ARCHAEOLOGICAL INVESTIGATIONS AT THREE SITES NEAR ARLINGTON, STATE ROUTE 385 (PAUL BARRETT PARKWAY), SHELBY COUNTY, TENNESSEE

Archaeological Testing at 40SY525 and 40SY526 and Archaeological Testing and Data Recovery at 40SY527

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ENVIRONMENTAL PLANNING OFFICE
PUBLICATIONS IN ARCHAEOLOGY NO. 4

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
TENNESSEE DEPARTMENT OF TRANSPORTATION

1999

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STATE ROUTE 385 (PAUL BARRETT PARKWAY),

SHELBY COUNTY, TENNESSEE

Archaeological Testing at 40SY525 and 40SY526

and Archaeological Testing and Data Recovery at 40SY527

PREPARED FOR

The Tennessee Department of Transportation

J.K. Polk Building, Suite 900

Nashville, TN 37243 615/741-5257

IN COORDINATION WITH

The U.S. Department of Transportation

Federal Highway Administration

UNDER

TDOT Project Number 93-42-04-1230

Tennessee State Archaeological Permit Number 000132R

BY

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Memphis, TN 38103

SUBMITTED APRIL 1996

PUBLISHED MARCH 1999

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STATE OF TENNESSEE

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PROJECT FUNDING AND ADMINISTRATION

Funding for this project and the publication of this report was provided by the U.S. Department of Transportation, Federal Highway Administration. The TDOT administered the project contracts.

ACKNOWLEDGMENTS

Many individuals contributed to the successful completion of this project. We gratefully acknowledge the technical and logistical support of Mr. Gerald Kline and Ms. Caroline Albright, archaeologists with the Tennessee Department of Transportation, Environmental Planning Office, in Nashville. Mr. Ed Cain and other staff members at Parsons De Leuw were instrumental in seeing that a cooperative effort between all parties was a successful one. We also wish to thank the landowners, Dr. Harris, Ms. Hayes, and Mr. Fulmer, for their permission to examine their property in the proposed highway corridor.

Evan Peacock, Zone Archaeologist for the Tombigbee Ranger District, Holly Springs National Forest, is thanked for providing literature concerning Tchula period sites in his area and for taking the time to visit the Fulmer site during the excavations. Robert Mainfort, Tennessee Division of Archaeology, deserves special thanks for providing unpublished technical manuscripts and advice on Early Woodland ceramics in west Tennessee. Gerald Smith and Charles McNutt, University of Memphis, are also appreciated for their help and support throughout the project. In addition, Sarge's Backhoe and Equipment Company furnished heavy equipment and a skilled operator, Kevin Acklin. Andrea Shea tabulated the carbonized remains from the Fulmer site (Appendix B).

Many Garrow & Associates personnel contributed to this report. Guy Weaver was Principal Investigator. Besides compiling and reviewing the report, Mr. Weaver is responsible for the reporting of the Fulmer site (40SY527) and contributions to the discussion section. Barbara Garrow was Project Manager. Mitch Childress contributed sections of the discussion, prepared many of the graphics, "ran the numbers," and assisted for several days during Phase III fieldwork at 40SY527. Drew Buchner was Field Director and is primarily responsible for the reporting of 40SY525 and 40SY526. Mary E. Starr contributed to the ceramic analysis and discussion sections.

Archaeological Field Technicians included Melissa Buchner, Michael Childress, Brian Collins, Angela Dobecka, Mike Horton, Charles H. McNutt Jr., Lee Mosley, José Oliver, Stella Parker, Mary E. Starr, and Charles Woods. Christopher Keoppel was Senior Field Technician. Laboratory processing and analysis were performed by Michael Childress, Brian Collins, Christopher Keoppel, Rodriguez McClay, Charles H. McNutt Jr., Stella Parker, and Louella Whitson Weaver. Flotation samples were processed by Michael Childress.

The photographic plates were prepared by Candice Spearman; the final graphics were prepared by Vince Macek. Nancy Liebe helped in production of the draft report. The report was copyedited, formatted, and produced by Dan Dolensky.

In 1998, Caroline Albright, under contract with Parsons Engineering Science, Inc., completed the final editing of the report for TDOT in its preparation for publication.

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I. INTRODUCTION

This report describes the results of archaeological investigations at the Harris (40SY525), Hayes (40SY526), and Fulmer (40SY527) sites. They are located along a section of the proposed State Route (SR) 385 corridor (Paul Barrett Parkway) near the town of Arlington in Shelby County, Tennessee. The investigations were conducted by Garrow & Associates at the request of Parsons De Leuw and the Tennessee Department of Transportation (TDOT).

The three sites were first recorded during a Phase I reconnaissance survey performed by Garrow & Associates during the autumn of 1993 (Oliver et al. 1993). In the final report, Phase II archaeological testing was recommended at three sites, 40SY525, 40SY526, and 40SY527, all of which were in the proposed right-of-way. Testing at these sites was initially performed by Garrow & Associates during December, 1993, and January, 1994. In the preliminary report of the Phase II testing (Buchner 1994), it was suggested that the proposed construction would not adversely impact significant cultural resources at 40SY525 and 40SY526. A continuation of the Phase II testing was recommended at 40SY527 in order to more accurately define the extent of intact cultural deposits and a hearth feature recorded in the first five 2 x 2 m test units. Subsequently, an additional week of fieldwork was conducted at the site in February, 1994. In the preliminary report of the extended Phase II testing (Buchner and Weaver 1994), it was recommended that 40SY527 be considered eligible for listing in the National Register of Historic Places under Criterion D. Phase III data recovery was also recommended to mitigate the proposed adverse effects of highway construction of SR 385 (Paul Barrett Parkway), pursuant to 36 CFR Part 800, regulations implementing Section 106 of the National Historic Preservation Act. At the request of Parsons De Leuw and TDOT, Garrow & Associates (1994) prepared a research design and Phase III data recovery plan for 40SY527. Phase III archaeological fieldwork began April 25 and ended June 3, 1994 (Weaver et al. 1994).

PROJECT LOCATION

The project location is depicted on the 1973 (photorevised) USGS 7.5 minute series topographic map, Arlington, Tennessee (Figure 1.1). The three sites are in close proximity on a loess ridge, approximately 3 km west-northwest of Arlington, in northeast Shelby County. This ridge forms part of the northern margin of the Loosahatchie River floodplain and overlooks an unnamed tributary to the north and east.

Sites 40SY525 and 40SY527 are entirely inside the proposed SR 385 right-of-way; only the extreme eastern portion of 40SY526 will be directly impacted by the proposed road construction. Site 40SY525 is situated at the eastern terminus of the ridge. The TDOT center line survey station 143+00 is near the approximate center of the site (Oliver et al. 1993:Figure 6). Site 40SY527 is situated on a secondary finger ridge southwest of TDOT center line station 132+00 (Oliver et al. 1993:Figure 6). Site 40SY526 is between 40SY525 and 40SY527 and covers a large part of the ridge crest. The area of direct impact at 40SY526 is between TDOT center line stations 139+00 and 140+00 (Oliver et al. 1993:Figure 10).

OUTLINE OF THE REPORT

This report details the project area and the methods and results of the Phase II testing and Phase III data recovery. Environmental setting is discussed in Chapter II, and a brief review of

Figure 1.1. Excerpt from USGS 7.5 Minute Quadrangle, Arlington, Tennessee, Depicting Project Area and Sites 40SY525, 40SY526, and 40SY527.

the cultural history is presented in Chapter III. Methods of the fieldwork and laboratory analysis are outlined in Chapter IV. Results of the archaeological testing at the Harris site (40SY525) and the Hayes site (40SY526) are presented in Chapters V and VI, respectively. Testing and data recovery of the Fulmer site (40SY527) are discussed in Chapter VII. In Chapter VIII, the results of the excavations are discussed with reference to previous investigations in west Tennessee and surrounding areas. Conclusions are presented in Chapter IX. Appendix A contains data tables relevant to the 40SY527 investigations. The results of the archaeobotanical analysis from 40SY527 are in Appendix B, and the reports of the radiocarbon assays from 40SY527 are included as Appendix C. Distribution maps from 40SY527 are presented in Appendix D.

II. ENVIRONMENTAL SETTING

PHYSIOGRAPHY AND GEOLOGY

West Tennessee is included in the Gulf Coastal Plain physiographic province, as defined by Fenneman (1938), and is situated in the northern part of the Mississippi Embayment syncline, a geological trough whose axis roughly parallels the Mississippi River. As one moves west from the Tennessee River toward the Mississippi River, progressively younger Cretaceous, Paleocene, Eocene, and Plio-Pleistocene surface strata are present. At the western boundary of the region, bottomlands in the Mississippi River floodplain are underlain by recent (Holocene) alluvium. The Coastal Plains sands and clays of western Tennessee were capped with Quaternary eolian loess deposits 20–90 feet thick near the Mississippi River and becoming thinner to the east.

Drainage in the area is dendritic, and main stream stems flow east to west. The main tributary in the project area is the Loosahatchie River. The headwaters of the streams in the project area drain the Tertiary marine-deposited sands and clays of the Coastal Plain. This material is also exposed by the east-west drainages, which have cut the loess sheet and redeposited sediments in the local floodplains as mixed sand, silt, clay, and gravel. Topography of the area is characterized by gently rolling hills and relatively narrow, flat floodplains. Steep, severely eroded gully land is also fairly common in the loess hills zone.

The immediately pre-Cenozoic and post-Paleocene geologic history of the Mississippi Embayment is of particular interest with regard to local sources of stone. It is frequently noted that the present alluvial surfaces of the meandering Mississippi and its tributaries are relatively devoid of sediments coarser than sand. However, episodes of gravel deposition have taken place during at least two major intervals. The earlier of these was during the uplift and subsequent long period of erosion of the Pascola arch during the early part of the Cretaceous (Marcher and Stearns 1962). The uplift exposed Cambrian-age Lamotte sandstone and, later, Paleozoic sandstones and chert-bearing limestones to erosion and transport by eastward-flowing streams. This formed an extensive, mixed terrestrial and marine sand and gravel deposit known as the Tuscaloosa Formation. After gravel deposition, the Pascola arch subsided and the western Tennessee area was filled with onlapping Tertiary marine sediment wedges. Lowering of sea levels with the onset of the Pleistocene exposed the Tertiary deposits and resulted in erosion of the Tuscaloosa gravel and redeposition of some of this material atop the eroded Tertiary surfaces. These mixed sediments formed an undifferentiated sand and gravel substratum (Saucier 1964). This substratum was then reworked and additional material deposited above it during the formation of braided stream terraces derived from glacial outwash. These later Pliocene and Pleistocene gravel deposits, collectively identified as Citronelle gravel (Stallings 1989), lie beneath the loess sheet and are exposed by erosion. These gravel deposits were exploited for the manufacture of stone tools during the prehistoric period and are currently mined for construction material throughout the region. A complex of abandoned and active gravel quarries is found 1 km west of the tested sites.

Exposure and erosion also resulted in the movement of iron-bearing groundwater through the Tertiary deposits of the Coastal Plain. This formed cemented ferruginous sandstones, siltstones, and conglomerates. These rocks are concentrated in the upland areas near the headwaters of the Mississippi River tributaries and were used extensively during prehistoric times for the manufacture of heavy grinding, pounding, and chopping tools.

Between the Mississippi River floodplain and the West Tennessee Uplands is an area of gently rolling terrain called the West Tennessee Plain (Figure 2.1) (Stearns 1975:4). The topography of

Figure 2.1. Physiographic Regions in the Vicinity of the Project Area.

Figure 2.2. Late Quaternary Eolian and Fluvial Units Underlying Memphis (from Mirecki and Miller 1994:Figure 2).

the plain is largely the result of sequential deposition and erosion of Pleistocene loess (eolian silts) formed at the close of the last (Wisconsin) glaciation. The loess can be up to 80 feet thick along the Mississippi River but becomes increasingly thinner to the east, tapering away at about the location of Jackson, Tennessee. On the west, the West Tennessee Plain grades into an area of hilly terrain and escarpments known as the Loess Hills. Correlation of bluff exposures and drilling logs help present a fairly good stratigraphic sequence. Figure 2.2 summarizes late Quaternary eolian and fluvial units of the Memphis bluff.

Surface and near-surface geological units below the loess consist of relatively unconsolidated deposits of sand, silt, clay, chalk, gravel, and lignite belonging to the Upper Cretaceous Series of the Cretaceous System and to the Paleocene, Eocene, and Pliocene(?) Series of the Tertiary System. Paleozoic bedrock occurs at depths exceeding 3,000 feet (Parks and Lounsbury 1975:37). Post-Paleozoic units are summarized in Table 2.1.

Table 2.1. Post-Paleocene Geologic Units Underlying Memphis (from Parks and Lounsbury 1975).

System	*Series*	*Group*	*Stratigraphic Unit*	*Thickness (feet)*	*Lithology and Significance*
Quaternary	Holocene and Pleistocene		Alluvium	0–175	Sand, gravel, silt, and clay.
	Pleistocene		Loess	0–65	Silt, silty clay, and minor sand.
Quaternary and Tertiary (?)	Pleistocene and Pliocene (?)		Fluvial deposits (Terrace deposits)	0–100	Sand and gravel; minor ferruginous sandstone and clay. Supplies water to many shallow domestic wells in suburban and county areas.
			Jackson Formation and upper part of Claiborne Group (“capping clay”)	0–350	Clay, fine grained sand, and lignite. Supplies water to some shallow wells made in sands below the fluvial deposits, but generally considered to be of low permeability and to confine water in Memphis Sand.
		Claiborne	Memphis Sand (“500-foot sand”)	600–880	Fine- to coarse-grained sand; subordinate lenses of clay and lignite. Very good aquifer from which most water for public and industrial supplies is obtained.
Tertiary	Eocene		Flour Island Formation	160–130	Clay, fine-grained sand, and lignite. Low permeability confines water in Memphis Sand and Fort Pillow Sand.
		Wilcox	Fort Pillow Sand	210–280	Fine- to medium-grained sand; subordinate lenses of clay and lignite. Once used as second principal aquifer for Memphis; now reserved for future use.
			Old Breastworks Formation	250	Clay, fine-grained sand, and lignite.

SOILS

On a statewide scale, the project location is in the “Soils of the Loess Region” (Springer and Elder 1980:19). More specifically, the three tested sites are on the margin of the Memphis-Grenada-Loring soil association, one of seven associations described in Shelby County by Sease et al. (1989) (Figure 2.3). The Memphis-Grenada-Loring association consists of nearly level to sloping, well drained and moderately well drained, silty soils on broad uplands. This association covers approximately 40 percent of the county and is characterized by broad, rolling, low-lying hills, the sides of which are dissected by numerous small drainages. The soils in this association developed in silty deposits more than 6 m thick.

Figure 2.3. Soil Survey Aerial Photograph of the Project Vicinity (after Sease et al. 1989).

Memphis soils are on the broader ridge tops and steeper hillsides (in the Memphis-Grenada-Loring soil association) and are found at all three tested sites. Sites 40SY526 and 40SY527 are mapped as Memphis silt loam (MeB), 2 to 5 percent slopes (Sease et al. 1989:Sheet 23). Site 40SY525 is mapped as Memphis silt loam, 30 to 65 percent slopes (MeG), reflecting its position on the terminus of a pronounced finger ridge (Sease et al. 1989:Sheets 23 and 24). The Memphis series are strongly acid and therefore do not favor good bone preservation. Erosion is the main management problem in farming this soil; the combined effects of tilling and subsequent erosion have "deflated" numerous archaeological sites in this area into plow zone deposits.

The representative profile for Memphis silt loam, 2 to 5 percent slopes, was obtained approximately 7 km south of the sites under investigation (north of Eads) and is described by Sease et al. (1989:29):

Ap 0–7 inches [0–17.7 cm], brown (10YR 4/3) silt loam; weak, fine, granular structure; very friable; strongly acid; abrupt, smooth boundary.

B21t 7–18 inches [17.7–45.7 cm], brown (7.5YR 4/4) to reddish brown (5YR 4/4) silty clay loam; moderate fine and medium, subangular blocky structure; friable; thin continuous clay films; strongly acid; gradual, smooth boundary.

B22t 18–36 inches [45.7–91.4 cm], brown (7.5YR 4/4) to reddish brown (5YR 4/4) silt loam; moderate, medium, subangular blocky structure; friable; thin continuous clay films; strongly acid; gradual, smooth boundary.

B23t 36–74 inches [91.4–187.9 cm], brown (7.5YR 4/4) silt loam; weak, coarse, subangular blocky structure; friable; few pale-brown silt coatings in old root channels and cracks; thin patchy clay films; few, small, black concretions; strongly acid; clear, smooth boundary.

C 74–108 inches [187.9–274.3 cm], dark-brown (7.5YR 3/2) silt loam; massive; firm; pale-brown silt coatings in cracks; strongly acid.

The color of the Ap horizon ranges from dark grayish brown to brown. The texture of the B21 horizon ranges from heavy silt loam to silty clay loam. The color of the B horizon ranges from brown to reddish brown.

In contrast to the Memphis series soils that characterize the ridge tops and bluff hill slopes of the tested sites, the level bottoms below are part of the Falaya-Waverly-Collins soil association (Sease et al. 1989). Soils belonging to the Falaya-Waverly-Collins association are deep, friable, silty, poorly drained to moderately well drained soils that occur in floodplains. Falaya silt loam (Fm) is associated with the bottoms of the unnamed tributary immediately north of the tested sites. Large cultivated tracts of Falaya silt loam are also associated with slightly elevated portions of the Loosahatchie floodplain immediately south of the sites. Waverly silt loam (Wv) is found primarily along the former channel of the Loosahatchie River and is generally associated with low-lying tracts of flooded timber.

Also of note in the immediate area are smaller tracts of Calloway silt loam (Ca), found along the unnamed tributary and Long Road, east of 40SY525. On these soils an "Archaic camp" site (40SY197) and a lithic scatter (40SY442) are reported (Oliver et al. 1993:Table 2). Smith (1991:48) has previously noted that "Apparent [Late Archaic-Benton] gathering camps . . . occur on Grenada and Calloway soils in low stream terrace topographic contexts within the loess hills soil zone."

The West Tennessee Plain is currently undergoing two primary types of landscape modification: erosion of upland agricultural lands and aggradation of local floodplains. The potential general effects on archaeological deposits and landforms in the area are directly related to these processes. Sites in cleared upland areas are being subjected to deflation and degradation, and some floodplain sites are being buried by seasonally deposited blankets of silt. These processes and their effects on site postdepositional characteristics have been documented in archaeological and geomorphological field studies in western Tennessee (Anderson et al. 1987; Barnhardt 1985; Childress 1993; Jolley 1985; Smith 1979a, 1979b). This work has also documented correlations between site locations, soil types, elevations, landforms, and sequential Pleistocene and Early Holocene terraces in the region (Barnhardt 1985; Peterson 1979a, 1979b; Saucier 1964; Smith 1979b).

CLIMATE

The archaeological sites treated in this report were occupied most intensively during the latter Holocene, when general climatic conditions were comparable to current conditions. Information available from the National Weather Service and the Soil Conservation Service may thus be used with some confidence to consider seasonal variations in climate for the period of interest (around 2,000 years ago). Variables of temperature, available moisture, evapotranspiration, precipitation, wind speed, and wind direction would have been extremely important to people living directly off the land with a preagricultural adaptation. Although humans do not exhibit the same kinds of systemic responses to environmental variation as other organisms, due to humans' reliance on nonbiological means of adaptation, ethnography clearly demonstrates the importance of basic climatic variables in structuring broad patterns of subsistence and the organization of living spaces.

The climate of Shelby County, Tennessee, is typical of the Mississippi Alluvial Valley and can be characterized as warm and moist, with mild winters and hot summers. Humidity is high (averaging 70 percent), and prevailing winds are from the south. The movement of large air masses is generally from the west-northwest to the east due to the upper atmospheric flow of the jet stream, but wind direction near the surface is greatly influenced by the internal counterclockwise motion of fronts. This results in prevailing southerly winds and has an ameliorating effect on local climatic conditions. Prevailing wind speed averages about 8.9 MPH and exhibits only slight seasonal variation (a range of about 7–11 MPH as measured by the National Weather Service at Memphis over the past 45 years) (Figure 2.4). Variation in prevailing wind speed is partially influenced by high sustained (35–45 MPH) and gusting (40–70 MPH) winds that are most prevalent during early spring (March) and fall (October). High winds are also associated with summer storms (June) that move through the valley (Figure 2.5). The National Weather Service data indicate that the direction of high and gusting winds is quite variable, ranging mainly from 135° to 360° (the direction from which the wind is blowing as measured by degrees east of magnetic north), i.e., from the north, northwest, west, southwest, and south-southeast (Figure 2.6). High winds from the east or northeast are extremely rare, and for purposes of long-term planning and weather prediction can be considered almost nonexistent.

Rainfall is abundant, and precipitation averaged 49.73 inches (1,263 mm) per annum in the period from 1931 to 1960 (Sease et al. 1989:Table 1). Seasonal variation in rainfall based on data from two samples recorded between 1931 and 1993 is shown in Figure 2.7. Fall is the driest season and winter is the wettest. January is the wettest month according to the 1931–1960 sample, but could be characterized as moderately dry according to the more recent National Weather Service sample (1950–1993). October is the driest month according to both

Figure 2.4. Monthly Variation in Local Speed of Prevailing Southerly Winds.

Figure 2.5. Comparison of Monthly Variation in Speed of Prevailing Southerly Winds with Sustained and Gusting High Winds.

Figure 2.6. Monthly Variation in Direction of Sustained and Gusting High Winds, Shelby County, Tennessee.

Figure 2.7. Monthly Variation in Precipitation, Shelby County, Tennessee (1931-1960 data from Sease et al. 1989; 1950-1993 data from National Weather Service).

samples. The 1969 soil survey reports that the highest monthly precipitation at Memphis (17.56 inches) was recorded in January 1937, followed by a high of 17.13 inches during April 1991. A productive rain is most likely when a moisture-laden warm front approaches from the southwest. In the winter and early spring, the moist air from the gulf collides with the dry continental air, and excessive rainfall can be expected. Thunderstorms occur about 51 days per year and during the summer are an erratic source of rainfall. Severe storms are infrequent; six tornadoes were reported from 1916 to 1964, and hailstorms happen only once or twice a year in any given location. Snowfall is negligible as a source of precipitation.

Comparison of the available climatic data indicates that winter is cold and relatively wet and can be characterized by occasional gusty, high winds from the north and west. A frequent short-term winter pattern is rainy weather followed by clear, cold periods and then warmer weather with increased cloudiness and rain. The coldest month is January, with an average daily high of 50.6° F and an average daily low of 33.4° F (Sease et al. 1989:Table 1). Spring is mild but brief, with fairly abundant rain and continuing gusty winds mostly from the north and west. Summers are long and dominated by warm southerly air flow, maximum evapotranspiration (peaking in July), and high humidity. July is the warmest month, with an average daily high of 92.1° F and an average daily low of 71.5° F. The growing season is long, with an average of 238 frost-free days and lasting from March 20 to November 12. Thunderstorms increase in frequency. Nuisance insects like fleas, ticks, and mosquitoes reach their annual peaks in population. Precipitation generally tapers off in late summer to the fall dry spell in September and October. Wind speed and direction shift back to the winter pattern of northerly and westerly gusts along with increased precipitation in November and December.

PALEOENVIRONMENT

Before the Paleoindian colonization of western Tennessee, the area experienced cyclic, Late Pleistocene glacial climates. A final mantle of wind-blown loess (Peorian) was deposited over most of the area during a glacial retreat after about 25,000 years B.P. (Saucier 1978). Spruce forests predominated during this time. After approximately 10,500 B.C., the spruce forests were slowly replaced by a cover of gum and cypress in association with postglacial, Early Holocene warming (Delcourt and Delcourt 1981). The Gum-Cypress forests were partially replaced by a mixed hardwood forest during cooler and wetter climatic conditions after about 8,500 B.C. Warmer and drier conditions of the mid-Holocene Hypsithermal prevailed from 7,000 to 3,000 B.C. in the Midsouth and had rather dramatic effects on plant and animal communities. An Oak-Hickory forest had become established over much of the area by the end of the Hypsithermal. Conditions were essentially modern after this time, although a general increase in precipitation followed the mid-Holocene climatic optimum. The area was characterized by a climax Oak-Hickory forest cover in the loess hills and better-drained stream terraces, and an extensive system of cypress-covered oxbow lakes and ponds along the local meandering streams.

FLORA AND FAUNA

The project area is part of the Carolinian Biotic Province (Dice 1943:16) and the Mississippi Embayment Section of the Western Mesophytic Forest Region (Braun 1950:157). Before modern large-scale land clearance and extensive stream channelization, the area was dominated by the Oak-Hickory climax forests of the stream terraces and interfluvial loess hills, and the floodplain plant species of the local streams. These included sweet gum, white oak, hickory, black gum, willow, bald cypress, cottonwood, and sycamore. Nut-bearing trees were very important components of prehistoric subsistence. Mainfort (1985:4) has also noted the presence of species of the Eastern Agricultural Complex, including *Chenopodium album* (lamb's quarters), *Polygonum* sp. (knotweed), and *Strophostyles leiosperma* (wild bean). Important food animals of the area included the white-tailed deer, black bear, turkey, opossum, raccoon, squirrel, rabbit, beaver, and otter. Migratory waterfowl moving up and down the Mississippi flyway were also fairly abundant. Major fish species included bass, catfish, crappie, and drum.

III. CULTURAL OVERVIEW

In this chapter, the prehistoric and historical occupations of the Central Mississippi Valley will be discussed in terms of characteristic artifacts, settlement, subsistence, and sociocultural organization. Attention will be focused on the western Tennessee region of the Mississippi River floodplain and adjacent upland sections of the Gulf Coastal Plain. The central section of the alluvial floodplain of the lower Mississippi River contains cultural remains associated with the entire span of human occupation in North America. Certain parts of the prehistoric record, particularly those characterized by the production of ceramics, have been more intensively researched than others, and investigation of the earlier phases has been hindered by differential preservation caused by shifting river channels and deposition of deep alluvium. Heavy alluvial deposition after the entrenchment of the main river channel and abandonment of braided stream surfaces at the close of the Pleistocene Epoch probably affected the earliest site record most intensively. Morse (1982:22) has suggested that some of the first sites created in eastern Arkansas may now lie under many meters of floodplain silts and clays.

East of the main channel of the Mississippi, the archaeological record has been affected more by erosion and human-induced downcutting of the landscape than by post-Pleistocene alluviation. Along the loess bluff section of the Coastal Plain in western Tennessee and Kentucky, many of the earliest deposits have long since washed away. In the district as a whole, stream channeling combined with agricultural and land clearance practices have had a dramatic effect on the integrity of the archaeological record. The bottoms of nearly every Mississippi River tributary in the western Tennessee Coastal Plain have received heavy blankets of silt and clay overburden, resulting in buried sites (Jolley 1985).

PALEOINDIAN PERIOD (CA. 11,500–9,900 B.P.)

Fluted Point Occupations (ca. 11,500–10,500 B.P.)

The Paleoindian period represents the earliest human occupation in the southeastern United States. The placement of these occupations in the terminal Pleistocene Epoch indicates an adaptation to cooler climatic conditions and a different physiographic regime than those found in the modern Holocene. The environment at this time is usually interpreted to have been characterized by a spruce- and/or pine-dominated boreal forest (Saucier 1978:42). However, by 1,000 years before the fluted point occupations, the environment had changed to deciduous forest (Delcourt et al. 1980).

Recent research on Paleoindian diagnostic artifacts (Anderson 1989) indicates that the period may be tentatively subdivided into early (ca. 11,500–11,000 B.P.), middle (ca. 11,000–10,500 B.P.), and late (ca. 10,500–10,000 B.P.) subperiods based on changes in hafted biface morphology. No radiocarbon dates are available to confirm independently the accuracy of this subdivision. The early occurrence of classic Clovis points is followed by the appearance of forms classified as Cumberland, Quad, Beaver Lake, and Redstone. Eastern Arkansas points that Morse and Morse (1983) identify as Coldwater and Sedgewick probably fall in the middle part of the period (Anderson 1989:Figure 1). Late Paleoindian points show affinity to Agate Basin forms from the Plains (Morse and Morse 1983:Figure 3.7). That these forms appear to be absent east of the Mississippi River may be significant.

Anderson's proposed temporal division of the Paleoindian period has also been used as a working model with some success in western Tennessee (Broster and Norton 1990). Compared to the Arkansas lowlands and Missouri bootheel, the density of Paleoindian diagnostic artifacts appears to be somewhat greater in the loess hills zone of western Tennessee. Even here, there is an emerging pattern of decreasing point density moving to the west away from the main channel of the lower Tennessee River. This pattern is probably conditioned by the occurrence of high quality chert sources in the limestones of the Tennessee River basin and the absence of comparable material in the Gulf Coastal Plain.

As in most other areas of the Southeast, the Paleoindian diagnostic artifacts of the region tend to occur almost exclusively as isolated surface finds or as very minor elements of multicomponent assemblages (Broster 1989; Morse and Morse 1983). Evidence of spatial association of points appears to exist in some areas, however. Three clusters of fluted points have been observed in northeast Arkansas that may reflect band territories (House 1975:30). Two of these clusters are in the Western Lowlands, along the central and upper Cache River basin, and the third is in the Eastern Lowlands to the east of Crowley's Ridge. The presence of buried Paleoindian components has been suggested for several regions in the Central Mississippi Valley, including eastern Arkansas (Morse 1982) and western Kentucky (Cultural Resource Analysts, Inc. 1990). Testing for the presence of these kinds of deposits can be accomplished through geomorphological research.

Aboriginal groups of the period were likely small, mobile bands dependent on a hunting and gathering economy. Although they may have hunted some of the megafauna that became extinct at the end of the Pleistocene, such as mastodon (*Mammut americanum*), bison (*Bison antiquus*), and ground sloth (*Megalonyx* sp.), the subsistence base probably was varied and likely included several plant and animal foods. There are no clear indications at any locality in the Central Mississippi Valley of associated Paleoindian tools and Pleistocene faunal remains. Most of the known finds in the region are from surface contexts and tend to occur along the major river systems. Notable mastodon find sites include Nonconnah Creek (Brister et al. 1981) and Island 35 (Williams 1954).

Dalton Period (ca. 10,500–9,900 B.P.)

The Dalton period is considered to be transitional between the Paleoindian and Archaic traditions. The key distinguishing feature of material culture is the unfluted, lanceolate Dalton point. The Dalton point is often affiliated with either the terminal Paleoindian or Early Archaic periods. Goodyear (1982) has argued that Dalton represents a distinct temporal interval between ca. 8,500 and 7,950 B.C. (10,500–9,900 B.P.) and has pointed out the continuity between the lithic reduction strategies of Paleoindian and Dalton populations (Goodyear 1982:384; Smith 1986:14). Though technologically similar to Paleoindian, the Dalton period manifests an adaptive pattern that is more akin to later Archaic cultures. One of the most important game species from this time forward to the contact era seems to have been the white-tailed deer (*Odocoileus virginianus*) (Morse and Morse 1983:71). The Dalton tool kit is also distinguished by the addition of special-function tools and the woodworking adze.

In contrast to the western Tennessee Coastal Plain, northeast Arkansas is distinctive in yielding extensive, important data on Dalton site types, material manifestations, and spatial patterning. Many of these data have been generated from surveys and excavations along the L'Anguille River just west of Crowley's Ridge (Anderson et al. 1989; Redfield 1971). Excavations from sites such as Lace (Redfield and Moselage 1970), Brand (Goodyear 1974), and Sloan (Morse 1975) have uncovered evidence of possible burials and revealed features identified as living floors and shelter remains. In western Tennessee, the Jackson Purchase of Kentucky, and northern Mississippi, Dalton is characterized by isolated surface finds in the loess hills (Smith 1979a:1, 1991:47). Intact and more substantial Dalton components may occur on old terraces in the floodplains of the Mississippi River tributaries. In general, the entire early part of the prehistoric sequence remains poorly understood east of the Mississippi River. Recent surveys in drainages of western Tennessee (Anderson et al. 1987) have failed to locate additional evidence of Paleoindian occupation in the region, and Smith's very general characterizations of the earliest part of the prehistoric sequence cannot be further elaborated upon with available data.

Recent work in the lower part of the Cumberland River drainage has supplied the first radiocarbon date for an intact Dalton component in the state (Norton and Broster 1992). Two Dalton projectile points were recovered from a partially buried stratum in association with charcoal fragments yielding an uncalibrated assay of 9,790 ± 160 years B.P. This date, combined with data from Missouri and Arkansas, may be used to infer the presence of widely ranging Dalton groups in western Tennessee during the interval suggested by Goodyear.

ARCHAIC PERIOD (CA. 9,900–3,000 B.P.)

The Archaic period has been generally dated from about 9,900 to 3,000 B.P. (7,850–1,000 B.C.) in the region. It is traditionally divided into three shorter intervals: Early Archaic (ca. 9,900–7,000 B.P.), Middle Archaic (ca. 7,000–5,000 B.P.), and Late Archaic (ca. 5,000–3,000 B.P.). Temporal divisions of the Archaic are primarily based on the occurrence of distinctive projectile point types. These bifacial tools have been demonstrated to change in a patterned way through time, and although various names have been applied to different morphological forms, they occur as "clusters" of related types with a particular spatial distribution. In addition to diagnostic biface types, other material markers subdivide the Archaic in the interior Southeast. These include types of ground stone artifacts (Kwas 1981; Elliott 1989), fragments of carved stone bowls, and variation in mortuary items.

The Archaic is characterized by a general and gradual increase in population. This demographic trend is accompanied by adaptations geared to the intensive exploitation of different broad environmental zones and to the eventual demarcation of territorial boundaries archaeologically recognizable as phases (Anderson and Hanson 1988). Intensive exploitation of food resources is reflected in substantial quantities of fire-cracked rock on many Archaic sites. This artifact class results from stone boiling techniques involving the use of skin bags or wooden bowls before the adoption of pottery (Goodyear 1988).

Subdivision of the Archaic and consideration of its attributes are complicated in the Central Mississippi Valley by the presence of the river and the contrasting ecozones of the broad floodplain and the adjacent loess hills zone of western Tennessee and Kentucky. The river may have acted as a cultural boundary in prehistory, but the precise nature of the boundary effect has not yet been delineated (Morse and Morse 1983:1). In addition, varied resources of the floodplains and loess hills may have acted to differentially condition prehistoric cultural adaptations in the Central Mississippi Valley. The degree to which the archaeological record generated by Archaic activity reflects varied responses to environmental zones or boundaries between social units ("phases" or "culture areas") is a problem for future research. No attempt has been made to reconcile the contrasting schemes proposed for the Archaic period of eastern Arkansas and western Tennessee (Morse and Morse 1983:99–134; Smith 1979a, 1991), and no effort was made to do so in this overview. The database for this area is rather sparse in comparison to parts of Arkansas and Missouri (Jolley 1985:7–13) but is steadily growing as a result of work sponsored by the U.S. Army Corps of Engineers in association with the West Tennessee Tributaries project. Ongoing work in the Reelfoot Lake region by Tennessee Division of Archaeology personnel has also generated important information on the later part of the prehistoric sequence (Mainfort and Moore 1991). The Lower Tennessee-Cumberland River Archaic sequence has been rather intensively studied (Nance 1987a, 1987b); the adjacent Coastal Plain of western Kentucky has not (Jefferies 1990).

Early Archaic (ca. 9,900–7,000 B.P.)

Early Archaic components in western Tennessee are identified by essentially the same hafted biface types found in adjacent regions (Smith 1991). In east-central and northeast Arkansas, the Early Archaic has been dated from roughly 9,900 to 7,000 B.P. and is recognized by a series of diagnostic projectile points, including Kirk Serrated, Lost Lake, Palmer Corner Notched, Beaver Lake, Rice Lobed, Rice Lanceolate, Rice Contracting Stemmed, Graham Cave Notched, Hardin Barbed, St. Charles Notched, Hidden Valley Stemmed, Cache River Side Notched, and Big Sandy Stemmed (House 1975:30; Chapman 1975:152; Morse and Morse 1983).

No stratified deposits have been excavated in western Tennessee, with the possible exception of 40GB42 in Gibson County. Smith (1979a:20–21) reported the discovery of a lower horizon yielding Palmer and Big Sandy points at this site during limited testing in 1973, but no detailed report of the testing results has ever been published. This site was subjected to more extensive testing during 1991 by the Tennessee Division of Archaeology under the direction of Robert Mainfort. Preliminary analyses suggest that 40GB42 may represent the remnants of a Late Archaic accretional mortuary mound capping a diffuse deposit of earlier material, but solid site interpretations must await complete analyses of the recovered assemblage and spatial data.

In addition to diagnostic projectile point types, several well-made tool forms also are thought to date to this period, including a diversity of scrapers, large chipped stone choppers, and reworked points, along with possible plant processing tools such as pitted cobbles and manos (Morse and Morse 1983). A generalized foraging adaptation by small, highly mobile groups is inferred at this time level. A greater use of plant resources suggests that Early Archaic populations may have had a somewhat more diversified subsistence base, with less reliance on hunting than previously thought. The intensity of plant utilization also may have varied across the major environmental zones of the region. There are vague indications, for example, that the frequency of heavy core/cobble tools may be greater in the loess hills zone east of the Mississippi River (Anderson et al. 1987:89), reflecting the demands of nut processing in this region. No detailed research has tested this proposition.

Middle Archaic (ca. 7,000–5,000 B.P.)

The Middle Archaic period is poorly represented in the lowlands of the northern Mississippi Alluvial Valley (Chapman 1975:177; House 1975:30). It can be roughly distinguished from the Early Archaic by the increased presence of ground stone artifacts and a less diverse stone tool kit. The Middle Archaic represents a period of increasingly localized exploitation of the resource base and expanded efficiency in the use of terrestrial and riverine resources. The Middle Archaic period spans the Hypsithermal, or climatic optimum, which was characterized by a pronounced drying trend in the general region and an apparent shift from forests to grasslands over much of the lowlands (Morse 1982; Semken 1983). Morse and Morse (1983:99) suggest that the term "Hypsithermal Archaic" be used for this period in the Central Mississippi Valley to denote population shifts away from the lowlands in response to the warmer, dryer climatic era. The suggested temporal duration of the "Hypsithermal Archaic" (7,000–3,000 B.C.) includes what is traditionally considered the latter part of the Early Archaic. In contrast, Chapman (1975:157), based on observations in Missouri, has noted that small camps dating to the Middle Archaic period do occur in the lowlands, along former river channels or on higher ground surfaces near smaller streams. These differences in opinion actually seem to reflect a variation in the emphasis placed on the importance of site size and associated evidence for the degree of intensity of utilization (Brown 1982:352). No researchers have denied the presence of Middle Archaic components in the lowlands, but instead they have focused discussion on how variations in component frequencies through the Archaic interval might reflect broad changes in adaptive strategies.

Smith (1991:48–49) has pointed out that by about 3,500 B.C. a pattern of broad seasonal rounds by groups moving between the lower Tennessee River and the Mississippi River loess hills zone had become established. This is partially confirmed by the relatively common occurrence of Western Highland Rim chert tools, including Dover, Ft. Payne, and Camden, on early Late Archaic sites in western Tennessee. Due to a general paucity of data, it is not known precisely when this pattern began or whether it is characteristic of Middle Archaic settlement-subsistence practices in western Tennessee. Research by Nance and his colleagues in extreme western Kentucky may have implications for understanding the Middle Archaic record in the project area. Like Morse and Morse (1983), Nance (1987a) sees a dramatic correlation between the onset of the mid-Holocene climatic optimum and regional changes in settlement-subsistence systems during the Middle Archaic:

> The Hypsithermal corresponds roughly to the Middle Archaic prehistoric period and we have identified changes in the Early-Middle-Late Archaic record of extreme western Kentucky that are temporally correlated with the onset and passing of the Hypsithermal. The nature of these changes suggest to us that environmental events and cultural changes were intimately connected. Our research has revealed that late Early Archaic components (earlier than 8000 B.P.; late Kirk) exhibit evidence of brief, nonintensive site occupation/utilization. In contrast, Middle Archaic (Cypress Creek/Eva-Morrow Mountain) strata exhibit dense, organic-rich midden accumulations indicative of intensive utilization or at least repeated use of the same locality over substantial time spans. These deposits are found buried in floodplain sediments adjacent to major rivers. By about 5000 B.P. the occupation/utilization pattern reverts to one associated with Early Archaic sites. Late Archaic sites also appear to be more highly dispersed over the landscape than Middle Archaic settlements. [Nance 1987a:94–95]

Firm identification of Middle Archaic artifacts associated with temporal divisions of the period has been difficult to achieve. Based on the data cited above from adjacent areas, this may be due to lack of material rather than just sampling error or differential preservation. Diagnostic artifacts for the Middle Archaic are thought to include basal notched Eva and Calf Creek points and side notched Hickory Ridge and Cache River projectile points (Morse 1982:22; Morse and Morse 1983:108–110). The side notched forms are morphologically similar to Early Archaic Big Sandy points. Their association with a Middle Archaic horizon, however, suggests the possibility of a distinctive and later side notched form. Smith (1991:48) has identified the Haywood point (Smith 1979a:Figure 15) of western Tennessee as one possible Middle Archaic marker for the region. Smith (1991:47) has also noted that classic Eva projectile points are almost nonexistent more than 35 km west of the lower Tennessee River, and Morse and Morse (1983:108) point out a similar scarcity in the western lowlands of Arkansas. These observations call into question the recognition of a true basal notched horizon (Morse and Morse 1983:108–109) in the western lowlands. Smith (1991:47–48) has suggested that Cypress Creek II points may mark the early part of the Middle Archaic. The placing of Cypress Creek in the Middle Archaic is in line with findings presented by both Nance (1987b) and McNutt and Weaver (1983) for adjacent regions of Tennessee and Kentucky. Benton points are associated with the terminal part of the Middle Archaic east of the Mississippi River.

