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Tennessee. Department of Environment & Conservation.

ARCHAEOLOGICAL INVESTIGATIONS IN THE OBION RIVER DRAINAGE:

THE WEST TENNESSEE TRIBUTARIES PROJECT

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Tennessee Department of Environment and Conservation
Division of Archaeology, Research Series No. 10

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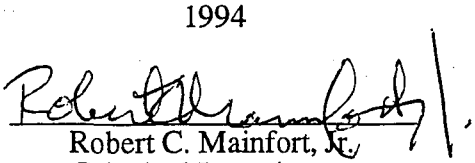

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Division of Archaeology, Research Series No. 10

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DEDICATION

To the memory of Kathleen Cannon Brandon,
whose promising career was cut short.

ABSTRACT

Under the terms of a Memorandum of Agreement between the Memphis District, U.S. Army Corps of Engineers and the Tennessee Division of Archaeology, archaeological site survey encompassing approximately 3,200 acres was conducted within the Obion River drainage of western Tennessee. Intensive testing of several prehistoric archaeological sites was also undertaken within the scope of the MOA. No significant architectural resources were observed during any phase of the project. Archaeological and geological field investigations strongly suggest that no deeply buried, intact cultural resources are present within the project area.

Relatively few archaeological sites were recorded within the project area, and none of the recorded sites exhibits intact subsurface archaeological deposits. Archaeological survey was also conducted in areas immediately adjacent to the project area, resulting in the location of additional sites. Based on information provided by local informants, several sites within the Obion River drainage, but located some distance from the mitigation lands, were recorded as part of efforts to select sites suitable for sample intensive testing. This resulted in the identification of the first midden mounds recorded within the Obion-Forked Deer Drainage.

Sample intensive testing was undertaken at several sites, including 40GB41, 40GB42, and the Oliver site; limited testing was conducted at several additional sites. The prehistoric ceramic assemblage from 40GB42 served as the springboard for a reassessment of previous typologies for ceramics of the Tchula and Middle Woodland periods, and the formulation of an explicit, new set of ceramic paste and type-variety definitions for western Tennessee, which have major implications for interpreting regional chronologies.

The Oliver site presented an opportunity to investigate an upland Emergent Mississippian site in the Obion River drainage. Data from the site represent an important baseline for researchers throughout the Central Mississippi Valley, as do the comparative ceramic data from the Reelfoot Lake Basin.

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ACKNOWLEDGMENTS

The archaeological investigations discussed herein were conducted under the terms of a Memorandum of Agreement (MOA) between the Memphis District - U.S. Army Corps of Engineers (USCOE) and the Tennessee Department of Conservation, Division of Archaeology (TDOA), entered into on February 2, 1991. Douglas Prescott served as USCOE project administrator from 1991 to 1993, and was succeeded by Jim McNeil.

Trip Smith served as project field director during 1991 and was assisted by William Lawrence. William Lawrence directed the 1992 excavations at the Oliver site and was assisted by Mark Norton, who also supervised various survey activities during the 1992 field season. The following individuals served as field and laboratory assistants during the project: Eric Ballheimer, Christopher Koeppel, Brent Roaten, Steve Adamson, Scott Shaffer, Darla Shaffer, Jamie Brandon, Kathleen Brandon, Keith Prilliman, and Shawn Chapman. Participants in the 1992 Memphis State University Department of Anthropology summer field school included Kathleen Brandon, Horace Mitchell, and Keith Prilliman.

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The graphics appearing in this report represent the efforts of Jamie Brandon, William Lawrence, and Mark Norton; Shawn Chapman produced the excellent pottery illustrations. Mark Norton took many of the artifact photographs. Charles McNutt, Richard Walling, and Mary Kwas reviewed earlier versions of this report; their substantive and editorial comments were most helpful.

The following landowners generously allowed us to conduct excavations on their properties: James Barner, Robert Chandler, Wayne Grant, Jim Glisson, Bob Hibbard, Elwyn Oliver, Jr., and William Penn. Keith Reynolds provided information about a number of archaeological sites, and Tommy Adams us assisted in relocating site 40GB42.

Harbert Alexander generously made available collections from several sites in Madison County; this material was of critical importance in formulating the ceramic type-variety nomenclature presented here.

INTRODUCTION

(Robert C. Mainfort, Jr.)

Under the terms of a Memorandum of Agreement (MOA) dated February 2, 1991 between the Department of Army, Memphis District, Corps of Engineers (USCOE) and the Tennessee Division of Archaeology (TDOA), TDOA conducted an intensive cultural resources survey within selected portions of lands acquired by USCOE for the purpose of mitigating West Tennessee Tributaries project impacts, as well as intensive testing of selected archaeological sites deemed likely to yield information pertinent to defining chronology and context within the project area. This area encompasses approximately 12,892 acres and, includes portions of the Obion-Forked Deer River drainage in Obion and Weakley Counties, Tennessee (Figure 1).

The cultural resources fieldwork prescribed by the original MOA included four specific tasks: (1) perform a cultural resources sample intensive survey of at least 25 percent of the acquired mitigation area with the goal of identifying all significant archaeological sites in the area examined; (2) conduct sample deep testing for the purpose of determining the presence and nature of buried cultural resources that may be present in the study area; (3) conduct intensive testing of selected sites to assist in defining cultural chronology and providing a context within which the significance of area cultural resources can be evaluated; (4) perform a sample architectural survey of at least 25 percent of the acquired mitigation area in order to identify significant structural remains and to help establish a context for determining architectural significance. Based on discussions with the Memphis District, U.S. Army Corps of Engineers and the State Archaeologist, items 2 and 4 were deleted after completion of the initial phase of field survey. No significant architectural resources were observed during any phase of the project. Moreover, archaeological and geological field investigations strongly suggest that no deeply buried, intact cultural resources are present within the project area (June Mirecki, this volume).

Between May 1, 1991, and April 30, 1993, pedestrian survey was conducted within selected portions of the acquired mitigation lands (hereafter, the project area), covering approximately 3,223 acres, for the purpose of identifying, recording, and evaluating historic and prehistoric properties pursuant to NRHP criteria as set forth in 36 CFR 63. All survey activities were conducted in accordance with the Secretary of Interior's Standards and Guidelines for Identification (48 FR 44720-23). Site evaluation included integration, to the extent possible, into the regional cultural/ historical framework, as presented below. Intensive testing was conducted at four prehistoric archaeological sites within and immediately adjacent to the mitigation lands. Three of these sites had previously been identified as being excellent candidates for yielding data critical to establishing a regional chronology (Mainfort 1992; Smith 1979a). The results, conclusions, and recommendations derived from this study will be incorporated into a State Protection Plan for the long-term protection of significant cultural resources throughout the mitigation lands.

The project area consists of over a dozen discontiguous tracts of land located along the Obion (main stem, Middle Fork, Rutherford Fork, and South Fork) and Forked Deer Rivers (North Fork) with a total area of approximately 12,892 acres. Nearly 75 percent of the area consists of uncleared, swampy, and/or seasonally flooded bottomland. Selection of areas within which to conduct cultural resources survey was, therefore, constrained by field conditions within the mitigation lands. Virtually all areas

situated above the floodplain were surveyed, as were several moderately large expanses of cleared floodplain. The survey results therefore reflect a bias in the selection of non-floodplain and cleared areas at the expense of swampy and forested areas. This reflects an emphasis by TDOA on locating as many sites as possible. It should be noted that the cleared floodplain parcels provide a sample of what might be expected in non-cleared floodplain parcels, since the settings are similar.

Survey efforts were concentrated in areas adjacent to the confluence of the Middle and South Forks of the Obion River, due both to accessibility and the presence of previously reported sites within or near the project area. As discussed below, relatively few archaeological sites were located, and a total of 9 previously recorded sites within the acquired mitigation lands were revisited.

Standard site survey methods were employed during the sample intensive survey. Field personnel typically included two survey teams, each consisting of one permanent TDOA staff member and two or more field assistants. Areas with adequate surface visibility were inspected by simple pedestrian survey utilizing transects spaced approximately 10 to 15 m apart. In areas of low surface visibility, shovel tests were excavated to a depth of approximately 50 cm along transects no more than 30 m apart at 30 m intervals. Upon the discovery of cultural material or positive shovel tests, one or more test units measuring 50 cm^2 were excavated to ascertain if intact subsurface cultural deposits were present. All sites and isolated artifact finds were plotted on project field maps and further documented with photographs, sketch maps, and verbal descriptions. State of Tennessee site survey forms were prepared for all sites recorded.

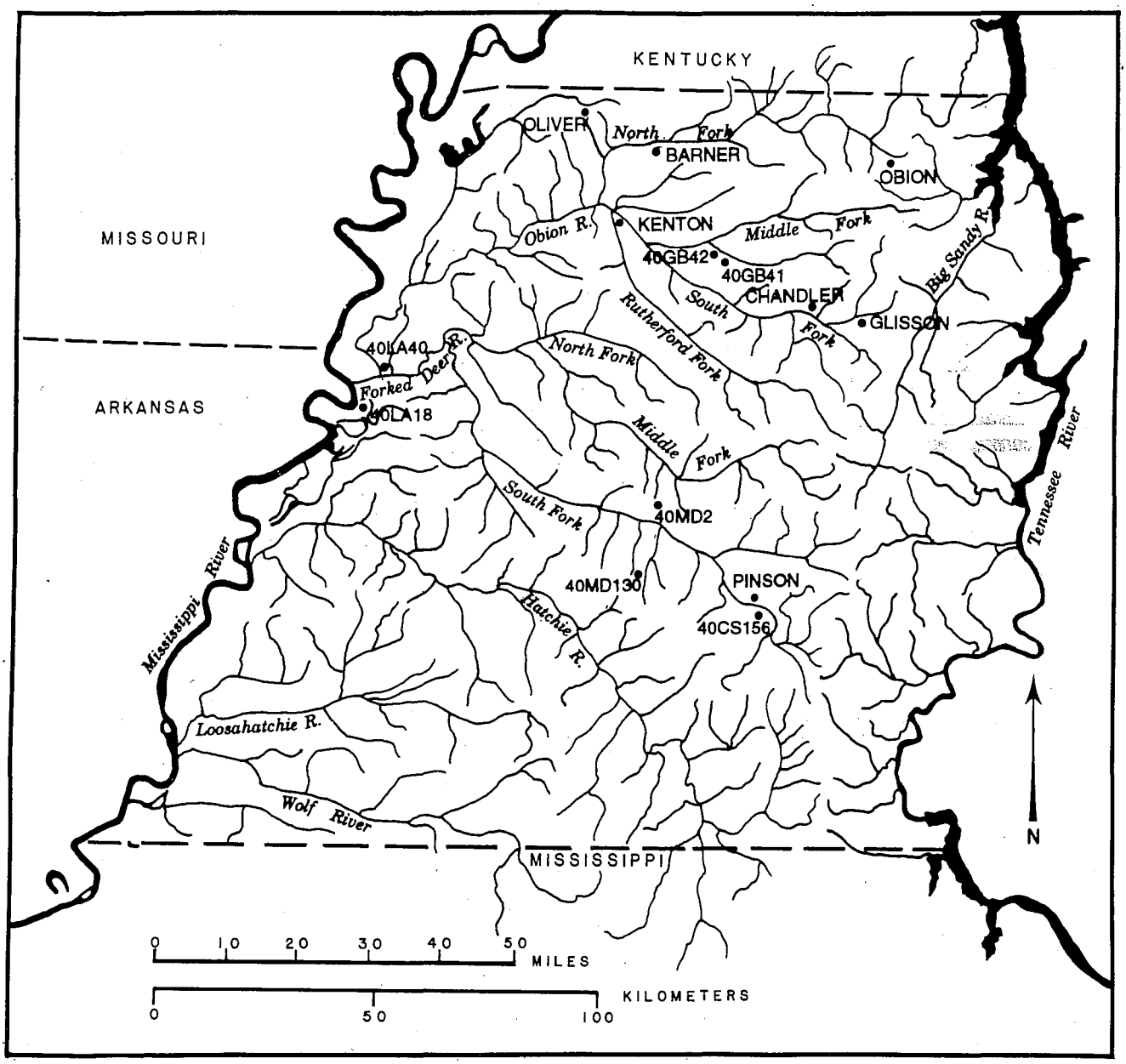


Figure 1. Project Area and Selected Archaeological Sites.

CULTURAL AND ENVIRONMENTAL SETTING

(Robert C. Mainfort, Jr.)

Geology and Soils

The study area lies within the West Tennessee Plain, a subunit of the Gulf Coastal Plain, which is the dominant topographic feature in the western third of the state. Characterized by a gently rolling to nearly flat terrain, the West Tennessee Plain extends from the hilly West Tennessee Uplands on the east and slopes gently to the loess bluffs adjacent to the Mississippi River floodplain. Surface geology consists primarily of sands, clays, and silts deposited during the Tertiary Period (Miller 1974).

Loess, a Pleistocene deposit of silty, windblown alluvium, forms the parent material for most of the soils in the study area. Soils of the Grenada-Memphis-Loring group are predominant throughout most of the area, although the Lexington-Grenada-Memphis-Ruston group and, to a lesser extent, the Ruston-Lexington-Providence group are present along the eastern periphery. Silty soils of the Falaya-Waverly-Collins group occur in the river bottoms (Springer and Elder 1980).

Prior to channelization in the early 1900s, the Obion and Forked Deer Rivers were meandering streams with numerous oxbow lakes and seasonal backwater ponds. Topographically, lands adjacent to major channels are typified by a broad floodplain that is bounded on the north and/or east by relatively steep bluffs and by gently rising slopes on the south and/or west.

Flora and Fauna

West Tennessee lies within the Mississippi embayment section of the Western Mesophytic Forest Region (Braun 1950: 157) and the Carolinian Biotic Province (Dice 1943: 16). In the uplands, pre-settlement vegetation was dominated by an Oak-Hickory Forest (Delcourt and Delcourt 1981), which seasonally produced an abundant nut crop, while wetland species such as bald cypress, sweet gum, cottonwoods, and willows occupy the river bottoms. Several species of seed-producing plants are also common within the floodplain and, to a lesser extent, in the uplands. These include lamb's quarters (*Chenopodium* sp.), knotweeds (*Polygonum* sp.), and wild bean (*Strophostyles leiosperma*), which were intensively harvested and, in some instances, cultivated by prehistoric populations elsewhere in eastern North America. A rich faunal community is supported by the waterways and adjacent bottom lands. Among the principal game fish are channel catfish, drum, white crappie, and smallmouth bass, while aquatic mammals include beaver, otter, and muskrat. Ducks are present seasonally in substantial numbers and white-tailed deer frequent both the bottoms, as well as the uplands. Other notable mammals are raccoons, opossums, and several species of rabbits and squirrels (U.S. Army Corps of Engineers 1975).

It is important to note that the biotic community described above did not become established in the study area until approximately 3000 B.C. Paleo-climates are briefly discussed below in conjunction with an outline of prehistoric culture periods in western Tennessee.

Summary of West Tennessee Prehistory

Although there has been far too little systematic archaeological research conducted in western Tennessee, sufficient work has been performed that broad chronological and areal trends have been formulated and generally accepted. The prehistoric record may be divided into 10 time segments that are, for the most part, common to the study area. These are: Paleoindian, Dalton, Early Archaic, Middle Archaic, Late Archaic, Transitional, Middle Woodland, Late Woodland, Early Mississippian, and Late Mississippian.

PALEOINDIAN PERIOD (12,000 - 8500 B.C.)

Although there is increasing evidence for much earlier human occupation of the New World, it is during the Paleoindian period that there is the first unequivocal evidence of widespread prehistoric habitation. By about 10,500 B.C., a major climatic amelioration had begun, resulting in the northward retreat of the Laurentide Ice Sheet and the replacement of the spruce forest of the middle south by a mixed conifer-northern hardwoods forest, which was the environment into which the first inhabitants of west Tennessee entered (Royall *et al* 1991).

Paleoindian occupations are characterized by the presence of large, well-made, fluted spear points, as well as blades, unifacial scrapers, burins, and knives. Paleoindian peoples were probably organized into small hunting and gathering bands of 25-50 individuals. Although fluted points have been found in association with extinct fauna in various parts of North America, no associations are known for Tennessee. No megafauna are conclusively dated after 8000 B.C. The Paleoindian period may be subdivided three stages characterized by specific point types: Early (Clovis), Middle (Cumberland), and Late (Beaver Lake and Quad). Outside of the Tennessee River valley, few Clovis horizon campsites have been recorded, but, as will be repeatedly noted below, this may be a function of inadequate sampling. The higher frequency of the later fluted point variants suggests a population increase (Smith 1979a; cf. Walthall 1980). Three radiocarbon assays on a sealed Clovis stratum at the Johnson site (40DV400) in Davidson County, Tennessee, cluster tightly around 10,000 B.C. (Broster *et al* 1991 and personal communication). Other than comparatively rare surface finds, little is presently known about Paleoindian occupation within or adjacent to the mitigation lands.

DALTON PERIOD (8500 - 8000 B.C.)

Technologically, the Dalton period/horizon represents an outgrowth of the Paleoindian tradition. Following Morse and Morse (1983), it will be treated here as a distinct entity, rather than as a subperiod of either Paleoindian or Archaic. White-tailed deer seem to have been the focus of hunting activities, but the presence of grinding stones attests to the importance of plant foods (especially nuts). Many lithic tool types carry over from the Paleoindian period, but a number of new forms, such as the Dalton adz, were produced. The Dalton point itself functioned as both a serrated knife and a saw (Morse and Morse 1983). Formal cemeteries, typically associated with sedentary populations, are now known to occur at least as early as Dalton times (Morse and Morse 1983).

Smith (1979a) reports that Dalton assemblages appear to have "halo" distributions, as suggested by an intact Dalton component at 40FY13; unfortunately, no data on this site have been published, making it impossible to assess interpretations of artifact

patterning, or even of site integrity. A deposit containing two Dalton points at the Puckett site, in Stewart County, Tennessee, has produced an uncalibrated date of 7840 ± 160 B.C. (Norton and Broster 1992). Several Dalton points were recovered during the course of this project, but in each instance there was no indication of intact subsurface deposits.

EARLY ARCHAIC PERIOD (8000 - 6000 B.C.)

Around 7000 B.C., climates in the Midsouth became significantly warmer and drier, and cool-temperate deciduous species were replaced by warm-temperate trees such as baldcypress and sweetgum (Royall *et al* 1991). This climatic episode, known as the Hypsithermal, continued for about 4,000 years and produced major vegetational changes that undoubtedly had a profound effect on prehistoric populations in the area (Delcourt and Delcourt 1981; Morse and Morse 1983).

The Big Sandy horizon (ca. 8000 - 7000 B.C.), which is characterized by well-made side notched projectile points, apparently represents an outgrowth of Dalton technology. In northern Alabama, there seems to be a demonstrable increase in numbers of sites over the Dalton period (Walthall 1980), but the Big Sandy horizon is poorly documented in interior west Tennessee. Recent data from Dust Cave, Alabama, indicate that Big Sandy points were being produced as early as 8000 B.C. (Dan Morse, personal communication). Incorrect identification of various side notched points that lack characteristic basal thinning as "Big Sandy" has led to interpretive problems throughout the Midsouth (e.g., Smith 1991).

Partially overlapping Big Sandy, the Kirk horizon has been securely dated elsewhere at *circa* 7400 - 6500 B.C. (Chapman 1977). Serrated Kirk points clearly served functions other than as projectile tips; edge wear analysis suggests their use as cutting tools. Kirk points seem to be concentrated in forested areas, suggesting their use in a woodland adaptation (Walthall 1980). A wide range of bone and antler tools are associated with the Kirk horizon, as are cane matting and mortars. At the Puckett site, in Stewart County, Tennessee, a Kirk horizon stratum has produced uncalibrated radiocarbon age estimates of 6870 ± 180 B.C. and 6540 ± 180 B.C. (Norton and Broster 1992).

An apparent development out of Kirk, the Bifurcate horizon is characterized by St. Albans and LeCroy points and dates between approximately 6700 and 6000 B.C. Excavations at Rose Island in eastern Tennessee revealed evidence of hearths and storage pits that reflect a system of nut procurement, processing, and storage that implies increased sedentism and a shift in economic scheduling (Chapman 1975). Bifurcate points are poorly represented west of the Tennessee River valley.

In southwestern Tennessee, Early Archaic sites seem to be concentrated on river terraces (Peterson 1979a, 1979b). At some localities in the vicinity of the mitigation lands, points representing several Early and Middle Archaic horizons have been collected, indicating a long occupational history (cf. Smith 1979a), but field inspections revealed no indications of intact cultural deposits.

MIDDLE ARCHAIC PERIOD (6000 - 3000 B.C.)

Middle Archaic cultures represent adaptations to the peak of the Hypsithermal climatic episode that saw the establishment of an Oak-Hickory Forest over most of western Tennessee by 3000 B.C., although some areas of prairie may have existed

during this period. The Middle Archaic witnessed the development of what Walthall (1980) calls "narrow spectrum economies," which focused on deer, mussels, and nuts on a seasonal basis. Numerous midden mounds dating to the late Middle Archaic have been recorded in the upper Tombigbee drainage (Bense 1987). Several similar sites were recorded and tested during the course of this project, although the occupations appear to be primarily post-Benton in age.

Two projectile point horizons have been defined for this time period. The Eva/Morrow Mountain horizon (ca. 5500 - 4000 B.C.) is characterized by short to medium length points with triangular blades and short, tapered stems. This horizon has been securely dated to the period of circa 5500 - 4500 B.C. at the Anderson site, near Nashville, Tennessee (Dowd 1989), and is strongly represented in the Tennessee River valley (e.g., Lewis and Lewis 1961). Outside of the Tennessee River valley, Morrow Mountain sites are relatively rare in surveyed areas of west Tennessee; if Morrow Mountain points are associated with an economy based on shellfish exploitation, their absence is understandable. Ground stone tools, including axes, milling stones, and finely crafted bannerstones, seem to proliferate during the Middle Archaic.

The Sykes-White Springs/Benton horizon is fairly tightly dated to the 4500 - 3000 B.C. time range (Bense 1987). Benton points are fairly common throughout western Tennessee; in the Wolf and Loosahatchie drainages, they appear to be concentrated on river terraces (Peterson 1979a, 1979b). Investigations in the Tombigbee drainage have recorded a dramatic increase in the number of features, as well as the amount of organic material, present in Sykes-White Springs/Benton middens, or "midden mounds" (Bense 1987). In the Tombigbee and Tennessee drainages, intensive occupation associated with shell middens continues.

As reported in this volume, the "Benton component" at 40GB42 "whose midden and pits were heavily laced with charred hickory nut hulls" (Smith 1991: 48) does not exist, and Smith's (1991: 55) assertion that the Benton horizon represents an "apparent shift with Benton to a more specialized harvest-collecting economy" is unsupported by archaeological data. Excavation data pertaining to alleged "rectilinear to ovate structures with light pole framing" associated with a Benton component at 40FY13 have not been published, making it impossible to assess Smith's (1991: 48) interpretation; a "Lambert complex hunting camp" dated to 450 ± 95 B.C., including a "postmold pattern from an apparent circular shelter about 2 meters in diameter" is also said to be present at this site (Smith 1991: 54), further clouding the issue of Benton structures.

LATE ARCHAIC PERIOD (3000 - 1500 B.C.)

By about 3000 B.C., modern climates and present-day sea level had been established. Rainfall was more abundant than during the Hypsithermal (Delcourt and Delcourt 1981; Morse and Morse 1983; Royall *et al* 1991). Most uplands in western Tennessee were covered by an oak-hickory forest, with characteristic bottomland species in floodplains and an association of beech trees with transitional upland slopes (e.g., Broster and Schnieder 1977). Many areas in the Midsouth saw substantial population increases (e.g., Connaway 1988). Along the Forked Deer River in the vicinity of Luray, several large Late Archaic sites, characterized by heavy concentrations of lithic debitage, including non-local materials such as Dover chert, have been recorded, but comparable sites have not been identified within the project area. Projectile points of the Late Archaic period are assigned to the Little Bear Creek cluster (Ensor 1981), which includes Little Bear Creek, Gary, and Mulberry Creek points; there are numerous local type designations for points of this general style.

Since data from excavations is all but nonexistent, the subsistence base for the Late Archaic inhabitants of the West Tennessee Coastal Plain is not presently known, but it could be speculated that fish from seasonal backwater lakes along major river drainages served the same role as shellfish. Early experiments with agriculture, including squash, sunflower, *Iva*, and *Chenopodium*, were taking place in various parts of eastern North America, but relevant paleoethnobotanical data are lacking for western Tennessee.

In the Loosahatchie and Wolf River drainages, virtually all reported Late Archaic sites occur on river terraces (Peterson 1979a, 1979b), but this is unlikely to accurately reflect the actual settlement pattern, since such a situation would run counter to virtually all settlement models for this time period anywhere in eastern North America. Smith's (1979b) observation that data from the Obion-Forked Deer drainage suggest the location of hunting camps in all zones, with gathering camps on the slopes between the river bottoms and the uplands, seems more plausible, but remains untested.

TRANSITIONAL PERIOD (1500 - 200 B.C.)

Several significant technological changes occurred among the prehistoric populations of western Tennessee between 1500 and 200 B.C. Although probably not initially of major consequence to the prehistoric inhabitants of the region, the development or adoption of ceramics provides a particularly useful archaeological benchmark. The term "Transitional Period" is used here to subsume the Middle and Late Gulf Formational cultures of the Tennessee River valley (Walthall 1980), as well as cultures to the west that were contemporary with the Poverty Point and Tchula periods of the Lower Mississippi Valley (cf. Peterson 1979a). Diagnostic projectile points are those of the Wade and Flint Creek clusters (Ensor 1981; O'Hear 1990), with the usual plethora of local type designations. Lithic continuity with previous periods seems evident in all areas.

Various styles of baked clay objects (bcos) (a.k.a., "earth oven elements" and "Poverty Point objects") are perhaps the best-known artifacts of Poverty Point culture/period sites in the Lower Mississippi Valley. These occur in unequivocally preceramic contexts at sites such as Teoc Creek (Connaway *et al* 1977). As reported by Smith (1979a, 1991) and others (e.g., Guthe 1964), bcos of various styles occur at a number of sites throughout the west Tennessee interior. Prior to this project, the only western Tennessee site at which bcos had been recovered from a good stratigraphic context is Pinson Mounds, where several ellipsoidal fabric marked specimens were associated with an early Middle Woodland deposit under Mound 12 (Mainfort 1986). Despite the association of bcos and early Middle Woodland ceramics in what the excavator considered to be an undisturbed stratum (Mainfort 1980: 24), Smith (1991: 54) attributes the Pinson Mound 12 bcos to a "possible Harris Island component" (i.e., Poverty Point period) and characterizes the depositional context as severely disturbed.

Smith (1979a, 1991; see also Smith and Weinstein 1987) assigns most, if not all, bcos, to the Poverty Point period. Some of these artifacts exhibit certain formal similarities to Poverty Point objects (e.g., Connaway *et al* 1977) and may indeed be of Poverty Point age, but in the Central Mississippi Valley, it has long been recognized that some forms of bcos persist into Woodland times (e.g., Phillips 1970), notably at the Early Marksville Helena Crossing site (Ford 1963). Baked clay objects also occur in preceramic contexts in the Central Mississippi Valley. For example, at the Weems site in southeast Missouri (Williams 1968), the lower excavation levels yielded bcos, but no ceramics. Excavations by Morse (1986, 1988) at the McCarty and Kellar sites in Arkansas clearly demonstrate the persistence of bcos into the Tchula and Woodland

periods. These and other data suggest that bcos probably are associated with both pre- and post ceramic occupations in western Tennessee, but at present it is not clear which, if any, styles of bcos are characteristic of specific time periods.

Smith (1979a, 1991) states that limited test excavations at 40GB42 provide possible stratigraphic evidence of pre-ceramic use of these artifacts in the study area; as reported later in this volume, intensive testing of this site provides little basis for such an interpretation. Moreover, of the over 200 sites with bcos presently entered in the site file data base, 107 have also yielded ceramics. Further, fabric marked, ellipsoidal baked clay objects have been recovered from an early Middle Woodland habitation deposit below Pinson Mound 12, where they were found in association with fabric marked ceramics (Mainfort 1980, 1986b). Large, cane impressed bcos have been recorded at 40WK72 (briefly discussed later in this volume) from a midden deposit in which small numbers of fabric marked sherds occur, but here the association is less clear. Small, round bcos are present on over half of the sites with Cormorant horizon ceramics in western Tennessee (cf. Jolley 1984); a large biconical plain specimen was recovered from 40MD2. The temporal position of various styles of bcos represents an important research question that awaits future resolution. Two sites (Barner and Atnip) recorded during the course of this project hold considerable promise in this regard.

Smith (1979a) has proposed the existence of 4 Poverty Point period "phases" within the Obion-Forked Deer drainage, one of which (the Kenton phase) encompasses most of the project area; more recently these "phases" have been referred to as "localized complexes" (Smith 1991). According to Smith (1979a: 73; see also 1991), "In most cases the phases are defined on the basis of contrasting configurations of both projectile point and clay object types." As will be demonstrated below, these "contrasting configurations" are largely illusory and are best regarded as products of sampling error. Additionally, there seem to be potentially serious problems with Smith's interpretation of other purportedly diagnostic artifacts.

According to Smith (1979a: 73), Pontchartrain points, large numbers of which were found in good contexts with bcos at the Teoc Creek site in Mississippi (Connaway *et al* 1977), "May have gone out of use by about 800 B.C." Smith evidently feels that Pontchartrain points are good markers for "early" Poverty Point occupations (1979a: 73; 1991). As noted by Brookes (1981), however, both Pontchartrain and the closely-related Flint Creek points continued in use until at least 200 B.C. Brookes wisely cautions against the assignment of sites to the Poverty Point period based solely on the presence of Pontchartrain points and also notes the frequent occurrence of ceramics at purported Poverty Point sites.

Other point types considered by Smith (1979a, 1991) to be diagnostic of Poverty Point occupations are termed Delhi, Lambert, Harris Island, and Arlington. Unfortunately, the latter three types are presented with minimal definitions (Smith 1979a: 68-72) and all clearly are closely related to previously defined types (e.g., the similarity between Arlington and Pickwick). Based on the published illustrations (Smith 1979a), the distinctions between Delhi, Lambert, and Harris Island points are not readily apparent, suggesting that inferences drawn about cultural differences or similarities based on these "types" may be ill-advised. Further, there are virtually no data from excavated sites that clarify the temporal placement of these point types.

Even using Smith's own data from surface collections, the association of putative Poverty Point projectile point types and bcos is, at best, unconvincing. For example, 40HD6 is assigned to the Poverty Point period based on the presence of 13 "diagnostic" projectile points. Yet not a single bco is reported from the site, while 18

sherds were collected (Smith 1979a: 83 and 88). The collection reported from 40CS16 includes 18 "diagnostic" points, a single bco, and 16 sherds. From 40GB16, a total of 33 bcos was reported, as were 38 sherds, but only a single (Lambert) point. As is the case for bcos, it seems premature to assign any of these point types solely to the Poverty Point period, much less to infer the presence of Poverty Point components based solely on the as yet cursorily defined point types.

	Spherical			**Biconical**		**Ellipsoidal**			**Biscuit**		
	Plain	Cord	Fabric	Plain	Plain	Cord	Fabric	Cane	Plain	Finger	Cane
Holly Grove	10	3	0	5	3	0	0	0	1	0	1
Harris Island	2	0	6	6	12	0	16	0	0	0	0
Harris Island	*2*	*0*	*0*	*2*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Stokes	89	10	0	53	23	1	0	2	10	10	41
Stokes	*43*	*1*	*0*	*23*	*12*	*0*	*0*	*2*	*3*	*8*	*17*
Kenton	11	2	0	9	1	1	0	2	4	10	8

Table 1. Distribution of baked clay object styles in the Obion-Forked Deer drainage. Data are adapted from Smith (1979a). Italicized items represent totals for districts after deletion of counts for single sites with extraordinarily large numbers of baked clay objects (see below).

Some specific comments about Smith's (1979a, 1991) putative Poverty Point "phases" or "districts" are presented below. These serve to underscore the tenuous nature of interpretations of Poverty Point period occupations in western Tennessee as discussed above.

Holly Grove District: This "district" encompasses "most of the loess soil zone of the South Fork of the Forked Deer River drainage." Baked clay object styles associated with sites in this district "include spherical, biconical, and ellipsoidal plain, and spherical cordmarked" (Smith 1979a: 73-74). The basis for defining this district and its associated "phase" consists of 12 sites (10 in Haywood County) from which 23 identifiable bcos were obtained (see Table 1). Three sites produced 4 bcos, one site 3, and the remainder a single specimen each (Smith 1979a: 83). A total of 36 pp/ks are represented in Smith's collections from this group of sites, of which 13 were found at a single site (1979a: 83). Ceramics have been collected from all of the included sites, with the exception of 40HD31; the artifact collection from the latter site is very small.

Harris Island District: Included within this district is the "Tertiary sand and sandy clay soil zone sector of the South Fork of the Forked Deer River drainage" (Smith 1979a: 74). The associated "phase" is based on a sample of 42 identifiable bcos from 4 sites; 38 bcos were collected from the Harris Island site (40MD8) (see Table 1). Smith's bco tabulations in a more recent publication (1991: 52-53) differ significantly from those originally presented. Particularly noteworthy are the disparities in the reported numbers of spherical plain bcos (2 versus 23). Since tabulations in the 1991 article do not include totals for individual sites, the cause of the differences cannot be assessed. The bcos recovered from Pinson Mounds, to which Smith (1991) refers as noted above, are not included in his tabulations.

According to Smith (1979a: 74) spherical, biconical, and ellipsoidal plain, as well as spherical and ellipsoidal fabric impressed bcos are characteristic of the "phase." Of the 73 pp/ks represented in collections from this group of sites, 18 were recovered from a single site (Smith 1979a: 84). Ceramics have been recorded at 40CS16, 40HE35, and 40MD8.

Stokes District: Most of "the loess soils zone of the North and Middle Forks of the Forked Deer River above Dyersburg" lie within this district (Smith 1979a: 74). Smith does not specifically state that any bco types are particularly characteristic of the associated "phase," which he defined based on a sample of 243 identifiable bcos from 27 sites (see Table 1). He does state, however, that the complex has "by far the best known and most varied assemblage of baked clay objects" in western Tennessee (Smith 1991: 55). Since Smith's (1991: 56-57) bco tabulations indicate that over 3 times as many identifiable bcos have been recorded for the Stokes district than for any other (and over 10 times as many as several districts), the apparent diversity is hardly surprising.

Significantly, 130 bcos derive from a single site (40GB93), while 2 other sites (40GB16 and 40GB7) produced 33 and 20 bcos, respectively (Smith 1979a: 85). Among the 38 pp/ks from this group of sites are 5 Arlington specimens; Arlington pp/k are not considered to be characteristic of the "Stokes phase," despite their more frequent occurrence than in the putative Holly Grove and Kenton phases (Smith 1979a: 73-75; 86). Ceramics have been collected from most of the sites in this district, the exceptions being limited to those from which little material has been obtained.

Kenton District: This district, which encompasses most of the project area, includes "the central half of the loess soils zone sector of the Obion River drainage, except most of the North and Middle Forks of the Obion" (Smith 1979a: 75). While recognizing the small size of his samples (which are actually larger than those for the Holly Grove district, as tabulated in the 1979 report), Smith (1979a: 75) suggests that spherical and biconical plain, and biscuit-shaped cane and fingertip impressed bcos "appear predominant" in this district. The associated "phase" is defined on the basis of 49 identifiable bcos from 11 sites (see Table 1); a single site (40GB42, which is discussed at length elsewhere in this volume) yielded 23 specimens. Only 11 pp/ks are reported for this group of sites (Smith 1979a: 87). Of the sites included in the district, only 40OB35 lacks reported ceramics.

As noted above, many, if not most, sites in the Obion-Forked Deer drainage that have yielded bcos have also produced ceramics. In calling attention to this repeated association, I do not mean to imply that in all instances, the bcos and ceramics represent single components. Rather, I simply wish to call attention to the fact that most of the data available for western Tennessee are equivocal on this point, and that there is no reason to assume that bcos are never associated with ceramic occupations.

Although an extensive reanalysis of baked clay object collections reported on by Smith was not conducted in conjunction with this project, bcos from a few sites were examined for comparative purposes. Several sites in Gibson County produced moderately large samples of bcos. From 40GB7, Smith (1979a: 85) reports 7 spherical plain, 9 biconical plain, 2 ellipsoidal plain, and 2 cubes (1 plain, 1 cane impressed). A much less definitive assemblage is suggested by reanalysis, which produced the following: 9 small plain fragments (probably spherical or biconical), 9 larger plain fragments (probably spherical or ellipsoidal), 1 irregularly shaped plain fragment (possibly rectanguloid), 4 cane impressed fragments (2 of which may have been biscuit shaped).

The larger collection from 40GB16 was reported as follows (Smith 1979a: 85): 7 spherical plain, 4 biconical plain, 5 ellipsoidal (3 plain, 1 cane impressed, 1 fingertip impressed), 17 biscuit shaped (11 cane impressed, 6 fingertip impressed). The specimens identified as "spherical, plain" are all fairly small fragments; 3 probably represent spherical, ellipsoidal, or irregularly shaped objects with plain surfaces, while

4 are of indeterminate shape and virtually lack any preserved exterior surface. The original shape(s) of the 4 reported biconical specimens could not be determined; these fragments could derive from spherical, ellipsoidal, biconical, or irregularly shaped bcos. Nor could the original shape(s) of the 3 reported ellipsoidal plain specimens be determined; all are small fragments with plain surfaces. Reinspection confirmed the presence of 11 probable biscuit shaped, cane impressed bcos, although all are fragments. All of the reported biscuit shaped, fingertip impressed examples are fragmentary; only 1 could be confidently identified as biscuit shaped, while 2 others probably represent cylindrical or ellipsoidal forms, and the remaining 3 are of indeterminate shape.

Smith (1979a: 84) tabulates the following bcos from 40MD8: 6 spherical fabric impressed; 4 biconical plain; 12 ellipsoidal plain; and 16 ellipsoidal fabric impressed. Reanalysis produced the following results: 1 biconical plain; 7 ellipsoidal plain; 14 ellipsoidal fabric impressed; 5 UID cordmarked; 8 UID fragments. A single biconical plain bco is reported from 40OB25 (Smith 1979a: 87); reanalysis found 4 unidentifiable fragments. A single spherical plain is reported from 40GB6 (Smith 1979a: 85); reanalysis found 1 spherical plain; 1 crude ellipsoidal fabric impressed; 8 UID plain fragments; and 1 UID fragment.

Based on this limited assessment, it seems apparent that a comprehensive reanalysis of the collections reported on by Smith should be undertaken. Such an effort might clarify geographic variability in baked clay object styles throughout western Tennessee.

Ceramics of the Wheeler and Alexander series have been reported primarily from the Tennessee River valley, but also occur in the interior, particularly the southern tiers of counties in western Tennessee. The earlier Wheeler fiber tempered wares probably date to approximately 1600 B.C. to 800 B.C. in the Midsouth, while the heavily sand tempered and often elaborately decorated Alexander series is fairly securely dated between 800 B.C. to 400 B.C. (O'Hear 1990). No evidence of these two early ceramic traditions has been recorded in the project area, although this may simply be a function of inadequate sampling.

Sherds resembling those characteristic of the Tchula period in the Mississippi River valley have been recorded from a number of sites in the west Tennessee interior. Cord impressed ceramics assignable to the type Cormorant Cord Impressed (Phillips 1970) have been recorded at some two dozen sites in western Tennessee. These sherds exhibit complex rim decoration produced by impressing single strands of cordage into geometric patterns at or near the rim; small, single cord-impressed notches often occur on rim interiors. Cormorant-style decorations (as well as Twin Lakes and Crowder-style punctations) are principally, but not exclusively, associated with a sparse, coarse clay (or grog) temper that Smith (1979a and elsewhere; Smith and Weinstein 1987) refers to as "Tchefuncte" paste; the paste of these ceramics tends to be rather chalky and light gray to tan in color. A variety of Withers Fabric Marked made on a similar paste is present at over half of the sites yielding Cormorant Cord Impressed and/or other early decorated types. Sites on which these early clay tempered wares occur are provisionally grouped together as representing the "Cormorant horizon" in western Tennessee, which is believed to date circa 500 B.C. to 200 B.C. An extensive discussion of various ceramic pastes and decorated types is presented in a subsequent chapter.

The precise chronological position of Cormorant Cord Impressed and related types in the study area is not known, although this material almost certainly pre-dates the characteristic sandy textured Middle Woodland wares of the region. Interestingly, several of the larger recorded Cormorant horizon sites (e.g., 40MD2 and 40MD130) do

not appear to have been occupied by Woodland peoples. A concentration of sites yielding Cormorant and related ceramics occurs in the Cypress Creek drainage in Madison County (cf. Jolley 1984). Site 40MD2 in Madison County has produced not only a large sample of Cormorant ceramics, but also approximately two dozen large triangular Frazier projectile points (Cambron and Hulse 1975). Projectile points of the Flint Creek cluster may also be diagnostic for the Cormorant horizon in western Tennessee (Ensor 1981).

Smith (1979a) has defined 4 "Early Woodland" phases (2 actually include "early" and "late" subperiods) that essentially lie within the same geographic areas included within his Poverty Point phases/complexes. The artifactual basis for these purported phases consists of 3 ceramic ware groups ("Tchefuncte," "Thomas," and "Baldwin") that Smith has never formally defined. Classification of ceramics dating to the Tchula and Middle Woodland periods in western Tennessee has proven particularly vexing for researchers attempting to utilize the ware groups proposed by Smith (1979a). As discussed later, a major thrust of the research undertaken within the scope of the West Tennessee Tributaries project was the development of unambiguous Tchula and Middle Woodland ceramic type-varieties that can be consistently applied and utilized by other researchers working in western Tennessee. This research included reanalysis of numerous collections obtained and analyzed by Smith (cf. 1979a). New ceramic type-varieties are presented later in this volume. Application of these to Smith's collections has often resulted in substantially different interpretations of his data and revealed numerous inconsistencies in his analyses.

As is the case with regard to the Poverty Point phases/complexes discussed above, a host of empirical problems attend Smith's "Early Woodland" phases. The phases are discussed below using Smith's (1979a) own data. Little, if any, basis for these "phases" is evident, other than the arbitrary geographic areas that they encompass.

Keil Creek Phase: Located along the South Fork of the Forked Deer River, ceramics of this "phase" are said to be "presently restricted to Tchefuncte, var. Tchula wares, with the transitional Thomas ware virtually absent from the data base. Surface finish is overwhelmingly plainware . . ." (Smith 1979a: 78). A total of 92 pottery sherds from 17 sites comprise the associated ceramic assemblage, including 23 sherds of "Baldwin ware." Only 3 sites yielded more than 10 sherds and 3 sites were assigned to the phase on the basis of a single sherd each (Smith 1979a: 88).

Spencer Creek Phases: Encompassing the upper portion of the South Fork of the Forked Deer River, the "early" Spencer Creek phase" is characterized by the Tchefuncte, var. Tchula, and Thomas ware;" roughly 60% of all sherds are said to have plain surfaces (Smith 1979a: 79). Smith (1979a: 89) assigned 17 sites to this phase based on a sample of 52 "Tchefuncte" and "Thomas" sherds. A single site (the Johnston site, 40MD3) yielded 10 sherds and 4 sites assigned to the phase yielded only a single sherd each (Smith 1979a: 89). The "late" Spencer Creek phase is distinguished by "Baldwin ware" ceramics, including 2 putative check stamped specimens (Smith 1979a: 79). Late Spencer Creek components are reported at 14 sites, from which a total of 95 sherds were collected. A single site (40MD3) yielded 44 sherds, with 40CS9 and 40CS16 yielding 14 and 13 sherds, respectively; 7 components are assigned on the basis of a single sherd (Smith 1979a: 89). The Pinson Mounds site lies within the area associated with these phases, but Smith (1979a) does not include the site in his ceramic tabulations. Also conspicuously absent is 40MD2, sherds from which are included in Smith's ceramic type collections at the C.H. Nash Museum-Chucalissa.

Eaton Phases: These phases represent occupations on the lower North and Middle Forks of the Forked Deer River. The "early" Eaton phase is defined ceramically by "Tchefuncte, var. Tchula, and Thomas paste" wares (Smith 1979a: 80) and includes 29 sites that produced a total of 393 sherds. Six sites (40DY3, 40DY4, 40GB6, 40GB7, 40GB16, 40GB63) are responsible for 335 sherds; 13 sites were assigned to the phase based on 3 or fewer sherds (Smith 1979a: 90-91). The "late" Eaton phase is characterized by "Baldwin ware," and includes 21 sites from which a total of 123 sherds were collected. Collections from 5 sites total 88 sherds; 7 sites were assigned to the phase on the basis of a single sherd each (Smith 1979a: 92). Reanalyses of several collections from sites in this area are presented later in this volume.

Rutherford Phase: The Rutherford phase area is located in the central portion of the Obion River drainage and includes occupations represented by all 3 of Smith's ceramic ware groups (Smith 1979a: 80-81). The 13 sites included in this phase yielded a total of 149 sherds, half of which (N=74) are from 2 sites (40GB42 and 40OB9); 2 other sites produced only a single sherd each (Smith 1979a: 93). Two sites within this area (40GB41 and 40GB42) were tested in 1991, the results of which are presented later in this volume, as are reanalyses of collections from 40OB9 and 40OB25.

