobst 1977). The target group would lie outside the village, but not so distant that the message could not be decoded (Wobst 1977). It would be of great interest to define the communicative network thus created. While not presently feasible it would be expected to form for each "emitting" village an oval space, with the emission locus positioned within the oval's end most distant from the source of critical commodities--one such candidate for commodity exchange would be, of course, the lithic raw materials. The assumption here is that the extent and direction of the network of social relations enjoyed by each village (or other corporate entity) was responsive to the contribution of that network to the viability of the village. In short, etically, at least, social relations did something to enhance the survival capabilities of the participants.

Turning to the second problem created by our model, namely the decline in frequency of decorated plain ware bowls late in the Great Bend ceramic sequence, it would be useful to learn more precisely the date of onset of that decline. It appears now to begin after A.D. 1600 but before A.D. 1700, based on data obtained from Eno River sites well to the east (S. Davis 1987). If that approximation is correct, then the waning of ceramic design elements may be signaling a decrease in social boundary marking and a decrease in population density which promoted the marking in the first place. That population decline then can be seen as a consequence of the European invasion (beginning in the mid-16th century) which spread fast-killing diseases to the interior. For the Great Bend, at least, those diseases may have been inadvertently carried along the traditional trade route linking the northwest Piedmont cultures to the lithic resources of the Carolina Slate Belt.

The goal of this chapter is to present a model, in the form of a narrative, which explains the patterning observed in the archeological record. It is recognized that the model is not the only possible explanation however, and inasmuch as this account is at variance with other views it seems useful to point out the major differences. One such difference is the way in which ceramic variability within a site or a feature is explained. In this chapter I have assumed that potsherds with different attribute states (e.g. fine sand temper vs. crushed quartz temper), found within a feature such as a pit, represent vessels in use at the same time. An alternative view (e.g. Davis 1987) is that such sherds are not of the same age, and their association within the feature is a fortuitous result of aboriginal excavation and refill of a pit in a previously occupied locale, with older refuse becoming incorporated with more recent materials.

It is a certainty that on some sites such mixed assemblages regularly occur. At the Donnana site there is clear evidence of such (Vacca 1989), but to explain the data set from the McPherson and Hardy sites in that fashion requires that every pit be contaminated by mixing, even in the absence of other evidence of a previous settlement. The model presented in this chapter is favored because (a) it accounts for the ceramic differences without invoking processes not discernable in the archeological record, such as an older occupation at the site which no longer is in evidence; and (b) it offers an explanation of the ceramic variability through time in terms of demographic, economic and social processes that are integrated, in a causal sense, by a cultural materialist paradigm. In other words, the account presented here offers an explanation for ceramic changes in terms of changes in human behaviour, and those bvehavioral changes are explained as responses to alteration of the cultural ecology of the region.

The assumption of contemporaneity of certain ceramic attribute states certainly is a vital element for the model presented here. It was in pursuit of such demonstrable contemporaneity that the Hardy site was studied in 1987, when the clustering of features suggested spatial segregation of components there, and the results of our work have been detailed in Chapter 3. The question is a simple one and straightforward--how much of the ceramic variability is a consequence of vessel function, and how much is a result of some technological evolution through time? Obviously I accept the view that both processes are operative in affecting the variability of ceramic assemblages, and have attempted to isolate certain attribute sets that are indexing function. Then I have tried to move from the changing frequencies of those functional vessel classes through time (storage vs. cooking vs. serving) to the changing frequencies of certain activity sets through time, and then finally attempted to explain the changing behaviors in terms of adjustments in the cultural ecology. If the data base I am using--the assemblages of potsherds from aboriginal pits--is a mixture of materials from different time periods then the model I have created has no support in the archeological record. How now to proceed? An aboriginal house floor with vessels in place would likely settle the question; absent such a Pompeiian discovery, burials with multiple vessels included as grave furniture would be useful. Thermoluminescent dating of the potsherds also suggests an avenue of research, although currently that method does not allow the degree of reliability and the narrow range of age estimation necessary. At present the model serves as a heuristic device for stimulating discussion and new directions for research. In the spirit of a barroom patron whose words provoke a brawl as he slides quietly out the door, I raise the question in hopes others can settle the issue.

CHAPTER FIVE: THE UPPER GREAT BEND SURVEY 1987

Background

Following the 1986 excavations at the Hardy site it was apparent that evaluation of that site required some information on the nature and distribution of other riverine settlements of the region. With aid of a Survey and Planning grant from the U.S. Department of the Interior, administered by the North Carolina Division of Archives and History, a survey of the Yadkin floodplain was undertaken beginning just below the mouth of the Ararat River and ending at the village of Rockford, a total of 13km or eight miles (Fig. 15). Thanks to the cooperation of landowners in Surry and Yadkin Counties access was obtained to almost all floodplain tracts; a few areas were "off-limits" because of recent planting, and most of those were surveyed in the winter of 1987-88. Only two areas have not been inventoried, both in Surry County. Including isolated finds a total of 43 sites was discovered (Table 21).

Methods

In order to compile a body of survey data comparable to that acquired in 1974 and 1975 similar field methods were used. Each cultivated field (which included most of the area in the spring of 1987) was inspected by a pedestrian team spaced at 10m intervals. Artifacts encountered were marked by pin flags to facilitate mapping the surface scatter and estimating artifact density, and then gathered as a "general surface collection." In those few instances where density warranted, one or more 2m dogleash collections also were obtained; i.e., all surface artifacts were retrieved within a 4m diameter circle. Site was defined by the presence of any materials indicative of cultural activities older than 50 years. A single artifact could, and did, represent a site.

Once found, a site was subjected to limited subsurface testing by 50cm x 50cm test pits and borings with a 2-inch auger to detect buried cultural features or strata. Test pits were positioned in areas of high artifact density or where the surface seemed stained by midden-like deposits, and all test pit soil was passed through quarter-inch screen. Auger tests were made at intervals of 5-15 meters ranging from the center of the surface scatter; for deeply buried sites this was the primary means of estimating site boundaries and condition. At least one test pit was excavated in each site either to subsoil or to 1m below surface, whichever came first. If a cultivated tract exhibited no surface materials auger borings were made at 100m intervals to a depth of 2m below surface to test for buried sites. This strategy was necessitated by the active nature of the floodplain in the survey area. A field log was maintained for a general description of the sites, terrain and other relevant information. Photographs were made of some, but not all sites, and measured profiles were sketched of test pits which revealed anomalous or unexpected soil characteristics. The North Carolina prehistoric site form was completed for each site and filed with the Office of State Archaeology in Raleigh.

Table 21 presents a synoptic view of the survey results. Site condition is of course a relative measure, and in this table it refers to the likelihood that a site retains intact subsurface remains. "Poor" indicates that erosion, deflation and/or cultivation has destroyed or severely compromised the site's integrity, and the site does not appear eligible for the National Register of Historic Places. "Fair" or "Good" condition refers to an increased probability that intact subsurface remains were found or are likely to be found, and in those instances a testing program should be implemented to determine the site's eligibility for the National Register of Historic Places under Criterion D, 36CFR60. The sites in Table 21, and in the individual site descriptions which follow, are listed in order of their location beginning at the downstream terminus of the survey area and continuing upstream. Approximate site locations can be seen in Figure 15.

Subsurface testing was used to locate sites in areas obscured by vegetation. Such areas received test pits at 30m intervals along a single line parallel to the river. Vegetated areas tended to occur only in very narrow bottomland tracts usually less than 50m wide, and thus a single line of test pits was deemed adequate for inventory. If cultural remains or apparent cultural stratigraphy were found auger tests were placed at 10m intervals to estimate site size and locate approximate boundaries.

Geology

Almost all sites were in recent alluvium of the Congaree or Buncombe series, appearing as loose sandy loam adjacent to the river and silt loams farther from the water, skirting the upland slopes. At least in recent years this section of the Yadkin floodplain has been affected more by flooding than the 1974 and 1975 survey areas downstream. As noted in the site descriptions below, it is common to find evidence of cutting and filling by the river, and local farmers confirm the destructive effects of high water periods in the survey area. Especially in the upper half of the 1987 survey area the floodplains are long and narrow, and the river makes a twisting route through closely-flanking uplands underlain by gneiss and schist. There are no major river tributaries in the survey area, and in flood stage the river's velocity, unchecked by temporary reservoirs afforded elsewhere by tributaries or broad bottom

TABLE 21: Surveyed Sites, Great Bend 1988

Site No.	Cultural Affiliation	Condition	Significance
31Yd119	Unknown	Poor	No further work
31Sr70	M. Archaic, M. Woodland	Poor	No further work
31Yd118	E. Woodland, L. Woodland, Historic	Poor	No further work
31Sr69	L. Woodland	Good	Testing
31Yd117	L. Archaic, L. Woodland	Poor	No further work
31Sr71	Unknown	Poor	No further work
31Sr68	Woodland	Poor	No further work
31Yd32	L. Woodland	Poor	No further work
31Sr51	L. Woodland	Poor	No further work
31Sr52	E., L. Archaic, L. Woodland	Poor	No further work
31Yd91	L. Woodland	Unknown	Testing
31Yd106	Unknown	Poor	No further work
31Sr53	Archaic, L. Woodland	Poor	No further work
31Sr54	E., M. Archaic, Woodland	Poor	No further work
31Sr55	Archaic, L. Woodland	Good	Testing
31Yd109	L. Woodland	Poor	No further work
31Yd110	M. Archaic, L. Woodland	Unknown	Testing
31Sr67	Paleo-Indian, E., L. Archaic, Woodland	Poor	No further work
31Sr62	L. Archaic, L. Woodland	Fair	Testing
31Yd113	Unknown	Poor	No further work
31Yd120	Unknown	Unknown	Testing
31Yd111	L. Archaic, L. Woodland	Fair	Testing
31Yd112	E. Woodland	Poor	No further work
31Yd121	L. Woodland	Poor	No further work
31Yd122	Archaic	Poor	No further work
31Yd123	M. Archaic, L. Woodland	Poor	No further work
31Yd124	E., M., L. Archaic, L. Woodland	Poor	No further work
31Sr56	L. Archaic, L. Woodland	Poor	No further work
31Sr57	E. Archaic, L. Woodland	Fair	Testing
31Sr58	L. Woodland	Good	Testing

TABLE 21 (cont.):

Site No.	Cultural Affiliation	Condition	Significance
31Sr59	L. Woodland	Fair	Testing
31Sr61	L. Woodland	Poor	No further work
31Sr60	L. Woodland	Fair	Testing
31Yd108	Unknown	Unknown	No further work
31Yd107	L. Woodland	Poor	No further work
31Sr66	L. Woodland	Fair	Testing
31Yd116	L. Archaic, E., L. Woodland	Fair	Testing
31Yd115	Unknown	Poor	No further work
31Yd114	L. Woodland	Poor	No further work
31Sr65	Woodland	Poor	No further work
31Sr63	Unknown	Poor	No further work
31Sr64	Unknown	Fair	Testing

land, erodes its floodplain, filling here, cutting there. Damage was evident throughout the upper survey area either as gullied and deflated bottomland or as thick deposits of sterile sands capping older soil horizons.

Midway of the survey tract the Yadkin River flows almost due east, and on the Surry County side there lies a wide tract of bottomland extending to the Ararat River (Fig. 15). The Hardy site is found at the east end of that expanse and thus has escaped extensive damage, the velocity of floodwaters being significantly reduced by the upstream floodplain.

The Sites

31Yd119

Near the downstream terminus of the survey area four quartz flakes were recovered within a four-hectare area of narrow floodplain. The specimens likely are redeposited; there is no evidence of intact stratigraphy. Because of the low density of specimens this "site" could be considered as four isolated finds, all four of unknown cultural affiliation.