Like sites of the preceding era, Middle Archaic occupations are assumed to occur on older, more stable land surfaces, particularly at higher elevations, although the possibility of deeply buried deposits cannot be discounted. Peterson's (1979a, 1979b) work along the Wolf and Loosahatchie rivers identified Middle Archaic sites in close association with terraces and terrace remnants. Resolving the exact nature of these associations should help us understand whether settlement patterns changed over the course of the Archaic and may suggest reasons this change may have taken place. Clarification of these issues could be greatly facilitated if an intact Middle Archaic component could be located and excavated in western Tennessee.

Late Archaic (ca. 5,000–3,000 B.P.)

Late Archaic period sites in the region are identified by numerous hafted biface types, including Benton, Gary, Burkett, Pickwick, McIntire, Mabin, Motley/Table Rock Stemmed, Mulberry Creek, and Big Creek. As Mainfort (1985:9) has pointed out, many of these types may be subsumed into the Little Bear Creek cluster as defined by Ensor (1981:96–98); the Wade and Ledbetter clusters appear to represent minority forms. Other diagnostics include baked clay balls, bannerstones, lapidary items, and a range of triangular and rectangular tools that probably served as axes or digging implements (Chapman 1975:217; Morse 1982:22; Morse and Morse 1983; Smith 1979a, 1991).

The Benton occupations (ca. 3,600–3,000 B.C.; 5,550–4,950 B.P.) are marked by the occurrence of distinctive, beveled-stemmed projectile points. Smith (1979a) has identified several Benton varieties and noted their distribution from the lower portion of the Tennessee River Valley to within a few miles of the edge of the loess bluffs in western Tennessee (Smith 1991:48). He describes what appears to be a typical site type: "apparent gathering camps littered mainly with fragments of ferruginous sandstone grinding tools . . . on Grenada and Calloway soils in low stream terrace topographic contexts within the loess soils zone. This environmental setting fits the prescription for the formation of shagbark and scalybark hickory groves." Childress (1993:69–98) has reported 40DY66 with a Benton component in a similar setting. Smith's environmental description also indicates a nearly perfect match with the reported sites (40SY197 and 40SY442) immediately east of the Harris site (40SY525). Smith (1991) reports the presence of possible rectilinear or ovate, bent-pole structures at 40FY13 in association with Benton occupation of that site. Test excavations at 40GB42 during 1973 and 1991 encountered what appear to be Benton burials. A full report of the latest investigations by the Tennessee Division of Archaeology is currently in preparation.

Benton occupation of the region may be followed by the presence of distinctive Mississippi drainage and lower Tennessee River Late Archaic groups. Smith (1991:48–49) has noted a complementary distribution of McIntire (Tennessee River) and Bartlett (Mississippi River) (Smith 1979a:Figure 4) projectile point forms in the area that may be correlated with separate Late Archaic populations, but this proposition has not yet been rigorously tested.

During the terminal part of the Late Archaic, clear relationships with the Poverty Point complex in the Lower Alluvial Valley are evident in the widespread local occurrence of baked clay balls and the rare occurrence of lapidary items such as carved and polished beads (Smith and McNutt 1988). Projectile point forms may be generally subsumed in Wade or Flint Creek clusters (Mainfort 1985:9). Smith's (1979a:70, Figure 16; 1991:Table 1) extremely common Lambert var. A is apparently an important diagnostic of the period. That numerous Poverty Point period sites exist in the region is evident from survey data generated on both sides of the river. Ford and Redfield, for example, found over 200 baked clay objects during their 1961–1962 Dalton Project Survey (Redfield 1971:57). Most of the baked clay balls found west of the Mississippi are comparatively simple, biconical or spherical shapes typical of the Late Archaic (Poverty Point) period. The range of baked clay ball types appears to be much greater in the loess hills zone (Smith 1991; Smith and McNutt 1988; Smith and Weinstein 1987), and Smith has relied on frequency variation of these types to posit a large number of Poverty Point phases for western Tennessee. Although some of these forms may have persisted later in time into the Woodland period (Phillips 1970:870), they are typically recovered in preceramic contexts.

Ceramics appear to the south and east of the project area during the terminal part of the Late Archaic. The first recognized ware in the Central Mississippi River Valley is Wheeler series fiber tempered pottery. Like the Alexander series, it seems to be a product of groups occupying the lower section of the Tennessee River; it is extremely rare in western Tennessee, where it is reported in low frequencies from surface collections and the lower stratigraphic levels of at least one multicomponent site (Childress and Wharey 1990; Mainfort 1985:9).

Specific models of Late Archaic settlement patterning in the northern part of the Lower Mississippi Alluvial Valley remain largely speculative at present. House (1973) has suggested that several autonomous Late Archaic groups were present in the northeast Arkansas/southeast Missouri area, occupying seasonal villages and oriented along specific watersheds. These observations are very similar to the geographic phase designations of Smith's western Tennessee Late Archaic settlement pattern. Morse (1982:22) has further noted that diagnostic Late Archaic artifacts are commonly found in the upper reaches of watersheds and has suggested that these areas may reflect the locations of winter villages. The discovery of undisturbed Late Archaic components in secure context and the excavation of those components will be essential if questions about site size, composition, and season of occupation are to be considered.

WOODLAND PERIOD (CA. 3,000–1,000 B.P.)

Early Woodland (ca. 3,000–2,000 B.P.)

The Early Woodland period in the Eastern Woodlands is traditionally assumed to have been the time of the introduction of pottery into much of the region, the appearance of elaborate burial mound ceremonialism, and the first evidence of intensive horticulture (Griffin 1967:180). The first part of the 3,000–2,000 B.P. interval should be considered transitional between the Late Archaic and Woodland periods, reflecting the gradual adoption of ceramics and associated shifts in settlement and subsistence by the populations of western Tennessee.

The term "Tchula" has been used to refer to Early Woodland components in the northern portion of the lower Mississippi Alluvial Valley (400 B.C.–A.D. 1). These components are assumed to be roughly contemporaneous with those of the Tchefuncte culture in the lower parts of the valley (Phillips et al. 1951:431–436). In western Tennessee, the occurrence of fabric marked ceramics tempered with a variety of materials, including sand, grog, and limestone, characterizes Early Woodland period assemblages (Mainfort 1985, 1986a). Projectile points in Ensor's (1981:94–95) Flint Creek cluster are probably diagnostic of the Early Woodland in western Tennessee (Mainfort 1985:10). Although large, Early Woodland burial mounds are located in northern Mississippi, they do not appear to characterize the Early Woodland record of the Coastal Plain in Tennessee (Mainfort 1985). Early Woodland occupations in the region are discussed in much greater detail in Chapters VII and VIII.

Middle Woodland (ca. 2,000–1,500 B.P.)

The onset of the Middle Woodland period is recognized by the decline of fabric marked ceramics and the increased use of pottery with cordmarked surfaces (Mainfort 1985, 1986a). Projectile points of the Lanceolate Expanded Stem and Lanceolate Spike clusters were used. Large and complex Middle Woodland earthworks occur east of the Mississippi, both immediately adjacent to the main channel and in seemingly more marginal locations (e.g., Pinson Mounds) (Mainfort 1986b, 1988). The Pinson Mounds site and related sites in northern Mississippi have yielded quantities of exotic imported goods including copper, mica, galena, and marine shell. The Pinson site was one of the largest and most complex ceremonial sites in eastern North America between A.D. 1 and 200. North of the Reelfoot Lake area in southwestern Kentucky, site 15FU37 has been identified as a complex Middle Woodland ceremonial enclosure with features reminiscent of southern Ohio earthworks (Mainfort and

Carstens 1987). These findings suggest that both northern Hopewellian and lower Mississippi Valley Marksville traditions influenced the material expressions of Middle Woodland ceremonialism in the project area, but the degree and nature of this influence have not been fully researched. The level of participation of western Tennessee populations in Pinson ceremonialism is also currently unclear.

Late Woodland (ca. 1,500–1,000 B.P.)

Late Woodland occupations in western Tennessee are identified primarily by the presence of grog tempered (Baytown) ceramics, a series that first emerged during the Middle Woodland. Some sand tempered wares probably co-occur (Mainfort 1985). Additional diagnostics include occasional Wheeler Check Stamped and Coles Creek Incised sherds, indicating influences from the Mississippi Alluvial Valley farther to the south. The use of the bow and arrow is reflected in the shift to Madison and Hamilton type smaller projectile points. A diminution of interregional trade and mortuary ceremonialism and a more local subsistence focus are evident. Horticulture was probably part of the subsistence base, but no sites with archaeobotanical remains from this period have been excavated in western Tennessee.

By A.D. 800, Mississippian populations appear to have begun spreading into northeast Arkansas, as documented at Zebree (3MS20) and other sites belonging to what Morse and Morse (1983) have described as the Big Lake phase. Similar components recently have been recognized along the Mississippi drainage in western Tennessee at the Shelby Forest site (40SY489) (McNutt 1988; McNutt and Fain 1990) and in the Reelfoot Lake region. Archaeological investigation of local Late Woodland sites thus offers the opportunity to examine the emergence and expansion of Mississippian culture in the central Mississippi Alluvial Valley (Morse and Morse 1990). Sites of this period may be present in the proposed project study areas and would be of considerable importance if found in good condition. Beyond the obvious importance of documenting the nature of this transition, an additional research topic includes looking for possible connections between the Coles Creek cultures farther to the south in the Mississippi Alluvial Valley and the developments in the southeast Missouri area.

MISSISSIPPIAN PERIOD (CA. A.D. 900–1600)

Perhaps no period of southeastern prehistory has been more intensively researched than the Mississippian. Based on excavations at numerous sites and extensive surface collections, a cultural pattern for the latest prehistoric segment has been both defined and continuously refined. From about A.D. 900 until initial European contact in the sixteenth century, Mississippian societies differing in complexity controlled local and regional territories along most of the large rivers of the interior Southeast, including those in the central section of the Lower Mississippi Valley.

At the risk of oversimplification, the cultural pattern of the Mississippian may be summarized in terms of its material and organizational attributes. The settlement pattern of Mississippian groups was focused on alluvial floodplains. These expanses of tillable soil could be worked easily with available wood, bone, and stone horticultural equipment. Maize was the dominant food crop and was supplemented by beans, squash, and probably a variety of other foods that have low archaeological visibility. Domesticated crops were augmented with wild foods that had contributed to aboriginal diets in the Southeast for centuries. These included nuts, berries, persimmons, greens, and roots. Meat sources included deer, turkey, small mammals, migratory waterfowl, and aquatic species.

The focus on maize as a primary food crop and the generally increased commitment to horticulture had significant impacts on the organizational complexity of aboriginal societies in the region. The relatively egalitarian Woodland societies were apparently transformed into more hierarchical constructs, with new emphasis on hereditary leadership. This "transformation" was related to the emergence of managerial organization. This more complex social organization has been called a chiefdom.

Increased organizational complexity is marked by the widespread appearance of substructure platform mounds. Because platform mounds also have been identified at some Middle Woodland sites, care must be taken when identifying the temporal span of sites based strictly on mound form. These mounds served primarily, though probably not exclusively, as the foundations for religious structures and as the locations for the residences of high-status individuals. Individual status distinctions were marked by differential access to nonsubsistence items such as conch shell jewelry, native copper, and nonutilitarian chipped stone items. Status distinctions are also reflected in the variation in Mississippian burials.

During the first stages of the Mississippian period, Woodland-style conical burial mounds were still erected in some regions, reflecting continuity in local traditions. Continuity is also reflected in the ceramic traditions, with the presence of clay tempered wares (Baytown) in the Mississippian period. Shell tempered plain and surface-decorated ceramics also began to appear. After about A.D. 1000, shell tempered ceramics were the dominant types in Mississippian assemblages.

In the late Mississippian period, populations began to nucleate along the Mississippi and St. Francis rivers into more compact villages with substantial wattle-and-daub houses. Villages were linked to regional mound ceremonial centers that were apparently the focus of important religious and social activities mostly associated with the horticultural cycle and mortuary ceremonialism. Local ceramic variations have led to the identification of several distinct phases in the Central Mississippi Valley (Phillips 1970), which are often interpreted as competing chiefdoms (House 1991).

The chronology for the Mississippian is based on the recognition of phases or cultures for the area that are defined on temporal, spatial, and artifactual grounds. Regional chronology building is an outgrowth of the monumental work in the central drainage by Phillips, Ford, and Griffin during the 1940s (Phillips et al. 1951). Mississippian sites are fairly commonplace along the natural levees of the broad alluvial belt and on the bluff tops overlooking the floodplain east of the Mississippi River. In western Tennessee, Mississippian sites are concentrated along the primary alluvial strip of the Mississippi River floodplain and adjacent loess bluffs.

Early Mississippian (ca. A.D. 900–1200)

Around or shortly after A.D. 800, Mississippian culture was in place in the northeast Arkansas area. Initial Mississippian occupations locally belong to the Hayti and Big Lake phases. Currently, the best-documented initial Mississippian assemblage comes from the Zebree site in northeast Arkansas (Morse and Morse 1980, 1990), the type site for the Big Lake phase. Big Lake components have been identified in the western part of the Eastern Lowlands, along the St. Francis and Little rivers. Marshall (1965:42–69) describes comparable materials from an Early Mississippian component at the Kersey site (23PM42) in Pemiscot County, Missouri, the basis for what he has described as the Hayti phase (see also Chapman 1980:241–244). Hayti phase components occur in southeast Missouri and northeast Arkansas in the eastern part of the Eastern Lowlands. The Shelby Forest site is a related manifestation in western Tennessee. The Obion (Garland 1992) and Denmark mound groups, also in western Tennessee, appear to be "the only demonstrable ceremonial centers" in the Coastal Plain during the early part of the

Mississippian (Mainfort 1985:12). Mainfort's research in the Reelfoot Lake area of northwestern Tennessee indicates a higher density of Early Mississippian components there than in the interior Tennessee Coastal Plain.

Late Mississippian (ca. A.D. 1200–1600)

During the Late Mississippian period, settlement nucleation is increasingly evident throughout the northern part of the lower Mississippi Alluvial Valley. Fortified villages become common and farmsteads disappear in many areas (Morse and Morse 1983). These changes have been linked to increasing regional population density and a concomitant expansion of warfare, arising in part over political rivalries ultimately based on the control of important resources such as trade routes, horticultural lands, and hunting territories (Larson 1972; House 1982; Smith 1978). The apparent abandonment of much of interior western Tennessee may be related to this pattern of regional population nucleation. The area may have been a buffer between major political entities; admittedly, this is highly speculative.

Late Mississippian (post–A.D. 1400) artifacts in western Tennessee include several distinctive ceramic types such as Walls Engraved, Barton Incised, and Parkin Punctated. Nodena projectile points appear in addition to triangular Madison forms on some sites (Mainfort 1991). Limited data from western Tennessee also suggest that diagnostic snub-nosed end scrapers are extremely rare to nonexistent on the post–A.D. 1400 sites from which surface collections have been made, indicating an assemblage content slightly different from sites of the Nodena/Armorel phase west of the Mississippi River.

The first European contact in the general project area was in June 1541, when the de Soto entrada left the province of Quizquiz (possibly Walls phase) and crossed the Mississippi River. Here they encountered complex Mississippian polities in the Eastern Lowlands of Arkansas. Descriptions of existing cultures by the de Soto chroniclers are the only historical record of the late prehistoric Mississippian occupations in the region. The chiefdom province of Pacaha has been equated with the archaeological Nodena phase. Williams (1980) has identified the Armorel phase as the seventeenth century coalescence of closely related Walls and Nodena phase populations. Horizon markers for the contact period include Chevron glass beads, Clarksdale bells, catlinite pipes, shell "buttons," sherd disks, and distinctive vessels. Several of the more distinctive vessel forms, as well as the sherd disks (possibly gaming pieces), of the protohistoric period exhibit continuity with the latest precontact expressions of ceramic art in the Walls and Nodena phase areas (Childress 1992).

Lewis (1988) has argued strongly for the recognition of astragalus dice as another distinctive protohistoric marker in the central Mississippi drainage, but most researchers have been reluctant to accept these artifacts as diagnostic of the period (Eisenburg 1989). However, Lewis has made the important observation that strict reliance on the recovery of European-manufactured items as the only unequivocal indicator of a protohistoric component has hindered research of the contact era. Postcontact burial practices shifted to secondary interment in large earthen urns, demonstrating associations with the late Alabama River phase along the upper section of the Tombigbee drainage. Probable Late Mississippian period burial urns have been recovered from sites 40LA26 and 40DY58 (Mainfort 1991).

HISTORIC OCCUPATION

Historical settlement in the project area was minimal until after 1800, although Spanish, French, and Euro-Americans are known to have passed through the area before then. When the French began traveling up and down the river in the eighteenth century, western Tennessee was apparently devoid of any substantial aboriginal populations. The area was primarily a hunting enclave for the Chickasaw of northeastern Mississippi. In 1763 the English assumed title to the land from the French. West Tennessee came under control of the United States a short time later. In 1796 Tennessee was made a state and separated from North Carolina. During the early nineteenth century, settlement on the frontier by Euro-American pioneers increased in intensity. Shortly after the beginning of the nineteenth century, towns and farmsteads became common in the area.

PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

The Loosahatchie River is one of the few western Tennessee drainages that has been subjected to systematic archaeological sample survey and is one of the best known areas in Shelby County (Smith 1974; Peterson 1979b). Peterson's (1979b) work for the Soil Conservation Service resulted in a database derived from a 5 percent sample stratified by primary landform along the lower and middle sections of the Loosahatchie (11 percent floodplain, 29.5 percent terrace, and 59.5 percent upland). During field investigations, 120 new sites were located, augmenting the previously recorded site total of 231 (see brief discussion in Smith 1991). Eight of the 60 randomly and intuitively selected one-minute survey quadrangles fell within the Arlington 7.5′ quadrangle and lie along or immediately adjacent to the proposed State Route (SR) 385 right-of-way. These data indicate relatively high site density (over four archaeological sites per one square minute of sampled space), particularly along terrace margins at the interface of the floodplain and loess uplands. This is exactly the setting of the three sites under investigation. Peterson also generated site density predictions for each of the primary landforms based on the sample survey data.

Previous work by Smith (1991) in the Loosahatchie drainage is also notable for the excavation undertaken at 40FY13 on the upper section of Beaver Creek. This site is only 17.5 km northeast of the three sites under investigation. Compared to most other pre-Mississippian sites in western Tennessee, this site witnessed fairly substantial excavation before its destruction (55.8 m^2 exposed, approximately 20 m^3 of site deposit excavated) (Peterson 1979b:31–32; Smith 1991). Smith reported midden as deep as 45 cm, several site components ranging from Dalton to Terminal Archaic ("Harris Island"), and the remains of a small rectilinear structure. Charcoal from one of the associated pits supplied one of the few radiocarbon dates for the western Tennessee region: 2400 ± 95 B.P. (450 B.C.). Unfortunately, the site excavations have never been completely reported.

Phillips (1970) placed the Merrel site (11-Q-3) north of the Loosahatchie River on his base map but never discussed the site, nor used it on any of his phase maps. This is primarily because the site is thought to contain an Archaic component and was reported to the Lower Mississippi Survey by Dr. Hampson (Robert Mainfort, personal communication 1994). Lithic artifacts curated at the Hampson Museum, Wilson, Arkansas, with an "MP" (Merrel Place) mark are thought to be from this site. The site location is near Kerrville in the Loosahatchie watershed. Buchner and Childress reviewed the Merrel Place material at the Hampson Museum on February 9, 1994. The collection includes only four stone tools, all manufactured from tan chert gravel (Figure 3.1).

Figure 3.1. Lithics from Merrel Place in the Hampson Museum Collection.

In addition to the large-scale projects mentioned above, the proposed construction of SR 385 (Paul Barrett Parkway) around Memphis has resulted, to date, in three archaeological surveys: between Ricks Road and Salem Road (McNutt et al. 1994); between Salem Road and Memphis-Arlington Road (Oliver et al. 1993); and between Memphis-Arlington Road and Interstate 40 (Collins and Chapman 1994). The latter survey is of particular interest, resulting in the discovery of site 40SY540. That site is in a 40 x 70 m area on the edge of a loess-capped Pleistocene terrace overlooking the confluence of Hall's and Cypress creeks (Walling et al. 1994). Phase II test excavations in 1994 covered 20 m^2 and were placed, after shovel testing, in areas thought to retain uneroded deposits. Most of the ceramics were eroded; Withers Fabric Marked was the dominant type recognized (n=37 vs. n=4 for Mulberry Creek Cord Marked). A Cormorant Cord Impressed sherd and a possible incised sherd were also recovered. The site also produced local gravel debitage, fire cracked rock, and ferruginous sandstone and siltstone. Debitage was indicative of on-site reduction and included decortication flakes, tertiary flakes, and biface thinning flakes, in descending order of frequency. At least one piece of shatter appeared to be use-polished. Density of lithics was highly variable, generally from about 100 to about 600 lithic items per 1 x 2 m test unit. Peaks of ceramic and lithic density were noted at the south and north ends of the site, respectively, suggesting segregation of working and living space and/or sexual division of space.

Other work in the local area includes archaeological survey for the Bartlett Corporate Park and extensive historical investigation of the Morning Sun Farmstead along SR 64 (Weaver and Childress 1984; Weaver et al. 1990). Today there are over 50 recorded archaeological sites within 2 km of the project corridor.

IV. RESEARCH DESIGN AND METHODS

The goals and field methods for the Phase II testing were originally outlined in the Phase I survey report recommendations (Oliver et al. 1993). These were reiterated in our manpower estimate for the project (Garrow & Associates, Inc. 1993). After the Phase II fieldwork, a preliminary report was submitted to the Tennessee Department of Transportation (TDOT), in which we suggested that the Harris (40SY525) and Hayes (40SY526) sites did not contain potentially significant archaeological deposits (Buchner 1994). However, preliminary results did suggest that the Fulmer site (40SY527) contained significant Early Woodland archaeological deposits, and we recommended a continuation of the Phase II testing in order to better determine the extent and nature of the intact archaeological deposits at the site. Results of the extended Phase II testing at the Fulmer site were detailed in a subsequent preliminary report to TDOT (Buchner and Weaver 1994). In that document we recommended that the Fulmer site be considered eligible for nomination to the National Register of Historic Places (NRHP) under Criterion D. After a request from Parsons De Leuw and TDOT, a research design and Phase III data recovery plan were prepared for Phase III archaeological data recovery at the Fulmer site (Garrow & Associates, Inc. 1994).

RESEARCH DESIGN

The primary goal of the Phase II archaeological investigations was to assess the significance of site deposits in the proposed State Route 385 right-of-way in order to determine each site's eligibility for nomination to the NRHP. Field techniques were designed to determine the existence, nature, and integrity of any subsurface archaeological deposits that might be present, as well as to generate chronological and functional data for the sites.

As part of the proposal for Phase III data recovery at the Fulmer site, several research avenues were developed (Garrow & Associates, Inc. 1994). These include both site-specific research questions and questions of a more regional scope.

Site Chronology

An understanding of site chronology is basic to site interpretation. Information recovered during the Phase II testing suggested the Fulmer site was occupied over a brief period during the late Early Woodland or early Middle Woodland periods. The Phase III investigations addressed specific questions relating to site chronology:

- When and for how long was the Fulmer site occupied?
- Is there evidence for seasonal occupations at the site?
- Is there evidence for changes in the types of activities, raw materials, or technology over time?

A major effort of the Phase III excavations was directed toward the recovery of radiocarbon assays from good contexts. Given the absence of faunal remains, floral remains were seen as the best approach to addressing the question of seasonality.

Site Function

Given the small site size, its physiographic location, and other evidence suggesting short occupational spans, it was suggested that the site represents a short-term or seasonal exploitive site, possibly used during the procurement and processing of nuts or small, oily seeds.

- What types of tasks were performed at the Fulmer site?
- What tasks were primary, and what tasks were less typical?
- Are the tasks performed an indication of the needs of the local group that occupied the site, or do they reflect community or regional needs?

Representative samples of the lithic and ceramic assemblage were collected to address questions of site function. It was also reasoned that structural remains, such as storage pits and wall posts, would be evidence of occupational duration and activities associated with the occupation.

Intrasite Variability and Site Structure

Phase II testing at the Fulmer site suggested variability in the distribution of artifacts and features across the site (Buchner and Weaver 1994). Previous research at similar sites suggests activity areas associated with work, storage, domestic use, and refuse disposal should be identifiable (Peacock 1993c). It was reasoned that intrasite variability of artifacts and features at 40SY527 could offer insights into short-term encampments and could provide a model for similar upland camp sites in the Loosahatchie River valley during the Woodland period.

- How was the Fulmer site organized in terms of activities within the site?
- Does the site structure reflect social or family organization?

To address these questions, a systematic and representative sample of structural features and artifacts were collected from all portions of the site core area.

Ceramic Technology

The nature of Woodland ceramic assemblages in west Tennessee is currently an issue of considerable debate (e.g., Mainfort and Chapman 1994; McNutt 1979; Smith 1979a). Major questions center on the possible chronological significance of clay vs. sand vs. clay/sand tempered wares and on the relationship between surface treatments and chronology. The problems stem, in large part, from the lack of excavated sites dating from this time period. Site 40SY527 is unusual in that the vast majority of the ceramics exhibit similar paste characteristics. The presence of fabric impressed wares and the total absence of cordmarking is significant, suggesting the site is a single component, short duration occupation. Given these preliminary findings, it was reasoned that additional excavations could be a rare opportunity to study a relatively pure ceramic assemblage from a poorly known period in the Midsouth.

- What kinds of ceramic vessels forms are associated with the Fulmer site, and how do they relate to the activities associated with the site?
- What are the typical decorative expressions and paste characteristics of the ceramic assemblage? How do they compare with vessel form, function, and site chronology?

A major goal of the excavations was to recover a relatively large and representative, provenienced sample of ceramic sherds in order to address the questions of ceramic technology, function, and chronology.

Dietary Reconstruction

The presence of archaeobotanical remains in soil samples recovered during the Phase II investigations at 40SY527 was seen as a unique opportunity for the study of diet among Early/Middle Woodland foraging groups.

- What kinds of archaeobotanical remains are present at the site, and in what proportions?
- What evidence is there for the processing and serving of plant foods at the site?

A concerted effort was made to recover archaeobotanical remains at the site, along with functional and morphological data on ceramic vessels.

Comparative (Regional) Research Questions

Settlement models developed for neighboring regions provide possible insights into the settlement system along the Loosahatchie River. However, few of the smaller, upland site types discussed have been excavated and reported. Although the lack of comparable excavation data is regrettable, several previous regional studies aid in the interpretation of the data from the Fulmer site.

- Is there regional variation in the type or diversity of tools associated with similar sites in west Tennessee and the surrounding regions?
- Is there regional variation in the types of activities at sites in similar topographic situations?
- What evidence is there of trade or transportation of nonlocal raw materials or finished artifacts at the Fulmer site?

To address these and other questions, an extensive review of the archaeological literature from neighboring regions was conducted.

FIELD METHODS

Initial Phase II field investigations began December 21, 1993, and ended January 10, 1994. The crew included the Field Director, one Senior Field Technician, and four Field Technicians. Work at the three sites includes the excavation of 68 shovel tests, the recovery of a controlled surface collection, the excavation of 12 2 x 2 m test units and two 1 x 1 m test units, and mechanized plow zone stripping (100 m^2).

Before the excavations, two grid systems were established: one for 40SY525 and 40SY526 and the other for 40SY527. The 40SY525/40SY526 grid utilized TDOT center line station 143+00 as the point of origin (0W x 0N) and, due to tree cover on the site, grid north is oriented 14° east of magnetic north. The 40SY527 grid utilized TDOT center line station 132+50 as the origin (0W x

0N). The 40SY527 grid is oriented perpendicular to a line between TDOT center line stations 132+00 and 133+00. This results in the 40SY527 grid north being aligned 35° east of magnetic north. Elevations in both grids were recorded in meters above mean sea level (AMSL).

Fieldwork at the Harris site (40SY525) began with the excavation of 36 shovel tests (ST 1–36) on a 10 m grid across the site. Preliminary analysis of the shovel test results guided the placement of five 2 x 2 m test units (Units 3–7) in areas where high artifact density was suggested by the shovel test data. A 4 x 2 m test trench (Units 1 and 2) was positioned in the flank of a conical "mound" to determine its origins. In total, 28 m^2 of the Harris site was formally excavated.

Fieldwork at the Hayes site (40SY526) was restricted to that part of the site in the right-of-way, which included the extreme eastern end of the site and encompassed less than one-fifth of the total site area. Work consisted of a controlled surface collection (CSC), the excavation of two 1 x 1 m test units (Units 13 and 14), and the mechanized plow zone stripping of a 5 x 20 m area. A "dog leash" controlled surface collection utilized a point in the 40SY525 site grid (50.0W x 30.0N), from which all 40SY526 CSC points were recorded in terms of azimuth and distance. Sixty-one surface sample units were collected (each with a 1 m radius, or 3.14 m^2), giving coverage of 191.5 m^2 of the site surface. The two 1 x 1 m units were in areas of high surface artifact densities, as suggested by the CSC. The plow zone strip (A) was between the two test units. Plow zone stripping was done with a backhoe equipped with a smooth bucket.

Initial testing at the Fulmer site (40SY527) included 31 shovel tests on a 10 m grid (ST 37–68) and the excavation of five 2 x 2 m test units (Units 8–12). Preliminary results suggested the presence of a burned earth hearth-like feature and an intact Early to Middle Woodland sheet midden. In the preliminary management report we recommended continuing Phase II testing to document the extent and nature of these features (Buchner 1994). The extended Phase II work included the excavation of an additional 20 m^2 of the site, raising the total area of formal excavations to 40 m^2. The extended testing was completed over five working days during the period February 17–24, 1994. The crew consisted of the Field Director and three Field Technicians. This work included excavation of four 2 x 2 m units (Units 15–18), one 1 x 2 m unit (Unit 20), and two 1 x 1 m units (Units 19 and 21). Field investigations for the Phase III data recovery at the Fulmer site were performed between April 25 and June 3, 1994. During this period, 58 2 x 2 m units and three 1 x 2 m units were excavated (Units 22–82) by a crew consisting of the Field Director, one Senior Technician, and five Field Technicians.

Field procedures were identical at all three sites. Shovel tests and unit-level soils were dry-screened through 0.25 inch hardware cloth to ensure consistent artifact recovery. All units were excavated in either 10 cm levels or natural strata, except Unit 21 (40SY527), which was excavated in four 5 cm levels. The grid coordinates for the northeast corner of each unit designate each unit's location. Shovel tests consisted of the excavation of a 30 cm diameter hole to sterile subsoil.

At the Fulmer site (40SY527), soil samples were obtained from feature and midden contexts and subjected to one of two different types of fine-mesh recovery. Some of the soil samples were water-screened using 1/16 inch mesh screens at the laboratory. A flotation device was used for the remaining samples. Three fractions were obtained from each flotation sample: a 1/16 inch heavy fraction and two light fractions (1.4 and 0.5 mm).

Field recording procedures included the following. All Phase II and III units, shovel tests, features, and artifact bags were numbered sequentially, beginning at one (1). All levels from units were recorded on standardized unit-level forms. All sediments were described by texture, structure, and Munsell color codes. Plan drawings of unit floors were made when appropriate. Features were recorded separately on feature forms. For all Phase II units, two profiles from each unit were drawn to scale and photographed in black and white film and color slides. For each Phase III excavation unit, two profiles were drawn, but only selected profiles were photographed due to the large number of units. An artifact bag list recording the provenience of the contents of each numbered artifact bag was maintained by the Senior Field Technician. Other records maintained include a shovel test record, a photographic log, and field notes.

LABORATORY METHODS

Basic Analysis

Basic analysis refers to artifact washing, basic sorting, and cataloging. All artifacts were washed in 1/16 inch mesh washing screens and allowed to dry overnight. After drying, larger organic matter (mainly roots) was removed. Bag contents were then sorted into categories, which were then weighed and/or counted. Fire cracked rock was separated into two types, fire cracked chert and fire cracked rock, and weighed. Ferruginous sandstone (FeSS) and natural stone (gravel) were recovered in significant frequencies and are also reported by weight. What little charcoal was recovered is reported by weight as well. Prehistoric ceramics, lithic tools, and debitage were counted and weighed. Historic artifacts were also counted.

After the basic analysis, each artifact was labeled in black ink by its accession number, and all items were placed into resealable plastic bags by artifact group. Natural stone, ferruginous sandstone, and fire cracked rock (but not fire cracked chert) were culled, or discarded, from the collection at this point. Prehistoric ceramics and retouched lithic pieces were pulled for additional analysis.

Ceramic Analysis

After basic analysis, all prehistoric ceramics were size-sorted to obtain a sample of sherds considered large enough for additional study. All sherds retained in a 1/2 inch mesh screen were pulled for analysis; those passing through were considered residual. Residual sherds were not analyzed further, though their mass was recorded by provenience.

All sherds recovered during the testing project are assignable to the Woodland period. No shell tempered (Mississippian) ceramics were recovered at any site. After the 1/2 inch ceramic sort, an effort was made to place our types within the context of existing west Tennessee ceramic typologies for the Woodland period (Mainfort and Chapman 1994; Smith 1979a), as well as those for the adjoining Mississippi Valley (Phillips 1970), upper Sunflower (Brookes and Taylor 1986), and northeastern Mississippi (Jenkins 1981; Jennings 1941).

Our ceramic typology is based on two major variables: paste and surface treatment. As the first step in the ware analysis, the sherds were assigned to one of the four paste "types" described below.

<u>Paste Type I</u>. Type I paste includes small reddish or gray clay particles, occasionally with hematite or other inclusions. The major sorting criterion of these sherds is their soft, chalky feel. Paste ranges from slightly contorted to laminated. These sherds generally exhibit the same color on the surface as in the core.

Paste type I as used here is morphologically similar to the description by Mainfort and Chapman (1994) for the Forked Deer series (Table 4.1). This paste series is defined by:

> the presence of unevenly distributed baked clay particles in a paste that is often contorted and occasionally laminated; the clay particles tend to be smaller and the appearance of lamination is less extreme than observed in the classic Tchefuncte material found to the south. The paste is usually soft and chalky. [Mainfort and Chapman 1994]

Sherds are mostly white, trending to orange, with a few dark gray examples. In their west Tennessee sample, vessel forms included mostly open bowls with slightly restricted bowls. Flat-based beakers are also present.

Following the typology proposed by Mainfort and Chapman (1994), plain sherds with Forked Deer series paste are considered Baytown Plain *var. Forked Deer* and fabric marked sherds are classified as Withers Fabric Marked *var. Withers*. The co-occurrence of these types is reported from several sites in west Tennessee, including 40MD2, 40MD130, 40DY3, 40DY4, 40GB6, 40GB7, and 40WK72 (Mainfort 1994). Other types include Mulberry Creek Cord Marked *var. Bells Road*. Decorated sherds include Cormorant Cord Impressed *var. unspecified* and Twin Lakes Punctated *var. unspecified*. Both of the latter types occur with Forked Deer series paste and the slightly sandier Madison series paste (described below). Given the consistent association with Tchula period decorative types, the Forked Deer series is tentatively regarded as predating both the Baldwin and Tishomingo series (Mainfort and Chapman 1994:41).

The Forked Deer series is notable as the only one of the four Woodland period ceramic series in west Tennessee, as defined by Mainfort and Chapman (1994), that does not exhibit a sandy feel on uneroded sherds. The authors also note the similarity of the Forked Deer Series paste to the "Cormorant group" of the upper Sunflower, although in the upper Sunflower assemblages lamination in the paste is not observed (Brookes and Taylor 1986:23). Smith (1979a; Smith and Weinstein 1987) considers similar paste under the rubric of "Tchefuncte," or "Tchula," and/or "Early Woodland" paste. Along the Nonconnah Creek drainage in Shelby County, Smith and Weinstein (1987:48) report three sites (40SY35, 40SY38, and 40SY45) with both fabric impressed and plain "Early Woodland paste" ceramics.

<u>Paste Type II</u>. These sherds are similar to Type I specimens except that they exhibit a slightly gritty feel. Paste type II is essentially equivalent to the Madison series defined by Mainfort and Chapman (1994). The Madison series is characterized by:

> the presence of baked clay particles in the paste, but varying amounts of fine sand are present, resulting in a sift, slightly raspy textured, often contorted to occasionally laminated paste . . . simply a sandy variant of Forked Deer. [Mainfort and Chapman 1994]

The inclusion of fine sand in the paste is likely a byproduct of source clay selection rather than an added tempering agent. Sherds are mostly white, trending to orange, with a few dark gray examples. In their west Tennessee sample, vessel forms included mostly open bowls with slightly restricted bowls. Flat-based vessels are also suggested (Mainfort and Chapman 1994). Types in the Madison series include Baytown Plain *var. Madison*, Withers Fabric Marked *var. Cypress Creek*, and Mulberry Creek Cord Marked *var. Westover*. Sherds exhibiting decoration similar to Cormorant Cord Impressed and Twin Lakes Punctated are also found on Madison series paste (Mainfort and Chapman 1994).

Mainfort and Chapman (1994) place neither cultural nor temporal distinctions between the Forked Deer and Madison series pastes. This view contrasts with the earlier interpretation of Smith (1979a), who views all mixed clay-sand paste sherds under the rubric "Thomas" ware. Smith suggests that mixed clay-sand (Thomas) assemblages are transitional between pure clay tempered (Tchefuncte) and pure sand tempered (Baldwin) ceramics and date to A.D. 1–150.

Paste Type III. Paste type III is a sandier paste than Type II but still includes a very few small clay particles. Mica flecks are occasionally present. Following Mainfort and Chapman (1994), this paste would be classified as Tishomingo series. The Tishomingo series essentially subsumes all other mixed sand and clay tempered sherds not attributable to the Madison series. An important characteristic in sorting the Tishomingo series is that this paste lacks the chalkiness associated with the Forked Deer and Madison series and frequently contains mica flecks. There is a morphological intergradation between Madison and Tishomingo series pastes; Tishomingo represents the sandier end of the spectrum. This series represents the more sandy mixed paste sherds formerly classified by Smith (1979a) as Thomas ware.

Following Mainfort and Chapman (1994), Baytown Plain *var. Tishomingo* is the type-variety name applied to plain-surfaced ceramics exhibiting paste type III. Other types include Mulberry Creek Cord Marked *var. Tishomingo* and Withers Fabric Marked *var. Craig's Landing*. In a departure from vessel forms represented in the Forked Deer and Madison series, vessels from west Tennessee ascribed to the Tishomingo series include open globular bowls and conoidal jars (Mainfort and Chapman 1994).

Paste Type IV. During the field investigations and preliminary laboratory analysis of the Fulmer site (40SY527) material, a few sherds were observed to contain both clay particles and coarse sand. The inclusion of coarse sand differs from the usual inclusions of fine to medium-sized sand in the majority of ceramics from the site. At the time, it was thought that the coarse sand inclusion might represent a rare ceramic ware classified as "Knob Creek" by Smith (personal communication 1994). Consequently, our paste type IV was established to include sherds with both clay and coarse sand inclusions. However, only five sherds out of 4,585 were classified as paste type IV, and we now tend to think these sherds represent a minor variant of our paste type III (Tishomingo series).