The position taken here is that Smith's (1979a, 1991) "districts" or "complexes" represent little more than arbitrary geographic areas and that the data upon which his putative associated "phases" are based are grossly inadequate for defining meaningful phases during any of the time periods dealt with in his various reports. Typological problems aside, comparison of Smith's map indicating areas surveyed (1979a: 127) with his "phase" maps (1979a: 128-130) reveals that the areas encompassed essentially represent nothing more than the circumscribed limits of survey activities within portions of the Obion-Forked Deer drainage. This is especially obvious in the case of Smith's "Keil Creek" and "Spencer Creek" districts/phases, which are separated by a substantial unsurveyed portion of the South Fork of the Forked Deer River.

None of this is meant to imply that stylistic zones and phases cannot be defined for the Tchula and Woodland periods in western Tennessee, only that the available data provide little support for Smith's interpretations.

MIDDLE WOODLAND PERIOD (200 B.C. - A.D. 500)

The Middle Woodland period witnessed a peak of ceremonialism and inter-regional trade throughout much of eastern North America. Numerous conical burial mounds and the presence of non-local materials in graves indicate participation in this pan-regional phenomenon, although relatively few classic Hopewellian commodities have been recovered from the southeast (Seeman 1977). The unique ceremonial center of Pinson Mounds was the largest site in the southeast between approximately 100 B.C. to A.D. 300 and is critical to understanding the Middle Woodland period in west Tennessee.

Based on research at Pinson Mounds, the appearance of sandy textured cordmarked ceramics and the decline in fabric marked wares has previously been utilized as a chronological marker for the beginning of the Middle Woodland period in western Tennessee (e.g., Mainfort 1985). Recent excavations on Pinson Mound 5 yielded a significant percentage of fabric marked ceramics (Saltillo Fabric Impressed and Withers Fabric Marked) associated with the uppermost intact mound summit (Mainfort and Walling 1992). Moreover, the ceramic assemblages at the early Middle Woodland Bynum (Cotter and Corbett 1951) and Pharr (Bohannon 1972) sites in Mississippi exhibit very high percentages of fabric marked sherds with very little cordmarking. It

seems reasonable, therefore, to treat sandy textured fabric marked ceramics as indicative of the early Middle Woodland period in the study area (cf. Walling *et al* 1989). At Pinson Mounds, cordmarking became the dominant surface treatment by circa A.D. 100 (Mainfort 1987), but fabric marking may have persisted in popularity somewhat longer in northern Mississippi (cf. Walling *et al* 1989).

Although clarified by the research reported on in this volume, temporal trends in ceramic temper are not adequately understood in western Tennessee. Assemblages from various contexts at Pinson Mounds include sand, sand and clay, and clay tempered wares with virtually identical surface treatments. Mainfort (1986a) suggests that differences in temper may have little chronological significance in western Tennessee, but Smith and Weinstein (1987: 50-56; see also Smith 1979a) consider temper to be of considerable importance. Data obtained during the course of this project support the former position (see also Ford 1989).

Projectile points of the Middle Woodland Tapered Shoulder cluster, Lanceolate Expanded Haft cluster (Baker's Creek, etc.), and Lanceolate Spike cluster, all of which tend to be poorly made, are securely dated to the Middle Woodland period (Ensor 1981). Copena points, which occur sporadically in the west Tennessee interior, are also diagnostic of this time period. Ellipsoidal, fabric marked, baked clay objects have been found in association with fabric marked ceramics at the Pinson Mounds site and are fairly common throughout west Tennessee (Mainfort 1980; Smith 1979a).

Some parts of the Coastal Plain, including the Forked Deer drainage, may have experienced marked population increases during the Middle Woodland period, while little or no increase is suggested by data from the Wolf and Loosahatchie drainages (Jolley 1984; Peterson 1979a, 1979b). Interestingly, none of the recorded Middle Woodland sites in western Tennessee exhibit artifact densities comparable to those of major Late Archaic sites.

LATE WOODLAND PERIOD (A.D. 500 - 800)

During the Late Woodland period, the inter-regional trade and certain forms of mortuary ceremonialism of the preceding period disappeared or were severely curtailed in most areas. However, cultural continuity is evident, as utilitarian ceramics and stone tools are stylistically similar to their Middle Woodland counterparts. Some degree of agriculture, focusing on corn and squash, was almost certainly practiced during the later portion of the Late Woodland period, as reflected by the appearance of large, presumably permanent settlements on rich agricultural soils within the Mississippi River floodplain (e.g., Mainfort 1988); some of these sites might be more appropriately viewed as Emergent Mississippian.

Although population size remained constant or increased in the Tennessee and Mississippi River valleys, large portions of the Coastal Plain, including interior west Tennessee, seem to have been virtually abandoned (Walthall 1980; Mainfort 1989; Peterson 1979a; Smith 1979b). The Late Woodland period is poorly documented in the west Tennessee interior, a situation that has created some difficulty in identifying diagnostic artifact types, particularly in the case of ceramics. Throughout west Tennessee, Late Woodland ceramics are assumed to be characterized by grog tempering, although, based on evidence from eastern Arkansas, sand tempered wares probably also occur. Small to medium sized triangular projectile points (Hamilton, Madison) are diagnostic of both Late Woodland and Mississippian cultures (Morse and Morse 1983).

EMERGENT AND EARLY MISSISSIPPIAN PERIODS (A.D. 800 - 1250)

The Mississippian period saw the development of economies based on corn agriculture and the rise of hierarchical settlement systems that were controlled by large, multi-mound towns. Permanent settlements are found in areas of high agricultural potential. Although ceramics of the Mississippian period in the Central Mississippi Valley are generally tempered with shell, potters at the Obion site (located east of the project area in Henry County) produced standard Mississippian vessel forms on a distinctive clay tempered paste obtained from the locally available Porters Creek Clay (Garland 1992). Importantly, research conducted in the Reelfoot Lake Basin and at the Oliver site (reported on in this volume) makes it clear that Emergent Mississippian ceramic assemblages (ca. A.D. 800-1050) in western Tennessee are dominated by Mulberry Creek Cordmarked.

Moreover, although the use of shell temper in pottery represents a technological innovation that liberalized vessel shape and increased strength (Morse and Morse 1983), it is now evident that characteristic shell tempered vessel forms were initially produced (at least at some localities) on clay tempered pastes. Small triangular projectile points were used as arrow tips, while large chert agricultural implements and ground chunkey stones are also diagnostic Mississippian artifacts.

Few Mississippian sites have been recorded to date in the West Tennessee Coastal Plain, possibly because most appear to be of small size. However, several mound complexes, including the Kenton group (40OB4), which is located adjacent to the mitigation lands and was cursorily tested during the course of this project, are believed to date to the Early Mississippian period. Characterized by the presence of one or more large platform mounds and an extreme paucity of ceramics and lithics, these sites are interpreted as vacant ceremonial centers (Mainfort 1992). Investigation of these early mound centers and associated habitation sites may provide critical information about the rise of Mississippian cultures. Varney Red ceramics are diagnostic of Early Mississippian occupations in the Reelfoot Lake Basin (Mainfort 1989); similar ceramics have now been recorded at a number of small sites in the Obion-Forked Deer drainage.

The Obion site (40HY14), which was occupied between approximately A.D. 1050 and A.D. 1250, represents the only recorded Mississippian town in interior west Tennessee (Garland 1992). Virtually nothing is known of the settlement pattern associated with this large mound center. Ceramics from the Obion site are overwhelmingly plainwares, with Kimmswick Fabric Impressed representing the only nonplain surface treatment that occurs in significant quantity. Minor decorated types include varieties of Matthews Incised, Mound Place Incised, and O'Byam Incised; several negative painted sherds are also reported. Most of these sherds are probably associated with the terminal occupation at the site.

A wall-trench house excavated at Pinson Mounds appears to represent an isolated Early Mississippian farmstead (Mainfort 1986a; Morse 1986); surveys in the general vicinity of Pinson Mounds have recorded several additional small sites that are probably comparable. Early Mississippian sites, including many of considerable size, are more numerous in the Mississippi River valley and adjacent bluffs, with a notable concentration in the vicinity of Reelfoot Lake (Mainfort 1989).

MIDDLE AND LATE MISSISSIPPIAN PERIODS (A.D. 1250 - 1600)

Since evidence for post-A.D. 1250 occupation in the west Tennessee interior is virtually nonexistent, little will be said here about the Middle and Late Mississippian periods. By around A.D. 1250 or slightly later, major occupation of the Obion site apparently had ceased. With the exception of the terminal occupation at the Obion site, no evidence of Middle period Mississippian has been reported to date in the west Tennessee interior. In the Central Mississippi valley, this period is characterized by large, fortified, multi-mound towns (e.g., Morse and Morse 1983).

Late Mississippian, circa A.D. 1400-1600, is a period during which marked population nucleation occurred throughout the Midsouth, with many large towns and entire regions being virtually abandoned (e.g., Morse and Morse 1983). In western Tennessee, Late Mississippian settlements appear to be confined almost exclusively to the Mississippi and Tennessee River valleys and the adjacent bluffs (Mainfort 1989, 1991). Horizon markers for Late Mississippian include Nodena points, chunkey stones with one flat and one concave face, and decorated ceramic types such as Parkin Punctated and Barton Incised (Morse and Morse 1983). No Late Mississippian sites have been identified in the project area, nor elsewhere in the west Tennessee interior.

Previous Archaeological Investigations

Professional archaeological research in the west Tennessee interior has largely been limited to surface surveys, virtually none of which could be called "intensive" by present standards. Lack of excavated data for most time periods has caused researchers to rely on non-local chronologies that may not be applicable to west Tennessee, and has stirred considerable debate about the temporal placement of some important artifact types (e.g., Mainfort 1986b). Since few archaeological investigations have been undertaken within the project area and the immediate vicinity, this section will note archaeological studies throughout the West Tennessee Coastal Plain that have produced data pertinent to the project.

Ever since its discovery in the early 1820s, the Pinson Mounds site has attracted considerable attention and was mentioned in a number of early antiquarian accounts (Mainfort 1986, 1988). The Obion mound group, located to the east of the project area on the North Fork of the Obion River, was the focus of the first large-scale professional excavations in the study area. In 1913, a team of archaeologists from Harvard University excavated several of the smaller mounds. Nearly 30 years later, the University of Tennessee conducted additional large-scale excavations at the site (Garland 1992).

The interior of west Tennessee received essentially no further attention from professional archaeologists until the early 1960s, at which time local interest in preserving Pinson Mounds as an archaeological park provided the impetus for two small-scale survey and testing projects at the site. Of particular note was the discovery of an Early Mississippian wall-trench house dating to approximately A.D. 1000 (Fischer and McNutt 1962; Morse 1986).

During the late 1960s, staff of the C.H. Nash Museum (Memphis State University) began to conduct archaeological surveys throughout various parts of west Tennessee in order to obtain data on the distribution of various artifact classes throughout the area (Gerald Smith, personal communication). In conjunction with the proposed West Tennessee Tributaries Project, numerous sites were recorded in the Obion-Forked Deer

drainage, including portions of the mitigation lands (United States Army Corps of Engineers 1975; Smith 1979a). Unfortunately, little subsurface investigation was undertaken. As discussed above, Smith used the survey data to define a number of archaeological phases.

Various projects proposed by the Soil Conservation Service in the early to mid-1970s necessitated several more narrowly focused surveys, most of which were conducted by students and faculty at Memphis State. These included surveys of Clover Creek, Cypress Creek (two tributaries of the Hatchie River), and Mud Creek, a tributary of the Obion River (Peterson 1975, 1976, 1977; Dye 1975). Again, little, if any, subsurface testing was conducted.

The newly-formed Tennessee Division of Archaeology (TDOA) conducted additional research at Pinson Mounds and the surrounding area in 1974 and 1975. Excavations at the mound complex provided the first Middle Woodland radiocarbon dates for the study area and yielded critical information about Middle Woodland ceremonialism, while surveys of the surrounding area sought to discern the settlement patterns of the societies responsible for the mounds, as well as earlier inhabitants (Broster and Schnieder 1977; Broster 1982; Mainfort 1980).

TDOA also conducted a survey along a portion of the Middle Fork of the Obion River. Few sites were recorded, and it was suggested that sites "tend to be located above the floodplain of the watershed area" (Broster 1975).

Pinson Mounds again became a focus of investigations in 1978 during the initial construction of the park museum and roads (Mainfort 1980). Concurrent with some of the salvage efforts at Pinson Mounds, Smith (1979b) surveyed several areas within the Hatchie National Wildlife Refuge, primarily examining cultivated areas that were likely to be disturbed during impending construction activities. Surface collection was supplemented by subsurface testing at various intervals throughout the impact area.

Peterson's (1979a, 1979b) surveys of the Wolf and Loosahatchie watersheds are noteworthy insofar as they represent the first attempt in western Tennessee to utilize a sampling design and to generate predictive models of site locations, although the sampling and field survey techniques actually employed make the site location models of minimal value. Nonetheless, some interesting changes in the utilization of stream terraces versus uplands over time provide a basis for more systematic future research. Limited survey was also conducted in Madison County in 1979 (McNutt 1979), with the survey universe being confined to a power line right-of-way.

Between 1981 and 1983, TDOA undertook extensive investigations at several key areas within the Pinson Mounds complex. In addition to demonstrating that the large platform mounds at the site were of Middle Woodland age, the excavations also produced a wealth of information about Middle Woodland material culture, as well as a suite of radiocarbon determinations (Mainfort 1986, 1988; Mainfort and Walling 1990). In an attempt to build on earlier survey efforts in the immediate vicinity of Pinson Mounds, an extensive survey encompassing approximately 130 km^2 was undertaken by Nelson (1982; see also Mainfort 1986a), and Kwas and Mainfort (1986) conducted preliminary investigations at the Johnston site.

Cypress Creek (this waterway being a tributary of the Forked Deer River in Madison County, rather than the stream of the same name surveyed by Peterson [see above]) was the focus of a reconnaissance survey conducted by Jolley (1984) for the Soil Conservation Service. In 1987, TDOA surveyed several areas within the southern

Soil Conservation Service. In 1987, TDOA surveyed several areas within the southern portion of the Hatchie River drainage. This non-probabilistic survey focused on obtaining basic data about several critical areas that had not been examined by previous researchers (Mainfort n.d.).

A small portion of the mitigation lands, as well as some adjacent localities, was surveyed (with limited subsurface testing) by Garrow and Associates in January, 1987. The resulting report includes a useful summary of area prehistory (Anderson 1987). Relevant summaries of regional prehistory also appear in an overview prepared for the U.S. Army ammunition plant near Milan (Smith and Hartsell 1984) and a survey report on the Nonconnah Creek drainage in Shelby County (Smith and Weinstein 1987).

As is the case for most of western Tennessee, little prior archaeological work has been conducted within and immediately adjacent to the project area. In the published version of a 1974 report, Smith reported a number of sites within and near the project area, but noted that little actual field survey was conducted because of poor surface visibility (1979a: 10). Of the sites reported by Smith, only 40WK11, 40WK14, and perhaps a portion of 40WK9 are located within the mitigation lands. A more recent survey by Anderson (1987) located 9 new sites on and near Beech Ridge, at the confluence of the Middle and South Forks of the Obion River in Weakley County. Anderson also revisited and/or relocated several sites previously reported by Smith in the general vicinity.

Several minor studies have been conducted within the northern portion of the Obion-Forked River Basin. To the east of the project area, Broster (1975) surveyed a small portion of the Middle Fork of the Obion River, and recorded several small sites interpreted as temporary habitation loci. Dye (1975) conducted a survey within the Mud Creek drainage, locating a number of sites, but none exhibiting potential for intact subsurface archaeological deposits.

QUATERNARY STRATIGRAPHY OF THE MITIGATION LANDS

(June E. Mirecki)

Holocene Stratigraphy of the Obion River Alluvial Plain

The Obion River and tributaries flow though unconsolidated sediments of Quaternary and Tertiary ages (Figure 2). The stratigraphy of the study area is best understood in terms of units that underlie two geomorphic elements: the Holocene alluvial plain of the Obion River and tributaries, and strata that outcrop at Quaternary terraces bounding the alluvial plain.

The total thickness of Holocene alluvium in the study area is not known. Seven boreholes were drilled to a depth of 30.5 feet or less in alluvium of the North, South, and Rutherford Forks of the Obion River by the U.S. Army Corps of Engineers (USACE; unpublished data, 1970; Bob Davis). Interpretation of these lithologic logs indicates that gravels defining the base of the Holocene alluvium were not penetrated at depths of 30.5 feet. The lithologic log of USACE boring 2-RO (Figure 3), shows a fining upward sequence from basal medium sand to silt and clay sediments on the surface. Although these boreholes are not in the study area, they do suggest that the thickness of the Holocene alluvium exceeds 30 feet at downstream locations, and also most likely in the West Tennessee tributaries study area.

Stratigraphic sections measured on Obion River channel walls during low flow allow for interpretation of the upper portion of the Holocene stratigraphic section (Figure 4). Typically, channel wall sections show basal, compact silt or silty sand units which fine upward to less-compact silts. A distinct contact between the compact silts and overlying friable silt (reworked loess or spoil) was observed commonly at sections exposed near bridge crossings in the study area; this may represent pre-channelization (lower compact units) and post-channelization (upper friable units) deposition.

The chronology of the Holocene alluvial deposition in the Obion River alluvial plain is poorly constrained due to the absence in outcrop exposures of organic-rich samples for radiocarbon analyses. Only one channel section (located outside of the study area) yielded a sample for radiocarbon analysis. In-place wood (branch, *Quercus alba* group; Andrea Shea, personal communication, 1992) was collected from the base of the natural channel of the South Fork of the Obion River, 1.5 miles northeast of Skullbone on Shades Bridge Rd., Gibson County, Tennessee. This sample (Beta-53132) yielded a radiocarbon age of 6,830 +/- 70 yr B.P using conventional methods. The presence of white oak suggests dry conditions at the site during the mid-Holocene.

Two short cores (approximately 1 meter) were collected in Holocene alluvium within the study area using vibracore methods (Hoyt and Demarest 1981; see Figure 2). These cores were sampled for lithologic and palynologic analyses. Data obtained from these cores are discussed later in the text.

Terrace Stratigraphy Adjacent to the Obion River Alluvial Plain

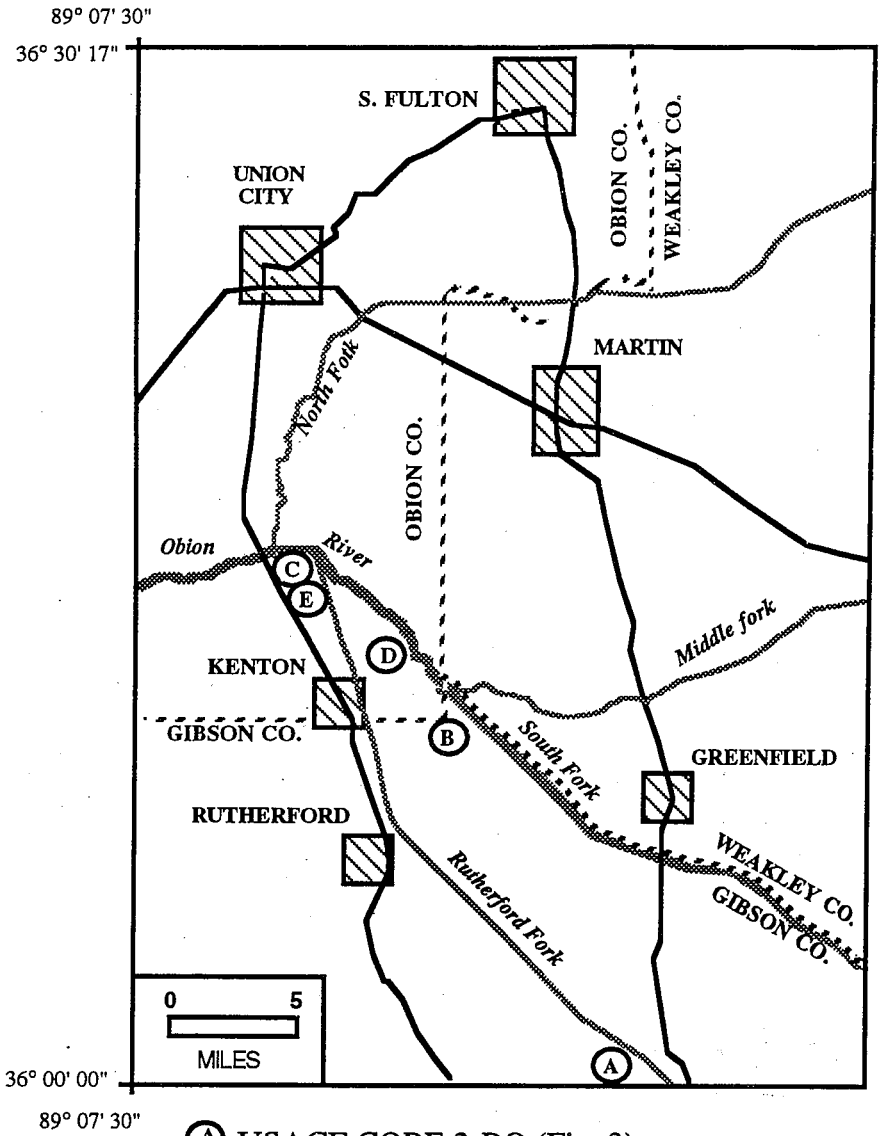
Unconsolidated sediments outcropping at Quaternary terraces near Kenton, Tennessee consist of three stratigraphic units: Pleistocene loesses, underlain by Quaternary and Tertiary terrace (or fluvial) deposits (Figure 5). In the Kenton section, three non-fossiliferous loesses with intervening geosols comprise the surface unit throughout the Obion River basin. The loesses (Peoria Loess, Roxana Silt, and the Loveland Loess) are underlain by an unnamed terrace deposit unit, consisting of silty sand, which fines upward to the Loveland Loess. At the base of the Kenton section, well-sorted fine-to-medium sands could be interpreted either as sediments of the Claiborne Group of Eocene age (Parks and Carmichael 1990) or as lower, coarser grained sediments of a Quaternary terrace deposit (Rodbell and Schweig 1993).

Quaternary Terrace Geomorphology Near the Forks of the Obion River

Fluvial terraces are identified most clearly by examination of terrace deposit stratigraphy, which consists of basal coarse grained gravels, fining upward to silts and clays (e.g., Figure 6). Once identified in outcrop, these terrace deposits can be correlated elsewhere in the region on the basis of altitude. Two terrace surfaces have been identified previously in the region adjacent to the forks of the Obion River (Saucier 1987), and this nomenclature of the Hatchie and Humboldt terraces is used here (Figure 6). The Finley terrace, which is younger and occurs at lower altitudes than the Hatchie terrace, is found farther west near the mouth of the Obion River.

The Hatchie terrace is the lowest, youngest terrace surface identified in the study area (Saucier 1987). The Hatchie terrace consists generally of a broad surface north and west of the main stem and North Fork of the Obion River. Altitude of the Hatchie terrace ranges approximately 10 to 15 feet above the Holocene alluvial plain, at 300 to 310 feet above mean sea level (MSL). The age and genesis of the Hatchie terrace are not well-constrained, although Saucier (1987) suggests that the Hatchie terrace may have been formed during a long period of stability. A radiocarbon age estimate from the Finley terrace indicates late Wisconsinan age (21.6 ka from gastropods in laminated silt; Rodbell and Schweig 1993). Therefore, the Hatchie terrace could represent a period of fluvial aggradation during the early Wisconsinan stage (approximately 30 to 70 ka).

The Humboldt terrace was identified by Saucier (1987) in the study area (Figure 6). In the region adjacent to the Obion River and its tributaries, the Humboldt terrace occurs at elevations approximately 30 to 40 feet above the Holocene alluvial plain, at altitudes of 320 to 350 feet above MSL. However, it is difficult to distinguish terrace deposits defining the Humboldt terrace from older, higher sediments in dissected uplands due to erosion. The surface of the Humboldt terrace does not provide much evidence to indicate its genesis, and is interpreted as a relict fluvial feature of pre-Wisconsinan age (Saucier 1987).



Ⓐ USACE CORE 2-RO (Fig. 3)
Ⓑ Channel wall section (Fig. 4).
Ⓒ Terrace deposits section (Fig. 5)
Ⓓ Beech Ridge core (Fig.8)
Ⓔ Obion River core (Fig. 8)

county boundary
road
river

Figure 2. Locations of stratigraphic section and cores

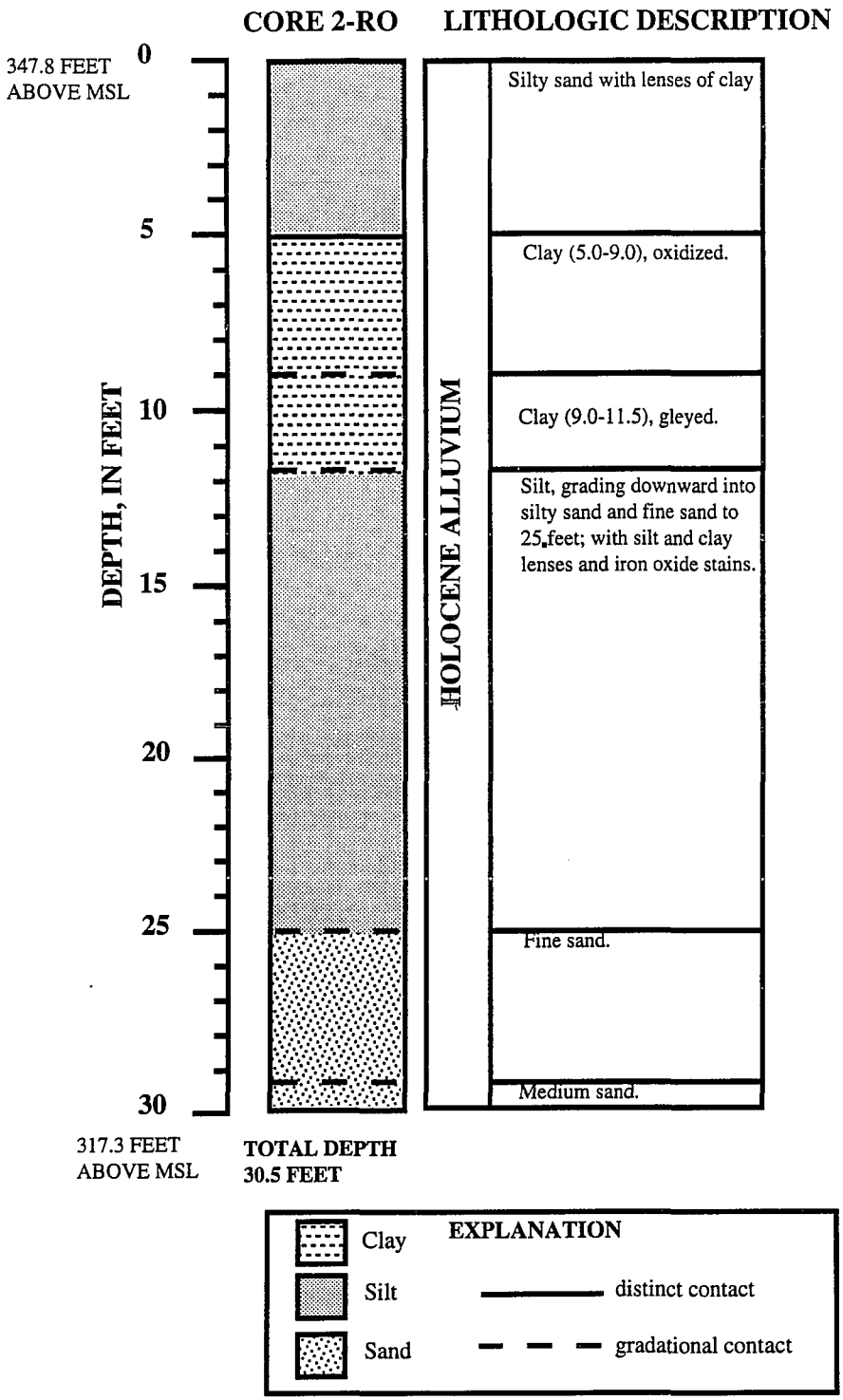


Figure 3. Lithologic description and interpretation of U.S. Army Corps of Engineers Boring 2-RO. Location shown in Figure 2 (36° 00' 37" N, 88° 49' 09" W; Bradford U.S.G.S. 7.5-min. topographic map); Rutherford Fork, Obion River. Core drilled March 10, 1970. Data provided by Bob Davis, U.S. Army Corps of Engineers.

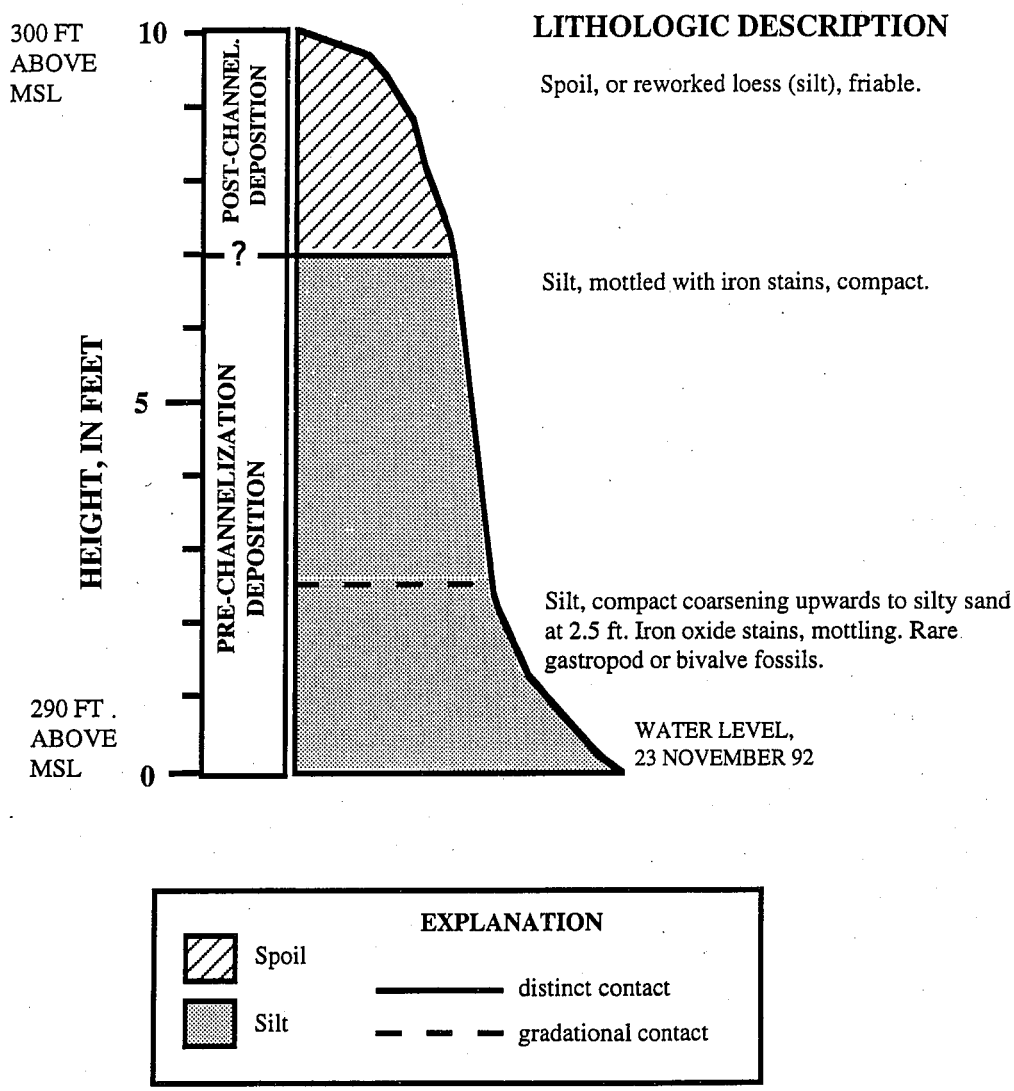


Figure 4. Composite section of channel wall section, natural channel of the Middle Fork, Obion River. Section drawn from exposure downstream from bridge on Kimery Levee Rd., Weakley County, Tennessee (Greenfield U.S.G.S. 7.5-min. topographic map). Section logged November 23, 1992 by J. Mirecki and W.S. Parks.

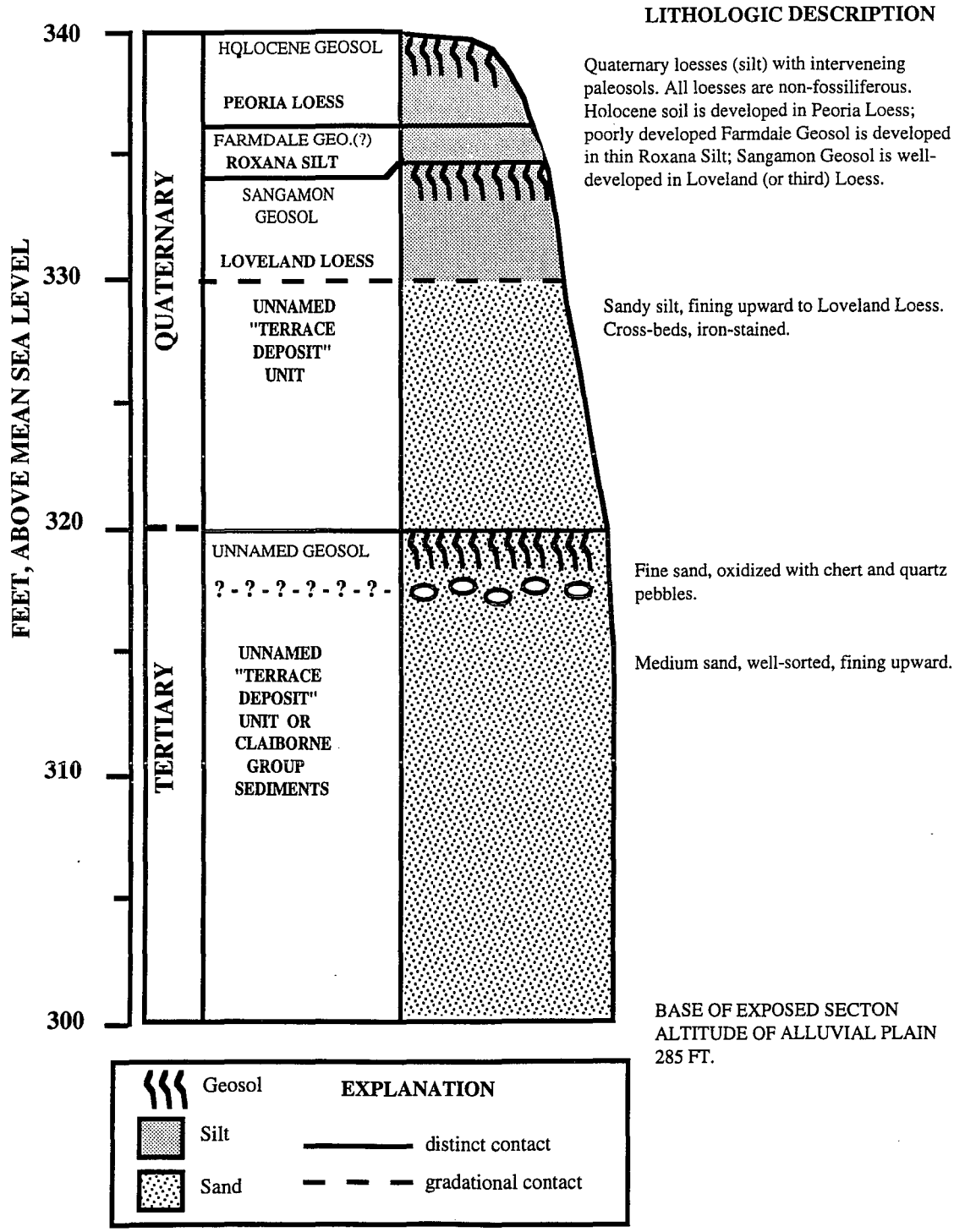


Figure 5. Composite lithologic section of strata exposed in two terrace sections along the south valley wall, South Fork, Obion River on Rt. 45W, 5.5 miles north of Kenton, Tennessee (Rives U.S.G.S. 7.5-min. topographic map. Section location shown in Figure 2. Section logged November 11, 1991 by J. Mirecki and W.S. Parks.

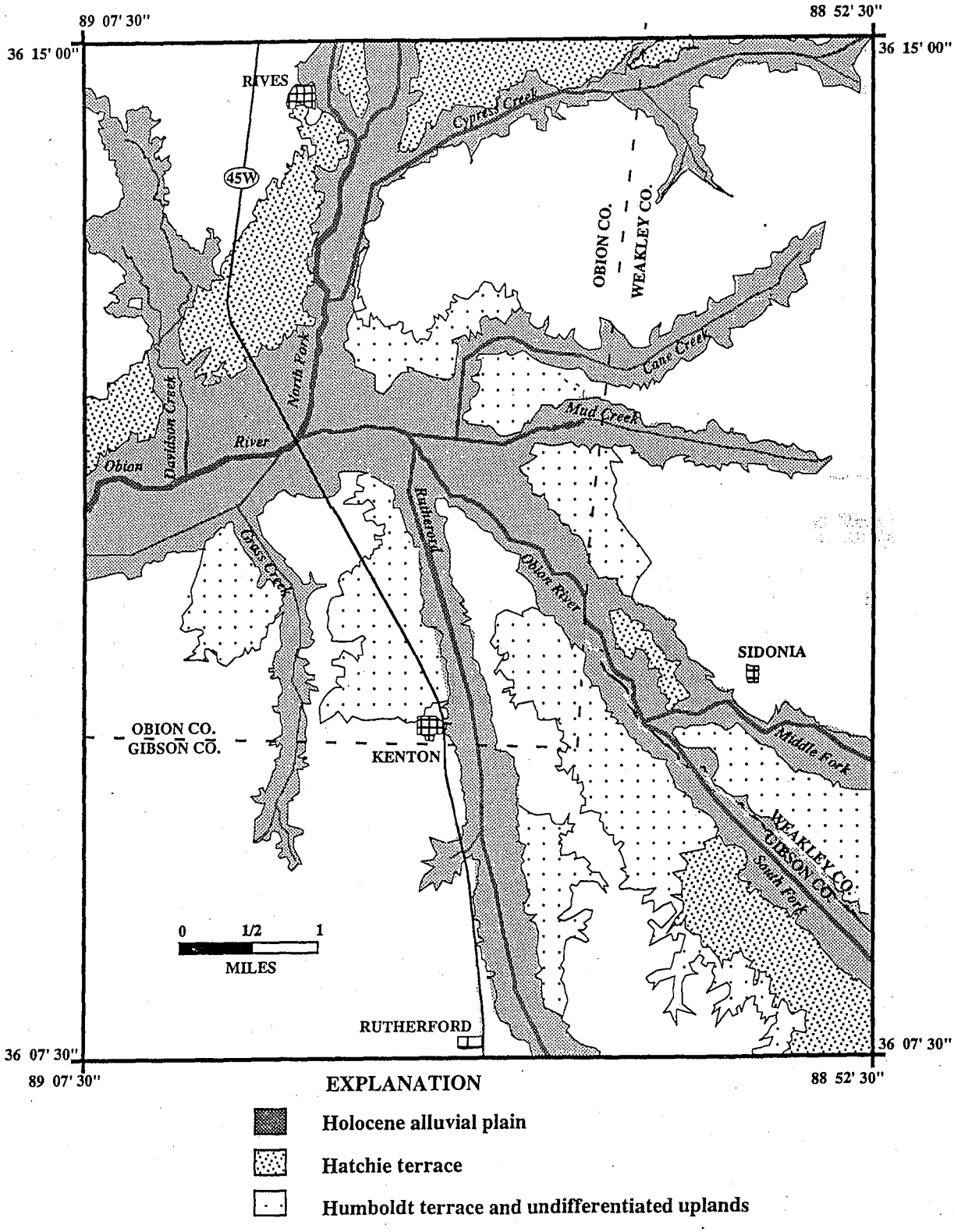


Figure 6. Distribution of Holocene alluvial plain and fluvial terraces in the study area. (After Saucier 1987).

Geomorphic Changes Within the Obion River Tributaries

The Obion River system represents a unique laboratory to study the response of alluvial channels to land-use changes and man-induced channel adjustments. Extensive modification of the channel after settlement accelerated deposition and erosion throughout the basin. After the Civil War, deforestation of the Obion River alluvial plain and adjacent uplands led to erosion and gullying in fields, and subsequent deposition of eroded sediments downstream (Ashley 1910; Simon and Hupp 1992). Aggradation of the lower Obion River resulted in increased flood frequency on cleared lands, and longer hydroperiods (period of inundation by flood waters; Simon 1989; Shankman and Pugh 1992). Upstream, continued erosion of cleared uplands led to lower base level and widening of the stream channel as headward erosion progressed upstream (Simon 1989).

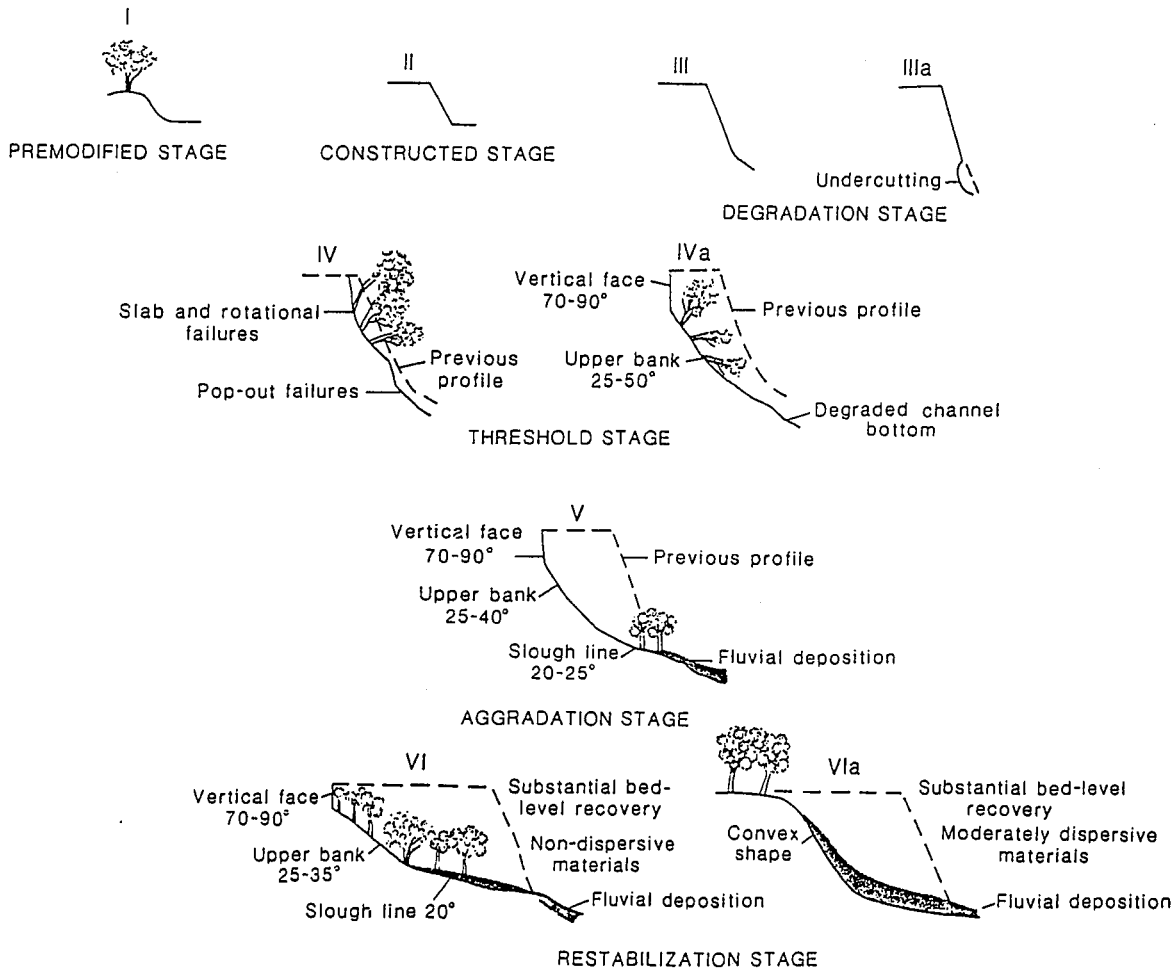
To facilitate drainage, agricultural productivity, and reduction of disease, the Obion River (and other west Tennessee streams except the Hatchie River) was modified by dredging and straightening. The first cycle of modification occurred during the 1920s, and the effects of aggradation and vegetation-clogged channels were evident in the lower reaches during the 1930s necessitating snagging (removal of tree and stumps) and bank clearing (Tennessee State Planning Commission 1936; Simon and Hupp 1992). A second cycle of channelization began in the 1950s, and continued though 1970 (Simon and Hupp 1992). In the region adjacent to the confluence of the north, south, and Rutherford forks of the Obion River, the last episode of man-induced stream channel modification took place during the period of 1966-1969 (Simon 1989; Shankman and Samson 1991). Subsequent adjustments of stream channel morphology reflect equilibration after this most recent episode of channelization.