31Sr70

Located in the downstream portion of a small lunate floodplain, this site exemplifies the damaging affect of the Yadkin's floodwaters on archeological resources. Like most riverine Woodland sites, Sr70 was situated on and in the natural levee, but when visited in June of 1987, only a small part of the levee remained intact. The spring flood had cut away an estimated 75 percent of its length, leaving a vertical face with exposed artifacts and numerous specimens scattered on the scoured surface between the levee remnant and the river. Several large potsherds appear to

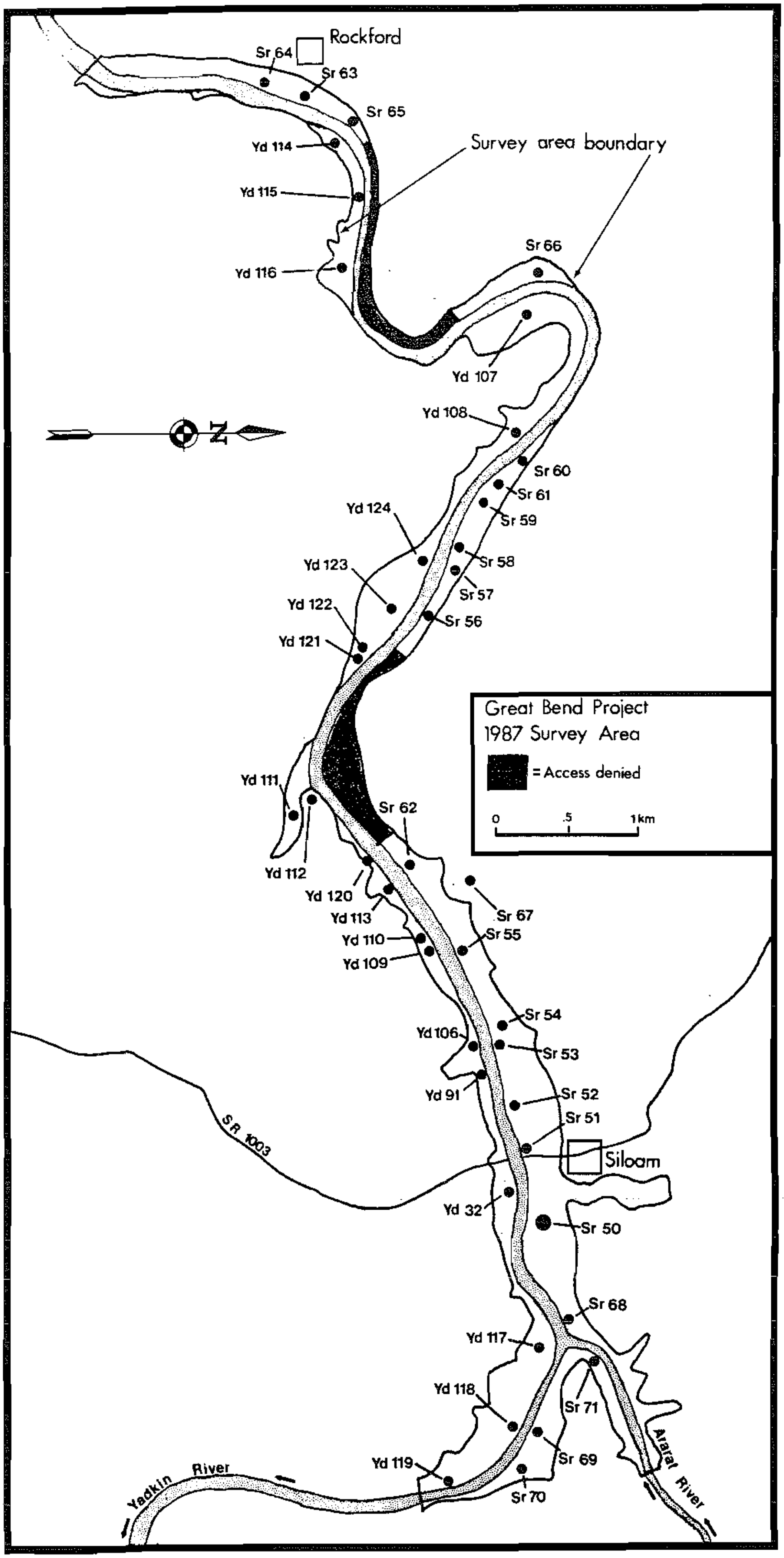


Figure 15. The Great Bend survey area, 1987.

represent a single vessel, and it seems likely that the recent erosion destroyed one or more features. No artifacts occurred on the (relatively) intact surface on top of the remaining levee, nor could any cultural stratum be seen in the eroded bank, despite the presence of occasional specimens exposed in the vertical face. Auger tests on the back slope of the levee failed to produce additional specimens. Sr70 seems to represent a site of unknown size but which contained abundant artifacts and some features, but now has lost all integrity.

Although Middle Archaic (Guilford) bifaces were recovered, the bulk of the materials are of a Middle Woodland (Uwharrie) occupation. Excluding the Archaic component, the site likely was occupied between A.D. 600 and A.D. 900.

31YD118

Located on the crest and slopes of the levee, this site was confined to the surface and plow zone. The levee is darkly stained with charcoal flecks in two places but those stains do not mark the artifact scatter and likely are of recent origin (from field clearing and burning). Subsurface test pits and auger borings encountered no subsurface materials. Surface materials were widely distributed over more than .5ha and include a Late Woodland potsherd (Dan River var. Stokes) and 19th century transfer-print earthenware, along with a projectile point tentatively identified as Gypsy, an Early Woodland type. The bulk of the artifacts consists of quartz and felsite debitage.

This site appears to have been deflated, probably by a combination of cultivation and erosion. It is unlikely that any cultural features or strata remain intact, and no further work is recommended.

31Sr69

This site is one of the few Woodland components discovered which retains a measure of integrity. It occurs on and in a prominent levee remnant adjacent to the Yadkin River. A dark soil stain could be seen over an oval area about 40m east-west on the riverine levee slope. Test pits, auger borings and surface inspection suggest the site measures about 70m by 20m, the long axis following the east-west levee crest and slope. One test pit revealed a midden 14cm thick beneath the plow zone, and a local informant disclosed that human skeletal remains had been found here following a recent flood. It is very likely that intact features remain here, but these are threatened by erosion and continuing cultivation. Ceramics are exclusively of the Dan River series. Lithic tools consist of the base of a felsite triangular Woodland projectile point and a complete triangular white quartz point. Abundant quartz and felsite debitage and fire-cracked rock also were collected. It is recommended that additional testing be conducted to more fully evaluate this site's research value.

31Yd117

This site occurs on the natural levee directly opposite the mouth of the Ararat River. The floodplain has been badly eroded, and all materials were recovered from the surface or in the plow zone. Test pits revealed no evidence of a midden or features. The specimens were thickly scattered over an area approximately 20m by 30m, the long axis paralleling the river.

At least two components are represented, an earlier Savannah River and a Late Woodland. The former is represented by a single projectile point (Fig. 16a), while the Woodland is represented by six potsherds, a triangular arrow point (Fig 16c) and several flakes of the fine-grained, dark gray-green or black unpatinated felsite typically associated with Woodland features in the Great Bend area; at least two of the flakes are retouched (Fig. 16b). The quartz debitage and fire-cracked rock likely also originated with the Woodland component.

This site has been thoroughly disturbed by erosion and cultivation, and has minimal research potential--no further work is required.

31Sr71

Located on the east bank of the Ararat River, 200m above its confluence with the Yadkin, this site consists of a dispersed scatter of quartz and felsite debitage and an anomalous fragment of marine shell. No artifacts, features or cultural stains were observed beneath the plow zone. The Ararat's floodplain is very narrow here, and it is possible the specimens have been redeposited from the upland ridge immediately east of the site, although that area was not surveyed.

The materials lay in a narrow strip of alluvium 150m north-south and 20-30m east-west, paralleling the Ararat. The lack of diagnostic specimens, coupled with the disturbed condition of the deposits, indicate this site has little research value. No further work is recommended.

31Sr68

This site when surveyed consisted of two loci separated by the railroad bed, and it is likely a single site measuring ca. 200m in diameter once was present. Materials consisted of quartz and felsite debitage and debris, mixed with chunks of naturally occurring quartz eroding from the hills north of the site. A single potsherd was found, tempered with crushed quartz. No buried features, cultural strata or artifacts were found by the subsurface tests.

The site is located at the downstream terminus of the floodplain also containing the Hardy site. The soils show evidence of flooding and colluvial wash from the uplands,

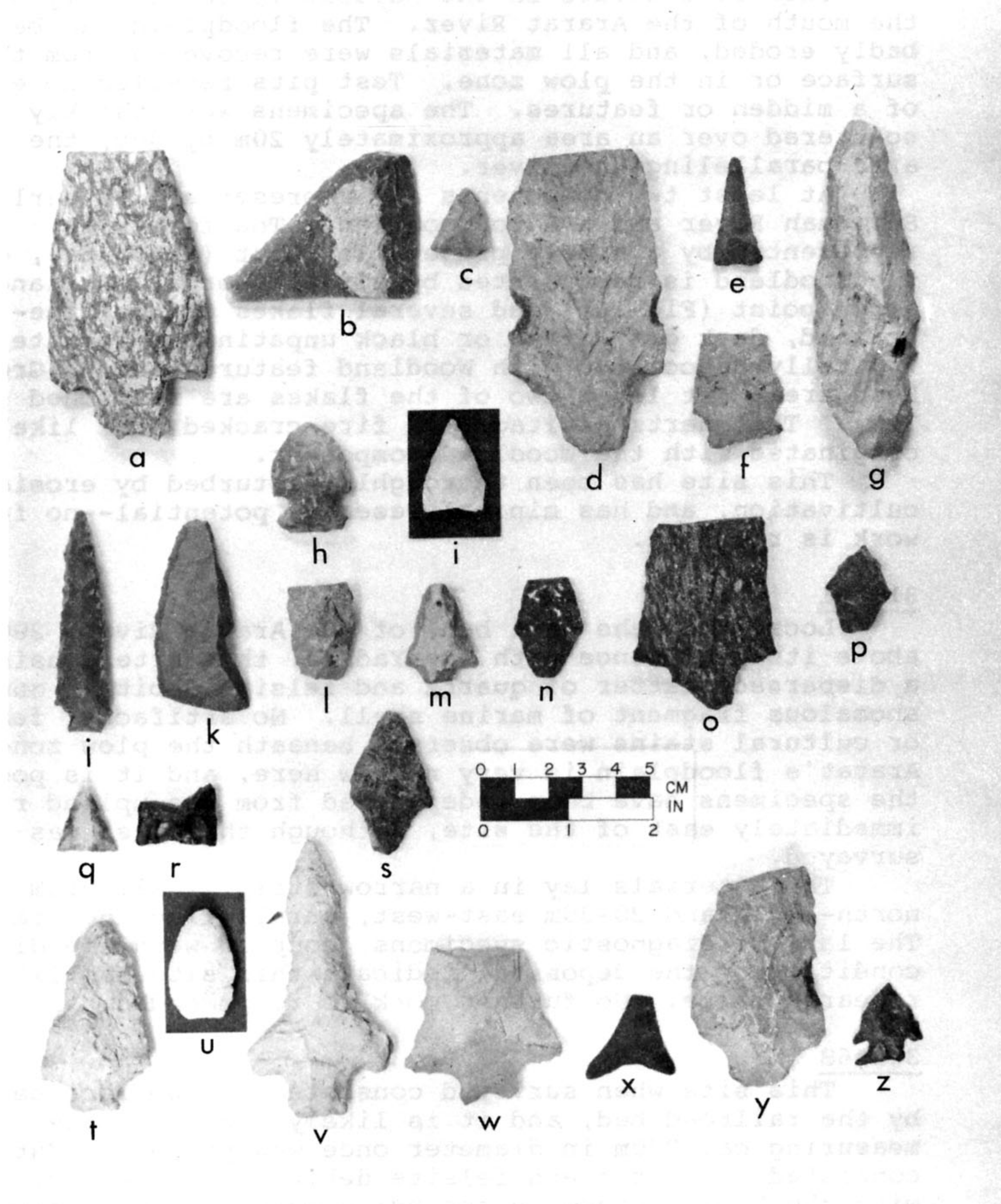


Figure 16. Lithic tools from surveyed sites, Yadkin and Surry counties, North Carolina. a–c, 31Sr117; d–f, 31Sr52; g, j, 31Sr53; h, i, k, l, 31Sr54; m, 31Yd109; n, 31Yd110; o, 31Sr62; p, 31Yd112; q, 31Yd122; r,s, 31Yd123; t–w, 31Yd124; x, y, 31Sr56; z, 31Sr59.

and at least some of the artifacts may be redeposited from the Hardy site. No further work appears warranted here.