Other Paste Types. It was anticipated before the ceramic analysis that other paste types might be present in the assemblage, and on our analysis forms, a fifth category was included for paste types not observed during the field investigations and basic analysis. Specifically, we were allowing for the possible presence of sherds exhibiting a sandy texture without clay particles. Woodland ceramics exhibiting a sandy paste and lacking clay inclusions are generally included in what Mainfort and Chapman (1994) term the "Baldwin series" and what Smith (1979a) has called "Baldwin ware" (also see Cotter and Corbett 1951; Jenkins 1981; Jennings 1941). This series is characterized by "a medium hard, sandy textured paste lacking visible clay particles" (Mainfort and Chapman 1994:56). The colors and representative vessel forms of the ceramics in the Baldwin series are similar to those in the Tishomingo series (Table 4.1). Baldwin series ceramics appear to postdate the Forked Deer and Madison series. Sand tempered wares are predominant by ca. A.D. 100 at the Pinson Mounds (Mainfort and Walling 1992). However, none of the ceramics from the Arlington assemblages was classified as Baldwin, and no other pastes other than paste types I, II, III, and IV were identified.

Lithic Analysis

Our lithic analysis is based on the sorting scheme of Sullivan and Rozen (1985; Rozen and Sullivan 1989a, 1989b). All lithic items are organized according to the hierarchical key presented in Figure 4.1, in which attributes may be observed to be either present or absent from any specimen under consideration. Use of the scheme (key) assumes a basic knowledge of fracture mechanics and an ability to recognize percussion features. Organization of the lithics using the attribute key results in the division of the sample into two categories (artifacts and debitage), which in turn contain several subclasses. Subclasses may be considered basic classificatory types.

Figure 4.1. Hierarchical Key for the Descriptive Classification of Chipped Stone Artifacts.

The remainder of the attribute key concerns the further classification of the resulting debitage. Debitage was initially divided into pieces with and without discernible single interior (ventral) faces. The latter category is the debris, subsuming commonly used descriptors such as "chipping shatter." Debitage with discernible single interior faces was segregated into specimens that retained points of applied force (bulbs of percussion) and those that did not. Debitage with no bulbs of percussion were categorized as flake fragments. The remaining specimens were finally divided on the basis of intact or missing flake margins. This sorting resulted in four debitage categories: complete flakes, broken flakes, flake fragments, and debris. Additional descriptive observations were made on the material in the debitage, retouched piece, and core categories. The recognition of debitage (all categories) with marginal modification too slight to be classified objectively as "retouch" has already been mentioned.

Additional analysis was performed on the subgroups of the cores category (projectile point/knives (PP/Ks), bifaces, and cores). All complete PP/Ks and basal fragments were measured for nine metric attributes, including blade length, haft length, maximum length, maximum thickness, medial blade width, shoulder width, base width, distal haft (neck) width, and basal concavity depth. After measuring these attributes, we classified the PP/Ks, relying primarily on the typologies of Cambron and Hulse (1986), Smith (1979a), and Justice (1987).

Additional analysis on other bifaces was restricted to complete specimens. Three metric attributes of complete bifaces were recorded, including maximum length, basal width, and maximum thickness. The shapes of complete bifaces were individually described as well. Retouched pieces were found mainly to be utilized debitage, and no further analysis was conducted. Formal flake tools, scrapers, gravers, or spokeshaves were noted and recorded as such, but these were few in number. All cores were reexamined; this category consists mainly of tested cobbles of local gravel and small, highly reduced core fragments. Relatively infrequent stone items included the following artifact categories: battered cobbles and hammerstones; abraders; and ground stone items.

We examined the PP/Ks and complete bifaces for raw material usage patterns and noted both local and nonlocal stone in the PP/K and biface assemblage. Most of the hafted bifaces were manufactured of what appears to be local Citronella cherty gravel. The unaltered local gravel has a fairly broad spectrum of color, ranging from pale yellowish brown (10YR 8/6) and grayish orange (10YR 7/4) to moderate yellowish brown (10YR 5/4). Textures range from fine-grained to slightly porous. The nonlocal chert found in the assemblage appears to be derived primarily from the cherty Mississippian limestones and Devonian-Silurian deposits exposed along the lower Tennessee River Valley to the east.

CURATION

As stipulated in the Scope of Work (Kline 1993), the materials collected during the survey will be curated by the Tennessee Division of Archaeology. The material is organized by analytical groupings within provenience units and has been placed in labeled, clear plastic bags. All artifacts are individually labeled by provenience, using catalog numbers assigned by the Tennessee Division of Archaeology. Copies of the field notes and forms, photographs, catalog and inventory lists, and analysis forms are also included for curation.

V. RESULTS OF TESTING AT THE HARRIS SITE (40SY525)

The Harris site (40SY525) is a multicomponent open-habitation site located in secondary growth on the eastern end of a prominent finger ridge at approximately 92.0 m AMSL (Figures 1.1 and 2.2). This finger ridge overlooks the Loosahatchie floodplain to the south and the bottoms of an unnamed tributary to the north and east. To the west-northwest, the ridge becomes wider, more level, and elevated. This ridge represents a remnant of the T-2a terrace, as described by Smith (1979a:11–22), which is correlated with the warm Farmdale Interstadial period (dated ca. 30,000–23,000 B.C.).

In the Phase I survey report, Oliver et al. (1993:42) described the Harris site as "a small open-habitation site associated with a possible mound. . . . The mound suggests the site dates from the Woodland period, although no chronologically sensitive artifacts were recovered." The western boundary was poorly delineated due to the presence of a TVA transmission line corridor. Oliver et al. (1993:47) suggested the site may formerly have been continuous with the Hayes site (40SY526), located in the cotton field along the ridge crest west of 40SY525. Work during the survey included the excavation of five shovel tests and recovery of a general surface collection with three proveniences: the base of an oak tree and two erosional areas on the north side of the ridge (Oliver et al. 1993:71). Only one shovel test (STP 171), located at the eastern terminus of the ridge, yielded artifacts (Oliver et al. 1993:Figure 7). Artifact density in STP 171 was moderately heavy (n=42), including 34 pieces of chert debitage, three pieces of fire cracked chert, one ferruginous sandstone abrader, and four pieces of ferruginous sandstone debitage. Cultural materials were characterized as limited to the upper 20 cm of soil. One shovel test (sterile) was excavated in the top of the possible mound. Seventy-five artifacts were recovered from all contexts. A linear depression, thought to represent a bulldozed area, was observed immediately west of the "mound." A level terrace and concrete trailer pad on the talus slope below the site (immediately to the south) were also noted (Oliver et al. 1993:71).

FIELDWORK

Phase II field investigations at the Harris site consisted of the excavation of 36 shovel tests and seven 2 x 2 m test units. After the establishment of a site grid, a stadia survey was made, and all Tennessee Department of Transportation (TDOT) survey stations remaining on the ground were mapped. The results of the Phase II investigations are presented below.

Shovel Testing Results

Testing of the Harris site began with the excavation of 36 shovel tests on a 10 x 10 m grid (Figures 5.1 and 5.2). The shovel test recovery is presented as a subtotal in Table 5.1. Most of the shovel tests (n=31) contained cultural materials; five shovel tests were sterile (ST 4, 7, 18, 25, and 28). All of the 31 positive shovel tests contained some fire cracked chert and/or fire cracked rock and/or ferruginous sandstone. In terms of total shovel test recovery, fire cracked rock was the most frequent mass category (948.0 g in 18 shovel tests), followed by ferruginous sandstone (926.2 g in 23 shovel tests) and fire cracked chert (623.7 g in 25 shovel tests). The mean yield for the combined total of these three categories is 80.6 g per positive shovel test (2,497.9 g/31 positive shovel tests), and frequencies range from a minimum of 0.4 g (ST 27) to a maximum of 445.0 g (ST 12). Natural stone (50.0 g) was recovered in only three shovel tests, and no charcoal was found.

Figure 5.2. General View of Site 40SY525.

Excluding the artifact categories analyzed by mass (fire cracked chert, fire cracked rock, and ferruginous sandstone), the number of "positive" tests is reduced to only 25 of the 36 excavated. The total number of counted artifacts recovered in the shovel tests is 181; thus, the mean number of counted artifacts per positive shovel test is thus 7.24. Counts range from a minimum of 1 (four cases) to a maximum of 25 (ST 2). Debitage is the most frequent class (n=134), followed by historic items (n=44) and utilized debitage (n=2). One PP/K base was recovered from ST 26.

We have previously presented an artifact density plot for the Harris site based on preliminary analysis of the shovel tests (Buchner 1994:Figure 3). In the preliminary report, counts were used for all artifact categories (including fire cracked chert/fire cracked rock/ferruginous sandstone), and the total was stated to be 670 artifacts (Buchner 1994:2). Because we used the preliminary counts to guide the placement of the test units, we provide the same density plot again (Figure 5.3), with the addition of contour lines.

The extrapolated artifact density plot in Figure 5.3 suggests four artifact concentrations. The highest artifact densities are northeast of the mound, on the eastern end of the finger ridge. Shovel Test 2, which had the highest frequency of counted artifacts, is located there. The only positive shovel test from the site survey (STP 171) (Oliver et al. 1993) also was in this area.

Artifact density drops significantly west of the possible mound, where the shallow linear depression is located. The subsoil was encountered very near the surface in shovel tests excavated in the depression, which contributes to the interpretation of the feature as a bulldozer cut. Three shovel tests were excavated in this surface feature (ST 3, 7, and 11). Shovel Test 7 was sterile, and ST 11 contained only one broken flake. However, ST 3 contained eight pieces of debitage and 138.8 g of fire cracked chert/fire cracked rock/ferruginous sandstone. This is likely due to the proximity of ST 3 to the edge of the cut.

The shovel test data also suggest two artifact concentrations along the northern margin of the finger ridge (Figure 5.3). Both of these secondary concentrations are correlated with slightly more elevated surfaces (above 92.0 m AMSL). Three shovel tests (ST 12, 19, and 20) are in the larger concentration, immediately west of the linear depression in the central part of the site. Shovel Test 12 is notable for the highest frequency (445.0 g) of fire cracked chert/fire cracked rock/ferruginous sandstone at the site, as well as 12 pieces of debitage. Shovel Test 19 contained more debitage (n=16) but less weighed artifacts (360.9 g); ST 20 yielded less debitage (n=9) and less cracked chert/fire cracked rock/ferruginous sandstone (250.0 g).

The third and westernmost concentration on the northern side of the ridge is centered on ST 22 and extends west to ST 23. Shovel Test 22 yielded 14 historic artifacts, six debitage pieces, and 330.1 g of weighed artifacts (the third highest shovel test mass frequency at the site). Shovel Test 23 yielded the second highest frequency of historic artifacts (n=11) as well as four debitage pieces and 95.5 g of weighed artifacts. Prehistoric artifact densities lessen to the west.

On the south side of the ridge, a fourth, smaller concentration is suggested by Figure 5.3. This concentration is spatially discrete from those noted along the northern ridge margin, being separated by the linear depression. This concentration is centered on ST 31, which yielded six pieces of debitage, one historic artifact, and 131.8 g of weighed artifacts. We suspected this concentration is the result of erosion or slope wash.

Formal Excavations

Seven 2 x 2 m units (Units 1–7) totaling 28 m^2 were formally excavated. Two units (1 and 2) were placed next to one another into the northern flank of the possible mound in order to

Figure 5.3. Shovel Test Density Plot, Site 40SY525 (after Buchner 1994:Figure 3).

determine its origins. The other five units were situated across the remainder of the site in areas where shovel tests had suggested areas of artifact concentrations (Figures 5.1 and 5.3). One feature was identified in Unit 3 (Feature 1), which is interpreted as a stump or tree fall hole. The individual units and feature are discussed briefly below.

Units 1 and 2. These two units form a 2 x 4 m trench into the mound (Figure 5.1). Unit 1 (S0.0 x E25.0) was positioned at the base of the slope of the mound, and Unit 2 (S2.0 x E25.0) was dug immediately to the south into the northern slope of the mound.

Unit 1 was dug in three levels. Level 1 consisted of stripping the root mat off the north half, and due to the slope the south half of the unit floor was leveled off at approximately 30 cm below datum (cmbd). Level 2 was a 10 cm level from 30 to 40 cmbd, and Level 3 consisted of a 10 cm level (40–50 cmbd) in the north half of the unit. Unit 2 was higher on the mound slope and was excavated in six arbitrary 10 cm levels, resulting in wedge-shaped east and west profiles.

The resulting Units 1 and 2 profile (Figure 5.4) and basic recovery totals (Table 5.1) suggest that this mound is not a prehistoric construction, but a mechanically produced spoil pile. The profile reveals a series of silty clay loam to silty clay strata with gravel and sand lenses, which do not have the appearance of being produced by "basket loading."

Unit 2, excavated wholly in spoil pile deposits, had the lowest artifact counts of any unit at the site (n=22); conversely, it had the highest frequency of natural stone, mainly unmodified tan gravel (more than 36 kg). Unit 1 yielded similar results in Levels 1 and 2, which were dug in the thinning talus slope deposits of the spoil pile. Unit 1 Level 3 (1 x 2 m), however, penetrated through the spoil pile sediments and reached the underlying A horizon, associated with the upper levels of other units. The artifact counts rise dramatically in Unit 1, Level 3 (548 counted artifacts compared to 39 counted artifacts for Levels 1 and 2 combined), and natural stone recovery drops significantly as well (13 kg for Levels 1 and 2 vs. only 1 kg for Level 3).

The age of the spoil pile is thought to be 35–40 years, based on tree size across the site. Some of the fill for this spoil pile may have come from the lower, sterile portions of the linear depression found immediately to the west. Its presence is probably related to construction associated with the former trailer site, immediately below and to the south.

Unit 3. Unit 3 (N15.0 x E8.0) was placed roughly in the center of the larger north-central concentration at the northern margin of the ridge (Figures 5.1 and 5.3). Unit 3 was excavated in five 10 cm levels (10–60 cmbd), and Feature 1 was identified at the base of Level 5. Compared to other excavation units, sediments in Unit 3 were soft and not well consolidated. The depth of this unit exceeded that of all others at the site (Figure 5.5). As such, the Unit 3 profile is not considered characteristic of the general, unmodified stratigraphy at the Harris site. Artifact recovery from Unit 3 (n= 2,144) (Table 5.1) was the highest at the site—surprisingly, more than double the recovery of Unit 5, which was placed in the area of highest artifact density. However, when artifact densities per volume of soil are calculated (Table 5.2), Units 3 and 5 have nearly identical results (n=890 and 893 artifacts per m^3, respectively). Interestingly, prehistoric ceramics were only half as frequent in Unit 3 (n=57) as Unit 5 (n=112). In Unit 3, Levels 2 and 3 produced more than half of the unit recovery (n=1,234 and 2,144, respectively), and counts dropped significantly in Levels 4 and 5. Artifact size was noted by the excavators to decrease in Levels 4 and 5 as well. The results suggest that prehistoric site deposits (formerly located in the linear depression to the east) were redeposited here by heavy equipment. This probably accounts for the slight topographic prominence of this section of the northern margin of the finger ridge, as well as the depth of Feature 1's point of origin.

Figure 5.4. East Profile Drawing and View to the Southeast, Units 1 and 2, Site 40SY525.

Figure 5.5. East Profile Drawing and View to the East, Unit 3, Site 40SY525.

Table 5.2. Artifact Density per Volume of Excavated Soil, Site 40SY525.

Feature 1. Feature 1 was identified in the northeast corner of Unit 3 at 60 cmbd and extended to a maximum depth of 132 cmbd. This feature is interpreted as a stump or tree fall hole that was later filled with artifact-bearing soils from above. The horizontal dimensions were recorded as 110 cm north-south x 85 cm east-west at the point of origin, and 70 cm north-south x 40 cm east-west at the base. We estimated the volume of this feature to be 0.41 m^3. The fill was recorded as a soft, dark brown (10YR 4/3) silt loam, similar to the soil matrix in the levels immediately above but slightly darker. In plan view, Feature 1 stood out distinctly against the nearly sterile strong brown (7.5YR 5/6) sticky silty clay stratum identified at the base of Level 5. In profile (Figure 5.5), Feature 1 appears as a rounded pit and extends into the north and east profiles. Below 90 cmbd, the feature margin was in contact with red (2.5YR 4/8) silt loam and dark reddish brown (2.5YR 3/3) fine silt loam.

Some 260 counted items were recovered from Feature 1, including sherds and a variety of lithic artifacts (Table 5.1). On a per volume of soil basis, Feature 1 has a lower yield (n=634 per m^3) than Levels 1, 2, and 3; it is nearly equal to Level 4 and greater than Level 5.

Unit 4. Unit 4 (N22.0 x W41.0) was situated on the western margin of the Harris site in an area of high grass next to a field road, outside the secondary forest growth covering most of the site (Figure 5.1). This unit was excavated in one natural level consisting of the plow zone (A_p), which was approximately 15 cm thick (Figure 5.6). Artifact recovery was light (n=91, of which 18 are historic), and no prehistoric ceramics were found. In soil profiles and artifact density, Unit 4 is more similar to Units 13 and 14 of the Hayes site (40SY526) than any other unit at the Harris site (40SY525). Note than Unit 13 is approximately 38 m north-northwest of Unit 4. This information suggests that the Hayes site represents a continuation of the lower-density, western part of the Harris site.

Unit 5. Unit 5 (N2.0 x E32.1) was placed on the eastern terminus of the finger ridge, where the shovel test density plot had suggested the densest part of the Harris site lay (Figures 5.1 and 5.3). This unit was excavated in three levels. Levels 1 and 2 were arbitrary 10 cm levels, and Level 3 was a natural level. Artifact density was heavy (n=1,069 and, excluding natural stone, 6,686.5 g of weighed artifacts) (Table 5.1). Level 1 yielded the majority of the artifacts (n=666 and 4,450 g weighed artifacts). Level 1 is associated with the humus/root mat (O horizon) and a dark yellowish brown (10YR 4/4) silt loam stratum (A_1 horizon) (Figure 5.7). Artifact yield dropped significantly in Level 2 (n=358) and was associated with a stratum change to a loose, strong brown (7.5YR 4/6) silt loam (A_2 horizon). Level 3 produced only 45 counted artifacts and was associated with the lower member of the A_2 horizon. Unit 5 excavations were halted in a sterile, compact silty clay loam (B horizon). Level 1 artifacts included complete Late Archaic PP/Ks as well as Woodland ceramics.

Unit 6. Unit 6 (S4.5 x W0.0) was positioned on the sloping south side of the ridge, west of the linear depression, to test an isolated secondary artifact concentration (Figures 5.1 and 5.3). The unit was excavated in four levels. Level 1 was a natural level consisting of the root mat; Levels 2 and 3 were arbitrary 10 cm levels; and Level 4 was an arbitrary 10 cm level in the north half of the unit. Recovery from Unit 6 was light (147 counted artifacts) (Table 5.1), and no ceramics were found. Only Units 2 and 4 had lower yields. Levels 2 and 3 produced the majority of the Unit 6 recovery (n=123) and were associated with a friable dark yellowish brown silt loam stratum (Figure 5.6). This stratum is somewhat intermediate between the strata designated as A_1 and A_2 horizons in Unit 5 and possibly represents the combining or weathering of these horizons in an erosional situation. Level 4 was virtually sterile (n=3) and was associated with a change to a compact silty clay loam (B horizon).

Unit 7. Unit 7 (N18.0 x W19.5) was located along the northern margin of the ridge to test the westernmost artifact concentration (Figures 5.1 and 5.3). Shovel testing of this concentration had produced some late historic artifacts as well as moderate frequencies of prehistoric

Figure 5.6. Profile Drawings, Units 4, 6, and 7, Site 40SY525.

Figure 5.7. West Profile Drawing and View to the West, Unit 5, Site 40SY525.

artifacts. This unit was excavated in three levels. Level 1 was a natural level consisting of the root mat/humus, and Levels 2 and 3 were arbitrary 10 cm levels.

Artifact recovery in Unit 7 was moderately heavy (n=520) and included the highest frequency of historic artifacts for any unit at the Harris site (n=99) (Table 5.1). Historic artifacts recovered here were dominated by Kitchen and Architectural group items (see below). Fragments of corrugated sheet metal and a crushed metal bucket were observed on the ground surface nearby, suggesting this location was formerly the site of a historic building or shed. Level 2 produced most of the recovery (n=387) for both historic and prehistoric artifacts and is associated with a dark yellowish brown silt loam stratum, which we designated the A_1 horizon in Unit 5 (Figure 5.6). Prehistoric ceramics were found only in this level. Recovery dropped significantly in Level 3, as the A_1 horizon graded into a friable strong brown silt loam (designated the A_2 horizon). The A_2 horizon in Unit 7 produced only one historic artifact. No features were identified.

ARTIFACT DISTRIBUTIONS

In this section, the results of the seven test unit excavations at the Harris site are combined with the results from the 36 shovel tests to produce extrapolated artifact density distribution plots. Although the overall artifact distribution pattern remains essentially unchanged from that shown by the preliminary analysis of the shovel tests (Figure 5.3), some classes of artifacts show density distribution patterns deviant from the overall pattern of total artifact density. To present the results of the shovel tests with the unit excavations in the same graphic plot requires some form of standardization. This was accomplished by dividing artifact totals (per unit or shovel test) by the volume of soil excavated (Table 5.2).

The first density pattern plotted was for the distribution of all counted artifacts (Figure 5.8). The overall pattern is quite similar to that found for the preliminary results of the shovel tests (Figure 5.3), with the largest high-density area found on the eastern ridge terminus. Deviations from the shovel test distribution pattern include increased density in the Unit 3 vicinity and better separation between the Unit 3 concentration and the western secondary concentration along the north ridge near Unit 7. Also note that while shovel test data suggested an isolated secondary concentration in the vicinity of ST 31, Unit 6 excavations failed to reveal substantial artifact concentrations there.

The density of all prehistoric ceramics was also plotted (Figure 5.9). Ceramics are not particularly well represented in the recovery but follow the general pattern; they are concentrated on the eastern ridge terminus (in the vicinity of Unit 5), where the total artifact density is highest. A small, spatially discrete, secondary concentration is found near Unit 3, also following the results of the overall pattern. An isolated low-density ceramic concentration also is associated with Unit 7.

The sum count for retouched pieces and "cores" (which includes bifaces, PP/Ks, and cores; see Chapter IV) was also tabulated by provenience (Table 5.2). Artifacts of this category were recovered in low frequencies, similar to the frequency of ceramics; however, utilized flakes and cores, unlike ceramics, were found in both shovel tests and units. The density calculations reveal that the three shovel tests containing one item of this category (ST 1, 26, and 32) have the highest density per volume of excavated soil (35.7/m^3) in spite of having the lowest absolute frequencies. Using unit data alone, the density pattern for this category follows the standard site pattern, with Unit 3 (23.8/m^3) and Unit 5 (26.7/m^3) being roughly equivalent and higher than the other units.

Figure 5.8. Density Distribution of Total Counted Artifacts, Site 40SY525.

Figure 5.9. Density Distribution of Prehistoric Ceramic Artifacts, Site 40SY525.

The debitage density pattern is nearly identical to the overall artifact density pattern (Figure 5.8), which is not surprising given the abundance of debitage in the assemblage. This suggests more intensive activity along the eastern end of the ridge, with density decreasing to the west along the north side of the ridge. A minor difference is that the secondary concentration around Unit 7 is of lower intensity compared to the site-wide pattern.

The sum of the fire cracked chert, fire cracked rock, and ferruginous sandstone mass totals by provenience was calculated next (Table 5.2). The density plot of these three combined categories reflects a new pattern of intrasite prehistoric artifact distribution and, by implication, site activity areas. For these categories, the highest densities are found west of the linear depression (dozer cut) rather than at the extreme eastern end of the ridge (Figure 5.10). However, if unit data alone were used to plot these categories, the standard site pattern would be repeated again. Unit 5 actually has the highest FCR density of all units (5,572.1 g/m^3) (Table 5.2).

The causal factor for skewing this density pattern to the west is the presence of three shovel tests (ST 12, 19, and 22) with hyper-elevated burned rock densities (more than 10,000 g/m^3) (Table 5.2). Interpretations are also complicated by the Unit 3 profile data, which suggest that the burned rock concentration is associated with an area of the site at least partly redeposited from the linear depression. The elevated ST 22 density is possibly related to the historic building or shed thought to have been located there.

The density of historic artifacts also deviates from the standard site pattern (Figure 5.11). Historic artifacts are essentially absent from the eastern part of the site, where prehistoric artifacts show their strongest concentrations, and are concentrated in a restricted area around Unit 7. We have previously stated that a structure or shed is thought to have been there. The presence of this historic artifact concentration weights the overall artifact pattern slightly in that area as well (Figure 5.8).

ARTIFACT ASSEMBLAGE

The Phase II Harris site assemblage contains 4,761 counted artifacts and 95,129.1 g of weighed items (Table 5.1). Among the categories of weighed items, natural stone is dominant (63.6 percent; 60,502.3 g). Fire cracked chert is about twice as frequent (16.6 percent; 15,833.2 g) as other types of fire cracked rock (8.7 percent; 8,233.3 g). Ferruginous sandstone is equally well represented (11.1 percent; 10,557.6 g). Very little charcoal was recovered (2.7 g). Counted artifacts consist mainly of prehistoric lithics (92.5 percent; n=4,406). Prehistoric ceramics (3.9 percent; n=188), historic artifacts (3.5 percent; n=165), and faunal/floral items (n=2) represent a minority of the assemblage.

Prehistoric Ceramic Analysis

Ceramics are a diminutive aspect of the prehistoric material culture of the Harris site (n=188), and only 80 sherds larger than 1/2 inch were subjected to further analysis. All of these sherds are eroded or weathered to some degree. The results of analysis of the Harris site ceramics are presented below, by provenience and type (Table 5.3). Note that the high-density area of the site, the eastern ridge terminus (Unit 5), yielded most of the 1/2 inch sherds and all of the decorated sherds.

Only one paste type (Type I) was recognized in the analysis of ceramics from theHarris site (see Chapter IV). The sherds are nearly "temperless" but include small particles of reddish clay

Figure 5.10. Density (g/m^3) Distribution of Fire Cracked Rock, Fire Cracked Chert, and Ferruginous Sandstone, Site 40SY525.

Figure 5.11. Density Distribution of Historic Artifacts, Site 40SY525.

Table 5.3. Ceramics by Provenience and Type, Site 40SY525.

Provenience	*Accession Number*	*Paste Type I* Plain/Eroded	*Paste Type I* Fabric Marked	***TOTAL***
Unit 1, Level 3	93-27-56	1	-	**1**
Unit 3, Level 1	93-27-39	1	-	**1**
Unit 3, Level 2	93-27-41	1	-	**1**
Unit 3, Level 3	93-27-45	1	-	**1**
Unit 5, Level 1	93-27-53	*44	11	**55**
Unit 5, Level 2	93-27-58	13	2	**15**
Unit 5, Level 3	93-27-59	5	1	**6**
Totals		**66**	**14**	**80**
Percentage		82.5	17.5	(100.0)

*Includes three rim sherds; all others are body sherds.

and occasionally hematite or other inclusions. Major characteristics of these sherds include their soft, chalky feel and the absence of fine sand. Paste ranges from slightly contorted to laminated. The clay particles are variable in both size and frequency.

Two forms of surface treatment were observed: plain/eroded (n=66; 82.5 percent) and fabric impressed (n=14; 17.5 percent). The fabric impressions on these weathered sherds appear to have been made by coarsely woven fabric, which left the surface dimpled. This type of surface treatment may have been created in a manner similar to that described by Jenkins (1981:143) in Gainesville Lake assemblages, where a decorative treatment was produced by wrapping dowels with fabric. Mainfort (1994) has suggested that this "ridge and valley effect" resulted from the weft and warp properties of the fabric itself. However, due to their eroded condition, the fabric impressions from the Harris site assemblage are poorly preserved and difficult to discern (Figure 5.12). Indeed, some of the sherds sorted as plain/eroded are severely eroded and may formerly have been fabric impressed specimens. Three tiny rim sherds were also found in this area (Figure 5.12a–c). They are plain-surfaced and have flattened, everted lips. The small size of the rim sherds precludes further analysis.

Following Mainfort and Chapman (1994), the two ceramic varieties represented in the Harris site assemblage are placed in the Forked Deer series as Baytown Plain *var. Forked Deer* and Withers Fabric Marked *var. Withers*. Smith (1979a:78) considers this paste a variant of Tchefuncte and assigns it a temporal range of 300 B.C.–A.D. 1.

Perhaps more significant than temper is the presence of fabric marking (Figure 5.12d–f) and the complete absence of cordmarked sherds. Phillips (1970:174–175) notes the "peak" of Withers Fabric Marked happens during the Early Woodland Tchula period. Mainfort (1986a:59) suggests that fabric marked ceramics were "developed or introduced into western Tennessee and northern Mississippi around 400 B.C. and remained an important decorative mode for several hundred years." A radiocarbon date of 205 ± 115 B.C. taken from Pinson, Mound 12, stratum V, postdates a stratum (VI) that contained high frequencies (70 percent) of fabric marked sherds (Mainfort 1980). Also from Pinson Mound 12, a burial (Feature 66) contained a Withers Fabric Marked jar and yielded a radiocarbon date of A.D. 80 ± 250 (Mainfort 1986b:89). Fabric marking does extend into the early Marksville period (Toth 1988), and at the Helena Crossing site, a Withers Fabric Marked vessel was associated with one of the ceramic deposits in Mound C (Ford 1963:31–32).

Ford (1989) suggests cordmarking was introduced to the Midsouth from the north, reaching the Pinson area of west Tennessee by at least 205 B.C. By 80 B.C. it had penetrated the northern

Delta and North Central Hills of Mississippi, and by Middle Woodland times it had replaced fabric marking as the dominant surface decoration on utilitarian ceramics.

Lithic Analysis

Analysis of the formal hafted bifaces (Table 5.4) indicates the presence of several components at the Harris site, spanning the period from the late Middle Archaic to the Early Woodland. The earliest component at the Harris site is represented by two Benton basal fragments (Figure 5.13l and 5.13m), recovered 75 m apart from opposite ends of the site. Both of these are manufactured from nonlocal chert (Dover or Ft. Payne) and exhibit the characteristic "steeply beveled stem edges" (Cambron and Hulse 1986:12–13). Futato (1982) offers a range of 3,600–3,000 B.C. for Benton points, but Justice (1987:111) suggests a broader range of 3,500–2,000 B.C. Peterson (1973:44) obtained a radiocarbon date of 2,050 ± 260 B.C. from the Benton zone at the Spring Creek site. Smith (1991:48) considers Benton points a marker for the early Late Archaic and has offered several vaguely defined varieties (Smith 1979a:101–102), which are suggested to have temporal significance.

A nearly complete corner notched PP/K was recovered from Unit 5, Level 1 (Figure 5.13j). It is manufactured from a high quality nodule of the local Pliocene gravel and exhibits careful workmanship and fine serration along the asymmetric blade (suggesting it may have been used as a knife). At first glance, the point appears to represent an Early Archaic form. However, the point also bears a close resemblance to a variety of barbed and corner notched forms dating to the Poverty Point/Tchula period in northeastern Arkansas. These include types such as Big Creek (i.e., Williams point cluster) (Bell 1960:96; Morse and Morse 1983:117–118) and Weems (Morse 1986:84, 86; Morse and Morse 1983:117–118, 155; Williams 1974:19). Perhaps the best affiliation is with McCarty points, a Tchula period form defined at the McCarty site in Poinsett County, Arkansas (Morse 1986:84, 86; Morse and Morse 1983:153, 155–156). The point is also reminiscent of corner notched points in the Wade cluster from the western Tennessee River Valley (Cambron and Hulse 1986:122; Ensor 1981:95–96).

Three formal hafted bifaces suggest a Terminal Archaic (1,500–300 B.C.) or Poverty Point period component at the Harris site. Interestingly, all were recovered from Unit 7, Level 2 (Table 5.4). Two basal fragments of Pontchartrain points were identified (Figure 5.13g and 5.13h), one of which is badly fire spalled, making its identification tentative. The more complete specimen has an unfinished base with cortex. Four varieties of Pontchartrain points are recognized in west Tennessee: vars. Teoc, Shelby, A, and B (Smith 1979a:Figures 26 and 27; Smith and Weinstein 1987:38, Figure 6-7c). However, none of these varieties has been formally described. Our points appear more similar to the illustrated vars. Shelby and A, which are stated to be the most common forms (Smith and Weinstein 1987:36).

Webb (1977) has suggested that the Pontchartrain point form appears to have ended ca. 800 B.C. in this area. Pontchartrain points appear morphologically similar to the better known Little Bear Creek type (Cambron and Hulse 1986:82). Justice (1987:196–197) considers Little Bear Creek points diagnostic of the "Late Archaic/Early Woodland transitional period" and suggests a date range of 1,500–500 B.C. Peterson (1973) found Little Bear Creek points were most frequent in the Kirby zone at the Spring Creek site, which yielded a radiocarbon date of 1,370 ± 160 B.C. and is thought to date no later than 800 B.C. In Alabama, Oakley and Futato (1975) report a date of 1,650 ± 180 B.C. on a pit feature containing Little Bear Creek points.

The other Poverty Point period PP/K recovered from Unit 7 appears to be a small Delhi (Figure 5.13i). The point exhibits well-defined barbs and a contracting stem. The base is snapped and unfinished. Delhi points are common on Poverty Point period sites in west Tennessee (Smith 1979a:107; Smith 1991:49; Smith and Weinstein 1987:36, 40). Smith (1991) has defined a

Figure 5.13. Selected Lithic Artifacts, Site 40SY525.

Tables 5.4. Metric Attributes of Formal Hafted Bifaces, Site 40SY525.

Table 5.5. Historic Artifacts, Site 40SY525.

Lambert complex for the Poverty Point period in the Loosahatchie River drainage based on its frequency, in addition to Pontchartrain and Lambert PP/Ks and certain baked clay ball forms. A radiocarbon date of 450 ± 95 B.C. was obtained at 40FY13, which is interpreted as a "Lambert complex hunting camp" (Smith 1991:54). Justice (1987:179–184) considers Delhi points part of the Terminal Archaic Barbed Cluster, which also includes Wade points. Delhi points are dated 1,300–200 B.C. at the Poverty Point site (Ford and Webb 1956:117).

A badly damaged PP/K is identified as a Motley point (Figure 5.13c), primarily on the basis of its narrow neck width and expanded base. This point is the only example from the Harris site that possibly exhibits thermal alteration (or else this chert is nonlocal). Motley points are recognized over a broad geographical area and are associated with Poverty Point culture in the Lower Mississippi Valley (Cambron and Hulse 1986:92; Ford and Webb 1956). Smith (1979a:Figure 22) suggests three varieties of Motley points for west Tennessee (vars. A, B, and C). Justice (1987:198–200) considers Motley points in the Motley Cluster and notes their occurrence in Late Archaic and Early Woodland period assemblages. Motley points are associated with fiber tempered ceramics and Little Bear Creek points in the Kirby zone (ca. 1,400–800 B.C.) at the Spring Creek site (Peterson 1973). The Spring Creek site stratigraphy indicates that Motley points occur after the Ledbetter cluster and before the introduction of Adena points and fabric marked ceramics.

Two drills were recovered at the Harris site, both in Unit 3 (Table 5.4). Temporal assignment of these items is tentative. The use of nonlocal chert for the manufacture of the willow leaf–shaped drill (Figure 5.13e) suggests a possible association with the Benton component.

One complete triangular biface was recovered from Unit 5, Level 2 (Figure 5.13k). The metric attributes are as follows: maximum length 62 mm, base width 39 mm, and maximum thickness 15 mm. The raw material consists of local tan chert. This specimen is interpreted as a preform, based on the absence of secondary flaking. The other bifaces found at the Harris site (n=25) are too fragmentary for further consideration, and at least three are distal or medial PP/K sections.

Other retouched pieces recovered at the Harris site (n=58) consist mainly of utilized debitage (n=55). The retouch observed on the utilized debitage is minimal, reflective of expedient use wear rather than intentional preparation. Nearly all of this material is manufactured from the local tan gravel. However, two more formal tools were found among these items. One of these (Figure 5.13a) is a triangular composite tool that is bifacially worked and plano-convex in cross section. One edge is bifacially retouched, and the other sides exhibit unifacial retouch resulting in steep lateral edges. This artifact was recovered from Unit 3, Level 3. The second specimen is a biface medial fragment from Unit 3, Feature 1, that has been reworked for use as a spokeshave (Figure 5.13b). The spokeshave's raw material is a waxy light gray (N7) fine-grained nonlocal chert probably derived from the Ft. Payne limestone formation.

No formal core analysis was conducted. The cores from the Harris site (n=58) are basically amorphous and consist mainly of moderate-sized to small tan cobbles that have been tested and flaked. Varying degrees of cortex remain on these cobble cores. Some cores are more reduced, with little or no cortex remaining; these are fewer in number. Many of the cobble cores show evidence of thermal alteration (fire spalling and reddening). The core technology at the Harris site indicates heavy reliance on the locally available gravels.

The "Other Stone" category (n=15) consists mainly (n=14) of hammerstones or choppers, which are essentially utilized, or battered, tan cobble cores. Choppers probably functioned as vegetable crushers (Morse and Morse 1983:124), and hammerstones were used in stone tool manufacture.

One possible lapidary artifact, a plain drilled stone bead, was recovered from Unit 3, Level 4 (Figure 5.13d). The metric attributes for the stone bead are as follows: interior diameter 11 mm, exterior diameter 26–29 mm, and thickness 6–9 mm. The bead is "wedge" shaped when viewed from the side and "donut" shaped from above or below. The raw material consists of dark yellowish orange (10YR 6/6) and moderate yellowish brown (10YR 5/4) limonite with some dark mineral stains adhering on the exterior.

The lithic artifact assemblage from the Harris site is sufficiently large to allow for artifact pattern analysis, following methods of Sullivan and Rozen (1985). This data is discussed in detail in Chapter VIII. The results indicate that the Harris site lithic pattern is most similar to Sullivan and Rozen's (1985) Type IB2. Type IB2 sites are considered reflective of a pattern of intensive reduction of available cores, resulting in a high percentage of debris, flake fragments, and exhausted cores. We would expect such an assemblage to be generated at a habitation or special purpose location, such as a hunting camp where chert procurement was an important activity.

Other Artifact Classes

Historic artifacts (n=165) were recovered from the Harris site. The densest concentration of historic artifacts is found in a restricted area around Unit 7 (Figure 5.11), and we have proposed that a structure or shed was formerly located there. The composition of the Harris site historic artifact assemblage is presented in Table 5.5. Kitchen group artifacts (n=62) dominate the historic assemblage, followed by Architectural group items (n=56), unidentified metal (n=44), Activities group (n=2), and Arms groups (n=1). Late ceramics, including stonewares and semi-vitreous refined earthenwares, and machine-made bottle glass of various colors form the bulk of the kitchen group artifacts. One snuff bottle fragment, two pieces of thick table glass, and milk glass canning seal lid fragments were found among the kitchen glass as well. The most numerous Architectural group artifacts are wire nails, but two fencing staples, one cut nail, and several unidentified nails were recovered as well. The cut nail possibly dates to the nineteenth century. The relatively high proportion of wire nails to cut nails (25:1) suggests that the historic component dates after 1900 (Orser et al. 1987:549–558). Brick fragments were fairly well represented (n=18) and could have been associated with a footing, a chimney, or a stove subfloor. Window glass, or flat glass, was not well represented, but windows may well have been salvaged from the former structure. The Activities group items consist only of hardware (one hinge and one hook). The Arms group is represented by a single .410 gauge shotgun shell casing. Small bore guns similar to this are still manufactured and are generally considered a child's gun or a "snake charmer." The historic assemblage is consistent with an interpretation that a shed or structure was located between Units 4 and 7 sometime after 1900. The structure was probably destroyed ca. 1960, when the earth-moving is thought to have occurred at the site.

Faunal/Floral category items are a negligible aspect of the Harris site recovery (n=2). One shell, probably from a snail, was recovered from Unit 3, Level 5. Immediately below in Unit 3, the stump hole (Feature 1) contained one unidentified, small, burned seed.