Aggradation (elevation of stream base level by sedimentation), or degradation (lowering of stream base level by erosion) relative to the area of maximum disturbance are the principle responses to channelization in the drainage basin. At any site along the stream, channel banks and slopes show a characteristic morphology in response to changing base level. However, at any given site, this morphology is not static; instead, channel bank and slope morphology adjusts over a 10-to-15 year span following channelization (Simon 1989; Simon and Hupp 1992). To describe the temporal changes of channel walls at any given site, a six-stage model describing bank-slope development has been proposed (Figure 7; Simon 1989). Because model development was based in part on data obtained from the Obion River in the study area, it will be summarized here, as follows.

The premodified stage (I) shows channel bank morphology resulting from natural fluvial processes. Construction stage (II) describes channel bank morphology resulting from dredging and repositioning the channel. Steep (18° to 34°) slopes on channel banks, and increased channel width are defined by engineering practices. Degradation stage (III) is characterized by rapid erosion of unstable banks formed during stage II, and lower base level. Consequently, bank height and channel width increase, especially near the area of maximum disturbance. Threshold stage (IV) is characterized by continued increased bank heights (sometimes to 5 m above the base of the channel) and bank slopes (55° to 65°) as the result of erosion. However, mass-wasting processes begin to exert an effect on bank-slope morphology and channel width. Aggradation stage (V) is characterized by increased channel width resulting from bank retreat (mass wasting), and higher base level due to sedimentation. Bank-slope angles decrease near the channel base due to downslope movement of failed bank material. Restabilization

stage (VI) is characterized by lower bank heights and the onset of fluvial deposition on upper bank surfaces. Mass-wasting processes subside, resulting in an overall flattening of bank-slope angles.

The Obion River extending between the confluence of the north fork and main stem (Rives U.S.G.S. 7.5-minute topographic map; station 07025900 of Simon and Hupp [1989]) to the confluence of the middle and south forks (Rutherford U.S.G.S. 7.5-minute topographic quad map; station 07024800 of Simon and Hupp [1992]) showed among the highest degradation rates in the Obion River system following dredging during 1965-1967 (Simon and Hupp 1992: Table 6). This region represents the area of maximum degradation, which occurs at the upstream terminus of channelization (Simon 1989; Simon and Hupp 1992). Over time, this stretch of the Obion River should evolve from an initial condition of degradation to a condition of aggradation as the knickpoint migrates upstream from the area of maximum disturbance. Bank-slope morphology should proceed through some or all of the six stages following channelization. At present (1993), bank-slope morphology near the Beech Ridge study area suggest stages IV (threshold) or V (aggradation). The upper portion of channel walls have vertical faces, and a low-angle slough line has developed near water level. Surfaces near the water line are not vegetated extensively by woody riparian plants.



Note: Scale is relative.

Figure 7. The six stage model of bank-slope development (from Simon 1989). Bank-slope morphology changes from a natural state (premodified stage I) through to restabilized stages (VI) in response to channelization.

Temporal changes in bank-slope morphology can be supplemented by analysis of concomitant changes in riparian vegetation. Since floral and arboreal composition, distribution, and diversity are sensitive to slope, sedimentation rate, and extent of inundation, models describing changes in channel morphology often include analyses of vegetation distribution (Miller 1985; Simon and Hupp 1992), or dendrogeomorphic analyses (Hupp and Bazemore 1993) to characterize geomorphic surfaces. The six-stage model of Simon (1989) and Hupp and Simon (1991) specifically addresses riparian (stream bank) vegetation patterns resulting from changing channel morphology. On the scale of the Obion River alluvial plain, processes other than changing stream base-level affect vegetation patterns. Land-use and environmental changes including cultivation, deforestation, and ponding behind levees can be characterized by specific arboreal and floral plant associations. Tables 2 and 3 summarize arboreal and floral plants that characterize modified and unmodified riparian environments, marsh, and wet alluvial plain forest environments.

ARBOREAL GENUS	COMMON NAME	FLORAL GENUS	COMMON NAME
Riparian (modified and recovering stream banks)[a]			
Acer negundo	Boxelder	*Ambrosia trifidium*	Giant ragweed
Acer saccharinum	Silver maple	*Cephalanthus*	Buttonbush
Alnus serrulata	Alder	*Polygonum*	Knotweed, smartweed
Betula nigra	River birch	*Rubus*	Blackberry
Fraxinus pennsylvanica	Green ash	*Xanthium*	Cocklebur
Platanus occidentalis	Sycamore		
Populus deltoides	Cottonwood		
Salix nigra	Black willow		
Sambucus canadensis	Elderberry		
Riparian (unmodified)[a,b]			
Acer negundo	Boxelder	*Arunindaria gigantea*	Cane
Acer rubrum	Red maple	*Aster simplex*	Daisy
Acer saccharinum	Silver maple	*Bohemeria cylindrica*	Button hemp
Alnus serrulata	Alder	*Commelina virginica*	Dew flower
Betula nigra	River birch		
Carpinus caroliniana	Ironwood		
Fraxinus pennsylvanica	Green ash		
Liquidambar styraciflua	Sweetgum		
Nyssa aquatica	Tupelo gum		
Platanus occidentalis	Sycamore		
Populus deltoides	Cottonwood		
Quercus falcata	Cherrybark oak		
Quercus lyrata	Overcup oak		
Quercus nigra	Water oak		
Taxodium distichum	Baldcypress		
Ulmus americana	American elm		

[a] summarized from Simon and Hupp (1992), and Miller (1985).
[b] summarized from Lewis (1984), Neiswender (1984), and Small (1933).

Table 2. Summary of plants that characterize modified and unmodified riparian environments. Common names are listed if available.

ARBOREAL GENUS	COMMON NAME	FLORAL GENUS	COMMON NAME
		Marsh[a]	
Carpinus caroliniana	Ironwood	*Azolla caroliniana*	
Nyssa aquatica	Tupelo gum	*Cephalanthus occidentalis*	Buttonbush
Salix nigra	Black willow	*Cyperus erythrorhizos*	Rush
Taxodium distichum	Baldcypress	*Hibiscus militaris*	Rose mallow
		Hypericum mutilum	St. John's wort
		Mikania scandens	Climbing hemp vine
		Sagittaria latifolia	Arrowleaf
		Alluvial plain forest (wet)[b]	
Acer negundo	Boxelder	*Arundinaria gigantea*	Cane
Acer rubrum	Red maple	*Aslepias perennis*	Milkweed
Acer saccharinum	Silver maple	*Bignonia capreolata*	Trumpet flower
Betula nigra	River birch	*Campsis radicans*	
Carpinus caroliniana	Ironwood	*Commelina virginica*	Dew flower
Carya aquatica	Water hickory		
Carya cordiformis	Bitternut		
Carya illinoiensis	Pecan		
Celtis spp.	Hackberry		
Cornus spp.	Dogwood		
Diosyros virginiana	Common persimmon		
Fagus grandifolia	Beech		
Fraxinus pennsylvanica	Green ash		
Gleditsia tricanthos	Honey locust		
Ilex decidua	Holly		
Liquidambar styraciflua	Sweetgum		
Morus spp.	Mulberry		
Nyssa aquatica	Tupelo gum		
Ostrya virginica	Hop hornbeam		
Planer aquatica	Water elm		
Platanus occidentalis	Sycamore		
Populus deltoides	Cottonwood		
Quercus lyrata	Overcup oak		
Quercus michauxii			
Quercus nigra	River oak		
Quercus nuttallii			
Quercus palustris	Swamp spanish-oak		
Quercus phellos	Willow oak		
Salix nigra	Black willow		
Taxodium distichum	Baldcypress		
Ulmus rubrum	Red Elm		

[a] summarized from Simon and Hupp (1992), and Miller (1985).
[b] summarized from Lewis (1984), Neiswender (1984), and Small (1933).

Table 3. Summary of plants that characterize marsh and alluvial plain forest environments. Common names are listed if available.

Plant community composition and diversity have long been used to characterize environments (e.g. Royall *et al* 1991; Chmura 1994), and also to detect natural or man-induced disturbance (Behre 1981; Brugam 1978a and b; Delcourt and Delcourt 1991;Simon and Hupp 1992). Riparian plant diversity (as determined by the number of species, and the number of individuals) generally increases in bank-slope settings that are more stable, meaning that the surface is not subject to high sedimentation rates or mass-wasting processes. The highest diversity of riparian plants is observed during early or late stages (stage I through III, and VI; Simon 1989) of bank-slope development. On the broader scale of the alluvial plain, plant diversity is lowest in environments that have a long hydroperiod. Marsh and cypress swamps occur naturally in low-lying areas of the alluvial plain, but can also result from impounded flood waters behind levees. To summarize, the lowest diversity of arboreal plants would be expected at or near channelized sections, or sites where flooding (either natural or man-induced) results in long hydroperiods.

Although a survey of existing plant community composition in the study area is beyond the scope of the study, compilations of regional plant taxa (Tables 2 and 3) are useful for comparison to palynological data obtained from cores in the study area.

Palynological Investigation of the Obion River Floodplain

The hypothesis guiding the palynologic investigation of the Obion River alluvial plain is that pollen assemblage data could serve as a proxy record of environmental and land-use changes following settlement of the region at approximately 1850. The land-use changes affecting local and regional vegetation patterns are deforestation following the Civil War and channelization beginning in the 1920s. Deforestation and subsequent cultivation of the alluvial plain would be characterized by an increase in non-arboreal pollen (NAP), specifically increasing abundances of composites (especially ragweed [genus *Ambrosia*]), and the appearance of cultivated plant pollen (especially corn [genus *Zea*]). The effect of channelization and subsequent changes of depositional environment on the pollen record may be shown by a shift in the dominance of arboreal pollen (AP) from cypress swamp and marsh trees and flora (e.g., baldcypress [genus *Taxodium*] and tupelo [genus *Nyssa*]) to more diverse arboreal pollen assemblage (Table 4 and 5). This post-channelization pollen assemblage results from contributions of wind-blown pollen in the region plus pollen from trees at the site, in contrast to more closed conditions in cypress swamps where most pollen is contributed from nearby trees.

To test this hypothesis, two vibracores (Hoyt and Demarest 1981) were obtained from the Obion River alluvial plain (Figures 2 and 8). The Beech Ridge core was obtained in a flooded backswamp environment, approximately 500 feet north of the middle fork of the Obion River, near the access road through the Beech Ridge TWRA wildlife protection area (Rutherford U.S.G.S. 7.5-minute topographic map). Vegetation at the site consisted primarily of beech (genus *Fagus*) and hickories (*Carya* spp.). The Obion River core was obtained in a slough, approximately 2000 feet southeast of the Obion River canal, east of the abandoned Illinois Central Gulf railroad bed (Rives U.S.G.S. 7.5-minute topographic map). Vegetation consisted of wet alluvial plain forest genera, including tupelo gum (genus *Nyssa*), sycamore (genus *Platanus*), baldcypress (genus *Taxodium*), and hickories (*Carya* spp.) surrounding the site.

The Beech Ridge core (1.56 m length) shows two distinct lithologic units, defined by physical characteristics of the sediments. A dark yellowish brown (10YR 4/2) upper silt with concretions overlies a moderate brown (5YR 3/4) silty clay with concretions. Percent loss-on-ignition measurements increase gradually down-core, suggesting more compact sediments at the base of the core (Figure 8). Pollen samples were collected at 10-cm intervals, and pollen extracts were made from all samples following the methods of Faegri and Iverson (1975), modified by L.C.K. Shane (1993). Of 16 samples prepared, 6 samples were observed microscopically (10-11 cm, 40-41 cm, 70-71 cm, 110-111 cm, 120-121 cm, 130-131 cm). Pollen grains were identified to genus and tabulated. Each sample was counted to a total of approximately 200 arboreal pollen (AP) grains. All non-arboreal (NAP) grains observed during this count also were identified and tabulated.

In the Beech Ridge core, pollen was present only in the upper two samples (10-11 cm and 40-41cm; see Figure 8 and Table 4). The uppermost sample (10-11 cm) showed an AP pollen assemblage dominated by oak (*Quercus* spp.; 17%) ash (*Fraxinus* spp.; 14%), and cedars (undifferentiated *Cupressaceae*; 11%). NAP is 20% of all (AP + NAP) pollen, and ragweed:oak value is low (0.2) despite the proximity of this site to formerly cultivated fields. NAP represented in this sample is typical of alluvial settings in the central Mississippi valley (Royall *et al*, 1991). The 40-41 cm sample showed low pollen abundance (40 AP grains in 4 slides) and poor preservation, so this sample is not valid statistically. Ambrosia was present in this sample (ragweed:oak value of 0.4) indicating that sediments at this horizon (40-41 cm) were deposited after deforestation in the region. No pollen grains were observed in samples below the 40-41 cm horizon.

The Obion River core (0.72 m length) shows three lithologic units defined on the basis of texture (Figure 8). A dark yellowish brown (10 YR 4/2) upper silt with organic matter overlies a light bluish grey (5B 5/1) silty clay with concretions. The lowermost layer is also a light bluish grey (5B 5/1) silt, with finely disseminated carbon but without concretions. Blue-grey coloration, and the formation of concretions indicate that this sediment is gleyed, probably sitting beneath the water table for an extended period. Percent loss-on-ignition measurements decrease below the lithologic contact at 28 cm, indicating greater compaction in the lower units. Pollen extracts were prepared, and pollen grains identified as in the Beech Ridge core. Of 8 pollen samples that were prepared, 4 were observed microscopically (4-5 cm, 24-25 cm, 30-31 cm, 70-71 cm).

In the Obion River core, pollen was present only in the upper 2 samples (4-5 cm and 24-25 cm; Table 5). AP pollen assemblages in both samples from the upper silt were dominated by ash (genus *Fraxinus*; 16% and 19%, respectively), oaks (genus *Quercus*; 10% and 12%, respectively), and cedars (*Cupressaceae*; both samples 11%). The sample at 4-5 cm also showed a high percentage of tupelo gum (genus *Nyssa*), and sweetgum (genus *Liquidambar*) pollen, which is not surprising given the presence of these genera at the coring site. The percentage of NAP is higher in the Obion River core samples than in the Beech Ridge core samples, with high (>15%) percent abundance of composites, and either monolete grains (from ferns; 4-5 cm) or elderberry (genus *Sambucus*; 24-25 cm). Ragweed: oak values of 1.1 (4-5 cm) and 0.7 (24-25 cm) suggest that the upper silt unit was deposited after settlement and the onset of cultivation. Macroscopic plant fragments and rootlets were preserved in the lower silts, and these were sampled for radiocarbon analysis. An age of 530 to 660 AD (calibrated age) was determined by AMS radiocarbon analysis of rootlets collected at 54-60 cm (Beta-71171). Lithologic and palynologic evidence and the radiocarbon age estimate suggest that the lithologic contact observed at 28 cm represents a change in sediment deposition as the result of channelization.

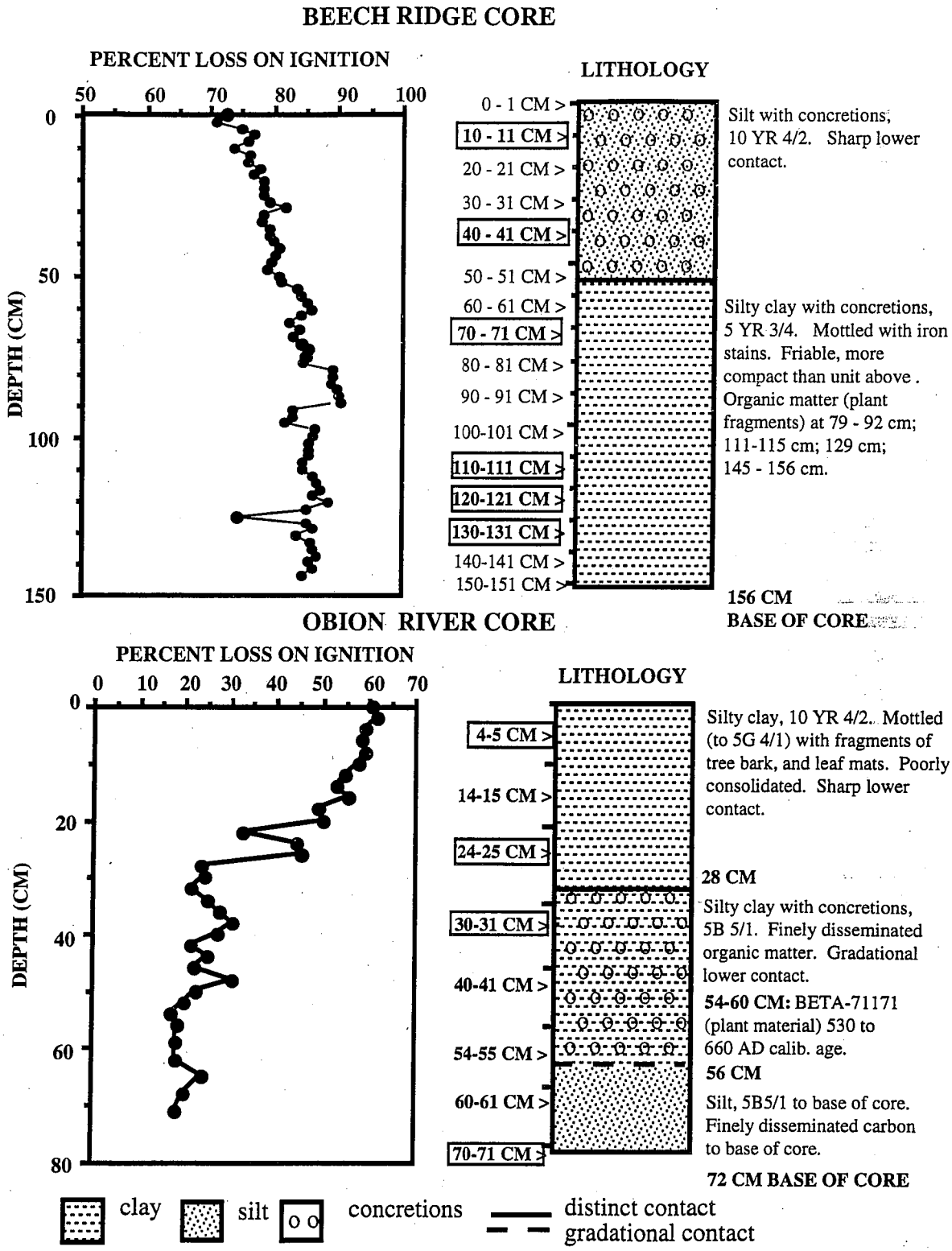


Figure 8. Loss-on-ignition measurements and lithology of the Beech Ridge and Obion River cores. Location of pollen samples are shown adjacent to core lithology. Pollen samples highlighted in squares were identified and counted.

ARBOREAL GENERA	10-11 CM		40-41CM		NON-ARBOREAL GENERA	10-11 CM		40-41 CM	
	N	PCT	N	PCT		N	PCT	N	PCT
ACER	8	3.2	1	2.0	AMBROSIA	7	2.8	4	8.2
BETULA	5	2.0	1	2.0	COMPOSITAE	7	2.8	0	0.0
CARYA	3	1.2	1	2.0	CYPERACEAE	3	1.2	0	0.0
CARPINUS	15	6.0	3	6.1	GRAMINAE	10	4	0	0.0
CUPRESSACEAE	28	11.2	9	18.4	ZEA	1	0.4	1	2.0
CELTIS	5	2.0	0	0.0	CARYOPHYLLACEA	1	0.4	0	0.0
CORNUS	4	1.6	0	0.0	SAMBUCUS	7	2.8	0	0.0
FRAXINUS	35	14.0	7	14.3	VIBURNUM	5	2	0	0.0
ILEX	2	0.8	0	0.0	EQUISETUM	1	0.4	0	0.0
JUGLANS	3	1.2	0	0.0	URTICA	2	0.8	0	0.0
LIQUIDAMBAR	2	0.8	0	0.0	SAXIFRAGE	1	0.4	1	2.0
MORUS	8	3.2	0	0.0	LYCOPODIUM	2	0.8	0	0.0
PINUS	1	0.4	0	0.0	TRILETE	2	0.8	0	0.0
PLANERA	5	2.0	0	0.0	MONOLETE	0	0	2	4.1
PLANTAGO	1	0.4	0	0.0	SUM NAP	49		8	
PLATANUS	11	4.4	0	0.0	SUM AP+NAP	249		48	
POPULUS	10	4.0	4	8.2	PERCENT NAP		20		20
QUERCUS	42	16.8	11	22.4		AQUATIC GENERA			
SALIX	4	1.6	0	0.0	NUPHAR	1		1	
TAXODIUM	4	1.6	1	2.0	NYMPHAEA	0		0	
TILIA	1	0.4	0	0.0	UNIDENTIFIED	4		0	
ULMUS	3	1.2	2	4.1	UNIDENTIFIABLE	27		8	
SUM AP	200		40		SUM	32		9	

Table 4. Arboreal pollen (AP) and non-arboreal pollen (NAP) data obtained from the Beech Ridge core. Percentage of each genus is calculated using the sum (AP+NAP), which includes all but aquatic genera and indeterminate grains. Monolete grains are undifferentiated ferns, trilete grains are undifferentiated mosses. Unidentified grains could not be keyed to genus; unidentifiable grains were folded, or disrupted as to prevent identification.

ARBOREAL GENERA

	4-5 CM		24-25 CM	
	N	PCT	N	PCT
ACER	7	3.2	5	2.4
BETULA	2	0.9	21	9.9
CARYA	11	5.1	18	8.5
CARPINUS	1	0.5	8	3.8
CUPRESSACEAE	23	10.6	23	10.8
CELTIS	1	0.5	7	3.3
CORNUS	0	0.0	1	0.5
FAGUS	17	7.9	3	1.4
FRAXINUS	34	15.7	41	19.3
ILEX	0	0.0	0	0.0
JUGLANS	0	0.0	2	0.9
LIQUIDAMBAR	19	8.8	13	6.1
MORUS	9	4.2	1	0.5
NYSSA	23	10.6	1	0.5
PINUS	17	7.9	4	1.9
PLANERA	1	0.5	0	0.0
PLANTAGO	1	0.5	2	0.9
PLATANUS	2	0.9	6	2.8
POPULUS	3	1.4	4	1.9
QUERCUS	22	10.2	26	12.3
SALIX	12	5.6	13	6.1
TAXODIUM	2	0.9	6	2.8
TILIA	0	0.0	0	0.0
ULMUS	9	4.2	7	3.3
AP SUM	216		212	

NON-ARBOREAL GENERA

	4-5 CM		24-25 CM	
	N	PCT	N	PCT
CARYOPHYLLACEA	3	2.1	1	1.1
AMBROSIA	25	17.1	19	21.8
COMPOSITAE	21	14.4	19	21.8
CHENOPODIACEAE	4	2.7	3	3.4
CYPERACEAE	3	2.1	2	2.3
GRAMINAE	14	9.6	3	3.4
ZEA	0	0.0	0	0.0
CORYLUS	0	0.0	2	2.3
EQUISETUM	3	2.1	0	0.0
LYCOPODIUM	3	2.1	0	0.0
EUPHORBIA	0	0.0	1	1.1
OSMUNDA	1	0.7	0	0.0
RIBES	1	0.7	2	2.3
RUMEX	4	2.7	1	1.1
SAMBUCUS	11	7.5	15	17.2
SPARGANIUM	1	0.7	0	0.0
VIBURNUM	1	0.7	2	2.3
VITIS	2	1.4	1	1.1
URTICA	7	4.8	2	2.3
TRILETE	3	2.1	2	2.3
MONOLETE	28	19.2	7	8.0
SUM NAP	135		82	
SUM AP + NAP	351		294	
PERCENT NAP		38		28
AQUATIC GENERA				
MYRIOPHYLLUM	0		1	
NUPHAR	2		0	
NYMPHAEA	6		0	
PROSERPINACA	0		1	
RANUNCULACEA	1		2	
TYPHA	2		1	
UNIDENTIFIED	7		2	
UNIDENTIFIABLE	5		11	
SUM	23		18	

Table 5. Arboreal pollen (AP) and non-arboreal pollen (NAP) data obtained from the Obion River core. Percentage of each genus is calculated using the sum (AP+NAP), which includes all but aquatic genera and indeterminate grains. Monolete grains are undifferentiated ferns, trilete grains are undifferentiated mosses. Unidentified grains could not be keyed to genus; unidentifiable grains were folded, or disrupted as to prevent identification.

CERAMIC TYPOLOGY

(Robert C. Mainfort, Jr., and Shawn Chapman)

Introduction

Classification of Tchula and Woodland period ceramics from western Tennessee has been a vexing problem for researchers (e.g., Jolley 1981; McNutt 1979), due in part to a lack of formal type descriptions based on collections from excavated habitation sites (cf. Mainfort and Walling 1992). In conjunction with the multi-year program of archaeological survey and intensive testing within the Obion-Forked Deer drainage, undertaken by the Tennessee Division of Archaeology on behalf of the Memphis District, U.S. Army Corps of Engineers, it seemed both appropriate and necessary to address some of the problems posed by ceramic variability in the region.

With the exception of the descriptions of ceramics from Pinson Mounds (e.g., Mainfort 1980, 1986), the only published descriptions of west Tennessee ceramic types are those of Smith (1979a and elsewhere), who has employed three rather loosely defined ceramic paste groups in his discussions of surface collections from sites throughout the area. In Smith's classificatory scheme, the term "Tchefuncte" refers to ceramics exhibiting "a rather contorted, poorly wedged paste with large fired clay lumps, but *completely lacking* sand" (1979a: 75 [emphasis in original]). In contrast, the original definition of Tchefuncte Plain states that the paste includes "angular particles of clay," as well as a "small amount of fine sand" (Ford and Quimby [1945: 52]; Wimberly [1960] notes that sand is *usually* [emphasis added] present). Varying degrees of sandiness within the type is not generally assumed to have chronological significance (Ford and Quimby 1945; see also Phillips 1970 and Weaver 1963).

"Thomas," as used by Smith, refers to "a smooth-textured paste including both the large clay chunks of the (Tchefuncte) ware and the coarse silt to fine sand characteristic of Baldwin ware" (Smith and Weinstein 1987: 50-53). "Thomas" paste is considered to postdate "Tchefuncte" and to predate "Baldwin" (sand tempered) wares (Smith 1979a: 75-78). Certain inconsistencies in the use of the term "Thomas" are discussed below. Finally, Smith's "Baldwin" ware consists of ceramics said to be purely sand tempered (or sandy textured) with no visible clay/grog pellets (1979a: 77).

Some researchers have experienced difficulties in applying Smith's ware descriptions, while others have raised questions about sortability and the purported chronological significance of his paste groups (e.g., Jolley 1981; Mainfort 1986b; McNutt 1979). Many of the classificatory difficulties posed by west Tennessee ceramics have been ably addressed by McNutt (1979), who provides a thorough discussion of the history of ceramic typology and the attendant problems. The problems identified by McNutt have largely persisted to the present and it is hoped that the descriptions provided here will be a major step toward remedying this situation.

In an attempt to alleviate some of the current classificatory difficulties, we offer descriptions of four paste "series" that are datable to the Tchula and Woodland periods. These paste series form the basis for the type and type-variety definitions that follow. The resulting typology includes a mixture of terminology from both the Lower Mississippi Valley (cf. Phillips 1970) and the Miller Culture area (cf. Jenkins 1981). Existing types and varieties have been employed where appropriate, but we will also introduce new nomenclature that is critical to clarifying the typological confusion noted by McNutt (1979).

A word of caution must be inserted regarding the term "temper," which has been the cause of numerous classificatory difficulties. Rice (1987: 406-413) correctly notes that "temper," when used as a noun, refers to material "added by potters to modify the properties of the clay" (1987: 406). Various aplastic inclusions, including materials that might also be "added by potters," occur naturally in clays; distinguishing between natural inclusions and materials intentionally added is very difficult. Moreover, baked clay particles can be incidentally created and worked into the clay during construction of ceramic vessels (Weaver 1963).

While there can be little doubt that crushed shell was intentionally added to the paste of Mississippian period vessels, inclusions such as sand and clay particles in Tchula and Woodland ceramics do not necessarily constitute temper. In fact, there seems to be general agreement that Tchefuncte ceramics do not contain temper (Gertjejansen and Shenkel 1983; Phillips 1970; Weaver 1963). At present, we see no basis for assuming that the sand and clay inclusions observed in our Forked Deer and Madison series represent intentional additions to the clay. Inclusions represented in the Baldwin and Tishomingo series may well reflect the selection of particular kinds of clays rather than temper in the strict sense. Also relevant here is the observation of Gertjejansen and Shenkel (1983) that sherds exhibiting a contorted and/or laminated paste have not been worked and, by definition, could not have had a tempering material added.

In discussing Tchula and Woodland ceramics below, we will generally avoid use of the term "temper." Since other ceramic types not discussed here will be cited for comparative purposes, references to paste inclusions will employ "temper" and "tempered" in quotes, by which the reader should understand that the referenced materials may not have been intentionally added by prehistoric potters.

Before proceeding, we should mention that, despite Phillips' (1970: 30-31) admonitions, the basis for the ceramic types defined here is a group of four distinctive ceramic paste groups or "series." In no way do we feel that defining these series constitutes "begging the question." It is paste groups, not so much specific types, that have created classificatory difficulties in western Tennessee.

Forked Deer Series

The Forked Deer series includes the types Baytown Plain, *var. Forked Deer*, Withers Fabric Marked, *var. Withers*, Mulberry Creek Cordmarked, *var. Bells Road*, Cormorant Cord Impressed, *var. unspecified*, and Twin Lakes Punctated, *var. unspecified.* This series is distinguished 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 less extreme than observed in the classic Tchefuncte material found to the south. The paste is usually soft and chalky, although denser (harder) sherds occur; collections from 40GB42 exhibit considerable variability in hardness. Early prehistoric ceramic firing technology was not such an exact "science" that the occurrence of an occasional Forked Deer series specimen exhibiting a somewhat greater than average hardness should not be a matter for grave typological concern.

As discussed below, the clay particles tend to be large and few in number relative to later paste groups. In contrast to the later Baldwin and Tishomingo series, mica is virtually never present in the paste of Forked Deer (or Madison) series sherds. Most sherds made on this paste exhibit a whitish (5YR 8/1) color, but colors range to reddish

yellow (5YR 6/6) and (less commonly) dark gray (10YR 4/1 or 3/1). Sherds generally exhibit the same color on surfaces and in the core.

Vessel forms suggested by rims include both open and slightly restricted bowls, while some basal sherds appear to derive from flat-based beakers. Lips are generally flattened; rounded lips are less common. Execution of lip finishing is summarily done. Rims are generally thickened. Interior notching of the rim with small cords is common on Forked Deer series ceramics; similar decoration has been noted on Sauty Cord Impressed (a sand "tempered" type closely related to Cormorant Cord Impressed) from the Guntersville Basin in Alabama (Heimlich 1952: 12-13).

Reanalysis of collections at the C.H. Nash Museum-Chucalissa, which were collected and originally analyzed by Gerald Smith (e.g., 1979a, Smith and Weinstein 1987) indicates that much, but not all, of the material classified by Smith as "Tchefuncte" falls within the Forked Deer series. The paste of the Lower Mississippi Valley type Tchefuncte Plain (Ford and Quimby 1945; Phillips, Ford, and Griffin 1951: 71; Phillips 1970: 162-163; Wimberly 1960) is clearly related, although not identical. In reference to similar ceramics in the upper Sunflower region in Mississippi, Brookes and Taylor describe what they call the "Cormorant group," a ceramic paste defined as "soft and very chalky, similar to Tchefuncte, but the appearance of lamination is not present" (1986: 23). With the exception of the occasional occurrence of lamination in the collections examined by us, our definition of Forked Deer series paste closely matches Brookes and Taylor's description of "Cormorant" paste.

Although stratigraphic evidence is lacking in western Tennessee, based on the relative softness of the paste (see below) and the consistent occurrence of Tchula period decorative types (e.g., Cormorant Cord Impressed), we tentatively regard the Forked Deer series as pre-dating both the Baldwin and Tishomingo series.

While most researchers should be able to accurately sort ceramics of the Forked Deer series based on the description above, we felt that a quantitative assessment of the differences between Forked Deer paste and other clay "tempered" pastes would be useful. Specifically, we wished to determine if statistically significant differences in clay particle size and numbers of clay particles could be demonstrated between Forked Deer series ceramics and Late Woodland/Emergent Mississippian "Baytown" paste sherds, and between Forked Deer and the "clay tempered" Mississippian ceramics that typify the ceramic assemblage from the Obion site (Garland 1992).

Using a random sample of 10 Forked Deer paste sherds from 40MD2, the size of all clay particles visible in one randomly selected facet of each sherd was measured. Based on this sample of 92 clay particles, the mean particle size is 1.04 mm, with a standard deviation of 0.79 mm; size ranged from less than 0.05 mm to 3.85 mm. Using the same selection procedure, clay particle size was measured on 10 clay tempered sherds selected from the Emergent Mississippian Oliver site assemblage (discussed later in this volume), resulting in a sample of 187 particles. The mean particle size is 0.46 mm, with a standard deviation of 0.53 mm.

An unpaired t-test was performed to determine if the differences in clay particle size between the two samples were significant, resulting in a value of t=7.262, which is significant at the .001 level. If the two samples used here can be considered to be representative of the two paste types (we, of course, feel that this is the case), clay particles in Forked Deer paste are indeed generally larger than those found in "clay tempered" Late Woodland/Emergent Mississippian wares of the Central Mississippi Valley.

In comparing the density of clay particles between Forked Deer and Late Woodland/Emergent Mississippian "clay tempered" ceramics, particle counts were made on one randomly selected facet for each of 20 sherds in each paste group (including those used in the clay size comparison). The approximate area of each counted surface was calculated. Clay particle density was computed as the ratio of number of clay particles divided by surface area. For the Forked Deer paste sample, the mean clay particle density is 0.129, with a standard deviation of 0.082, while the mean for the Late Woodland/Emergent Mississippian paste series ceramics (see discussion later in this volume) is 0.195, with a standard deviation of 0.097. These figures yield an unpaired t-test value of 2.29, which is significant at <.05, i.e., clay particle density is lower in Forked Deer series paste than in the sample of Late Woodland/Emergent Mississippian "clay tempered" ceramics. This may suggest that the clay particles in the sample of Late Woodland/Emergent Mississippian paste series sherds represent intentionally added inclusions.

Comparable counts and calculations were made for a sample of clay/grog "tempered" sherds from the Obion site (40HY14). Typical sherds from the Obion site bear a superficial resemblance to ceramics of the Forked Deer series, in that the Obion site sherds also tend to exhibit a light gray paste (Garland 1992). Differences in hardness between the two pastes is quite readily apparent, but we were curious about quantitative differences.

Mean clay particle size in our sample from the Obion site (N=237 clay particles) was 0.36 mm, with a standard deviation of 0.42; size ranged from <0.05 mm to 1.9 mm. Comparison of particle size between Obion and Forked Deer series produced a *t* value of 10.018, which is significant at <.001. The mean clay particle density of Obion ceramics (again using a sample of 20 sherds) was 0.347, with a standard deviation of 0.339. In comparing the Obion and Forked Deer samples, a *t* value of -2.796, which is significant at <.01, was obtained.

These statistical comparisons clearly demonstrate that clay particle size tends to be larger in Forked Deer paste ceramics than either our Late Woodland/Emergent Mississippian or Obion site paste samples. Moreover, clay particle density in the two temporally later pastes is significantly greater than that observed in ceramics of the Forked Deer series. While neither clay particle size nor density constitute necessary or sufficient criteria for classificatory purposes, the results of the statistical analyses strengthens the validity of our definition of Forked Deer series as a distinctive paste and provides other researchers with some quantitative standards against which their own analyses can be compared.

Types included within the Forked Deer series are as follows:

Baytown Plain, *var. Forked Deer*
References: Variety not previously described. The following references provide comparative information: Ford and Quimby (1945: 52); Phillips *et al* (1951: 71); Phillips (1970: 162-163); Smith (1979a: 75-76); Smith and Weinstein (1987: 45).

Temper: Probably lacks temper in the strict sense. Moderate (15-20%) to (rarely) abundant (apx. 50%) clay particles. Clay particles tend to be fairly large and blocky on the edges. See description of the Forked Deer series above for more detailed discussion.
Texture: Sherds generally feel soft and chalky. Paste is often contorted to occasionally laminated in cross-section. Breaks are crumbly and jagged to clean. See description of Forked Deer series for discussion.

Color: 5YR 8/1 (white) to 5YR 6/6 (reddish yellow) and 10YR 4/1 or 3/1 (dark grey). The majority of sherds are white, shading to pale reddish yellow (orange); a few are dark grey. Surfaces and cores of most sherds exhibit the same color.

Thickness: Mean: 7.5 mm; range: 4.4-11.6 mm.

Hardness: 2 to 3

Surface Finish: Surfaces are slightly lumpy to evenly smoothed on both the interior and exterior of the majority of sherds, and frequently show weathering.

Rims: Based on a small sample, rims are generally oriented to produce a straight profile. Lips are usually flattened. Interior notching with a cord is a common treatment.

Appendages: None.

Vessel Form: In comparison of rim forms to existing vessels, most suggest open bowl forms though slightly restricted bowls are also suggested. Basal sherds from the type collections and other collections demonstrate that the flat-based beaker or "flower pot" form was also common.

Sorting Criteria: Plain, smoothed surface on a Forked Deer series paste. *Forked Deer* and other varieties in the Forked Deer series are distinguished from their Madison series counterparts based on sandiness or the lack thereof. Forked Deer series ceramics exhibit a surface that is smooth and chalky to the touch, whereas sand is readily felt on the surface of Madison series ceramics. This distinction is best observed on a smooth, as opposed to decorated or eroded, sherd surface. Note that the "chalkiness" of the Forked Deer series may be due to the surfaces having been floated (Ford and Quimby 1945). Hence, when sorting sherds with eroded surfaces, it is likely that the Madison series will be somewhat overenumerated. We have observed that an eroded spot on an otherwise typical, chalky Forked Deer series sherd will often feel slightly sandy.

Body sherds of this variety can occasionally be difficult to separate consistently from clay/grog "tempered" sherds from other time periods, but the paste description above should provide a sufficient basis for sorting in most instances.

Relationships: Companion types on the same paste are Withers Fabric Marked, *var. Withers*, Twin Lakes Punctated, *var. unspecified*, and Cormorant Cord Impressed, *var. unspecified.*

Comments: The breakage differentiation of sherds seems to relate to the extent of paste manipulation and possibly the clay used. Sherds that show more extensive lamination (which generally seem to exhibit a more orange color) tend to break cleanly, while the more contorted paste (typically associated with a white to light gray paste) sherds break crumbly and jagged.

Definition of this variety is based on surface collections from 40MD2 and 40MD130. The homogeneity of paste and decoration on these two sites indicates what we interpret as single component occupations at each, as well as contemporaneity between the sites. Collections of sherds from Dyer, Gibson, Weakley, and Shelby counties were also examined for comparative purposes (see Smith 1979a and Smith and Weinstein 1987).

Withers Fabric Marked, *var. Withers*

References: Phillips *et al* (1951: 73-76); Phillips (1970: 174-175); Smith and Weinstein (1987: 45); Toth (1988: 233).

Temper: Probably lacks temper in the strict sense. Moderate (15-20%) to (rarely) abundant (apx. 50%) clay particles. Clay particles tend to be large and blocky on the edges. See description of the Forked Deer series above for more detailed discussion.

Texture: Sherds generally feel soft and chalky. Paste is often contorted to occasionally laminated in cross-section. Breaks are crumbly and jagged to clean. See description of Forked Deer series for more discussion.

Color: 5YR 8/1 (white) to 5YR 6/6 (reddish yellow) and 10YR 4/1 or 3/1 (dark grey). The majority of sherds are white, shading to pale reddish yellow (orange); a few are dark grey. Surfaces and cores of most sherds exhibit the same color.

Thickness: Mean: 7.35 mm; range: 6.3-10.2 mm.

Hardness: 2 to 3

Surface Finish: A simple twined fabric was impressed into the wet clay of the exterior at oblique or horizontal angles to the lip. Numerous well-defined "ridges and valleys" are usually evident on the vessel exterior; these are often visible even though the individual fabric cordage impressions have been largely obscured by surface erosion. Surfaces frequently show weathering.

Jenkins (1981: 143) suggests that this style of surface decoration was produced by wrapping groups of 4 to 6 dowels with fabric, creating a "paddle." Close examination of vessel surfaces, however, suggests that the "ridge and valley" effect actually resulted from properties of the fabric itself, not the technique of application. Ridges occur along the weft elements of the fabric, while the "valleys" correspond to the areas of warp threads between wefts.

Rims: Based on a fairly small sample, rims are generally oriented to produce a straight profile. Lips are usually flattened. Interior notching with a cord is a common treatment.

Appendages: None.

Vessel Form: Comparison of rim forms to existing vessels most suggest open bowl forms though slightly restricted bowls are also suggested. Base sherds from the type collections as well as other sherd collections show that the flat-based beaker or "flower pot" form was also common.

Sorting Criteria: Fabric marked surface on a Forked Deer series paste.

Comments: In sorting the various fabric marked varieties discussed here, it was our impression that the fabric impressions found on *Withers* and *Cypress Creek* (see below) tend to be somewhat coarser than those on Saltillo Fabric Impressed and *Craig's Landing*. To test this inference, cord width measurements were made on a randomly selected sample of cord impressions from several west Tennessee sites. Using these measurements, a series of unpaired t-tests was performed to compare cord widths among the fabric marked varieties.

No significant differences were found between *Withers* (N=40) and *Craig's Landing* (N=69) or Saltillo Fabric Impressed (N=59). Surprisingly, the sample of *Cypress Creek* (N=99) exhibited significantly more narrow cord impressions than *Withers* (t=5.08, p <.001). At this point, we do not regard this difference to be of cultural or temporal significance, because *Cypress Creek* also exhibits narrower cord impressions than *Craig's Landing* (t=5.23, p<.001) and Saltillo Fabric Impressed (t=4.01, p<.001). As mentioned above, it seems likely that these latter, examples of our Tishomingo and Baldwin series pastes, respectively, post-date *Cypress Creek.*

It should also be mentioned that in most instances, surface decoration on *Withers* and *Cypress Creek* appears to have been applied while the paste was wetter than was the case on the presumably later fabric marked types, resulting in less clearly defined individual cordage impressions. Cordage impressions on Withers Fabric Marked, *var. Craig's Landing* and Saltillo Fabric Impressed tend to be fairly distinct.

Mulberry Creek Cordmarked, *var. Bells Road*

References: Variety not previously described. The following references provide comparative information: Phillips (1970: 138); Smith and Weinstein (1987: 45); Toth (1988: 231).

Temper: Probably lacks temper in the strict sense. Moderate (15-20%) to (rarely) abundant (apx. 50%) clay particles. Clay particles tend to be large and blocky on the edges. See description of the Forked Deer series above for more detailed discussion.

Texture: Sherds generally feel soft and chalky. Paste is often contorted to occasionally laminated in cross-section. Breaks are crumbly and jagged to clean. See description of Forked Deer series for discussion.

Color: 5YR 8/1 (white) to 5YR 6/6 (reddish yellow) and 10YR 4/1 or 3/1 (dark grey). The majority of sherds are white, shading to pale reddish yellow (orange); a few are dark grey. Surfaces and cores of most sherds exhibit the same color.

Thickness: Mean: 6.07 mm; range: 5.0-7.8 mm.

Hardness: 2 to 3

Surface Finish: Exterior malleated with a cord-wrapped paddle, creating cord impressions that are oriented vertically or obliquely to the lip over the entire vessel surface.

Rims: Based on a fairly small sample, rims are generally oriented to produce a straight profile. Lips are usually flattened. Interior notching with a cord is a common treatment.

Appendages: None.

Vessel Form: A comparison of rim forms to existing vessels suggests that open bowl forms predominate, although slightly restricted bowls also seem to be represented.

Sorting Criteria: Cordmarked surface on a Forked Deer series paste.

Comments: Smith (personal communication; cf. Smith and Weinstein 1987) has suggested that when cordmarking is present on Tchula period paste (i.e., our Forked Deer series), the cord impressions tend to be coarser than those observed on presumed

"later" pastes. As in the case of the various fabric marked types, we tested this proposition using a series of unpaired t-tests. Cords on the rather small measured sample of *Bells Road* proved to be significantly wider than those in samples of both *Tishomingo* (N=110; t=3.38, p<.001) and Furrs Cordmarked (N=54; t=3.03, p<.01). Cord widths on *Bells Road* and *Westover* tend to be of virtually identical size.

Bells Road is not present in the assemblages from the two sites that produced the largest collections of Forked Deer series ceramics (40MD2 and 40MD130), but examples were noted during reanalysis of collections from 40SY40 and 40SY56. *Bells Road* may represent the west Tennessee equivalent of *Porter Bayou* (Phillips 1970: 138; Toth 1988: 231), for which good contextual data appears to be sparse.

Cormorant Cord Impressed, *var. unspecified*

References: Phillips *et al* (1951: 73); Phillips (1970: 77).

Temper: Occurs primarily on Forked Deer and Madison series paste, rarely on Baldwin and Tishomingo paste.

Texture: See discussion under Forked Deer and Madison series paste.

Color: Within the range described for Forked Deer and Madison series paste.

Thickness: Mean: 9.2 mm; range: 6.4-11.7 mm.

Hardness: 2 to 3

Surface Finish: Individual cord impressions were used to create simple rectilinear or (less commonly) curvilinear patterns on vessel rims. The band of cord impressions is usually framed by rows of cord notching or punctation above and below. Stylistically, all observed examples fall within the range of *Cormorant*, but the paste differs from that described for *Cormorant* (Phillips 1970: 77).