31Yd32

31Yd32 is found directly across the Yadkin River from the Hardy site, in a tract of bottomland heavily scoured and filled by the river. Materials were scattered over an area 200m by 70m, on the riverine slope of the levee. All identified artifacts are Woodland, predominantly Late Woodland, and include potsherds, lithic tools and debitage, and a few small pieces of fire-cracked rock.

Despite the large areal extent of the surface scatter, subsurface tests revealed there no discernible midden or features beneath the plow zone. Sub-plow zone strata included distinctive bands of sandy clay of varying color and lenses of white coarse sand, indicative of cutting and filling by the river. While some intact features may remain the probability seems low, and barring accidental disclosure of such by flooding or cultivation no additional work here is warranted.

31Sr51

The large tract of Surry County bottomland west of the Siloam bridge contained several sites. The most easterly of these, and the most intact, was Sr51 or the Atkinson site. Over 40 years ago this site yielded a complete soapstone platform pipe (illustrated in Rights 1957: Pl. 34), although the 1987 survey crew found only scanty surface remains. The site appears to have experienced aggradation by river overflow, with the plow zone consisting of coarse white sands. The possibility that a buried component(s) was present prompted an unusual amount of subsurface testing here. The survey party excavated eight test pits immediately west of the bridge, and another four east of the bridge. West of the bridge these pits defined an area 80m by 60m (the long axis paralleling the river) and a much smaller area to the east. The latter area, conceivably part of the larger site at one time, had been thoroughly disturbed by construction of the bridge and a landfill operation. The western area however showed a very dark, organic stained stratum intact below the plow zone, beginning at 60-80cm below surface. At the time of survey this dark, almost black, stratum was assumed to be a midden. It yielded some artifacts and charcoal, and the site dimensions estimated above are based on its areal subsurface expanse.

The Atkinson site was tested more thoroughly by the Wake Forest University field school crew following the survey team's visit. Three 2m squares were excavated, each encountering the black "midden" at the expected depth. These larger units disclosed that the stained soil was not created by refuse, but rather represents a buried backswamp deposit with cultural materials occurring sporadically. The stratum is a clayey loam which continues, though lighter in color, to 160cm below surface. It seems most likely that the river has carried away the original site which lay to the south on a natural levee; the backswamp behind the levee now has been buried by river sand, a result of the more northerly course of the Yadkin building a new levee atop the old backswamp clays. Artifacts found in the dark stratum probably eroded down from the levee crest or were scattered onto the backswamp during the occupation.

The ceramic inventory from the buried stratum consists almost entirely of Dan River series materials. Surfaces are eroded and the specimens small, but identifiable surface treatments are net-impressed or, much less frequently, plain. Tempering material is crushed quartz and sand. This component is approximately the same age as the earliest Woodland occupation at the Hardy site. Artifacts were scarce on the surface as stated, but the sherds recovered are exclusively sand-tempered Dan River series with plain or net-impressed exterior surfaces. Based on the sample in hand, and our understanding of the geological processes, it would appear that two occupations are represented, the later Dan River component post-dating the burial of the backswamp and the slightly older component. Adequate testing has been conducted here to demonstrate the site probably is not eligible for the National Register of Historic Places due to the scanty remains below the plow zone, and the disturbed nature of the later occupation represented by surface materials.

31Sr52

In the same floodplain as Sr51, but 300m farther upstream, was found a long (400m), narrow (100m) scatter of lithics and ceramics. These materials appeared to be concentrated in three loci within the more expansive scatter, which lies on the crest and backslope of the natural levee. Two concentrations measured approximately 100m x 40m; the westernmost possibly is slightly smaller, about 70m x 30m. In any case they are regularly spaced within the site limits along the levee crest, a situation comparable to the Hardy site. Subsurface testing here indicated all materials are confined to the plow zone; no midden or cultural features were observed. The undisturbed soil beneath the plow zone has a high clay content, again suggesting the sandy topsoil is of recent origin and the levee now is building on top of much older backswamp deposits.

Although the small artifact samples are only suggestive, the eastern locus may predate the other two: ceramics here show a higher incidence of crushed quartz temper. Lithics include Woodland triangular points or point fragments (Fig. 16e), along with Early Archaic Kirk (Fig. 16f) and Late Archaic Savannah River (Fig.16d) dart points. Debitage consisted of quartz flakes, chips, and cortex fragments, and felsite flakes and chips. Fire-cracked rock was present but scarce. In consideration of the disturbed nature of the site, and the low probability of intact features below the plow zone, no further work is recommended.

31Yd91

This site was found as a very sparse scatter of artifacts within an area 200m x 20m, paralleling the Yadkin River in a very narrow tract of bottomland. Within the oval scatter was present a dark stain on the surface, measuring ca. 30m x 10m. Subsurface testing showed a darkly stained loamy sand continuing below the plow zone some 25 cm, yielding to a orange-brown clayey sand at ca. 55cm. North of the stain, but within the oval defined by surface materials, a second test showed the dark stratum from 87-128cm below surface; south of the surface stain and outside the surface scatter a meter-deep test pit failed to encounter the stain.

The stratum was originally interpreted as a midden, plowed where visible on the surface and buried by recent alluvium farther north. Although charcoal was present in the stain artifacts were absent with the exception of a single potsherd. The paucity of cultural remains in this stratum is similar to the situation at the Atkinson site (31Sr51) and may have a similar explanation; i.e., the stratum's organic staining was created by soil formation processes in a backswamp setting, with artifacts and charcoal incidentally incorporated from an adjacent levee site, now destroyed by river action. Additional excavation at this site, and similar sites (see below) are required to properly assess the origin of the organic stained horizon. Unfortunately no soil samples were taken, nor notation made of the silt/clay content of the dark stratum, and its origin presently is unknown. If the stratum is a midden then the site's research potential is high. Testing is recommended.

The artifacts indicate a Late Woodland origin. The potsherds are identified as Dan River var. Dan River. Lithic remains include flakes of chalcedony, felsite and quartz.

31Yd106

Located a short distance upstream of Yd91, on the opposite side of a small tributary of the Yadkin, this site consists of a minor debitage scatter over an area ca. 100m x 60m. The floodplain here is very narrow and backed by steep slopes and bluffs to the south. The soil, as at Yd91, is a silty sand alluvium which increases its clay content with depth.

Subsurface testing yielded no evidence of buried soil horizons or cultural remains. The surface materials include flakes of quartz and felsite, an exhausted quartz core, and one piece of fire-cracked rock. No cultural affinity can be assigned these remains, and the site is unlikely to yield further information.

31Sr53

This site is directly opposite Yd106, immediately east of a small Yadkin River tributary. Although artifacts were found only on the surface or in the plow zone, staining of the surface could be seen in two oval areas ca. 50m x 20m in the sandy alluvium near the river. Subsurface testing showed some staining in a stratum 7cm thick below the plow zone in these ovals, but no artifacts or features were found. Surface materials include two potsherds (Dan River var. Dan River), and felsite and quartz debitage. Immediately north of the surface stains there is a slight rise which continues to the railroad bed, a distance of 100m. This rise contained abundant quartz debitage and debris, fire-cracked rock and two unidentified bifaces, probably dating to the Archaic period (Fig. 16g,j). Here, too, all materials were confined to the surface or plow zone.

This site may contain two components, one Archaic (on the rise) and one Late Woodland (near the river in the flat, sandier alluvium). The deposits likely have been mixed to an unknown extent by cultivation, with a continuous surface scatter over an area 100m x 50m (long axis paralleling the river). It is unlikely that any buried remains are present. No further work is recommended.

31Sr54

On the opposite side of the tributary flanking Sr53 was found an expansive lithic scatter. The materials occurred for some 400m in a band 30-50m wide, paralleling the river but removed from it by approximately 80m. The 80m strip adjacent to the Yadkin is blanketed by sand and sandy loam to a depth of a meter where red clayey sand and sandy clay is encountered. Above that is a 6-25cm thick brown or dark brown "midden" (as mistakenly identified in the field), another example of a buried natural soil horizon. From that stratum to the plow zone are variegated lenses of mottled sands, white sands and yellow sands, clearly indicative of overbank deposition. No artifacts were found on the surface or in the subsurface tests in this strip. This area has been particularly vulnerable to cutting and filling because immediately upstream, on the opposite side of the river, steep bluffs encroach to the water's edge, deflecting the river's velocity toward the Surry County side.

The site, as stated, begins ca. 80m from the river. Here the ground is slightly higher and continues to rise to the railroad bed. The soil is still alluvial, sandy loam with some red clays interspersed. Materials were concentrated at the east end of the site. Only lithics are present, including quartz and felsite debitage, tools and fire-cracked rock. Identified specimens include Kirk (Fig.

16h), Guilford (Fig. 16l) and Pee Dee (Fig. 16i). Other tools include a discoidal biface and a side-scraper made on heat-treated jasper (Fig. 16k).

The preponderance of white quartz of high quality in the debitage assemblage, including a number of cores and core fragments, suggests that lithic reduction of that material was one activity at this site. The only indication of a Woodland presence is the Pee Dee point (intended as a descriptive type name only), interestingly made of that same material. Although not noted by the survey party it is likely that a vein of quartz outcrops in the area; a survey of the environs is planned.

This site may be larger than suggested by the surface materials, possibly lying partially buried beneath the river sediment. This seems unlikely given the absence of materials in the test pits along the river, however. It seems most probable that it represents a multi-component Archaic workshop in a typical Archaic setting, i.e., on a ridgetoe extending into the floodplain. The river probably has cut to the north here, resulting in some alluviation of the lower portion of the ridgetoe. This is substantiated by an auger test on the riverine edge of the site, 77m north of the river; red sandy clay was struck at 45cm below surface. No further work is recommended at this badly disturbed site.

31Sr55

Located in the same tract of bottomland as Sr54, this site is partially buried by recent alluvium. Dark stained soil was evident on the backslope of the levee, while nearer the river the stratum lay buried from 10-71cm, depending on levee height, and ranged in thickness from 15-70cm. Auger tests and test pitting indicated the stain covers an area approximately 50m east-west and 40m north-south.

Unlike other similar sites reported above, this dark stratum contained cultural materials, albeit in low frequency. Whether the staining is a consequence of human occupation or represents a site located on an old soil horizon is not clear due to the limited soil profiles available in the test pits.