SUMMARY

Test excavations at the Harris site (40SY525) recovered diagnostics suggesting a sequence of prehistoric occupations, beginning during the late Middle Archaic Benton Horizon, continuing through the Late Archaic and Poverty Point periods, and ending sometime during the Early Woodland period. A historic building or shed was constructed on the northwestern part of the site after 1900. This structure is thought to have been destroyed when parts of the site were bulldozed ca. 1960. This earth-moving was probably done in conjunction with leveling for an adjacent trailer lot, which itself is now abandoned. Investigation of the curious earthen mound at the site revealed that this feature is a modern, mechanically created spoil pile and probably is derived from an adjacent linear depression. In terms of artifact density, the richest area of the site lies on the eastern ridge terminus and is partly buried by the spoil pile. Unfortunately, this small area does not appear to have archaeological integrity. No cultural features were identified in this area, and only one feature, interpreted as a stump hole, was located at the site. The Harris site does not appear to contain intact archaeological deposits capable of yielding significant additional data and does not warrant nomination to the NRHP. No further archaeological work is recommended.

VI. RESULTS OF TESTING AT THE HAYES SITE (40SY526)

The Hayes site (40SY526) is a low-density surface/plow zone site that represents a western continuation of the Harris site (40SY525). Only part of the Hayes site lies in the proposed State Route (SR) 385 right-of-way, and testing was limited to this area. This site was identified in a small (11 acre) upland cotton field and is essentially correlated with the T-2a terrace ridge crest. The Harris site is on the eastern spur of the same ridge. The Fulmer site (40SY527) is on a northern spur of the ridge, approximately 125 m to the north (Figures 1.1, 2.1, and 6.1).

Site surveyors (Oliver et al. 1993:48, 51) characterized 40SY526 as "a large, light density, prehistoric open-habitation site. . . . Clay tempered ceramics suggest the occupation dates from the Woodland period. . . . Based on low artifact density, the site is interpreted as a discontinuous series of field camps and/or limited activity loci." The boundaries were considered to be poorly defined, but the maximum site size was estimated as 244 m east-west by 30 m north-south (7,320 m^2). The site has been impacted by the placement and junction of two TVA transmission line corridors and by erosion and moderate gullying in places due to agriculture. Previous work at the site included the excavation of four shovel tests (STP 61–64) and the recovery of a general surface collection. STP 64, the only positive test (one complete flake recovered from a 16 cm thick plow zone), was in the right-of-way along the tree line on the northeastern edge of the site. Seventy-three artifacts were recovered in the general surface collection: five clay tempered sherds, one chipped stone adze, two biface fragments, 15 cores, two cobbles, one retouched piece, 32 pieces of chert debitage, 13 pieces of fire cracked rock, and two pieces of ferruginous sandstone debitage (Oliver et al. 1993:71–72). The sherds were not typed but are characterized as "clay tempered with a gritty paste" (Oliver et al. 1993:51). Surface density was light but concentrated more on the eastern end of the ridge (closer to the Harris site). The Hayes site (40SY526) is part of Tract No. 10 (TDOT n.d.) and is owned by Rachel Ann Hayes, not Arthur Fulmer as previously stated (Oliver et al. 1993:48).

FIELDWORK

Field investigations for Phase II testing at the Hayes site were restricted to the proposed right-of-way. A controlled surface collection was taken, two 1 x 1 m test units were excavated, and one area was mechanically stripped of the plow zone in an effort to locate features (Figure 6.2).

Controlled Surface Collection

Fieldwork at the Hayes site (40SY526) began with the recovery of a controlled surface collection (CSC). The sampling area was restricted by the right-of-way to the extreme eastern end of the site, in an area estimated as 120 m north-south by 12 m east-west (1,440 m^2) (Figure 6.2). This area represents about one-fifth of the total maximum site area (1,440 m^2/7,320 m^2). The sample area was collected through the placement of 61 surface collection units (also called CSC points), each with a 1 m radius (3.14 m^2), providing 191.5 m^2 of coverage.

Some 238 counted artifacts, 2,345.4 g of weighed artifacts (fire cracked chert, fire cracked rock, and ferruginous sandstone), and 3,070.8 g of natural stone were recovered in the CSC (Tables 6.1 and 6.2). This represents the majority of the Phase II Hayes site recovery. The mean number of counted artifacts per collection unit is 3.9, with counts ranging from zero (five cases) to 20. The mean mass of weighed artifacts (excluding natural stone) per collection unit is 50.3 g, with masses ranging from a minimum of zero (12 cases) to a maximum of 299.1 g.

Figure 6.1. General Site Conditions, View to the North, Hayes Site (40SY526).

Figure 6.2. Topographic Map of Site 40SY526.

Table 6.1. Basic Recovery Summary, the Hayes Site (40SY526).

Table 6.1. Page 2 Of 2.

Table 6.2. Artifact Density Data, Controlled Surface Collection, Site 40SY526.

To produce an artifact density plot for the Hayes site, we first converted the polar locational data recorded for each CSC unit using grid coordinates extended from 40SY525 (Table 6.2). Surface artifact densities of counted artifacts and weighed artifacts were then calculated for each of the 61 surface collection units by dividing the recorded totals for each unit by the area covered, or 3.14 m^2 (Table 6.2). Statistical analysis of the artifact density results per unit reveals a mean value of 1.24 artifacts per m^2, with a standard deviation of 1.11. Two high-density outliers (CSC points 1 and 15) are identified (Table 6.2).

Analysis of the artifact density results for weighed artifacts (i.e., fire cracked rock categories) suggests a mean value of 12.24 g/m^2 and a standard deviation of 19.27 (Table 6.2). In the case of weighed artifacts, more than 60 percent of the sample units have density values of less than 10.0 g/m^2, and 95 percent of all sample units contained less than 38.5 g/m^2. Three high-density outliers (CSC points 4, 42, and 60) have densities more than 69.0 g/m^2.

The surface density results per unit (Table 6.2) were used to produce extrapolated artifact density plots (Figures 6.3 and 6.4), on which the site contour map has been overlaid. Note that the program has extrapolated artifact densities both westward across unsampled parts of the Hayes site and northeast down a steep forested slope not considered part of the 40SY526 area. The site surface density by count shows two high-density concentrations correlated with CSC Units 1 and 15 (Figure 6.3). Both of these points were on severely eroded areas, which offered the best surface visibility in the right-of-way. CSC Unit 1 is found on the lowest portion of the sample area at the edge of a field road. Later, during additional work at the Fulmer site, a large, ground, ferruginous sandstone mortar was unearthed here in a muddy tire rut (see below).

CSC Unit 15 is higher on the ridge in a badly eroded patch of soil along the edge of the cotton field. Nearly sterile areas are found along the ridge slope and field road between these two high-density concentrations. Two medium-density secondary concentrations are suggested farther to the north, one northeast of Unit 14 and the other at the extreme northern part of the sampling frame, along the edge of the woods. Oliver et al. (1993) excavated STP 64 in or near this concentration, recovering a flake. Interestingly, the four high- or moderate-density concentrations noted above are located at approximately 36 m intervals from one another. The extrapolated artifact density for the combined fire cracked chert, fire cracked rock, and ferruginous sandstone masses follows that for the counted artifacts presented above (Figure 6.4). Note that there are three high-density areas, correlated with the three statistical outliers (CSC points 4, 42, and 60), and one moderate-density area, the eroded patch near CSC point 15. Between these high and medium concentrations, the Hayes site surface is nearly sterile and the four concentrations are well separated.

Oliver et al. (1993) interpreted this site as a "discontinuous series of field camps and/or limited activity loci." Each of these four surface concentrations appears in both the mass and count density plots, and each may represent an individual limited activity locus or brief-duration camp. Three of the four loci are found along the higher, northern ridge rim, following a pattern observed at the adjoining Harris site. A problem with interpreting each Hayes surface artifact concentration as discrete limited activity areas is that two of the four concentrations are associated with superior visibility (eroded areas). The concentration at the base of the ridge (CSC points 1 and 4) is possibly redeposited through erosion, and the eroded patch concentration (CSC point 15) could result from either erosion and/or prehistoric activity.

Formal Excavations

Formal excavations at the Hayes site consist of two 1 x 1 m test units (Units 13 and 14). In an attempt to locate features, a 20 x 5 m area (strip A) was mechanically stripped to subsoil, but

Figure 6.3. Surface Artifact Density by Count, Site 40SY526.

Figure 6.4. Surface Artifact Density by Mass, Site 40SY526.

no prehistoric cultural features were identified. Excavations revealed that cultural materials are restricted to the surface and a shallow plow zone deposit, as Oliver et al. (1993) indicated. Erosion after years of plowing has reduced the A horizon in this upland field to an average thickness of 15 cm—quite shallow compared to the 25–35 cm of O, A_1, and A_2 horizon sediments found in unplowed portions of the adjacent Harris site (40SY525). Unit 4 at the Harris site did reveal a plow zone/subsoil profile similar to those found at the Hayes site. The excavation results are briefly reviewed below.

<u>Units 13</u>. Unit 13 was placed in a grassy fallow area along the plowed field edge, immediately west of an eroded patch of ground with high surface artifact densities near CSC point 15) (Figure 6.2). The northeast corner of Unit 13 was 22.8 m at 299°48′ from the 40SY525 grid point 50W x 40N. Unit 13 was dug in one 15 cm thick level (Figure 6.5). Like Unit 4, Unit 13 revealed a thin O horizon; neither of these locations is actively cultivated. The recovery was good, with 90 counted artifacts and 347.6 g of weighed items, including natural stone (Table 6.1). The plow zone artifact density is 600 artifacts/m^3 (90 artifacts/0.15 m^3), which is nearly four times the artifact density for the nearby Unit 4 (151.7 artifacts/m^3) and nine times the density of Unit 14 to the north (see below). Among counted artifacts, debitage (n=58) and small prehistoric sherds (n=28; 17.1 g) were the most abundant classes, but three utilized flakes and one battered cobble were also recovered. Fire cracked chert, ferruginous sandstone, and natural stone were recovered in roughly equivalent frequencies.

<u>Unit 14</u>. Unit 14 was approximately 25 m north of Unit 13, near the heaviest combined fire cracked chert, fire cracked rock, and ferruginous sandstone concentration at the site (CSC point 42) (Figure 6.3). The northeast corner of Unit 14 was 47.4 m at 318°46′ from the 40SY525 grid point 50W x 40N. Again, the plow zone was 15 cm thick, but because this location was in the field no O horizon was present (Figure 6.5). East-west plow scars were noted at the base of excavations. Recovery was low (n=10) and included only lithics: nine pieces of debitage and one retouched piece (Table 6.1). The mass total is also low (78.7 g including natural stone). The counted artifact density for the Unit 14 plow zone sample is 66.7 artifacts/m^3 (10 artifacts/0.15 m^3), which is substantially lower than Unit 13.

<u>Strip A</u>. Strip A, which measured 100 m^2 in area, was placed in the actively cultivated area between Units 13 and 14 (Figure 6.2). Surface artifact densities suggested the northern end of the strip had higher artifact frequencies (Figures 6.3 and 6.4). Subsurface artifact density results from Units 13 and 14 suggested the opposite, with the highest subsurface densities found in Unit 13 near the southern end of the strip. Stripping revealed five soil anomalies, none of which is prehistoric in origin. Three soil anomalies showed branched root casts extending in several directions up to 35 cm deep into the subsoil; these casts are considered the products of bioturbation. One soil anomaly consisted of a shallow and narrow gravel-filled scar and is interpreted as a gravel-filled tire rut. The fifth is a small area of rotten and crushed milled wood that appeared to be the remains of two or three old survey stakes, plowed under and buried. Strip A is under the TVA power line and the tire rut, and buried survey stakes probably relate to the construction of the concrete and steel power line tower immediately to the southwest.

ARTIFACT ASSEMBLAGE

The Phase II Hayes site assemblage contains 340 counted artifacts and 5,843 g of weighed items (Table 6.1). Among the categories of weighed items, natural stone is dominant (54.7 percent; 3,196 g). Fire cracked chert is about twice as frequent (19.8 percent; 1,159 g) as other types of fire cracked rock (11.6 percent; 676 g). Ferruginous sandstone is equally well represented (13.9 percent; 812 g). No charcoal was recovered. This pattern compares very favorably to that

Figure 6.5. West Profile Drawings, Units 13 and 14, Site 40SY526.

observed in the Harris site (40SY525) weighed artifact frequencies (see above). Counted artifacts at the Hayes site consist mainly of prehistoric lithics (90.6 percent; n=308). Prehistoric ceramics represent a proportionally more substantial fraction of the Hayes assemblage (9.1 percent; n=31) than of the Harris site assemblage. Only a single historic artifact is contained in the assemblage.

Prehistoric Ceramic Analysis

Most of the ceramics from the Hayes site were recovered from Unit 13 (n=28), but sherds were also found at CSC point 30 (n=2) and CSC point 16 (n=1) (Table 6.1). Oliver et al. (1993:51) previously reported five clay tempered sherds "with a gritty paste" in their general collection from the site. All the ceramics from the Hayes site are small, presumably due to breakage relating to repeated cultivation, and are highly eroded.

Seven body sherds larger than 1/2 inch were recovered during the Phase I and II investigations at the Hayes site (Table 6.3). For a small assemblage, the ceramics show a surprising amount of diversity. One Type I (see Chapter IV) plain sherd was recovered in Unit 13. Following Mainfort and Chapman (1994), it could be classified with the Forked Deer series, type Baytown Plain *var. Forked Deer*. Five of the seven sherds from the Hayes site were classified with Type II paste and fit with Mainfort and Chapman's (1994) Madison series (a sandy textured variant of the Forked Deer series). All of these Madison series sherds are plain (Baytown Plain *var. Madison*), except one that is cordmarked (Mulberry Creek Cord Marked *var. Westover*). One plain sand tempered sherd with a few clay and mica inclusions, a unique specimen, is classified in the sand and clay tempered Tishomingo series (our Type III paste) as Baytown Plain *var. Tishomingo*. However, it is almost purely sand tempered (Baldwin series). In an interesting contrast to the Harris site (40SY525) and Fulmer site (40SY527) assemblages, no fabric impressed sherds were identified at the Hayes site.

Table 6.3. Ceramics by Provenience and Type, Site 40SY526.

	Type I	*Type II*		*Type III*	
Provenience	*Plain*	*Plain*	*Cordmarked*	*Plain*	***TOTAL***
Surface (Phase I)	0	3	1	0	**4**
CSC Point 30	0	0	0	1	**1**
Unit 13, Level 1	1	1	0	0	**2**
TOTAL	**1**	**4**	**1**	**1**	**7**

The small ceramic assemblage from the Hayes site suggests a possible Early to Middle Woodland affiliation. As mentioned above, Smith (1979a) suggests that mixed tempered wares (Thomas ware; our paste types II and III) are "transitional" between pure clay and pure sand tempered wares and should date to the period A.D. 1–150. Mainfort and Chapman (1994) do not consider the Madison series paste, or paste in general, a reliable chronological indicator and credit "neither cultural or temporal distinctions" between the chalky (Forked Deer series) and gritty (Madison) clay tempered pastes. Mainfort does note that by ca. A.D. 100 at Pinson Mounds the ceramic assemblage is predominantly sand tempered, suggesting that the Baldwin series postdates the Forked Deer and Madison. The Tishomingo series paste is not considered a viable chronological indicator, although it intergrades with the Baldwin series at one end of the sand/clay mixed paste continuum. The use of cordmarking as the only decorative treatment at the Hayes site is probably a more reliable chronological indicator, as fabric marked ceramics were largely replaced by cordmarked ceramics by A.D. 1–100 (Mainfort 1986a:59).

Lithic Analysis

Hafted bifaces are not well represented in the Hayes site assemblage. Only one PP/K, an untypeable distal element, was recovered from the site during the Phase II investigations (CSC point 37) (Table 6.1). This location is a low-density area between Units 13 and 14 (Figures 6.3 and 6.4). No hafted bifaces were recovered during the Phase I assemblage. Locally available tan to red Citronella chert was used in the manufacture of the PP/K fragment, as well as all the bifaces and biface fragments from the site.

One complete biface (CSC point 55) and two biface fragments were recovered during Phase II investigations (CSC points 41 and 42) (Table 6.1). These bifaces are spatially associated with the two northern surface concentrations. The complete specimen (Figure 6.6c) was originally a relatively flat tan cobble that was bifacially thinned, leaving cortex on approximately 30 percent of the surface, mostly on one side. The resulting teardrop-shaped tool has these metric attributes: maximum length 68 mm, maximum width 48 mm, and maximum thickness 25 mm. The lateral edges exhibit some use retouch, suggesting its use as a knife/ scraper.

One chipped stone adze and two biface fragments were recovered during the Phase I general surface collection. The chipped stone adze (Figure 6.6a) consists of a split fossiliferous stream cobble with a bifacially worked bit. The distal end exhibits heavy battering and step fractures suggesting its use as a wedge. Cortex remains over approximately 30–40 percent of the tool's surface (again on one side) and the metric attributes are: maximum length 84 mm; maximum width 63 mm; maximum thickness 27 mm.

Bifaces may be relatively infrequent, but other cores and core fragments are relatively abundant in the Hayes site assemblage. As suggested above, this is largely the result of postdepositional factors such as erosion and possibly relic collecting, as well as differences in visibility of the larger artifacts. Thirty-six cores were recovered in controlled surface collection; none was recovered from excavated contexts (Table 6.1). The core assemblage is very similar to that found at the Harris site, which we characterized as basically amorphous cores on medium-sized to small tan cobbles. Varying degrees of cortex remain on these cobble cores. There is evidence of thermal alteration on some specimens (fire spalling and reddening). The core technology at the Hayes site, like that of the adjoining Harris site, indicates heavy reliance on the locally available gravels.

The retouched pieces recovered at the Hayes site consist entirely of utilized debitage, manufactured from local gravel. Twenty-six retouched pieces were recovered, including 22 from the controlled surface collection, three from Unit 13, and one from Unit 14 (Table 6.1). Like the cores category, the proportion of retouched pieces in the Hayes site assemblage is considerably higher than in the adjacent Harris site assemblage, although in terms of absolute frequencies, the Harris site yielded more cores and retouched pieces. Functional differences between the Hayes and Harris sites may be reflected in these proportions, but the comparisons are blurred by postdepositional factors, different recovery strategies, and the restricted area investigated at the Hayes site.

The Other Stone items category (n=7) consists mainly (n=5) of utilized or battered cobbles, which functioned as vegetable crushers or hammerstones. Four battered cobbles were recovered in controlled surface collection, and one was recovered in Unit 13 (Table 6.1). Two ground stone artifacts were also recovered. A large fragment of a ferruginous sandstone mortar was found in a muddy tire rut west of 10.0S x 50.0W (40SY525 grid) (Figure 6.2). The metric attributes for the mortar are: weight=2.6 kg; maximum length=24 cm; maximum width=14 cm (half?); maximum thickness=7.5 cm; upper diameter of ground basin=11 cm; and depth of basin=4 cm (Figure 6.7). The opposite side (not illustrated) is plow-scarred but appears to have been ground or pecked with a second basin; in cross section, the basin base

Figure 6.6. Selected Lithic Artifacts, Site 40SY526.

Figure 6.7. Ferruginous Sandstone Mortar, Site 40SY526.

are ground to within 1.7 cm of one another. The second ground stone artifact is a double pitted cobble recovered from backfilled Strip A (Figure 6.6b). The "nutting stone" is manufactured on a flat-sided cobble (85 mm x 63 mm x 32 mm) of dense grainy quartzitic chert, which appears local. The pits measure 19 and 20 mm in diameter and are 1–2 mm deep.

The general proportions of lithic artifacts from the Hayes site were compared to patterns for site types suggested by Sullivan and Rozen (1985). This analysis is discussed in detail in Chapter VIII. The results suggest that there are more differences than similarities when comparing the Hayes lithic assemblage with those proposed by Sullivan and Rozen. As shown below, the Hayes site lithic assemblage is most similar to Group II site assemblages, associated with late stages of tool manufacture. The principal deviation between the Hayes site lithic assemblage is that flake fragments are underrepresented in the Hayes assemblage, and cores are overrepresented. Again, this pattern is probably a reflection of postdepositional erosion and collection methods, which resulted in the recovery of larger artifacts from the site surface.

Other Artifact Classes

One historical artifact, a metal bracket, was recovered from CSC point 5, located along the road on a sloping part of the ridge (Figure 6.2). This artifact is considered twentieth century scatter and does not suggest a historic component is present at the Hayes site.

SUMMARY

Investigation of the Hayes site was restricted to the SR 385 right-of-way, which covers approximately 20 percent of the total site area. Archaeological testing at the Hayes site was the least intensive of the three sites under investigation. Work included the excavation of two 1 x 1 m test units, the recovery of a controlled surface collection from a 1,440 m² sample area, and mechanized plow zone stripping (100 m²).

Excavation results demonstrate that the upland cotton field containing the Hayes site has been substantially eroded, leaving a thin (15 cm) plow zone deposit containing a relatively low density of prehistoric ceramics and lithics. The construction of TVA transmission towers has further degraded parts of the site. No prehistoric cultural features were identified in the excavation units or in the mechanically stripped area. The recovery of a few eroded ceramics suggests the site was occupied during the Early and/or Middle Woodland periods. No Archaic period diagnostics were recovered.

The Hayes site is best considered the western periphery of the adjoining Harris site (40SY525). Artifact density at the Hayes site is lower than that observed at the Harris site. However, the Phase II investigations suggest the presence of a continuous low-density scatter between the two "sites" that was obscured by vegetation.

Artifact density plots based on the results of the controlled surface collection revealed four concentrations in the right-of-way portion of the Hayes site. Three of the observed concentrations follow the higher northern rim margin and are located at regular intervals from one another. These concentrations appear to mirror patterns observed at the Harris site and possibly represent "limited activity loci" or "a discontinuous series of field camps" as proposed by the site surveyors (Oliver et al. 1993).

Archaeological investigations on threatened portions of the Harris site (40SY526) have shown that no significant deposits exist in the project corridor. The relatively light artifact density, low potential for diagnostic artifacts, and the apparent lack of subsurface features suggest the research potential at the site is low. However, portions of the site exist outside of the project corridor in areas that were not investigated. Because of the possibility that significant, intact archaeological deposits exist on unthreatened portions of the site, the site should be considered potentially significant and potentially eligible for listing in the National Register of Historic Places under Criterion D. If earth-moving associated with road construction is restricted to the project corridor, the project will have no adverse effect on any potentially significant archaeological deposits that may be outside of the project corridor. Therefore, no further work is recommended.

VII. RESULTS OF TESTING AND DATA RECOVERY AT THE FULMER SITE (40SY527)

The Fulmer site (40SY527) was first recorded on October 10, 1993, at the northern end of a finger ridge on the northern side of the same northwest-southeast trending ridge top on which sites 40SY526 and 40SY525 are also located (Oliver et al. 1993) (Figures 1.1 and 2.1). Elevation is approximately 303.5 feet (92.5 m) above mean sea level (AMSL). The site is ca. 75 m (250 feet) south of an unnamed tributary of the Loosahatchie River, which would have been seasonally flooded before channnelization. An old logging road is present along the south side of the site. The site is ca. 100 m (328 feet) southwest of the intersection of Long Road and Osborntown Road on property owned by Arthur Fulmer Sr. and others, between Tennessee Department of Transportation (TDOT) Stations 130+00 and 132+00 in the proposed State Route (SR) 385 right-of-way corridor.

FIELDWORK

Phase I Excavations

During the initial Phase I investigations (Oliver et al. 1993), the site was in light, secondary growth forest that allowed zero percent surface visibility. The Phase I investigations at the site consisted of 15 shovel tests excavated at approximately 10 m intervals to a maximum depth ranging between 28 and 35 cm below surface (cmbs) (Figure 7.1). A surveyor's station stake (Station 131+43.04) is approximately 35 m (115 feet) north-northwest (N 355^{o} W azimuth) of STP 175. A general surface collection was also conducted, but no artifacts were noted.

Based on 10 positive shovel tests (Figure 7.1), the maximum site size was calculated at 45 m (148 feet) east-west by 70 m (230 feet) north-south, or 3,150 m^2 (0.315 ha). It was suggested that the site boundaries corresponded to the steep to moderate slopes along the north, east, and west sides of the ridge. The southern boundary was not well defined, and it was suggested that the site extended along the ridge crest to connect with the Hayes site (40SY526).

Twenty-three prehistoric artifacts were recovered during the Phase I investigations. Artifacts include two clay tempered sherds with gritty paste and one projectile point/knife (P/PK), characterized by a broad blade, rounded corners, contracting stem, and a flat cross section (Gary cluster; see further discussion below). The other artifacts included flake fragments, flake debris, fire cracked rock, and ferruginous sandstone. In general, artifact density was light, although counts were relatively high in STP 187. The limited subsurface testing suggested prehistoric materials were limited to the upper 20 cm. No cultural features were encountered.

Based on low artifact density, the site was tentatively interpreted as the location of a series of temporary field camps and/or limited activity loci. In spite of the low artifact density and past site disturbances (including historical deforestation and associated erosion), the site appeared to be in fair to good condition. This determination was based on the relatively large size of some of the ceramic sherds. The possibility of archaeological features was also recognized. Given this possibility, it was recommended that the site be considered potentially eligible for nomination to the National Register of Historic Places. Phase II testing to determine its eligibility was recommended (Oliver et al. 1993).

Figure 7.1. Phase I and II Shovel Test Locations, Fulmer Site (40SY527).

Figure 7.2. Phase II and III Unit Locations, Site 40SY527.

Phase II Excavations

The initial Phase II field investigations at the Fulmer site (40SY527) were conducted in conjunction with the Phase II investigations at the Harris (40SY525) and Hayes (40SY526) sites between December 21, 1993, and January 10, 1994 (Buchner 1994). In preparation for the excavations, a site grid was established that utilized TDOT center line station 132+50 as the point of origin (0W x 0N). The 40SY527 grid is oriented perpendicular to the line formed between TDOT center line stations 132+00 and 133+00. This results in the 40SY527 grid north being aligned 35° east of magnetic north. Elevations were recorded in meters AMSL using TDOT stake elevations recorded on strip maps.

Phase II fieldwork began with the excavation of 31 shovel tests on a 10 x 10 m grid (Figure 7.1) (Buchner 1994:Figure 5). Twenty-eight artifacts were recovered in nine positive tests (Appendix A, Table A.1). Prehistoric ceramics were the most numerous class of recovered artifacts (n=10). An extrapolated artifact density plot based on the shovel test data suggested that the highest artifact density was near shovel test 38, at the northern end of the 92.5 m AMSL contour line. Frequencies dropped dramatically to the north and west, where the terrain drops into the adjacent bottomland. Artifact frequency diminished gradually along the ridge crest south of shovel test 38, as well as on the sloping eastern flank of the ridge (Buchner 1994:Figure 6).

Based on the shovel test data, five 2 x 2 m test units were excavated in areas of relatively high artifact density (Figures 7.2 and 7.3). Three units (Units 8, 9, and 10) were placed on the highest part of the ridge crest. Unit 11 was excavated on slightly lower terrain on the south end of the site, and Unit 12 was situated on the slope to the east (Buchner 1994).

A large burned area, designated Feature 2, was uncovered in the northeast corner of Unit 10. In addition, an area of seemingly intact archaeological deposits was tentatively identified below the humus in Unit 11. The lower part of this stratum contained very high frequencies of prehistoric ceramics (n=112), suggesting a remnant midden. This deposit contained a large, reconstructable, fabric impressed vessel fragment with a double folded rim (Buchner 1994). All sherds from the Fulmer site appeared to have the same paste type—a mixture of grog, sand, and other rock particles. These preliminary results suggested that the Fulmer site (40SY527) contains significant archaeological deposits dating to the Early and/or Middle Woodland period.

A continuation of the Phase II testing was recommended at site 40SY527 in order to more accurately define the extent of the potentially intact cultural deposits found in Unit 11 and to further expose the hearth (Feature 2) in Unit 10 (Buchner 1994:6). It was reasoned that additional excavations would generate better information regarding the extent and nature of archaeological deposits at the site, which could then be used to formulate an archaeological data recovery plan, if necessary.

Consequently, extended Phase II field investigations were conducted from February 17 to 24, 1994 (Buchner and Weaver 1994). The placement of additional units was guided, in large part, by the results of artifact density plots prepared from data incorporating the preliminary analysis of Units 8–12 and the shovel test data. Four additional 2 x 2 m units (Units 15, 16, 17, and 18), one 1 x 2 m unit (Unit 20), and two 1 x 1 m units (Units 19 and 21) were excavated during the extended testing phase (Figure 7.3).

The extended Phase II investigations resulted in the exposure of an additional 20 m^2, increasing the total excavated area of the site to 40 m^2. Backfill from Unit 10 was removed to expose the unexcavated portions of Feature 2. Units 15, 17, and 21 were dug next to Unit 10 to allow for the full exposure of Feature 2 (Figure 7.3). Units 16 and 18 were excavated near the southeast corner of Unit 11, where several conjoining sherds from a fabric impressed folded rim vessel

Figure 7.3. Plan of Phase II and III Unit Locations, Site 40SY527.

were recovered. Unit 20 was excavated east of Unit 18 to further define a cluster of small, shallow features. Unit 19 was placed on the southern site margin, approximately 10 m south of the Units 18 and 20, and is near the proposed fence location on the south side of the SR 385 right-of-way. Units 15–20 were excavated in two 10 cm levels, and Unit 21 was excavated in four 5 cm levels.

In addition to Feature 2, five new subsurface features (Features 3–7) were recorded. Soil samples for fine mesh water screening were removed from 10 proveniences: six from feature context and four from Levels 1–4 in the south half of Unit 21 (see below). Water-screened 1/16 inch fractions from these features contain wood charcoal, burned nut hulls, and charred seeds, suggesting good archaeobotanical preservation.

As before, all of the ceramic sherds from the Phase II extended testing at 40SY527 appeared to have a similar paste characterized by a mixture of clay particles, sand, and rock particles. Surface treatments included fabric impressed and plain/eroded ceramics. Rim sherds suggested a number of vessel forms, including straight-sided beakers and flared-mouth jars. An unusual flared-rim bowl was also present. Local Pliocene gravel debitage was the second most frequent artifact class at the site. Chipped stone tools include small bifaces, utilized debitage, and small Pliocene cobble cores. A ground stone gorget fragment was also found in Unit 18 above Features 4 and 5. Moderate quantities of fire cracked rock, fire cracked chert, ferruginous sandstone, and natural stone were recovered as well (Appendix A, Table A.1). Based on the results of the extended testing, site size was conservatively estimated at approximately 40 m north-south by 10–25 m east-west, although the site core area appeared to be smaller, covering approximately 450 m^2.

Given the apparent integrity of cultural materials and the research potential at site 40SY527, it was recommended that the site be considered eligible for nomination to the National Register of Historic Places under Criterion D. It was also recommended that Phase III data recovery investigations be conducted in those areas of the site to be adversely affected by the proposed road construction (Buchner and Weaver 1994).

Phase III Excavations

Subsequent to the above recommendations, a proposal for Phase III data recovery was prepared by Garrow & Associates (1994) for Parsons De Leuw and TDOT. The proposed research design and methods for the Phase III data recovery were thought to be adequate in scope to address questions concerning ceramic and lithic technology, intrasite patterning of artifacts and features, and site function (see Chapter IV). An extensive program of flotation was also proposed for the recovery of archaeobotanical remains.

Because archaeological deposits were shallow and spatially restricted, it was proposed that a large percentage of the site be excavated (50–60 more 2 x 2 m units). These excavation units were to be placed in the site core, roughly corresponding to the area inside the 92.0 m elevation contour. Mechanically stripping the site in the hopes of uncovering subsurface features was not recommended due to the dense forest cover and shallowness of the cultural deposits.

Phase III archaeological fieldwork began April 25 and ended June 3, 1994. Arriving on the first day of fieldwork, the crew was surprised to find that the landowner had contracted with a logging company to remove all mature trees in the right-of-way. Although damage to the site from heavy machinery was not extensive, the crew had to spend more time than expected clearing the site for excavation. Brush and fallen trees were cleared away from the crest of the knoll and moved to the side slopes. This modern-day “toss zone” did influence the location of units along the margin of the site.

Figure 7.4. Phase III Excavations in Progress, View to the South, Site 40SY527.

Fifty-two 2 x 2 m units (22–73) were excavated in a checkerboard fashion across the main part of the site (Figures 7.3 and 7.4). Six additional 2 x 2 m units (74–78 and 82) and three 1 x 2 m units (79, 80, and 81) were excavated between previously excavated units with high artifact densities or suspected features. These units, when combined with the 12 units previously excavated during testing, amount to 278 m^2, encompassing approximately 62 percent of the total site core area.

The results of the investigations are presented below. A detailed table of the artifact distributions recovered from 1/4 inch screen is presented by unit and level in Appendix A, Table A.1; this information also is summarized in Table 7.1. Artifact recovery from special samples (1/16 inch and flotation) is presented in Table 7.2.

RESULTS OF THE FIELD INVESTIGATIONS

Site Stratigraphy

The Fulmer site, like the Harris site (40SY525), does not appear to have been plowed, although it probably was logged several times and may have been used as pasture. The cultural deposits at the Fulmer site were very shallow and, for the most part, were restricted to the upper 20 cmbs. The surface of the site was covered by a thin, 3–5 cm thick layer of organic forest litter and duff (O horizon, designated Stratum I). Below this organic layer, the site stratigraphy is

Table 7.1. Quarter-Inch Recovery Summary, the Fulmer Site (40SY527).

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Table 7.1. 40SY527 (Fulmer Site) 1/4 Inch Recovery Summary. Page 2 Of 3.

Table 7.1. 40SY527 (Fulmer Site) 1/4 Inch Recovery Summary. Page 3 Of 3.

Table 7.2. Basic Recovery Summary of Special Samples, Site 40SY527.

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Table 7.2. Basic Recovery Summary Of Special Samples, Site 40SY527.

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characterized by a loosely consolidated silt loam (Stratum II) ranging in color from brown (10YR 4/3) to dark yellowish brown (10YR 4/4). In the northeast corner of the site (northeast of a line between Units 27 and 56) (Figures 7.2 and 7.3), Stratum II was generally a lighter yellowish brown (10YR 5/4–6). This deposit ranged between 5 and 20 cm in thickness and was generally thicker in the southeast portion of the excavated area (east and south of a line between Units 76 and 16) (Figures 7.2 and 7.3). Beneath Stratum II, a sterile subsoil (B horizon) consisted of a strong brown (7.5YR 4/6) to yellowish brown (10YR 5/6–8) silty clay loam.

Two areas of the site revealed slightly different soil profiles. In the southeastern excavations (Units 79, 61, 62, 65, 11, 16, 18, and 20), Stratum II is thicker and weakly stratified (Figures 7.2 and 7.3). The upper part of this stratum consists of a friable brown (10YR 4/3) to very dark brown (10YR 3/2) silt loam; the lower part consists of the usual dark yellowish brown (10YR 4/4) to yellowish brown (10YR 5/4) silt loam (Figure 7.5). The transition between zones in this stratum is gradual. The second area of the site with slight stratification in Stratum II surrounds the northwestern excavations, i.e., in the vicinity of Units 30, 33, 36, 80, and 81 (Figures 7.2 and 7.3). There, the upper part of the stratum was a brown (10YR 4/3–5/3) silty loam over a lighter-colored dark yellowish brown to yellowish brown (10YR 5/6) silty clay loam.

In these two areas of the site, the upper, darker zone suggests a concentration of midden-like sediments. A brief examination of the artifact distributions in Tables 7.1 and 7.2 will show that these areas were also relatively high in the amounts of cultural materials recovered. Although no extensive middens were delineated, there is ample evidence, presented below, to suggest good contextual integrity of artifacts in these and other areas of the site.

Features

As stated previously, six soil anomalies, designated Features 2, 3, 4, 5, 6, and 7, were identified during the Phase II investigations at site 40SY527. Sixteen additional "features" (7–23) were defined during the Phase III investigations. Each is described below (Table 7.3; Figure 7.6).

Overall, the recovery and interpretation of structural remains at 40SY527 are disappointing. Many of the "features" defined during the excavations obviously represent postdepositional occurrences. Burned tree roots, including Features 3, 8, 9, 10, 12, 13 North, 18, 19, and 20, suggest forest fires or intentional burning at the site after the primary period of occupation. Other features, such as 4/6, 5, 7/23, 14, 15, 17, and 21, appear to be tree root casts or other krotovina containing an occasional artifact.

Figure 7.5. West Profile, Unit 61, Site 40SY527.

Table 7.3. Feature Summary, Site 40SY527.

Figure 7.6. Feature Distribution, Site 40SY527.

However, a few features at the site may represent disturbed structural remnants and/or midden-filled depressions dating from the Tchula period. Feature 2, for instance, is thought to represent a central hearth area. This interpretation is based on the presence of a large area of fire-reddened subsoil and on the distribution of artifacts around the feature (see below). Features 16/22 and 13 South and possibly Feature 11 may represent the remnants of small pit features. The absence of large storage pits, burials, or post mold patterns is conspicuous, especially because several subsurface soil anomalies were defined and because the excavated sample of the site is large. The absence of these types of features is interpreted as a reflection of the temporary nature of the prehistoric occupation and not the result of postdepositional factors, excavation error, or sample size.

Feature 2. The first feature identified, Feature 2, is an area of intensive thermal alteration of subsurface deposits, identified at the base of the E horizon (Level 2) in Units 10, 15, and 17. Feature 2 is an elongated oval in shape with an indistinct boundary and measures approximately 160 x 100 cm. The burned area consists of a yellowish red (5YR 4/6) silty clay that extends a maximum depth of 17 cm into the surrounding strong brown (7.5YR 4/6) silty clay subsoil (Figure 7.7).

A 5 gallon sample of the feature fill from Unit 10 was water-screened through 1/16 inch wire mesh, and the remaining fill was screened in the field through 1/4 inch mesh. Except for fired clay, a few small charcoal flecks, and a few pieces of lithic debris, both samples were found to be sterile (Tables 7.2 and A.1). The four sherds listed from Feature 2 are now thought to derive from root casts in the feature fill at the Level 2 contact, rather than from the Feature 2 fill. Carbonized plant remains recovered from the 1/16 inch water-screened sample of Feature 2 include small amounts of hickory nutshell, as well as maple, ash, and hickory charcoal (Appendix B, Table B.1.). Three whole, partially carbonized tulip poplar fruits were also recovered.

Feature 2 is interpreted as the location of a large surface burn, probably a central hearth area. As shown below, lithic and ceramic artifact concentrations appear to be clustered around Feature 2. The lack of artifacts and of any charcoal concentration from the feature fill suggests the upper portion of the features was cleaned out by site occupants or was eroded away before the deposition of the overlying cultural deposits.

Feature 3. This feature was defined in Unit 16 at the base of Level 2. At definition, it appeared as an amorphous area consisting of dark brown (10YR 3/3) silty clay fill outlined with a ring of charcoal. Upon excavation, the feature was found to be oval and tapered to a point. It measured approximately 14 x 30 cm at definition and was excavated to a depth of 40 cm into the dark yellowish brown (10YR 4/6) silty clay subsoil. It was apparent during excavation that the "feature" represented a recently burned tree root. Feature fill was water-screened through 1/16 inch mesh, and a large amount (70.0 grams) of charcoal and a small amount of lithic debitage were recovered (Table 7.2). However, because Feature 3 obviously represented a modern tree root, the charcoal was not submitted for archaeobotanical analysis.

Feature 4/6. Although Features 4 and 6 were defined and excavated separately, they probably represent the same soil anomaly. Feature 4/6 is interpreted as a possible midden-filled depression or partially burned root cast associated with a fire during the historic period.

Feature 4 was defined in the east profile of Unit 18 at the base of Level 2. At definition, it appeared as an amorphous area of soft, loosely consolidated dark brown (10YR 3/2) silty clay with common charcoal surrounded by a more compact area of brown to dark brown (10YR 4/3) silty clay. The feature extended into the matrix of dark yellowish brown (10YR 4/6) silty clay subsoil. At definition, it measured 70 x 85 cm and was excavated to a depth of 12 cm below definition. The excavated profile shows sloping sides and a rounded bottom. Feature fill was

Figure 7.7. Plan View of Feature 2 and West Profile of Unit 17, Site 40SY527.

dry-screened in the field through 1/4 inch wire mesh and water-screened through 1/16 inch wire mesh in the laboratory. Artifacts recovered include ceramics, lithic debris, and charcoal (Tables A.1 and 7.2). A charcoal sample was handpicked from the water-screened fraction and submitted for radiocarbon dating. The sample (Beta-71453) returned a date of 170 ± 80 B.P. (A.D. 1780). The report of the radiocarbon dating results is included in this volume as Appendix C.