While studying the type collections (from 40MD2 and 40MD130), we observed that the horizontal rows of Twin Lakes-like punctation were consistently produced by impressing a small segment of cord or a knot into the clay. This decorative treatment is often accompanied by interior cord notching (apparently produced by impressing small knots of cordage), which also occurs on other types exhibiting Forked Deer or Madison series paste; similar decoration appears on the related and probably contemporary type Sauty Cord Impressed in the Guntersville Basin (Heimlich 1952).

Rims: This type is best regarded as a decorative rim treatment. It seems to occur most frequently on rims with a thickened exterior, straight profile, and a flattened lip.

Appendages: None known.

Vessel Form: Slightly restricted bowls or open bowls, such as Tidwell vessel D (Ford 1990: 109).

Sorting Criteria: Simple geometric designs on vessel rim formed by impressing single strands of cordage (perhaps woven patterns in some instances). In the western Tennessee collections studied, *Cormorant*-style decoration occurs primarily on Forked Deer and Madison series pastes, although a single example from 40LA40 exhibits Tishomingo series paste.

Comments: With only two exceptions, decoration on the sherds examined conforms closely to the original type description (Phillips *et al* 1951) and resembles various sections of the design on Tidwell vessel D (Ford 1990). Other partial motifs observed include a curvilinear line descending from a horizontal cord impression and widely-spaced chevrons below a row of cord notches and a horizontal cord impression. See Figure 9.

Our treatment of Cormorant Cord Impressed and Twin Lakes Punctated is inconsistent with the other type/varieties described here. Specifically, it would seem appropriate to define new varieties of these two decorated types based on the paste series described above. We have elected not to do so primarily because this would result in the definition of 8 new varieties based on very small samples. This seems to be of questionable analytical value at this time.

Twin Lakes Punctated, *var. unspecified*

References: Phillips *et al* (1951: 76); Phillips (1970: 165-166); Toth (1988: 232-233).

Temper: Occurs primarily on both Forked Deer and Madison series paste, rarely on Baldwin and Tishomingo paste.

Texture: See discussion under Forked Deer and Madison series paste.

Color: Within the range described for various types with Forked Deer and Madison series paste.

Thickness: Small sample; similar to Cormorant Cord Impressed.

Hardness: 2 to 3

Surface Finish: Wedge-shaped or oval punctations applied to the rim just below the lip. Stylistically, all observed examples fall within the range of *Twin Lakes* and *Hopson*, but the paste differs from that described for these varieties (Phillips 1970: 166).*Twin Lakes* is distinguished by the characteristic herringbone motif, while *Hopson* usually exhibits horizontal rows.

Rims: This type is best regarded as a decorative rim treatment. It seems to occur most frequently on rims with a thickened exterior, straight profile, and a flattened lip.

Appendages: None known.

Vessel Form: Slightly restricted bowls or open bowls, such as Tidwell vessels C and D (Ford 1990: 108-109).

Sorting Criteria: Simple geometric designs on vessel rim formed by applying a band of punctations in a simple geometric motif in a band immediately below the lip. In the western Tennessee collections studied, this type seems to occur primarily on Forked Deer and Madison series pastes.

Comments: Based on the collections studied to date, Twin Lakes Punctated rarely occurs in western Tennessee. As noted above, our treatment of Cormorant Cord Impressed and Twin Lakes Punctated is inconsistent with the other type/varieties described here. We have elected not to define new varieties of these two decorated types based on the paste series described above because of the small samples available.

Madison Series

Ceramic types in the Madison Series include Baytown Plain, *var. Madison*, Withers Fabric Marked, *var. Cypress Creek*, Mulberry Creek Cordmarked, *var. Westover*, Cormorant Cord Impressed, *var. unspecified*, and Twin Lakes Punctated, *var. unspecified*. This series is characterized by the presence of baked clay particles in the paste, but varying amounts of fine sand are also present, resulting in a soft, slightly raspy textured, often contorted to occasionally laminated paste that closely resembles the Forked Deer series. Indeed, both Forked Deer and Madison series ceramics are present in the large collections from 40MD2 and 40MD130, both of which appear to be single component sites, and it is our impression that Madison paste is simply a sandy variant of Forked Deer (cf. Ford and Quimby 1945; Phillips 1970). Therefore, at this point we ascribe neither cultural nor temporal distinctions to the differences between these two series (cf. McNutt 1979: 19 and 40).

Future research may validate Smith's (1979a; Smith and Weinstein 1987) claim that some of the material we have classified as Madison series represents a "transition" between Forked Deer and Baldwin pastes, but our research, which is based on much larger samples than those used by Smith, provides little support for this interpretation. There is presently no reported stratigraphic evidence from west Tennessee that can be brought to bear on this problem (see below).

As in the case of the Forked Deer series, some Madison series sherds (e.g., some specimens from 40GB42) exhibit a paste that is harder than the norm, but in all other attributes fit easily within our definition of this series.

Using procedures discussed above, clay particle size and density were compared between samples of Forked Deer and Madison series ceramics by means of unpaired t-tests. Based on a sample of 131 clay particles (obtained from 10 sherds), the mean size for Madison paste is 0.91 mm with a standard deviation of 0.61 mm; the range is from <.05 mm to 2.9 mm. There is no significant difference in particle size between Forked Deer and Madison paste at either the .05 or the .10 level (t=1.377). Mean clay particle density for Madison series paste is 0.084, with a standard deviation of 0.054. Comparison with the density ratio of Forked Deer paste yielded a value of t=2.07, which is significant at the .05 level; Madison paste ceramics generally contain fewer clay particles than those of Forked Deer paste. The importance of this apparent difference is not clear at present.

Rims are generally thickened and suggest vessel forms of open and slightly restricted bowls, while flat-based beakers are suggested by basal sherds in the collections. Lips are usually flattened; rounded examples are less common. Lip finishing is done rather summarily. Interior notching of the rim is common.

Many sherds that fall within our description of Madison paste have previously been classified as "Thomas" by Smith (1979a; Smith and Weinstein 1987). Phillips *et al* (1951: 141-142; see also their discussion on p. 77 under "Baytown Plain") proposed the provisional type Thomas Plain to accommodate plain surfaced wares that were primarily or exclusively sand "tempered," but with clay particles often present. The provisional types Blue Lake Cord-Marked and Twin Lakes Fabric-Impressed were also made on this paste. In his classification of ceramics from the Womack site in northern Mississippi, Koehler attempted to follow this concept of Thomas, specifically noting that the paste type contained "medium to coarse sand as the primary tempering material with the inclusion of clay particles" (1966: 29).

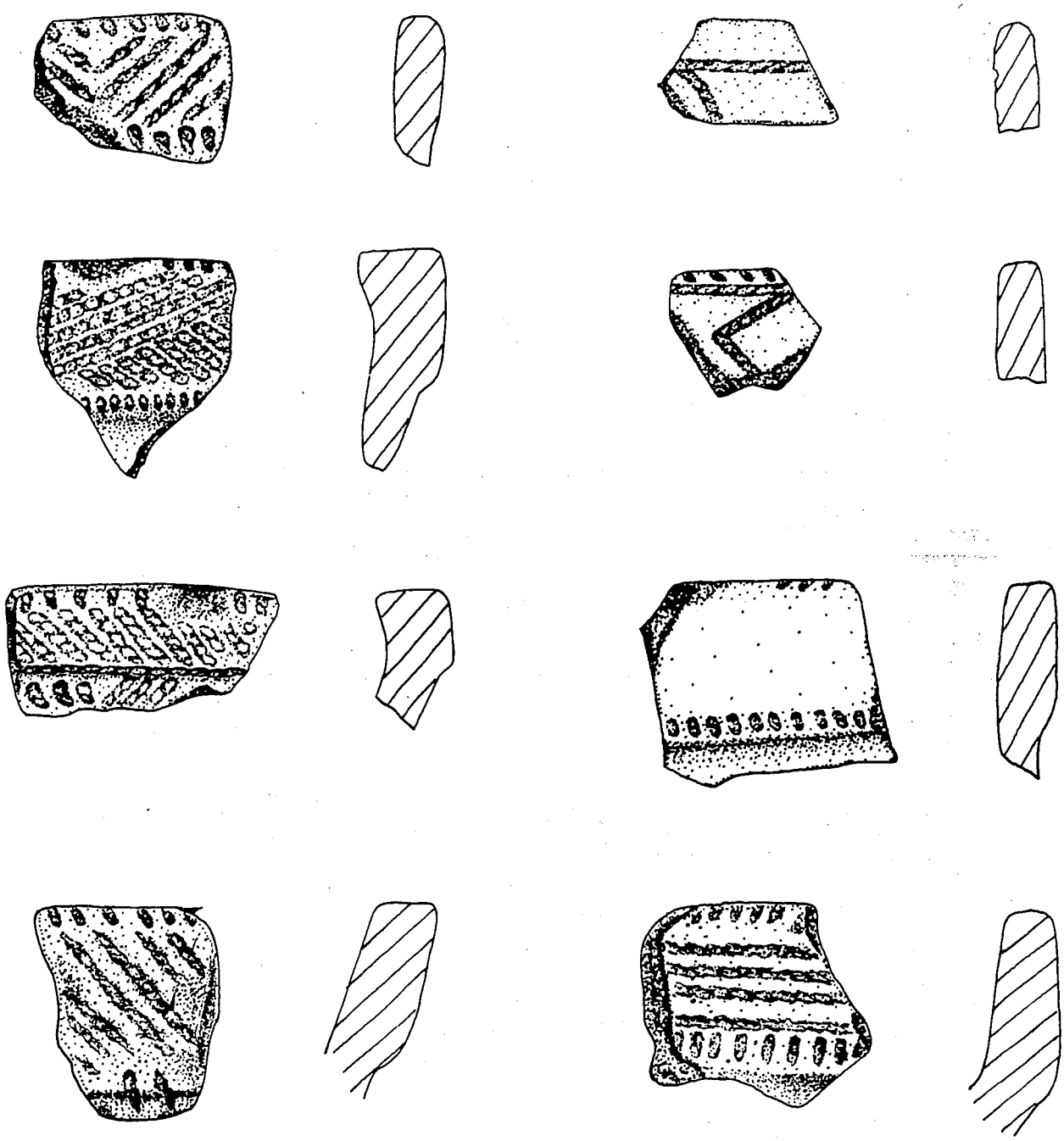


Figure 9. Cormorant Cord Impressed ceramics from various sites.

Phillips (1970: 54-55) subsumed Thomas Plain within Baytown Plain, *var. Thomas*, although he refers to the paste as "sandy-textured," while suggesting that "neither sand nor clay was added to this pottery as tempering" (1970: 54-55). In his discussion of Withers Fabric Marked, *var. Withers*, however, Phillips (1970: 174-175) specifically refers to the "sandy textured clay-tempered *Twin Lakes* variety of Withers." Yet under the definition of *Twin Lakes*, the paste is said to be "equivalent to the *Thomas* variety of Baytown Plain" (Phillips 1970: 175). Toth (1988: 231-233), in discussing the same paste, but with reference to Mulberry Creek Cordmarked, *var. Blue Lake*, and Withers Fabric Marked, *var. Twin Lakes*, specifically uses the term "sand-tempered."

Our purpose in reviewing the use of the term "Thomas" here is to point out the ambiguities associated with the term and to note that Smith's (1979a; Smith and Weinstein 1987) "Thomas ware" does not precisely correspond to the other published descriptions. Moreover, "Thomas," as used by Smith, overlaps with and, in fact, includes, the paste commonly associated with Baytown Plain, *var. Tishomingo* (Jenkins 1981; Jennings 1941; Mainfort 1986b; Mainfort and Walling 1992; Smith 1979a: 76-77). We shall therefore eschew use of the term "Thomas" in reference to west Tennessee ceramics and we urge other researchers to do likewise.

Types included within the Madison series are as follows:

Baytown Plain, *var. Madison*

References: Variety not previously described. The following references provide comparative information: Ford and Quimby 1945: 52; Phillips *et al* (1951: 141-142); Phillips (1970: 54-55); Smith (1979a: 75-78).

Temper: Probably lacks temper in the strict sense. Moderate (15-20%) to very (rarely) abundant (apx. 50%) clay particles and minor to moderate amounts of fine sand often unevenly distributed throughout the paste. Clay particles are usually large and blocky on edges. See description of the Madison series above for more detailed discussion.

Texture: Sherds are generally soft and chalky, but the sand content makes them slightly raspy as well. Paste is often contorted to occasionally laminated in cross-section. Breaks are crumbly and jagged to clean. See description of the Madison series above.

Color: 5YR8/1 (white) to 5YR6/6 (reddish yellow) and 10YR4/1 or 3/1 (dark grey). The majority of sherds are white shading to pale reddish yellow (orange). Some specimens are dark grey. Surface and core color is usually the same.

Thickness: Mean: 7.5 mm; range: 4.4-11.6 mm. Rim sherd average thickness: 9.2 mm; range: 6.4-11.7 mm.

Hardness: 2 to 3

Surface Finish: Surfaces are lumpy to evenly smoothed on both interior and exterior and frequently show weathering. Companion types include Withers Fabric Impressed, *var. Cypress Creek*, Mulberry Creek Cordmarked, *var. Westover*, Cormorant Cord Impressed, *var. Cormorant*, and Twin Lakes Punctated, *var. Hopson.*

Rims (N=6): Rims are flattened on the lip surface and are the same thickness or thicker than the section of the body on the sherd.

Appendages: None.

Vessel Form: In comparison of rim forms to existing vessels, most suggest open bowls although there is evidence for slightly restricted bowls as well. Base sherds show the existence of flat based vessels.

Sorting Criteria: We view *Madison* essentially as a sandy variant of *Forked Deer*. Macroscopically, the paste appears to be virtually identical to *Forked Deer*, with the exception of the presence of varying amounts of fine sand.

Comments: As noted above, this variety of Baytown Plain is very similar to *Forked Deer*. The occurrence of sand could be a result of varying amounts of sand within lenses of the clay source or conscious addition of sand to the paste. In the type site collections, both *Forked Deer* and *Madison* occur with the same rim forms and surface treatments. We have elected to separate these two varieties in order to resolve some of the confusion created by Smith's (1979a; Smith and Weinstein 1987) concept of "Thomas" paste, to which he ascribes temporal significance. It is possible that future work will allow more clear-cut separation.

Surface collections from 40MD2 and 40MD130 were used as type collections in defining this variety. At times, it can be difficult to distinguish eroded sherds of this variety from *Tishomingo*. Hardness can be inconsistent and does not, in itself, provide an adequate basis for distinguishing paste types, but if color and clay particle size are also considered, few problems in sorting should be experienced. Differences in rim treatments will also assist in identification if both varieties are present in a collection.

Withers Fabric Marked, *var. Cypress Creek*

References: Variety not previously described. The following references provide comparative information: Phillips *et al* (1951: 73-75); Phillips (1970: 174-175); Smith (1979a: 75-78).

Temper: Probably lacks temper in the strict sense. Moderate (15-20%) to (rarely) abundant (apx. 50%) clay particles and minor to moderate amounts of sand unevenly distributed throughout the paste. Clay particles are usually large and blocky on edges. See description of the Madison series above for more detailed discussion.

Texture: Sherds are generally soft and chalky, but the sand content makes them slightly raspy as well. Paste is often contorted to occasionally laminated in cross-section. Breaks are crumbly and jagged to clean. See description of the Madison series above.

Color: 5YR8/1 (white) to 5YR6/6 (reddish yellow) and 10YR4/1 or 3/1 (dark grey). The majority of sherds are white shading to pale reddish yellow (orange); some are dark grey. Surface and core color is usually the same.

Thickness: Mean: 8.0 mm; range: 5.3-11.0 mm.

Hardness: 2 to 3
Surface Finish: A simple twined fabric was impressed into the wet clay of the exterior at oblique or horizontal angles to the lip. See discussion under *Withers*.

Rims: Rims are flattened on the lip surface and are the same thickness or thicker than the section of the body on the sherd.

Appendages: None.

Vessel Form: A comparison of rim forms to existing vessels suggests that most derive from open bowls, although there is evidence for slightly restricted bowls as well. All basal sherds represent flat based vessels.

Sorting Criteria: Fabric marked surface on a Madison series paste. See discussion under *Withers*.

Mulberry Creek Cordmarked, *var. Westover*

References: Variety not previously described. The following references provide comparative information: Phillips (1970: 54-55); Smith and Weinstein (1987: 53-55); Toth (1988: 231).

Temper: Probably lacks temper in the strict sense. Moderate (15-20%) to (rarely) abundant (apx. 50%) clay particles and minor to moderate amounts of sand unevenly distributed throughout the paste. Clay particles are usually large and blocky on edges. See description of the Madison series above for more detailed discussion.

Texture: Sherds are generally soft and chalky, but the sand content makes them slightly raspy as well. Paste is often contorted to occasionally laminated in cross-section. Breaks are crumbly and jagged to clean. See description of the Madison series above.

Color: 5YR8/1 (white) to 5YR6/6 (reddish yellow) and 10YR4/1 or 3/1 (dark grey). The majority of sherds are white shading to pale reddish yellow (orange). Some are dark grey. Surface and core color is usually the same.

Thickness: Mean: 6.9 mm; range: 4.3-10.4 mm.

Hardness: 2 to 3

Surface Finish: Exterior malleated with a cord-wrapped paddle, creating cord impressions that are oriented vertically or obliquely to the lip over the entire vessel surface. Surfaces frequently show weathering.

Rims: Rims are flattened on the lip surface and are the same thickness or thicker than the section of the body on the sherd.

Appendages: None.

Vessel Form: Comparison of rim forms to existing vessel suggests that open bowls are most common, although there is evidence for slightly restricted bowls as well. Base sherds show the existence of flat based vessels.

Sorting Criteria: Cordmarked surface on a Madison series paste. Using a fairly small sample (N=15), cord widths on *Westover* were found to be significantly larger than those on *Tishomingo* (t=2.95, p<.01) and Furrs Cordmarked (t=2.62, p=.01).
Comments: Like the closely related *Bells Road*, this variety is not represented in the assemblages from the two sites for which we have the largest collections of Forked Deer series ceramics (40MD2 and 40MD130), but a number of examples were noted during our reanalysis of collections from 40SY49 and 40GB6.

Tishomingo Series

The Tishomingo paste series includes Baytown Plain, *var. Tishomingo*, Mulberry Creek Cordmarked, *var. Tishomingo*, and Withers Fabric Marked, *var. Craig's Landing*. This series is defined by presence of varying amounts of sand and readily visible fired clay particles (possibly used as temper), often somewhat unevenly distributed in a medium hard paste. Pastes are usually darker than that of either Forked Deer or Madison series ceramics and surfaces lack the chalkiness associated with these series. In contrast to the Forked Deer and Madison series, mica flecks are frequently present in the paste of Tishomingo series ceramics that we have examined.

Jennings' original description of Tishomingo paste tempering states: "Clay pellets, much sand, rarely fossil shell or limestone . . . Texture: Irregular, lumpy fracture. Contorted paste. Temper irregularly distributed" (1941: 200). Cotter and Corbett (1951: 19) give essentially the same description, but note that the Tishomingo sample from Bynum site "predominantly clay-grit tempered, but does contain some sand." This predominance of clay/grit "temper" differs from Jennings' definition, which seems to imply a paste that is primarily sand "tempered" with minor amounts of clay particles.

Jenkins (1981: 90-91) uses "Tishomingo" as a variety of both Baytown Plain and Mulberry Creek Cordmarked, describing the paste as follows: "Crushed sherds (grog) constitute less than 20 percent of the paste. Sand constitutes 10 to 20 percent of the paste. Bone inclusions and hematite nodules rarely occur . . . [Texture is] similar to fine sand paper and sometimes slightly chalky." Based on this definition, particularly his use of the term "slightly chalky," we suspect that Jenkins may include within his Tishomingo varieties some material that we would classify within the Madison series.

In the classification scheme proposed here, all darker colored, non-chalky sherds exhibiting both sand and clay particles in the paste, without regard to specific proportions, are included in the Tishomingo series, while the Baldwin series is reserved for sand "tempered" (or "sandy textured") sherds lacking visible clay particles (cf. Mainfort and Walling 1992). Our Tishomingo series paste can therefore accommodate a much sandier paste than that described by Cotter and Corbett (1951). Reanalysis of several collections at the C.H. Nash Museum-Chucalissa indicates that a substantial number of sherds originally classified by Gerald Smith (e.g., 1979a; Smith and Weinstein 1987) as "Baldwin ware" exhibit varying amounts of clay particles in the paste and would be classified within our Tishomingo series.

Rims are generally everted and are of the same thickness or thinner than the vessel body. Exterior rim "folds" are common; lip notching is a common decorative treatment.

Following the lead of McNutt (1979; see also Ford 1989; Johnson 1988; Mainfort and Walling 1992), at this point we ascribe no temporal significance to Tishomingo series paste. We do not feel that in the west Tennessee area it is sound interpretation to identify a component specifically as Early, Middle, or Late Woodland based on the presence of 1 or 2 sand and clay "tempered" sherds with eroded surfaces. It is worth mentioning that the Duck's Nest Sector at Pinson Mounds provides firm evidence of the contemporaneity of Baldwin, Tishomingo, and certain "Baytown" series ceramics, although some of the vessels represented are not of local origin (Mainfort 1986).

Since both Madison and Tishomingo series ceramics are characterized by the presence of both clay particles and sand in the paste, it is inevitable that difficulties will be experienced in sorting these series. We have experienced some problems ourselves.

To some extent, this is both understandable and unavoidable (cf. Phillips 1970: 26-27). Careful adherence to the paste and type descriptions presented here should allow accurate sorting in most instances. Context can also provide important clues, e.g., Madison series ceramics should typically be associated with assemblages that include Tchula period decorated types (Cormorant Cord Impressed, Withers Fabric Marked, etc.), while cordmarking should be prominent in Tishomingo assemblages. Vessel and rim forms should also be considered. Our operational use of Tishomingo series paste subsumes all sand and clay "tempered" (or pastes containing both sand and visible clay particles) sherds that are not *readily* attributable to the Madison series, based on paste and/or the factors mentioned above.

Finally, there are the type collections themselves, which are curated by the Tennessee Division of Archaeology. These provide other researchers with the opportunity to directly compare specimens with the sherds originally used in formulating the definitions presented here.

Types included within the Tishomingo series are as follows:

Baytown Plain, *var. Tishomingo*

References: Cotter and Corbett (1951: 19); Jenkins (1981: 90-91); Jennings (1941: 200-201); Mainfort and Walling (1992: 122).

Temper: Includes varying amounts of medium to fine sand grains and clay particles, often unevenly distributed. The clay particles are usually smaller than those of the Forked Deer and Madison series, and are blocky on the edges. See description of Tishomingo series ceramics above for more detailed discussion.

Texture: Sherds are hard and the surface feels like fine sandpaper. Paste may occasionally exhibit laminations in cross-section when viewed under a microscope. See description of Tishomingo series ceramics for discussion.

Color: 2.5YR 5/6 (red), 5YR 5/4 (reddish brown), 5YR 6/6 (reddish yellow), 7YR 7/1 (light grey), 7.5YR 7/2 (pinkish grey).

Thickness: Mean: 6.48 mm; range: 4.5-8.5 mm

Hardness: 3 to 4

Surface Finish: Surfaces are smooth or burnished.

Rims: Generally rims are thinner than or equal to body thickness and everted. A common decorative treatment is lip notching.

Appendages: None

Vessel Form: Open globular bowls and conoidal jars are indicated.

Sorting Criteria: Plain surface on a moderately hard paste containing varying amounts of sand and visible clay particles. See description of Tishomingo series above.

Relationships: Companion types include Withers Fabric Marked, *var. Craig's Landing*, and Mulberry Creek Cordmarked, *var. Tishomingo*.

Comments: 40LA40 and 40CS156 are the type sites for this variety as defined here. Sites from Shelby, Dyer, and Weakley counties were also examined for comparative purposes (see Smith 1979a, Smith and Weinstein 1987).

Mulberry Creek Cordmarked, *var. Tishomingo*

References: Cotter and Corbett (1951: 19); Jenkins (1981: 99-102); Jennings (1941: 200-201); Koehler (1966: 31, 38); Mainfort and Walling (1992: 122).

Temper: Includes varying amounts of fine to medium sand grains and clay particles, often unevenly distributed. The clay particles are usually smaller than those of the Forked Deer and Madison series, and are blocky on the edges. See description of Tishomingo series ceramics above for more detailed discussion.

Texture: Sherds are hard and surfaces feels like fine sandpaper. Paste may occasionally exhibit laminations in cross-section when viewed under a microscope. See description of Tishomingo series ceramics above for discussion.

Color: 2.5YR 5/6 (red), 5YR 5/4 (reddish brown), 5YR 6/6 (reddish yellow), 7YR 7/1 (light grey), 7.5YR 7/2 (pinkish grey).

Thickness: Mean: 6.9 mm; range: 4.1-9.6 mm

Hardness: 3 to 4

Surface Finish: Exterior malleated with a cord-wrapped paddle, creating cord impressions that are oriented vertically or obliquely to the lip over the entire vessel surface. Interiors frequently hand smoothed.

Rims: Rims are commonly folded and straight to excurvate. Lip notching is common.

Appendages: None

Vessel Form: Open globular bowls and conoidal jars are indicated. Decorated sherds exhibit the same decoration that appears on intact conoidal jars of the same paste.

Sorting Criteria: Cord marked surface on a moderately hard paste containing varying amounts of sand and visible clay particles. See discussion of individual cord widths under *Bells Road* and *Westover*. There was no significant difference in cord size between our sample of *Tishomingo* (N=110) and Furrs Cordmarked (N=54).

Comments: 40LA40 and 40CS156 are the type sites for this variety as defined here. Sites from Shelby, Dyer, and Weakley counties were also examined for comparative purposes (see Smith 1979a and Smith and Weinstein 1987).

Withers Fabric Marked, *var. Craig's Landing*

References: Jenkins (1981: 104-108); Koehler (1966: 31, 38); Mainfort and Walling (1992: 122).

Temper: Includes varying amounts of fine to medium sand grains and clay particles, often unevenly distributed. The clay particles are usually smaller than those of the Forked Deer or Madison series, and are blocky on the edges. See description of Tishomingo series ceramics above for more detailed discussion.

Texture: Sherds are hard and surfaces feels like fine sandpaper. Paste may occasionally exhibit laminations in cross-section when viewed under a microscope. See description of Tishomingo series ceramics above for discussion.

Color: 2.5YR 5/6 (red), 5YR 5/4 (reddish brown), 5YR 6/6 (reddish yellow), 7YR 7/1 (light grey), 7.5YR 7/2 (pinkish grey).

Thickness: Mean: 7.0 mm; range: 4.5-8.1 mm

Hardness: 3 to 4

Surface Finish: A simple twined fabric was impressed into the wet clay of the exterior at oblique or horizontal angles to the lip. Much of the discussion under *Withers* also applies to *Craig's Landing*.

Rims: Rims are commonly folded and straight to excurvate. Lip notching is common.

Appendages: None

Vessel Form: Open globular bowls and conoidal jars are indicated.

Sorting Criteria: Fabric marked surface on a moderately hard paste containing varying amounts of sand and visible grog. As discussed above, individual cord widths on a sample of *Craig's Landing* were found to be significantly larger than those on *Cypress Creek* (t=5.27, p<.001). No significant differences in cord size were found between *Craig's Landing* and either *Withers* or Saltillo Fabric Impressed.

Comments: 40LA40 and 40CS156 are the type sites for this variety as defined here. Sites from Shelby, Dyer, and Weakley counties were also examined for comparative purposes (see Smith 1979a and Smith and Weinstein 1987).

Baldwin Series

The Baldwin series includes the types Baldwin Plain, Furrs Cordmarked, and Saltillo Fabric Impressed. While variations within these types clearly are present, at present we feel that there is neither an adequate basis nor need for defining sortable varieties. This series is defined by a medium hard, sandy textured paste lacking visible clay particles and that may occasionally exhibit laminations in cross-section when viewed under a microscope. Sand particles tend to be fairly evenly distributed.

Like the Tishomingo series, rims are generally everted and are the same thickness or thinner than the vessel body. Exterior rim thickening strips ("folds") are common and lip notching is a common decorative treatment.

Jennings' original definition of Baldwin paste describes the temper and texture of the type Furrs Cordmarked as: "Temper: Sand fine to very fine, very abundant. Mica flecks common, rare clay pellets. Texture: Fine homogeneous, temper evenly distributed, flaky or straight fracture. Very gritty and friable to touch" (1941: 199-200). Both Furrs Cordmarked and its plain-surfaced companion type, Baldwin Plain, are characterized by a "lack of burned clay pellet tempering" (1941: 200). Cotter and Corbett (1951: 17) restrict tempering material to sand, stating that "Burned clay pellets are completely lacking." Jenkins (1981: 123-127) follows Cotter and Corbett (1951) in describing Baldwin paste ceramics for the Gainesville reservoir area.

Our concept of the Baldwin paste series corresponds to the definitions provided by Cotter and Corbett (1951) and Jenkins (1981), with the provision that in sorting, the presence of a single clay pellet in a sherd of average size is permissible; sherds exhibiting two or more clay particles are classified within the Tishomingo series. This usage of Baldwin is also compatible with Smith's (1979a: 77) description, but, as noted above, his operational use of the term included a considerable number of sherds that we would group within our Tishomingo series. In contrast to the Forked Deer and Madison series, sherds of the Baldwin series frequently exhibit a micaceous paste. We have not attempted to assess sand grain size in developing our definition of Baldwin paste.

Ceramics of the Baldwin series generally seem to postdate the Forked Deer and Madison series. At Pinson Mounds, the ceramic assemblage is predominantly sand tempered by *circa* A. D. 100 (e.g., Mainfort and Walling 1992). The relationship between our Baldwin series and the sand tempered Alexander series of the Tchula period is, mercifully, beyond the scope of this study, but clearly needs to be addressed in a region with major Alexander occupations.

Types included within the Baldwin series are as follows:

Baldwin Plain

References: Jennings (1941: 199-200); Cotter and Corbett (1951: 17-18); Koehler (1966: 37); Jenkins (1981: 123-127).

Temper: Fine to medium sand grains comprise approximately 10 to 25 percent of the paste.

Texture: Sherds generally feel hard and like fine to medium sand paper. The paste may occasionally exhibit laminations in cross-section when viewed under a microscope.

Color: 2.5YR 5/6 (red), 5YR 5/4 (reddish brown), 7YR 7/1 (light grey), 7.5YR 7/6 (reddish yellow), 7.5YR 7/2 (pinkish grey).

Thickness: Mean: 6.35 mm; range: 5.8-7.0 mm

Hardness: 3 to 4

Surface Finish: Surfaces are smoothed and, in some instances, burnished. Companion types on this paste include Saltillo Fabric Impressed and Furrs Cordmarked.

Rims: Rims are commonly "folded" and everted. Rim thickness is generally equal to or thinner than body thickness and everted. Lip notching is a common treatment.

Appendages: None

Vessel Form: An open globular bowl is indicated.

Sorting Criteria: Smoothed or burnished exterior surface on a sandy textured paste. As noted above, the presence of a single visible clay particle is allowable within our concept of Baldwin paste.

Comments: Surface collections from 40CS156 were used as the type collection. Collections from Shelby, Madison, Dyer, and Weakley counties were also considered. Few sherds with an intact surface were found. Sand ranges from very fine to coarse, and mica and iron compounds are frequent inclusions in the paste. Mica and iron compounds occur naturally as inclusions in many west Tennessee clay deposits (Whitlach 1940).

Furrs Cordmarked

References: Jennings (1941: 199-200); Cotter and Corbett (1951: 18-19); Koehler (1966: 37); Jenkins (1981: 132-133).

Temper: Fine to medium sand grains comprise approximately 10 to 25 percent of the paste.

Texture: Sherds usually feel hard and like fine to medium sand paper. The paste may occasionally exhibit laminations in cross-section when viewed under a microscope.

Color: 2.5YR 5/6 (red), 5YR 5/4 (reddish brown), 7YR 7/1 (light grey), 7.5YR 7/6 (reddish yellow), 7.5YR 7/2 (pinkish grey).

Thickness: Mean: 7.1 mm; range: 4.8-9.7 mm

Hardness: 3 to 4

Surface Finish: Exterior malleated with a cord-wrapped paddle, creating cord impressions that are oriented vertically or obliquely to the lip over the entire vessel surface. Interiors frequently hand smoothed.

Rims: Rims are commonly "folded" and straight to excurvate. Rim thickness is generally equal to or thinner than body thickness and everted. Lip notching is a common treatment.

Appendages: None

Vessel Form: Conoidal jars are the only form presently known.

Sorting Criteria: Cord marked surface on a sandy textured paste.

Comments: Surface collections from 40CS156 were used as the type collection. Collections from Shelby, Madison, Dyer, and Weakley counties were also considered.

Saltillo Fabric Impressed

References: Jennings (1941: 201); Cotter and Corbett (1951: 18); Koehler (1966: 37-38); Jenkins (1981: 140-143).

Temper: Fine to medium sand grains comprise approximately 10 to 25 percent of the paste.

Texture: Sherds usually feel hard and like fine to medium sand paper. The paste may occasionally exhibit laminations in cross-section when viewed under a microscope.

Color: 2.5YR 5/6 (red), 5YR 5/4 (reddish brown), 7YR 7/1 (light grey), 7.5YR 7/6 (reddish yellow), 7.5YR 7/2 (pinkish grey).

Thickness: Mean: 6.0 mm; range: 4.5-8.9 mm

Hardness: 3 to 4

Surface Finish: A simple twined fabric was impressed into the wet clay of the exterior at oblique or horizontal angles to the lip. See discussion above under *Withers*.

Rims: Rims are commonly folded and everted. Rim thickness is generally equal to or thinner than body thickness and everted. Lip notching is a common treatment.

Appendages: None

Vessel Form: Conoidal jars are the only form presently known.

Sorting Criteria: Fabric marked surface on a sandy textured paste.

Comments: Surface collections from 40CS156 were used as the type collection. Collections from Shelby, Madison, Dyer, and Weakley counties were also considered. See discussion of cord widths under *Withers* and *Craig's Landing*.

Paste	**Surface Treatment**		
	plain	**cordmarked**	**fabric marked**
Forked Deer series	Baytown Plain, *var. Forked Deer*	Mulberry Creek Cordmarked, *var. Bells Road*	Withers Fabric Marked, *var. Withers*
Madison series	Baytown Plain, *var. Madison*	Mulberry Creek Cordmarked, *var. Westover*	Withers Fabric Marked, *var. Cypress Creek*
Baldwin series	Baldwin Plain	Furrs Cordmarked	Saltillo Fabric Impressed
Tishomingo series	Baytown Plain, *var. Tishomingo*	Mulberry Creek Cordmarked, *var. Tishomingo*	Withers Fabric Marked, *var. Craig's Landing*

Table 6. Summary of proposed ceramic type-variety nomenclature.

Discussion

Smith asserts that "Current data indicates that paste characteristics suffice to indicate basic chronological units for (west Tennessee), with the various surface finishes and decorative styles of secondary chronological significance . . ." (1979a: 49 and 1979b: 20). He does not elaborate on this point and, with the exception of data from 40LA18 (discussed below), we are unable to find the basis for this statement in any of Smith's reports. Moreover, this position is contradicted by the research of Ford (1981, 1989) and Johnson (1988) in northern Mississippi and Mainfort at Pinson Mounds in western Tennessee (e.g., Mainfort 1986a and b; Mainfort and Walling 1992), which indicates that surface treatment, rather than minor differences in paste, are fairly reliable chronological indicators (see also Rice 1987 and Weaver 1963). Specifically, the shift in fabric marking to cord marking is considered by most researchers to be a hallmark of the transition from Early to Late Marksville (Middle Woodland).

Smith's interpretation of Woodland ceramics and chronology in western Tennessee is based primarily on relatively small surface collections from sites that may be multicomponent (e.g., Smith 1979a). While much of our data also derives from surface collections, the definitions of Forked Deer and Madison series types are based on analysis of substantial collections from two large, single component sites (40MD2 and 40MD130). There is possible evidence of Archaic occupation at these sites, but the ceramic collections almost certainly reflect occupations by single social groups. Our Baldwin and Tishomingo series definitions are anchored in the large excavated samples from Pinson Mounds (Mainfort 1980, 1986a), although material from this ceremonial site was intentionally excluded during formulation of type definitions.

In support of his classificatory scheme for Tchula period and Woodland ceramics, and the temporal significance he ascribes to the various ware groups, Smith (1979a: 78) states that "Test excavations conducted . . (at 40LA18) . . indicate that Thomas ware there is followed by Baldwin, which is in turn followed by a local ware termed Lauderdale. Tchefuncte ware was present on the site in small quantities in all levels, with an abnormally high percentage of cordmarking which suggests that it was still being made at the same time as the Thomas ware." The first of the quoted statements is actually contradictory, because in the same paragraph, Smith goes on to say that ". . . nearly all the material termed 'Lauderdale' . . . should actually be classified as Thomas." Therefore, Smith is saying that the ceramic sequence at 40LA18 is actually Thomas-Baldwin-Thomas, a most interesting state of affairs. Re-examination of the relevant field records and the ceramic collections from the site provides no support for either Smith's interpretation of various ceramic "wares" (i.e., "Tchefuncte," "Thomas," etc.) or the reported stratigraphic relationships between the ware groups.

Site 40LA18 is located within the Mississippi River floodplain in Lauderdale County, Tennessee, in the vicinity of Open Lake. At the time of its discovery and excavation the site was located in a tract of land that had fairly recently been cleared by logging operations. Not only had trees been cut, but stumps were also removed. Additional disturbance had been caused by agricultural utilization. Cultural deposits at 40LA18 extended to a depth of only about 25 cm. The relatively shallow depth of cultural deposits and extensive disturbance make 40LA18 a poor choice for delineating stratigraphic relationships in the ceramic assemblage (unpublished field records, C.H. Nash Museum-Chucalissa; John Hesse, personal communication 1992). Excavations were limited to two test pits that were excavated to subsoil in 5 cm arbitrary levels.

Setting aside problems of site integrity, Smith's own ceramic counts from the site provide no apparent basis for his interpretation of stratigraphic and chronological relationships. Smith's analysis of ceramics from one of the two completely excavated test units (100R100) at 40LA18 is presented in Table 7. Collections from the site, housed at the C.H. Nash Museum-Chucalissa, had been sorted and the various types bagged separately by Smith, which greatly facilitated our reanalysis (Tables 8 and 9). Ceramics from the second test unit were also examined, but the material from Level 4 was not bagged by paste type. Although this second unit is only cursorily treated here (Table 10), the data present a situation virtually identical to that found in 100R100.

Using Smith's own analysis and tabulations as a starting point (Table 7), several important points may be made with respect to these data. First, considerable disturbance to the site is confirmed by the presence of Mississippian sherds as deep as Level 3. Second, contrary to Smith's published summary of the 40LA18 ceramic assemblage (1979a: 78), "Tchefuncte ware" actually is more numerous than "Baldwin ware" in three of the five excavated levels (as well as in the plowzone), and the two occur in nearly identical frequency in Level 3. "Thomas ware" is the most numerous

paste type in every level. Finally, while the percentage of "Lauderdale ware" does seem to increase slightly from bottom to top, "Tchefuncte ware" also makes a strong showing in the uppermost level below the plowzone. In sum, even accepting Smith's analysis of the ceramics from 40LA18 as correct, the data do not support his interpretation of stratigraphic changes in the ceramic assemblage.

LEVEL	Tchefuncte	Thomas	Baldwin	Lauderdale	Beckwith	Neeley's Ferry	TOTAL
PZ	13 (17.3)	34 (45.3)	11 (14.7)	14 (18.7)	2 (2.7)	1 (1.3)	75
L1	23 (18.0)	56 (43.8)	19 (14.8)	22 (17.2)	6 (4.7)	2 (1.6)	128
L2	15 (13.2)	57 (50.0)	23 (20.2)	11 (9.7)	8 (7.0)	0	114
L3	30 (23.6)	52 (40.9)	31 (24.4)	13 (10.2)	0	1 (0.8)	127
L4	22 (26.8)	39 (47.6)	16 (19.5)	5 (6.1)	0	0	82
L5	11 (29.0)	20 (52.6)	7 (18.4)	0	0	0	38
TOTAL	114	258	107	65	16	4	564

Table 7. 40LA18 (Unit 100R100). Paste types analyzed and recorded by G. Smith (notes on file at the C.H. Nash Museum - Chucalissa).

Our reanalysis of the collections from unit 100R100 (Tables 8 and 9) differs considerably from Smith's analysis. No Forked Deer series ceramics are present (our Forked Deer series is largely based on sherds identical to Smith's type specimens of "Tchefuncte" or "Tchula" ware at the C.H. Nash Museum-Chucalissa). Only a single Madison series paste specimen (essentially Smith's "Thomas") was recorded. Most of the sherds classified by Smith as "Thomas" were placed within our Tishomingo series.

There is considerable variability in the sample of Tishomingo from 40LA18, and we are not entirely satisfied with the results of our reanalysis. One relatively common variant exhibits a hard, sandy paste containing a moderate number of fairly large clay particles; Smith classified most of these sherds as "Thomas," despite the fact that they exhibit a markedly different firing technology than most of his "Thomas" type specimens. While it is possible that Smith is correct in grouping these specimens within his concept of "Thomas," we feel that this material serves as an excellent illustration of why researchers have experienced difficulties in attempting to use Smith's paste types. If we were to expand our definition of Madison series paste to include these sherds, we would be forced to remove key sorting criteria, namely the rather chalky surface and the uniform color exhibited by the surface and the core. The explicit differences between the Madison and Tishomingo series would then become hopelessly blurred and would lead to problems of sortability as discussed by Jolley (1981) and McNutt (1979).

LEVEL	Forked Deer	Madison	Baldwin	Tishomingo	Baytown	shell	TOTAL
PZ	0	0	7	53	15	1	76
L1	0	0	8	105	38	2	153
L2	0	0	6	98	34	2	140
L3	0	1	8	154	32	1	196
L4	0	0	7	53	16	0	76
L5	0	0	1	27	9	0	37
TOTAL	0	1	37	490	144	6	678

Table 8. 40LA18 (Unit 100R100). 1992 reanalysis using paste series proposed here.

TYPE	PZ	L1	L2	L3	L4	L5	Total
Mulberry Creek Cordmarked, *var. Westover*				1			1
Baldwin Plain			2	2			4
Furrs Cordmarked	7	8	3	6	7	1	32
Baldwin paste, eroded			1				1
Baytown Plain, *var. Tishomingo*		9	9	17	7	1	43
Mulberry Creek Cordmarked, *var. Tishomingo*	51	81	85	126	39	25	407
Withers Fabric Marked, *var. Craig's Landing*		2		2	2		6
Tishomingo paste, eroded	2	13	4	9	1	1	30
Baytown Plain, *var. unspecified*		3	1	2	4		10
Mulberry Creek Cordmarked, *var. unspecified*	14	22	23	26	12	8	105
Withers Fabric Marked, *var. unspecified*					3		3
Wheeler Check Stamped, *var. unspecified*			3		1	1	5
Baytown paste, eroded	1	13	7	4			25
Mississippi Plain, *var. unspecified*		2		1			3
Varney Red, *var. unspecified*	1						1
shell temper, eroded			2				2
TOTAL	76	153	140	196	76	37	678

Table 9. 40LA18 (Unit 100R100). 1992 reanalysis.

TYPE	L1	L2	L3	L4	L5	Total
Withers Fabric Marked, *var. Withers*	1					1
Furrs Cordmarked	1	5	2	5		13
Saltillo Fabric Impressed			1			1
Baldwin paste, eroded			1			1
Mulberry Creek Cordmarked, *var. Tishomingo*	27	22	13	10	6	78
Withers Fabric Marked, *var. Craig's Landing*	1		1			2
Tishomingo paste, eroded	6		3			9
Baytown Plain, *var. unspecified*		2				2
Mulberry Creek Cordmarked, *var. unspecified*	11	4	4	5		24
Wheeler Check Stamped, *var. unspecified*	1					1
Baytown paste, eroded	4					4
Varney Red, *var. unspecified*	2					2
shell temper, eroded	1					1
TOTAL	55	33	25	20	6	139

Table 10. 40LA18 (Unit 91R100). Reanalysis using paste series proposed here.

Over 50 percent of the sherds classified by Smith as "Baldwin" were found on inspection to contain readily visible clay particles and are classified within our Tishomingo paste group. This may account in part for Smith's later observation that in the Nonconnah Creek drainage, his "Thomas" and "Baldwin" wares consistently co-occur on sites (Smith and Weinstein 1987: 53).

According to Smith (1979a: 78), the 40LA18 ceramic assemblage indicates that the primary occupation of the site occurred during the Tchula and Early Marksville periods. Perhaps the most striking aspect of the reanalyzed ceramic sample from 40LA18 is the predominance of cordmarking (over 80 percent) in every excavated level. Fabric marking, for which a strong representation would be expected if there was an Early Marksville (or slightly earlier) component (Johnson 1988; Mainfort 1986b; Toth 1988), occurs on only 6 sherds. The paucity of fabric marked sherds and the absence of Tchula period decorated types such as Cormorant Cord Impressed, as well as the high frequency of cordmarking, suggests that the major occupation of 40LA18 occurred during the Late Woodland period.

Supplementary Data from other Relevant Sites

Presented below are data (with particular emphasis on ceramics) from a number of western Tennessee sites that bear on the typological discussion above. Of special note are sites 40MD2, 40MD130, and 40CS156, collections from which figured prominently in the formulation of the proposed ceramic paste descriptions.