The surface collection includes a single Archaic point (probably Savannah River--the stem is missing); otherwise all materials are compatable with a Late Woodland (Dan River) occupation. Debitage is predominantly white quartz. Included in the surface finds are the stem of a ceramic pipe and the distal portion of an alate stemmed soapstone pipe. Features, along with the intact midden zone, likely are present beneath the overburden of the levee, and hence this site may yield additional information on the Late Woodland stage. Testing is recommended.

31Yd109

This small site was found in the floodplain adjacent to an ephemeral tributary of the Yadkin. All materials occurred within a circular area 30m in diameter, and no subsurface remains could be detected. Quartz and felsite debitage, a few Dan River sherds and fire-cracked rock were found, along with a small stemmed point. The latter cannot be identified with assurance because part of its stem is missing (Fig. 16m). The research potential of this tiny site has been severely compromised, and no further work is recommended.

31Yd110

Immediately across the small drainage mentioned above, west of Yd109, was found a dispersed scatter of Late Woodland Dan River potsherds, felsite and quartz debitage, and the base of a triangular Woodland projectile point. The materials were found within an area 200m x 100m, with its long axis paralleling the river. The floodplain here is quite narrow and the levee is poorly defined; materials likely have been at least partially dispersed by cultivation.

No subsurface midden or features were found, but a Middle Archaic Morrow Mountain point was recovered in the bucket auger at a depth of 47cm, well below the plow zone (Fig. 16n). Whether this specimen has been redeposited by flooding or rodents, or dropped to that depth during the auger boring, or represents a buried Archaic component is not known, but test excavations are warranted to determine the stratigraphic context.

31Sr67

Originally recorded in 1985, this upland site was revisited in 1987 because of its proximity to the survey area and the report of Paleo-Indian and Early Archaic materials gathered there in the past. When visited by the 1987 crew the site was in cultivation, and artifacts were found over an area approximately 100m x 100m. The site occurs on the riverine slope of a ridge system, heavily eroded, with little likelihood of the preservation of features.

The site produced a miscellany of artifacts including Late Archaic (Savannah River) and Woodland projectile points. Two Late Woodland (Dan River) potsherds also were found, along with a fragment of a soapstone disc, a fragmentary biface, and debitage of felsite and quartz. While this site apparently was visited repeatedly in prehistory all context for the remains has been destroyed, and no additional work is justified.

31Sr62

This site consists of a dark stain 30m from the river's edge, exposed by cultivation and recent forest clearing and bulldozing in the floodplain. The stain covers an area 160m x 35m, the long axis parallel to the river. This tract had experienced very recent alluviation, with white coarse sand present over most of the bottom, but here and there the darker soil was turned up by plowing. Auger tests showed a stain up to 30cm thick; the upper portion had been plowed (along with the 10-20cm of white sterile sand overburden) but the lower portion remains relatively intact, with features likely present but not observed. The extent of disturbance is highly variable however, with some areas completely gouged away by heavy equipment.

Four Late Woodland potsherds were found in the stain (Dan River), along with a sparse scatter of felsite and quartz debitage, a tiny fragment of a ground stone implement, and a Late Archaic Savannah River projectile point (Fig. 16o). The scarcity of artifacts may be an indication that the stain is not entirely, or perhaps not mainly, a result of human occupation. Whether it is a true midden or an old soil horizon, it has been badly damaged, and additional testing is necessary to determine whether appreciable information is still available in less disturbed areas.

<u>31Yd113</u>

This "site" consists only of two pieces of quartz debitage recovered from a very narrow floodplain. At the time of survey the field was fallow but the surface visibility good, and auger tests gave no indication of subsurface cultural deposits. No further work is warranted.

<u>31Yd120</u>

This site occurred in the only rockshelter found by the survey. The shelter is of impressive size, almost 50m long and 15m high, with a varying depth of 2-5m. Exposure is to the northwest, toward the river 20m distant. Its current floor is only slightly above the adjacent floodplain, which seemingly makes the shelter vulnerable to scouring by the river. Nevertheless, a 50cm x 50cm test pit produced two felsite flakes from 80cm below surface. Whether these have been redeposited or represent an intact component is unclear.

It seems most unlikely that such a prominent and spacious rockshelter would have been unoccupied during prehistory. Its significance depends on the effects of fluvial processes on its deposits, and these can only be assessed by a testing program to define the site stratigraphy.

<u>31Yd111</u>

Upstream and 600m from the rockshelter, Bowman Mill Creek enters the Yadkin, and a small floodplain has formed on the west side of the confluence. No site was found on the Yadkin, but Yd111 occurs in that part of the bottom adjacent to the creek, 250m above its mouth. Artifacts were abundant in an oval area 60m x 20m (long axis parallel to Bowman Mill Creek). A discernable stain outlines the site, but subsurface testing found no remnant of a midden below the plow zone.

Artifacts include Late Woodland potsherds (Dan River), and broken or aborted triangular projectile points, along with quartz and felsite debitage, broken bifacial and unifacial tools, and a Late Archaic Savannah River projectile point.

The location of this site may have provided some protection from erosion by the Yadkin, and features may occur beneath the plow zone. Further testing is recommended to fully assess its information potential.

31Yd112

This is an isolated find of a felsite Gypsy projectile point (Fig. 16p), discovered at the mouth of Bowman Mill Creek. There is a tiny clearing on the east side of the creek in a plot of alluvium. Auger testing and close scrutiny of the area yielded no further specimens. This single point provides a rare example of an Early Woodland presence in that portion of the Yadkin Valley surveyed in 1987.

31Yd121

Upstream of the floodplain containing Yd111 the uplands encroach to the river's edge on the Yadkin County side, creating a 500m reach where no floodplain exists. Beyond this restriction the uplands retreat and a large elliptical bottom is present containing four sites, Yd121, 122, 123, and 124. On the opposite bank there is a ridge system that similarly extends to the river, producing a constriction that may account for the dramatic cutting and filling evidenced in the floodplain. Augering and test pitting across the bottom revealed variegated strata and lenses, along with a potsherd from the improbable depth of 142cm. Conversation with the landowner confirmed that the bottom had "washed out" in 1981; evidently that was only one of several episodes that have adversely affected the integrity of the archeological sites.

Probably as a consequence of river flooding, at least in part, the entire bottom yields cultural materials, albeit in varying concentrations. The exceptions are those areas obviously covered by recent alluvium or a thickly vegetated strip, low and wet, immediately fronting the river. The four sites which follow have their boundaries defined rather arbitrarily, when artifact density had noticeably declined to that of the "background noise" present over the entire tract.

Yd121 is in the eastern end of the bottom, inscribing an oval 40m x 15m, the long axis parallel to the Yadkin and some 30m from the heavily wooded and gullied strip fronting the river proper. Of the four sites, Yd121 is the best preserved, perhaps because there is a low swampy area immediately to the west which would probably provide some protection from the floods, at least the more recent episodes. There was some staining of the plow zone in the oval which may be a remnant of a midden deposit. The site yielded a side-scraper of white quartz and two Late Woodland Dan River potsherds, along with a quantity of quartz debitage, a small amount of felsite debitage, and fire-cracked rock. Subsurface tests showed no intact features except in a single auger test, where a 21cm thick stratum of dark, organic stained sand mixed with lenses of white sand occurred. That zone was 38-59cm below surface and yielded no artifacts--the staining may simply represent a buried soil. No further work is recommended.

31Yd122

A short distance southwest of Yd121, on the opposite side of the swampy area and adjacent to the base of the uplands, was a scatter of quartz and felsite debitage. The materials were dense within a 40m x 40m area, but testing suggests all specimens are confined to the surface or plow zone. In addition to the debitage, a biface fragment and a double side and end scraper were found. This site may represent an Archaic occupation but it has been severely disturbed, and no further work is recommended.

31Yd123

This is a sprawling site covering the central section of the bottom, a locale where flood damage is most apparent. Artifacts were scattered over a linear tract of 300m x 50m paralleling the river, in and on an undulating levee. Late Woodland ceramics (Dan River) and projectile points (Fig.16q,r) were found, along with a Middle Archaic Morrow Mountain point (Fig. 16s). Quartz and felsite debitage and fire-cracked rock also was present.

Auger tests across the site, coupled with the surface indications, suggest that the site has been heavily disturbed. No intact midden stratum or features are present; a Late Woodland potsherd was recovered from 142cm below surface, doubtless a result of cutting and filling by the Yadkin River. No further work is necessary at this site.

31Yd124

This site is located in the upstream end of the bottom, on a levee of varying height, and covers an oval area ca. 100m by 50m, long axis parallel to the river. Subsurface tests indicate the area has been severely washed and filled. The sub-plow zone sands are highly variable in clay/sand content, and in one instance, mottled with residual clays. No midden is present, and all artifacts occurred on the surface.

The ceramics are Dan River and occur in relative abundance, but there is also a strong Archaic presence represented by Kirk (Fig. 16v), Stanly (Fig. 16w), and

Savannah River (Fig.16t) points as well as several large biface fragments, doubtless portions of Archaic dart points (Fig. 16v). Felsite and quartz debitage also was present. It would appear that a large multicomponent site once existed on the floodplain and perhaps on the adjacent ridgetoe to the south, where some quartz debitage was present. Unfortunately it has been thoroughly churned by the river, assisted by the plow. No further work is recommended.

31Sr56

Opposite the bottom containing sites Yd121-124 is a long but quite narrow floodplain, also strongly affected by cutting and filling. The easternmost site, Sr56, received so much alluvium in the last flood that its owner used a bulldozer to scrape it from the cultivated fields. Cultural materials occur only on the surface and sub-plow zone stratigraphy consists of alternating lenses of sterile sands and clays.

Artifacts include four potsherds of the Late Woodland (Dan River var. Stokes) and a Woodland triangular point (Fig. 16x), along with a Late Archaic Savannah River point (Fig. 16y). Quartz and felsite debitage also was present along with fire-cracked rock and unaltered river cobbles. This site has been severely affected by erosion and plowing, and no further work is recommended.

31Sr57

This site is located 400m west of Sr56 in the same narrow floodplain. The artifact scatter covered an oval 26m x 18m, the long axis paralleling the river along the back slope of the levee. Auger testing located a buried midden; a darkly stained stratum occurred from 32cm, the bottom of the plow zone, to 92cm below surface (maximum depth). Apparently only the upper portion of the occupational zone has been plowed. Here at least the river is building the levee rather than eroding and filling, although erosion probably has cut away other portions of the site leaving only this isolated "patch" of midden.

Artifacts occurred on the back slope of the levee where the midden is exposed, and also lie buried beneath the sands on the levee crest. It is likely that intact features also are present although none were encountered by the survey. Artifacts include quartz and felsite debitage, Late Woodland Dan River potsherds, and a Kirk projectile point. Testing is recommended to more fully assess this site's research potential.

31Sr58

A short distance west of Sr57 and across a small tributary lies Sr58, a dense scatter of Late Woodland ceramics, quartz and felsite debitage and fire-cracked rock. The soil was stained on the surface over a 50m diameter circle containing the bulk of the artifacts, and testing indicates the midden continues in portions to the site to 110cm below surface. The probability of intact features seems high, and further testing is recommended to determine the site's eligibility for the National Register of Historic Places.

31Sr59

Still farther upstream but in the same floodplain as Sr58 was 31Sr59, on the west side of a small unnamed tributary. Artifacts were distributed on the surface over an area 220m x 140m, with the highest density occurring within a 50m x 100m oval soil stain in the nearly level floodplain. Testing across the entire scatter showed no buried midden, even within the stain, although there was some minor mottling of the sand immediately below the plow zone in that area. As in the rest of the floodplain there may have been heavy equipment used to grade the sterile river sands deposited in this decade, resulting in exposure of the midden to plowing. Features may still be intact although none were detected by the survey.