Feature 6 was defined in the west profile of Unit 20 at the base of Level 2 and is separated from Feature 4 by a balk. Like Features 4 and 5, this feature first appeared as an amorphous area of soft, loosely consolidated dark brown (10YR 3/2) silty clay with common charcoal surrounded by a more compact area of dark grayish brown (10YR 4/2) silty clay. The feature extended into the matrix of dark yellowish brown (10YR 4/6) silty clay subsoil. It measured 70 x 30 cm and was excavated to a depth of 9 cm below definition. The excavated profile is basin-shaped, with a tree root stain through center of the feature. Some feature fill was dry-screened in the field through 1/4 inch wire mesh, but most of the fill was water-screened through 1/16 inch wire mesh in the laboratory. Artifacts recovered include ceramic sherds, lithic debitage, unaltered natural stone, and charcoal (Tables A.1 and 7.2).

Feature 5. This feature was defined just south of Feature 4 in Unit 18 at the base of Level 2. Like Features 4 and 6, it appeared as an amorphous area of soft, loosely consolidated dark brown (10YR 3/2) silty clay with common charcoal surrounded by a more compact area of brown to dark brown (10YR 4/3) silty clay. The feature extended into the matrix of dark yellowish brown (10YR 4/6) silty clay subsoil and into the south profile of the unit. The exposed section measured approximately 30 x 25 cm and was excavated to a depth of 7 cm below definition. The resulting profile indicates a shallow basin shape. Portions of the feature fill were dry-screened through 1/4 inch wire mesh in the field and water-screened through 1/16 inch wire mesh in the laboratory. Prehistoric ceramics, lithic debris, charcoal, ferruginous sandstone, and unaltered natural stone were recovered (Tables A.1 and 7.2). A charcoal sample was handpicked from the water-screened fraction and submitted for radiocarbon dating. The sample (Beta-71454) returned a date of 890 ± 70 B.P. (A.D. 1060) (Appendix C). The interpretation of Feature 5 is uncertain, although it appears to represent a disturbed midden-filled depression.

Feature 7/23. Features 7 and 23 are separated by a balk between Units 20 and 77 and probably represent the same soil anomaly. The feature is interpreted as a midden-filled root mold or possible root-disturbed pit.

Feature 7 was defined at the base of Level 2 in Unit 20 along the east profile of the unit. At definition, it appeared as an elongated area of dark brown (10YR 3/2) silty clay with common charcoal in a matrix of dark yellowish brown (10YR 4/6) silty clay subsoil. It measured 160 x 35 cm and was excavated to a maximum depth of 9 cm below definition. In profile, the feature appears as a thin lens of organic material between the humus level and the underlying subsoil. Feature 7 fill was dry-screened through 1/4 inch wire mesh in the field and water-screened through 1/16 inch wire mesh in the laboratory. Prehistoric ceramics, lithic debris, charcoal, and unaltered natural stone were recovered. Two large fabric impressed sherds were piece-plotted (Tables A.1, 7.1, and 7.2).

Feature 23 was defined in the southwest corner of Unit 77 at the base of Level 1. At definition, it appeared as an amorphous area of soft, moist, dark brown (10YR 3/2) silty clay with common charcoal surrounded by a matrix of dark yellowish brown (10YR 4/6) silty clay. The subsoil consists of a strong brown (7.5YR 4/6) silty clay. The exposed portion of the feature measured 60 x 35 cm and was excavated to a maximum depth of 26 cm below definition. The feature is disturbed by a tree root that runs east-west across the unit. Feature fill was dry-screened in the field through 1/4 inch wire mesh. Artifacts from Feature 23 include prehistoric ceramics and lithic debitage (Table 7.1).

Feature 8. This feature was defined in the southwest corner of Unit 36 at the base of Level 1. At definition, it appeared as an amorphous burned stain with concentrations of charcoal. The fill consisted of a dark brown (10YR 3/3) organic clay with patches of reddish brown (5YR 3/3) burned soil. It measured 50 x 60 cm and was excavated to a depth of 18 cm below definition. Feature fill was dry-screened in the field through 1/4 inch wire mesh. Artifacts include one ceramic sherd and one flake fragment (Table A.1). The feature is interpreted as a recently burned tree stump.

Feature 9. This feature was defined in the southwest quadrant of Unit 44 at the base of Level 2. At definition, it appeared as an oval area of yellowish brown (10YR 5/4) silt loam fill in a matrix of dark yellowish brown (10YR 4/6) silty clay subsoil. It measured 90 x 40 cm and was excavated to a maximum depth of 16 cm below definition. The resulting profile shows sloping feature walls and a rounded bottom. A small, rotten tree stump was present in the northern portion of the feature. Fill from Feature 9 was divided into north and south halves before being dry-screened in the field through 1/4 inch wire mesh. One prehistoric ceramic sherd, one flake fragment, burned clay, and a small amount of fire cracked rock were recovered (Table 7.1). The feature is interpreted as a tree root.

Feature 10. This feature was defined in the northeast corner of Unit 43 at the base of Level 2. At definition, it appeared as an poorly defined, linear, burned area consisting of a dark brown (10YR 3/3) silty clay fill with flecks of charcoal and burned earth and scattered concentrations of black (10YR 2/1) organic soil. It measured 120 x 50 cm but extended into the north and northeastern profiles. The feature was excavated to a maximum depth of 50 cm below definition. The north wall profile indicates a shallow lens of feature fill with an irregular bottom. Above the feature, a zone was defined, consisting of a laminated dark yellowish brown (10YR 4/4) silty clay and very dark grayish brown (10YR 3/2) organic silts. This zone contrasted with the surrounding humus and suggests Feature 10 originated at the surface. Feature fill was bagged in the field and taken to the laboratory for flotation. Artifacts include lithic debitage, charcoal, burned earth, and miscellaneous rock (Table 7.2). Carbonized plant remains recovered from the flotation were recorded as oak (Appendix B, Table B.1.). The feature is interpreted as a burned tree root.

Feature 11. This feature was defined in Unit 43 at the base of Level 2 and extends into the south wall profile. The profile of the south wall suggests the feature originated at the surface. At definition, it appeared as a circular area of dark brown to dark yellowish brown (10YR 3/3–4) silty clay fill with flecks of charcoal and burned earth in a matrix of strong brown (7.5YR 4/6) silty clay. The exposed part of the feature measured 50 x 40 cm and was excavated to a depth of 42 cm below definition. Feature fill was bagged in the field and taken to the laboratory for flotation. Artifacts include lithic debitage, charcoal, burned earth, and miscellaneous rock (Table 7.2). Carbonized plant remains recovered from the flotation were identified as oak and an unidentifiable wood (Appendix B, Table B.1.). A charcoal sample from Feature 11 was collected from the soil sample flotation (heavy sample) and submitted for radiocarbon dating. The sample (Beta-75394) returned a date of 200 ± 50 B.P. (A.D. 1750) (Appendix C). The feature is interpreted as a midden-filled depression.

Feature 12. This feature was defined in Unit 45 at the base of Level 1. At definition, it appeared as a circular burned area of dark yellowish brown (10YR 3/4) silty clay loam with charcoal and burned earth, surrounded by a matrix of dark yellowish brown (10YR 4/6) silty clay matrix. It measured 35 x 40 cm and was excavated to a depth of 8 cm below definition. The resulting profile indicates a shallow depression with root stains branching away from the fill concentration. Feature fill was dry-screened in the field through 1/4 inch wire mesh. Artifacts include prehistoric ceramics, lithic debitage, one biface fragment, charcoal, burned earth, and ferruginous sandstone (Table A.1). Feature 12 is interpreted as a burned tree root.

Feature 13. This feature was defined in the eastern half of Unit 48 at the base of Level 1, although the south wall profile of the unit suggests the feature originated at or near the surface. At definition, it appeared as an amorphous area of dark yellowish brown (10YR 4/4) midden-like soil measuring approximately 100 cm north-south by a maximum of 40 cm east-west. The feature fill contrasted with the surrounding matrix of strong brown (7.5YR 4/6) silty clay loam. Several amorphous patches of very dark grayish brown (10YR 3/2) silt loam were evident in the feature fill. A circular concentration of charcoal in the northern portion of the feature was excavated to a depth of 25 cm below definition and found to be a modern tree root. This area was designated Feature 13 North. A portion of the Feature 13 North fill was dry-screened through 1/4 inch wire mesh in the field, and the rest was taken to the laboratory for flotation. Artifacts include prehistoric ceramics, lithic debitage, charcoal, and miscellaneous rock (Tables A.1 and 7.2).

The southern portion of the feature was removed by troweling, revealing a shallow basin-like depression 5–9 cm in depth below the base of Level 1 and measuring 68 x 80 cm. The feature appeared to extend into units to the east and south but was not found in the northwest corner of Unit 52. At the base of this basin, designated Feature 13 South, two circular stains were evident; they were excavated to a maximum depth of 45 cm below definition. Artifacts from the 1/4 inch screen were bagged with Feature 13 North (Table 7.1). A separate 5 gallon soil sample was taken from Feature 13 South to the laboratory for flotation. This sample produced a small amount of lithic debitage, prehistoric ceramics, charcoal, and miscellaneous rock (Table 7.2). Carbonized plant remains recovered from the flotation include oak and grapevine (Appendix B, Table B.1.). The feature is interpreted as a midden-filled root cast or other bioturbation.

Feature 14. This feature was defined along the northern wall of Unit 48 at the base of Level 1. At definition, it appeared as a linear area of dark yellowish brown (10YR 4/4) silty clay loam fill in a matrix of strong brown (7.5YR 4/6) silty clay loam. The exposed portion of the feature measured 105 x 30 cm and was excavated to a depth of 5 cm below definition. A large tree root extended along the length of the feature. Feature fill was bagged in the field and taken to the laboratory for flotation. Artifacts include prehistoric ceramics, lithic debitage, charcoal, and miscellaneous rock (Table 7.2). Feature 14 is interpreted as a root mold.

Feature 15. This feature was defined in Unit 54 at the base of Level 2. At definition, it appeared as a circular, pit-like feature with yellowish brown (10YR 5/4) silty loam fill with dark brown (10YR 3/3) mottling. It measured 38 x 45 cm and was excavated to a depth of 29 cm below definition. The feature profile is tapered, suggesting that it represents a midden-filled root mold or other bioturbation. Feature fill was bagged in the field and taken to the laboratory for flotation. Artifacts include prehistoric ceramics, lithic debitage, charcoal, burned earth, and miscellaneous rock (Table 7.2). Carbonized plant remains recovered from the flotation include hazelnut shell and oak wood (Appendix B, Table B.1.).

Feature 16/22. Feature 16/22 appears to be a disturbed midden-filled depression; it was first defined as Feature 16 in the northwest corner of Unit 58 at the base of Level 1. At definition, it appeared as a half-oval area of dark yellowish brown (10YR 4/6) silty clay loam in a matrix of brownish yellow (10YR 6/8) clayey subsoil. In Unit 76, Feature 22 was defined along the south wall at the base of Level 1. At definition, it appeared as a semicircular stain of dark brown (10YR 3/3) silty clay with brown (10YR 5/3) mottling. Together, Feature 16/22 appears as an oval, basin-shaped depression measuring approximately 140 cm north-south by 35 cm east-west. The base extended approximately 17 cm below definition. In Unit 76, an artifact concentration extended north from the northern boundary of the feature an additional 45 cm.

Feature 16 fill was bagged in the field and taken to the laboratory for flotation. Artifacts include several prehistoric ceramics, lithic debitage, charcoal, burned earth, and miscellaneous rock (Table 7.2). Carbonized plant remains recovered from the flotation include walnut shell and an assortment of wood charcoal, including hickory, ash, sycamore, and oak (Appendix B, Table B.1.).

Feature 22 fill was water-screened through 1/16 inch mesh. Artifacts from Feature 22 include several prehistoric ceramics, lithic debitage, charcoal, and miscellaneous rock (Table 7.2). Carbonized plant remains include seven small fragments of hickory and hazelnut shell, along with fragments of oak and poplar charcoal (Appendix B, Table B.1.). Two whole carbonized tulip poplar fruits were also recovered.

Feature 17. Feature 17 was defined in association with a ceramic concentration in the southwest corner of Unit 61 at the base of Level 2. At definition, it appeared as an amorphous area of dark brown to brown (10YR 4/3) silt loam with flecks of charcoal against the yellowish brown (10YR 5/8) silty clay subsoil. The feature was troweled for better definition, revealing a linear (southwest-northeast) stain measuring approximately 80 x 30 cm. The profile revealed two post mold–like circular stains, which were designated 17A and 17B (Figure 7.8).

Feature 17A measured 24 cm in diameter and was excavated to a depth of 28 cm below definition. Feature fill was water-screened through 1/16 inch mesh. Artifacts from Feature 17A include prehistoric ceramics, lithic debitage, charcoal, burned earth, and miscellaneous rock (Table 7.2). Carbonized plant remains include seven small fragments of hickory nut shell and over 30 fragments of oak charcoal (Appendix B, Table B.1.). A charcoal sample from Feature 17A, representing a single fragment of charred wood, was submitted for radiocarbon dating. The small sample (Beta-75395) was given an extended count and returned a date of 430 ± 70 B.P. (A.D. 1520) (Appendix C). The feature may represent the base of a midden-filled post mold or, more likely, a filled root mold or other krotovina.

Feature 17B measured approximately 30 cm diameter and was excavated to a depth of 65 cm below definition. Feature fill was water-screened through 1/16 inch mesh. Artifacts from Feature 17B include prehistoric ceramics, lithic debitage, charcoal, burned earth, miscellaneous rock, and one small fragment of unidentifiable bone (Table 7.2). Carbonized plant remains include a small fragment of hickory nut shell and over 30 fragments of oak charcoal (Appendix B, Table B.1.). The feature is interpreted as a deep root cast or rodent burrow.

Feature 18. This feature was defined along the north profile of Unit 59 at the base of Level 2. At definition, it appeared as a semicircular area of soft, moist, very dark brown charcoal and silt loam. It measured 50 x 50 cm and was excavated to 37 cm below definition. Feature fill was water-screened through 1/16 inch mesh. Artifacts from Feature 18 include prehistoric ceramics, lithic debitage, charcoal, burned earth, miscellaneous rock, and one small fragment of unidentifiable bone (Table 7.2). The profile indicates a burned tree tap root.

Feature 19. This feature was defined extending into the west profile of Unit 72 at the base of Level 2. At definition, it appeared as a semi-oval concentration of red (2.5YR 4/6) silty clay in a matrix of strong brown (7.5YR 4/6) silty clay subsoil. It measured approximately 40 x 50 cm and was excavated to a depth of 17 cm below definition. The base of the feature is shallow and irregular, and the feature is interpreted as burned root.

Feature fill was water-screened through 1/16 inch mesh. Artifacts from Feature 19 include charcoal and miscellaneous rock (Table 7.2). Carbonized plant remains include over 30 fragments of oak charcoal (Appendix B, Table B.1.). A scattered charcoal sample was handpicked from the 1/16 inch mesh soil sample and submitted for radiocarbon dating. This sample (Beta-75396) returned a date of 980 ± 60 B.P. (A.D. 970) (Appendix C).

Figure 7.8. Features 17A and 17B, Unit 61, Site 40SY527.

Feature 20. This feature was defined in the southwest corner of Unit 73 at the base of Level 2. At definition, it appeared as a semicircular area of dark yellowish brown (10YR 4/6) silty clay with heavy mottling of dark red (2.5YR 3/6) burned earth. It measured 60 x 80 cm and was excavated to a depth of 25 cm below definition. Feature fill was water-screened through 1/16 inch mesh. Artifacts from Feature 20 include prehistoric ceramics, charcoal, and burned earth (Table 7.2). The feature is interpreted as a burned tree root.

Feature 21. This feature was defined in the southeast corner of Unit 74 at the base of Level 1. At definition, it appeared as a circular area consisting of an inner circular stain of dark brown (10YR 3/2) organic silt with flecks of charcoal surrounded by a lighter zone of dark yellowish brown (10YR 4/4) silty loam. It measured 50 x 60 cm and was excavated to a depth of 10 cm below definition. Feature fill was water-screened through 1/16 inch mesh. Artifacts from Feature 21 include prehistoric ceramics, lithic debitage, charcoal, miscellaneous rock, and small fragments of unidentifiable shell (Table 7.2). Rotten wood was recovered from the feature fill, and the feature is interpreted as a recent root mold.

PREHISTORIC CERAMIC ANALYSIS

The Fulmer site yielded the largest and best-preserved ceramic assemblage of the three sites under investigation. Excluding shovel tests, the assemblage includes 12,911 individual ceramic sherds and sherdlets (excluding clay objects and burned earth) weighing approximately 27.0 kg. Ceramics constitute approximately 51.7 percent of the counted prehistoric artifacts (excluding burned earth), and the ratio of ceramic sherds to chipped and ground stone artifacts (n=12,027; 17.4 kg) is approximately 1.1:1 (1.5:1 in weight).

The ceramic assemblage was subjected to several different levels of analysis. During the basic analysis, sherds were separated from other artifact classes, counted, and weighed. These data are presented in Tables 7.1 and 7.2 and in Appendix A, Tables A.1 and A.3. After basic analysis, all prehistoric ceramics were size-sorted to obtain a sample of sherds considered large enough for additional study. All sherds retained in a 1/2 inch mesh screen (n=4,586, or 35.5 percent of the total ceramic count) were analyzed. Sherds that passed through the screen were considered residual and were not analyzed further. Sherds larger than 1/2 inch were segregated into rims or body sherds and by paste type and surface treatment (eroded/plain surface, fabric impressed, punctated, cord impressed, and "other"). The paste and surface treatment raw data are presented by provenience in Appendix A, Table A.2, and are summarized in Table 7.4. The ceramics distribution at the site is discussed in the following chapter.

Paste Characteristics

The ceramic assemblage was sorted into four paste types (see Chapter IV). All of the sherds had at least some clay particles mixed in the paste. The number of sherds with large, dense, distinct, subangular to rounded clay particles leaves little doubt that, in most instances, clay particles were intentionally added to the clays before vessel construction.

Type I paste (n=251, or 5.5 percent) was identified on the basis of clay particles in the paste and by its soft, chalky feel with no indication of a sandy texture. Surface treatments include plain/eroded (n=230, or 91.6 percent) and fabric marked (n=21, or 8.4 percent). These sherds are morphologically similar to the Tchula or Tchefuncte wares referred to by Smith (1979a; Smith and Weinstein 1987) and to the Forked Deer series defined by Mainfort and Chapman (1994). Under the latter classification, these sherds can be classified as Baytown Plain *var. Forked Deer* and Withers Fabric Marked *var. Withers*.

Table 7.4. Surface Treatment and Ceramic Paste Type, Site 40SY527.

The vast majority of the ceramic assemblage (n=4,335, or 94.5 percent) has a sandy surface texture, but there is no clear indication that sand was intentionally added to the clays as a tempering agent. These ceramics would fall within what Smith (1979a; Smith and Weinstein 1987) calls Thomas ware. The amount of sand varies from slightly sandy to very sandy; following Mainfort and Chapman (1994), we divided these sherds into two categories. Our Type II (n=2,496, or 54.4 percent) includes sherds with a slightly sandy texture; Type III sherds (n=1,834, or 40.0 percent) exhibit a sandier paste lacking the chalkiness associated with Types I and II.

During the field investigations and preliminary laboratory analysis, a few sherds were observed to contain moderate amounts of coarse sand. At the time, it was thought that the coarse sand inclusion might represent a rare ceramic ware classified as "Knob Creek" by Smith (personal communication 1994). Consequently, our paste type IV was established to include sherds with both clay and coarse sand inclusions. However, only five sherds out of 4,585 were classified as paste type IV, and we now tend to think these sherds represent a minor variant of Type III.

Type II paste is equivalent to the Madison series proposed by Mainfort and Chapman (1994); Type III paste corresponds to the Tishomingo series. Type/varieties for the Madison series present in the Fulmer assemblage include Baytown Plain *var. Madison*, Withers Fabric Marked *var. Cypress Creek*, Cormorant Cord Impressed *var. unspecified*, and Twin Lakes Punctated *var. unspecified* (Table 7.4). Proposed type/varieties in the Tishomingo series present at Fulmer include Baytown Plain *var. Tishomingo* and Withers Fabric Marked *var. Craig's Landing*. Sherds exhibiting Cormorant Cord Impressed and Twin Lakes Punctated designs are also found on Type III paste at Fulmer, although Mainfort and Chapman (1994) propose no nomenclature for these treatments in the Tishomingo series. Surface treatments are further discussed below.

A plot of the distribution of paste types across the site does not suggest any concentration of one particular paste type in any particular area. Instead, the data suggest the types are distributed evenly within and across the major ceramic concentrations in the site.

Rim and Vessel Form Analysis

As part of the analysis, the entire ceramic assemblage was laid out on tables and a concerted effort was made to mend sherds into larger rim and vessel fragments. Diagnostic rims and vessel fragments were then analyzed. Of the 401 rim sherds identified during the 1/2 inch sherd analysis, 136 individual rim sherds were selected, producing 108 mended diagnostic rims. These were grouped into 21 rim forms representing approximately 79 individual vessels. Using paste, rim diameter, orifice configuration, rim form, color, and decoration, 74 of the 79 individual vessels were grouped, with reasonable confidence, into 14 hypothesized vessel forms (Tables 7.5 and 7.6; Figures 7.9–7.23). All are variations on basic bowl and jar forms.

Vessel Forms 1 and 2 are large, shallow, pan-like bowls. The single vessel represented in Vessel Form 1 is one of the most extensively modified in the collection. The rim is thickened on the

Table 7.5. Vessel Form Summary, Site 40SY527.

Form	*Count*	*Average Dia.(cm)*	*Diameter Range (cm)*	*Rim Form*	*Illustrations*
1. Large Shallow Bowl	1	35.0	-	1	7.16a, b
2. Large Flaring Rim Bowl	5	29.5	25–35	2	
3. Small Flaring Rim Bowl	2	11.0	10–12	2	
4. Small Shallow Bowl	4	13.8	9–18	3, 4, 15	7.18f, h, n
5. Medium Hemispherical Bowl	2	16.0	15–17	6	7.18l
6. Carinated Bowl	1	15.0	-	7	7.18d, e
7. Subcarinated Bowl	3	13.3	10–15	8	7.17a
8. Small Hemispherical Bowl	4	10.5	9–11	6, 9, 10	7.18a
9. Medium Jar	11	16.4	12–22	12	7.17c, d; 7.18o
10. Large Globular Jar	2	22	-	13	7.19a–e
11. Medium Globular Jar	1	12	-	14	
12. Conoidal Bowl/Beaker	35	24.6	11–38	16, 17, 18	7.19f–j; 7.20a–f, h, j–n; 7.21b, c
13. Scalloped Rim Bowl	2	19	18–20	19, 20	
14. Ovoid or Triangular Vessel	1	-	-	21	7.17b

Figure 7.9. Frequency of Vessel Rim Diameters, Site 40SY527.

Table 7.6. Ceramic Rim Form Analysis. Page 2 of 3

Table 7.6. Ceramic Rim Form Analysis. Page 3 of 3

Figure 7.10. Hypothesized Vessel Forms, Site 40SY527.

Figure 7.11. Rim Forms 1, 2, 3, 4, and 5, Site 40SY527.

Figure 7.12. Rim Forms 6, 7, 8, 9, and 10, Site 40SY527.

Figure 7.13. Rim Forms 11 and 12, Site 40SY527.

Figure 7.14. Rim Forms 13, 14, 15, 16, and 17, Site 40SY527.

Figure 7.15. Rim Forms 18, 19, 20, and 21, Site 40SY527.

Figure 7.16. Slipped Vessel Fragments, Site 40SY527.

Figure 7.17. Cord Impressed Rims, Site 40SY527.

Figure 7.18. Punctated Rims, Site 40SY527.

Figure 7.19. Fabric Marked Rims, Site 40SY527.

Figure 7.20. Folded Rims, Site 40SY527.

Figure 7.21. Fabric Marked Rims and Body Sherds, Site 40SY527.

Figure 7.22. Fabric Marked Body Sherds, Site 40SY527.

Figure 7.23. Vessel Bases, Site 40SY527.

interior, and the entire interior is red filmed (Figures 7.11 and 7.16a, b). The exterior appears to have been fabric marked or otherwise roughened but is now very eroded. A further modification to this particular bowl is a shallow molded groove below the thickened rim (Figure 7.11). It is one of only seven fabric impressed bowls; this surface decoration was generally used for the manufacture of conoidal bowls/beakers (Vessel Form 12).

Vessel Form 2, also a large basin-like bowl, is characterized by a horizontally flaring rim (brim). In Rims 2.1 and 2.7, the junction of the rim and the steeply sloping wall is strengthened on the underside exterior with an additional roll of clay (Figure 7.11). The unrestricted orifice of these vessels may indicate cooking, particularly dry cooking (parching). The shallow form would be inappropriate for cooking large volumes of water-based foods.

Smaller serving vessels are also suggested. These include unrestricted conical, semi-hemispherical, and carinated forms. Decoration is common on these vessels, including cord impressions, punctations, and rim notching. Conical vessels (Vessel Forms 3 and 4) are represented by several different rim forms, including internally thickened rims with flattened lips (Rim Form 4, Figure 7.11). Vessel Form 3 (Rims 2.02 and 2.05), with horizontally flared rims, is a diminutive version of Vessel Form 2. Rim Form 3 (Vessel Form 4) is similar in morphology but less pronounced. The four folded flaring rims in Rim Form 15 are also thought to represent small conical bowls (Figure 7.14 and 7.18f, h, n). Possibly from two vessels, the rims have interior punctations below the lip. The exteriors are fabric marked (Table 7.6).

Semi-hemispherical bowls (Vessel Forms 5 and 8) are suggested by Rim Forms 6, 9, and 10. Rim Form 6 has thickened, straight to slightly convex rims with flattened lips. Rim Forms 9 and 10 include thin, straight, and everted rims with rounded lips (Figure 7.12 and 7.18a, l).

Carinated and semi-carinated bowls (Vessel Forms 6 and 7; Rim Forms 7 and 8) are represented by four vessels. On the only vessel representative of Vessel Form 6, the exterior portion of the rim above the inflection served as zones for punctations; in Vessel Form 7, cord impressions are found on the exterior below the inflection (Rim 8.1) and on the interior below the lip (Rim 8.2) (Table 7.6; Figures 7.12, 7.17a, and 7.18d, e). These vessels are similar to carinated vessels from the Tidwell and McCarter mounds in north Mississippi (Connaway and McGahey 1971:31; Ford 1990).

Globular jars in the Fulmer assemblage (Vessel Forms 9–11) are suggested by Rim Forms 12–14 and possibly Rim Form 11. Vessel Form 10 is represented by at least one and probably two large jars with externally thickened lips (Figure 7.14; Table 7.6). Vessel Form 11 (Rim Form 14, Figure 7.14) is similar in morphology but has a smaller diameter and exhibits cord impressions and punctations. Decoration is common on rims and body fragments included with Vessel Form 9 (Rim Form 12).

The most common vessel form at Fulmer are deep conoidal to subconoidal bowls/beakers (Vessel Form 12). These vessels, predominantly fabric marked, are suggested by simple everted rims (Rim Form 16), folded everted rims (Rim Form 17), and straight folded rims (Rim Form 18) (Figures 7.14, 7.15, 7.19f–j, 7.20a–f, h, j–n, 7.21b, c). There is a fairly wide range in the orifice diameter for these vessels (11–38 cm), and some of the smaller diameters may have come from flared-mouth bowls (Vessel Form 4). However, body and basal fragments indicate that most if not all of these vessels are straight-sided or slightly tapering forms with small, contracting, or conical rounded bases. No flat bottoms were indicated. Some of the vessels may have slightly recurved profiles, but there is no good evidence for distinct shoulders. In general, there is a tendency for Rim Form 16 to be associated with smaller orifices (mean=20.8 cm, s.d.=4.6), compared to flared, thickened rims (Rim Form 17, mean=24.7 cm, s.d.=3.1). The largest vessels tend to be associated with straight thickened rims (Rim Form 18, mean=32.1 cm, s.d.=4.2) (Figure 7.24).

Figure 7.24. Cumulative Frequency of Vessel Form 12 Rim Diameters, Site 40SY527.

Three rims in the assemblage deserve special note. Rim Forms 19 and 20 exhibit labial extensions that form rounded points, or "horns." Rim 19.1 appears to be associated with a deep flared-rim bowl or beaker, and Rim 20.1 comes from a semi-hemispherical bowl (Figure 15). Both are fabric marked. A similar treatment is evident on vessel E from the McCarter mound and from sherds recovered from the Clear Creek site in Mississippi (Ford 1990: Figures 6 and 11).

At least one vessel with an ovoid or triangular orifice is suggested by Rim 21.1 (Figures 7.15 and 7.17b). This thickened rim with cord impressed exterior measures over 52 mm in length but has no discernible curvature. Vessels with triangular orifices are reported from Tchula contexts at the Tidwell and McCarter mounds (Ford 1990).

It should be emphasized that although the preceding statements and counts presented for the vessel reconstructions are based on in-depth and time-consuming analyses, the results are considered to be a "best guess" approximation. We feel that such attempts are well worth the effort. When addressing questions of site function and chronology, quantification of rim and vessel form is as important, if not more important, than quantification of decorative treatment and paste type.

Ceramic Decoration

Before considering ceramic decoration, a major constraint in the data base should be noted. In Chapter IV, we mention that because of the eroded nature of the ceramics at the Fulmer site, we did not feel confident in separating plain from eroded surfaces. Normal attrition to the vessel walls is expected to have occurred during vessel use. Erosion is also expected from postdepositional factors, especially considering the shallow nature of the cultural deposits at the site. The low firing and sandy paste associated with most of the sherds also contribute to the loss of sherd surfaces. Although it is meaningful to qualify what is present in terms of decorated surfaces, we cannot be sure whether the absence of a particular treatment is the result of that treatment not being part of the ceramic technology, or whether the absence is the result of poor preservation. This is particularly true when considering cord impressed and slipped wares, which are highly fugitive.

Ceramic decorative treatments can be divided into surface decoration, decorative design, and structural categories (Rouse 1952:338). Table 7.4 presents the decorative elements by temper group as they occur in combination and as individual modes. The distribution of decorative treatments is listed by provenience and temper in Appendix A, Table A.2.

Surface Decoration. Surface decoration refers to the modification of the surface of vessels, as with burnishing, cord and fabric marking, slipping, and painting. In the Fulmer assemblage, surface decorations include burnishing, fabric marking, and slipping (i.e., red filming). Because the assemblage contains such a high percentage of eroded sherds, burnishing was not quantified. Fabric marking can be considered of marginal decorative intent, as it is generally regarded to be a technological by-product, i.e., a result of the method of manufacture. The purpose of slipping is sometimes thought to be technological—the slip may work as a sealant on porous pastes—but red slipping is also often regarded as symbolic.

To help alleviate the problems of separation along coil lines, the surfaces of larger vessels were often malleated by slapping or paddling with a tool to better weld the clay straps together. In the case of fabric marked ceramics, a rattan-like material, perhaps rolled basketry fragments or a specially woven plant fiber tool, was used. The finish is probably not derived from an actual cloth, although in later times, actual cloth seems to have been used for the molding of large pans. In the Fulmer assemblage, fabric marking was recognized on 565 sherds (12.1 percent) and is associated with paste type I (n=21, or 8.4 percent), Type II (n=361, or 14.2 percent), Type III (n=181, or 9.7 percent), and Type IV (n=2, or 40.0 percent). These figures are probably underrepresented for the period assemblage due to the high proportion of eroded sherd surfaces. Fabric marking is associated with folded rims, rim punctations, and internally slipped sherds (Table 7.4; Figures 7.14, 7.15, and 7.19–7.22). It is present on a large shallow bowl (Vessel Form 1, n=1), small shallow bowls (Vessel Form 4, n=2), and conoidal bowls/beakers (Vessel Forms 16, 17, and 18, n=26).

Fourteen sherds (0.3 percent) were classified as having a red slip applied to the interior surface (Table 7.4). Care was taken to distinguish between applied slips and “self slips.” In clay pastes of mixed particle size, a surface that can be mistaken for a slip can be produced by a standard surface smoothing technique called “floating” (Shepard 1956:191–192). The surface is slightly moistened while it is rubbed with the fingers or a tool such as a pebble. A smooth, more compact layer of clay is obtained on the surface. These “self slips” are similar in composition to the rest of the sherd body clay. A liquid clay-based mixture intentionally applied for a color or surface effect typically differs from the rest of the sherd in mineral composition. True slips often flake off due to the weak bond achieved by applying a thick wet pigment to an already partially dried and smoothed vessel, and in all likelihood slipping is underrepresented in our tabulations due to surface erosion. Interior slips are present on at least two vessels. The first is the large, shallow, pan-like bowl with fabric impressed exterior from Unit 58/64 (Vessel Form 1, Figures 7.10 and 7.16a, b). The color of the slip applied to the interior of the vessel is reddish brown to dark reddish brown (5YR 4/4–3/4). Three additional but non-conjoinable sherds from Unit 40 with the same slip may be part of this vessel. A second vessel, possibly a shallow pan, is suggested by four mended sherds from Unit 64 (Figure 7.16c). These sherds have a moderate pink (7.5YR 7/4) interior slip and are thinner than those from Vessel 1.

Decorative Design. Decorative design includes those examples in which *portions* of the vessel surface have been painted, impressed, punctated, incised, engraved, or appliquéd. Decorative design elements recognized in the Fulmer assemblage include cord impressing and punctation and a few possible instances of incising.

Punctations are found on 37 sherds (0.8 percent of the total analyzed assemblage) and occur in association with sandy paste types II and III (Table 7.4). Punctated sherds at Fulmer occur as single rows below the lip, but not in multiple rows (herringbone fashion). Punctations are associated with folded rims, fabric marking, and cord impressions. The maximum size of each set of punctations ranges from 2 to 9 mm. In some cases the depression was sufficient to displace a ridge or burr before the tool marks (see Rim Form 11, Figure 7.13). Items such as grass stems, very small cane segments, or wood splinters may have been used as stylus. It is also possible that at least some of the punctations were formed using knotted cord, as with Cormorant Cord Impressed *var. Norman* (Brookes and Taylor 1986:25). Cord twists are clearly evident in wedge-shaped punctations along the neck of a nearly complete jar from the Sardis Lake area in the collection at the University of Memphis, Department of Anthropology. With the possible exception of Rim 12.3 (Figure 7.13), the use of knotted cord punctations could not be positively identified due to the eroded nature of the specimens.

Rims thickened with extra coil/straps, rolls, or folds often accommodate punctations. When punctations appear on both the interior and exterior, the interior punctations tend to be higher on the rim just below the lip (see Rim Forms 11 and 12, Figure 7.13). In most cases, punctations appear as wedge-shaped or oval depressions, as in Twin Lakes Punctated *vars. Twin Lakes* (Phillips 1970:166) and *Hopson* (Toth 1988:232). In a minority of cases, punctations are circular, as in Twin Lakes Punctated *var. Crowder* (Phillips 1970:166). These two variants occur on body and rim sherds and on the exterior and/or interior surfaces (Table 7.7).

Table 7.7. Punctations on Ceramic Rims, Site 40SY527.

	Oval/Wedge-Shaped	*Circular*	**Total**
Rim Interior	8	2	**10**
Rim Exterior	5	4	**9**
Rim Interior/Exterior	6	3	**9**
Rim, Undetermined	4	0	**4**
Body, Exterior	1	4	**5**
Total	**24**	**13**	**37**

In three instances, punctations appear in zones outlined by cord impressed lines or thin, incised lines. Examples include Rim 12.3, possibly Rim 12.4 (Figure 7.13), and one body sherd from Unit 54, Level 2. This treatment is suggestive of sherds classified as Churupa Punctated *var. Boyd* (Connaway and McGahey 1971:24–25; Phillips 1970:67–69) or Twin Lakes Punctated *var. Tidwell* (Ford 1990:108).

Individual cord impressions were recognized on 26 sherds (0.6 percent): 21 rims and five body sherds (Table 7.4; three rim sherds with lost proveniences appear in Tables 7.4 and 7.5 but not Table A.2). The treatment is present on a subcarinated bowl (Vessel Form 7), small hemispherical bowls (Vessel Form 8, n=3), medium jars (Vessel Form 9, n=9), a medium globular jar (Vessel Form 11), and the oval or triangular vessel (Vessel Form 14).

Cord impression most often occurs as a single zoning line at the base of everted lips (n=3) (see Rims 5.01, 9.02, 12.05, Figures 7.11, 7.12, and 7.13) and thickened lips (n=4) (see Rims 12.02, 12.06, 12.07, 12.08, Figure 7.13), or as single zoning lines at the base of thickened or everted rims with punctations (n=7) (see Rims 9.01, 9.04, 12.01, 12.04, 12.09, and 14.01, Figures 7.12, 7.13, and 7.14). In three cases, cord impressions were placed as parallel diagonal lines on thickened rim straps (see Rims 21.01 and 17.06, Figure 7.15). Parallel diagonal lines also occur on the body of a semi-carinated vessel below the point of inflection (see Rim 8.01, Figure 7.12). Besides those sherds mentioned above in relation to zoned punctation, there are six examples where curvilinear cord impressions outline filled zones of diagonal cord impressions. Zone cord impression can be seen on Rims 12.01, 12.03, 12.04, 12.05, and 12.6 (Figure 7.13) and on one body sherd from Unit 54, Level 2. The latter body sherd also exhibits oval punctation in a circular pattern parallel to the outlining cord impression. Rim 12.02 also has short, closely spaced notches along the lip margin and is the only recognized incidence of this treatment. No cord impressions were noted on the interior of rims. With the possible exception of the body sherd from Unit 54, Level 2, all cord impressed sherds could be typed as unspecified varieties of Cormorant Cord Impressed (Phillips 1970).

Structural Decoration. Structural decoration refers to modifying the vessel shape by adding two-dimensional lugs and strap handles, appliqué extensions on the lip, and three-dimensional modeling. The only modes of structural decoration recognized at the Fulmer site are rim thickening and labial extension. No podal supports, annular bases, lugs, or handles were noted.

Experiments have shown that rim thickening is often a structural imperative in this technology. The thickened surface is also suitable for applying decorative designs such as punctations and cord impressions. On larger vessels, the characteristics of the thickened rim can be expected to vary around its circumference. Folds were often worked back into the vessel surface by paddling. Thickened rims are very common in the assemblage and occur on both bowl and jar forms. In the analysis of the 1/2 inch ceramic sample, only those sherds with broad exterior rim straps ("folds") were considered folded. Thirty-eight cases of folds were noted; the treatment occurred in combination with fabric impressing, punctation, and cord impression (Table 7.4) and as single (n=20) and double (n=3) folded forms. There is a slight tendency for folded rims to be more common on the sandier, Type III (Tishomingo) paste than on the less sandy Type II (Madison) paste. Of the 378 rims identified for these two types, 16 Type II rims are folded (7.6 percent) vs. 22 folded rims (13.1 percent) with Type III paste.

A drilled sherd was also recovered, exhibiting a break through the middle of the hole. This is generally interpreted as an indication of vessel mending. However, on the complete Cormorant Cord Impressed jar from Sardis Lake (curated at the University of Memphis), holes appear to be molded in symmetrical positions just below the vessel orifice. This suggests intentional modification for hanging. The example from Fulmer is too eroded to indicate whether drilling or molding was used to produce the hole.

BAKED CLAY OBJECTS

The excavations at 40SY527 recovered several fragmented baked clay objects (Table 7.1 and Appendix A, Table A.1). This artifact type (also called earth oven elements, BCOs, and Poverty Point objects) is common on Tchula period sites in the region and may have continued in use into the Middle Woodland period (Mainfort 1994:9). The 40SY527 examples are very fragmented and were identified on the basis of their white, contorted, temperless paste. Of the 31 fragments (32.2 g) recovered from the site, only one fragment is complete enough to suggest a definable form. This specimen, from Unit 31, Level 2, appears to be spherical and measures approximately 25 mm in diameter. Ellipsoidal shapes are suggested (but not convincingly) by examples from Unit 30, Level 2 (n=1); Unit 31, Level 1 (n=1); and Unit 66, Level 1 (n=1).

Baked clay objects were recovered from two separate areas. One concentration was in the northeast corner of the excavation in Units 31 and 34 (Figure 7.3). The second was centered in Units 75 and 79, in the southern part of the site close to the Feature 2 hearth area.