40MD2

The Bells Road site (40MD2) is located on a small hill between two branches of Matthews Creek in Madison County. A 30 cm midden was reportedly present at one time, but the site now appears to be deflated. Testing for surviving feature bases would be desirable. Within an area of approximately 3 ha is a moderate scatter of ceramics and baked clay objects attributable to a Tchula period occupation. Mr. Harbert Alexander has collected at least 20 Frazier points from the site; these are very likely contemporary with the ceramics and baked clay objects.

Three collections are represented in the summary table below. These are a collection donated by Mr. Alexander, material housed at the C.H. Nash Museum-Chucalissa, and a collection made by TDOA staff.

Over 70 percent of the ceramics from 40MD2 are assignable to the Forked Deer paste series. Since the same surface treatments are present on both Forked Deer and Madison series ceramics at the site, it seems most parsimonious to view the entire ceramic assemblage as the product of the same, single component occupation, although a controlled surface collection might reveal spatial differences between the paste types. The lack of Mulberry Creek Cordmarked varieties is noteworthy in this large assemblage.

Several sherds from 40MD2 are curated in the type collections at the C.H. Nash Museum-Chucalissa and, although never mentioned in print, evidently represent some of the type specimens for Smith's (1979a) "Tchefuncte" paste series.

132	Baytown Plain, *var. Forked Deer* (5 rims)	1	large biconical plain baked clay object
45	Withers Fabric Marked, *var. Withers* (6 rims)	14	small spherical plain baked clay objects
41	Cormorant Cord Impressed (Forked Deer paste)	37	UID plain bco fragments
1	Twin Lakes Punctated (Forked Deer paste)	6	UID cordmarked bco fragments
337	Forked Deer series eroded (38 rims, 5 bases)	1	UID fingernail punctated bco fragment
39	Baytown Plain, *var. Madison* (11 rims)		
27	Withers Fabric Marked, *var. Cypress Creek* (7 rims)	6	pp/k base fragments (2 Dover chert)
22	Cormorant Cord Impressed (Madison paste)	2	pp/k distals (2 Dover chert)
3	Twin Lakes Punctated (Madison paste)	3	pp/k midsections (1 Dover chert)
91	Madison series eroded (15 rims)	1	worked ferruginous siltstone
1	Tishomingo series eroded (1 rim)	9	chert debitage

764

Table 11. Summary of collections from 40MD2 (includes both TDOA collections and those housed at the C.H. Nash Museum-Chucalissa)

40MD130

Site 40MD130 is located on the uplands about 1 km east of Robertson Creek, a tributary of Cypress Creek, in Madison County. The site reportedly covers 4.5 ha (Jolley 1984), but the area exhibiting notable artifact density is perhaps half as large. Although a Middle Archaic component (represented by a Benton point) is present, major occupation of the site occurred during the Tchula period, as represented by numerous Forked Deer and Madison paste sherds and a few baked clay object fragments.

The artifact counts below were obtained from a large collection donated by Mr. Harbert Alexander, as well as a collection made by TDOA staff. In contrast to 40MD2, Madison series paste is predominant at 40MD130; the uniformity of the ceramic assemblage suggests that it represents the product of the same single component occupation. The lack of any varieties of Mulberry Creek Cordmarked is noteworthy at both 40MD130 and 40MD2.

5	Baytown Plain, *var. Forked Deer*	10	UID baked clay object fragments
28	Withers Fabric Marked, *var. Withers* (8 rims)		
14	Cormorant Cord Impressed (Forked Deer paste)	4	pp/k base fragments (2 Dover chert)
1	Twin Lakes Punctated (Forked Deer paste)	4	pp/k distals
140	Forked Deer series eroded (3 rims)	2	pp/k midsections (1 Dover chert)
9	Baytown Plain, *var. Madison* (2 rims)	1	crude triangular pp/k (not Madison)
1	Mulberry Creek Cordmarked, *var. Westover*	8	bifaces/biface fragments
46	Withers Fabric Marked, *var. Cypress Creek* (12 rims)	1	groundstone celt fragment
11	Cormorant Cord Impressed (Madison paste)	2	nutting stones
1	Twin Lakes Punctated (Madison paste)	2	chert scrapers
201	Madison series eroded (15 rims)	1	retouched flake
3	Tishomingo series eroded (1 rim)	1	core
		93	chert debitage

460

Table 12. Summary of collections from 40MD130.

40CS156

This site consists of a relatively light scatter of material along a ridge system within the Henderson Industrial Park, northwest of Henderson, Tennessee. Covering an area of approximately 0.5 ha, 40CS156 was discovered as a result of initial clearing of the property prior to development, and appears to represent a single component site dating to the early Middle Woodland period. Repeated visits to the site under a variety of conditions have produced no evidence of subsurface features, although testing has been very limited.

With a single exception, all decorated ceramics from 40CS156 are fabric marked; a small sample of plain surfaced sherds is also present. Thus, occupation of this site predates major use of the large ceremonial center of Pinson Mounds (Mainfort 1986; Mainfort and Walling 1992), which is located several kilometers to the northwest. One small sherd exhibits very fine diagonal incising with alternating pairs of lines filled with short perpendicular lines to create a ladder-like motif.

Most of the ceramics from 40CS156 exhibit a very sandy (often coarse) paste, as reflected in the high percentage of sherds with eroded surfaces. Although both Baldwin and Tishomingo series ceramics are present in the assemblage, the virtually identical proportions of fabric marked sherds, the lack of cordmarked sherds, the very sandy character of both paste groups, and the lack of any apparent spatial differentiation between paste groups support a single component interpretation for the assemblage.

Two previously unreported baked clay object forms have been identified at the site. These include 2 small, rather crude objects that are somewhat teardrop-shaped with wide indentations and plain surfaces, and a biconvex plain form. All examples exhibit a very sandy paste.

Several identifiable projectile points/knives have been collected at 40CS156. Two of these exhibit nicely worked edges and are assigned to the type Flint Creek. Another nearly complete specimen closely resembles the Cotaco Creek type. Two virtually identical bases are markedly flared at the proximal end and are fairly deeply notched at the top of the haft element; these are classified as Motley.

1	Baytown Plain, *var. Madison*
1	Madison series eroded
15	Baldwin Plain (1 rim)
98	Saltillo Fabric Impressed
1	Baldwin paste, fine incised
470	Baldwin series, eroded (1 rim)
10	Baytown Plain, *var. Tishomingo*
36	Withers Fabric Marked, *var. Craig's Landing* (1 rim)
198	Tishomingo series eroded (1 rim)
830	

2	teardrop-shaped plain baked clay objects
1	1 biconvex plain baked clay object
1	UID baked clay object fragments
3	pp/k
4	pp/k base fragments
2	pp/k distals
7	pp/k midsections
8	bifaces/biface fragments
1	core
215	chert debitage
1	nutting stone
1	groundstone fragment (ferruginous siltstone)
3	ferruginous siltstone flakes
15	ferruginous siltstone
8	ferruginous sandstone
26	firecracked rock

Table 13. Summary of collections from 40CS156.

40WK72

Located adjacent to Boaz Creek, several kilometers west of McKenzie, Tennessee, 40WK72 had been earmarked for testing during the 1991 field season. The site was originally recorded as the result of reports of looting received from area residents. An initial visit to the site revealed considerable damage, but it seemed apparent that large intact portions of the site remained. Upon inspection in the spring of 1991, it was discovered that virtually the entire site had been destroyed by vandals, and plans for testing were abandoned.

Archaeological deposits at the site formerly consisted of a black midden zone up to approximately 40 cm thick within an area of perhaps 0.5 ha. Overlying the midden deposit was a zone of redeposited alluvium from Boaz Creek, mixed with wash from the hillside to the north. Midden was plainly visible along the north bank of the creek and a moderate amount of prehistoric cultural material, including an occasional projectile point, was present in the stream bed for a distance of roughly 50 m.

Based on several collections made from the vandals' pits and backfill, artifact density was quite sparse, consisting primarily of ferruginous siltstone and sandstone. As indicated in Table 14, very little lithic debitage was present. Bone preservation was excellent, making the destruction of the site all the more lamentable.

The small ceramic assemblage for 40WK72 is of considerable interest, both because of the types present and the challenges it poses to our proposed ceramic nomenclature. Although single specimens of Mississippi Plain and Furrs Cordmarked were recovered, the remainder of the ceramics probably represent one or more Tchula period components. Several sherds are of particular note. The first of these is an Alexander Punctated rim that exhibits two distinct styles of punctation, as well as the start of two incised lines; the effect of the implied zoned decoration over the entire vessel must have been striking. Two rims from the same Cormorant Cord Impressed vessel with a Forked Deer series paste were collected. The decorative treatment was applied over smoothed-over fabric marking (Withers) - - a neat demonstration of contemporaneity. Notching is present on the interior of the rim. Several basal sherds from flat-bottomed Withers Fabric Marked vessels are represented, while a *Cypress Creek* rim is outflaring with a thin rim thickening strip, or "fold."

As mentioned above, sorting some of the 40WK72 ceramics into paste types proved difficult, particularly in distinguishing between our Madison and Tishomingo series pastes. A group of sherds assignable to a single, flat-bottomed *Cypress Creek* vessel exhibit archetypical Madison series paste; these sherds are very pale gray throughout, with visible fragments of baked clay and readily apparent sand. Other *Cypress Creek* sherds exhibit numerous large grog particles and a somewhat chalky paste, but are uniformly fired to a light reddish brown. Here the relative softness of the paste was the critical factor in employing the Madison, rather than the corresponding Tishomingo, series type-variety. One specimen of Withers Fabric Marked is designated *var. unspecified*; the paste is similar to that of the Tishomingo series, exhibiting relatively fine grog with sand, as well as being quite hard. Its light color suggests that the sherd apparently was poorly fired, and the sand is unusually coarse.

A variety of baked clay object fragments was collected from 40WK72, including some forms not previously identified in western Tennessee. The vast majority of bcos from the site are cane punctated. Since no complete specimens were found, shapes were not easy to identify in many instances. Many cane punctated examples appear to have been large biscuit-shaped and/or rectanguloid forms, but several uninterpretable

forms are also present. Two fragments exhibit wide notches formed by impressing a finger into the object; one of these may have been biscuit-shaped. Another clay object, possibly spherical, exhibits fingernail punctations. A moderately large amorphous clay object lacking decoration was also collected.

There is considerable variability in the paste of the bcos, which may have relevance for an interpretation of ceramic pastes at the site, since the variability exhibited by the bcos probably is a function of clay sources, rather than any intentional addition of tempering material. Sand is present in the paste of all bcos from 40WK72, but the single fingernail punctated specimen a markedly sandier paste that is almost Baldwin-like. While it clearly would be inappropriate to draw universal generalizations from the small data set from 40WK72, the variability in the paste of bcos should provide a cautionary note to researchers who would impute significant temporal and/or cultural differences from relatively minor differences in ceramic pastes.

9	Baytown Plain, *var. Forked Deer*
2	Withers Fabric Marked, *var. Withers*
3	Baytown Plain, *var. Madison*
24	Withers Fabric Marked, *var. Cypress Creek* (1 rim)
3	Cormorant Cord Impressed (Madison paste; 2 rims)
2	Madison series, eroded and/or smoothed over
1	Furrs Cordmarked
1	Baytown Plain, *var. Tishomingo*
3	Mulberry Creek Cordmarked, *var. Tishomingo*
1	Alexander Punctated
1	Wither Fabric Marked, *var. unspecified*
1	Mulberry Creek Cordmarked, *var. unspecified* (clay, sand, and bone temper)
1	Mulberry Creek Cordmarked, *var. unspecified* (temper like Forked Deer series, but hard and micaceous)
1	Mississippi Plain
53	
6	biscuit, cane punctated baked clay objects
6	UID cane punctated bco fragments
2	UID plain bco fragments
1	UID fingernail punctated bco fragment
5	UID bco fragments
2	pp/k
2	pp/k midsections (1 Dover chert)
2	biface fragments
1	unifacial chert tool
1	core
27	chert debitage (6 Dover chert)
9	firecracked rock

Table 14. Summary of collections from 40WK72.

Presented below are ceramic counts from various west Tennessee sites reported by Smith (1979a; Smith and Weinstein [1987]) to have substantial amounts of "Tchefuncte" and/or "Thomas" paste ceramics. The original sherd counts appear on the left, with the results of our reanalysis on the right. These are presented to indicate the relationship between the paste groups defined above and those employed by Smith.

In addition to the type-varieties proposed here, two factors are largely responsible for differences between the two analyses. First, Smith's operational use of "Baldwin paste" included many sherds (sometimes in excess of 50%) that exhibit clearly visible clay particles in the paste. Second, Smith's published tabulations of "plain" surfaced sherds include large percentages (sometimes as great as 100%) of specimens actually sorted by him as "rough plain," as revealed by inspection of the collections. Our reanalyses indicate that few (none, in the case of some collections) "rough plain" sherds actually exhibit plain, smoothed surfaces. Surface decoration (usually cord or fabric marking) is readily observable on over 50% of the specimens originally sorted by Smith as "rough plain," with most of the remainder exhibiting unidentifiable (eroded) surfaces. We cannot account for discrepancies in total sherd counts between the two analyses, although some may be due to the fact that Smith (personal communication, 1993) did not include sherds with eroded surfaces in his published tabulations.

Smith (1979a)		1992 reanalysis	
11	Early Woodland paste, plain	3	Baytown Plain, *var. Forked Deer*
3	Early Woodland paste, fabric marked	3	Mulberry Creek Cordmarked, *var. Bells Road*
20	Thomas paste, plain	5	Withers Fabric Marked, *var. Withers*
6	Thomas paste, cordmarked	1	Cormorant Cord Impressed (Forked Deer paste)
3	Thomas paste, fabric marked	16	Forked Deer paste, eroded
15	Baldwin Plain	5	Mulberry Creek Cordmarked *var. Westover*
9	Furrs Cordmarked	3	Withers Fabric Marked, *var. Cypress Creek*
2	Saltillo Fabric Impressed	19	Madison paste, eroded
		7	Furrs Cordmarked
69		62	

Table 15. Summary of collections from 40DY3.

Smith (1979a)		1992 reanalysis	
17	Early Woodland paste, plain	4	Baytown Plain, *var. Forked Deer*
3	Early Woodland paste, fabric marked	1	Mulberry Creek Cordmarked, *var. Bells Road*
2	Early Woodland paste, Cormorant Cord Impressed	4	Withers Fabric Marked, *var. Withers*
8	Thomas paste, plain	2	Cormorant Cord Impressed (Forked Deer paste)
1	Thomas paste, cordmarked	17	Forked Deer paste, eroded
2	Baldwin Plain	1	Mulberry Creek Cordmarked, *var. Westover*
		1	UID rim with small rectangular punctations (Madison paste)
		11	Madison paste, eroded
		2	Madison or Tishomingo paste, eroded
33		43	

Table 16. Summary of collections from 40DY4.

Smith (1979a)		1992 reanalysis	
29	Early Woodland paste, plain	1	Baytown Plain, *var. Forked Deer*
5	Early Woodland paste, cordmarked	18	Mulberry Creek Cordmarked, *var. Bells Road*
1	Early Woodland paste, fabric marked	1	Withers Fabric Marked, *var. Withers*
5	Thomas paste, plain	43	Forked Deer paste, eroded
10	Thomas paste, cordmarked	1	Baytown Plain, *var. Madison*
8	Baldwin Plain	10	Mulberry Creek Cordmarked *var. Westover*
10	Furrs Cordmarked	5	Madison paste, eroded
		1	Mulberry Creek Cordmarked, *var. Tishomingo*
		1	Baytown Plain, *var. unspecified*
		1	Mulberry Creek Cordmarked, *var. unspecified*
68		82	

Table 17. Summary of collections from 40GB6.

Smith (1979a)		1992 reanalysis	
25	Early Woodland paste, plain	6	Baytown Plain, *var. Forked Deer*
1	Early Woodland paste, cordmarked	1	Mulberry Creek Cordmarked, *var. Bells Road*
11	Early Woodland paste, fabric marked	10	Withers Fabric Marked, *var. Withers*
3	Early Woodland paste, Cormorant Cord Impressed	3	Cormorant Cord Impressed (Forked Deer paste)
3	Thomas paste, plain	20	Forked Deer paste, eroded
12	Baldwin Plain	3	Withers Fabric Marked, *var. Cypress Creek*
5	Furrs Cordmarked	1	Cormorant Cord Impressed (Madison paste)
		1	Baldwin Plain
		2	Furrs Cordmarked
		8	Tishomingo paste, eroded
60		72	

Table 18. Summary of collections from 40GB7.

Smith 1979a		1992 reanalysis	
29	Early Woodland paste, plain	2	Baytown Plain, *var. Forked Deer*
4	Early Woodland paste, cordmarked	4	Mulberry Creek Cordmarked, *var. Bells Road*
11	Early Woodland paste, fabric marked	13	Withers Fabric Marked, *var. Withers*
2	Early Woodland paste, Cormorant Cord Impressed	2	Cormorant Cord Impressed (Forked Deer paste)
2	Thomas paste, plain	17	Forked Deer paste, eroded
		2	Baytown Plain, *var. Madison*
		3	Mulberry Creek Cordmarked, *var. Westover*
		8	Withers Fabric Marked, *var. Cypress Creek*
		1	red filmed, Madison paste
		12	Madison paste, eroded
48		64	

Table 19. Summary of collections from 40GB16.

Smith (1979a)		1992 reanalysis	
4	Early Woodland paste, plain	4	Mulberry Creek Cordmarked, *var. Bells Road*
12	Thomas paste, plain	18	Forked Deer paste, eroded
4	Thomas paste, cordmarked	1	Mulberry Creek Cordmarked *var. Westover*
1	Thomas paste, Cormorant Cord Impressed	1	Withers Fabric Marked, *var. Cypress Creek*
4	Furrs Cordmarked	1	Cormorant Cord Impressed (Madison paste)
3	Baldwin Plain	17	Madison paste, eroded
		1	Furrs Cordmarked
		3	Mulberry Creek Cordmarked, *var. Tishomingo*
		1	Tishomingo paste, eroded
28		47	

Table 20. Summary of collections from 40GB57.

Smith (1979a)		1992 reanalysis	
19	Early Woodland paste, plain	5	Baytown Plain, *var. Forked Deer*
11	Early Woodland paste, fabric marked	3	Mulberry Creek Cordmarked, *var. Bells Road*
1	Early Woodland paste, Cormorant Cord Impressed	12	Withers Fabric Marked, *var. Withers*
18	Thomas paste, plain	21	Forked Deer paste, eroded
7	Thomas paste, cordmarked	5	Withers Fabric Marked, *var. Cypress Creek*
6	Thomas paste, fabric marked	3	Cormorant Cord Impressed (Madison paste)
2	Thomas paste, Cormorant Cord Impressed	16	Madison paste, eroded
3	Furrs Cordmarked	1	Baldwin Plain
10	Baldwin Plain	4	Furrs Cordmarked
		1	Saltillo Fabric Impressed
		8	Baldwin paste, eroded
		1	Mulberry Creek Cordmarked, *var. Tishomingo*
		4	Tishomingo paste, eroded
77		84	

Table 21. Summary of collections from 40GB63.

Smith (1979a)		1992 reanalysis	
3	Early Woodland paste, plain	1	Mulberry Creek Cordmarked, *var. Bells Road*
5	Early Woodland paste, cordmarked	2	Forked Deer paste, eroded
6	Thomas paste, plain	14	Mulberry Creek Cordmarked, *var. Tishomingo*
11	Thomas paste, cordmarked	2	Tishomingo paste, eroded
4	Baldwin Plain	17	Baytown Plain, *var. unspecified*
4	Furrs Cordmarked	1	Baytown Plain effigy element
8	"Baytown, variety unspecified"	270	Mulberry Creek Cordmarked, *var. unspecified*
76	"Baytown, Ensley paste"	40	Baytown paste, eroded
263	"Baytown, Beckwith paste"		
372		347	

Table 22. Summary of collections from 40OB9. Original sherd counts from Smith (1979a: 14 and 93); the total actually adds up to 380 sherds. Reanalysis indicates that 146 of the "Baytown, Beckwith paste" sherds were actually sorted as cordmarked; this term and the others appearing in quotes evidently are meant to refer to paste types, not type-varieties.

Smith (1979a)		1992 reanalysis	
1	Early Woodland paste, plain	2	possibly Forked Deer paste, eroded
1	Early Woodland paste, fabric marked	2	Furrs Cordmarked
1	Thomas paste, plain	1	Baldwin paste, eroded
3	Thomas paste, cordmarked	3	Mulberry Creek Cordmarked, *var. Tishomingo*
2	Furrs Cordmarked	5	Tishomingo paste, eroded
4	"Baytown, Obion paste"	4	Baytown Plain, *var. unspecified*
3	"Neeley's Ferry"	34	Mulberry Creek Cordmarked, *var. unspecified*
		5	Baytown paste, eroded
		3	Mississippi Plain
57		66	

Table 23. Summary of collections from 40OB25. Original sherd counts from Smith (1979a: 14 and 93); the total actually adds up to 15 sherds.

Smith (1979a)		1992 reanalysis	
1	Twin Lakes Punctated (Early Woodland paste)	8	Baytown Plain, *var. Forked Deer*
1	Tammany Punctated (Early Woodland Paste)	14	Mulberry Creek Cordmarked, *var. Bells Road*
3	Early Woodland paste, eroded	1	Twin Lakes Punctated (Forked Deer paste)
15	Thomas paste, plain	5	Forked Deer paste, eroded
56	Thomas paste, cordmarked	8	Baytown Plain, *var. Madison*
30	Thomas paste, eroded	47	Mulberry Creek Cordmarked, *var. Westover*
14	Baldwin Plain	5	Madison paste, eroded
81	Furrs Cordmarked	8	Furrs Cordmarked
63	Baldwin paste, eroded	8	Baytown Plain, *var. Tishomingo*
5	Baytown Plain, *var. unspecified*	26	Mulberry Creek Cordmarked, *var. Tishomingo*
3	Mulberry Creek Cordmarked, *var. unspecified*	4	Tishomingo paste, eroded
6	Baytown paste, eroded	3	Baytown Plain, *var. unspecified*
		2	Mulberry Creek Cordmarked, *var. unspecified*
		1	Mississippi Plain (sandy paste)
		11	UID sand/clay eroded
		5	possibly eroded Wheeler Check Stamped
		37	sand/bone cordmarked (many have Forked Deer-like paste)
		4	sand/grog/bone cordmarked
		1	bone/limestone (?) cordmarked
278		197	

Table 24. Summary of collections from 40SY40.

Smith and Weinstein (1987)		1992 reanalysis	
9	Early Woodland paste, plain	11	Baytown Plain, *var. Forked Deer*
1	Twin Lakes Punctated (Early Woodland paste)	1	Twin Lakes Punctated (Forked Deer paste)
1	Cormorant Cord Impressed (Early Woodland paste)	1	Cormorant Cord Impressed (Forked Deer paste)
9	Early Woodland paste, eroded	15	Forked Deer paste, eroded
2	Thomas paste, plain	15	Baytown Plain, *var. Madison*
1	Twin Lakes Punctated (Thomas paste)	3	Twin Lakes Punctated (Madison paste)
1	Tammany Punctated (Thomas paste)	14	Madison paste, eroded
20	Thomas paste, eroded	1	Baytown Plain, *var. unspecified*
3	Baldwin Plain	1	Mulberry Creek Cordmarked, *var. unspecified*
1	Twin Lakes Punctated (Baldwin paste)		
10	Baldwin paste, eroded		
5	Baytown Plain, *var. unspecified*		
5	Baytown paste, eroded		
68		62	

Table 25. Summary of collections from 40SY47.

Smith and Weinstein (1987)		1992 reanalysis	
2	Early Woodland paste, eroded	2	Mulberry Creek Cordmarked, *var. Bells Road*
6	Thomas paste, plain	2	Baytown Plain, *var. Madison*
30	Thomas paste, cordmarked	32	Mulberry Creek Cordmarked, *var. Westover*
43	Thomas paste, eroded	2	Madison paste, eroded
45	Furrs Cordmarked	9	Furrs Cordmarked
71	Baldwin paste, eroded	1	Baldwin paste, eroded
2	Mulberry Creek Cordmarked, *var. unspecified*	13	sand/bone cordmarked
		21	Mulberry Creek Cordmarked, *var. Tishomingo*
		4	Mulberry Creek Cordmarked, *var. unspecified*
199		87	

Table 26. Summary of collections from 40SY49.

Smith and Weinstein (1987)		1992 reanalysis	
17	Early Woodland paste, plain	11	Baytown Plain, *var. Forked Deer*
5	Early Woodland paste, cordmarked	9	Mulberry Creek Cordmarked, *var. Bells Road*
18	Early Woodland paste, eroded	1	Withers Fabric Marked, *var. Withers*
2	Thomas paste, plain	22	Forked Deer paste, eroded
6	Thomas paste, eroded	3	Baytown Plain, *var. Madison*
1	Baldwin Plain	8	Madison paste, eroded
1	Furrs Cordmarked	9	Furrs Cordmarked
3	Baldwin paste, eroded	1	Baldwin paste, eroded
		1	Baytown Plain, *var. Tishomingo*
		1	Mulberry Creek Cordmarked, *var. Tishomingo*
		3	Tishomingo paste, eroded
		1	Mississippi Plain
53		70	

Table 27. Summary of collections from 40SY56.

Smith and Weinstein (1987)		1992 reanalysis	
7	Early Woodland paste, eroded	1	Baytown Plain, *var. Forked Deer*
9	Thomas paste, plain	9	Mulberry Creek Cordmarked, *var. Bells Road*
3	Twin Lakes Punctated (Thomas paste)	1	Twin Lakes Punctated (Forked Deer paste)
19	Thomas paste, eroded	8	Forked Deer paste, eroded
5	Baldwin Plain	2	Baytown Plain, *var. Madison*
1	Twin Lakes Punctated (Baldwin paste)	1	Twin Lakes Punctated (Madison paste)
28	Baldwin paste, eroded	1	vertical incised (?) (Madison paste)
1	Baytown Plain	26	Madison paste, eroded
		1	Baytown Plain, *var. Tishomingo*
		1	UID grog temper eroded
73		50	

Table 28. Summary of collections from 40SY87.

DESCRIPTION OF SITES IN THE MITIGATION LANDS

(William L. Lawrence, Robert C. Mainfort, Jr., and Mary L. Kwas)

Introduction

This section describes all of the archaeological sites located within the project area, including those located during the required archaeological survey, as well as several previously recorded sites that were revisited. As indicated below, relatively few archaeological sites have been identified within the mitigation lands. To a certain extent, this is understandable, insofar as over 70 percent of the mitigation lands are located within the Obion River floodplain and are inundated during large portions of the year.

Areas surveyed within the mitigation lands are shown in Figures 10 through 15, while the locations of most sites are illustrated in Figure 16. Surface visibility ranged from (rarely) poor to excellent. Survey methods were discussed in the preceding section.

Based in part on the results of earlier investigations, Beech Ridge, a large erosional remnant situated approximately 1500 m north of the present confluence of the Middle and South Forks of the Obion River was judged to have particularly high potential as a locus for prehistoric habitation. While this assessment proved to be correct relative to most other areas surveyed, site density was considerably lower than anticipated. Beech Ridge was surveyed under virtually ideal conditions (recently plowed, followed by moderate rainfall), so this is not a function of sampling error. Even more disappointing, however, was the lack of intact subsurface deposits at all of the sites inspected.

The site descriptions that follow are grouped by location. The first group is located on Beech Ridge, while the second consists primarily of sites located in the uplands to the east of the confluence (see Figure 16).

40WK11

This site was originally recorded by Gerald Smith (1979a) and was revisited by Anderson (1987). 40WK11 is located on and adjacent to a small knoll near the western end of Beech Ridge, and consists of a moderate scatter of lithics and ceramics within an area measuring approximately 120 m by 65 m. All prehistoric cultural material was recovered from the knoll. In addition to intensive surface survey, two 50 cm^2 test units were excavated in two localities exhibiting relatively high concentrations of prehistoric cultural material. In both instances, subsoil was encountered immediately below the plowzone, and no intact cultural deposits were observed.

Collected artifacts indicate utilization of the site primarily during the Tchula and Mississippian periods, as well the presence of an historic component. The machine-made marble demonstrates that the historic occupation extended past 1920, while the remainder of the assemblage could easily date into the 1940s.

Number	Description
1	pp/k - Bradley Spike
2	biface fragment (medial)
3	decortication flakes
7	secondary flakes
3	chert core fragments
1	ferruginous siltstone
2	firecracked rocks
2	prehistoric ceramics - Forked Deer series, eroded
7	prehistoric ceramics - Mississippi Plain
1	spark plug - porcelain
1	shotgun shell base
1	marble - bicolor machine-made glass
6	milk glass - canning jar liners
6	cobalt blue glass - medicine bottle/jar (at least 3 vessels)
5	aqua glass - probably patent medicine
1	milk glass with ribbing - patent medicine bottle?
8	clear glass - probably medicine bottle (1 lip shows mold lines)
1	light aqua flat glass - window glass
2	opaque green glass - cosmetic jar or kitchen glass
1	milky green glass with mold lines - soft drink bottle?
1	thick clear glass - UID bottle?
1	frosted clear glass
1	relief-molded porcelain with hand painted black stripe - decorative object?
3	CC ware (1 cup handle, 1 plate/saucer rim, 1 bowl/cup rim)
18	white ironstone
3	blue ironstone with portion of maker's mark
2	pink glazed unrefined earthenware
2	yellow glazed unrefined earthenware (1 with decal)
3	blue transfer-printed whiteware (probably flow blue)
2	handpainted whiteware
1	stoneware - brown slip, jug handle
5	stoneware - dark brown (Albany) slip
2	stoneware - light brown slip
1	stoneware - gray saltglaze
1	stoneware - while-slipped interior, Albany slipped exterior
2	stoneware - relief-molded, white interior, blue exterior - kitchen bowl
2	iron nails (1 round head, 1 possibly square head)

Table 29. Summary of Collections from 40WK11.

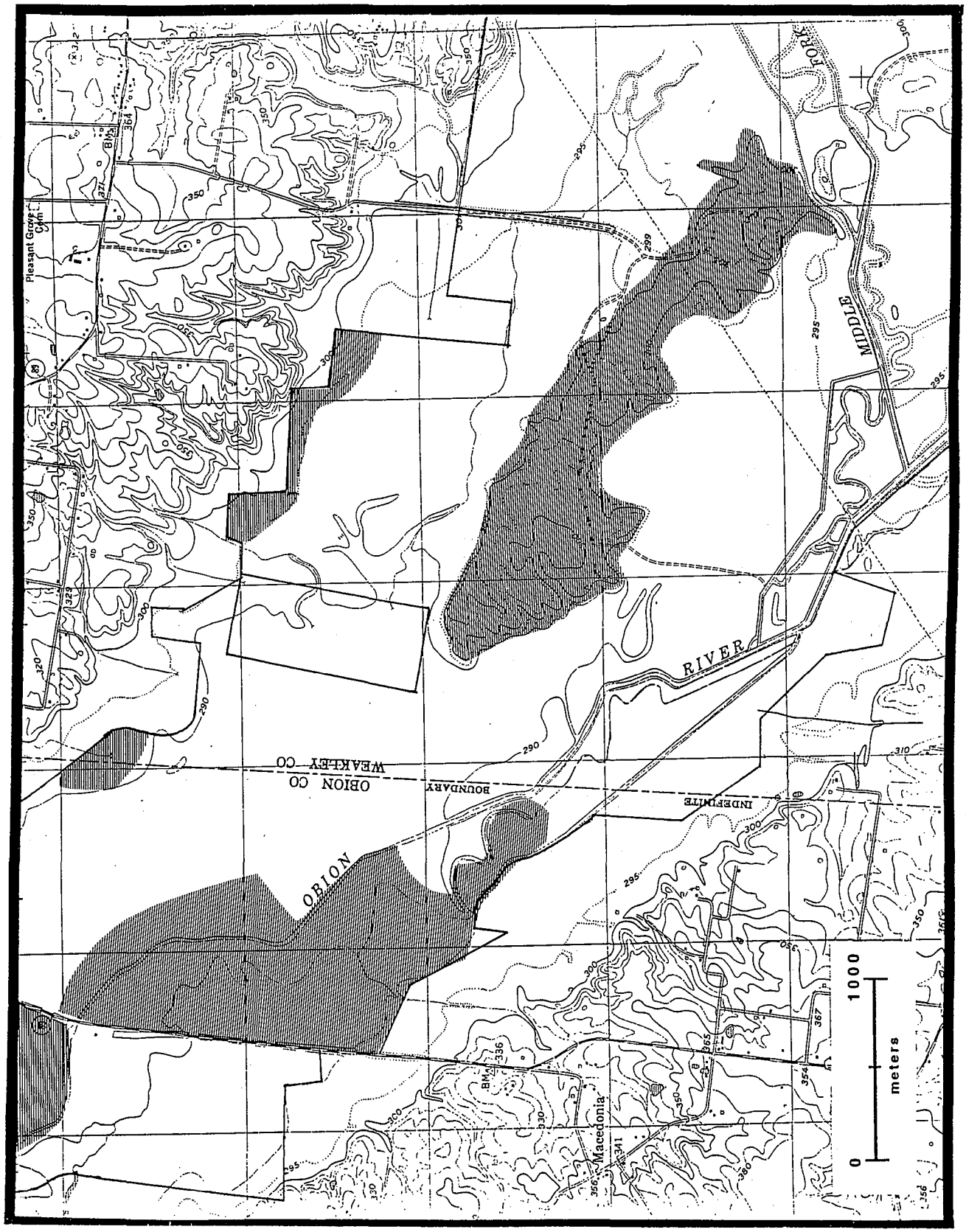


Figure 10. Areas surveyed on the U.S.G.S. Rutherford 7.5' quadrangle (1985).

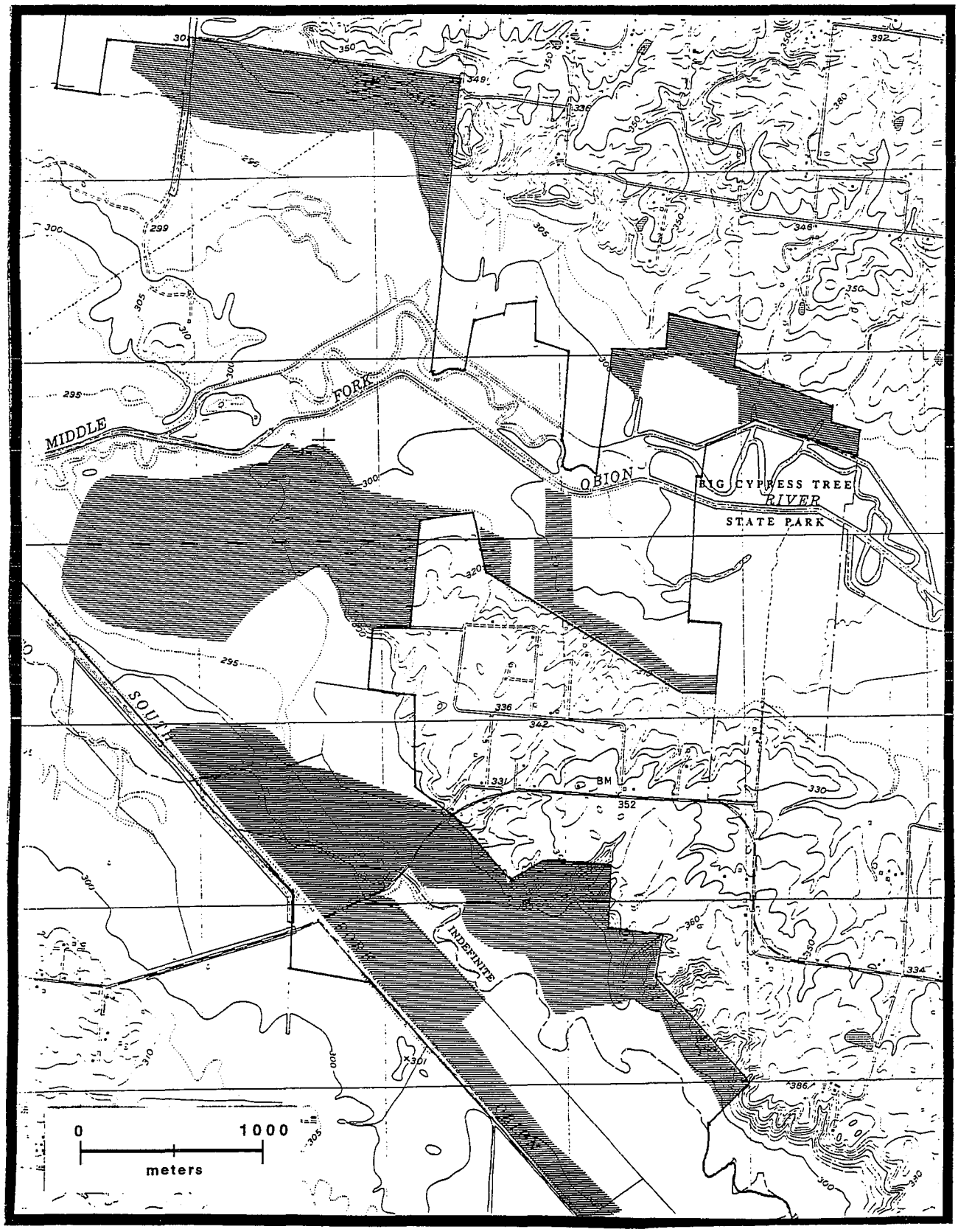


Figure 11. Areas surveyed on the U.S.G.S. Rutherford 7.5' quadrangle (1985).

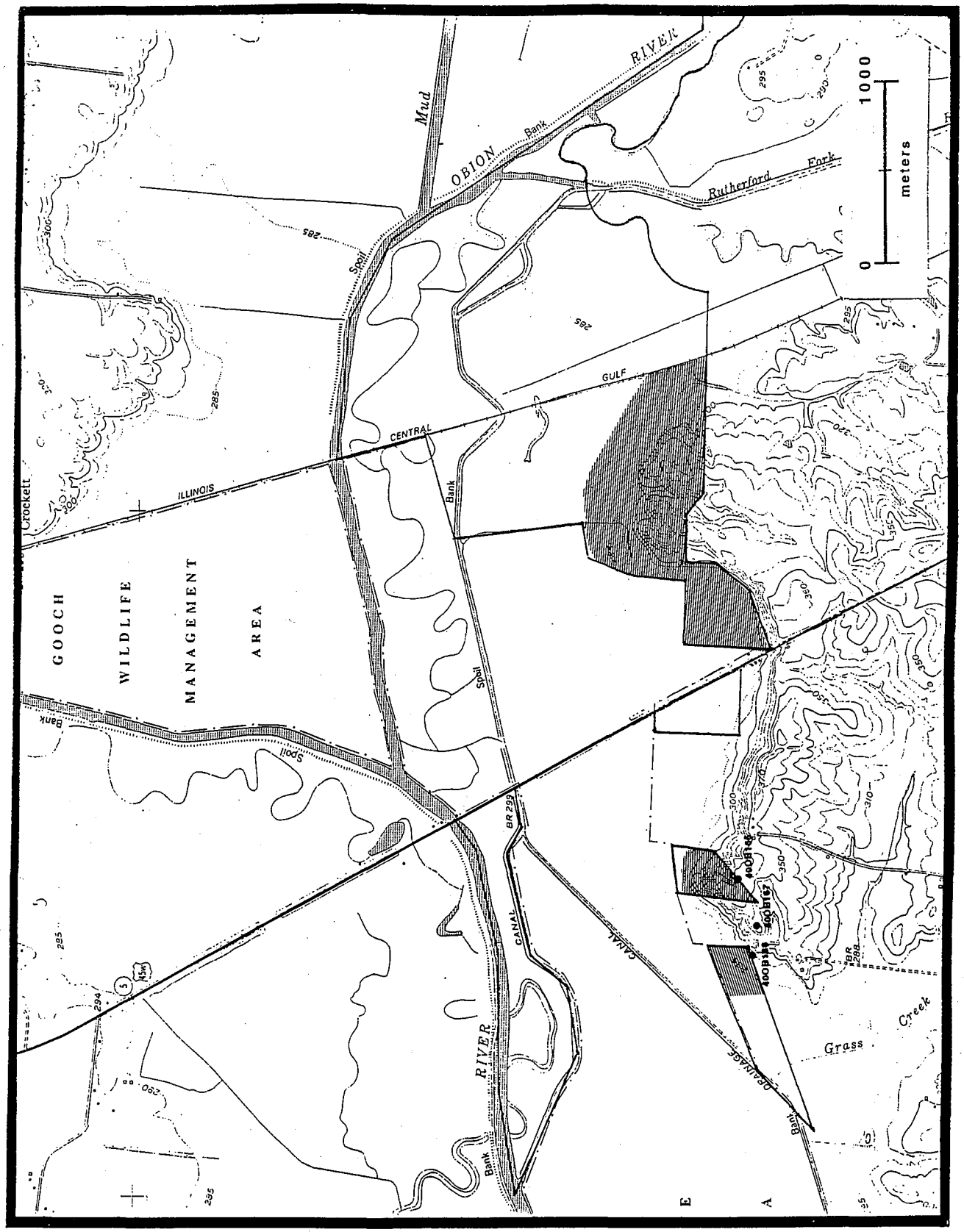


Figure 12. Areas surveyed on the U.S.G.S. Rives 7.5' quadrangle (1980). Locations of several miscellaneous sites indicated.

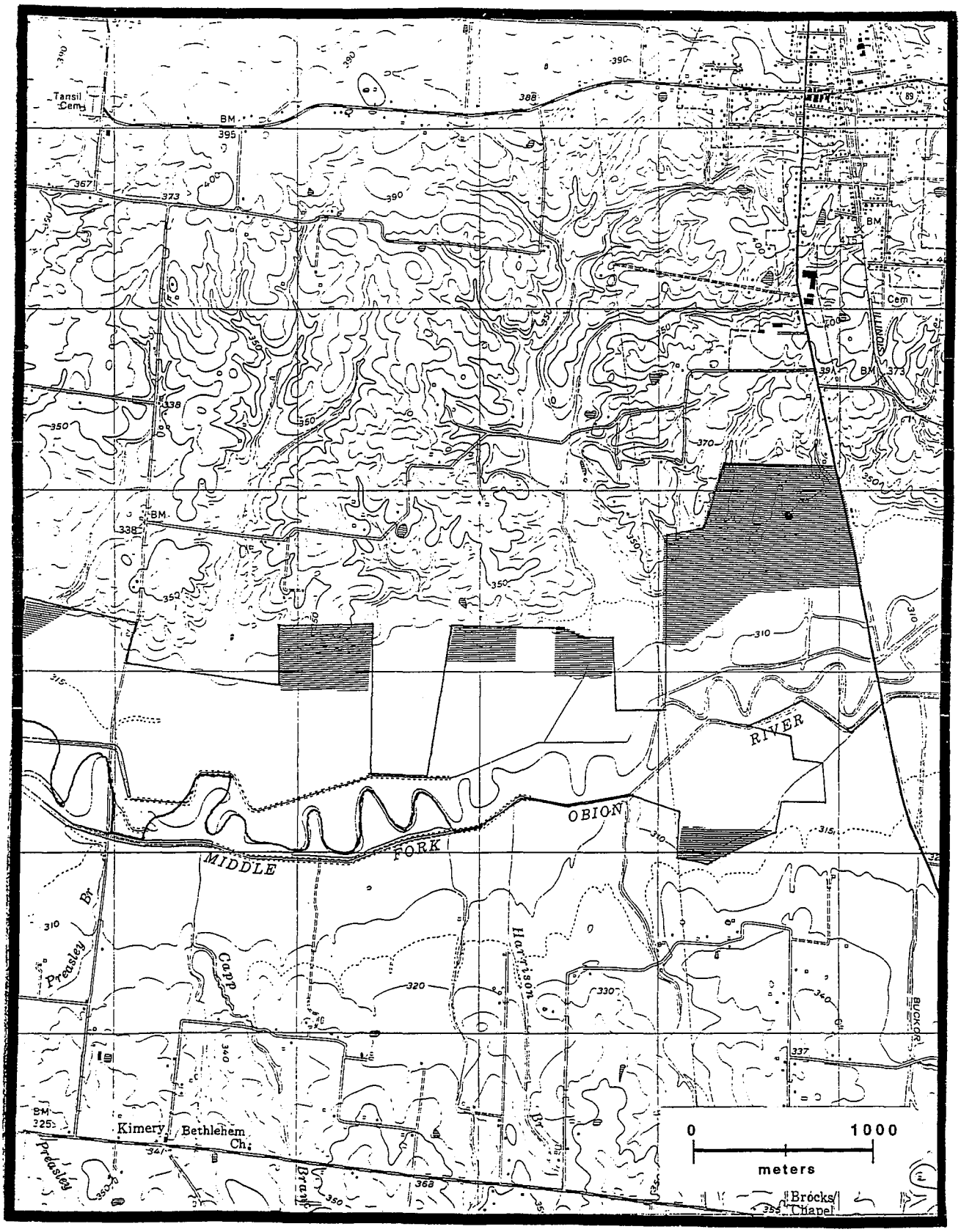


Figure 13. Areas surveyed on the U.S.G.S. Greenfield 7.5' quadrangle (1985).