Ceramics were primarily Late Woodland Dan River specimens. Several fragmentary Woodland triangular projectile points were recovered as well as an unidentified corner-notched point of unusual, unidentified siliceous stone (Fig. 16z). Testing is recommended to more fully assess the subsurface condition of this site.

31Sr61

This site is located 200m upstream of Sr69 in the same narrow floodplain. Materials were sparsely scattered over a leveled area 140m x 70m, conforming to a rectangular field. To the north, beyond a drainage ditch, earth-moving equipment had been in use removing recent alluvium, and this site may have been affected to an unknown degree also. No subsurface midden staining, features or other evidence of intact remains were encountered. Artifacts consist of quartz and felsite debitage and four Late Woodland Dan River potsherds. No further work is recommended.

31Sr60

Some 200m upstream of Sr61, just beyond the bulldozed field, another Late Woodland site was encountered (Sr60). This site is better preserved exhibiting a dark oval soil stain 60m x 20m paralleling the river, in the sandy loam of a cultivated field. No clearly defined midden was present below the plow zone though there was some diffuse staining, possibly the base of a plowed midden stratum. Features may remain though none were found by the survey. Artifacts include quartz and felsite debitage, a fragment of a pointed biface (probably a Woodland projectile point), and Dan River potsherds. Testing is recommended to determine whether intact features remain undisturbed.

31Yd108

Across the river from sites Sr59, 60 and 61 is a narrow floodplain which was extensively tested and augered for buried sites; none were detected on the surface. Over a distance of 150m the upstream portion of the bottom showed a dark stained stratum beginning between 35cm-85cm below surface, below sands or sandy loams of the present levee, and measuring 20cm-40cm in thickness. The soil was dark but heavy with clay, and produced only one artifact, a felsite flake. Charcoal flecks were occasionally encountered as well. Although the stratum may be a midden it seems more likely it is a buried natural horizon, probably an ancient backswamp formation like that encountered at Sr51. More expansive test excavation would be necessary to fully evaluate its significance, but the paucity of cultural materials suggest low information potential. No further work is recommended unless a particular research design is formulated to evaluate geological processes affecting this sector of the Yadkin Valley; for such a research design, Yd108 deserves testing.

31Yd107

Above Yd108 the Yadkin has inscribed a hairpin turn, and site Yd107 occurs on the inside of this turn. A large tract of bottomland is located here, bounded at the upstream end by an impressive 15m high rock bluff. The field was tested and augered but no subsurface remains were found, only sterile alluvial sands, sandy loams and clays. Artifacts were present on the surface, confined to an unstained ca 100m x 60m oval, 100m from and paralleling the Yadkin River. Fire-cracked rock, quartz, felsite, and jasper debitage were recovered, along with pottery of the Late or Middle Woodland. This ceramic assemblage provides a good example of the classification difficulties presented by an assemblage on the Uwharrie-Dan River cusp. Unfortunately this site, one of the earliest Woodland components located by the survey, seems to have little research potential due to its disturbed, deflated condition. No further work is recommended.

31Sr66

On the outside of the same river bend described for Yd107, and opposite that site, was found a buried stratum of dark brown soil beginning between 33cm and 84cm below surface. Evidence from the auger tests and test pits, coupled with the backdirt from insect burrows, suggests the stain covers a narrow oval along the levee crest and slopes, 250m long and 20-25m wide, long axis parallel to the river.

The surface collection produced a small amount of quartz debitage; test pits yielded minor amounts of quartz and felsite debitage, pottery and the distal end of a thin biface, very likely a Woodland projectile point. These artifacts suggest the dark stratum may be of cultural origin. On the other hand, overlying varves of clay, lenses of sand and mottled stains suggest some filling by the river here, and the stratum may be a buried soil of natural origin. Only more expansive test excavations can clarify the potential significance of this site. Testing is recommended.

31Yd116

This site is located 1.5km upstream from Sr66, in a narrow bottom extensively eroded by the river. The levee is very prominent here, and its riverine slope has been washed to expose a midden deposit which was being mixed with the sterile alluvium by plowing at time of survey. A portion of the midden may remain intact beneath the levee crest. The exposed stain was about 80m long, with artifacts occurring in a strip 80m x 40m parallel to the river.

The collected artifacts include quartz and felsite debitage, a quartz Savannah River point, a Woodland triangular arrow point, and a fragment of a small stemmed biface. Only one potsherd was recovered, probably Late Woodland. A local farmer reported a ground stone celt also was found here.

The exposed, eroded portion of this site has little integrity, but further testing is necessary to determine if an intact section of the midden is present on the levee crest.

31Yd115

A light scatter of quartz debitage on a heavily eroded levee was found in the same floodplain, 500m upstream of Yd116. The site has been completely destroyed, and no further work is recommended.

31Yd114

Another badly eroded site, this location is 400m upstream of Yd115 in the same bottom. A thick deposit of sterile white sand has been recently deposited on the levee, and a few artifacts were collected from an oval area ca. 60m x 30m, with the long axis parallel to the Yadkin on the levee foreslope. Auger testing suggests the levee has undergone repeated cut-and-fill episodes, but a discolored stratum of sandy silt was present at 67cm below surface in one test and at 124cm in another. This likely represents an old soil horizon--it yielded no cultural material.

Artifacts were found only on the eroded surface and include quartz debitage, fire-cracked rock, and a single Late Woodland potsherd. The information potential of this site is negligible, and no further work is recommended.

31Sr65

Directly opposite Yd114 was a small site on the back slope of the levee, with artifacts lightly scattered over an area ca. 30m x 60m and parallel to the river. Subsurface tests encountered a homogenous red clayey subsoil directly below the plow zone, indicating deflation by erosion. Because red clay usually indicates a residual origin, it is likely the levee is covering a terrace remnant or a ridge toe. The assemblage includes a small amount of quartz debitage and the basal portion of a triangular Woodland arrow point. It is unlikely that any intact remains are present here, and no further work is recommended.

31Sr63

This small site, 60m x 20m, was marked by an oval stain on the crest of a low levee south of the village of Rockford. Subsurface tests struck homogenous clayey sands immediately below the plow zone, suggesting deflation of the bottom. Artifacts included only quartz debitage and one piece of fire-cracked rock. No further work is warranted.

31Sr64

Some 300m upstream of Sr63 a single quartz core was found on the low cultivated levee. Below the plow zone the soils are mottled, but a slight stain was observed in one test at 70-125cm, with charcoal flecks present. Apparently some cutting and filling has occurred here (a modern brick was encountered at 45cm below surface) but there is the possibility of a preserved cultured stratum below the disturbed soils. More extensive testing is necessary for confirmation.

Conclusions

One intended benefit of combining the data from two excavated sites with the survey information is to provide a framework for interpreting the surveyed sites. The Hardy site is of particular importance in that regard because of its proximity to the surveyed sites and because of the presence there of three components, relatively dated by seriation (Marshall 1987, 1988) and the absolute dates provided by the carbon-14 analyses. By comparing the collections obtained from the surveyed sites with those from Hardy we can manifest finer chronological control over the survey data and approach an understanding of settlement dynamics of the region.

In Table 22 each of the surveyed ceramic sites has been compared to the Hardy components and an absolute date is provided based on cross-dating of the ceramic collection. For reasons explained previously it is essential that assemblages be compared, not individual sherds. However, this creates a problem for sites yielding small potsherd samples. Sites with fewer than 10 sherds (an arbitrary choice) are marked with an asterisk as particularly prone to error in cross-dating. A few sites produced only one sherd and, although I have given these a date, it is little more than a guess and should be construed as such. Such sites are marked with a double asterisk in the table.

A number of assumptions are made in conducting this exercise. First, it is assumed that the C14 dates from Hardy are accurate. Certainly they are consistent with the seriation results obtained by Marshall (1988) and there is no reason to suspect their accuracy apart from the small number of analyzed samples. To simplify Table 22, and its implications, the three dates are used without the standard deviation measures so that the Hardy site east component is dated at A.D. 1020, rounded for these discussions to A.D. 1000. The central component is dated at A.D. 1282, rounded to A.D. 1300. The western component is dated at A.D. 1535, rounded up to A.D. 1600. This provides a "spread" of 300 years between components and better accommodates the historic(?) copper artifact from Feature 65-2 at the Hardy site. As will be seen, the precise dates are not critical to this discussion (although their sequencing is).

A second assumption is that the ceramic trends detailed in the previous section are time-factored and regular, i.e., they are indexing processes that are unidirectional in time, and that the slope of those processes is regular, or nearly so, when plotted against time. This assumption allows an assemblage exhibiting a frequency of attribute states not replicated in a Hardy site component to be placed, in time, between those components, e.g., A.D. 1100.

Thirdly, it is assumed that the ceramic changes manifested at Hardy were occurring contemporaneously throughout the survey area. Also, it is assumed that the collection from each surveyed site represents a single component which underwent no change in its ceramic industry during the occupation and that the collection obtained by the survey party is representative of vessels in use during that occupation.

It is freely acknowledged that these assumptions are unlikely to be met by all the sites represented in our data corpus. The objective here, however, is not to reconstruct the exact historical sequence of the aboriginal settlement locations, but rather to detect any gross patterning those locational choices may have produced through time and space.

In assigning the dates shown in Table 22 the seriation charts prepared by Marshall (1988) were used to place each assemblage along the time line in accordance with the expressed frequency of three attribute states considered particularly useful for chronological ordering: temper size and amount, interior surface treatment, and incidence of plain exteriors. In operationalizing the dating, however, it was found that some of the assumptions described above had to be abandoned. This was particularly apparent when a

Table 22: Cross-dating of Ceramic Sites, 1987 Great Bend Survey

Provenience	Date	Comments
31Sr70*	A.D. 600-900	
31Yd118*	A.D. 1675	
31Sr69*	A.D. 1100	
31Yd117*	A.D. 1275	
31Sr68**	A.D. 1300	
31Yd32	A.D. 1575	Late components
	A.D. 1000	Early components
31Sr51*	A.D. 1600	Late components(surface)
31Sr51	A.D. 1000	Early components(buried)
31Sr52*	A.D. 1475	Possible Yadkin Phase present also
31Yd91*	A.D. 1000	
31Sr53*	A.D. 1400	
31Sr55*	A.D. 1325	
31Yd109*	A.D. 1350	
31Yd110*	A.D. 1375	
31Sr67*	A.D. 1250	
31Sr62*	A.D. 1290	
31Yd111*	A.D. 950	Very Early Dan River
	?	Yadkin River component
31Yd121**	A.D. 1300	
31Yd122**	A.D. 1325	
31Yd123*	A.D. 1325	
31Yd124*	?	No concordance with Hardy assemblage; mixed
31Sr56	A.D. 1625	
31Sr57	A.D. 1400	
31Sr58	A.D. 1675	
31Sr59	A.D. 1450	Plus one Yadkin Phase sherd
31Sr61*	A.D. 1425	
31Sr60	A.D. 1350	
31Yd107	A.D. 1100	
31Sr66**		
31Yd116**	A.D. 1000	
31Yd114*	A.D. 1300	

collection (e.g., 31Yd32) exhibited a marked contrast to the Hardy site sequencing of attribute change yet could be divided into two assemblages which expressed concordance with the Hardy trends. These sites are considered to be a result of two components, and two dates are assigned. This reduces, of course, the sample size for each and incurs the small-sample asterisk for one or both components. A few sites appear to predate the eastern Hardy component. Those assemblages were compared to the Parker site materials dating from A.D. 600-900 (Newkirk 1978), and located 50 airline km south of Hardy on the Yadkin River.