LITHIC ANALYSIS

Excluding shovel tests, 12,027 individual chipped and ground stone artifacts (17,437.0 g) were recovered from the Phase II and III excavations at the Fulmer site (Tables 7.1, 7.2, A.1, and A.3). Lithics from the special samples (Table 7.2) consist primarily of microdebris, and the following analysis includes only those artifacts recovered from the 1/4 inch dry screen (Tables 7.1 and A.1). This sample includes 385 stone tools and 11,029 pieces of unutilized debitage and debris. In addition, the 1/4 inch sample includes 8,943 g of fire cracked chert and other stone, 5,500.2 g of ferruginous sandstone, and 2,633.3 g of unaltered natural rock (local gravel). Distributions of the lithic assemblage and specific characterization of the debitage/debris are discussed in detail in the next chapter. Chipped and ground stone tools, the primary concern in this section, were subdivided into five categories: bifaces, retouched flakes, pebble tools, cores, and other stone (Appendix A, Table A.4). Figures 7.25–7.27 show selected lithic artifacts.

Bifacial Tools

This category of stone tools includes 54 artifacts characterized by the formal shaping through bifacial reduction. All are of local chert, except when noted. Bifacial tools were divided into nine subcategories (Table A.4).

<u>Projectile Point/Knives (PP/Ks).</u> Fifteen PP/Ks or PP/K fragments were recovered from the Phase II and III excavations, including six unidentifiable distal or medial fragments. The other nine specimens are discussed below. In addition, one complete PP/K recovered from the Phase I investigations is also considered (Figure 7.25; Table 7.8).

The specimen shown in Figure 7.25a was recovered during the Phase I survey from STP 187 (Oliver et al. 1993:55, 75). It is a nearly complete PP/K with straight to convex blade edges, rounded shoulders, and a short, contracting stem. The base is angled and somewhat concave. The cross section is plano-convex. Fine pressure flaking is almost absent along the margins. The artifact was thermally altered after it was completed, and the distal tip of the point is missing as a result of fire spalling. The contracting stem suggests an affiliation with the Gary cluster (Justice 1987:189). The point is also very similar to the local type Harris Island:

> [S]mall to medium-sized dart points with convex blade edges and rounded shoulders which form an inflected curve into a straight stem. Cortex or striking platform bases are usual. This is a marker type for the late Poverty Point Period in western Tennessee and is also found on Poverty Point sites in southeastern Missouri. A date of 2400±95 radiocarbon years: 450±95 B.C. (I-5782) was obtained for a component at 40FY13 which is characterized by this type. [Smith 1979a:70, 110]

The PP/Ks shown as Figure 7.25b and d and possibly the point in Figure 7.25c could be included with points in the Flint Creek Cluster (Ensor 1981:94–95). These are medium- sized projectiles with slightly excurvate blade edges, parallel to slightly expanding haft elements, and straight to incurvate, tapering shoulders. They are generally well made. The base of the example in Figure 7.25c has been broken and reworked. These points are very similar to Smith's (1979a:70, 112, 115) Lambert and Mabin points. Lamberts are seen on late "Poverty Point" sites, and Mabins are reported from sites assigned to Tchula phases on the Forked Deer and Obion rivers. Two straight stem fragments, listed in Table 7.8 (not illustrated), should probably be included in this cluster as well.

The point in Figure 7.25e is classified as Decatur (Cambron and Hulse 1986:41). This is a small, corner notched point with beveled sides and an incurvate base. The cross section is rhomboidal, and the blade is straight-sided and lightly serrated. On this specimen, the stem edges of the notches are heavily ground, but the base is not ground. Decatur points, like similar Kirk corner notched forms, date to the Early Archaic period.

Figure 7.25. Selected Thin and Hafted Bifaces, Site 40SY527.

Table 7.8. Metric Attributes of Formal Hafted Bifaces, Site 40SY527.

The larger specimen in Figure 7.25f is similar to forms that Smith (1979a:70–71, 98) has termed "Arlington." The form is described as "a medium-sized dart point with recurved blade edges, straight to slightly barbed shoulders, and a straight to slightly contracting stem." Arlington points are distinguishable from the similar Pickwick type by their generally smaller size, finer workmanship, less pronounced flare at the shoulders, and broader stem relative to blade width. Like Harris Island and Lambert points, this point type is included by Smith (1979a) as a marker of the late Poverty Point period in western Tennessee. Based on its context at Fulmer, we would suggest this form continues in use into the Tchula period.

Also included here are two asymmetric, thin bifaces with probable hafting elements (Figure 7.25g and h). Both are identical in having one relatively straight side and one recurved edge. Both were recovered from Unit 61, Level 1, and are interpreted as hafted knives.

Drill/perforators. Two bifacial drill fragments were recovered from the excavations (Table A.4). The example from Unit 15, Level 1 consists of the distal fragment. The second example, complete except for the distal end, is from Unit 36, Level 1, and is included in Table 7.8 (Figure 7.25k). It has a straight base and straight, tapering sides.

Adzes and Adze Fragments. This subcategory includes six complete and three fragmented bifaces exhibiting a biconvex transverse bit (Table A.4). Complete examples are included in Figure 7.26 and Table 7.8. The bit is beveled on the example shown as Figure 7.26d, and polish is evident on the tools shown as Figure 7.26a, b, c, and d. Note that four of the six complete examples come from Units 30 and 31 in the northern portion of the excavation.

Other Bifaces. Included here are thin bifaces (<15 mm, n=2); thin biface fragments (n=14); thick biface fragments (>15 mm, n=2); bifacially worked flakes (n=7); and unidentified biface fragments (n=3) (Table A.4). The two complete thin bifaces are shown in Figure 7.26g and h. The first is a thermally altered, elongated biface exhibiting secondary retouch along one edge opposite an unfinished edge with multiple hinge fractures. It may have originally been a projectile point preform used as a knife. The second complete biface (Figure 7.26h) is also thermally altered and is ovate in form. Secondary retouch is evident along one steeply beveled edge opposite a broadly serrated edge. The artifact may have been a composite tool for cutting and scraping.

The two thick biface fragments from Units 64 and 72 were mended (Figure 7.26i). The artifact is photographed in profile to show the plano-convex form. The flat side is unfinished cortex. Percussion flaking is evident, as is a large hinge fracture. It is made of a fine-grained black, ferruginous siltstone or basalt. Polish on the tapered end suggests its use as a scraper or planing tool.

Artifacts classified as bifacially worked flakes (n=7) exhibit bifacially worked edges but retain ventral flake surfaces. Three examples suggest use as composite knife/scrapers (Figure 7.25j). Two preforms are included (Figure 7.25i), as are two drill/perforator fragments (Figure 7.25l).

Retouched Flakes

This category includes 181 unifacial flake tools exhibiting intentional retouch and/or use modification (Table A.4). Utilized flakes (n=137) comprise the largest subcategory, followed by utilized blade-like flakes (n=25). Blade-like flakes were defined as any flake with a length twice as large as the width. Blade-like flakes were only separated from other debitage if they showed retouch. The counts do not suggest that producing blades from prepared cores was a major part of the lithic technology at 40SY527. However, there is enough evidence to suggest that the technology was not unknown. Figure 7.27a–c shows examples of utilized blades.

Figure 7.26. Adzes and Selected Bifaces, Site 40SY527.

Figure 7.27. Selected Tools and Other Lithics, Site 40SY527.

Unifacial tools also include ratchet/perforators (n=2) (Figure 7.27f); end scrapers (n=2) (Figure 7.27d and e); side scrapers (n=8) (Figure 7.27g); scraper/gravers (n=3); a scraper/spokeshave (Figure 7.27h); and graver/perforators (n=2). An unusual artifact (Figure 7.27i) is a polished hoe or adze resharpening flake reworked into a denticulate scraper.

Pebble Tools

A distinctive tool category (n=18) found at the Fulmer site consists of minimally worked local gravel (Table A.4). These tools could easily be mistaken for tested cobble cores, but careful examination generally shows use modification. Bifacially and unifacially worked edges are present, suggesting use as denticulates (n=11) (Figure 7.27j); bifacially edged knives (n=5) (Figure 7.27k); and spokeshaves (n=1) (Figure 7.27 l). One example has an extremely battered edge, suggesting use as a chopper or hammerstone.

Cores

Some 127 cores were recovered from the excavations (Table A.4). The vast majority are multidirectional cores (n=97), all on local Plio-Pleistocene gravel. Eighteen core fragments and six tested cobbles were also found. In addition, five cores were recorded with unidirectional blade-like flake scars. The flake scars originated from blows to a platform created by the intentional splitting of a cobble or from selection of a split cobble. One core exhibits bidirectional flaking characteristic of bipolar reduction (Figure 7.27n), although it may have had secondary use as a wedge.

Other Stone Tools

Five artifacts were included in this category (Table A.4). The first is the distal butt end of a greenstone celt. The poll end is heavily battered or unfinished, as with Copena celts from Murphy Hill (Cole 1981:41–45). The material is probably Hillabee schist from central Alabama (Eugene Futato, personal communication 1994; Cole 1981:41–44).

A small fragment of a reddish ground siltstone gorget was recovered from Unit 18 level fill above Features 4 and 5 (Figure 7.27m). The shape cannot be determined. The fragment measures 9 mm in thickness and broke along two plains converging at a hole drilled from one side. Expanded center bar gorgets have been recovered from Cormorant components at the Boyd site (Connaway and McGahey 1971:55) and at the Tidwell Mound (Ford 1990:108).

Surprisingly, only one hammerstone was recognized in the assemblage. It is made from an elongated quartzite cobble and exhibits heavy battering at both ends. Other artifacts in this category include a large sandstone cobble showing grinding and battering, as if used with a metate, and one sandstone abrader.

HISTORICAL ARTIFACTS

Excavations at 40SY527 recovered 19 historic artifacts. The former location of a fence was observed, and a logging road crossed the ridge southeast of the main concentration, but there is no evidence to suggest historic period occupation. Historic artifacts recovered are listed in the Table 7.9.

Table 7.9. Historic Artifacts, Site 40SY527.

Unit/Level	*Bag No.*	*Count*	*Item*
Unit 12, Level 2	145	1	Miscellaneous plastic
Unit 17, Level 1	151	1	12 gauge shotgun shell
Unit 21, Level 1, S1/2	317	1	Bullet casing
Unit 29, Level 1	180	1	Nail
Unit 32, Level 1	186	4	Iron spikes
Unit 32, Level 1	186	1	Button fragment
Unit 35, Level 1	194	1	Metal staple
Unit 51, Level 1	236	1	Shotgun shell
Unit 51, Level 1	236	1	Button (plastic)
Unit 54, Level 1	234	1	Metal
Unit 54, Level 1	234	1	Barbed wire
Unit 55, Level 2	249	1	Metal staple
Unit 61, Level 1	251	1	Bone fragment
Unit 62, Level 1	255	1	12 gauge shotgun shell
Unit 63, Level 1	268	1	Bullet (.32 caliber)
Unit 68, Level 2	280	1	“Super X” .22 shell

RADIOCARBON ASSAYS

From the beginning of the Phase II testing at 40SY527, a concerted effort was made to recover datable charcoal samples. During the Phase II investigations, charcoal samples from Features 4 and 5 were submitted to Beta Analytic, Inc., for radiocarbon dating and C13/C12 analyses. Charcoal from Feature 4 was dated to 170 ± 80 B.P. (A.D. 1780), and an assay of 890 ± 70 B.P. (A.D. 1060) was returned from Feature 5 (Buchner and Weaver 1994). Neither of these dates is consistent with the artifact assemblage from the site; they are probably the result of a mixture of old and modern charcoal in the samples submitted.

The results of the radiocarbon assays from the Phase II testing were disappointing, but it was hoped that additional charcoal samples recovered during the Phase III excavations would result in a refinement of site chronology. To this end, three additional samples were submitted from feature contexts. Sample 3 charcoal was obtained from Feature 11 soil sample flotation (heavy fraction), and Sample 5, from Feature 19, was obtained from a soil sample water-screened through fine mesh (1/16 inch). About 9.2 g of “dirty charcoal,” representing a single fragment of charred wood, was obtained for Sample 4 (Feature 17A).

It was an even greater disappointment when the samples returned the following dates: 200 ± 50 B.P (A.D. 1750) for Feature 11; 430 ± 70 B.P. (A.D. 1520) for Feature 17A; and 980 ± 60 B.P. (A.D. 970) for Feature 19. The lab reports are included in Appendix C. After receiving these dates, we revisited the site to recover ceramic samples for thermoluminescence dating, but by then the site had been destroyed by highway construction.

At present, all we can offer is a relative date of occupation based on related artifact assemblages and radiocarbon dates from other sites. An affiliation with the Cormorant Horizon of the Early Woodland (Tchula) period is indicated by the presence of chronologically sensitive artifacts, including stemmed PP/Ks, punctated and cord impressed decorated ceramic sherds, and baked clay objects, along with the absence of later markers such as cordmarked ceramics and Marksville decoration. In the next chapter, we will present arguments suggesting this horizon occurred during a brief period of prehistory, ca. 400–100 B.C.

ARCHAEOBOTANICAL RESULTS

The recovery of archaeobotanical remains in soil samples from features processed after the Phase II investigations at the Fulmer site was encouraging, and the Phase III investigations were seen as a unique opportunity to study Early Woodland subsistence practices. Given the absence of faunal remains, floral remains were seen as the best approach to address the question of seasonality. To this end, large soil samples were obtained from most features defined at the site. These samples were water-screened through 1/16 inch mesh (window screen) or floated (Table 7.2).

It became apparent during and after the excavations that all but a few features at the Fulmer site were the result of postdepositional disturbance. Even those features that appeared to be the result of aboriginal activities were shallow and subject to root and rodent disturbance (see above). Consequently, only those archaeobotanical samples with possible integrity were sent to Andrea Shea for analysis. Shea's tabulation of carbonized plant remains from the site is included as Appendix B. The results are not encouraging. Only 24 fragments of nutshell (hickory, hazelnut, and walnut) weighing approximately 0.2 g were recovered. Wood charcoal (including maple, hickory, ash, poplar, sycamore, and oak) is better represented ($n \geq 536$; 91.9g) but cannot be confidently associated with the occupation at the site due to the ambiguous integrity of the feature context. Except for six charred fragments of tulip poplar seed, all seeds recovered are modern. These include blackberry, pokeweed, wild bean, muscadine grape, grape, pine cone, tulip poplar, hop hornbeam, and New Jersey Tea (Andrea Shea, personal communication 1994).

SUMMARY AND CONCLUSIONS

In summary, the Fulmer site (40SY527) is situated on a small finger ridge overlooking the bottomlands of an unnamed tributary of the Loosahatchie River at the edge of the Loess Hills and West Tennessee plain in Shelby County, Tennessee. Site size is conservatively estimated at approximately 40 m north-south by 10–25 m east-west; the site core area is smaller, covering approximately 450 m^2. Phase II testing and Phase III data recovery included hand-excavation of approximately 278 m^2 (approximately 62 percent of the site core area).

The site appears not to have been plowed, although the slope it shares was probably cleared several times in the past and may have been used as pasture. Cultural deposits were shallow, and artifacts are most abundant 5–20 cm below the surface. Localized sheet midden deposits were recorded in the northwest and southeast corners of the excavation, and, in general, the contextual integrity of artifacts is good across the site.

In spite of the unsuccessful attempts to recover useful radiocarbon dates and archaeobotanical samples, excavations at the Fulmer site offer many contributions to our understanding of the Tchula period in west Tennessee. The distribution of material remains indicates distinct activity areas, including concentrations around a central hearth area (Feature 2). The analysis of the ceramic and lithic assemblage at the Fulmer site indicates a strong similarity to materials associated with the Turkey Ridge phase of the Lake Cormorant culture complex. These and other issues are discussed at length in the next chapter.

VIII. DISCUSSION

This chapter addresses questions outlined in the research design (see Chapter IV). To address these questions, it is first necessary to place the present investigations in a regional context (Table 8.1). The cultural chronology for the period of interest is supported by the selected chronometric determinations shown in Table 8.2. First, a selective review of the related literature is presented to show the evolution of current arguments and interpretive conventions. The main focus of this review is the Lake Cormorant complex of the Early Woodland (Tchula) period. The area of concern is that part of the Midsouth that includes west Tennessee and northern Mississippi between the Tennessee/Tombigbee drainages on the east and the Mississippi River on the west (Figure 8.1). Passing references are made to sites and sequences outside this area when applicable. Later sections of this chapter consider patterns of intersite and intrasite variability at the Arlington sites in the context of other settlement/subsistence studies from the region. This is followed by a discussion and comments on the ceramic and lithic assemblages.

LAKE CORMORANT CHRONOLOGY AND CULTURAL CONTEXT

Early Ceramic Traditions in the Midsouth

The introduction of ceramics in the Southeast is time-transgressive, with an initial date of 2500 B.C. on the Atlantic Coastal Plain during the Early Gulf Formational period (Jenkins 1986; Jenkins et al. 1986). During the Middle Gulf Formational, between approximately 1600 and 800 B.C., the use of fiber tempered ceramics (Wheeler series) spread to the Pickwick area in the Tennessee River Valley and the western Gulf Coastal Plain (O'Hear 1990a).

Wheeler ceramics are rare in west Tennessee and northern Mississippi outside the Tennessee River Valley. The possible existence of a Middle Gulf Formational fiber tempered horizon at the end of the Poverty Point occupation at Jaketown, Teoc Creek, and related sites has been discussed for the Yazoo Basin (Connaway et al. 1977; Jenkins 1986; Phillips 1970). The McGary phase (Williams and Brain 1983) could represent a localized manifestation near the Loess Bluffs, on oxbows of the Stage 4 Mississippi River meander belt's eastern diversion. This appears to be the only area of the Yazoo Basin where fiber tempered pottery was ever present in significant, but still very low, amounts (Walling 1994).

The Late Gulf Formational subperiod is the time of the end of fiber tempering and the development of Alexander, Tchefuncte, and paddle-stamped ceramics. Fully developed Alexander assemblages have been dated between ca. 800 and 400 B.C.; the development of Tchefuncte lies ca. 600 B.C., though perhaps as early as 800 B.C. (O'Hear 1990b, Webb 1991). Tchefuncte has been dated to about 700–200 B.C. in Louisiana (Gibson and Shenkel 1988). In light of the many shared attributes of the Alexander and Tchefuncte ceramic traditions, Jenkins et al. (1986) consider both to have developed at about the same time and to have been derived from a similar Wheeler base. On the other hand, Williams and Brain (1983, in Walling and Roemer 1993:22) have postulated that Tchefuncte ceramics were introduced as a fully developed complex in the mid–first millennium B.C. with no influence from Wheeler and only some from Alexander.

The end of the Gulf Formational is signaled at different times in different areas of the Coastal Plain by the appearance and dominance of the Northern, Middle Eastern, and Southern Appalachian fabric marked ceramic traditions over the Gulf tradition. These "Woodland"

Table 8.1. Cultural Chronologies and Important Horizon Markers for the Region.

Table 8.2. Selected Transitional and Early/Middle Woodland Chronometric Dates.

Figure 8.1. Selected Archaeological Sites in the General Vicinity of the Project Area.

complexes either totally replaced or became intermixed with the local Gulf Tradition complexes (Jenkins 1986:47). Alexander ceramics continue in the bend area of the Tennessee River until ca. 300–400 B.C., when they are replaced by limestone tempered conoidal fabric impressed ceramics (Colbert). Gulf decorative techniques can be seen to have survived into at least the initial part of Colbert, along with fabric impressing and paddle stamping (David Dye, personal communication 1995).

In the lower Tennessee Valley and in the adjacent uplands away from the Pickwick reservoir area, fabric marking appears with the earliest ceramics, added to an otherwise aceramic Late Archaic material culture. There are several lines of evidence suggesting the adoption of ceramics in north Mississippi and west Tennessee occurred around 300–400 B.C.—after Alexander and the establishment of Tchefuncte in the lower Mississippi River Valley and southern Yazoo Basin. Excavations at site 40FY13 on the upper section of Beaver Creek (approximately 17.5 km northeast of the Fulmer site [40SY527]) revealed a midden containing aceramic components ranging from Dalton to Terminal Archaic. A radiocarbon assay of 2,400 ± 95 B.P. (450 B.C.) was recovered from a feature associated with the Terminal Archaic ("Poverty Point") Lambert phase component (Peterson 1979b:31–32; Smith 1991; G. Smith, personal communication 1995). The earliest (non-Alexander) date associated with ceramics is 395 B.C., from a submound crematory pit at Pharr containing Saltillo Fabric Impressed and Baldwin Plain ceramics (Mainfort 1986a). In the northern delta, the earliest ceramic assemblages containing fabric marked ceramics have been dated to 220 B.C. at the Boyd site (Connaway and McGahey 1971). The earliest dated ceramic assemblage in interior west Tennessee was recovered from Mound 12, Stratum VI, at Pinson (40MD1). The assemblage is characterized by a high percentage of Saltillo Fabric Impressed (over 70 percent) and fabric impressed elliptical baked clay objects. A date of 205 B.C. was recovered immediately above this deposit at the base of Stratum V (Mainfort et al. 1982). In the Holly Springs National Forest in the North Central Hills of Mississippi, the earliest ceramic horizon appears to be associated with clay tempered wares exhibiting plain and fabric marked surfaces, with minority proportions of cord impression and punctations generally associated with the Cormorant stylistic horizon (Evan Peacock, personal communication 1995).

Fabric marking persisted into the Middle Woodland period but was gradually replaced by cordmarked ceramics. Ford (1989) presents a scenario for the introduction of cordmarking from the northern part of the central Mississippi River Valley, where the technique was dominant over fabric marking by 190 B.C. in southeast Missouri. Based on the dates from Stratum V at Mound 12, Ford suggests cordmarking was present as a minority ware in the Pinson area by 205 B.C. Cordmarked ceramics from a pit feature at Martin #1 dated to 80 B.C. are the first indication of the surface finish in the north Delta and possibly the North Central Hills of Mississippi. It appears in the Miller area slightly later—approximately A.D. 1 (Ford 1989:10). Mainfort (1994:15) proposes that the introduction of sandy textured fabric marked ceramics be used as an indicator for the early Middle Woodland period in west Tennessee. At Pinson, cordmarking dominates the ceramic assemblage by ca. A.D. 100, although fabric marking persists as a minority ware and could have persisted in popularity even longer in northern Mississippi (Mainfort 1994:16; Walling et al. 1989). By this time, social transformations and exchange networks characteristic of the Middle Woodland Hopewell/Marksville complex were well underway.

The Cormorant Complex

North Mississippi. The origins of the concepts for the Cormorant complex and Tchula are found in the pioneering work of the Lower Mississippi Valley Survey (Phillips et al. 1951). The term Tchula was originally proposed by Phillips, Ford, and Griffin (1951:432) to refer to Tchefuncte-like Early Woodland ceramics found in central and northern Mississippi (Griffin

1986:40). A further division was proposed to separate a "northern Tchula" complex associated with materials from the Norman site (22QU518) and a "southern Tchula" complex reflecting assemblages from Jaketown (22HU505).

In his reorganization of data from the Yazoo Basin, Phillips (1970:15–16) chose to retain the term Tchula as a time period designation (as opposed to a ceramic complex per se, a distinction not always adhered to in later literature). Regional sites and assemblages dating from the Tchula period were subdivided into two "cultures" by Phillips: the Tchefuncte culture in the south and the Lake Cormorant culture in the north. Phase designations were also proposed for each culture. The original phase designation for the Lake Cormorant culture in northern Mississippi was the Turkey Ridge phase, a tight cluster of five sites along Lake Cormorant in DeSoto County. The Turkey Ridge phase is described by Phillips as:

> the way a phase should look, at least at its center—a tight cluster of sites, in this case all on the natural levees of the same cut-off channel. . . . Unfortunately in this case we have only the center. It seems highly unlikely that these five sites represent the full range of distribution of the Turkey Ridge phase. [Phillips 1970:878]

At the time of Phillips's work, few Tchula period markers were recognized. They included "Cormorant Cord Impressed in the northern, Tchefuncte types in the south, and Alexander or Alexander-like pottery in both" (Phillips 1970:876). The ceramic assemblage for the Turkey Ridge phase sites, as originally defined, included Cormorant Cord Impressed, "sherds classified with Tchefuncte types but with excessive latitude," and Baytown Plain *var. Bowie* (Phillips 1970:878). High frequencies of Withers Fabric Marked *vars. Withers* and *Twin Lakes* were also noted. Twin Lakes Punctated *vars. Twin Lakes* and *Crowder* and Indian Bay Stamped were excluded from earlier definitions of northern Tchula (Phillips et al. 1951) and included in the later Early Marksville Twin Lakes phase (Phillips 1970:880).

The Norman phase was seen as transitional between the Turkey Ridge phase to the north and the Tchefuncte culture Tuscola phase to the south (Ford 1990:103; Phillips 1970:15). Phillips (1970:16, 876–879) also suggested Lake Cormorant culture might be expanded to include the Burkett and Pascola phases in southeast Missouri (Williams 1954) and hinted at the possibility of Lake Cormorant components in eastern Arkansas.

The eastern edge of the Yazoo Basin had been the scene of the first tentative introduction of fiber tempered ceramics during the Poverty Point period. Similar influence can be seen during the Tchula period. At sites such as Norman and Tackett and other sites in Quitman County, Mississippi (Figure 8.1), soft, chalky ceramics tempered with angular clay fragments (Tchefuncte paste) and hard, sandy ceramics (Alexander paste) co-occur with ceramics characteristic of the Lake Cormorant group to the north (Brookes and Taylor 1986). However, the temporal affiliation of these ceramic groups is not altogether clear.

Norman (22QU518) materials include very typical Alexander decorative treatments such as complicated patterns comprised of plats of close-space incised lines, fingernail punctations, and lines of bosses punched from the interior encircling the rims. About 35 percent of the assemblage is on Alexander paste; however, the Alexander decorative modes also occur on the Tchefuncte paste (Toth 1988:25). The latter paste is characteristic of an "inferior" technology:

> [C]arelessness in grinding and sifting the clay may account for the presence of large angular lumps. . . . Poor wedging, or lack of careful kneading . . . is suggested by the presence of laminations and cleavage planes. . . . the pottery was not subjected to a very high degree of heat in firing. [Toth 1988:25, after Ford and Quimby 1945]

Modifications noted in this latter, mixed character assemblage include rim thickening straps, lip notching, herringbone rim punctations, and bosses punched from the interior. Also present is a wide variety of decorative treatments such as rectilinear patterns of incised lines, unzoned plain rocker stamping, fingernail and triangular stylus punctations, zones of drag-and-jab lines, plain and dentate simple stamping, and cord impressing "that relates to the Lake Cormorant culture in the northern portion of the alluvial valley." Withers Fabric Marked and coarse cordmarked are also present and are thought to be from the portion of the assemblage that dates "just before the Hopewellian intrusion into the Lower Valley" (Toth 1988).

Unfortunately, excavations at Norman in 1977 provide little data on the relationship between Alexander, Tchefuncte, and Cormorant ceramics (Brookes and Taylor 1986). These authors do clarify to some degree specific distinguishing characteristics. They note that in the upper Sunflower of lowland northern Mississippi where these three groups co-occur, Tchefuncte and Alexander ceramics have similar decorative motifs and vessel forms in spite of the differences in paste. Cormorant motifs and vessel forms, on the other hand, differ "vastly" from the Tchefuncte and Alexander wares. Even though the Cormorant paste group is similar to the soft and chalky Tchefuncte paste, laminations are not present. Cormorant materials from Norman include the types Twin Lakes Punctated, Cormorant Cord Impressed, Churupa Punctate, and Mabin Stamped:

> In most instances, decoration consists of triangular zones filled with punctations, stamping, or cord impressions. Often red film is applied to plain zones, and when this is the case the interior is also red filmed. . . . Vessel shapes are mostly shallow bowls. [Brookes and Taylor 1986:25]

The most extensive, detailed excavation reports of a Cormorant Horizon habitation in the area come from excavations at the Boyd site (22TU531) in Tunica County, Mississippi (Connaway and McGahey 1971). The setting of the occupation was the still-aggrading natural levee of the active Mississippi River, now the cut-off called Beaverdam Lake, at its outlet into Beaverdam Bayou. Two components were identified at the site. The lower layer, Zone I, consisted of a midden and U-shaped pits associated with Lake Cormorant ceramics. Radiocarbon dates were recovered from two pits in Zone I: 220 ± 90 B.C. and A.D. 85 ± 100. Only the first date is considered appropriate for the Zone I assemblage (Ford 1990:105). A later Marksville component, Zone II, was present above Zone I; it produced three radiocarbon dates, A.D. 540, 450, and 250 (Table 8.1). Major type/varieties associated with the Zone I occupation at Boyd include Baytown Plain *var. Bowie* and Withers Fabric Marked *var. Withers*. Decorative types include Cormorant Cord Impressed *var. Cormorant*, Twin Lakes Punctated *var. Twin Lakes* and *var. Crowder*, and Churupa Punctated *var. Boyd*. There are occasional red filmed zones and incised or cord impressed lines accompanying the punctation. Red filming on the typical soft, clay tempered Zone I paste was also noted (n=54). A few sherds from Zone I were classified as Indian Bay Stamped and Marksville Incised *var. unspecified* (n=22). One cross-hatched rim was also recovered from Zone I (Connaway and McGahey 1971:Tables 3 and 4).

Material from Boyd, Zone I, was reanalyzed by Brookes and Taylor (1986; also see Ford 1990:105) who, combining information from Norman, redefine the ceramic types present on Cormorant complex sites. These include: Twin Lakes *vars. Twin Lakes* (Phillips 1970:166) and *Crowder* (Toth 1988:232); Cormorant Cord Impressed *vars. Cormorant* (Phillips 1970:77) and *Norman* (Brookes and Taylor 1986:25); Churupa Punctated *var. Boyd* (Connaway and McGahey 1971:24–25), and; Mabin Stamped *vars. Mabin*, *Point Lake*, *Deadwater*, and *Cassidy Bayou* (Toth 1988:226–228). Undecorated vessels were assigned predominantly to Phillips's (1970) types Withers Fabric Marked and Baytown Plain *var. Bowie* (traditionally a sandy paste, but here, Brookes and Taylor note, the materials classified as *Bowie* at Boyd have a typically Tchula soft, chalky paste). The high incidence of red filming, approaching 15 percent on Cormorant ceramics, is seen as an early trait, with such treatment declining to less than 2 percent in Marksville assemblages (Brookes and Taylor 1986:26).

The lithic assemblage from Zone I at Boyd includes three hafted bifaces with contracting stems. Cores include a least one example exhibiting parallel blade scars, which “resembles cores from the Jaketown Site” (Connaway and McGahey 1971:54–55, plates 30–32). A tool similar to a Jaketown perforator was recovered. Two reported limonite gorget fragments include one expanded center type, along with a fragment of a hollow, truncated cone of sandstone. Small round baked clay balls at Boyd and at other related sites were also thought to be a potential temporal marker.

Connaway and McGahey (1971:29–32) also discuss sites known at that time to be similar to Boyd, Zone I. The nearest are Sterling (22TU535), at the north end of Beaverdam Lake, and the McClintoc site (22TU539), seven miles to the northeast. Both have about a 2:1 ratio of plain to fabric marked, with minority decorative wares similar to those found at Boyd. On the basis of these three sites, the authors designate the Boyd phase. The distinguishing factor separating the Boyd phase and the nearby Turkey Ridge phase previously defined by Phillips (1970) was the apparent absence of Twin Lakes Punctated *var. Twin Lakes* in Phillips’s description of Turkey Ridge. This is in spite of the fact that Twin Lakes Punctated *var. Crowder* is reported from the Turkey Ridge phase component at the Withers site (G. Smith, personal communication, in Connaway and McGahey 1971:29)

Related assemblages were also noted from Norman (22QU518) and Melancholy (22CO637). Connaway and McGahey (1971:29) suggest that components from the Twin Lakes and White sites, previously included in the Marksville Twin Lakes phase (Phillips 1970), should be considered pre-Marksville based on the reported presence of Cormorant Cord Impressed (Phillips et al. 1951) and Twin Lakes Punctated sherds. Close parallels were also found with the Tidwell site on the Little Tallahatchie River near Oxford, with the somewhat later Clear Creek site, also on the Little Tallahatchie, and with the Early Miller I Bynum Mounds, in Chickasaw County, Mississippi, at the western edge of the Tombigbee drainage. We should note that Phillips et al. (1951) originally assigned several small mounds associated with multicomponent sites to the Tchula period. These mounds appeared to be confined to the Sunflower River area and along the Little Tallahatchie and Yacona rivers. Phillips (1970) and Toth (1988) were more conservative and assigned these sites to the Middle Woodland Twin Lakes phase (see expanded discussion in Ford 1990).

The Cormorant complex came into decidedly sharper focus after Ford’s (1990) examination of complete and partial vessels from five small, obscure mounds in the Central Hills. She argues convincingly for a Cormorant affiliation of the Tidwell Mound (22LA517), the McCarter Mound (22PA502), Tyson Mound (22LA673), and the Clear Creek Mound (22LA542) (Figure 8.1). Even though the pots are from mortuary contexts and cannot be considered representative of habitational assemblages, the descriptions of the vessel forms and decorative motifs are a major step toward understanding variability within and between sites and assemblages.

Additional Cormorant culture sites are known in Tunica and DeSoto counties, Mississippi, but these sites have not been extensively investigated. The Clay Ball site, on a sand ridge west of Tunica, is interpreted as a locus of repeated Tchula encampments. A small area of the site produced small (2–3 cm), spherical gray clay balls in large numbers. Twin Lakes herringbone punctated rims on reddish pastes are the prevalent Early Woodland diagnostic along this ridge, along with some Mulberry Creek Cord Marked, indicative of later occupations. Another large, partially destroyed site with similar clay balls and Twin Lakes Punctated ceramics has been found near Lake Cormorant (John Connaway, personal communication 1994). Brookes and Taylor (1986) suggest Tchula assemblages are present at two other sites, Swan Lake (22CO647) and Tackett (22QU567), but these are not discussed.

West Tennessee. A great many Tchula period sites have been recognized from surface collections made in west Tennessee, but, with a few notable exceptions, the chronological context and associations are ambiguous. A great deal of time and energy has been expended on reconciling problems of temper in Woodland period ceramics, with less emphasis on decoration and vessel form.

Gerald Smith has for many years proposed the development of a "Tchefuncte-like" ceramic horizon in west Tennessee from local populations affiliated through exchange networks with Poverty Point peoples to the south. In Smith's ceramic classification, Early and Middle Woodland sherds exhibiting fine sand and no clay particles are typed as "Baldwin" ware (Baldwin Plain is a Tombigbee valley type). Clay tempered wares with sandy pastes are termed "Thomas" (a sandy variety of Baytown Plain), and ceramics termed "Tchula" were seen as a northern variant of Tchefuncte that lacks the laminated cross-section appearance of the classic Louisiana coastal area Tchefuncte ware (Smith 1979a:i). The classificatory scheme was in part inherited by Smith from early workers in the region (Cotter and Corbett at Bynum; Koehler at Womack; Morse and Polhemus at Pinson). Smith concludes that the pastes have temporal significance and assigns Tchefuncte ware to the interval 300 B.C. –A.D. 1, Thomas ware to A.D. 1–150, and Baldwin ware to A.D. 150–300 (Smith 1979a:78). Smith (1979a), reporting on surveys in the Obion and Forked Deer drainages, offers definitions of several Poverty Point and Tchula period phases corresponding to watershed segments. Numerous sites were visited, with small to moderate surface collections being retrieved. These phase designations have been questioned on the basis of sample size and survey area (Mainfort 1994), but it is important to note that, in spite of the apparent rigidity of the paste/chronology proposed by Smith, many of the Early Woodland phases discussed are characterized by ceramics with Cormorant complex design elements on clay tempered sandy and non-sandy pastes.

The Tchula period in west Tennessee is also discussed in a recent report of archaeological investigations in the Obion River drainage by Robert C. Mainfort (1994:8–15). Mainfort, following Peterson (1979a), uses the terms "Transitional Period" to designate that period of prehistory (1,500–200 B.C.) that includes "the Middle and Late Gulf Formational cultures of the Tennessee River Valley, as well as cultures to the west that were contemporary with the Poverty Point and Tchula periods of the Lower Mississippi Valley" (Mainfort 1994:9). This period includes the development or adoption of ceramics and the use of baked clay objects. Diagnostic projectile points include those of the Wade and Flint Creek clusters (Ensor 1981; O'Hear 1990a).

In his discussion of the early ceramic traditions, Mainfort (1994:13) proposes the use of the term "Cormorant Horizon" in reference to assemblages containing Cormorant Cord Impressed as well as Twin Lakes and Crowder-style punctations. In the two dozen or so sites assigned to the Cormorant Horizon in west Tennessee, including 40MD2 and 40MD130, these design elements are seen as mainly associated with sparse, coarse clay (or grog) temper and a chalky texture. The co-occurrence of Withers Fabric Marked and baked clay objects is also suggested. A tentative date of ca. 500–200 B.C. is proposed for the Cormorant Horizon.

Excavations at Pinson, Mound 12 (Broster and Adair 1975; Broster et al. 1980), are particularly important to an understanding of the distribution and chronology of the Cormorant Horizon in west Tennessee. The excavations revealed two premound occupation levels, Strata V and VI. Two dates were recovered from Stratum V (Mainfort et al. 1982:17). A charcoal sample from the upper part of the deposit returned an assay of A.D. 255 ± 80 in association with Furrs Cordmarked (40 percent) and Saltillo Fabric Impressed (22 percent). The lower portion of Stratum V (Level 2) contained a ceramic assemblage consisting of over 50 percent Saltillo Fabric Impressed. A charcoal sample from this level was dated 205 ± 115 B.C. Stratum V overlies an earlier occupation in Stratum VI. Although there are questions concerning the ceramic counts reported for Stratum VI (Ford 1989:6), there do appear to be similarities between this assemblage and other Tchula period sites in the region. The assemblage is predominantly

Saltillo Fabric Impressed (approximately 70 percent) and plain. The percentages of other decorative treatments are not reported, but the excavators note that "a majority of the sherds exhibit rims with parallel interior incisions or notches and appear to represent large flared-rim jars" (Broster and Adair 1975:35; Broster et al. 1980:24). Four "net" impressed sherds from a flared rim jar of "an extremely coarse grain sand tempered type" are reported from Stratum V. The impressions, which begin at the lip of the vessel and cover the entire exterior surface, are widely separated and possibly were made with knotted cord. Several elliptical fabric impressed baked clay objects were also recovered from Stratum VI. Stratum VI is interpreted as contemporaneous or slightly earlier than Miller I (Mainfort et al. 1982:17).

Eastern Arkansas. There is slight evidence of Early Woodland occupation in southeast Arkansas. South of Helena, only a few sites in the Felsenthal, Bayou Bartholomew, and Arkansas River Lowland physiographic provinces have produced a handful of diagnostic sherds (Rolingson and Jeter 1986). Wheeler, Alexander, Tchefuncte, and Tchula complex ceramic types, modes such as fabric marking, thickened rims, and podal supports, and tetrahedral/biconical baked clay objects are taken as Early Woodland diagnostics. A few important sites have been reported, but little investigation has been conducted.

The Loggy Bayou site (3DR59) consisted of "a single quite distinct fire pit [that] had no cultural material around it. . . . It was packed with black carbonized soil, biconical and amorphous clay balls, and . . . Withers Fabric Impressed and Tchefuncte Plain" (Rolingson and Jeter 1986:95). Thermoluminescence dating (A.D. 290 ± 260 and 410 ± 130) indicates Marksville period use of the oven/hearth. A second Drew County site, Sandy Hill (3DR160), is on a point bar overlooking standing water. The site consists of several scatters of artifacts for a few hundred meters along the ridge. Most occupations date to the Late Archaic and there is a small concentration of Baytown ceramics. An Alexander Incised rim comes from this site, as well as expanded stemmed points. A third southeast Arkansas site, the Grampus or Lloyd's Bayou site (3AS84), is a Poverty Point-Woodland midden deposit in point bar deposits of the Arkansas River. Ceramics include a small, restricted-orifice jar on soft paste, Tchefuncte Stamped, Lake Borgne Incised, and Churupa Punctated. Ceramics, clay balls, plummets, gorgets, and stemmed points of the Gary and related clusters also come from this site complex (Rolingson and Jeter 1986).