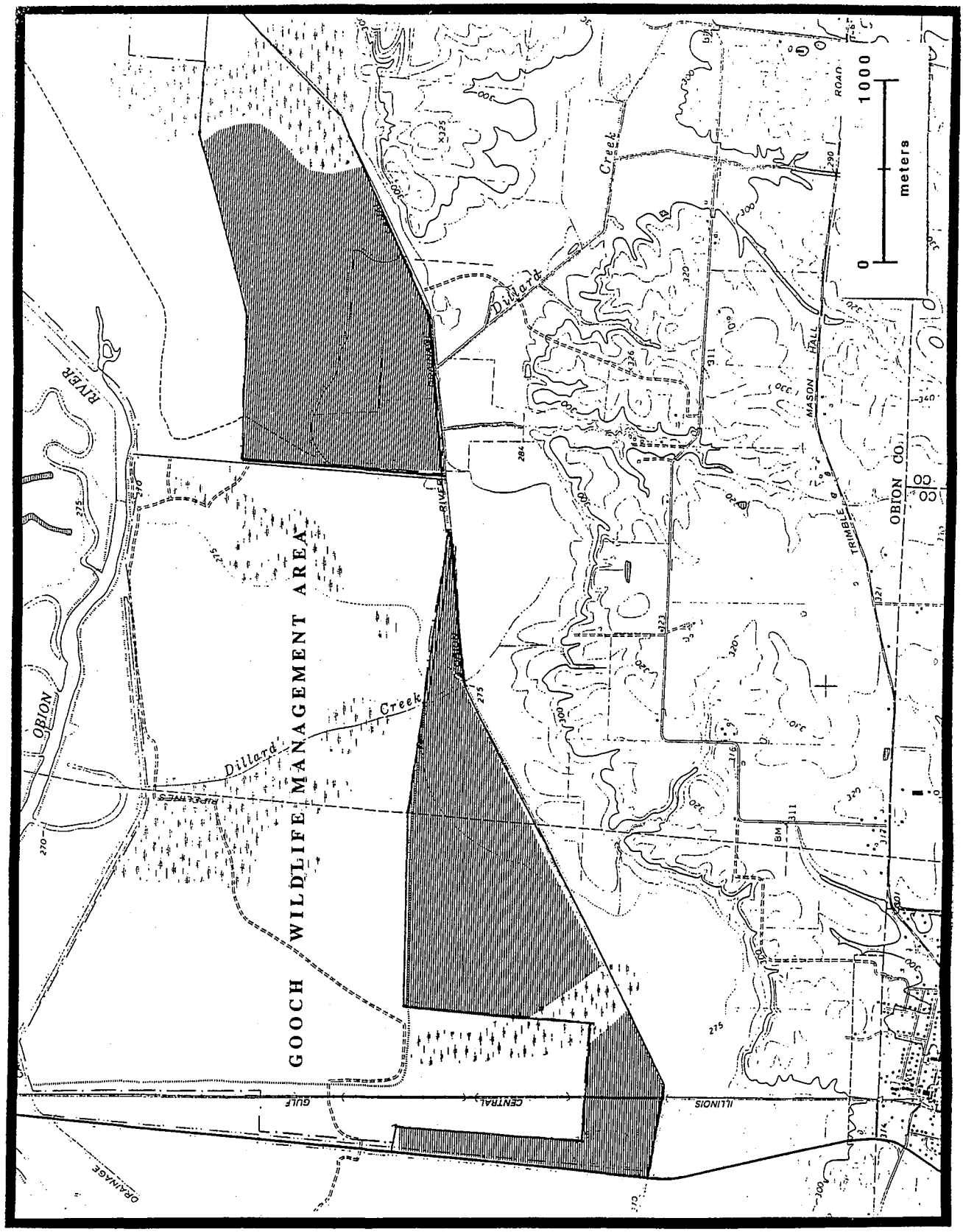


Figure 14. Areas surveyed on the U.S.G.S. Trimble 7.5' quadrangle (1983).

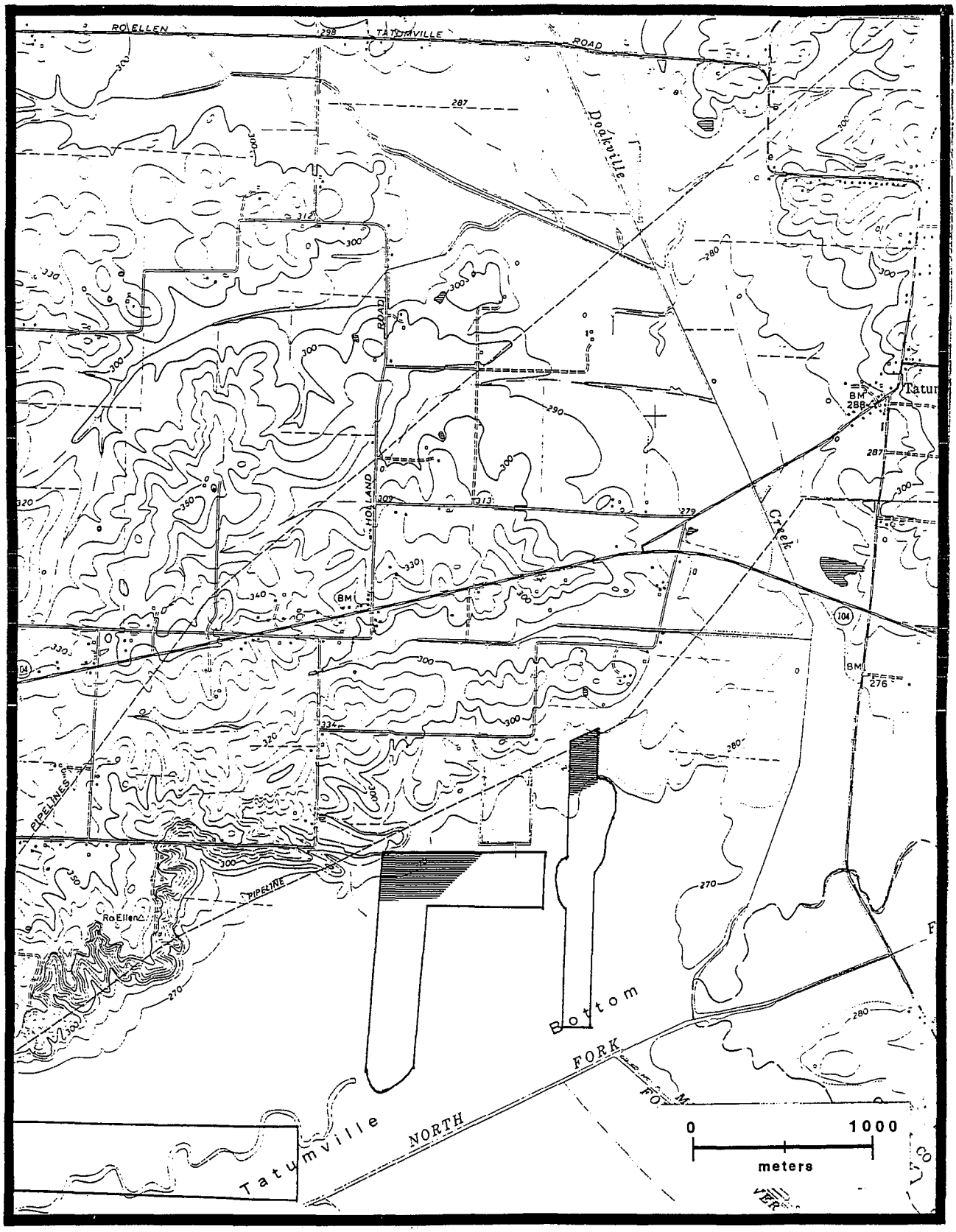


Figure 15. Areas surveyed on the U.S.G.S. Tatumville 7.5' quadrangle (1981).

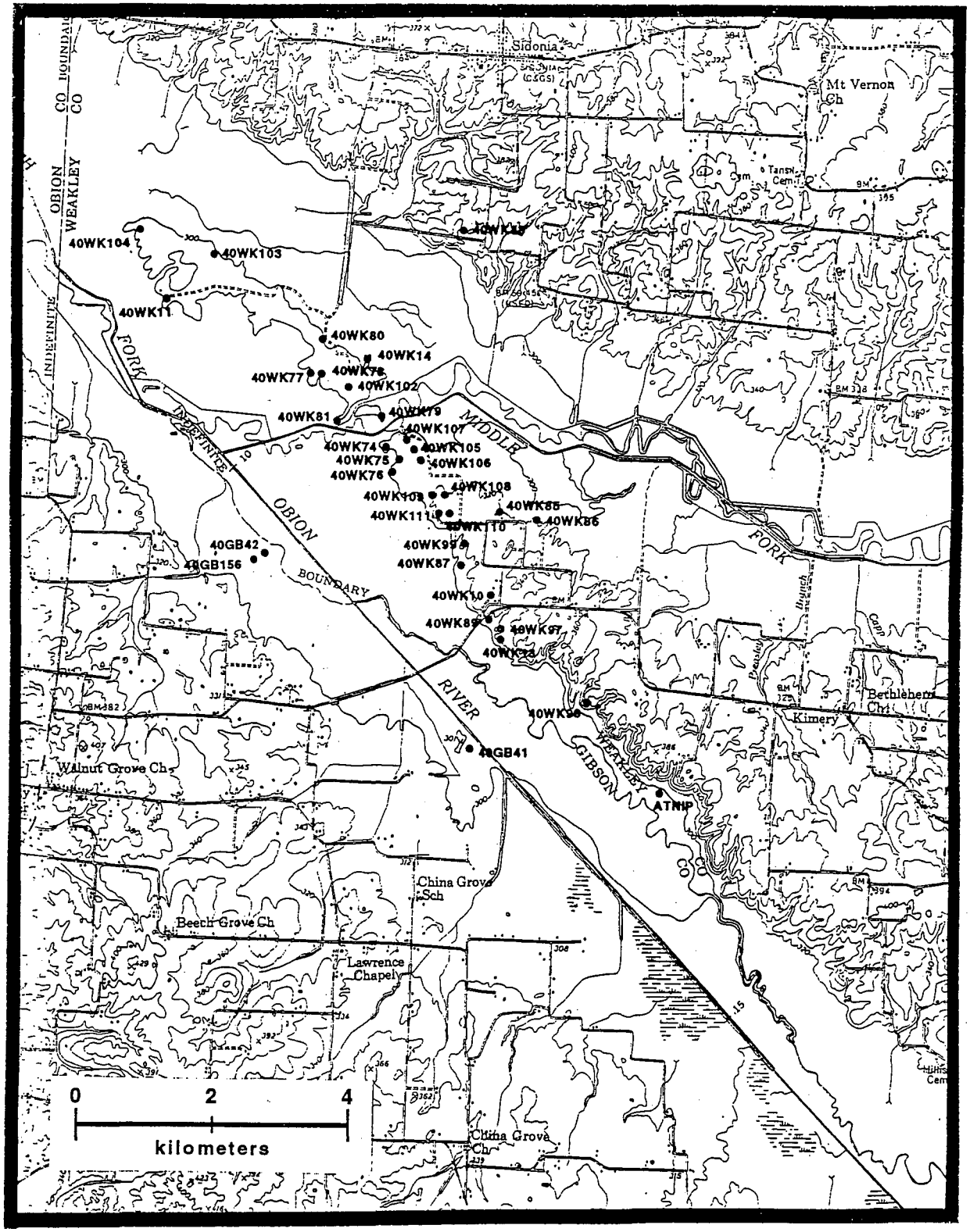


Figure 16. Locations of selected sites in the vicinity of Beech Ridge. U.S.G.S. Greenfield 15' quadrangle (1972).

40WK14

This site was recorded by Gerald Smith (1979a) and revisited by Anderson (1987), who recovered a moderate sample of historic artifacts dating to the latter half of the nineteenth to early twentieth century and two possible prehistoric artifacts. The site is located on a knoll on the eastern side of Beech Ridge. Surface visibility was excellent at the time of our investigation, and a light scatter of glass and brick was observed within an area measuring approximately 50 m in diameter. Since Anderson's (1987) collection is curated by TDOA, we did not collect additional material. No testing was conducted at the site.

40WK77

This site consists of a moderate scatter of lithics and ceramics along the southeastern margin of Beech Ridge (cf. Anderson 1987: 80), covering an area measuring approximately 95 m by 55 m. In addition to intensive surface survey, two test units (one 100 cm x 50 cm, the other 50 cm^2) were excavated in localities exhibiting relatively high concentrations of surface material. In both instances, subsoil was encountered immediately below the plowzone, and no intact cultural deposits were observed. From the artifact inventory below, it is evident that the site has several components, spanning the Dalton through Woodland periods.

Number	Description
1	pp/k - Dalton
1	pp/k fragment (proximal) - weak-stemmed Pickwick?
1	pp/k fragment (proximal) - Bakers Creek
3	pp/k fragments (distal)
1	hafted scraper - expanding base
1	biface fragment (proximal)
1	biface fragment (medial)
5	milling/processing stones
11	decortication flakes
22	secondary flakes
14	tested chert cobbles
24	ferruginous siltstone
17	firecracked rocks
6	prehistoric ceramics - Madison series, eroded
1	prehistoric ceramics - Baldwin series, eroded
2	prehistoric ceramics- Tishomingo series, eroded

Table 30. Summary of Collections from 40WK77.

40WK78

This site consists of a sparse scatter of lithics and ceramics on Beech Ridge, with an area measuring approximately 90 m by 50 m (cf. Anderson 1987: 80-81). In addition to intensive surface survey, two 50 cm^2 test units were excavated in localities exhibiting relatively high concentrations of surface material. In both instances, subsoil was encountered immediately below the plowzone, and no intact cultural deposits were observed. The site has several prehistoric components, spanning the Early Archaic through Woodland periods, as well as a minor historic component.

Number	Description
1	pp/k - large, triangular (Frazier?)
1	pp/k fragment (proximal) - expanding stem
1	pp/k fragment (proximal) - straight stem
1	pp/k, reworked - untyped Early Archaic form
6	pp/k fragments (medial)
1	biface fragment (medial)
7	decortication flakes
45	secondary flakes
2	utilized flakes
4	chert core fragments
16	ferruginous siltstone
21	ferruginous sandstone
11	firecracked rocks
4	prehistoric ceramics - Forked Deer series, eroded
4	prehistoric ceramics - Madison series, eroded
1	prehistoric ceramics- Tishomingo series, eroded
1	baked clay object, biconical
1	stoneware - gray saltglazed exterior, brown interior

Table 31. Summary of Collections from 40WK78.

40WK80

Recorded by Anderson (1987: 81) as a "dense scatter of historic artifacts, with a few prehistoric artifacts also present," this site is located on a small rise on the northeastern portion of Beech Ridge. The historic artifacts collected by Anderson represent a twentieth century occupation. Site dimensions are approximately 75 m by 50 m. Resurvey under conditions of excellent surface visibility indicated the presence of a sparse scatter of glass and brick. No prehistoric artifacts were observed; Anderson collected four chert flakes and a grog tempered sherd. Since Anderson's collection is curated by TDOA, we did not collect additional material. No testing was conducted at the site.

40WK81

This previously recorded, severely disturbed site is located on the extreme southeastern tip of Beech Ridge (Anderson 1987: 58). Although Anderson (1987) reports collecting a moderate amount of cultural material, resurvey under conditions of excellent surface visibility produced only 2 primary decortication flakes. Due to the scarcity of material, as well as the disturbed nature of the deposits, no attempt was made to assess site boundaries.

40WK102

Located about 300 m north of 40WK81 near the eastern end of Beech Ridge, 40WK102 is a light scatter of lithics within an area measuring approximately 70 m by 40 m. In addition to intensive surface survey, two 50 cm^2 test units were excavated. In both instances, subsoil was encountered immediately below the plowzone, and no intact cultural deposits were observed. The lack of prehistoric ceramics suggests an Archaic occupation.

Number	Description
1	pp/k - untyped straight stem
1	pp/k fragment (proximal) - side-notched
1	biface fragment
1	decortication flakes
11	secondary flakes
1	retouched flake
1	utilized flake
1	chert core
2	tested cobbles
1	hammerstone
12	ferruginous sandstone
4	firecracked rocks

Table 32. Summary of Collections from 40WK102.

40WK103

This site consists of a very light scatter of prehistoric ceramics and lithics along the edge margin of Beech Ridge within an area approximately 50 m in diameter. In addition to intensive surface survey, two 50 cm^2 test units were excavated. In both instances, subsoil was encountered immediately below the plowzone, and no intact cultural deposits were observed. A minor Tchula period occupation is suggested by the ceramics. A moderate amount of mid-twentieth century Euroamerican material was also noted, but not collected.

Number	Description
2	secondary flakes
2	prehistoric ceramics - Forked Deer series, eroded

Table 33. Summary of Collections from 40WK103.

40WK104

This site consists of a moderate scatter of lithics and ceramics along the northern edge of Beech Ridge, with an area measuring approximately 100 m square. In addition to intensive surface survey, two 50 cm^2 test units were excavated in localities exhibiting the highest concentrations of surface material. In both units, subsoil was encountered immediately below the plowzone, and no intact cultural deposits were observed. Based on the Pickwick point, baked clay object fragments, and the Tishomingo series sherd, prehistoric use of the site probably occurred during the Tchula and early Middle Woodland periods; as indicated by the white ironstone, a minor historic component is also present.

Number	Description
1	pp/k fragment (proximal) - Pickwick
2	pp/k fragment (proximal) - expanding stem
2	pp/k fragments (distal)
3	decortication flakes
7	secondary flakes
4	tested chert cobbles
7	ferruginous siltstone
7	ferruginous sandstone
7	firecracked rocks
1	prehistoric ceramics- Tishomingo series, eroded
6	baked clay object fragments
2	white ironstone

Table 34. Summary of Collections from 40WK104.

The following sites are located within the mitigation lands, but not on Beech Ridge:

40WK74

This site was recorded by Anderson (1987) as a scatter of prehistoric and historic artifacts located approximately 2 km east of the confluence of the Middle and South Forks of the Obion River. Contrary to Anderson (1987: 78), the site is located east of Beech Ridge. The site was resurveyed under conditions of excellent visibility. Within an area measuring approximately 30 m in diameter, a few prehistoric artifacts, but no historic artifacts were collected. In addition to intensive surface survey, two 50 cm^2 test units were excavated. In both instances, subsoil was encountered immediately below the plowzone, and no intact cultural deposits were observed.

Number	Description
2	decortication flakes
1	ferruginous siltstone
1	ferruginous sandstone

Table 35. Summary of Collections from 40WK74.

40WK75

Recorded by Anderson (1987) as a scatter of prehistoric artifacts on a knoll northeast of 40WK76, this site could not be relocated, despite very good survey conditions. The area had recently been plowed and planted, and a substantial amount of rain had fallen during the days just prior to our visit. Anderson (1987) collected 3 grog tempered sherds, a hafted biface fragment, a core, a hammerstone fragment, a utilized flake, and a thinning flake. Evidently, a very light Woodland occupation is, or was, present at this locality.

40WK76

Recorded by Anderson (1987) as an historic house site with a prehistoric component, site 40WK76 is located in the uplands about 2 km east of the confluence of the Middle and South Forks of the Obion River, and measures approximately 65 m by 35 m in areal extent. In addition to intensive surface survey, two 50 cm^2 test units were

excavated, in which subsoil was encountered immediately below the plowzone, and no intact cultural deposits were observed. The historic component probably dates circa A.D. 1900, while occupation during the Tchula and Woodland periods is indicated by the prehistoric ceramics.

Number	Description
1	scraper - reworked expanding stem pp/k
1	pp/k fragment
1	biface fragment
3	decortication flakes
35	secondary flakes
2	exhausted chert cores
3	tested cobbles
1	siltstone
4	ferruginous siltstone
1	prehistoric ceramic - Mulberry Creek Cordmarked, *var. Bells Road*
1	prehistoric ceramic - Forked Deer series, eroded
3	prehistoric ceramics - Baytown Plain, *var. Madison*
1	prehistoric ceramics - Madison series, eroded
2	prehistoric ceramics - Furrs Cordmarked
1	prehistoric ceramics - Baldwin series, eroded
1	prehistoric ceramics - Withers Fabric marked, *var. Craig's Landing*
1	amber/brown glass - mold-blown bottle lip
1	amber glass - jar lip and shoulder
1	frosted white glass - canning jar lid liner
1	light green glass - probably soft drink bottle
1	aqua glass - base of jar?
1	clear bottle glass
1	clear glass with decorative frosting - probably soft drink bottle
1	clear glass rim, faceted - section of dish?
1	white porcelain - cup fragment?
2	whiteware (probably ironstone)
1	stoneware - tan with metallic brown glaze - jug fragment?
3	stoneware - gray/tan with dark brown (Albany?) slip on both sides
1	stoneware - tan with saltglaze exterior and brown interior - crock
1	stoneware - tan crock base with pink/tan exterior and dark brown interior
1	stoneware - tan crock base with greenish exterior and dark brown interior
1	stoneware - blue (saltglaze?) exterior and partially black (burned?) interior
1	unglazed clay marble - tan
1	UID brass

Table 36. Summary of Collections from 40WK76.

40WK79

Another site reported by Anderson (1987), 40WK79 is located on a knoll at the extreme eastern end of Beech Ridge. We were unable to resurvey the site due to high water and dense vegetation.

40WK105

One of several sites that occupy the extreme northwest (and lowest) portion of the uplands between the Middle and South Forks of the Obion River, 40WK105 is located about 1.8 km east of the confluence. Within an area measuring approximately 20 m in diameter, a few prehistoric artifacts were collected. In addition to intensive surface survey, two 50 cm^2 test units were excavated. Subsoil was encountered immediately below the plowzone, and no intact cultural deposits were observed.

Number	Description
1	pp/k fragment (distal)
1	decortication flake
2	secondary flakes

Table 37. Summary of Collections from 40WK105.

40WK106

Located approximately 150 m southeast of 40WK105, this site is a moderate scatter of prehistoric ceramics and lithics within an area measuring approximately 25 m in diameter. In addition to intensive surface survey, two 50 cm^2 test units were excavated, in which subsoil was encountered immediately below the plowzone, and no intact cultural deposits were observed.

Number	Description
1	pp/k fragment (distal)
1	biface fragment
5	secondary flakes
1	siltstone
2	ferruginous sandstone
1	firecracked rock
1	prehistoric ceramic - Forked Deer series, eroded

Table 38. Summary of Collections from 40WK106.

40WK107

Site 40WK107 is located on a first terrace about 1.8 km northeast of the confluence of the Middle and South Forks of the Obion River, near 40WK74 and 40WK105. Within an area measuring approximately 20 m in diameter, a few prehistoric artifacts were collected. In addition to intensive surface survey, two 50 cm^2 test units were excavated. In both instances, subsoil was encountered immediately below the plowzone, and no intact cultural deposits were observed.

Number	Description
1	pp/k fragment (distal)
2	ferruginous sandstone
1	prehistoric ceramic - Forked Deer series, eroded

Table 39. Summary of Collections from 40WK107.

40WK108

Situated in the uplands, about 2.4 km east of the confluence of the Middle and South Forks of the Obion River, this site is a light scatter of prehistoric ceramics and lithics within an area measuring approximately 35 m in diameter. In addition to intensive surface survey, two 50 cm^2 test units were excavated. In both instances, subsoil was encountered immediately below the plowzone, and no intact cultural deposits were observed. A Tchula period occupation is suggested by the ceramic assemblage.

Number	Description
1	pp/k fragment - unidentified expanding stem
1	secondary flake
3	prehistoric ceramics - Forked Deer series, eroded
4	prehistoric ceramics - Madison series, eroded
1	prehistoric ceramics - Tishomingo series, eroded

Table 40. Summary of Collections from 40WK108.

40WK109

Site 40WK109 is located in the uplands approximately 100 m west of 40WK108. A moderate scatter of prehistoric ceramics and lithics, as well as a minor historic component, is present within an area measuring approximately 30 m in diameter. In addition to intensive surface survey, two 50 cm^2 test units were excavated. Subsoil was encountered immediately below the plowzone, and no intact cultural deposits were observed. The prehistoric ceramics are indicative of a Tchula period occupation, while the historic material probably dates to the twentieth century.

Number	Description
1	pp/k fragment (medial)
1	decortication flake
1	secondary flake
1	exhausted chert core
3	prehistoric ceramics - Forked Deer series, eroded
9	prehistoric ceramics - Madison series, eroded
2	whiteware
2	UID stoneware
1	clear window glass

Table 41. Summary of Collections from 40WK109.

40WK110

Another upland site, located about 100 m south of 40WK108, 40WK110 consists of a moderate scatter of lithics and ceramics, evenly distributed across an area measuring approximately 115 m by 65 m. In addition to intensive surface survey, four 50 cm^2 test units were excavated. In each unit, subsoil was encountered immediately below the plowzone, and no intact cultural deposits were observed.

The site has several components, spanning the Dalton through Mississippian periods, as well as an historic component. Major prehistoric use of the site during the Tchula period is indicated by the ceramic assemblage. The machine-made marble indicates a post-1920 date for the historic component; the actual date probably is closer to 1940. Additional testing at this site clearly is warranted.

Number	Description
1	pp/k - Dalton/Greenbrier
3	pp/k fragments (proximal) - 1 straight stem, 2 contracting stem
1	pp/k fragment (distal)
1	hafted scraper - reworked Early Archaic corner-notched form
1	hafted scraper - straight stem
1	biface - small, triangular
1	biface fragment (medial)
2	anvil stones
8	secondary flakes
2	chert core fragments
58	prehistoric ceramics - Baytown Plain, *var. Forked Deer*
3	prehistoric ceramics - Mulberry Creek Cordmarked, *var. Bells Road*
2	prehistoric ceramics - Withers Fabric marked, *var. Withers*
24	prehistoric ceramics - Baytown Plain, *var. Madison*
2	prehistoric ceramics - Mulberry Creek Cordmarked, *var. Westover*
1	prehistoric ceramics - Mulberry Creek Cordmarked, *var. Tishomingo*
7	prehistoric ceramics - Mississippi Plain
1	marble, blue glass with white interior swirls - machine-made
1	milk glass
1	aqua glass - bottle
2	clear glass - bottle
1	clear glass - possible jar finial
1	clear window glass
1	green glass - bottle
1	relief-molded clear glass - soft drink bottle
1	clear glass
1	stoneware - brown slip (portion of neck?)
1	stoneware - cream slipped exterior, unglazed interior
1	stoneware - yellow glazed exterior, unglazed interior
1	stoneware - Albany slip on both surfaces
2	stoneware - relief-molded flower designs - blue exterior, white interior

Table 42. Summary of Collections from 40WK110.

40WK111

Located about 100 m west of 40WK110, this site is a light scatter of prehistoric ceramics and lithics within an area measuring approximately 35 m in diameter. In addition to intensive surface survey, two 50 cm^2 test units were excavated. In both units, subsoil was encountered immediately below the plowzone, and no intact cultural deposits were observed. The single prehistoric ceramic sherd may be indicative of a Woodland period occupation.

Number	Description
1	pp/k - unidentified straight stem
2	pp/k fragments (distal)
1	anvil stone fragment
4	ferruginous siltstone
1	ferruginous sandstone
2	tested chert cobbles
2	firecracked rock
1	prehistoric ceramic - Tishomingo series, eroded

Table 43. Summary of Collections from 40WK111.

40OB166

Spanning State and private land, this site is situated on a high bluff on the south side of the Obion River, 1.2 km west of U.S. 45. Within an area measuring about 50 meters square, a moderate amount of prehistoric and historic material was collected under fair visibility conditions. A single shovel test produced no evidence of subsurface deposits. A Mississippian component is indicated by the shell tempered sherd.

Number	Description
4	chert flakes
1	tested chert cobble
1	ferruginous sandstone
1	shell temper eroded rim
2	UID sherdlets
6	whiteware
2	porcelain
2	stoneware (one with Albany slip exterior)
1	window glass
1	clear glass, molded (possible bottle base fragment)
1	brick fragment
1	rusted iron fragment

Table 44. Summary of collections from 40OB166.

40WK168

This light scatter of prehistoric lithics and ceramics is located on the first terrace of the Obion River, about 450 m southwest of 40OB168. Based on the distribution of surface collected artifacts, the site area is estimated to be about 30 m square. Surface visibility was fair; a single shovel test revealed no indication of intact cultural deposits. The two ceramic sherds probably represent a Woodland occupation.

Number	Description
4	secondary flakes
2	chert shatter
2	UID sand/clay temper eroded
5	UID sherdlets

Table 45. Summary of Collections from 40WK168.

SITES OUTSIDE THE MITIGATION LANDS

(William L. Lawrence and Robert C. Mainfort, Jr.)

A number of sites outside the mitigation lands were recorded or revisited during the course of this project (see Figures 1, 11, and 15). Some represent localities brought to our attention by local informants who assisted us in our efforts to locate sites suitable for intensive testing; others are located immediately adjacent to the mitigation lands. An listing of all revisited sites will not be presented because little new data was obtained.

40OB167

This site is located on a hillside on the south side of the Obion River, approximately 300 m southwest of 40OB166. Within an area measuring about 50 m by 40 m, a moderate amount of prehistoric and historic cultural material was collected. No evidence of intact subsurface cultural deposits was observed in a single shovel test. A Woodland component of uncertain age is suggested by the single ceramic sherd, while the historic material may represent occupation by a twentieth century tenant farmer.

Number	Description
1	pp/k midsection
1	biface
1	biface fragment
1	retouched flake
2	primary flakes
9	secondary flakes
1	clay temper eroded sherd
4	whiteware
1	stoneware - gray saltglaze exterior, brown slip interior
1	stoneware lid fragment - brown slip
1	brick fragment
1	rusted iron fragment

Table 46. Summary of collections from 40OB167.

40WK85

Situated approximately 600 m east of 40WK108, this site consists of a light scatter of lithics and ceramics within an area approximately 20 m square. No indication of intact cultural deposits was observed in the single 50 cm^2 test unit. A Tchula period occupation is suggested by the Adena point and the baked clay object fragment.

Number	Description
1	pp/k - Adena
1	biface
1	biface fragment
1	utilized flake
7	UID sherdlets
1	baked clay object fragment - UID

Table 47. Summary of collections from 40WK85.

40WK86

A small upland site located about 400 m east southeast of 40WK85, 40WK86 consists of a light scatter of ceramics within an area measuring approximately 20 m square. A single 50 cm^2 test unit produced no evidence of intact cultural deposits. The single identifiable sherd and the baked clay object fragments are probably attributable to a Tchula period occupation.

Number	Description
1	Baytown Plain, *var. Madison*
2	sherdlets - UID
3	baked clay object fragments - UID

Table 48. Summary of collections from 40WK86.

40WK87

Another small upland site, 40WK87 is located approximately 600 m southwest of 40WK111. Within an area about 20 m square, a moderate number of ceramics were collected. No evidence of intact cultural deposits was disclosed by a single 50 cm^2 test unit. The ceramic assemblage indicates the presence of at least two components, one dating to the Tchula period, the other to the Mississippian period.

Number	Description
6	Mulberry Creek Cordmarked, *var. Westover*
2	Mulberry Creek Cordmarked, *var. Tishomingo*
1	Mississippi Plain, *var. unspecified*
10	UID sherdlets
1	baked clay object - ellipsoidal, cordmarked
12	baked clay object fragments - UID

Table 49. Summary of collections from 40WK87.

40WK88

Site 40WK88 is located in the uplands north of the Middle Fork of the Obion River. A light scatter of ceramics provisionally attributed to a Tchula period occupation was observed within an area measuring approximately 30 m by 20 m. A single 50 cm^2 test unit produced no evidence of intact subsurface cultural deposits.

Number	Description
1	Mulberry Creek Cordmarked, *var. Westover*
3	Baytown Plain, *var. Madison*
3	UID sherdlets
14	baked clay object fragments - UID

Table 50. Summary of collections from 40WK88.

40WK89

This small upland site is located approximately 750 m southwest of 40WK87, and consists of a light scatter of ceramics and lithics. At the time of discovery, the site was covered with grass, interrupted by small erosion furrows. No evidence of intact cultural deposits was observed in a single 50 cm^2 test unit which, in conjunction with poor surface visibility, precluded precise size determination. The site area probably is no greater than 20 m in diameter. A Tchula period occupation is suggested by the sparse artifact assemblage.

Number	Description
1	pp/k fragment - medial
3	Mulberry Creek Cordmarked, *var. Westover*
1	UID sherdlet
1	baked clay object fragment - UID

Table 51. Summary of collections from 40WK89.

40WK97

Situated on the opposite side of a large erosion gully about 150 m southeast of 40WK89, this upland site is represented by a relatively small artifact assemblage, probably due to poor surface visibility. Since vegetation covered much of the site area, accurate boundaries could not be determined based on the distribution of surface material. A single 50 cm^2 test unit produced no evidence of intact subsurface deposits; excavation of additional test units as an aid to establishing site boundaries seemed unwarranted. The artifact collection suggests the presence of Late Archaic and Tchula period components.

Number	Description
1	pp/k base - probably Pickwick
3	biface fragments
9	UID sherdlets
1	baked clay object fragment - UID

Table 52. Summary of collections from 40WK97.

40WK98

A blufftop site located about 1.3 km southeast of 40WK97, this site consists of a lithic and ceramic scatter within an area measuring approximately 100 m by 80 m. Surface visibility was poor and two 50 cm^2 test units produced no evidence of intact subsurface cultural deposits. Thus the site limits are, at best, an approximation. A Tchula period occupation is suggested by the single identifiable ceramic sherd; three eroded sherdlets were also recovered. Lithic debitage was observed, but not collected, at the site.

40WK99

Another blufftop locality, this small site is situated about 150 m north of 40WK87. Within an area measuring approximately 10 meters square, a few pieces of prehistoric ceramics were collected. The *Madison* sherd and the baked clay object fragments probably are indicative of a Tchula period occupation.

Number	Description
1	Baytown Plain, *var. Madison*
1	Mulberry Creek Cordmarked, *var. unspecified*
2	baked clay object fragments - UID

Table 53. Summary of collections from 40WK99.

Atnip site (40WK100)

The Atnip site is a small (20 m by 15 m) midden mound located on a natural rise at the edge of the first terrace of the South Fork of the Obion River, about 1.3 km southeast of 40WK98. A large amount of ferruginous sandstone and a "nutting" stone was observed on the surface. A single 1 m square test unit revealed the presence of a 20 cm plowzone underlain by an intact midden deposit measuring about 40 cm thick.

Primary usage during the Tchula period is suggested by the baked clay object fragments and the Delhi point. The lack of pottery sherds is notable. At present, the Atnip and Barner sites represent the only unequivocal examples in western Tennessee of the use of baked clay objects on a preceramic horizon. The fluted point midsection may reflect a Paleoindian component or reuse of an older artifact. A number of small bone fragments and a white-tailed deer tooth were also recovered from the test unit.

The Atnip site was recorded shortly before the start of fieldwork at the Oliver site, and intensive testing was planned upon completion of work at the latter site. Due to a number of factors, the anticipated testing could not be undertaken. Future research in the area should give high priority to additional investigations at this site.

Number	Description
1	pp/k - Delhi
1	pp/k midsection - fluted (Cumberland?)
1	pp/k base fragment - UID side-notched
1	pp/k fragment - UID
1	pitted "nutting" stone
1	hammerstone
69	chert flakes
36	blocky shatter
10	ferruginous siltstone
40	ferruginous sandstone
	small ferruginous siltstone/sandstone (1572.5 g.)
1	bco fragment - cane impressed
	small, UID bco fragments (139.7 g.)
	fired clay pellets - bco fragments? (138.1 g.)
	UID burned bone fragments (47.8 g.)

Table 54. Summary of collections from the Atnip site.

40WK101

This site is located on a bluff above the North Fork of the Obion River, near the city limits of Dresden, Tennessee. Until recently, the site area was part of a hog lot, which has caused considerable erosion. A fairly dense concentration of prehistoric cultural material is present within an area measuring approximately 30 m by 12 m; a light scatter extends over a larger (50 m x 40 m) area. Surface visibility was fair at the time of visitation. No subsurface testing was conducted because subsoil was exposed across the entire site. Late Archaic and Woodland components are suggested by the artifact assemblage.

Number	Description
2	pp/k - weak asymmetrical stems (Pickwick variant)
1	pp/k base - straight stemmed
2	pp/k medial fragments
4	pp/k distals
1	drill fragment - base
2	prehistoric ceramics - Mulberry Creek Cordmarked, *var. Tishomingo*

Table 55. Summary of collections from 40WK101.

Glisson site (40CL65)

The Glisson site consists of two concentrations of prehistoric cultural material within an area measuring 275 m by 100 m along two parallel ridges at the confluence of Brier and Crooked Creeks, approximately 3 km north of Huntingdon, Tennessee. In the immediate vicinity of the site, these streams join with Guins and Beaver Creeks to form the South Fork of the Obion River. The site is presently utilized for row crop agriculture. Surface visibility was excellent at the time of our visit.

Two 50 cm^2 test units were excavated on each ridge. In each instance, stratigraphy consisted of a plowzone extending between 20 and 30 cm below surface, underlain by a pale brown (10YR6/3) subsoil. No intact cultural deposits were observed and artifact recovery was limited to firecracked rock and ferruginous sandstone, neither of which were retained for analysis.

A third unit, measuring 2 m by 2 m, was excavated adjacent to a small standing structure. The surrounding area had not been plowed recently, raising the possibility of intact cultural deposits. Stratigraphy was identical to that observed in the smaller units, with no indication of intact deposits. The lack of ceramics in our surface collection suggests, but by no means demonstrates, a pre-Woodland age for the site.

Number	Description
1	pp/k edge fragment
176	lithic debitage
	ferruginous siltstone
	ferruginous sandstone
	firecracked rock

Table 56. Summary of collections from the Glisson site.

TEST EXCAVATIONS AT SELECTED SITES

(William L. Lawrence and Robert C. Mainfort, Jr.)

As stipulated in the Memorandum of Agreement, TDOA conducted sample intensive testing at several archaeological sites "in order to aid in defining the chronology and context within which to determine the significance of area cultural resources." Based on a search of the State archaeological site files, review of pertinent literature, and preliminary survey within the mitigation lands, it quickly became apparent that no sites suitable for intensive testing were present within the immediate project area. This contingency was anticipated in the wording of the MOA, which does not specify that sites selected for intensive testing must be located within the mitigation lands, rather that "All data obtained shall be applicable to the study area."

Even with the flexibility of not being confined to the mitigation lands, selection of sites for testing proved to be difficult, and one of the two most intensively investigated sites was subsequently proven to be of little value to the objectives of the testing program. Very few prehistoric archaeological sites with intact subsurface deposits have been recorded in the west Tennessee interior. While this situation in part reflects survey biases, with regard to the immediate needs of this project, there were very few options available. Compounding the paucity of potentially suitable sites in the general vicinity of the mitigation lands, several sites judged to be of particular interest had been virtually destroyed by vandals prior to our pre-fieldwork inspections. These include the Chandler site and 40WK72, both of which are briefly discussed elsewhere in this volume.

Several sites considered by Smith (1979a) to have high research potential were revisited. While extensive discussion of our field inspections is beyond the scope of this volume, it must be noted that our impressions of several sites described in glowing terms by Smith were singularly unimpressive. These include 40DY3, 40DY4, and 40GB37. Of course, it must be remembered that Smith recorded these sites roughly 20 years prior to our investigations, and that all had been under intensive agricultural utilization during the intervening years.

Intensive testing was conducted at three prehistoric archaeological sites, with very limited testing at several others. The results of these investigations are presented below.

40GB41

Site 40GB41 is situated within a section of floodplain approximately 200 m west of the channelized South Fork of the Obion River and about one kilometer west of the former South Fork channel (Figures 1 and 16). This locality is approximately 4.25 km upstream from the confluence of the Middle and South Forks of the Obion River. Smith (1979a: 20) states that the site occupies a low rise and the present landowner informed us that the site was clearly visible as a prominent rise as recently as the 1950s. Local residents incorrectly refer to the site as a "mound," which supports claims that 40GB41 formerly stood as high as a meter or more above the surrounding floodplain. Intensive agricultural utilization has reduced the site to virtually the same elevation as the floodplain. At the time of our initial visit (June, 1991), the site was clearly visible as a midden stain covering an area about 40 m by 50 m.

Initial excavation consisted of seven contiguous 1 x 2 m units oriented along a north/south axis to a maximum depth of 50 cm below surface. Three units were

subsequently expanded into 2 x 2 m squares and two additional 2 x 2 units were also excavated, making the total excavation area 28 m^2 (Figure 17). To supplement data from the excavations, soil samples were extracted with a split-spoon sampler at two meter intervals along the east/west axis of the grid system.

The plowzone was removed as a single soil unit and was selectively screened. The underlying midden deposit was excavated using arbitrary 10 cm levels within the stratum; all material from the midden deposit was screened, with several samples retained for flotation and waterscreening. Several deep shovel tests were excavated into subsoil with negative results.

Stratigraphy proved to be fairly straightforward and uniform across the site area. The uppermost soil unit is a plowzone, 10 to 20 cm thick, consisting of dark brown (10YR 3/3) sandy silt. A 20 cm thick midden deposit is present immediately below the plowzone. The upper portion of the midden is a very dark brown (10YR 3/2) silty clay, which is underlain by a mottled deposit of grayish brown (10YR 5/2) silty clay mottled with dark yellowish brown (10YR 4/4) subsoil. Soil samples indicate that this midden thins toward the margins of the site. The basal subsoil is a dark yellowish brown (10YR 4/4) clay. Several recent relic hunter pits intrude through the midden and into subsoil.

Artifact density was low in both the plowzone and the surviving portion of midden. The plowzone produced 5 small baked clay object fragments, 12 ceramic sherds, 9 eroded sherdlets, 3 unidentifiable projectile point/knife fragments, and a basal fragment of a Dalton point. Identified ceramics include Baytown Plain, *var. Madison* and Withers Fabric Marked, *vars. Cypress Creek* and *Craig's Landing*. The slightly larger artifact sample from the midden includes a single biconical plain baked clay object, 16 unidentifiable bco fragments, 10 ceramic sherds, and 12 sherdlets. With the exception of a single Mississippi Plain sherd, the ceramics are comparable to those from the plowzone. Projectile points from the midden include a Greenbrier/Dalton base, a large Benton blade (12.7 cm in length), a heavily reworked straight stemmed point, and 6 unidentifiable point fragments (Figure 18). Three biface fragments, a quartzite mortar, and a drill were also recovered, as was a small quantity of vertebrate faunal remains, gastropod and unionid shells.

A single human burial was partially exposed at the base of the midden. Cursory examination of the exposed portions suggest that the bundled remains of an adult male are represented. The large mussel shell found near this individual may represent a grave accompaniment or may simply be an incidental inclusion.

Site 40GB41 has been almost completely deflated by plowing, with only the remnants of a midden surviving. Lack of intact stratified deposits, as well as the lack of subsurface features and apparent absence of material suitable for radiometric dating, precludes a definitive discussion of site age and function. The presence of baked clay objects and ceramics in the midden suggest a post-Archaic origin for the deposit, but the large Benton blade (apparently *in situ*), as well as the Dalton/Greenbrier point fragments provide obvious indications of earlier usage.

Although only a single human burial was disclosed during our excavations, conversations with the landowner and a local collector indicate that human remains were numerous prior to the nearly complete destruction of the site. This raises the possibility that 40GB41 may have served primarily as a mortuary locus and only secondarily as a habitation site.

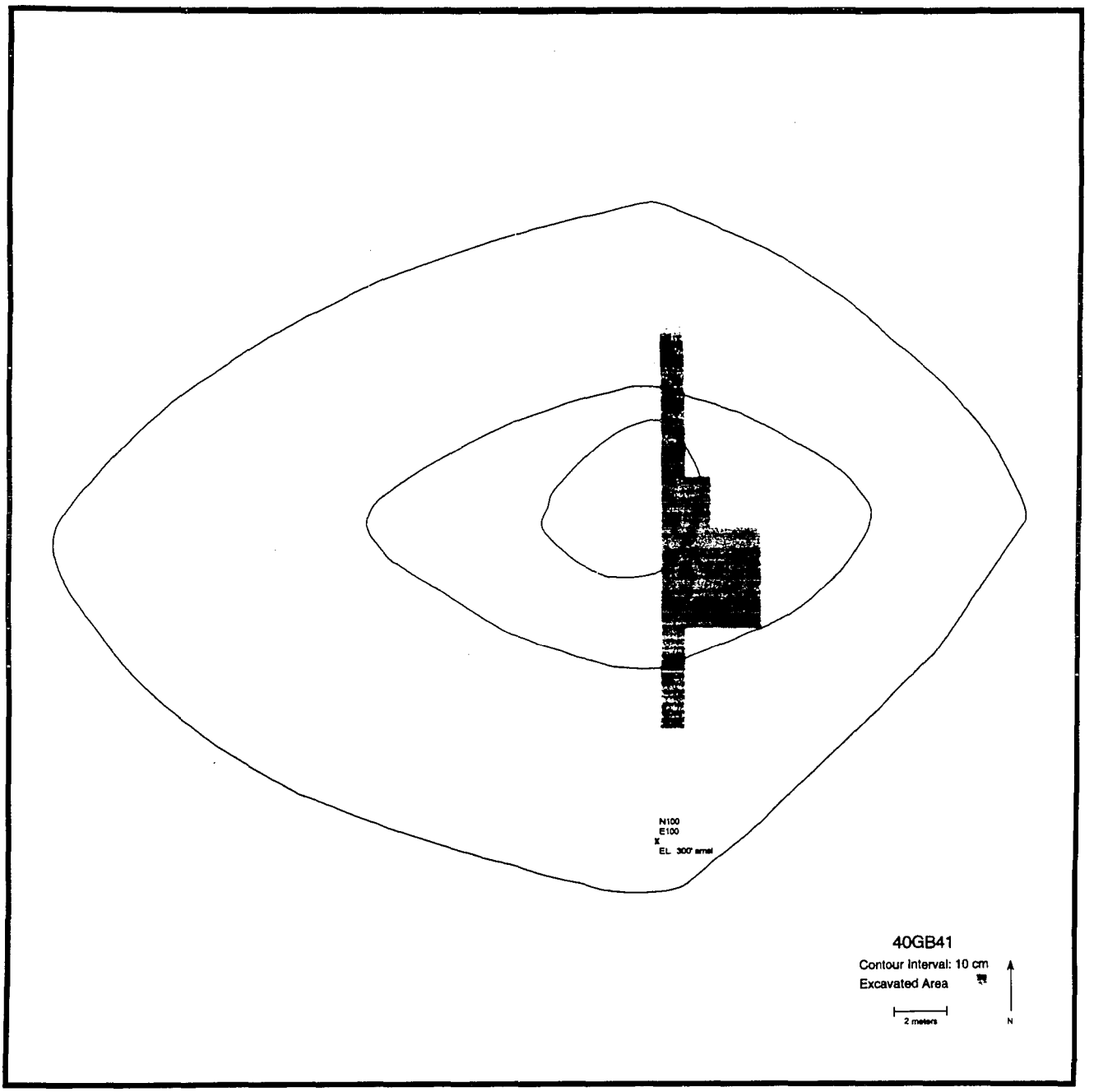


Figure 17. Topographic Map of 40GB41, showing excavation units.