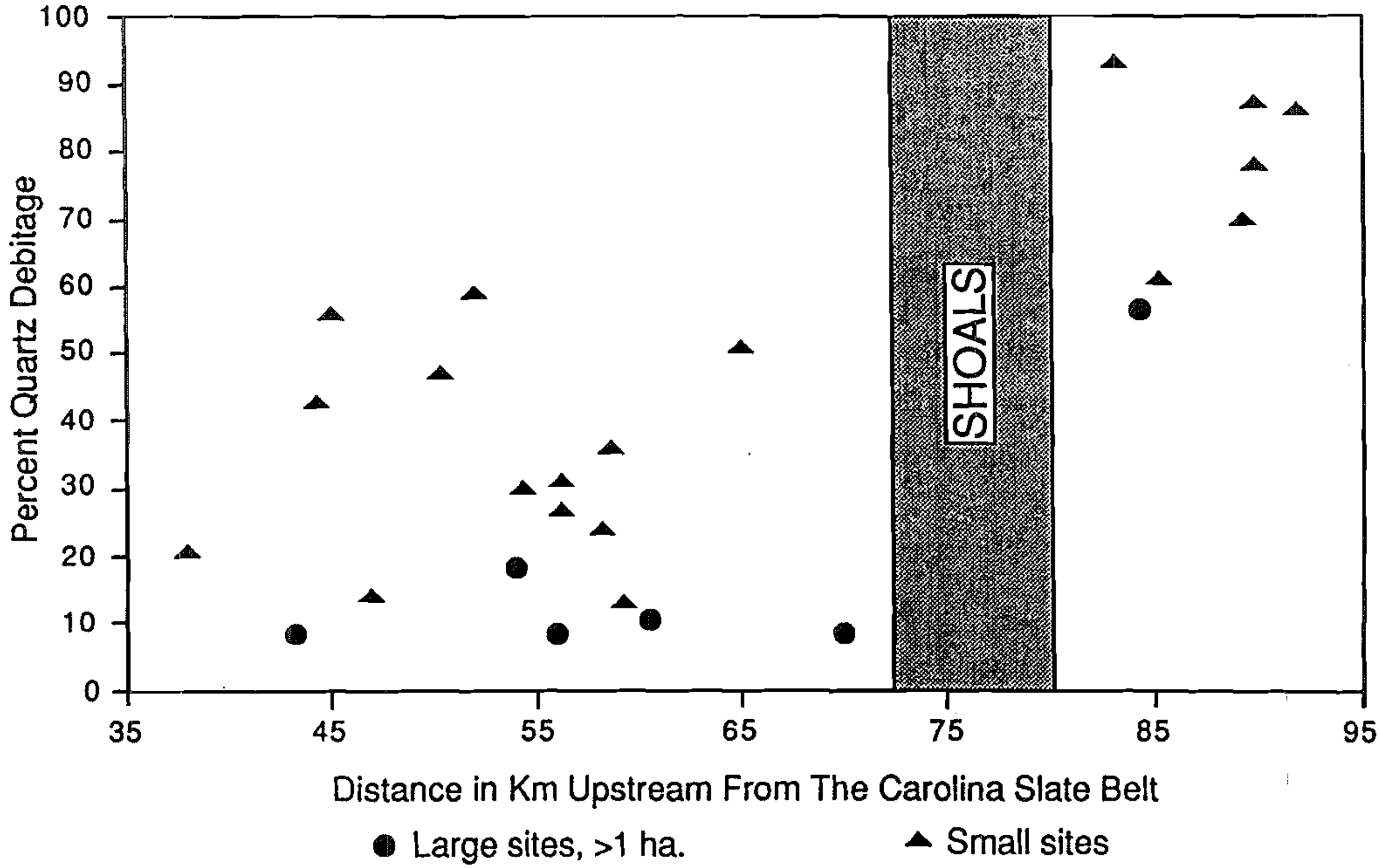
One of the questions posed at the outset of our work involved the acquisition of high-quality lithic raw material by the sedentary Woodland communities above the Yadkin shoals. After two seasons of survey below the shoals, and excavations at the Donnaha and McPherson sites, it was clear that the quartz-felsite ratio represented in collected debitage varied widely from site to site.

Using the ceramics from each site for identifying Late Woodland lithic assemblages, it can be seen that there is no apparent decline in the felsite presence as a function of distance from the supply zone, assumed to be somewhere in the Carolina Slate Belt, for sites located below the shoals within the survey area (Fig. 17). A pattern was perceived, however, in the felsite-quartz ratio when small (less than 1ha) and large sites were compared. Regardless of distance from the supply zone, large sites (represented by the circles in Fig. 17) generally had much more felsite in the debitage collection. In fact, the highest percentage of felsite below the shoals occurred in the Donnaha assemblage, the farthest site from the Slate Belt.

In an earlier unpublished paper (Woodall and Abbott 1983) it was pointed out that this pattern does not conform to a down-the-line model of exchange because there is no distance-decay effect (Renfrew 1977). It was suggested that the large sites, however, may have functioned as gateway communities (Hirth 1978), receiving the raw material and ultimately dispersing portions of it to smaller satellite communities. It was presumed that the large towns such as Donnaha would be attractive, from an energy-conservation standpoint, for bulk-breakage and would, in effect, serve as nodes for an exchange system reaching ultimately to the supply zone, i.e., the Slate Belt.

While this model accommodated our data set in 1984, more recent analyses of the Donnaha and Hardy sites (Vacca, in preparation; Marshall 1987) have made suspect the interpretation of large sites as representing large villages. They may, in fact, simply be palimpsests of small villages created by the phenomenon of component clustering, a Late Woodland phenomenon described by Simpkins (1985) in other Piedmont river valleys.. If this is the case then the higher percentage of felsite may not be a result of large sites functioning as trade nodes but rather the longevity of a human presence at such sites. As pointed out by Ammerman

Figure 17: Percentage of Quartz Debitage By Distance From The Carolina Slate Belt



et al. (1978) the percentage of non-local raw material will increase through time at a site outside the supply zone until equilibrium is reached. Thus, the differential ratios observed downstream for large sites/small sites are explicable within the framework of both the bimodal site size model (towns vs. hamlets) and the component clustering model (site abandonment and reoccupation, with no significant variation in settlement size).

Whatever proves to be the cultural process responsible for the observed downstream pattern of felsite-quartz debitage the question regarding the shoals remains, for they present a physical obstacle to the movement of commodities by river. With the addition of the 1987 survey data from the valley above the shoals an interesting pattern emerges (Fig. 17). Using Late Woodland sites with debitage counts >30 (as done for the downstream sites), the Hardy site emerges as the locus with the highest felsite percentage. (only the central sector was used for this exercise because the eastern sector was considered older than most downstream sites and yielded a small sample, and the western sector may be reflecting change or disruption caused by European contact). Despite the fact that Hardy, if found by the survey, would have been considered a large site and thus comparable to Donnaha, its felsite percentage not only is markedly lower than the downstream large sites but is even lower than almost all the small downstream sites (Fig. 17). Upstream of Hardy the pattern created by the felsite-quartz ratio conforms to expectations of "down-the-line" trade. It is gratifying to note that the quartz-felsite ratio in the Hardy site central sector plow zone closely approximates that from the excavated sub-plow zone midden and features (60% vs. 58%), suggesting that the survey collections are an adequate indicator of a site's lithic context. Testing of that model for the upstream area awaits additional survey information from sites upstream of Rockford.

One confounding variable affecting the study of lithic debris on these Woodland sites is the common occurrence of Archaic projectile points and, probably, debitage of Archaic derivation. Unless the Archaic materials can be eliminated for the analysis they threaten to distort or disguise any patterning attributable to the Late Woodland occupants. This possible source of bias is freely acknowledged. If, however, the transient Archaic populations had more ready access to high quality stone than the sedentary, more numerous Woodland peoples, then the Archaic contribution to the Woodland sites throughout the Great Bend area may be considered a constant, and significant spatial variability in the felsite/quartz ratio on those sites would be solely a Woodland phenomenon.

If that assumption is permitted, then the shoals mark a break in the archeological patterning of stone refuse in the Yadkin Valley, and the different patterns on either side of the shoals appear to reflect separate modes of acquisition of high-quality felsite from the Slate Belt. Below the shoals felsite was available in quantity, usually composing at least 50 percent of the lithic assemblage of a site. Above the shoals that percentage drops off sharply, and continues to drop as one proceeds upstream. One interpretation would have the Hardy site functioning as a procurement locus for the region, with a modicum of material received either overland or via the difficult water route. From the Hardy site area the material diffused upriver by "down-the-line" trade, steadily dwindling in its contribution to the total lithic assemblage of those upstream sites.

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APPENDIX A: Human Skeletal Remains from the Hardy Site, 31Sr50

by David S. Weaver

The human skeletal remains from the Hardy site are those of two individuals, an adult and a child. The adult remains were recovered from an extended burial, most of which was left *in situ*, while the remains of the child all were removed. Table A1 is an inventory of the skeletal remains. Descriptions of the remains follow the terminology and methods in Bass (1971) unless otherwise noted.

Burial 60-2

Cranium. The cranium is complete, although fragmentary. The cranial vault is of normal thickness and shows no evidence of cranial deformation. There are multiple wormian bones (all <.5 cm), as are common in Native American crania (El-Najjar and McWilliams 1978:129-131), along the lambdoidal suture. There is no cranial skeletal pathology. The basilar, squamous and lateral portions of the occipital are not fused, suggesting an age at death of less than 4 years (Pick *et al.* 1977:59). The tympanic plates of the temporal bones show Stage 4 development, indicating an age at death of less than 2.5 years (Weaver 1979).

Dentition. The deciduous dentition shows mild occlusal wear. The roots of the deciduous incisors are almost completely formed, the roots of the deciduous canines are about 3/4 complete, and the deciduous molar roots are slightly more than 1/2 formed. The crowns of the permanent first molars are present, but not completely formed and their enamel is not well consolidated. The permanent maxillary medial incisor crowns are formed and are shovel-shaped, a trait that is most common among Native Americans (Hrdlicka 1920). The dental development suggests an age at death of less than 2.5 years (Ubelaker 1987). There are no dental anomalies and there is no dental or periodontal disease.

Axial Skeleton. The body of the hyoid was recovered and is normal. Fragments of the right first and second rib and the right clavicle are normal. All seven cervical vertebrae and parts of at least three upper thoracic vertebrae were found. The neural arch halves of the vertebrae are fused, while the arches are not fused to their respective vertebral bodies, indicating a skeletal age of between 2 and 7 years (Anderson 1962:130). The degree of fusion strongly suggests an age of 2 to 3 years.

Appendicular Skeleton. No bones of the appendicular skeleton are present.

Summary. This individual was a child of approximately 2 to 3 years of age at death. Because of the fragmentary nature of the cranium, no measurements were made. There are no indications of cause of death and there are no skeletal anomalies or pathologies. There is no evidence of any postmortem manipulation or other treatment of the remains.

Field observations suggested this individual was represented by an isolated cranium. After the skull had been removed to our laboratory and cleaned, however, the fragments of the axial skeleton were found. The remains clearly were separated from their other skeletal parts by some disturbance of the burial, perhaps by an intrusive pit. It is also possible that the remains are intrusive into the pit in which they were found. In the absence of evidence for any postmortem manipulation of the remains, such as disarticulation, and given that the remains represent elements that easily might have become disassociated if the skeletal remains were moved, postmortem intrusion into this burial is the most probable reason for the particular inventory available in this burial. (However, despite very careful scrutiny no evidence of such intrusion could be detected in the field.) The close association of a small pot also suggests the cranial and axial remains of this burial are in their original position.