Potential Tchula period sites have also been recorded in the Felsenthal region near the confluence of the Ouachita and Saline rivers, resulting in the naming of a Coon Island phase (Rolingson and Schambach 1981). This cluster of sites appears to be more closely related to the Tchefuncte culture. This is to be expected, given the geographical position and the fact that Tchefuncte ceramics have been found up the Red River as far west as Harrison County, Texas. Rolingson and Jeter (1986) note:

> [I]t is possible that sites are deeply buried both along the major river courses (as recently discovered along the Ouachita River) and perhaps are also in what are now thought of as swamps [like the McCarty site to be discussed below]. If much of southeastern Arkansas was swampy, then perhaps the sites are primarily ephemeral fishing and collecting camps that will be extremely difficult to find and to identify. [Rolingson and Jeter 1986:99]

The ceramic types noted for the Coon Island phase are Tchefuncte Incised, Lake Borgne Incised, Tchefuncte Stamped, and Tchefuncte Plain. Fragments indicate bases with short legs and "pinked or cockscomb" lip notching (Rolingson and Schambach 1981). The largest site thus far assigned to the phase consists of a complex of dispersed discontinuous midden areas with six mounds on a promontory on the edge of the 4 m high scarp defining the edge of the Deweyville terrace where it overlooks the extensive lowlands of the Gran Marais portion of the Ouachita River floodplain.

Morse and Morse (1983:137–138) have reviewed evidence of Early Woodland occupation of northeast Arkansas and have concluded that "historical continuity from the local Archaic is evident in artifact styles of the Tchula. No new populations or apparently even significant waves of influence were involved." The population of the Tchula period is seen as having a strong orientation toward the lowlands, with the uplands serving as "hinterlands" or perhaps virtually abandoned for habitation purposes. They determine that "it would have been difficult for groups existing adjacent to or within the modern meander belt to include upland regions within a seasonal migratory pattern" (Morse and Morse 1983:143). Although not specifically stated, the difficulty of including upland areas in the catchment is presumably due to the difficulty of crossing the many parallel, south-flowing streams across the floodplain to the adjacent hills. However, other researchers see a hiatus of occupation in northeast Arkansas at this time, as few Early or Middle Woodland sites have been identified in the area. This hiatus includes the Tchula and Marksville periods, with a few notable exceptions such as the Helena mounds, until A.D. 300–500, the Baytown period, when there is ample evidence of repopulation of northeast Arkansas (Dicks and Weed 1986).

Some settlement pattern information is derived from the distribution of sites across the landscape, but most of the Morses' information comes from the McCarty site (3PO467), a single Late Tchula or Early Marksville occupation near Marked Tree, Arkansas. McCarty was discovered during land leveling of a sand knoll in the backswamp between the Tyronza and Little rivers. The Tchula component consists of a concentrated cemetery with seven burials and other scattered bone next to an area with seven deep storage pits, two other burials, a shell deposit, and probably at least one shallow earth oven (Morse 1986:75). Biconical clay balls and fire cracked rock are fairly common on the site. Pits were 1–1.5 m in diameter, with estimated capacities of 400–1,000 liters. Burials were tightly flexed. Associated mortuary materials include an Alabama greenstone celt, nine small globular copper beads, a cache containing a large point and three adzes, and, probably, an antler tool, a basalt adze, and a Cormorant Cord Impressed bowl. Weems expanding stemmed, barbed points, and related forms were recovered; Gary rounded stemmed forms were poorly represented. Other tools include choppers, hammers, and "a number of short bifacial adzes, chisels, and/or hatchets" (Morse and Morse 1983:156). A reel-shaped limonite gorget fragment, a chert bead made from a bannerstone-drilling slug, a basalt gouge-type adze, and a hematite plummet also come from this site.

Ceramics from McCarty range from sandy to chalky, with some sand present in 85 percent of the sherds. Morse (1986:79) notes, "the distinction between grog and sand-tempered pottery is not as straightforward as in the Baytown period. . . . The two major pastes at McCarty overlap to a considerable degree." That there is an extended site reoccupation may be indicated by the fact that 40 percent of the sandy pottery is plain, but 80 percent of grog-tempered pottery is plain. The wares of the McCarty site are seen to compare well with the Pascola phase in southeast Missouri. Cordmarking is the dominant surface finish. Few fabric impressed sherds (one according to Morse and Morse 1983:147; two according to Morse 1986:82) were recovered. Morse concurs with Phillips (1970:174–175) that the type Withers Fabric Marked reaches its peak of production in the Early Marksville period. Other diagnostic ceramic treatments include rim nodes or bosses and podal supports. Check stamping and net impression are other minor surface finishes. Plain small bowls are present. Large jars have flat or conical bases. Punctations occur most often as a row beneath the rim or sometimes as a wider neck treatment. Horizontal bands of rocker stamping, possibly executed with mussel shell margins and classified as Tchefuncte stamped, appear on large jars. The most complete vessel was a small, partly red filmed Cormorant Cord Impressed deep bowl or jar with a very compact paste and polished surface. The vessel has interior cord wrapped dowel-impressed notches and exterior herringbone and nested triangle motifs executed with cord impressions bounded by impressions. The rim form is taken as a forerunner of Marksville rims.

Survey along the L'Anguille River recorded two sites that may have Tchula components (Anderson et al. 1989). Site 3LE175, with Paleoindian through Tenant period components, produced Burkett, Gary, and Weems points and Tchefuncte Stamped, Withers Fabric Marked, Baytown Plain, Thomas Plain, and Mulberry Creek Cord Marked ceramics. The site is on loessic soils on a high bluff over the main channel of the L'Anguille. Site 3LE226 is a dense Early and Middle Woodland scatter at the end of a long ridge extending into the L'Anguille swamp. This site is also situated on loessic silt loams. Tchula and Marksville diagnostics were recovered. The surveyors interpret from their findings that Early Woodland sites (ca. 3000–2500 B.P.) similar to McCarty are rare in the L'Anguille basin. Even by the beginning of the Middle Woodland period, small dispersed villages in the lowlands and seasonally occupied upland loci are scarce, and evidence for a change to horticulture is lacking. The Middle Woodland (ca. 2500–1500 B.P.) is recognized in the region by Cormorant Cord Impressed and Withers Fabric Marked, along with types typically thought diagnostic of the Marksville period. Two concentrations of Late Archaic-Woodland point types were recognized in the L'Anguille survey, one to the south indicating a substantial population and one to the north separated from the first by a break in distribution in the Cross County area (Anderson et al. 1989).

At the Brougham Lake (3CT98) site, near Earle, Arkansas, excavation revealed Tchula and later components (Klinger et al. 1983). One feature is attributed to the early component and at least two vessels are represented, one with rim bosses; also represented are biconical clay balls and Weems and Burkett points similar to those recovered from the McCarty site. The component is interpreted as a short-term occupation or perhaps the locale of periodic specialized activities like fishing and gathering. As at McCarty, the assemblage interpreted by the investigators as Tchula may instead be early Marksville, based on the smoothed-over, cordmarked, grit tempered and Evansville/Tammany Punctated ceramics.

To the north, in Mississippi County, Arkansas, three sites with Woodland components were identified in the course of canal work by the U.S. Army Corps of Engineers (Lafferty et al. 1987). These are deep, stratified sites with predominantly plain and cordmarked Barnes series (sandy paste) ceramics, although Poverty Point Objects were recovered from the lowest stratum of several sites, indicating at least some habitation of the area earlier than the Middle Woodland period.

Southeast Missouri. Price (1986) examines evidence from sites in the alluvial valley of southeast Missouri producing materials similar to decorated Tchula ceramics from farther south in the Mississippi River Valley. The apparent affinity of sand tempered Burkett, Pascola, and Hoecake site ceramics in southeast Missouri with the Alexander series has long been remarked, and a few cases of similar materials have been reported from rockshelters and open sites in the mountains to the west. Small Early Woodland sites on sand ridges are more common in the Little River Lowland, Malden Plain, and Western Lowland than in the Cairo Lowland. Sand tempering is a long-standing tradition in this region and continues through the Middle Woodland period Barnes ceramics. Some early (Pascola) traits such as rim bosses and fabric marking continue after cordmarking and folded rims become dominant. Price (1986:537) sees greater affinities for this complex in Alexander and Tchefuncte than with northern Early Woodland complexes such as Black Sand and Baumer. Sand/grit tempering and fabric marking are seen as part of a widespread technological horizon not necessarily implying close social connections. Specific Tchefuncte affinities are seen in style, decorative motifs, and surface treatments. In southeast Missouri, cord impressed, rocker stamped, pinched, bossed, fabric impressed, net impressed and other punctated treatments have been identified as having Tchefuncte correlates. Additional elements of the material culture include a lithic complex of heavily resharpened contracting-stemmed knives and small-stemmed corner notched projectile points, which are typically heat-treated. Generalized cutting/scraping bifacial discoidals, hematite plummets, and boatstones are also recognized. Clay balls occur on some sites. A date of 500–300 B.C., without radiocarbon support, is suggested (Price 1986:545).

Conclusions

Before addressing specific conclusions and hypotheses, it seems wise to first outline and define certain time-space-form constructs. The term "Tchula," as used here, is meant to designate a general time period that begins with the widespread adoption of ceramics and ends with the beginning of Marksville (Brookes and Taylor 1986; Phillips 1970). Tchula is conventionally restricted to that part of the Midsouth in the Mississippi River drainage south of its confluence with the Ohio River. Three major ceramic groups are recognized in the Tchula time-space unit: Alexander, Tchefuncte, and Lake Cormorant. All three ceramic groups appear to be derived from a stylistic pool of decorative modes present in the Gulf Tradition. Current data suggest the area including the lower Mississippi River Valley and lower Yazoo Basin south from the Jaketown site is characterized by Tchefuncte ceramics exclusively. Lake Cormorant assemblages are found in the extreme northern Yazoo Basin, the North Central Hills, and the Mississippi River drainage of west Tennessee, but Alexander and Tchefuncte assemblages are essentially absent (Brookes and Taylor 1986; Phillips 1970). All three groups occur on sites in southeast Missouri and eastern Arkansas and at Norman and related sites in Mississippi, but in these areas the stratigraphic/chronological relationships among the groups are not clear.

We assume that the adoption of ceramic vessel technology is time-transgressive and happened in different areas at different times. Alexander assemblages have been dated between ca. 800 and 400 B.C.; the development of Tchefuncte lies ca. 600 B.C. but perhaps as early as 800 B.C. (O'Hear 1990b; Webb 1991). Several lines of evidence suggest that the adoption of ceramic vessels occurred much later in the area characterized exclusively by Lake Cormorant ceramics. Differences in vessel forms, construction, and decorative elements between Alexander/Tchefuncte on one hand and Lake Cormorant on the other are mentioned by Brookes and Taylor (1986). In addition, Lake Cormorant ceramics lack the laminations present in Tchefuncte wares, suggesting a refinement in ceramic technology. The consistent co-occurrence of fabric marked ceramics with Cormorant decorative designs in surface collections and excavated assemblages at the Boyd and Fulmer sites indicates that the first use of ceramic vessels corresponds to the spread of fabric marking in the lower Tennessee River Valley (ca. 300–400 B.C.). A beginning date of approximately 400 B.C. for Lake Cormorant is consistent with the radiocarbon assay of 450 B.C. from an aceramic component at 40FY13 (Tables 8.1 and 8.2) (Peterson 1979b:31–32; Smith 1991). This date is also consistent with the ca. 220 B.C. date from the Turkey Ridge phase assemblage at the Boyd site (Connaway and McGahey 1971). A "late Tchula" affiliation for the Cormorant Horizon is also consistent with the beginning of profound changes in settlement in the North Central Hills—a topic discussed in more detail below. Future researchers may uncover sites with a pre–fabric impressed Cormorant component, or an earlier date for the introduction of fabric impressed ceramics, or a Cormorant assemblage predating the date suggested by 40FY13's limited evidence. But given the data at hand, a beginning date of ca. 400 B.C. for the Cormorant Horizon in this area is suggested.

To date, our best samples of Cormorant habitation assemblages are from Boyd, Zone I, and Fulmer. There are enough similarities between the ceramic assemblages from Fulmer and Boyd to suggest that these two sites should be considered representative of the same stylistic zone (i.e., Turkey Ridge phase), if not the same social/settlement system. Those differences that can be discerned (percentages of decorative designs and surface treatments; vessel forms; sandy clay tempered vs. non-sandy clay tempered pastes) might well relate to functional differences associated with an upland vs. lowland context. Based on the assemblages from these two sites, along with vessel descriptions reported by Ford (1990), the complex is recognized by a suite of distinctive ceramic and lithic attributes. Ceramic decorative modes include the use of individual cord impression (Cormorant Cord Impressed) and punctations (Twin Lakes Punctated *vars*. *Twin Lakes*, *Crowder*, and *Tidwell* and Churupa Punctated *var. Boyd*). These treatments were most commonly placed along the rims but were also on the body of vessels in zones outlined by incising or cord impressions. The assemblage at the Fulmer site suggests these decorations are primarily found on small to medium-sized bowls and jars. Red filming is also present on the interior and/or exterior of shallow basins and bowls and in delineated zones on bowls and jars. Black painting may also be present. Mabin Stamped varieties could also be present in some assemblages. Deep bowls/beakers are common and are usually associated with fabric marked exteriors and folded and/or everted rims. Cordmarking is absent. Ceramic pastes are characteristically soft and chalky, with clay inclusions and/or temper. Sandy pastes are common and even dominate some assemblages. Other aspects of the material culture include small baked clay objects, greenstone celts, and possibly expanded center gorgets. Projectile points include contracting stem types similar to Gary (Smith's [1979a] "Harris Island") and small points similar to examples in Ensor's (1981) Flint Creek cluster (Smith's [1979a] "Mabin" and "Lambert" types). Unidirectional blade cores and tools made from blades may also occur in small numbers.

The relationship between Boyd and Fulmer and the presumably coeval buried component in Stratum VI of Mound 12 at Pinson presents food for thought. The component has not been adequately reported, but on the basis of what has been written there appear to be both similarities and differences. Whether this component should be considered part of a separate but related Tchula period complex or whether it represents an entirely different development is not known. Possible implications are presented below in the discussion of ceramic temper.

FULMER SITE STRUCTURE

In the Research Design prepared as part of the proposal for Phase III data recovery at the Fulmer site (40SY527) (see Chapter IV), questions regarding intrasite variability and site structure were proposed. To address these questions, a systematic and representative sample of the site was collected. Previous research at similar sites has suggested activity areas associated with work, storage, domestic use, and refuse disposal might be identifiable (Peacock 1993c). It was reasoned that intrasite variability of artifacts and features at site 40SY527 could offer insights into the Early Woodland settlement system in the Loosahatchie River valley.

The preceding technical sections have detailed the excavation strategies of the investigations at the Fulmer site and described stratigraphy and feature morphology. The shallow stains and soil anomalies designated as features, though containing at least some organic deposits from the aboriginal occupation, are difficult to interpret unequivocally as Early Woodland installations. Certainly none is deep or substantial enough to be interpreted as storage facilities. Field assessment of the morphology indicated pretty clearly that most of the features are old root casts and burrows containing mixed midden soil and loess. The major exceptions are Feature 2, a possible hearth area, and Feature 16/22, a shallow basin 3 m east of Feature 2. The latter feature was correlated with the zone of highest artifact density. Both the disappointing radiocarbon results and the archaeobotanical analysis complemented the interpretation of the majority of the features as related to natural, postdepositional processes. As such, consideration of features will be mainly restricted to the large fire-reddened area, Feature 2, recorded near S32 W9 in Units 10, 15, and 17 (Figure 7.6).

The full-spatial site sample obtained from Fulmer contrasts markedly with typical excavation samples obtained from arbitrarily delimited rights-of-way, where it is typically impossible to estimate what fraction of an occupational scatter is under examination. This uncertainty either completely undermines attempts to consider the organization of space and landscape use by site occupants or renders statistically suspect any interpretations that are put forth. No such uncertainty pertains to the sample obtained from the Fulmer site, where occupational debris was closely correlated with the topography of the landform. The 92 m contour line (Figure 7.1) defining the top of the small knoll is a reasonable margin for the occupational scatter. A small saddle around S50 marks the southern edge of the main scatter, defining an oval area of about 450 m^2. Excavation in this core area provided excellent spatial coverage and a sample from 277 m^2 of the site surface, an outstanding sample fraction in excess of 60 percent.

An unusually large artifact assemblage was recovered from 40SY527 (Appendix A, Table A.1). Ceramic sherds constitute the majority of durable items, whether considered by frequency or mass (somewhat striking given the greater absolute density of stone). Fire cracked rock, ferruginous sandstone and siltstone fragments, lithic debitage, and burned clay pellets also occurred in high to moderate frequencies. These "bulk classes" were augmented by a much smaller quantity of Pliocene cobble cores, bifaces, cobble tools, PP/K fragments, flake tools, and fragments of baked clay balls. Ground stone items were quite rare. These included the poll end of a broken schist celt, a drilled and ground fragment of red siltstone (probably a gorget), and a white sandstone abrader. Organic preservation was poor at the site and restricted mainly to fragmented hardwood charcoal. Few food remains (trace amounts of burned hickory nut hull) were recovered, and there was essentially no bone preservation (the few pieces recovered from the floats appear to postdate the occupation and probably represent noncultural accumulations).

Despite the unsuccessful attempt to obtain absolute estimates of the temporal span represented at 40SY527 through radiocarbon assays, there seems little doubt that the deposit dates generally to the local Early Woodland Tchula period (ca. 400–100 B.C.). Participation in the broader Tchula cultural tradition of the northern Central Mississippi Valley is apparent. The number of separate components or occupational episodes represented at the site within this interval is less certain, and this section will try to shed additional light on this aspect of land-use reconstruction.

Analysis of site structure will treat the deposit as a single analytical unit, primarily because there is little evidence for stratigraphic separation. Material recovered from 71 excavation units (67 2 x 2 m units and four 1 x 2 m units) covering 276 m^2 in the core area are used here. Feature totals were included with the appropriate unit. Unit 21, a special water-screened sample, and Unit 19, located south of the main block excavations, are not considered here. The units were all excavated to the base of the artifact-bearing deposit and were, for all intents and purposes, of the same depth (maximum depth 22 cm below surface [cmbs]) Because soil volume was essentially constant, frequency and mass data were plotted as if the artifacts were restricted to the horizontal dimension. The only adjustments required were the doubling of the mass and frequency totals for the "bulk items" in the four 1 x 2 m units (Units 20, 79, 80, and 81). Note that these adjustments result in slight incongruities for some of the classes in Appendix A. Table 8.3 contains the absolute and adjusted values used for the distribution plots.

Two types of distributions are considered. The first is spatial trend line and gray-scale plots of individual and lumped categories of artifacts using both frequency and mass values. Plots using indices of ceramic fragmentation (average sherd mass) and relative size of chipped stone/waste (core:debitage ratio) as z-values are also examined. Cartesian coordinates are unit centers. These plots were generated using DeltaGraph Professional, version 2.0.1, and are included as a series of figures (Figures D.2–D.13) in Appendix D. Figure D.1 shows the margins of the plotted area with respect to the site topography and mapping grid. Most of the distribution maps contain artificially truncated marginal contours ("edge effect"), but these are easily ignored when considering the basic distributional structure of items having large samples. In addition to the trend line distributions, the point plot locations of low frequency items

Table 8.3. Absolute and Adjusted Values for Artifact Classes Used to Examine Material Distributions, Site 40SY527.

(adzes, PP/Ks, etc.) are presented. Most of the point plot locations are accurate only to within 4 m^2. The two types of spatial plots combine to inform in a fairly detailed way on the structure of the Fulmer site artifact scatter.

Distributions of ferruginous stone (FeSS) and fire cracked rock (FCR) are shown in Figures D.2 and D.3. The trend lines show the distributions as total grams of material per 4 m^2 of horizontal space. Although the z-values could easily have been modified to produce more "exacting" plots per square meter or per cubic meter of site deposit (see below), the structure of the distributions would have been identical. It is the basic clustering of material that is of interest here rather than the precise values associated with the contour lines. Two fairly high-density clusters of FeSS, each about 20 m^2, are apparent within the larger scatter. The clusters contain comparable masses of FeSS. The northern cluster is on the high ground above 92.5 m; the southern concentration is 4–5 m southeast of Feature 2 and more dispersed. FCR is more concentrated along the edges of the knoll than the FeSS and is generally more diffuse. There are three main clusters of FCR, each covering about 30–45 m^2. A low-density zone of both FeSS and FCR is apparent around Feature 2.

Both the frequency and mass of ceramics produce similar distribution plots (Figures D.4 and D.5). Ceramic refuse is quite dense in an area of roughly 150 m^2 along the eastern knoll flank between the 92 and 92.5 m contours. A second zone, about 40 m^2 west of Feature 2, is connected by a narrow high-density corridor, producing an obvious "halo" around the hearth. The zone of highest ceramic density (300–500 g per m^2) covers about 20 m^2 and perfectly overlaps the southern cluster of FeSS. The northern FeSS cluster is also complemented by a smaller ceramic cluster (ca. 3.5 m^2) containing about 60 g of ceramic refuse per m^2. The ceramic distribution plots also reveal an obvious "clean" area around the perimeter of Feature 2.

The total distribution of ceramic refuse was augmented by considering the distribution of average sherd mass across the knoll. A simple index of "sherd intactness" was computed by dividing the total ceramic mass for each unit by the frequency of sherds; high values indicate larger sherds on average for each 4 m^2 area, and low values indicate greater fragmentation (range of values 0.85–3.9, mean 1.93, s.d. 0.68). The gray-scale plot based on the index values is shown in Figure D.6. The larger, more intact sherds are definitely concentrated in patches along the site perimeter in close correspondence with the 92 m contour line with a few exceptions: sherds in the high-density zone southeast of Feature 2, and two small clusters to the northeast at the same distances of 5 m and 11 m from the hearth. The implications of the distribution of relatively intact vs. fragmented sherds will be considered again below.

Distributions of various combinations of chipped stone tools and waste are shown in Figures D.7–D.10. Variation between the mass and frequency plots for the same classes of chipped stone (Figures D.7 and D.8) is more pronounced than for the ceramics (Figures D.4 and D.5). This is not unexpected considering the effect a single large item can have, or the marked variation in core/debitage frequencies and masses. Taking these factors into account, however, the plots of chipped stone indicate distributions that are nearly isomorphic with those produced using the other artifact classes with large sample sizes. The primary depositional zone (containing 200–350 chipped items per m^2), covering roughly 15 m^2, is southeast of the hearth. A small high-density cluster of chipped stone also overlaps the ceramic and FeSS concentrations on the northern end of the knoll prominence. Marked absence of material around the fire basin is again apparent.

Figures D.10 and D.11 show the distribution of variable-sized chipped stone objects that complement the information on ceramic size sorting. Average object size, as measured by the ratio of cores to debitage in the units (range of values is 0.0–0.137, mean 0.04, s.d. 0.03; for positive core frequencies the range is between 7 and 137 cores per 1,000 flakes), is inversely correlated with both site-wide debitage and total object densities. This pattern is further explored below using point plot data for specific stylistic and functional stone tool classes.

Various artifact classes exhibit highly correlated spatial distributions, as indicated by the summary distributions of high-density ceramic and lithic zones (Figures 8.2 and 8.3). Significant overlap produces four rather distinct high-density clusters in a plot of total site artifact density (Figures D.12 and D.13). The clusters vary in density but are quite similar in size. Each cluster can be roughly accommodated by a circle with an area of 25 m^2. Figure 8.4 shows the relationship of the artifact clusters (referred to hereafter as A, B, C, and D) to the features.

Most of the soil stains were recorded in areas characterized by moderate artifact density. The most obvious exceptions are Feature 2 (interpreted as a central hearth), located near the center of a marked low-density halo, and Features 16/22 and 13 South. These shallow basins are not root casts or burrows, but appear to be associated with the site occupation (see discussion of features in Chapter VII). The location of Feature 16/22 equidistant from the centers of clusters B, C, and D may be significant. Larger items (cores and large sherds) are inversely correlated with clusters, with the exception of cluster D, which contained a relatively high proportion of larger sherds.

Table 8.4 lists characteristics of the artifact clusters. Density values are in grams per square meter. Value ranges for different material classes were derived from inspection of cluster overlap for the distribution plots in Appendix D. As can be seen, the sum of the mean densities for the four classes of mass-analyzed refuse are close but unequal to the mean cluster densities for combined artifact classes. The variation (particularly in the case of cluster B) can be accounted for by estimation error and skewing in the locations of cluster centers and the centers of specific item classes. Together, about 70 percent of the site refuse is concentrated in the four clusters. Total density ranges indicate that the cluster pairs A-B (fairly low-density) and C-D (fairly high-density) are quite similar. The apparent pairs also occupy similar topographic positions (A-B on the knoll prominence and C-D slightly down-slope along the flank south and east of Feature 2). Further, the ratios of mean densities for each low-density cluster and the nearest high-density cluster (A-C: 12.5 m and B-D: 6.7 m) are almost exactly 1:2. The proportional representation of the four primary refuse classes within clusters (bottom of Table 8.3) also suggests cluster pairs A-B and C-D. Clusters A and B are both characterized by a predominance of lithic debitage and chipped stone tools, and clusters C and D rank highest on

Figure 8.2. Summary Distribution of Ceramic Density and Sherd Intactness, Site 40SY527.

Figure 8.3. Summary Distribution of Lithics, Site 40SY527.

Figure 8.4. Summary Distribution of Features and Density Clusters (A–D) Defined by Total Artifact Density (g/m^2), Site 40SY527.

Table 8.4. Characteristics of Artifact Clusters, Site 40SY527.

(insert reduced Excel Table)

the proportion of ceramics. Both cluster pairs exhibit significant similarity on the number one rank order proportion. Similarity in the rank order scores diminishes for the classes with lower proportions, and no two clusters exhibit the same absolute orders. Cluster A seems to diverge from the other three clusters in having a fairly high proportion of FeSS. It is also more spatially segregated from the other clusters, which form an almost equilateral triangle between centers.

Before summarizing the implications for spatial organization based on the distribution plots, the point plot locations of formal tools with low sample sizes are considered. Figures 8.5–8.8 show the locations (accurate to within 4 m^2) of 105 formal tools and tool fragments in nine morphological/functional classes. The co-occurrence of the tools with the identified artifact clusters is shown in Table 8.4. With this interesting independent association data, the nature of the density clusters and the apparent pairings (A-B and C-D) implied by the mass data can be considered. Distribution of the tools indicates general co-variation with the distribution of other refuse items, with significant clustering along the knoll flank south and east of the hearth. About 60 percent of the formal tools (61 of 105) fall within the artifact clusters, slightly lower but quite comparable to the expected proportion based on the general distribution of material at the site. However, inspection of the detailed distribution of types across clusters reveals some very interesting inter-cluster variations (Table 8.3). The seemingly ubiquitous sample size-richness relationship (Leonard and Jones 1989) implies that tool type diversity should be positively correlated with cluster density. However, the two low-density clusters (A and B) are each associated with seven of the nine tool types, and the high-density clusters exhibit lower richness (4 and 6 types, respectively, for clusters C and D). This vaguely suggests an inverse relationship between cluster density and tool type diversity, but with only four examples the strength of the relationship is suspect. The proportion of tools plotted in the identified clusters also diverges from expectations in half the cases based on relative sample size (see Table 8.3). Bifaces, scrapers, adzes, and PP/Ks are slightly rarer in the high-density zones; the other tool classes are roughly in the expected range. Formal tools seem to be significantly overrepresented in cluster A, significantly underrepresented in cluster C, and within the expected range based on density variation in clusters B and D. Projectile points were recovered only from clusters A and B and peripheral areas (Figure 8.8). Both PP/Ks and adzes show significant distributions at the north end of the ridge, away from the total chipped stone concentrations.

Material distributions at Fulmer point to highly redundant occupational use of the small finger ridge. Very high artifact densities in restricted locations, combined with the presence of a single well-defined hearth, support an interpretation of either repeated short-term occupation by a small group with very brief intervals between residential episodes, or short-duration year-round occupation by a small residential group. The absolute number and duration of the occupations are difficult to establish. Areas of high traffic are indicated on the highest ground north and west of Feature 2 by the general distribution of artifacts and by size sorting. Paths into and out of the occupation area may be indicated by gaps in the peripheral zones of relatively intact sherds (Figure 8.2) (O'Connell 1987:95, Figures 11 and 12). A marked clear area around the hearth is apparent. Interestingly, the size of the low-density halo around the hearth is comparable to the size of the artifact clusters (20–25 m^2) (Figure D.13). Artifact clusters may represent activity (clusters A and B) and refuse disposal areas (C and D), respectively. Spatial segregation of activities associated with PP/Ks and adzes *may* be exhibited by tools at the northern terminus of the ridge. More general considerations of site structure and spatial organization will be taken up in the next section.

COMPARATIVE REGIONAL SETTLEMENT ANALYSIS

The spatial distribution of durable items at the Fulmer site (40SY527) was considered in some detail in the previous section of this chapter. This treatment was site-specific. Here we take up

Figure 8.5. Distribution of Bifaces and Pebble Tools, Site 40SY527.

Figure 8.6. Distribution of Denticulates, Scrapers, and Drill/Perforators, Site 40SY527.

more general issues of site structure, occupational duration, spatial organization, and group size by drawing on comparative data from local, regional, and global contexts. The primary focus will be at the scale of the "residential group." An explicit consideration of residential group organization is strongly supported by the nature of the site itself, which exhibits multiple material correlates of ethnographically documented nonagricultural residential groups. The scale and focus of analysis contrast rather markedly with common interpretive treatments that address variables related exclusively to more abstractly "defined" nonresidential groups. We refer of course to cultural traditions and constituent "phases." Regardless of the specific concept under consideration, be it the Tchula period Cormorant Horizon of the northern alluvial valley or some other similarly conceived unit, nonresidential group delineation as applied in the Southeast is roughly equivalent to a geophysical subdivision (usually a curved line drawn around a drainage or physiographic subregion) coupled with a qualitatively characterized "style zone." Determining the degree to which phase boundaries correlate with prehistoric social boundaries or interaction networks is typically quite difficult, but the assumption that archaeological phases somehow reflect information-sharing groups is implicit in most formulations. We have no intention of digressing into a discussion of the validity of particular phases, but merely wish to emphasize that specific "phase affiliations" are in most cases irrelevant to generating regional models of long-term settlement-subsistence and land-use practices. It is recognized, however, that residential groups do not operate in isolation. Therefore, consideration of intrasite variability and spatial organization at the Fulmer site would be incomplete without looking briefly at regional data that may reflect the organization of the larger settlement-subsistence system.

Temporal trends in occupational intensity and land use in the local area may be gauged by looking at Peterson's (1979a, 1979b) data from the Wolf and Loosahatchie drainages. Much of the information was obtained from the floodplains, terraces, and upland ridges immediately surrounding the Fulmer site. For example, eight of the 50 randomly and intuitively selected one-minute survey quadrangles in the Loosahatchie watershed fall within the Arlington 7.5′ USGS quadrangle and lie along or immediately next to portions of the proposed SR 385 right-of-way. Survey in both watersheds resulted in a data base of 490 sites (both previously recorded and new sites; 351 in the Loosahatchie and 139 in the Wolf) derived from 4.2 percent (Loosahatchie) and 5.1 percent (Wolf) samples of over 4,000 km^2. The total 18,772.4 ha discontinuous survey tracts were stratified by primary landform along the Loosahatchie (11 percent floodplain, 29.5 percent terrace, and 59.5 percent upland) and Wolf (13 percent floodplain, 22 percent terrace, and 60 percent upland). Peterson employed the stratified sample data to generate predictions of component occurrence for each of the primary landforms. The distribution of expected site (actually component) frequencies across the physiographic zones by period is summarized in Table 8.5.[1] These expected frequencies (totaling 7,114 sites/components; Peterson totals 6,126) are weighted by the relative exposure of the three physiographic zones across the local landscape. As Peterson originally noted (1979b:70–71), both watersheds exhibited remarkably similar site distribution patterns with the exception of the distribution of late period components near the river mouths. The similarity of the distributions supported combining the samples into a single contingency table.

[1] Peterson's data tables are somewhat difficult to work with, particularly Tables 20 and 21 in the Loosahatchie report (Peterson 1979b). There are several inexplicable discrepancies here between cell frequencies, marginals, and site totals in other parts of the reports. We suspect that this is partially due to the rather vague distinction between *components* and *sites* throughout most of the narrative. One would expect, for example, that the individual cell frequencies in the "Sites Located" column of Tables 20 and 21 would add up to the totals at the bottom. Sums of cell values for the Loosahatchie table offer totals of 17 floodplain, 183 terrace, and 33 upland "sites." The totals at the bottom are 16, 162, and 56, respectively. We assume that the cell values represent the distribution of recognizable components across the located sites, but Peterson does not explicitly state this in the text. Futhermore, Peterson (1979b:71) states that the site totals include the random, intuitive, and previous survey work in both drainages. Table 21 (Wolf) lists the appropriate 139 sites, but Table 20 (Loosahatchie) lists only 234, not the 351 said to make up the total site sample for this drainage. In any case, we have worked directly with the "Expected Sites" values (assumed to be individual components) without regard to the original marginals.

Archaeological interpretation of contingency table distributions rarely depends on examining raw frequencies such as in Table 8.5. A routine Fordian procedure of calculating percentages for period seriation is normally pursued, which in this case would involve dividing each component value in the three physiographic zones by the appropriate row (period) total. This method implicitly assumes that the relative co-occurrence of components in physiographic zones in a period carries more interpretive meaning than the relative occurrence of components in a single zone through time (the percentage we would generate by dividing cell values by the appropriate column totals). For archaeological purposes, e.g., settlement pattern analysis, we are usually interested in both kinds of relative concentrations. Both McNutt (Lumb and McNutt 1988) and Sackett (1989) have explicitly addressed this methodological dilemma and have independently advocated the use of normalized matrices for the analysis of contingency tables. The procedure is simple and involves alternating cyclic calculation of row and column percentages. This results in a matrix that provides simultaneous information on both kinds of concentrations (the "inherent variability" of the sample) (Lumb and McNutt 1988:60). Resulting cell values and marginal totals can then be used to compute goodness of fit statistics (X^2, G^2) to see how the representation of components in the three physiographic zones corresponds to those we might expect under random conditions. (Peterson also used nonparametrics to examine the component distributions across landforms.) The reader is referred to the above sources for more extended discussion of the rationale and procedures of matrix normalization.

Normalized matrices of expected site frequencies are shown in the center of Table 8.5. Individual cell values for each matrix have been adjusted so that the grand totals are 100. Separate calculations dropping the post–Middle Woodland components were run based on Peterson's judgment that "projections for the latest two units in the sequence are not considered valid because of the destruction to the lower Wolf valley caused by Memphis and its suburbs." This is no great loss because our focus is on long-term trends in Archaic through initial Woodland period site distributions. The reduced matrix was further modified by increasing the individual cell values by five to account for the zero values for Early Archaic floodplain and Late Archaic upland distributions (not strictly proper but probably only a minor statistical infraction given the "projected" nature of the site frequency matrix).

Again, the assumption here is that relatively constant, nonselective land-use patterns through time would have produced a random distribution. This would be reflected by the values shown at the bottom of Table 8.5 (100/27; 3.7 and 100/21; 4.76, respectively, for matrices *a* and *b*, *c*). By applying a "rule-of-thumb" procedure for assessing the significance of the departure of individual cells from equiprobability (Lumb and McNutt 1988:61), it is possible to evaluate the representation of components across the three landforms. For the smaller matrix (*b*, *c* , 21 cells and 12 degrees of freedom), a X^2 value of 21.03 satisfies a significance level of 0.05, requiring an average X^2 value of 1.001 (21.03/21) for each cell in the three by seven contingency table. Because the expected value for each cell under random conditions is 4.76, we can solve the X^2 equation $[(o-e)^2/e]$ for o through substitution to obtain a range for the observed values. In this case $o = 4.76 \pm 2.1835$, so any observed cell values in the range $2.58 < o < 6.945$ can be considered insignificantly different from those expected under random conditions at the 0.05 level. Values outside this range would of course represent significant overrepresentation or underrepresentation of a component on one of the three landforms. The math for the total matrix is the same (see bottom of Table 8.5 for critical values). Each cell in Table 8.5 is coded according to this range, which is sensitive to both the representation of expected components across landforms and the total frequencies of expected components in each physiographic zone. Outstanding deviations (probably significant at p values less than 0.05) are enclosed in boxes. As can be seen by comparing the general distribution of significantly deviate cells in the three normalized matrices, the inherent variability is about the same. Most variability appears to be related to the projected Late Archaic site distribution.

The most significant aspect of the land-use data is their apparent reflection of highly variant use of upland locales across major time horizons. Site distributions in the other physiographic regimes (terraces and floodplains) appear to be about what one would expect given landscape exposure and projected site density. Of course, the remarkably overrepresented Late Archaic sites projected for the floodplain are a lone exception. Temporal variation in the pattern and/or intensity of upland use suggested by the analysis is basically the same as that proposed by Peterson (1979b:74–76), although the modified matrices reflect less overall temporal variation in land use than Peterson found by analyzing the raw projections. If the normalized land-use indicators are further weighted by the estimated period of duration, the distribution of land-use indices may be plotted as in Figure 8.9. As indicated by the inspection of the cell deviation patterns in the normalized matrix, use of terrace and floodplain locales exhibits roughly covariant increases through time with the noticeable exception of a dramatic relative reduction between the Transitional and Early Woodland periods (roughly between 3150 and 1850 B.P.). In contrast, upland land-use changes markedly, with maximum index values indicated for the Early Archaic and Early Woodland. Two extreme shifts are in evidence at around 7500 B.P., during the Early to Middle Archaic transition, and approximately 2500 B.P., at the beginning of the Early Woodland. The coincidence of the earlier shift with the peak of the Hypsithermal climatic regime seems to lend some credibility to both the sample numbers and the various weightings applied to the index values. This makes the latter shift during the Early Woodland, which seems to mark the most intensive use of upland locales for any time period, difficult to reject on the grounds of sampling or statistical problems. However, undocumented biases in component assignment might also be at work.

Figure 8.9. Indices of Archaic and Woodland Period Land Use in the Loosahatchie and Wolf Watersheds.

Additional manipulation of the Loosahatchie/Wolf settlement pattern data does not supply any more definitive "proof" of long-term changes in land-use patterns than Peterson's original treatment. As Peterson recognized, there are sampling intangibles that leave one less than confident about the reconstructed site distribution pattern (see also Mainfort 1994:9, 19). The indices are, however, quite suggestive. Of obvious interest with respect to interpretation of the Fulmer site is the indication of dramatic increase in upland sites during the Early Woodland. If this is indeed the case, Fulmer may be characterized as a "typical" site. Despite this, no detailed information on the internal organization of these apparently common upland occupation areas was available before the excavation at 40SY527. It is instructive to consider some findings from adjacent areas to further assess the validity of the settlement pattern indicators in the local area before focusing specifically on intrasite variability at the Fulmer site.

Several surveys and site assessments have been performed in the region around Memphis since the early work along the Wolf and Loosahatchie. Selected survey and sampling tracts in western Tennessee and northern Mississippi are shown in Figure 8.10. None of the shaded areas represents blanket coverage, but some have been surveyed rather intensively. The Hatchie and the Wolf/Loosahatchie (3, 4) represent stratified random samples. Data were obtained from the other tracts through both intuitive survey and total survey coverage of small tracts mandated by cultural resource management compliance. For the Early Woodland period (Table 8.1), survey tracts in the Mississippi drainage (1–5) may be considered to fall in a generalized Tchula/Lake Cormorant region; the Tombigbee tracts (6–7) are in the Alexander-Miller area (Johnson 1988; Rafferty 1994). Additional data on tracts 1–5 are in Table 8.6.

Beech Ridge is an upland locale in the West Tennessee Plain at the confluence of the Middle and South forks of the Obion River (Anderson et al. 1987; Childress 1993:37; Mainfort 1994; Smith 1979a). Approximately 35 sites have been recorded just above the 300 foot AMSL contour along the edge of an elongated loess ridge (elevations range from about 300 to 350 feet AMSL). Most of the sites are small and lack significant midden deposits. A notable exception is 40WK100, a small midden "mound" along the floodplain terrace edge southeast of the primary concentration of upland sites. Described as "preceramic" on the basis of recovery from a 1 x 1 m test unit (no pot sherds), the site is nonetheless assigned to the Tchula period (Mainfort 1994:94). Tchula or Early Woodland components were recognized on 50 percent of the Beech Ridge area sites by various investigators. This is probably a conservative estimate; most of the other sites were assigned only to the Woodland or Late Archaic-Transitional time horizon due to the absence of time-sensitive artifacts. The low-density Dalton through Mississippian components at 40WK110 (described as primarily Tchula) and minor Mississippian presence at 40WK87 are the only recognized components outside the Late Archaic-Woodland range. Like the data from the Wolf/Loosahatchie, survey in the Beech Ridge area generally supports an interpretation of marked regional increase in the Early Woodland use of upland edges.