Figure 18. Lithic Artifacts, 40GB41.

40GB42 (William L. Lawrence, Robert C. Mainfort, Jr., and Andrea B. Shea)

Site 40GB42 was originally recorded by Gerald Smith, who described it as "a deeply stratified site with midden approximating 1.2 meters (4 feet) in depth near the center and occupations ranging in time from Early Archaic through Mississippian.... The Mississippian occupation is confined to the upper few inches and would have been destroyed had the site ever been cultivated; the major occupations are, in order from most recent to earliest, Baytown; Tchula; Poverty Point; Benton; and Early Archaic, including Big Sandy and Palmer" (1979a: 20-21). Smith excavated two test units, and specifically identified the presence of a "Late Archaic Benton stratum." Based on Smith's description, we anticipated that excavations at 40GB42 would provide important baseline chronometric and typological data spanning several cultural periods.

The site is located approximately 2.5 km downstream from 40GB41 within a wooded section of floodplain roughly 500 m west of the present-day channel of the South Fork of the Obion River. This locality is immediately adjacent to a former natural channel of the South Fork and lies about 1 km upstream from the confluence of the South and Middle Forks of the Obion River (Figures 1 and 16).

Anderson (1987: 67-69) incorrectly identified as 40GB42 a light scatter of cultural material located in a plowed field immediately west of the actual site. The locality referred to by Anderson as 40GB42 has been recorded as 40GB156 (see Figure 16). In fairness to Anderson, who has repeatedly shown himself to be a very capable and conscientious researcher, it should be noted that the precise location of the site is not readily discernible from the State site form. After several unsuccessful attempts to relocate 40GB42, we were assisted by Mr. Tommy Adams, who had shown the site to Smith some 20 years earlier.

The site consists of a low rise with an areal extent of approximately 600 m^2 and a maximum height of about 1.5 m above the surrounding floodplain (Figure 19). 40GB42 has never been cultivated, but has been extensively damaged by relic hunters, whose pits are evident over much of the site.

Fieldwork at 40GB42 was conducted during late June, July, and August, 1991. A horizontal grid of 2 meter squares was established across the area selected for testing, with the source point designated as N100E100. Vertical control was maintained with reference to a datum point defined by a nail driven into a large tree immediately adjacent to the site. Nine 2 m squares and six 1 x 2 meter units, resulting in a total excavation area of 48 m^2, were excavated. The walls of several large relic hunter pits were cleaned to provide additional stratigraphic data. Units were generally placed contiguously in order to provide maximum information about site stratigraphy, based on the description by Smith noted above. To the extent possible, identifiable strata were removed as single vertical units, with 10 cm (or less) arbitrary levels employed within stratigraphic zones as necessary.

With the exception of highly disturbed areas and samples retained for flotation or waterscreening, all excavated soil was passed through 1/4 inch mesh screen. Soil samples for flotation and waterscreening were collected from strata within each unit as deemed appropriate; since it quickly became evident that the depositional history of the site was rather different than Smith's (1979a) description, all soil samples were processed through windowscreen. Excavation was greatly hindered by the presence of numerous prehistoric human burials. Upon discovery of a burial, excavation was terminated within the unit or portion of the unit in which the interment was located.

Site stratigraphy, as illustrated in Figure 20, consisted of three zones containing prehistoric artifacts underlain by subsoil. The uppermost, Stratum I, consists of a deposit of dark yellowish brown (10YR 4/4) silty loam, varying in thickness from 8 to 40 cm. Virtually the entire stratum has been severely disturbed, both by tree roots, as well as by relic hunters. The overwhelming majority of cultural material was recovered from Stratum I. The underlying Stratum II is a 16 to 42 cm thick deposit of very dark grayish brown (10YR 3/2) silty loam with a high organic content and, thus, probably represents a buried A soil horizon (June Mirecki, personal communication 1991). A moderate amount of shell is contained within this stratigraphic unit, and fired clay particles are evident in profiles.

Stratum III is a deposit of dark yellowish brown (10YR 3/4) silty loam, mottled with light gray (10YR 7/1) clay loam, with a thickness ranging from 8 to 52 cm. The lower portion of this stratum was designated in the field as IIIB due to the increased representation of light gray clay nearer the base of our excavations. Gastropod and univalve shell are common throughout the entire stratum. These are evenly distributed, and no shell lenses or concentrations indicative of discreet dumping episodes were observed. Several units were excavated to a sufficient depth that subsoil, represented by a yellowish brown (10YR 5/6) clayey loam, was encountered. Soil particle size analysis of multiple samples from each stratigraphic unit indicate that the relative proportions of sand, silt, and clay are remarkably homogenous throughout all strata.

As noted above, Stratum I yielded most of the artifact assemblage, including 601 complete and fragmentary baked clay objects, some of which are illustrated in Figure 21. Most are composed of a poorly fired light gray clay containing sand inclusions; the sand probably does not represent an intentionally added aplastic, but rather a natural occurrence within the utilized clay source. A variety of baked clay object forms were identified, including biscuit-shaped (N=100), spherical (N=31), biconical (N=10), ellipsoidal (N=2), and cube (N=1). Decorative modes include cane punctated (N=93), plain (N=78), sharp implement punctated (N=25), incised (N=2), fingernail punctated (N=2), and grass/fabric marked (N=1).

Stratum I also produced 1,026 ceramic sherds that are indicative of multiple occupation episodes. The ceramic sample is dominated by sherds of the Madison paste series (N=464), which includes Baytown Plain, *var. Madison*, Withers Fabric Marked, *var. Cypress Creek*, and Mulberry Creek Cordmarked, *var. Westover*. Less numerous are ceramics of the Tishomingo (N=226) and Forked Deer (N=169) series. Very few examples (N=12) of the sand tempered Baldwin series were recovered; types represented include Baldwin Plain, Saltillo Fabric Impressed, and Furrs Cordmarked. Seven sherds of Cormorant Cord Impressed, *var. unspecified* were also recovered. An Emergent/Early Mississippian occupation is indicated by the presence of Mississippi Plain (N=72) and Varney Red (N=6). Figure 22 illustrates a sample of the ceramics.

A total of 57 complete and fragmentary projectile point/knives were recovered from Stratum I. Identifiable types include Crawford (N=2), and single examples of Damron, Little Bear Creek, Pickwick, and Benton (Cambron and Hulse 1975), the latter being represented by a proximal fragment. See Figure 23. Most pp/ks were fragmentary and not assignable to a type. Unidentified proximal fragments include 4 expanding stemmed and 2 straight stemmed specimens. Several hafted scrapers (N=3), drills (N=2), anvil stones, and a small prismatic bannerstone fragment were also recovered.

Artifact density in Stratum II is markedly lower than that in Stratum I and most cultural material derives from the uppermost levels of the stratum. Stratum II produced 95 complete and fragmentary baked clay objects. Most numerous are biscuit-shaped

forms (N=21), followed by spherical (N=6), and single examples of biconical and cube/rectanguloid; the latter exhibits a set of three nested cane impressions on each of its six sides. Surface decoration, in order of decreasing frequency, includes cane punctated, plain, sharp implement punctated, and cordmarked.

The ceramic sample from Stratum II totals only 63 sherds. Almost half (N=31) are assignable to the Madison series (primarily with eroded surfaces), with 17 examples of Forked Deer and 11 Tishomingo sherds. Of the latter, 10 sherds are specimens of Withers Fabric marked, *var. Craig's Landing*. No Baldwin series ceramics were found in Stratum II, but 2 Mississippi Plain sherds were recovered from the uppermost 10 cm level within the stratum. The latter presumably reflect admixture from Stratum I.

Sixteen points and point fragments were recovered from Stratum II. Identifiable examples include a contracting stemmed point similar in form to Tombigbee Stemmed, *var. Tombigbee* (Ensor 1981: 91-92), the base of a Benton point, and a side-notched basal fragment that may represent the base of a Big Sandy.

Artifact density decreased dramatically in Stratum III, while the frequency of gastropod and unionid shells increased. A small sample of shells (N=326) was collected, but poor preservation precluded recovery of a truly representative sample. No baked clay objects were found in Stratum III and only 6 ceramic sherds were recovered, including a Baldwin paste specimen with cane punctations. The paltry ceramic assemblage from this stratum probably represents artifacts displaced from higher strata by relic hunters or bioturbation. The two projectile points from Stratum III are identified as Flint Creek, *var. unspecified* (Ensor 1981: 94-98) and Damron.

Although numerous faunal remains were recovered, virtually all specimens were highly fragmentary and friable, and none could be identified at the family level (Emanuel Breitburg, personal communication). Several pieces of modified large mammal long bones were noted.

Since the deposits at 40GB42 do not represent a sequence of superimposed occupation zones, no soil samples were floated. A total of 25 soil samples, primarily from general fill, but also several features (later revealed to be burial pits), were waterscreened through standard windowscreen. As summarized in Table 57, over 357 g of charred botanical remains were recovered, of which the residual portion comprised 61.8 g.

Charred hickory nutshell fragments account for the vast majority of the identifiable botanical assemblage (288.8 g). Over half of this amount (150.7 g) was recovered from the fill of Feature 5, while Features 6 and 8 yielded 35.9 g and 42.8 g, respectively. Oak and hickory dominate the identified wood specimens. This is somewhat interesting insofar as 40GB42 occupies a floodplain environment. Mulberry, minimally represented in the botanical assemblage, presently flourishes in the vicinity of the site.

Eleven human burials and two dog burials were encountered within Stratum III; five additional individuals, attributed to a "Benton component," were identified by Smith (1979a, 1991) during earlier testing. Within the area exposed by our excavations, which partially overlapped one of Smith's units, the density of burials is notably high, implying that Stratum III is primarily associated with a mortuary function.

Total weight	357.7
Residual	61.8
NUT (weight)	
Hickory (*Carya* sp.)	288.8
Hazelnut (*Corylus americana*)	0.1
Walnut (*Juglans* sp.)	1.2
Acorn (*Quercus* sp.)	0.2
WOOD/GRASS (total weight)	5.6
WOOD/GRASS fragments	
Cane (*Arundinaria* sp.)	1
Grass stem	2
Hickory (*Carya* sp.)	30
Persimmon (*Diospyros virginiana*)	1
Beech (*Fagus grandifolia*)	4
Ash (*Fraxinus* sp.)	3
Honey Locust (*Gleditsia triacanthos*)	2
Mulberry (*Morus rubra*)	2
Sycamore (*Platanus occidentalis*)	3
Oak (*Quercus* sp.)	91
Bark	4
Diffuse porous	3
Unidentifiable	34
SEEDS/FRUITS (total weight)	<0.1
SEEDS/FRUITS (number)	
Persimmon (*Diospyros virginiana*)	2
Greenbriar (*Smilax* sp.)	1

Table 57. Botanical remains from 40GB42.

Interments were exposed only to the extent necessary to identify the remains as human; no osteological analysis was performed. Three primary flexed burials and two bundle burials were identified; burial positioning was not determined for the remaining interments due to incomplete exposure. No grave accompaniments were observed.

Only one individual, a flexed inhumation, was interred within a recognizable pit within a large (176 cm north/south, > 200 cm east/west), shallow basin (Feature 5) that was excavated into subsoil at the base of Stratum III. The size of this feature suggests that it was originally constructed for a non-mortuary purpose and was subsequently used as a burial repository; this interpretation is supported by the large quantity of hickory nut fragments recovered from the fill. None of the burials appear to be intrusive from higher strata; in several instances Stratum II was observed intact above an underlying interment. This fact, as well as the lack of identifiable burial pits, suggests that Stratum III represents an accretional mortuary structure. The virtual lack of cultural material clearly militates against this stratum constituting an occupation layer.

The paucity of artifacts also makes it difficult to place Stratum III within a tight chronological framework. If Stratum III and its inclusive burials were deposited during the Tchula or Woodland periods, greater admixture of materials from the upper levels of the site would be expected; as noted above, only six sherds were found within Stratum III, despite extensive excavation, and there is no indication of burial pits intrusive through Stratum II. The flexed and bundle burials are suggestive, but by no means diagnostic, of the Late Archaic period. Unfortunately, no temporally diagnostic artifacts were observed in association with any of the burials and no charcoal samples suitable for radiometric assays were obtained from Stratum III.

Interpretation of Stratum III as a preceramic burial mound is admittedly tenuous, and no comparable structures have been recorded in the Central Mississippi Valley (cf. Morse and Morse 1983). There is, however, an increasing body of data indicating that mound construction in Louisiana may have begun as early as 4000 B.C. (Gibson and Shenkel 1988; Saunders and Allen 1993). Moreover, no major conceptual leap is required between use of a locality as a formal cemetery that expands horizontally over time to expansion of the cemetery in the vertical dimension (i.e., mound construction) as well.

At the very least, our excavations demonstrate that 40GB42 is not a deeply stratified habitation site, as suggested by Smith (1979a, 1991), although the recovered artifacts are indicative of a fairly long time span. Virtually all cultural material occurs in the upper two stratigraphic zones. Moreover, these upper strata (particularly Stratum I) are sufficiently disturbed and/or mixed that no meaningful interpretation of relative chronological placement of various artifacts (i.e., ceramics and baked clay objects) can be inferred from the data obtained during our excavations, which are far more extensive than those of Smith. This invalidates the suggestion by Smith (1991: 55) that a Poverty Point period "Kenton component" exists as a distinguishable cultural entity at 40GB42.

Additionally, we found no indications of the "midden and pits . . . heavily laced with charred hickory nut hulls" mentioned by Smith (1991: 48) in reference to the site, although hickory nut remains were found in the fill of several burial pits. Examination of collections, artifact inventories, and field notes at the C.H. Nash Museum-Chucalissa failed to provide any evidence that charred hickory nuts were recovered during Smith's test excavations.

Finally, the "Benton" zone identified by Smith (1979a, 1991) actually represents a buried A soil horizon that contains a variety of ceramics and baked clay objects. Indeed, other than the recovery of several fragmentary Benton points, there is little basis for positing a Benton occupation at 40GB42.

The results of intensive testing at 40GB42 must be regarded as very disappointing. Based on previous descriptions of the site, we assumed that our considerable efforts would be rewarded with a wealth of data from good stratigraphic contexts on several poorly documented time periods in west Tennessee. As discussed above, the site obviously did not meet our expectations. Our investigations have served to clarify previously published erroneous interpretations of 40GB42 (Smith 1979, 1991), but unfortunately the site has contributed very little to an increased understanding of west Tennessee prehistory. The possibility, which we regard as fairly strong, that the lowest artifact bearing stratum represents a Late Archaic mortuary mound, probably could not be definitively resolved by further excavations due to the degree of disturbance to the site. This interpretation may, however, prove testable at other sites in the Obion-Forked Deer drainage.

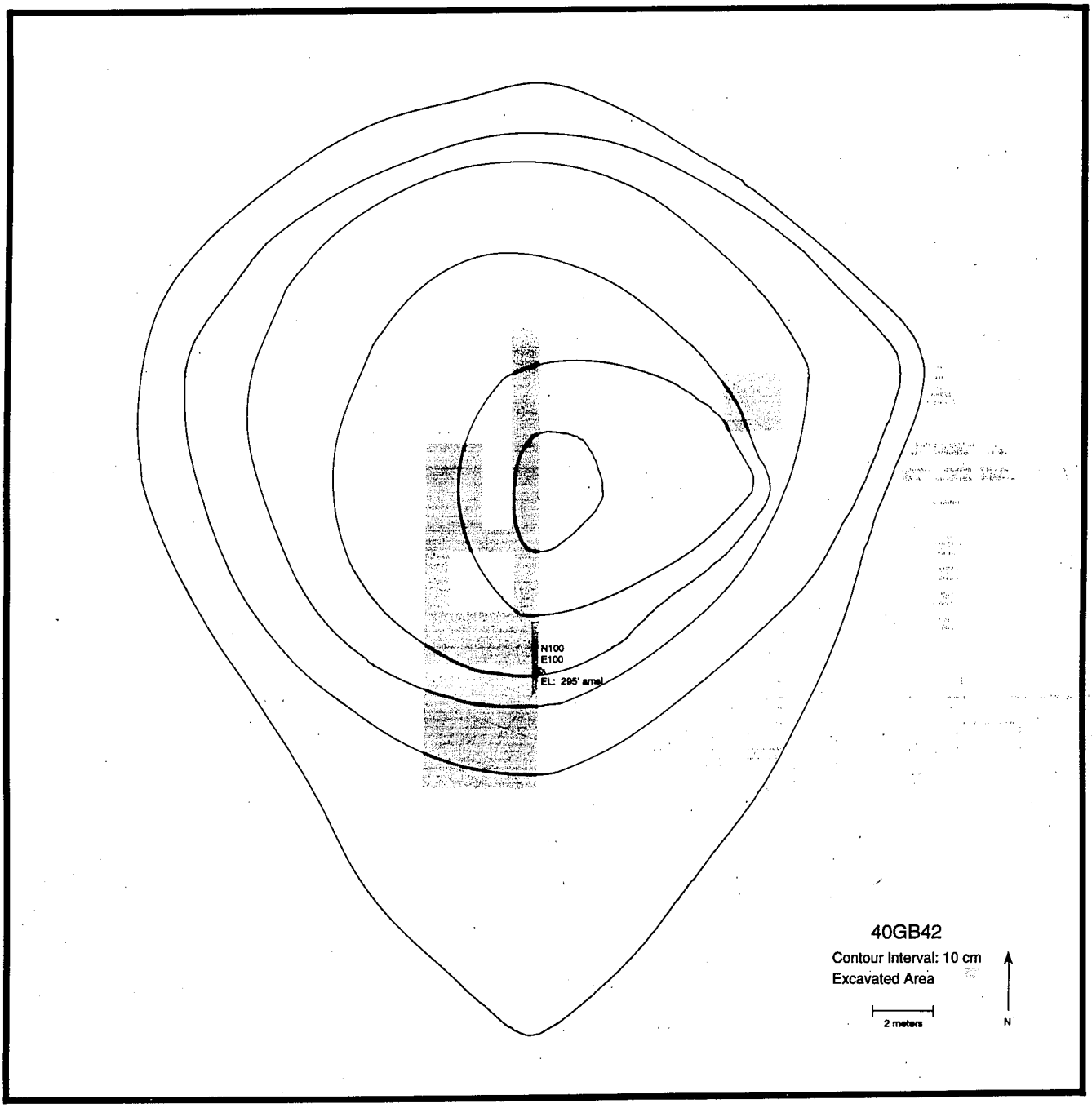


Figure 19. Topographic Map of 40GB42, Showing Excavation Units.

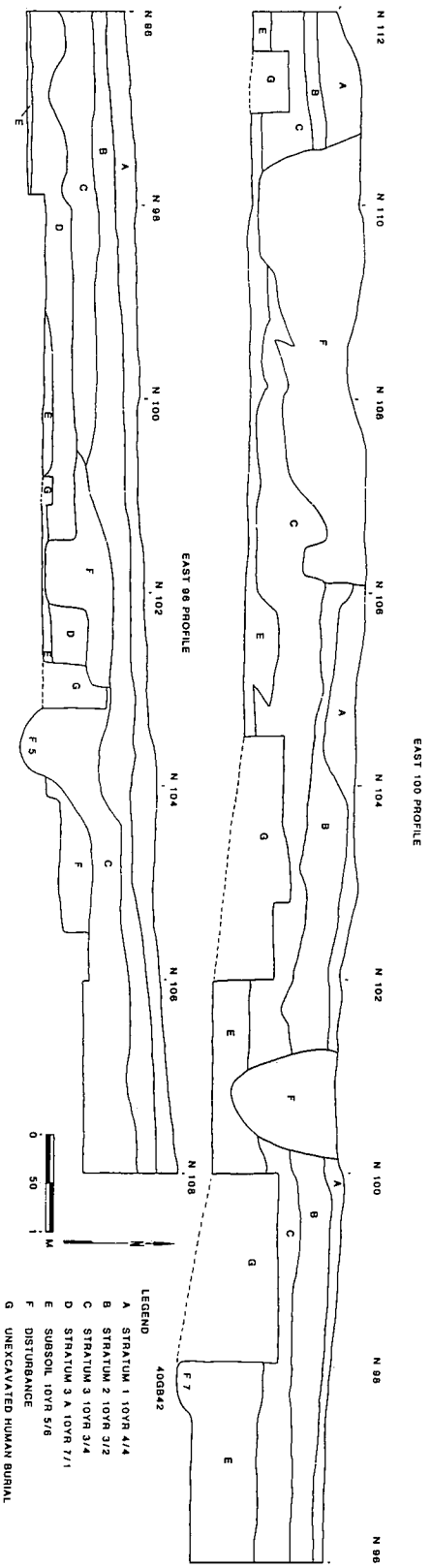


Figure 20. Selected Profiles, 40GB42.

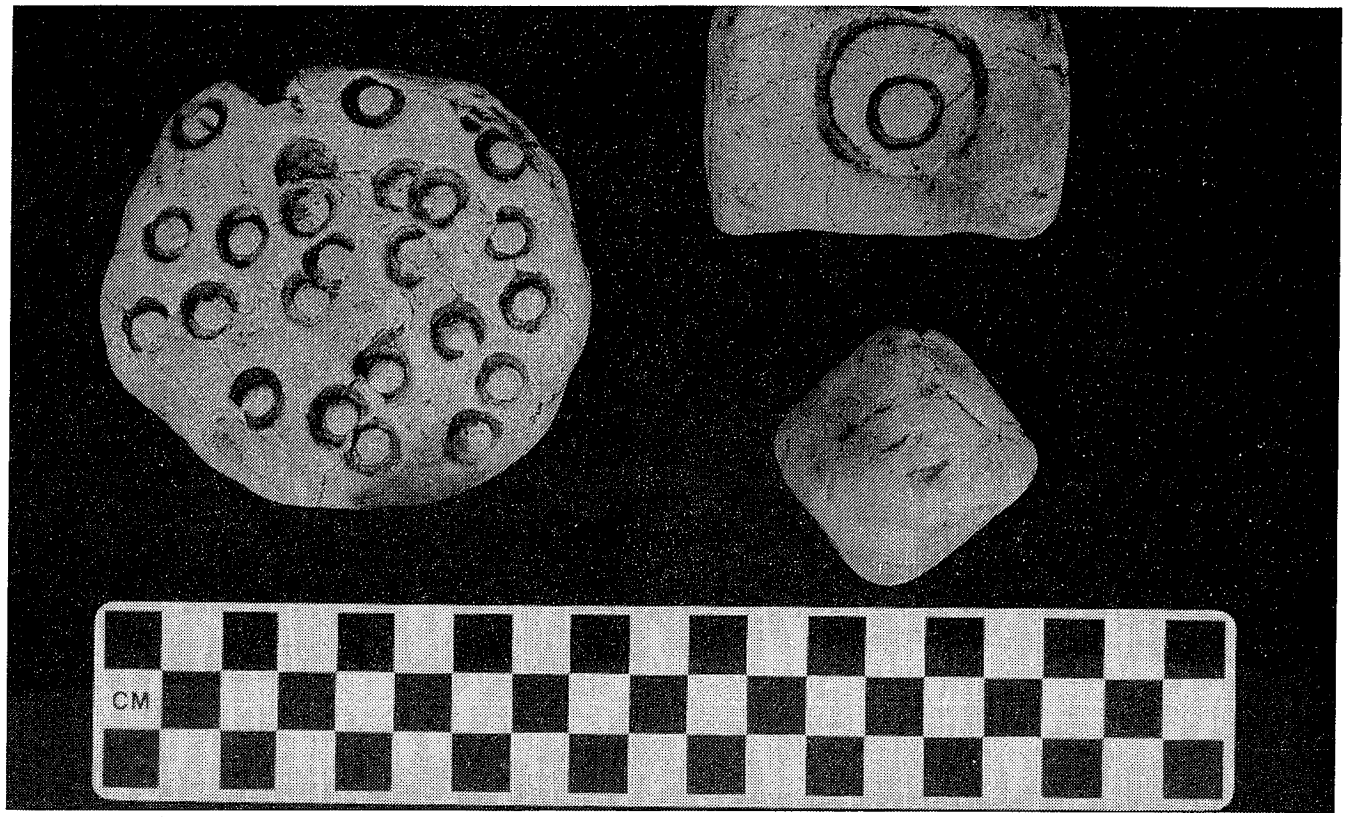


Figure 21. Baked Clay Objects, 40GB42.

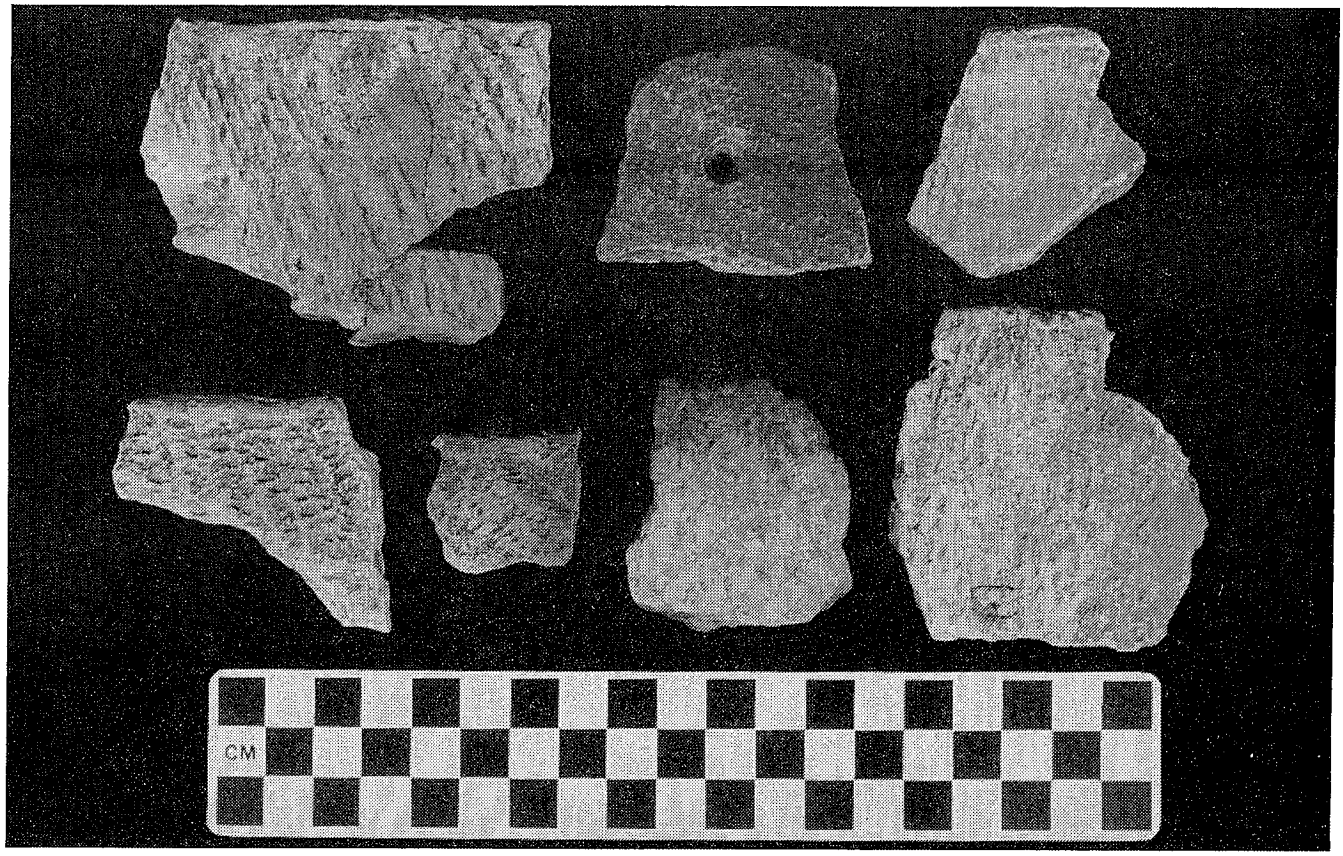


Figure 22. Ceramics, 40GB42.

Figure 23. Lithic Artifacts, 40GB42.

Kenton Mound group (40OB4)

The Kenton mound group (40OB4) is located on an upland area at the confluence of the Rutherford and South Forks of the Obion River (Mainfort 1992; see Figure 1). As recorded by Douglas Osborne and George Lidberg on March 17, 1941 (presumably during a break in their work at the Obion site), the site consisted of "4 pyramidal mounds - 3 smaller mounds which have been plowed over. No village present." The largest mound is stated to have been 25 feet tall, with a diameter of 150 feet (since this was a rectangular platform mound, the latter figure probably is an estimate of the length of one side). A small mound (perhaps the smallest of the platforms) was approximately 5 feet tall and 60 feet in diameter.

The site area apparently was later visited by Memphis State University staff during the course of, or prior to, G. Smith's survey work within the Obion-Forked Deer drainage (1979a: 127), but despite the size and obvious importance of this mound complex, it did not receive mention in his listing of "significant" sites (1979a: 11-37). Parenthetically, the same may be said of the Johnston mound group (40MD3), which is considered to be culturally related to Pinson Mounds (Kwas and Mainfort 1986).

Inspection of old aerial photographs and recent field surveys indicate that the complex included a minimum of six mounds. Unfortunately, the largest earthwork was bulldozed circa 1971 (Helmut Wenz, personal communication). About 300 meters southeast of the destroyed earthwork are the remains of a second rather substantial mound. Plowing has reduced this earthwork to a low, oval rise that is scarcely visible. A possible burial mound measuring approximately 14 m in diameter and 3 m in height is located several hundred meters northeast of this mound remnant. It appears to be fairly well preserved and is not currently under cultivation.

A fourth earthwork, 16.5 m in diameter and 3.5 m tall, is located near the center of the mound complex. A property line bisects the mound, and the owner of the western half elected to remove his portion of the earthwork with heavy machinery 20 or more years ago. The eastern portion remains relatively intact.

The western face of this mound was profiled to obtain construction sequence data and to determine mound function. Several small trees, brush, and other overgrowth were removed from the mound face and a fresh profile was cut causing as little damage to the earthwork as possible. Several slot trenches were excavated along the base of the profile in order to expose the lowest portion of the mound and to search for submound features.

Two distinct construction episodes were revealed in the profile (Figure 24). The initial construction stage consists of basketloaded brown (10YR5/3), yellowish brown (10YR5/4), and dark yellowish brown (10YR4/4) fill. Individual basketloads are easily identifiable. This mound measured approximately 11.6 m in diameter, with a maximum height of 2.7 m, and was constructed on sterile yellowish brown (10YR5/6) subsoil, the humus zone having been removed prior to construction. No evidence of submound features were exposed during our limited excavations.

The upper mantle consists of dark yellowish brown (10YR4/4) clayey loam and ranges in thickness from 2.3 m to 50 cm near the present summit. Only a single individual basketload, located slightly above the initial mound, was discerned within this construction stage. No cultural material was present in this basketload.

No features, burials, or evidence of structure floors are present in the exposed profile, and no prehistoric artifacts were recovered during excavation. The lack of artifacts in the mound fill is consistent with the results of several surface collections made by TDOA staff at 40OB4 under ideal field conditions. All collections from the site are very small, suggesting that substantial prehistoric habitation deposits were never present at the site. Ceramics include specimens of Mississippi Plain, Baytown Plain, and Varney Red; a single Madison point has also been collected.

Mainfort (1992) has suggested that the Kenton mound group (40OB4) and three similar sites in the west Tennessee interior, represent vacant ceremonial centers that were constructed early in the Mississippian period. Each of the sites includes at least one fairly large platform mound and all exhibit a conspicuous lack of cultural materials. With the exception of the Ames Plantation group, shell tempered ceramics have been collected from each site.

Comparable sites have not been recorded in the Mississippi River counties of Tennessee, where the greatest concentration of Mississippian sites is located. The lack of similar sites in the Mississippi Valley is not the result of inadequate surveys because this area has been a focus of considerable research efforts (e.g., Mainfort 1991). If comparable sites ever existed in the Mississippi River valley, it seems likely that they have been masked by subsequent deposits associated with Mississippian towns (Mainfort 1992).

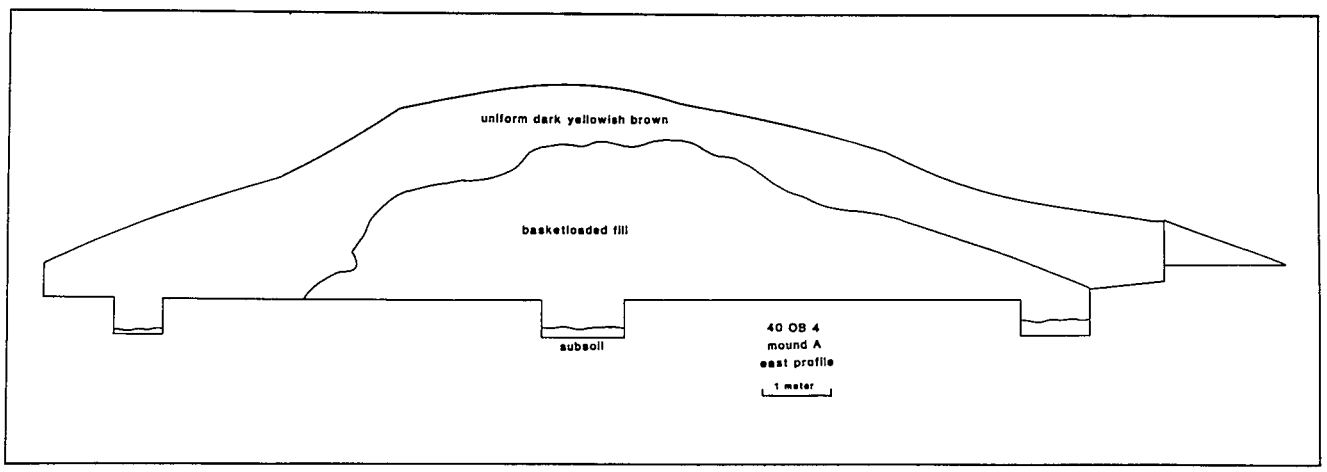


Figure 24. West Profile, Mound A, Kenton Mound Group.

Chandler site (40CL64)

The Chandler site (40CL64) occupies the end of a narrow, upland peninsula that extends into the floodplain of the South Fork of the Obion River, approximately 3.5 km downstream from the confluence of Crooked and Beaver Creeks (Figure 1). The dredged channel of the South Fork lies about 1 km to the southwest, while the former natural channel is about 500 m in the same direction. A light scatter of artifacts is present over an area measuring approximately 100 m by 40 m, but shovel testing indicates that subsurface deposits are limited to an area of about 40 m by 20 m. Although cultivated in the recent past, the Chandler site is covered by pasture and secondary growth timber, and is presently utilized to graze cattle. Unfortunately, relic hunters had been very active at the site prior to our initial visit, and most of the remaining intact deposits were destroyed soon thereafter. There was a clear intention to "get the good stuff" before the archaeologists did.

Because of severe vandalism, our excavations were limited to a single 2 m^2 unit which was excavated to a depth of 128 cm below surface. Beneath a 20 - 25 cm thick plowzone, a 20 - 34 cm thick deposit of very dark brown silt loam was encountered. When originally identified during shovel testing, this soil unit was interpreted as an intact midden, but excavation revealed the presence of recent debris, indicating that the deposit simply represents redeposited fill from relic hunting activities. Nonetheless, a moderate number of prehistoric artifacts were recovered, including 6 Baytown Plain, *var. Madison* sherds, 5 Withers Fabric Marked, *var. Cypress Creek*, 148 small baked clay object fragments, 16 pp/k fragments, 2 biface fragments, and a hammerstone. Hafting elements were present on only 3 of the pp/k fragments. One exhibits a straight stem, while the other 2 are expanding stem forms assignable to the Bakers Creek type.

Below the disturbed deposit, was a 10-35 cm thick layer of compact very dark grayish silt loam that apparently represents an undisturbed prehistoric occupation zone. Artifact density dropped markedly, consisting of only 29 small baked clay object fragments and a hafted scraper. The scraper exhibits an expanding stem and the blade edge is concave, suggesting a woodworking function.

At the base of the intact deposit was a large oval pit, with inslanting sides and a flat base, that intruded into subsoil. This feature measured 190 cm by 130 cm, with a minimum depth of 74 cm. Although the precise level of origin could not be determined, the feature clearly originated below the upper disturbed deposits. Feature fill consisted of a grayish brown loam mixed with ash, charcoal flecks, and numerous burned clay fragments. The pit walls exhibited clear indications of exposure to fire. Calcined bone and small fragments of shell were also recovered, but none were large enough to permit identification. The only artifact from the feature was a distal pp/k fragment.

A total of 775 faunal elements and 3 pieces of human bone were recovered from the Chandler site. Results of analysis by Emanuel Breitburg are summarized below in Table 58. The limited extent of excavations limits meaningful interpretation of the data.

A large amount of charcoal was found at the base of the feature. Two samples produced calibrated radiocarbon dates of B.C. 5530 (5479) 5364 (TX-7794; 6520 80 bp) and B.C. 5612 (5493) 5476 (TX-7795; 6600 70 bp). These represent the first Middle Archaic radiocarbon determinations for the west Tennessee interior, but their value is severely limited by the virtual absence of associated artifacts. This situation serves to underscore the potential value of data from the Chandler site that has been destroyed by vandals.

Taxa	Count	MNI	Burned	Cut	Modified
Deer	52	2	8	2	0
Mink	1	1	0	0	1
Raccoon	1	1	0	0	0
Fox Squirrel	2	1	1	0	0
Gray Squirrel	2	1	0	0	0
Woodchuck	2	1	1	0	0
Common Mole	1	1	0	0	0
Rabbit	1	1	1	0	0
Turkey	3	1	0	0	0
Duck spp.	1	1	0	0	0
Box turtle	8	1	0	0	0
Pond turtle	1	1	0	0	0
Stinkpot	1	1	1	0	0
Snake spp.	2	1	0	0	0
Mammal - UID	435	N/A	256	0	1
Bird - UID	54	N/A	28	0	0
Reptile - UID	189	N/A	114	0	1
Fish - UID	1	0	0	0	0
Bivalve	4	N/A	1	0	0
Misc. UID	14	N/A	2	0	0
TOTALS	775	15	414	2	10

Table 58. Faunal remains from the Chandler site.

Barner site (40WK83)

The Barner site (40WK83) is a large midden mound situated on the south bank of a former channel of the North Fork of the Obion River, approximately 5 km north of Martin, Tennessee (Figure 1). Maximum dimensions of the site are as follows: 28 m north/south; 35 m east/west; 80 cm in height (see Figure 25). Local informants report sporadic excavations by collectors over the past 30 years, but the site appears to be remarkably intact.

Two 2 m by 2 m test units were excavated at the Barner site, one to a depth of 37 cm below surface. In this unit, a tightly flexed burial was exposed at the base, but not excavated; the remains appeared to be those of an adult male. Also recorded in the unit was a dog burial, apparently not associated with the human interment. The second test pit reached a depth of 80 cm before encountering sterile subsoil.

Stratigraphy is straightforward. A thin (15-20) cm plowzone overlies the dark gray (10YR4/1) clay midden, which contains numerous gastropod and unionid shells. No distinct concentrations of shells were observed. Subsoil consists of yellowish brown (10YR5/4) silty clay, probably representing a relict levee deposit from the river.

A single large pit (Feature 1) with expanding sides was recorded at a depth of 40 cm below surface and continued well into subsoil. The top was essentially circular in plan view, with an upper diameter of 56 cm, a basal diameter of 72 cm, and a depth of 65 cm. Cultural material from the feature includes 6 baked clay objects (3 biscuit-shaped plain, 2 biconical plain, one biscuit-shaped cane impressed), 277 unidentifiable bco fragments, a pp/k distal, and the base of a drill. Most of the faunal assemblage (Table 59) derives from the pit and exhibits varying degrees of burning. White-tailed deer are strongly represented, followed by raccoon and gray squirrel; the single bald eagle element is noteworthy. A number of species associated with an aquatic lowland environment are present, but fish remains are surprisingly scant. Modified faunal elements include 3 antler drifts, 2 antler tine flakers, and an awl fashioned from a deer tarso-metatarsal. Five small beads fashioned from *Leptoxis* (formerly *Anculosa*) shells were also recovered.

Relatively few sherds of prehistoric ceramics were recovered from the Barner site, most of which derived from the plowzone. These include 5 Withers Fabric Marked, *var. Withers*, 5 Mulberry Creek Cordmarked, *var. Westover* (including a basal sherd from a flat-based jar), and 2 eroded Madison series sherdlets. A single eroded Forked Deer series sherdlet was found near the base of the midden.

Cultural material not associated with the pits includes 2 biscuit-shaped cane impressed baked clay objects, 282 unidentifiable bco fragments, a ferruginous siltstone gorget fragment, 3 bone awl fragments, 4 pitted ("nutting") stones, an anvil stone, 2 biface fragments, 3 pp/ks (one Pickwick, one Bakers Creek, one straight stemmed), and 3 unidentifiable pp/k fragments.

A single large soil sample from Feature 1 was waterscreened through standard windowscreen, and yielded 17.0 g of identifiable botanical remains. Charred hickory nut shell fragments comprise 16.2 g of the sample, with walnut contributing only 0.1 g. Among the identifiable wood charcoal, are 4 specimens of hickory and single examples of ash, cherry, oak, and cane. One grape seed was also identified, as was a maize kernel; the latter undoubtedly represents a modern intrusion

Time and personnel constraints did not permit additional testing at the Barner site. In retrospect, it is unfortunate that this site was not recorded sooner and that more extensive excavations could not have been conducted, since the Barner site appears to represent a well-preserved early Tchula period occupation. There is excellent potential for the recovery of subsistence data, as well as material for radiocarbon dating.

Finally, it must be noted that, to the best of our knowledge, the Barner and Atnip sites represent the first midden mounds to be recorded in the Obion-Forked Deer drainage. Numerous others are undoubtedly present, and the physical setting of these two sites should prove instructive in locating comparable sites.

Taxa	**Count**	**Burned**	**Cut**	**Modified**
Deer	167	17		4
Elk	1	0	0	0
Pig	1	0	0	0
Beaver	2	0	0	0
Muskrat	2	0	0	0
Raccoon	13	3	0	0
Fox Squirrel	2	0	0	0
Gray Squirrel	12	6	0	0
Squirrel spp.	4	1	0	0
Chipmunk	1	0	0	0
Common Mole	1	0	0	0
Opossum	5	0	0	0
Cottontail Rabbit	2	0	0	0
Swamp Rabbit	1	0	0	0
Rabbit	1	0	0	0
Gray Fox	7	1	0	0
Dog spp.	1	0	0	0
Turkey	1	0	0	0
Quail	1	0	0	0
Bald Eagle	1	0	0	0
Pie-billed Grebe	1	0	0	0
Box Turtle	9	3	0	2
Stinkpot	4	0	0	0
Turtle spp.	186	61	0	0
Colubrid snake	2	0	0	0
Viperid snake	4	0	0	0
Snake spp.	1	1	0	0
Leptoxis spp.	5	0	0	5
Frog/Toad	4	0	0	0
Mammal - UID	1201	736	0	2
Bird - UID	69	6	0	0
Reptile - UID	12	4	0	0
Fish - UID	13	3	0	0
Bivalve	3	1	0	0
Misc. UID	2	1	0	0
TOTALS	1742	844	0	13

Table 59. Faunal Remains from the Barner Site.