Burial 64-7

Cranium. The bones of the cranial vault and fragments of the face were recovered. The cranium was deformed when recovered, probably from ground pressure and warping, although the possibility of premortem cranial deformation cannot be excluded. The cranial bones are of normal thickness (approximately 5 mm) and the available cranial sutures are well fused, indicating an adult individual. The basilar suture of the occipital is fused and obliterated, indicating an age at death of greater than 25 years. There are no cranial pathologies or anomalies other than a small foramen of Huschke, a skeletal nonmetric trait of unknown significance, in the tympanic plate of the left temporal (El-Najjar and McWilliams 1978:137-138).

Dentition. The dentition of this person shows mild to moderate dental wear, indicating a relatively young adult. There is dental caries on the occlusal surface of the left mandibular third molar, and there is a small periodontal abscess immediately posterior to the left maxillary third molar. The right mandibular first and second molars were lost ante-mortem, probably to dental disease, and the tooth sockets had not fully remodelled at the time of death. The three remaining second molars present anomalies in enamel formation that resulted in fissures on the lingual distal portion of the occlusal surfaces. Such enamel defects are susceptible to caries, and it is possible the teeth that were lost ante-mortem were lost as a consequence of caries in such fissures. The crown of the left maxillary medial incisor shows caries that seem to have originated in enamel formation defects at both the mesial and distal interstitial surfaces. The incisor is shovel-shaped, as is common among Native American incisors (Hrdlicka 1920). This individual's dental health was generally good, with a few caries, no dental calculus and only mild dental wear.

Axial Skeleton. Six cervical vertebrae, an unsided scapular coracoid process and fragments of both clavicles were all that was recovered of the axial skeleton. The first through fifth cervical vertebrae are essentially intact and present no pathology or anomaly. The sixth cervical vertebra is fragmentary. The fragments of the clavicular shafts are normal and not particularly robust. There are no skeletal pathologies or anomalies in the axial skeleton.

Appendicular Skeleton. The fragmentary appendicular skeleton is represented by fragments of femoral shaft, very small fragments of a humeral shaft, and the mid-shafts of an ulna and a radius. The ulna and radius are very small and quite gracile, and the cortical bone of all the surviving long bones is thin but healthy, suggesting a small and gracile individual. No measurements are possible. There is no skeletal pathology or anomaly.

Summary. The skeletal remains from EU 64-7 are those of a gracile adult of undetermined sex between 25 and 30 years of age at death. There are no clear indications of intentional cranial deformation. There are no indications of any post-mortem treatment of the remains. There are no skeletal pathologies or anomalies. The person experienced some dental disease, though none of the disease would have been debilitating or life-threatening. There are no indications of cause of death.

TABLE A1: Skeletal Inventory

EU 60-2

Fragments of:
- Frontal
- Left and Right Parietal
- Occipital
- Left and Right Temporal
- Sphenoid
- Left and Right Maxilla
- Left and Right Nasal
- Left and Right Molar
- Mandible
- Ethmoid
- Left and Right Lacrimal
- Left and Right Palate
- Vomer
- Left and Right Nasal Conchae

Body of the Hyoid
Left and Right Malleus
Left Incus
Dentition
- Left and Right Mandibular and Maxillary Deciduous First Molars
- Left and Right Mandibular and Maxillary Deciduous Second Molars
- Left Maxillary and Left and Right Mandibular Deciduous Canines
- Left lateral Deciduous Maxillary Incisor
- Right Lateral Deciduous Mandibular Incisor
- Left Maxillary and Left and Right Mandibular Permanent Molar Crowns

Fragments of:
- Right First and Second Rib
- Right Clavicle
- Seven Cervical Vertebrae
- Three Thoracic Vertebrae

EU 64-7

Fragments of:
- Left and Right Parietal
- Occipital
- Frontal
- Left and Right Temporal
- Left and Right Maxilla
- Left and Right Mandible

Right Malleus
Permanent Dentition
- Left and Right Mandibular and Maxillary Third Molars
- Left and Right Maxillary and Left Mandibular Second Molars
- Right Maxillary First Molar

Left and Right Maxillary First and Second Premolars
Left and Right Mandibular First Premolars
Left and Right Mandibular Second Premolars
Left and Right Maxillary Canines
Right Mandibular Canine
Left Maxillary Medial Incisor
Fragments of Four Incisor Roots

Fragments of:

Six Cervical Vertebrae
Coracoid Process of a Scapula
Left and Right Clavicles
Femoral Shaft
Humeral Shaft
Ulnar Shaft
Radial Shaft

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APPENDIX B: Artifact Inventory
Great Bend Survey 1987

(In the following inventory, projectile point type designations Uwharrie, Pee Dee, Caraway and Yadkin are descriptive only; no cultural-historical implications are intended.)

31Yd119
General Surface
2 Quartz secondary flakes
2 Quartz tertiary flakes

31Sr70
General Surface
6 Quartz secondary flakes
36 Quartz tertiary flakes
11 Quartz core fragments
1 Quartz biface
1 Quartz projectile point fragment--Guilford
4 Quartz misc. rocks
5 Felsite secondary flakes
16 Felsite tertiary flakes
1 Felsite biface fragment
3 Felsite retouched flakes
1 Felsite utilized flake
1 Chert projectile point--unidentified
19 Potsherds

31Yd118
General Surface
1 Quartz secondary flake
5 Quartz tertiary flakes
2 Quartzite cobble fragments
3 Felsite tertiary flakes
1 Felsite broken flake
1 Felsite side scraper
1 Felsite projectile point--Gypsy?
1 Chert tertiary flake
3 Potsherds

31Sr69
General Surface
6 Quartz secondary flakes
44 Quartz tertiary flakes
12 Quartz core fragments
27 Quartz misc. rocks
1 Quartz projectile point--Pee Dee Pentagonal
1 Quartz retouched flake
3 Quartzite flakes
2 Felsite primary flakes
2 Felsite tertiary flakes
1 Felsite projectile point--Uwharrie
1 Felsite utilized flake

1 Felsite broken flake
6 Potsherds

Test pit 2
5 Quartz cobble fragments
1 Felsite tertiary flake
1 Potsherd
Charcoal .73g

Test pit 3
2 Quartz discards
1 Felsite tertiary flake
1 Potsherd

31Yd117
General Surface
5 Quartz secondary flakes
12 Quartz tertiary flakes
3 Quartz core fragments
1 Fire-cracked rock, cobble
1 Felsite primary flake
2 Felsite secondary flakes
6 Felsite tertiary flakes
1 Felsite projectile point--Savannah River
1 Felsite projectile point--Caraway
1 Felsite projectile point--triangular tip, Uwharrie
1 Felsite side-scraper
4 Potsherds
2 Sherdlets

31Sr71
General Surface
11 Quartz tertiary flakes
8 Quartz core fragments
1 Quartz retouched flake
6 Quartz misc. rocks
1 Felsite secondary flake
1 Felsite utilized flake
1 Felsite patinated flake
2 Chert flakes
1 Mussel shell

31Sr68
General Surface
3 Quartz primary flakes
11 Quartz secondary flakes
18 Quartz tertiary flakes
6 Quartz core fragments
10 Quartz misc. rocks
2 Felsite secondary flakes
6 Felsite tertiary flakes

1 Felsite broken flake
1 Potsherd

31Yd32
General Surface
19 Quartz tertiary flakes
4 Quartz core fragments
1 Quartz biface
5 Fire-cracked rocks
7 Felsite secondary flakes
17 Felsite tertiary flakes
2 Felsite utilized flakes
1 Felsite retouched flake
1 Felsite projectile point--abort
1 Chert tertiary flake
1 Chert retouched flake
52 Potsherds
8 Sherdlets

Dogleash 1
1 Fire-cracked rock
1 Felsite tertiary flake
4 Potsherds
1 Sherdlet

31Sr51
General Surface
3 Quartz secondary flakes
11 Quartz tertiary flakes
1 Felsite secondary flake
1 Felsite tertiary flake
1 Felsite flake, patinated
3 Felsite flakes, broken
1 Jasper tertiary flake
10 Potsherds
6 Pieces of steatite, unworked

Test pit 1E
1 Quartz nondescript piece

Test pit 2E
2 Potsherds

Test pit 1W
1 Potsherd

Test pit 2W
2 Potsherds

Test pit 4W
1 Potsherd

Test pit 8W
1 Felsite secondary flake
1 Potsherd

31Sr52
General Surface 1
6 Quartz secondary flakes
9 Quartz tertiary flakes
1 Quartz core fragment
1 Quartz biface fragment
7 Quartz nondescript pieces
4 Potsherds

General Surface 2
1 Quartz primary flake
10 Quartz secondary flakes
29 Quartz tertiary flakes
1 Quartz core fragment
7 Quartz nondescript pieces
2 Felsite primary flakes
2 Felsite secondary flakes
1 Felsite tertiary flake
1 Felsite projectile point--Savannah River
1 Felsite projectile point--Kirk
1 Felsite projectile point--Uwharrie
1 Felsite projectile point--Yadkin
1 Felsite projectile point fragment--triangular base
1 Felsite projectile point fragment--unidentified base
2 Felsite core fragments
1 Jasper tertiary flake
9 Potsherds

General Surface 3
2 Quartz primary flakes
6 Quartz secondary flakes
11 Quartz tertiary flakes
1 Quartz blade
6 Quartz core fragments
7 Quartz nondescript pieces
1 Felsite secondary flake
7 Felsite tertiary flakes
1 Felsite utilized blade
7 Potsherds

Test pit 1
1 Potsherd

31Yd91
General Surface
1 Quartz tertiary flake
2 Chert primary flakes
3 Potsherds

Test pit 1
- 1 Potsherd
- .15g charcoal

31Yd106

General Surface
- 2 Quartz secondary flakes
- 4 Quartz tertiary flakes
- 1 Quartz broken flake
- 1 Fire-cracked rock
- 1 Felsite tertiary flake
- 1 Felsite broken flake

31Sr53

General Surface
- 4 Quartz primary flakes
- 10 Quartz secondary flakes
- 18 Quartz tertiary flakes
- 1 Quartz blade
- 1 Quartz preform
- 3 Quartz core fragments
- 7 Quartz nondescript pieces
- 1 Quartzite cobble fragment
- 2 Felsite secondary flakes
- 5 Felsite tertiary flakes
- 1 Felsite blade
- 1 Felsite projectile point--unidentified Archaic
- 1 Felsite triangular blade/knife
- 1 Felsite bifacially retouched flake
- 1 Chalcedony tertiary flake
- 2 Potsherds

31Sr54

General Surface 1
- 2 Quartz primary flakes
- 6 Quartz secondary flakes
- 4 Quartz tertiary flakes
- 1 Quartz projectile point--Guilford
- 1 Quartz projectile point--Pee Dee
- 3 Quartz core fragments
- 4 Quartz nondescript pieces
- 1 Felsite projectile point--Guilford
- 1 Felsite projectile point--Kirk
- 1 Chert tertiary flake

General Surface 2
- 4 Quartz primary flakes
- 19 Quartz secondary flakes
- 39 Quartz tertiary flakes
- 9 Quartz core fragments

4 Quartz nondescript pieces
2 Felsite primary flakes
2 Felsite secondary flakes
15 Felsite secondary flakes
1 Felsite biface fragment
1 Felsite core fragment
1 Jasper unifacial tool/retouched flake
1 Chert tertiary flake

Dogleash 1
3 Quartz nondescript pieces
1 Felsite tertiary flake

Dogleash 2
4 Quartz secondary flakes
1 Quartz tertiary flake
1 Quartz core fragment
7 Quartz nondescript pieces
3 Quartz cobble fragments

Dogleash 3
2 Quartz secondary flakes
4 Quartz tertiary flakes
4 Quartz nondescript pieces
1 Quartz cobble fragment
1 Felsite tertiary flake
1 Chert unifacial tool/retouched flake