Jolley's (1984) survey in the Cypress Creek drainage near the interface of the loess sheet and the Coastal Plains sands and clays also generated useful comparative data on upland site distributions. In fact, these data are particularly interesting because coverage was focused on upland areas due to the location of proposed Soil Conservation Service terraces (Jolley 1984:9). A pattern of small (under roughly 700 m^2), low-density sites (most probably lacking appreciable midden accumulations) along ridge tops and side spurs was evident. The small surface collections appear to reflect fairly high ceramic to lithic ratios. Recognition of sites with Early Woodland components (n=6) was conservative; Jolley relied mainly on the presence of Gary cluster (Adena) projectile points and fabric marked ceramics. However, 38 of the 64 components identified were assigned to the Woodland period. Sites with more specific temporal assignment were largely Transitional Archaic or Early Woodland (22 of 26 components). Nearly 90 percent of sites (14 of 16) yielding baked clay ("Poverty Point") objects also contained pottery sherds, and half of the sites with Early Woodland components also had Transitional Archaic components. Although not quite as robust as the Wolf/

Figure 8.10. Selected Survey and Sample Tracts in Western Tennessee and Northern Mississippi.

Table 8.6. Site Size and Density Data for Upland Localities in the Mississippi Drainage of Western Tennessee and Northern Mississippi.

(Insert Excel Table)

Loosahatchie data, the available indicators point to marked increase in the occupation and use of upland edge settings during the Early Woodland interval. The Tennessee Division of Archaeology has identified the Cypress Creek sample as "a concentration of sites yielding Cormorant and related ceramics" (Mainfort 1994:14). As in the Beech Ridge area, only one site (40MD130) was significantly larger (about 35,000 m^2) and potentially more complex. Jolley (1984:31) described it as a large "Woodland base camp." Additional work by Mainfort (1994:13–14) led them to describe the site as one of the "larger recorded Cormorant horizon sites" in western Tennessee.

The Cypress Creek data are also notable for the high site density in the uplands. This density is matched only by the interfluvial portions of the Holly Springs National Forest in northern Mississippi (Peacock 1993a, 1993b, 1993c). This latter sample is particularly interesting from the perspective of the Loosahatchie due to its proximity to the Fulmer site and the partial overlap of the watersheds. Peacock describes a series of small sites "thickly concentrated in the ridges" north of the upper reaches of the Little Tallahatchie. Data indicate that most of the sites date to the Tchula period. Mean site size is extremely close to the recorded size of the Fulmer site (Table 8.6). These small sites also appear to lack significant midden accumulations and are characterized by high ceramic to lithic ratios. Lithics are primarily ferruginous sandstone fragments. Although no significant testing has been accomplished to date, the sites are provisionally interpreted as single component, short-term seasonal occupation areas. Marked variation in the density of ceramic-bearing sites is also recorded north and south of the Little Tallahatchie (roughly 20:1 according to Peacock 1993c:11), perhaps marking the boundary of a dispersed settlement cluster. The pattern of Early Woodland landscape use is again quite similar to that inferred for the Loosahatchie drainage.

Survey near the mouth of the Hatchie River (Jolley 1981) was based on a physiographically stratified sampling strategy nearly identical to Peterson's. (Random quad sizes were 100 ha along the Hatchie vs. ca. 284 ha along the Wolf and Loosahatchie). Site density along the bluff edge and interior upland ridges was fairly high in the 412 ha sample space (Table 8.6), and the representation of components was quite comparable to the other tracts. Of the 771 sherds recovered from some 45 sites, only one was shell tempered. Most of the identified components (24 of 37; 65 percent) dated to the Transitional Archaic or Woodland. The subsample of upland sites was similarly distributed (12 of 17 upland components; 70 percent). As in the Beech Ridge and Cypress Creek areas, a single site seemed to be exceptional in comparison to the small upland loci. Site 40LA77 is a small site in the floodplain of a secondary stream covering only about 1,200 m^2. Although only 26 sherds were recovered, half were fabric impressed (on clay/grit/sand tempered paste); this was the only site in the area that yielded any Withers Fabric Marked. This site also exhibited fairly high surface density.

Consideration of the settlement pattern indices for the Loosahatchie and Wolf drainage in regional context supports the interpretation of a fairly dramatic shift in the relative use of upland settings around 2,500 years ago. Even in the adjacent Nonconnah drainage (Smith and Weinstein 1987), where bias toward survey along the terraces and floodplain fringes is heavy, most of the upland components identified (23 of 38) include material associated with the Poverty Point and Early Woodland periods. The co-occurrence of baked clay objects and ceramics on many sites in *some* of the drainages (see also Mainfort 1994:10), combined with the presence of fabric impression on both locally early ceramics (Withers, Twin Lakes Punctated rims, and possibly Cormorant Cord Impressed rims) and baked clay objects, indicates that the timing of increasingly intensive use/occupation of uplands varied somewhat. Variance in the site density across the survey tracts also seems to reflect no uniform settlement pattern shift (Table 8.6). In other words, there seems no reason to suggest a broad, large-scale shift at some specific time, but rather slightly staggered but generally coeval changes during the latter part of the Transitional period (Table 8.1) (Johnson 1988). Fine-tuning the temporal context is not possible with current data. Indications of increasing site density in interfluvial zones should not be taken as evidence that other zones were unoccupied or un(der)exploited. In fact, *if* the location of numerous small occupation sites along ridges and side spurs was part of a strategy to reduce the distance from residential areas to the resources present in all the physiographic subzones, we might infer that the intensity of local resource exploitation was increasing in general. This inference concerns the larger settlement-subsistence system, of course, and the comparisons drawn for this discussion have been restricted to how aboriginal people were positioning themselves on the landscape. We are taking a cue from Rafferty (1994) in maintaining an explicit analytical distinction between the apparent settlement pattern (mobile, sedentary, nucleated, dispersed, clustered, etc.), occupational permanence (year-round, seasonal, short-term activity-specific, etc.), and basic mode of subsistence (foraging, collecting, hunting-fishing-gardening, etc.).

Rafferty (1994) is the best general discussion of apparent changes in settlement pattern for the region, with a specific focus on recognition of the onset of fully sedentary occupation. Like the information reviewed here, the Lee/Pontotoc area site indicators are derived from survey data. She points out that the interpretations drawn from the Lee/Pontotoc data are not intended as a model for the entire region, emphasizing the distinction between the Pontotoc Ridge area and the valley of the Tombigbee to the east. It is important to emphasize that sedentism does not imply the complete loss of mobility, but the shift from seasonal to year-round occupation at residential sites. Rafferty's analysis and discussion is directly relevant to the interpretation of the Fulmer site for two reasons. First, the inferred occupation date for Fulmer (roughly 200 B.C.) immediately postdates the inferred timing for the relatively rapid adoption of sedentary patterns for the region. As indicated in the previous sections, the change in apparent settlement duration is closely correlated with the most dramatic shift in land-use indicators for the Loosahatchie watershed. Second, Fulmer matches the range of indicator values measured on sites interpreted as postdating the onset of fully sedentary occupation. The most important appear to be a high ceramic to lithic ratio, very high artifact density, minimal distance to water (ca. 200 m to the nearest tributary), and high diversity of tool types. In fact, most of the durable items (recognizing the preservation bias against organics like wooden bowls, bone awls, etc.) expectable from a site occupied by both men and women engaged in a full range of subsistence and craft-oriented tasks are present. Debitage analysis indicates that those involved in the manufacture and maintenance of stone tools were probably roughing out blanks, producing expediency tools from pebble cores, sharpening bifaces through edge retouch and grinding, and discarding spent items on-site. The ceramic assemblage and accompanying hafted bifaces further suggest a single component, residential group occupation sometime around 200 B.C.

Although what may seem an inordinate amount of time was devoted to the regional record of Transitional/Early Woodland settlement, this was seen as essential to providing appropriate background for a time period characterized by considerable change. Of particular interest in the local area is the sudden shift to sedentism accompanied closely by the adoption of ceramic cooking vessels. With the review of the regional settlement pattern accomplished, we may finally turn our attention back to the interpretation of intrasite variability at the Fulmer site and the implications for residential group organization.

Distributional analysis demonstrates that Fulmer was a small occupation site that covered only about 450 m^2. Discrete clusters of refuse covering roughly 25 m^2 each were interpreted as activity and associated disposal zones based on inter-cluster artifact diversity, cluster proximity, and density ratios. Because household and activity areas are closely associated among documented hunter-gatherers, clusters with the highest diversity (clusters A and B) on the knoll prominence may be tentatively identified as the former location of structures. Although no post patterns were recorded, this could be related simply to the nature of the construction. Certainly the presence of discrete ovoid zones meets our expectations for the shapes of pre-Mississippian structures, and the inferred shape and fugitive evidence of posts or basins is correlated with the available global sample of highly to moderately mobile groups (Gamble 1991:6). If the inference holds that Fulmer represents an occupation area used by a group experiencing recently restricted seasonal mobility, no rapid change in architecture may have occurred. No local comparative data on Early Woodland floor areas are available, but round houses with radii of 2–3 m are certainly in keeping with patterns recorded on this time horizon for adjacent areas (Braun 1991:369; Steponaitis 1986:376–381). The circular pattern covering only about 3 m^2 reportedly revealed at 40FY13 and dating to 450 B.C. (Peterson 1979b; Smith 1991:54) must for now be considered aberrant for both the time period and region. Late Woodland houses recorded in the adjacent Mississippi River alluvial valley at 3CT98 (Klinger et al. 1983:201–243) indicate round structures with internal floor areas of about 20 m^2. Given the cluster size, arrangement, and spacing at the Fulmer site it is difficult to infer more than two households in residence. O'Connell's data (1987:85) indicate that a debris scatter of the size exhibited at the Fulmer site could be easily generated by a single (Alyawara) household.

It was suggested earlier that the site structure could be accounted for by "either repeated short-term occupation by a small group with very brief intervals between residential episodes, or short-duration year-round occupation by a small residential group." In western Tennessee variables of site size, assemblage content/diversity, and location have been implicitly related to primary function ("hunting camp," "nut-gathering camp," "floodplain village," "base camp," etc.). None of these characterizations has been based on the kind of data that are available for 40SY527. Based on preliminary survey data, Fulmer would have probably been interpreted as a "hunting camp" or "nut-gathering camp," depending on the kind of material contained in the collection. However, as the regional review indicates, year-round occupation of residential sites should not be unanticipated. Let us consider the evidence for short-term seasonal vs. short-duration year-round occupation of the site.

Several density plots indicated high traffic at the Fulmer site on the highest ground north and west of Feature 2 (Figures 8.2–8.4). The clearest indications of possible paths into and out of the occupation area are the gaps in the peripheral zones of relatively intact sherds and the size-sorted chipped stone and debitage. As O'Connell notes (1987:95), both artifact size-sorting and secondary refuse disposal zones (if this is indeed what clusters C and D represent) correlate with longer occupation spans. Ethnoarchaeologically recorded occupation areas indicate, in fact, that the patterning at the Fulmer site should not result from short-term occupations separated over fairly lengthy periods. Estimating occupational duration at the Fulmer site using O'Connell's (1987:80–81) Australian information on the relationship between activity area distributions and occupation span yields values far higher than even the longest duration occupations of the Alyawara. Even making large adjustments in group size indicates that a year or more would have been required to generate a scatter of this density in such a restricted area. The Fulmer assemblage content supplies ample independent evidence for an extended occupation at the site. There are 36 of the most common large utilitarian cooking vessels (Form 12) in the ceramic assemblage, which means that perhaps 60 of these forms were used and broken at the site. Estimates based on Mississippian vessels with greater strength and thus longer use-lives would include an estimated occupation span of about 20 years for an assemblage with this number of jars (Pauketat 1989). Assuming that Early Woodland vessels had use-lives half as long as Pauketat's ethnographic sample, the estimated occupation span is still considerable and does not indicate short-term, activity-specific or seasonal occupation of the knoll. Finally, the clean zone around the hearth, its size and organization (Binford 1983; Thomas 1991:196–199), and a single large, well-defined cooking facility clearly indicate use and maintenance (the feature had apparently been cleaned out at least once) by a small core group of closely interacting residents with shared knowledge of the site's "appropriate" spatial organization. The combined indicators, then, are more supportive of a single sedentary occupation by a small group of perhaps two households for several years than repeated short-term seasonal occupation by various groups of possibly variable internal social composition and thus incomplete knowledge about the specific organizational features of the Fulmer site.

COMMENTS ON THE ARTIFACTS

Trade and Transportation of Nonlocal Materials

The Research Design prepared for the Phase III data recovery at the Fulmer site posed the question of trade and transportation of nonlocal materials or finished artifacts. At present, little can be said regarding exchange of ceramic items, except that exotic pastes and decorative treatments generally associated with vessels conventionally classified as "Hopewell ware" are absent in the assemblage. For the most part, the ceramic and lithic assemblages indicate local procurement and manufacture. The exceptions are the greenstone celt fragment and (possibly) reddish siltstone gorget fragment recovered from the excavations (see Chapter VII). The celt material has been tentatively identified as Hillabee schist from central Alabama (Eugene Futato, personal communication 1994). Greenstone celts are commonly found on Middle Woodland sites (Cole 1981:41–44), and an example was recovered from the Tchula component at the McCarty site (Morse 1986:87, Figure 7.4f). Greenstone celts also occur at the Poverty Point site (Webb 1977:44–45).

The complete shape of the small red siltstone gorget could not be determined, but expanded center bar gorgets have been recovered from Cormorant components at the Boyd site (Connaway and McGahey 1971:55) and at the Tidwell Mound (Ford 1990:108). Ferruginous siltstone has a wide distribution across the Midsouth, but the recurring similarities in form and material at sites as far away as Poverty Point (Webb 1977:47) indicate that these items, or the raw materials, were extensively traded.

Debitage Analysis

One problem proposed for the investigations at the Fulmer site centered on the question of regional variation in the types of activities performed at similar sites in the area (see Chapter IV). Several types of open-habitation sites have been proposed for western Tennessee, including base camps, temporary field camps, limited activity loci, and lithic workshops. Assigning site types on the basis of individual site assemblages can be problematic, especially when site boundaries are not well established and when impressions of artifact diversity are based on small sample sizes. One method of classifying site lithic assemblages is proposed by Sullivan and Rozen (1985). Lithic assemblages from a series of excavated sites and surface collections in Arizona were sorted according to differences in the percentages of the four debitage categories (complete flakes, broken flakes, flake fragments, and debris) and the two nondebitage categories (cores and retouched pieces) using a hierarchical cluster analysis (see Chapter IV). Four groups (Groups IA, IB1, IB2, and II) are defined. Each group is assumed to reflect substantially different lithic technologies (Sullivan and Rozen 1985:763). The assemblage groupings proposed by Sullivan and Rozen are based primarily on the relative proportions of debitage, not tools. This makes the method much more applicable to small collections, which may not contain a large sample of formal artifacts.

Group I collections show substantial evidence for initial core reduction activities, and Group II collections are associated with later stages of tool manufacture. Compared to Group II collections, Group I sites are distinguished by higher percentages of cores and complete flakes and lower percentages of broken flakes and flake fragments (Sullivan and Rozen (1985:762–764). Group II collections are characterized by the lowest percentages of cores and complete flakes and the highest percentages of broken flakes and flake fragments (Table 8.7).

Group I is subdivided on the basis of the relative proportion of debitage categories. Group IA is characterized by extremely high percentages of cores and complete flakes and very low percentages of broken flakes and flake fragments. These collections are thought to be associated with unintensive core reduction at sites where chert cobbles were abundant and only a few flakes per core were removed. Groups IB1 and IB2 are intermediate between Group IA and Group II. Group IB2 assemblages are characterized by a very high percentage of debris, assumed to be the product of shattered striking platforms and bulbs of percussion that become increasingly abundant as core reduction becomes more intensive. In other words, debris will increase with the number of flakes struck per core and as the core platform angles increase. Group IB2 assemblages are interpreted as the byproduct of intensive core reduction. Group IB1 assemblages are interpreted as the byproduct of both core reduction and tool manufacture. Group IB1 is characterized by a lower percentage of debris than Group IB2 but is intermediate between Group IA and Group II with respect to cores, complete flakes, broken flakes, and flake fragments (Table 8.7).

Although the Sullivan and Rozen groups were defined based on cluster analysis of site assemblages in the southwestern U.S., the fracture mechanics of chert and pan-continental similarity in aboriginal reduction techniques warrant use of the groups for comparison with those in the Southeast (Childress and Buchner 1993:262–263; Weaver 1994). The method applies the lithic classification incorporated in the present analysis (see Chapter IV).

Arlington site artifact category percentages and proportions are shown in Table 8.8. The data indicate that the Fulmer site has the highest incidence of complete flakes (35.8 percent) and, in this sense, is most like the Group I assemblages associated with core reduction. However, the percentage of cores (including both bifaces and reduction cores in the present analysis) is highest at the Hayes site (13.3 percent) and lowest at the Fulmer site (1.8 percent). Fulmer also has the highest proportion of broken flakes (20.0 percent) and flake fragments (35.6 percent) in the sample and, in this sense, is similar to Group II assemblages, as defined above.

Table 8.7. Average Artifact Category Percentages for Technological Groups (from Sullivan and Rozen 1985:Table 2).

	IA	*IB1*	*IB2*	*II*
	Unintensive Core Reduction	*Core Reduction/ Tool Manufacture*	*Intensive Core Reduction*	*Tool Manufacture*
Complete Flakes	53.4	32.9	30.2	21.0
Broken Flakes	6.7	13.4	8.1	16.8
Flake Fragments	16.0	35.3	34.7	51.3
Debris	6.1	7.9	23.0	7.3
Cores	14.7	2.8	2.0	0.6
Retouched Pieces	3.1	7.5	2.0	3.1

Table 8.8. Summary of Lithic Artifact Categories from the Arlington Sites.

	Harris (40SY525)		*Hayes (40SY526)*		*Fulmer (40SY527)*	
	Count	*Percent*	*Count*	*Percent*	*Count*	*Percent*
Complete Flakes	1,257	28.6	69	22.9	4,082	35.8
Broken Flakes	744	16.9	56	18.6	2,282	20.0
Flake Fragments	1,369	31.2	54	17.9	4,059	35.6
Debris	870	19.8	56	18.6	606	5.3
Cores	93	2.1	40	13.3	200	1.8
Retouched Pieces	58	1.3	26	8.6	181	1.6
					11,439	

Table 8.9. Brainerd-Robinson Coefficient (BR) Comparing Lithic Artifact Category Percentages of the Arlington Sites to Technological Groups.

	IA *Unintensive Core Reduction*	*IB1* *Core Reduction/ Tool Manufacture*	*IB2* *Intensive Core Reduction*	*II* *Tool Manufacture*	*40SY525*	*40SY526*	*40SY527*
40SY525	121.7	169.3	**182.1**	156.4	-	159.6	170.2
40SY526	136.3	145.1	143.1	**156.4**	-	-	136.2
40SY527	134.3	**180.7**	163.3	161.6	-	-	-

Comparisons that take the entire assemblage frequencies into account can also be made. The Brainerd-Robinson coefficient, *BR*, is often used to express the degree of similarity between two archaeological collections when each collection is characterized by the percentages of the artifact types it includes (Cowgill 1990; Garrow 1989; Marquardt 1978; Weaver and Hopkins 1991). The formula for *BR* is:

$$BR = 200 - \sum_{i=1}^{N} \left| P_{i\,A} - P_{i\,B} \right|$$

where $P_{i\,A}$ is the percent of Type *i* in collection A and $P_{i\,B}$ is the percent of the same type in collection B. *BR* is a similarity coefficient that equals zero for totally different collections and 200 for identical collections. Generally, values between 180 and 200 suggest highly similar comparisons, values between 160 and 180 are considered moderately similar, and values below 160 are dissimilar.

The *BR* values for comparisons between the average percentages of artifact groups suggested by Sullivan and Rozen (1985) and the Arlington sites is shown in Table 8.9. The analysis suggests that the Harris site (40SY525) is highly similar to Group IB2 assemblages (intensive core reduction sites). This is consistent with the number of natural cobbles present at the site. Evidently, the reduction of small cobble cores was a major site activity, but not the only activity. The Fulmer site (40SY527) is highly similar to Group IB1 sites characterized by both core reduction and tool manufacture and is moderately similar to the Harris site. Again, the data suggest local chert cobbles were processed at the Fulmer site, although the relative proportion of this activity was less important than at Harris. The Hayes site (40SY526) does not compare well with any of the artifact groups but is most similar to Group II (tool manufacturing sites). The principal deviation in the Hayes site lithic assemblage is the underrepresentation of flake fragments and the relatively high number of cores. This pattern probably reflects the surface collections at Hayes, compared to the excavation samples from the other two sites. Postdepositional factors like plowing and erosion should also be considered.

We should note that these comparisons combine hafted bifaces, other bifaces, and biface fragments in the same category as amorphous cores and core fragments. In assemblages with few formal bifacially worked tools, combining bifaces with reduction cores will not have an appreciable effect. However, finished bifaces and reduction cores represent opposite ends of the lithic trajectory; one would expect to find more bifaces in assemblages associated with tool manufacture and more cores on sites on which the primary activity was core reduction. To explore this idea further, the frequency of bifacially worked artifacts at the Arlington sites was subtracted from the core category and added to the retouched pieces category. The resulting percentages were then used to compute the *BR* values. No significant differences are evident between the two methods.

The Use of Temper in Regional Chronologies

In this last discussion section, we review some of the results of the Arlington sites' ceramic analysis in light of the long-standing debate on Woodland ceramics in west Tennessee and north Mississippi. Much of the debate has centered on the development of independent chronologies based on proposed changes in paste characteristics through time (Ford 1981, 1988a; Mainfort 1994; Smith 1979a), and to a lesser extent on proposed changes in paste through time over space (Ford 1989; Jenkins 1981; Johnson 1988; McNutt 1979). A third line of inquiry—the relationship between paste and vessel form/function—has received little attention.

Two often-cited studies of Tchula period ceramics involve experimental evaluations. In a study of sherds from Jaketown, Elizabeth Weaver (1963) concluded that Tchula ceramics were untempered. Comparison of sherd paste with local clays revealed that carbonized fibers and channels from fine roots and decaying plant part vascular bundles; silt, sand, hematite, and ocher; and what is typically described as grog (lumps of clay different in color or texture from the rest of the paste) are all naturally occurring components. Preceramic period Poverty Point objects from Jaketown and samples of near-surface clays from the site environs show the same range of variation in paste inclusions as the early ceramics. Experimentally, coarser clays were found to be easier to work than purer clays, leading to the conclusion that silty or sandy clays may have been preferred as a suitable basic resource that could be worked without preparation or addition by Tchula potters. She concludes:

> we are not justified in assuming that the habit of tempering was present when Tchula pottery was made. . . . paste differences within the Tchula complex seem to have no archaeological significance[;] purity of clay was not a matter over which the early potter, unlike the modern archaeologist, brooded unduly. [Weaver 1963:56]

A four-year technological study to replicate Tchefuncte ceramics from Big and Little Oak Island and other Louisiana sites is reported by Gertjejansen and Shenkel (1983). The authors note that clays in the lower Delta are predominantly smectite (montmorillonite), the group of clay minerals with the highest water holding capacity and thus the greatest problems of cracking due to contraction during drying. The problem is mitigated by the natural presence or purposeful addition of aplastics (temper). Two techniques that improve the product, wedging and tempering, are not part of the Tchefuncte technology. Clay is believed to have been gathered in an already plastic state and formed into vessels without further refining such as dry crushing, sifting, and mixing. The angular lumps often described as grog tempering are seen to result from the "accidental inclusion of small dried bits of clay that abound during the building process"; the contorted or laminated paste is seen as the "result of no clay preparation whatsoever" (Gertjejansen and Shenkel 1983:46). The addition of temper requires that the particles be kneaded into the clay; this eliminates the laminations that occur naturally in bedded clays. Thus, "in a sherd that has a sandy texture and is also contorted, the sand is a natural part of the clay. When sandy sherds do not exhibit a laminated cross section, they may have been intentionally tempered, but they could also be the product of sandy clays that were well wedged" (Gertjejansen and Shenkel 1983:46). Even after firing to 600° C, vessels made of smectite re-absorb water, particularly if they are used for cooking, resulting in early disintegration even if they are not used for liquid containment. Relatively few experimental vessels were suitable for boiling, and it is concluded that the Tchefuncte vessels would have been best suited for collection and dry storage (Gertjejansen and Shenkel 1983).

Please note that in both studies outlined above, the subject was Tchefuncte ceramics, not the Cormorant ceramics considered here. As such, many of the conclusions presented by Weaver (1963) and Gertjejansen and Shenkel (1983) are not applicable. However, their findings about clay selection, vessel construction, firing, and durability do have direct relevance. Cormorant ceramics do not exhibit the laminated cross sections, suggesting the clays were prepared and kneaded. In the Fulmer assemblage, the density and size of clay particles evident in most sherds leave little doubt the processed clays were intentionally clay or grog tempered. Whether sand was added as a tempering agent is open to question. However, we do not subscribe to the idea that the selection of sandy clay over non-sandy clay was purely a matter of availability or convenience. The use of baked clay objects has a long tradition in the area, and knowledge of ceramic properties was no doubt present among resident populations before the widespread adoption of ceramic containers. The same can be said for temper (Wheeler and Alexander wares are certainly tempered) and decoration (punctations and cord impressions on Late Archaic baked clay objects are also design elements found in Cormorant complex ceramics). Gertjejansen and Shenkel (1983:52), remarking on the relationship between vessel form and paste, suggest Tchefuncte deep open bowls and tubby pots "may well be the result of the clay dictating the shape." In ceramic assemblages like the Fulmer site's, where a continuum of paste textures are evident, we suggest that shape may be dictating the selection of clay. Braun (1983) has shown that the reduction in the density and average size of tempering particles contributes to the flexural strength of a vessel while increasing its resistance to crack initiation under use-related thermal stress. In western Illinois, such a shift is interpreted as a mechanical response accompanying the increased importance of boiling starchy seed foods. At the Fulmer site, the predominant vessel forms appear to be deep bowl/beakers, commonly associated with fabric marked exteriors and folded rims. There is a tendency for folded rims to be more common on the sandier pastes (see Chapter VII), but evidence for the covariance of paste texture and other vessel forms is not readily apparent. Unfortunately, an in-depth evaluation of the relationship between vessel form and function in the Fulmer ceramic assemblage is outside the scope of this report. Further analysis of the Fulmer vessels or similar assemblages may shed further light on this intriguing problem.

Although we argue that tempering is a significant and sensitive element in the study of Early Woodland ceramics, we tend to agree with most researchers that temper is not chronologically diagnostic except in a broad, general sense. Recent work on west Tennessee Woodland period ceramics by Mainfort and Chapman (1994) suggests there is no chronological difference between clay tempering (Forked Deer series) and clay/some sand tempering (Madison series). The implication is that these differences are due to variation in the local clay sources. However, the authors suggest these series are earlier than those series containing more sand/less clay (Tishomingo) and sand/no clay (Baldwin). This sequence is based on changes in the percentages of cordmarking/fabric impression and in vessel form. The evidence at the Fulmer site tends to support Mainfort and Chapman's (1994) proposition for the co-occurrence of both non-sandy and sandy pastes in early ceramic assemblages from sites west of the Tennessee River watershed. If anything, the inclusion of Tishomingo series paste in association with Cormorant decorative motifs at the Fulmer site suggests that variability in paste type is even less chronologically sensitive than proposed. A refinement in identification of associated vessel forms from fragments and of form/paste series associations is also in order, given the results of the Fulmer analysis.

At present, there is no good evidence from excavated contexts to support Smith's (1979a) contention of an earlier Tchefunte-like ceramic complex comprised exclusively of plain clay tempered ceramics with non-sandy pastes. Smith is correct in suggesting that soft, clay tempered wares (Forked Deer series) are exclusively Early Woodland. Therefore, it seems premature to completely disregard previous component assignments based on the presence of this paste. Having said this, we feel compelled to acknowledge the ambiguous results of our own findings. The Harris site (40SY525) produced a ceramic assemblage (n=80) characterized exclusively by soft, clay tempered Forked Deer series paste and plain/eroded (82.5 percent) and fabric marked (17.5 percent) surfaces (see Chapter V). In addition, PP/Ks from the Harris site include forms usually assigned to the Late Archaic (Motley, Pontchartrain, and Delhi). Given the small sample size and debatable contexts, the lack of sandy paste at the Harris site is suggestive but not conclusive.

Before leaving the topic of temper, the possible relationships between Stratum VI, Mound 12, at Pinson and the Cormorant components at Boyd, Zone I, and Fulmer should be mentioned briefly. Based on the two available radiocarbon dates from Boyd and Mound 12, the two components should be roughly coeval, or Stratum VI could possibly be earlier than Boyd, Zone I. The Mound 12 component has not been adequately reported, but on the basis of what has been written, there appear to be both similarities and differences. Similarities suggesting affiliation with the Cormorant Horizon include fabric marked ceramics, a minority of ceramic decorative elements (cord impressions and punctations), and the presence of baked clay objects. However, the ceramic paste is the same as sandy Baldwin wares, and other ceramic elements present at the Fulmer and Boyd sites appear to be absent at Pinson. Stratum V, which overlies Stratum VI at Mound 12, contains clay tempered wares, leading Mainfort (1986a) to discount Smith's (1979a) definition of an early Tchefuncte ware and a succeeding mixed sand and grog tempered Thomas ware. However, the significance of the early sand tempered wares in Stratum VI is not addressed. More recently, Mainfort (1994:15–16) proposes that the beginning of early Middle Woodland be revised to about 200 B.C. to include sites characterized by sandy textured, fabric marked ceramics. This redefinition would include the component at Mound 12, Stratum VI, but could also describe the component at Fulmer.

This seeming contradiction in the sand to clay/sand transition found at Mound 12 is rectified if Mound 12, Stratum VI, is viewed in light of the Miller sequence, where sand is the first temper additive. Early Woodland peoples living west of Pinson in the West Tennessee Plain may well have followed a different path from those living in the West Tennessee Uplands—one derived from the Mississippi Alluvial Valley tradition, which initially included clay particles as tempering agents. This is not a new idea, as the original excavators typed the Mound 12 assemblage using Miller types (Broster et al. 1980; Johnson 1988). The watershed divide in west Tennessee is recognized as a cultural boundary at least by the end of the Benton Horizon (after about 3,000 B.C.). This is not to say that any cultural unit is homogeneous in all attributes across space and time. Clay tempering appears earlier at Pinson than in the upper Tombigbee (Rick Walling, personal communication 1995), and we would also expect clinal variations in the adoption of surface treatments such as cordmarking (Ford 1989). It just seems strange to us that complementary ceramic series existing between the North Central Hills and the Miller area in Mississippi should somehow stop at the state line. Future researchers may well determine that two separate ceramic typologies are required to organize Early Woodland material in west Tennessee.

IX. CONCLUSIONS AND RECOMMENDATIONS

This report describes the results of archaeological investigations at the Harris (40SY525), Hayes (40SY526), and Fulmer (40SY527) sites. These sites are in the right-of-way of the proposed State Route (SR) 385 corridor (Paul Barrett Parkway) near the town of Arlington in Shelby County, Tennessee. The investigations were conducted by Garrow & Associates at the request of Parsons De Leuw and the Tennessee Department of Transportation (TDOT).

The three sites were first recorded during a Phase I reconnaissance survey during the autumn of 1993 (Oliver et al. 1993). Testing at the three sites was initially performed during December 1993 and January 1994. In the preliminary report of the Phase II testing (Buchner 1994), it was suggested that the proposed construction would not adversely impact significant cultural resources at the Harris or Hayes sites. A continuation of the Phase II testing at the Fulmer site was recommended to more accurately define the extent of intact cultural deposits and features. Subsequently, an additional week of fieldwork was conducted at the site in February 1994. In the preliminary report of the extended Phase II testing (Buchner and Weaver 1994), it was recommended that the Fulmer site be considered eligible for listing in the National Register of Historic Places (NRHP) under Criterion D. Phase III data recovery was also recommended, pursuant to 36 CFR Part 800, regulations implementing Section 106 of the National Historic Preservation Act. At the request of Parsons De Leuw and TDOT, a research design and Phase III data recovery plan were prepared for 40SY527 (Garrow & Associates, Inc. 1994). Phase III archaeological fieldwork began April 25 and ended June 3, 1994 (Weaver et al. 1994).

THE HARRIS SITE (40SY525)

The Harris site (40SY525) is a multicomponent open-habitation site on the eastern end of a prominent finger ridge that overlooks the bottoms of an unnamed tributary to the north and east and the Loosahatchie floodplain to the south. Phase II field investigations at the Harris site consisted of the excavation of 36 shovel tests and seven 2 x 2 m test units. Test excavations recovered diagnostics suggesting a sequence of prehistoric occupations, beginning during the late Middle Archaic Benton Horizon, continuing through the Late Archaic and Poverty Point periods, and ending sometime during the Early Woodland period. Investigation of a suspected earthen mound revealed this feature to be a modern, mechanically created spoil pile. Prehistoric artifact density is highest at the eastern ridge terminus. Unfortunately, this small area does not appear to have archaeological integrity. No cultural features were identified in this area, and only one feature, interpreted as a stump hole, was located at the site. The location of a razed twentieth century building or shed was also evident in the northwestern part of the site. This structure is thought to have been destroyed when the majority of the site was bulldozed in the 1960s.

The Harris site does not appear to contain intact archaeological deposits capable of yielding significant additional data and does not warrant nomination to the NRHP. No further archaeological work is recommended.

THE HAYES SITE (40SY526)

The Hayes site (40SY526) is a low-density surface and plow zone open-habitation site situated along the crest of the ridge west of the Harris site (40SY525). When the work was conducted, the site area (11 acres) had recently been planted in cotton. Only part of the Hayes site lies in the proposed SR 385 right-of-way (approximately 20 percent of the total site area), and testing was limited to this area. Phase II archaeological testing at the Hayes site included the excavation of two 1 x 1 m test units, the recovery of a controlled surface collection from a 1,440 m^2 sample area, and mechanized plow zone stripping (100 m^2).

Excavation results demonstrate that the upland cotton field containing the Hayes site has been substantially eroded, leaving a thin (15 cm) plow zone deposit containing a relatively low density of prehistoric ceramics and lithics. The construction of TVA transmission towers has further degraded portions of the site. No prehistoric cultural features were identified in the excavation units or in the mechanically stripped area. The recovery of a few eroded ceramics suggests the site was occupied during the Early and/or Middle Woodland periods. No Archaic period diagnostics were recovered.

The Hayes site is best considered the western periphery of the adjoining Harris site (40SY525). Artifact density at the Hayes site is lower than that observed at the Harris site. However, the Phase II investigations suggest the existence of a continuous low-density scatter between the two "sites" that was obscured by vegetation. Artifact density plots based on the results of the controlled surface collection revealed four concentrations in the right-of-way portion of the Hayes site. Three of the observed concentrations follow the higher, northern rim margin and are located at regular intervals from one another. These concentrations possibly represent limited activity loci or the results of a discontinuous series of temporary occupations.

Archaeological investigations in threatened portions of site 40SY526 showed that no significant deposits exist in the project corridor. The relatively light artifact density, low potential for diagnostic artifacts, and apparent lack of subsurface features suggest that the research potential of the site is low. However, portions of the site outside the project corridor are in areas that were not investigated. Because of the possibility that significant, intact archaeological deposits exist on unthreatened portions of the site, the site should be considered potentially significant and potentially eligible for listing in the NRHP under Criterion D. If earth-moving associated with road construction is restricted to the project corridor, the project will have no adverse effect on any potentially significant archaeological deposits that may be located outside the project corridor. Therefore, no further work is recommended.

THE FULMER SITE (40SY527)

The Fulmer site (40SY527) is situated at the northern terminus of a finger ridge on the northern side of the same northwest-southeast-trending ridge top on which sites 40SY525 and 40SY526 are located, between TDOT survey Stations 132+00 and 133+00. Site size is conservatively estimated at approximately 40 m north-south by 10–25 m east-west, although the site core area is smaller, covering approximately 450 m^2. During the Phase II investigations, the site was in mature woodlands. Logging underway at the beginning of the Phase III investigations hampered fieldwork and damaged small portions of the site but did not seriously impact the site as a whole. The site appears not to have been plowed, although the ridge has probably been logged and cleared several times and may have been used as pasture.

Phase II fieldwork began with the excavation of 31 shovel tests on a 10 x 10 m grid. Based on the shovel test data, five 2 x 2 m test units were excavated in areas of relatively high artifact density. During the Phase III data recovery, 58 2 x 2 m units and three 1 x 2 m units were excavated in checkerboard fashion across the main part of the site. About 278 m^2 (approximately 62 percent of the total site core area) was hand-excavated. Cultural deposits at the Fulmer site are shallow and largely restricted to the upper 20 cm below surface (cmbs). Two areas of sheet midden were evident, correlating to areas of high artifact density. Twenty-two subsurface features were identified, but analysis suggests only two or possibly three represent relatively undisturbed remains of prehistoric activity. The most important is Feature 2, believed to the remains of a central hearth. Artifact distributions suggest the presence of disposal areas, living areas, and related activity areas in discrete parts of the site.

The excavations resulted in the recovery of excellent ceramic and lithic collections representative of upland Tchula period occupations. Over 24,500 prehistoric artifacts were recovered from the Phase II and III investigations, including over 12,600 ceramic sherds and 11,400 items of chipped stone. Except for one projectile point/knife affiliated with the Early Archaic period, all cultural materials are consistent with an occupation dating to the Early Woodland (Tchula) period. Ceramic analysis included classifications based on paste and surface treatment. A quantified rim/vessel form analysis is a major step toward understanding the diversity of ceramic containers present. Results of radiocarbon assays and archaeobotanical analysis of charred floral samples recovered from the site were disappointing. Comparative review of similar sites in the region indicates an affiliation with the Turkey Ridge phase of the Lake Cormorant Horizon. An occupational span of ca. 400–100 B.C. is suggested.

Does Fulmer represent the remains of a small, sedentary (year-round) household site occupied by "Lake Cormorant" culture-bearers? Perhaps, but as with so many archaeological queries, firm answers cannot be derived from the excavation of a single site. With this in mind, we have tried to balance our interpretation by considering data from both the region and the site itself. As Ford (1990:103) recently observed with reference to the more complex end of the Tchula sociocultural continuum (mortuary behavior), the "obscurity" of the local Tchula period is beginning to seem more apparent than real. Review of the regional literature suggests that the same is true for our knowledge of settlement organization and social interaction. Regional researchers in western Tennessee and northern Mississippi have developed a fairly impressive body of information for the Gulf Formational through Woodland periods for the upper Tombigbee, the intervening Central Hills, and Mississippi tributaries region. We are beginning to see a relatively fine-grained cultural chronology, particularly for the Middle Woodland, and direct evidence for high levels of east-west social interaction and boundary maintenance between groups living in the upper Midsouth. This is most sharply developed for the regional Middle Woodland at the Hopewellian Horizon, where a clear boundary between the Miller- and Marksville-related ceramic wares is recognized. The boundary is coincident with the location of several large mound-ceremonial centers and appears to be reflected in the earlier Lake Cormorant and Alexander ceramic traditions as well. Evidence for interaction, mainly in the form of exchange, is contrasted by data indicating a lag time of several centuries among subregions in the adoption of both ceramic vessels and fully sedentary or "maximally diverse" settlement-subsistence patterns. This is the context in which we have considered the Fulmer site remains. We hope that the data on the contents and internal organization of what may be the most typical kind of site for the period will prove useful.

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APPENDIX A
DISTRIBUTION TABLES FOR THE FULMER SITE (40SY527)

APPENDIX B
ARCHAEOBOTANICAL REMAINS FROM THE FULMER SITE (40SY527)

APPENDIX C
REPORT OF RADIOCARBON DATING ANALYSES FOR THE FULMER SITE (40SY527)

APPENDIX D
DISTRIBUTION MAPS FROM THE FULMER SITE (40SY527)