Dogleash 4
5 Quartz secondary flakes
2 Quartz tertiary flakes
3 Quartz nondescript pieces
1 Felsite secondary flake
1 Felsite tertiary flake

31Sr55
General Surface
5 Quartz tertiary flakes
1 Quartz retouched flake
1 Quartz cobble fragment
1 Felsite projectile point--Savannah River?
1 Jasper tertiary flake
1 Soapstone pipe fragment
2 Potsherds

Test pit 1
1 Quartz tertiary flake
5 Potsherds

Test pit 2
2 Potsherds

Test pit 3
2 Quartz tertiary flakes
1 Potsherd

31Yd109
General Surface
5 Quartz secondary flakes
6 Quartz tertiary flakes
2 Fire-cracked rock
1 Felsite secondary flake
8 Felsite tertiary flakes
1 Felsite blade
1 Felsite projectile point, abort
1 Chert tertiary flake
4 Potsherds

31Yd110
General Surface
5 Quartz secondary flakes
7 Quartz tertiary flakes
3 Quartz discards
13 Felsite secondary flakes
43 Felsite tertiary flakes
2 Felsite flakes, patinated
1 Felsite broken flake
1 Felsite utilized flake
1 Felsite bifacially retouched flake
1 Felsite side, end-scraper
1 Felsite projectile point--Morrow Mt.
1 Felsite projectile point--triangular base
3 Chert tertiary flakes
13 Potsherds
1 Sherdlet

31Sr67
General Surface
1 Quartz primary flake
7 Quartz secondary flakes
45 Quartz tertiary flakes
1 Quartz projectile point abort--triangular
1 Quartz projectile point abort--small stemmed
1 Quartz core fragment
3 Quartz misc. rocks
6 Felsite secondary flakes
11 Felsite tertiary flakes
2 Felsite flakes, patinated
2 Felsite broken flakes
1 Felsite projectile point--Savannah River
1 Jasper primary flake
8 Chert tertiary flakes
1 Chert biface fragment

1 Chert side scraper
2 Potsherds

31Sr62
General Surface
4 Quartz tertiary flakes
2 Quartz core fragments
5 Felsite secondary flakes
6 Felsite tertiary flakes
1 Felsite bifacially retouched flake
1 Felsite projectile point--Savannah River
4 Potsherds
2 Sherdlets

31Yd113
General Surface
2 Quartz tertiary flakes

SY87-120
Test pit 1
2 Felsite tertiary flakes

31Yd111
General Surface
1 Quartz primary flake
18 Quartz secondary flakes
32 Quartz tertiary flakes
4 Quartz core fragments
1 Quartz biface fragment
2 Felsite primary flakes
18 Felsite secondary flakes
31 Felsite tertiary flakes
3 Felsite flakes, patinated
4 Felsite broken flakes
1 Felsite retouched flake
1 Felsite bifacially retouched flake
1 Felsite projectile point--Savannah River
1 Chert secondary flake
1 Chert tertiary flake
1 Jasper projectile point--triangular abort
7 Potsherds

Dogleash 1
3 Quartz tertiary flakes
2 Felsite tertiary flakes
1 Jasper secondary flake
3 Potsherds

Dogleash 2
3 Felsite secondary flakes

6 Felsite tertiary flakes
2 Felsite flakes, patinated
2 Felsite projectile points--triangular abort

Test pit 1
3 Quartz tertiary flakes
1 Felsite tertiary flake
2 Potsherds

31Yd112
General Surface
1 Felsite projectile point--Gypsy

31Yd121
General Surface
12 Quartz secondary flakes
23 Quartz tertiary flakes
5 Quartz fire-cracked rocks
1 Quartz side scraper
1 Felsite primary flake
2 Felsite secondary flakes
1 Felsite tertiary flake
1 Felsite flake, patinated
1 Chert tertiary flake
2 Potsherds

31Yd122
General Surface
43 Quartz secondary flakes
35 Quartz tertiary flakes
5 Quartz core fragments
1 Fire cracked rock fragment
1 Quartz biface fragment
1 Felsite primary flake
2 Felsite secondary flakes
8 Felsite tertiary flakes
2 Felsite broken flakes
1 Felsite flake, patinated
1 Felsite utilized flake
1 Felsite side-end scraper
1 Chert biface fragment

Dogleash 1
3 Quartz tertiary flakes
1 Quartz utilized flake
1 Felsite tertiary flake
1 Potsherd

31Yd123

General Surface 1

1 Quartz primary flake
2 Quartz secondary flakes
11 Quartz tertiary flakes
1 Quartz projectile point--Pee Dee
3 Felsite secondary flakes
13 Felsite tertiary flakes
1 Felsite flake, patinated
1 Chert secondary flake
3 Potsherds

General Surface 2

11 Quartz secondary flakes
8 Quartz tertiary flakes
3 Potsherds
1 Piece, turtle carapace

Auger Test 2

1 Potsherd

General Surface 3

1 Quartz primary flake
9 Quartz secondary flakes
13 Quartz tertiary flakes
1 Quartz core fragment
3 Felsite secondary flakes
13 Felsite tertiary flakes
1 Felsite core fragment
3 Felsite broken flakes
1 Felsite projectile point--Caraway
1 Felsite projectile point--Morrow Mt.
2 Chert tertiary flakes
1 Chert projectile point
9 Potsherds

General Surface 4

1 Quartz tertiary flake
1 Felsite tertiary flake

31Yd124

General Surface 1

1 Quartz primary flake
19 Quartz secondary flakes
48 Quartz tertiary flakes
6 Quartz core fragments
1 Quartz biface fragment
1 Quartz projectile point preform
1 Quartz projectile point tip
3 Felsite secondary flakes
3 Felsite tertiary flakes
1 Felsite core fragment
1 Felsite broken flake

1 Felsite retouched flake
1 Felsite projectile point medial fragment
1 Felsite projectile point, abort
1 Felsite projectile point--Kirk
1 Chert tertiary flake
4 Potsherds

General Surface 2
9 Quartz secondary flakes
11 Quartz tertiary flakes
3 Quartz core fragments
10 Felsite secondary flakes
5 Felsite tertiary flakes
2 Felsite core fragments
1 Felsite broken flake
2 Felsite side-scrapers
1 Felsite projectile point--Savannah River
1 Felsite projectile point--Stanly, basal section
1 Felsite projectile point--abort
1 Chert projectile point--abort
14 Potsherds

General Surface 3
1 Quartz primary flake
2 Quartz secondary flakes
2 Quartz tertiary flakes
1 Fire-cracked rock
3 Felsite secondary flakes
2 Felsite tertiary flakes
1 Felsite core fragment
1 Felsite projectile point--Kirk base
8 Potsherds
2 Sherdlets

31Sr56
General Surface
2 Quartz primary flakes
5 Quartz secondary flakes
9 Quartz tertiary flakes
1 Quartz notched piece
5 Quartz core fragments
3 Quartz nondescript pieces
2 Felsite secondary flakes
6 Felsite tertiary flakes
1 Felsite projectile point--Savannah River
1 Felsite projectile point--Yadkin
4 Potsherds

31Sr57
General Surface 1
1 Quartz primary flake
2 Quartz secondary flakes

1 Quartz projectile point--Kirk
1 Quartz core fragment

General Surface 2
1 Quartz primary flake
2 Quartz secondary flakes
14 Quartz tertiary flakes
1 Quartz bifacially retouched flake
3 Quartz core fragments
1 Felsite tertiary flake
1 Felsite bifacially retouched flake

Test pit 1
1 Quartz primary flake
1 Quartz secondary flake
1 Fire-cracked rock
2 Felsite tertiary flakes
1 Potsherd

31Sr58
General Surface
9 Quartz primary flakes
35 Quartz secondary flakes
70 Quartz tertiary flakes
1 Quartz bifacial blade fragment
4 Quartz core fragments
4 Quartz nondescript pieces
1 Fire-cracked rock
3 Felsite secondary flakes
6 Felsite tertiary flakes
1 Felsite projectile point--unidentified
1 Felsite side scraper
1 Chalcedony primary flake
1 Chalcedony tertiary flake
43 Potsherds

Dogleash 1
2 Quartz secondary flakes
10 Quartz tertiary flakes
1 Quartz core fragment
1 Quartz nondescript piece
1 Felsite secondary flake
9 Felsite tertiary flakes
1 Felsite projectile point--triangular base
1 Felsite core fragment
2 Chert secondary flakes
32 Potsherds

31Sr59
General Surface
7 Quartz primary flakes
17 Quartz secondary flakes

41 Quartz tertiary flakes
1 Quartz projectile point--Unidentified basal fragment
1 Quartz projectile point--Woodland triangular base
1 Quartz biface fragment
1 Quartz scraper
1 Quartz utilized flake
9 Quartz core fragments
7 Quartz nondescript pieces
2 Felsite primary flakes
5 Felsite secondary flakes
12 Felsite tertiary flakes
2 Felsite projectile point fragments--triangular distal tips
1 Felsite projectile point fragment--triangular base
3 Felsite scrapers
1 Felsite bifacial blade
1 Jasper tertiary flake
1 Chert tertiary flake
1 Chert projectile point
41 Potsherds

31Sr61

General Surface

4 Quartz tertiary flakes
1 Quartz core fragment
5 Quartz discards
2 Felsite tertiary flakes
4 Potsherds

31Sr60

General Surface

5 Quartz secondary flakes
9 Quartz tertiary flakes
2 Quartz core fragments
1 Quartz nondescript piece
1 Felsite secondary flake
1 Felsite tertiary flake
1 Felsite projectile point fragment--triangular distal tip
1 Felsite core fragment
1 Chert secondary flake
1 Chert tertiary flake
13 Potsherds

31Yd108

2 Felsite flakes

31Yd107

General Surface

4 Quartz primary flakes
19 Quartz secondary flakes
22 Quartz tertiary flakes

4 Quartz core fragments
1 Quartz retouched flake
1 Fire-cracked rock
2 Quartzite cobble fragments
1 Felsite primary flake
4 Felsite secondary flakes
3 Felsite tertiary flakes
1 Jasper core fragment
27 Potsherds
8 Sherdlets

Dogleash 1
1 Quartz cobble
5 Potsherds

31Sr66
General Surface
1 Quartz secondary flake
5 Quartz tertiary flakes
3 Quartz core fragments
1 Quartz cobble fragment
2 Quartz discard

Test pit 4
1 Quartz discard
1 Felsite tertiary flake
1 Felsite projectile point fragment--triangular distal tip
2 Sherdlets

Test pit 5
1 Quartz secondary flake
1 Quartz tertiary flake

31Yd116
General Surface
5 Quartz secondary flakes
5 Quartz tertiary flakes
2 Quartz core fragments
1 Quartz cobble fragment
1 Quartz projectile point preform
7 Felsite tertiary flakes
1 Felsite projectile point--triangular base
1 Felsite projectile point--Gypsy
1 Potsherd

31Yd115

General Surface

6 Quartz secondary flakes
6 Quartz tertiary flakes
2 Quartzite cobble fragments

31Yd114

General Surface

4 Quartz secondary flakes
8 Quartz tertiary flakes
1 Quartz core fragment
2 Quartz cobble fragments
1 Potsherd

31Sr65

General Surface

1 Quartz primary flake
1 Quartz secondary flake
9 Quartz tertiary flakes
2 Quartz discard
1 Felsite primary flake
1 Felsite projectile point fragment

31Sr63

General Surface

1 Quartz tertiary flake
4 Quartz core fragments
1 Fire-cracked rock
2 Quartz discards

31Sr64

General Surface

1 Quartz core fragment