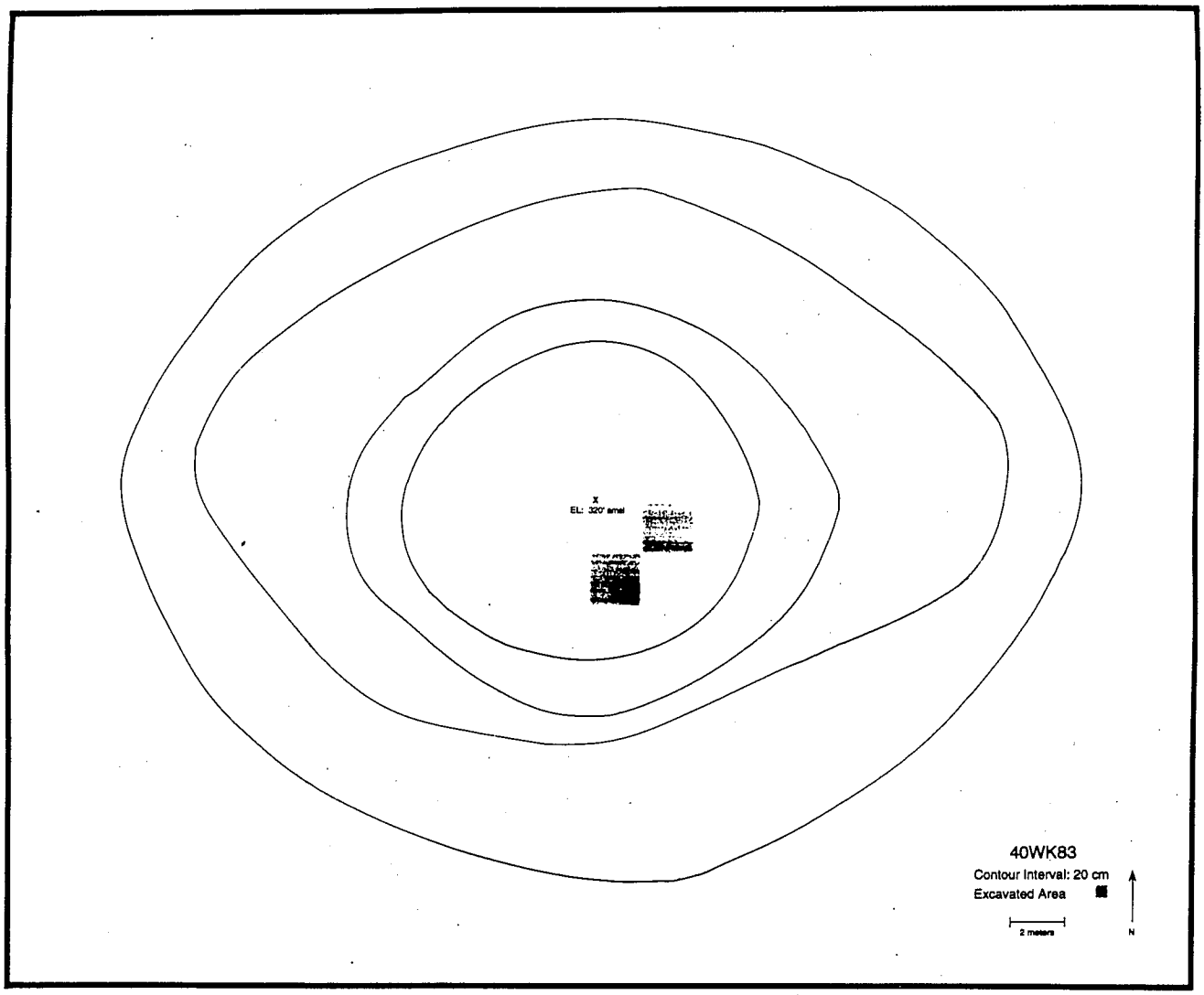


Figure 25. Topographic Map, Barner Site, showing excavation units.

A small amount of prehistoric cultural material was observed on the surface approximately 60 m north of the Barner site, on the opposite side of the former channel of the North Fork of the Obion River. This locality, designated as 40WK84, was tested based on its possible relationship to the Barner site. Two 2 by 2 m test units were excavated to a maximum depth of 35 cm below surface. All traces of prehistoric occupation were found within the plowzone, although our limited testing obviously does not rule out the possibility that the intact bases of some features may be present.

Excavated ceramics include Baytown Plain, *var. Forked Deer* (N=2), Withers Fabric Marked, *var. Withers* (N=1), Baytown Plain, *var. Madison* (N=6), and 6 untyped eroded sherdlets. Baked clay objects are represented by a single ellipsoidal plain specimen and 43 unidentifiable fragments. Among the lithic artifacts are a Pickwick pp/k, an unidentified side-notched basal fragment, a stemmed pp/k that may be a Benton variant, 2 hafted scrapers with expanding stems, an unidentified lateral fragment, and the distal portion of a drill. Two pitted "nutting" stones were also recovered.

Like the Barner site, 40WK84 appears to be an early Tchula period occupation. Our test excavations suggest that additional testing at Barner would be far more productive than at 40WK84.

The Oliver Site (Robert C. Mainfort, Jr., and William L. Lawrence)

The Oliver site (40OB161) is located within the uplands near the headwaters of Hoosier Creek, a tributary of the Obion River, several kilometers northwest of Union City, Tennessee (Figure 1). The west-flowing Reelfoot Creek drainage lies approximately 8 km to the west. Local soils are those of the Grenada group, which are well-suited for row crop agriculture (Brown *et al* 1973). When first visited, an abundance of prehistoric ceramics and dark midden staining were observed on the surface, and a large surface collection was made. The site encompasses a minimum of 4.5 ha and probably is somewhat larger. Approximately 3 ha lie within the holdings of Mr. Junior Oliver, after whom the site is named. Soil probe tests revealed the presence of intact midden deposits below the plow zone.

Preliminary analysis of the surface collection demonstrated that the ceramic assemblage was overwhelming dominated by Mulberry Creek Cordmarked sherds that are indistinguishable from similar ceramics that are well-known from Late Woodland/Emergent Mississippian contexts in the Reelfoot Lake Basin to the west (e.g., Mainfort 1989). Moreover, a moderate quantity of Varney Red was also collected, as were several Madison projectile point fragments. Evidence from the surface collection, therefore, suggested that the Oliver site was roughly contemporary with a number of large, untested sites in the Reelfoot Lake Basin, and was occupied primarily between roughly A.D. 800 and A.D. 1000. Since not only is excavated data lacking for the presumably contemporary sites near Reelfoot Lake, but also the fact that no upland sites comparable to Oliver have been identified in western Tennessee, the Oliver site was selected for intensive testing.

Fieldwork at the Oliver site was conducted during late May, June, and early July, 1992 by TDOA staff and several field school students from the Department of Anthropology, Memphis State University. A total of 24 two-meter squares encompassing some of the highest portions of the site on the Oliver family property was excavated (Figure 26). A relatively small area was investigated in order to minimize the amount of land that Mr. Oliver generously agreed to withhold from agricultural production. After completion of the initial test units, block excavations were conducted in two localities approximately 8 m apart. Use of block excavations was dictated by our interest in exposing definable feature clusters, while achieving a moderate amount of spatial coverage within the area available for testing.

A horizontal grid of two-meter squares was established across the area selected for testing, with the source point designated as N100E100. Vertical control was maintained with reference to a datum point defined by a nail driven into a large gate framing post of treated lumber. Excavation proceeded using arbitrary 10 cm levels; as possible and appropriate, natural stratigraphic levels were employed.

With the exception of the plowzone and samples retained for flotation or waterscreening, all excavated soil was passed through 1/4 inch mesh screen. Selected samples from the plowzone were also screened. To the extent possible, two-liter soil samples from excavated features (excluding posts) were retained for flotation, with the bulk of the remaining feature fill saved for waterscreening. Flotation and waterscreen samples were also collected from midden contexts as deemed appropriate.

Stratigraphy at the Oliver site is fairly straightforward. A plow zone extending to a depth of roughly 20 cm below ground surface is present across the investigated portion of the site. A dark brown midden averaging about 20 cm thick lies below the plowzone

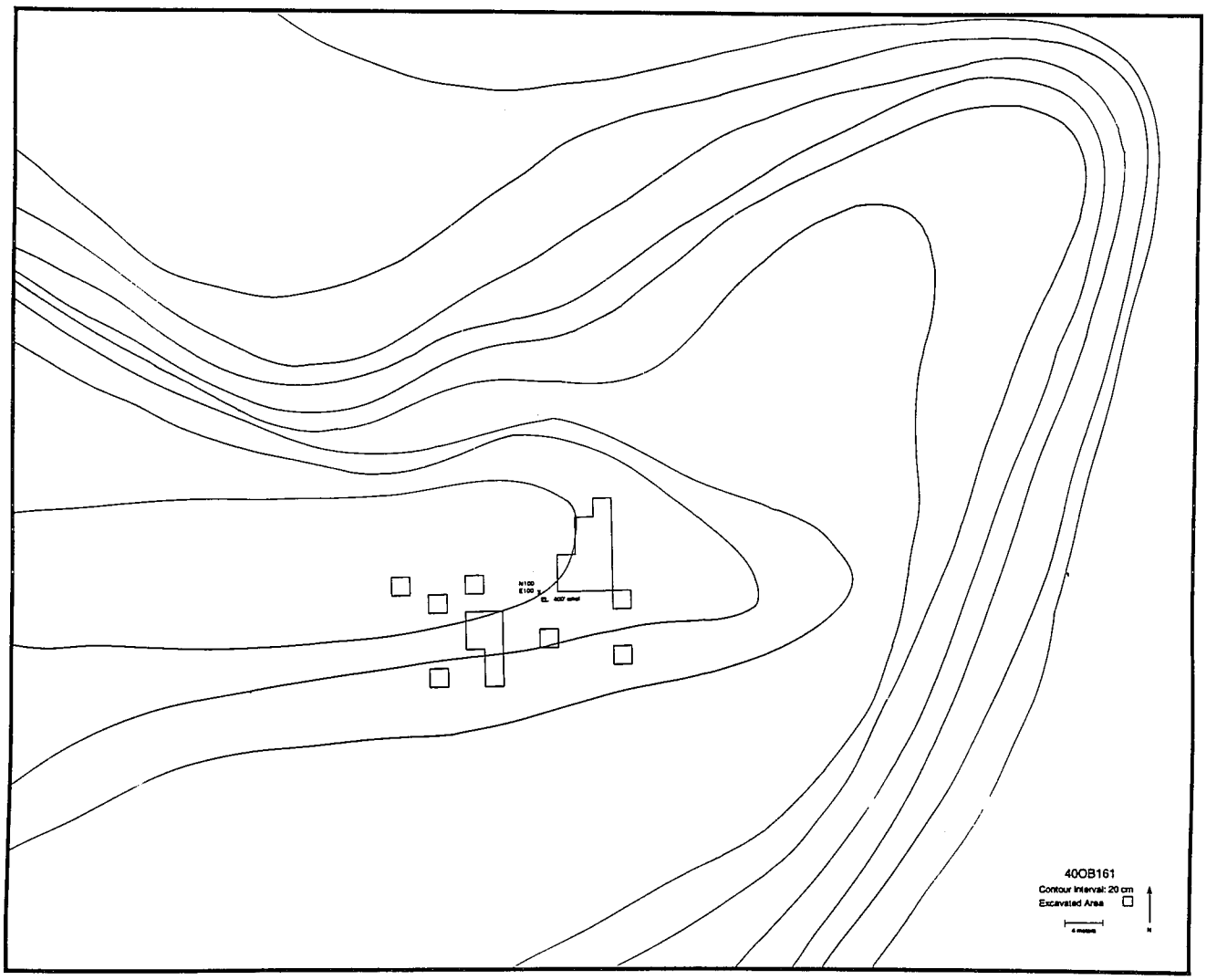


Figure 26. Topographic Map, Oliver Site, showing excavation units.

in the eastern excavation block. Very little intact midden was observed in the western block, with the remains of prehistoric features appearing immediately at the base of the plow zone, especially in the more southern units.

Where substantial midden deposits remained intact, definition of features in subsoil was hampered by considerable downward leaching of organic matter. That is, there is no abrupt change in soil coloration at the base of the midden, rather a gradual fading; this is represented by "stratum 2" in the profile drawings. In several instances, individual features could not be defined until excavations reached in excess of 20 cm below the base of the actual midden (as defined by artifact density and subsequently in profiles). Indeed, it is likely that several features went undetected in the initial excavation units before this situation became evident. Possible features were shovel skimmed or troweled until the outline was clearly defined. Features were then cross-sectioned along the axis, photographed, and drawn. Soil samples were retained as noted above.

Representative stratigraphic profiles are presented in Figures 27 through 29. The dark brown (10YR 3/3) midden is identified as "stratum 1," with the underlying organically stained (but lighter in color) subsoil deposits (10YR 4/2) represented by "stratum 2." Basal subsoil consists of dark yellowish brown (10YR 4/4) loess.

Although the artifact assemblage from the Oliver site (discussed below), is dominated by clay tempered ceramics, with a rather small minority of shell tempered wares, there is absolutely no stratigraphic evidence that suggests that these temper groups represent two distinct, sequent occupations. Nor does the horizontal distribution of shell tempered ceramics and such putative Mississippian types as Kimmswick Fabric Marked and Wickliffe Thick. Quite the contrary, it seems virtually certain that, with the exception of minor amounts of pre-A.D. 800 artifacts, as discussed below, there is but a single archaeological component present at the site.

PREHISTORIC FEATURES

Numerous posts and 53 prehistoric features were exposed during the 1992 field season at the Oliver site (Figures 30 and 31). Descriptive data on the latter are presented in Table 60. Summary statistics appear in Table 61; these are based on a total of 42 features that were completely or almost completely excavated. Many posts were initially assigned feature numbers in the field, but these numbers are not included in Table 60, nor in Figures 30 and 31.

All of the identified features are pits of various shapes and sizes. Artifact density, including burned clay fragments, within the vast majority of features was low. This, coupled with the relative uniformity of feature shape and the very low incidence of fired bases and the absence of pit linings, generally limits functional interpretations.

In Table 60, length refers to the long axis of a feature at the point of recognition, while width is the maximum measurement perpendicular to the long axis. Depths represent maximum differences in elevation between the point of recognition and the base of the feature. Volumes were calculated using standard formulae from solid geometry (e.g., Kelly *et al* 1987: 145). The volumes of two features, F-1 and 3, far exceed that of any others. It must be noted that the tabulated dimensions represent *minimum* size estimates, because only those portions of features that extended into subsoil could be recorded. This further muddies attempts at functional interpretations.

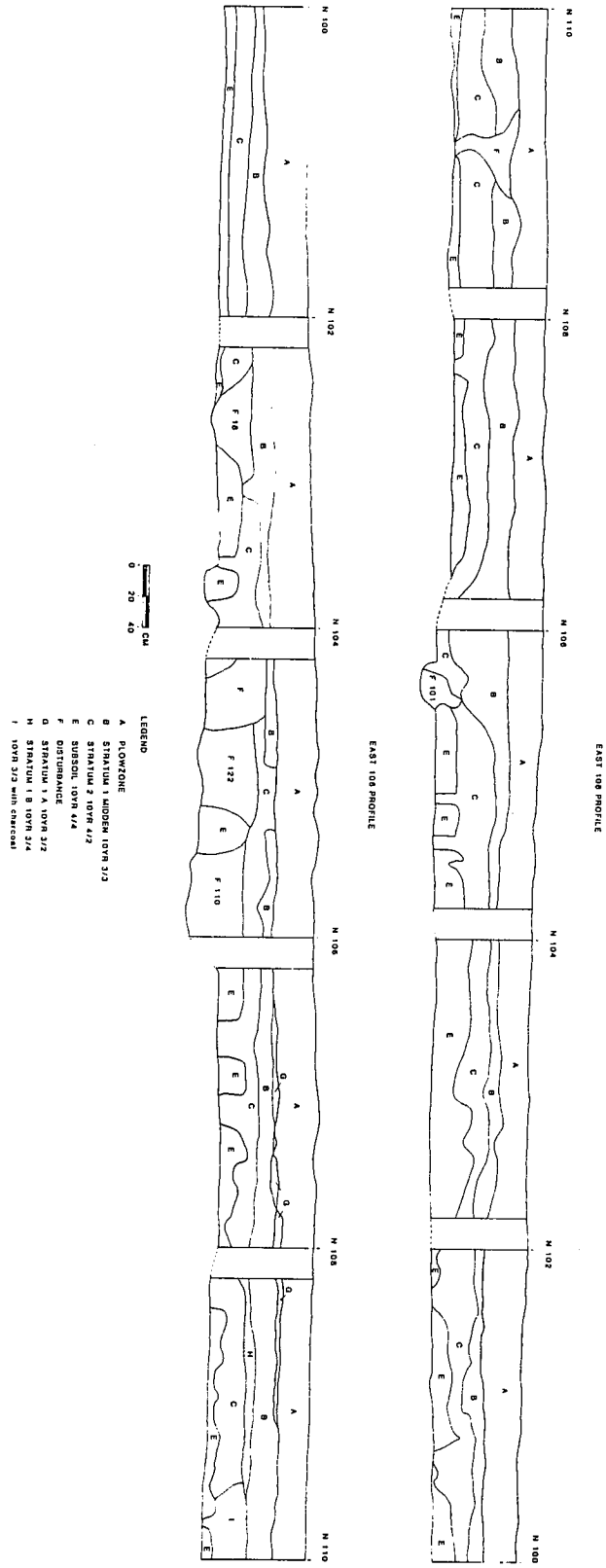


Figure 27. Selected Profiles, Eastern Block, Oliver Site.

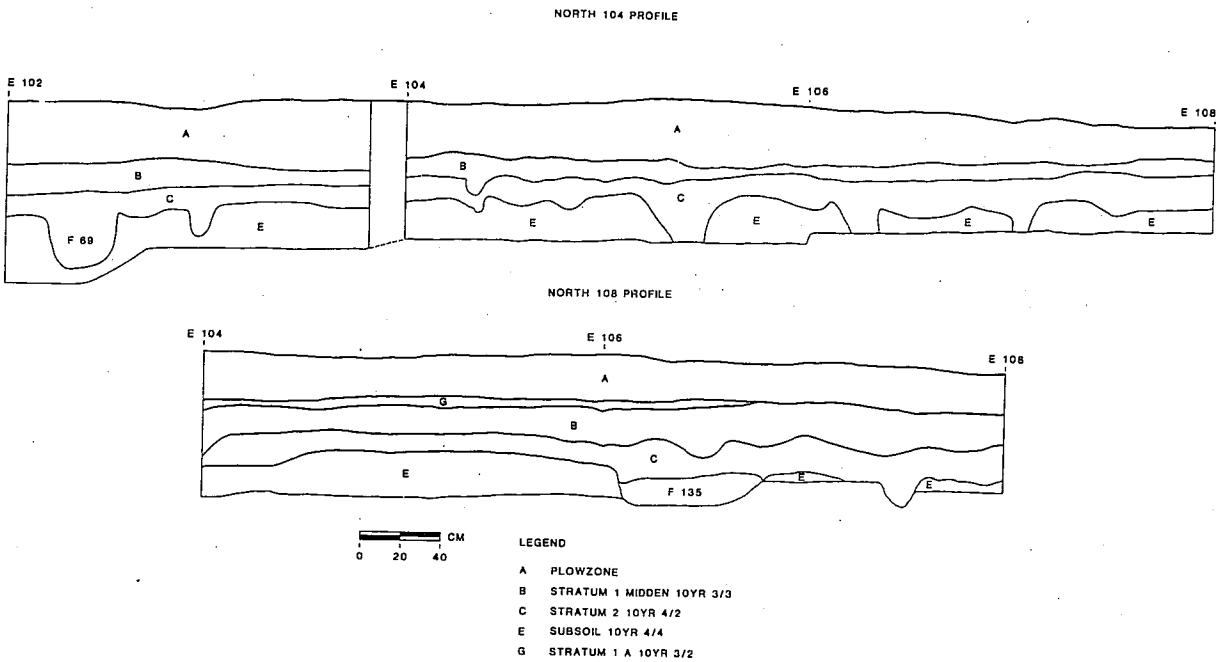


Figure 28. Selected Profiles, Eastern Block, Oliver Site.

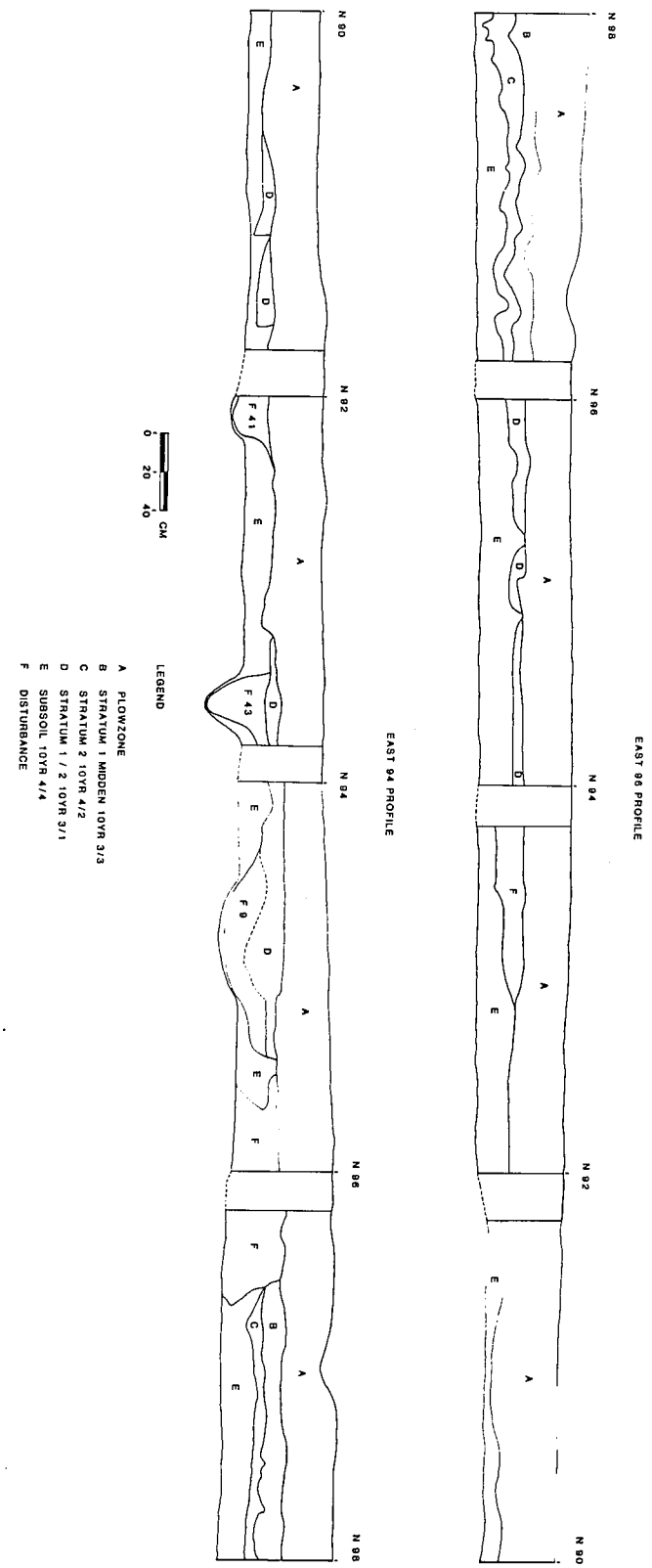


Figure 29. Selected Profiles, Western Block, Oliver Site.

Morphological data (Table 59) are based on plan and profile drawings that were compiled in the field on feature forms. Circular features closely approximate (i.e., within only a few centimeters) true circles in plan view, while oval features usually exhibit pronounced deviation from circularity. No rectangular or square features were observed. Features were generally sectioned to obtain profiles, although in some cases this proved to be impractical; profiles for features with depths of under 20 cm should be viewed with a degree of caution. Basin-shaped sides are clearly curvilinear. Vertical sides are oriented within a few degrees of true verticality, while insloping sides are straight but contracting toward the base. No features with expanding sides were recorded.

Webb (1992) classified features at the roughly contemporary Petitt site as storage facilities if they exhibited an estimated depth of at least 35 cm and an estimated volume of at least 50 liters. To obtain original depth and volume estimates, Webb added from 10 to 100 cm to feature depths based on the stratigraphic point of recognition. While he is undoubtedly correct in his assertion that in the case of the Petitt site, the resulting estimates more closely approximate the original dimensions than do the measurements obtained from portions actually observed during excavation, comparable estimates were not made for the Oliver site features largely because of the ambiguities introduced by such a procedure. As an exercise, depths and volumes of all Oliver site features were doubled. Assuming that the resulting figures more accurately reflect the original dimensions, application of Webb's size criteria suggests that only 15 features (including 2 incompletely excavated examples) at the Oliver site could plausibly be considered to have served a storage function at some point during their history. A major caveat is the significantly different preservation of midden deposits between the eastern and western blocks, i.e., features in the western block undoubtedly have lost far more of their original volume due to plowing and erosion.

Only two features exhibited fired bases; one of these (F-138B) was located immediately adjacent to a pit containing an originally intact ceramic vessel (F-138A), suggesting a possible functional relationship between the two features. A second virtually complete ceramic vessel was recovered from the nearby F-134. In the same excavation unit, F-145 exhibited a fired base. A cache of perforated mussel shells (often referred to as "hoes") was recovered from F-109.

SPATIAL ORGANIZATION OF THE OLIVER SITE

Excavation of the western contiguous block disclosed a total of 25 prehistoric features and 20 probable or possible posts (Figures 30 and 31). Feature and artifact densities were markedly lower in one of the southernmost units (N90E94), probably due to the prior removal of virtually all midden deposits and an unknown amount of subsoil by plowing and erosion. This situation is readily apparent in the north-south profile of this area (Figure 29). In fact, midden deposits were rather thin throughout most of the western block relative to those in the eastern block, and artifact densities were generally lower (Figures 32-36).

Although several possible linear alignments of posts are discernible, in the absence of other structural evidence (i.e., hearths), interpretation of these as the walls of structures is unjustified. The sparse number of features in the immediate vicinity of the N96E94 grid point is of interest, although not presently interpretable.

Feature	Unit	Length	Width	Depth	Apx. Volume	Plan	Profile	Base	Comments/ Contents
1	N100E104	75	60	49	148	oval	basin	basin	
2	N100E92	60	44	38	68	oval	basin	basin	
3	N94E100	80	80	35	110	circular	basin	basin	
7	N94E94	72	54	16	27	oval	basin	basin	
8A	N94E94	47	30	20	15	oval	basin	basin	
9A	N94E94	51	30+	19	15	oval	basin	basin	
11	N102E104	70	30	40	66	oval	basin	irregular	
17	N102E104	50	30	30	37	oval	vertical	irregular	
18	N102E106	40	20	17	19	oval	basin	basin	
22	N94E94	33	32	18	11	circular	basin	basin	
23	N102E104	40	30	20	14	oval	basin	basin	
24	N102E104	20	20	26	13	circular	irregular	irregular	disturbed?
25	N102E104	80	30	28	58	oval	inslope	irregular	disturbed?
26	N102E104	40	30	13	7	oval	basin	basin	
36	N102E106	40	39	17	13	circular	irregular	basin	
38	N100E106	33	33	29	25	circular	basin	basin	
42	N92E94	32	23	3	1	oval	basin	basin	
46	N92E94	53	43	23	27	oval	basin	basin	
52	N92E94	30	24	7	2	oval	basin	basin	
53A	N100E106	41	25	25	18	oval	basin	basin	
55	N92E94	74	54	12	20	oval	basin	basin	
57	N92E94	50	48	18	20	circular	basin	basin	
63	N102E102	61	63	20	34	circular	basin	basin	
67	N92E94	46	35	7	5	oval	basin	basin	
69	N102E102	36	14+	24	12	oval	basin	basin	
71	N102E102	96	8+	30	N/A	oval?	basin	basin	
72	N94E92	25	21	22	9	oval	vertical	flat	
73	N94E92	72	50	2?	3	oval	basin	basin	
74	N94E92	37	37	16	11	circular	basin	basin	
75	N94E92	50	20	14	7	oval	basin	basin	
77	N94E92	22	20	7	1.5	circular	basin	basin	
78	N100E102	34	35	7	3.5	circular	basin	basin	
92	N100E102	22	12+	18	5	circular?	basin	basin	charred nuts
97	N104E106	90	68	16	41	oval	basin	basin	
99	N96E92	67	54	19	37	oval	basin	flat	
100	N104E106	40	29+	43	61	oval?	inslope	basin	
101	N104E106	40	27+	27	24	oval	vertical	flat	
109	N104E106	42	24+	28	23	oval	basin	basin	mussel shell tools
110	N104E106	100+	50	34	N/A	irregular	inslope	irregular	multiple pits?
112	N104E106	68	42	10	12	oval	basin	irregular	disturbed
115B	N108E106	34	30	23	16	oval	vertical	basin	
122	N104E104	62	32	10	8	oval	basin	irregular	
128	N108E106	25	20	7	1.5	oval	basin	basin	disturbed
131A	N104E104	39	26	29	24	oval	basin	basin	
132	N104E104	24+	14+	15	4	oval	basin	basin	
134	N106E104	68	53+	19	33	oval	inslope	irregular	vessel
135	N106E106	68	42+	12	14	oval	basin	basin	
137	N106E104	60	60	30	57	circular	basin	basin	
138A	N106E104	60	30+	30	59	circular?	inslope	flat	vessel
138B	N106E104	60	30+	30	59	circular?	inslope	flat	fired base
142	N106E106	42	22+	14	7	oval?	basin	basin	
145	N106E104	41	30	35	23	oval	inslope	flat	fired base
147	N106E104	52+	20	20	12	oval?	basin	basin	

Table 60. Features recorded at the Oliver site (40OB161). Non-consecutive numbers caused by elimination of posts and soil stains subsequently determined not to be prehistoric features. Dimensions given in centimeters; approximate volumes are based on definable portions of features and are given in liters.

	Minimum	Maximum	Mean	S.D.
Length	20.0	90.0	49.9	17.6
Width	20.0	80.0	37.8	15.7
Depth	2.0	49.0	20.7	10.7
Apx. Volume	1.0	148.0	27.5	30.2

Table 61. Descriptive summary statistics for features at the Oliver site (dimensions in centimeters and liters).

The somewhat larger eastern block might be expected to provide more convincing indications of structures, but here, too, the evidence is less than compelling. The best candidate for a structure is represented by the posts in N106E106 and N108E106. These, as well as the presence of Features 134, 138, and 145, strongly suggest the presence of a structure. Also intriguing are the burned areas recorded within the midden in units N104E104 and N108E106. Unfortunately, the data are still more suggestive than definitive. The relatively high density of features throughout most of the eastern block further confounds identification of actual structures.

Distributions of various artifact classes (Figures 32-36) provide intimations of spatially distinct activity loci, but the limited extent of excavations and differential preservation of midden deposits greatly constrains interpretive potential. The distribution maps do not include material from the plowzone and represent raw total weights for each artifact class. No attempt has been made to standardize unit totals relative to volumes of surviving midden deposits.

As shown in Figures 32 and 33, the distributions of ceramics and firecracked rock are highly isomorphic. The distribution of shell fragments (Figure 34) is very similar, especially with regard to densities in the northernmost excavation units. Primary flakes exhibit a significantly different distribution (Figure 35), with very low densities in the N106 tier and a marked concentration in the N100 tier of the eastern block. The distribution of ferruginous sandstone differs markedly from that of other artifact classes (Figure 37), with an exceptionally high concentration in N102E102.

Obviously, it is tempting to postulate a functional linkage between ceramics, firecracked rock, and shell fragments, while viewing primary flakes and ferruginous sandstone as relating to other types of activities. While this is certainly plausible, without considerable additional fieldwork at the Oliver site, further discussion of spatial organization is unwarranted.

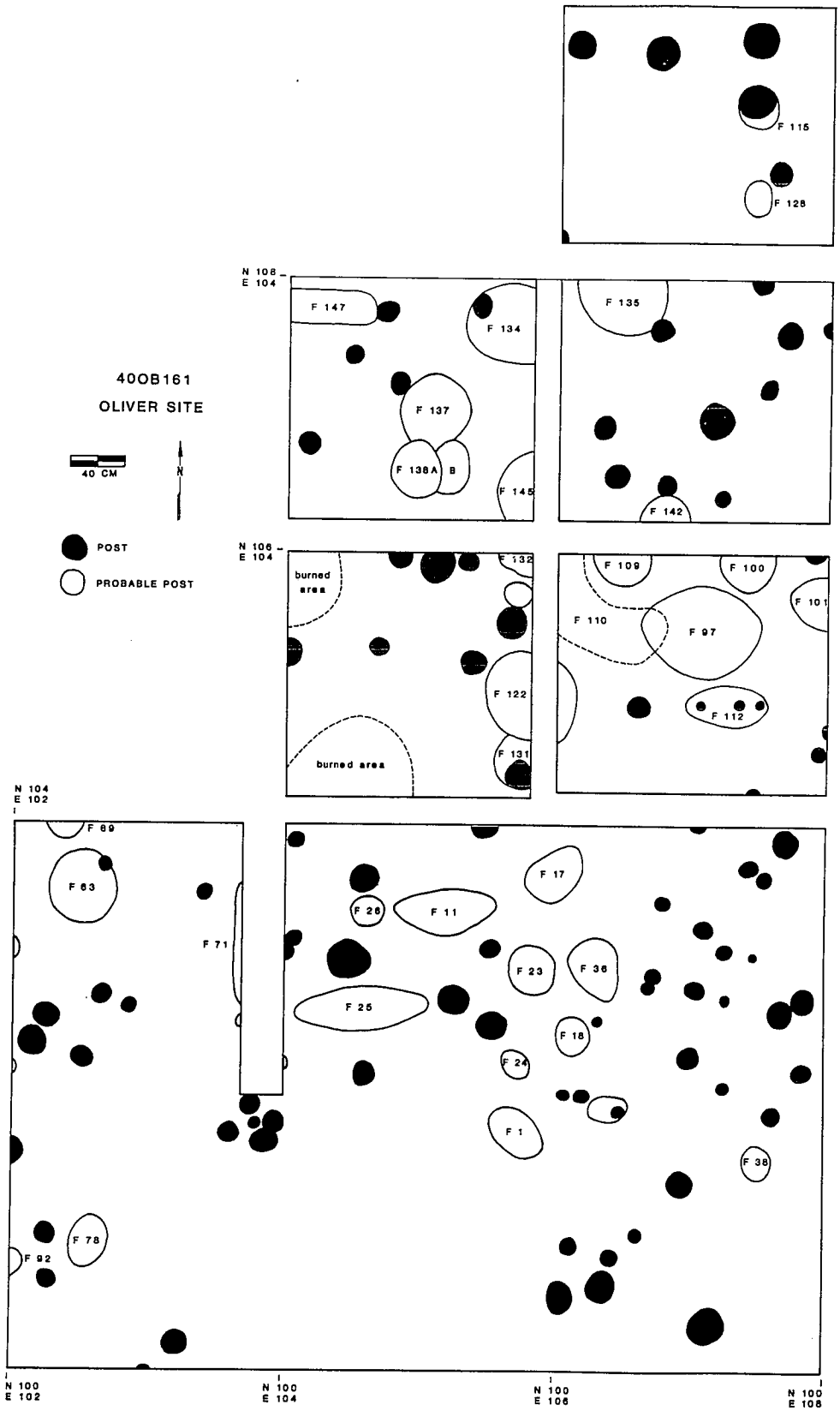


Figure 30. Plan View, Eastern Block, Oliver Site.

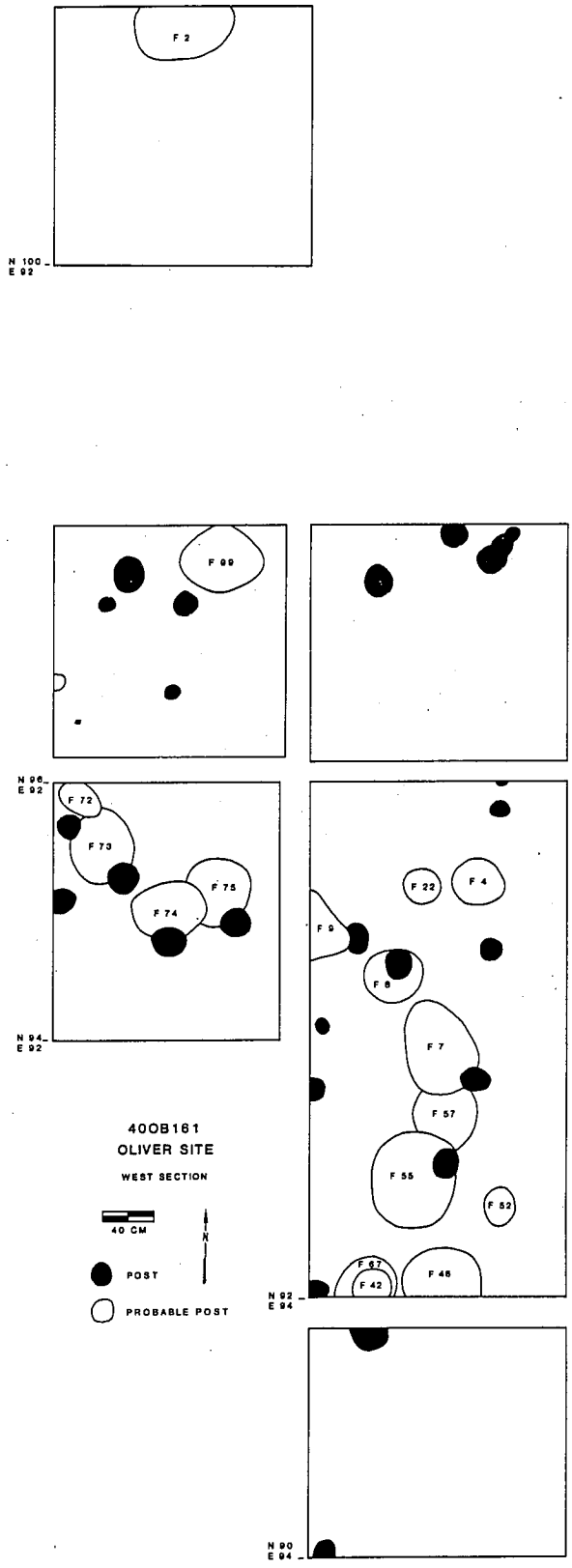


Figure 31. Plan View, Western Block, Oliver Site.

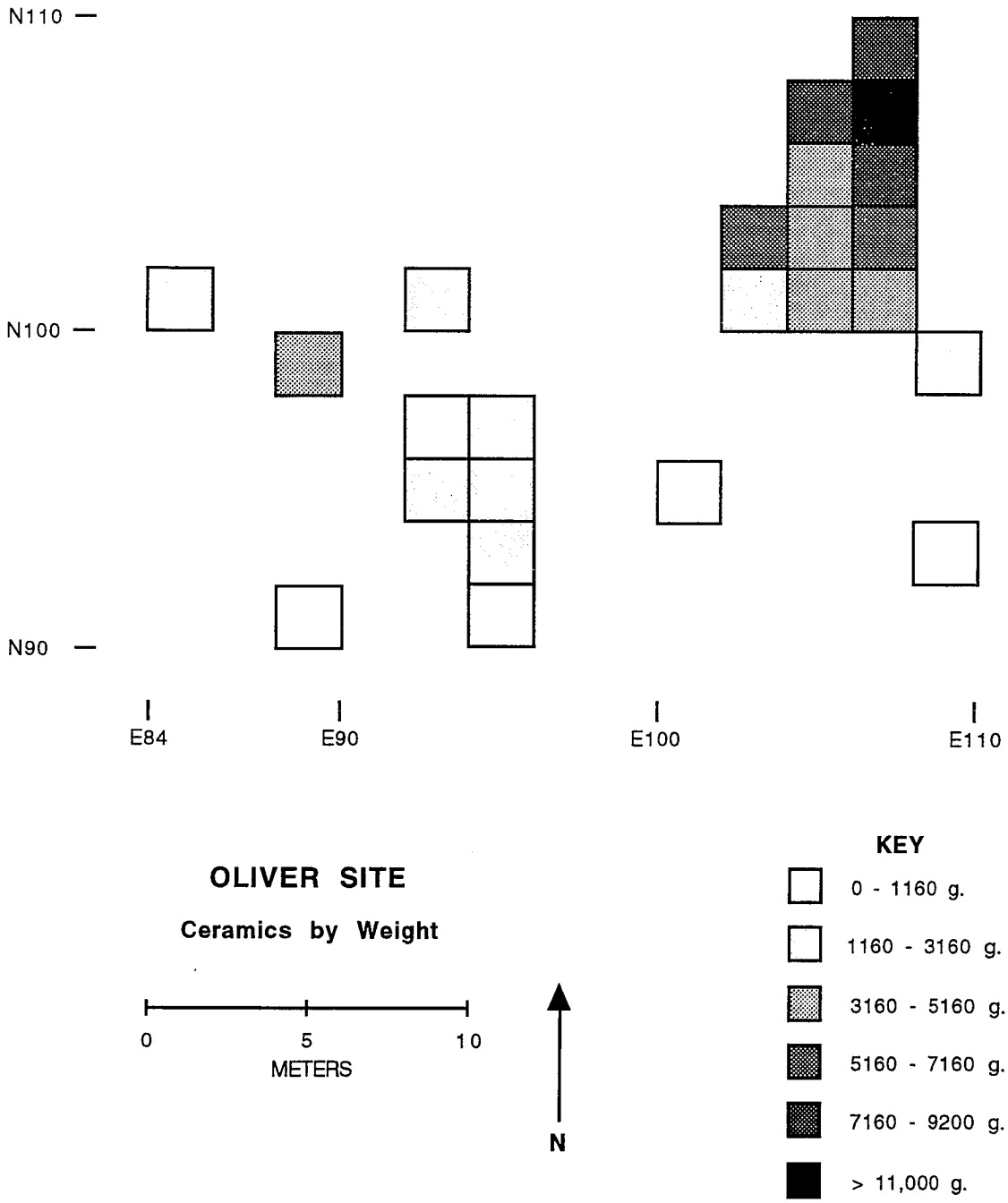


Figure 32. Spatial Distribution of Ceramics by Weight, Oliver Site.

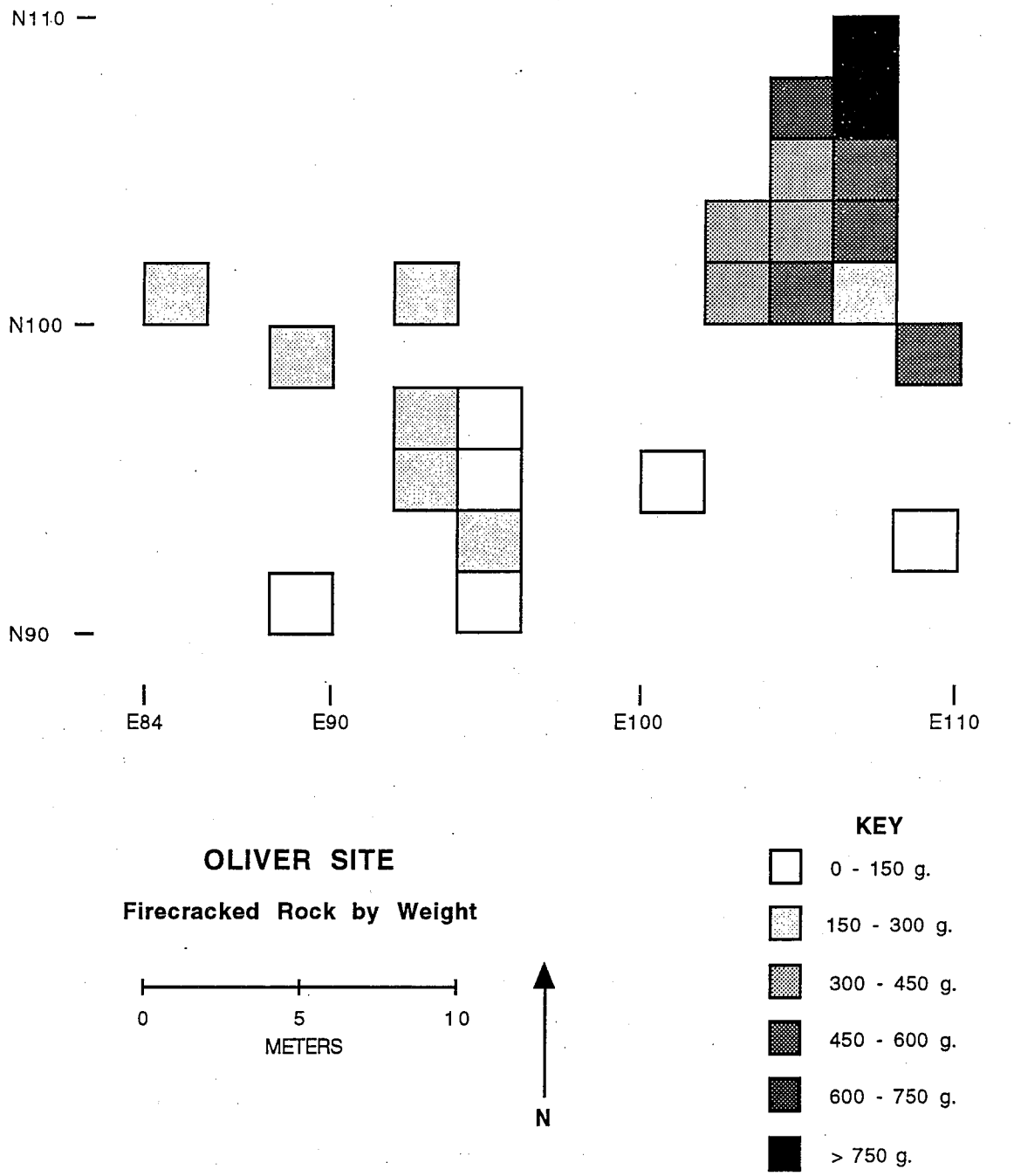


Figure 33. Spatial Distribution of Firecracked Rock by Weight, Oliver Site.

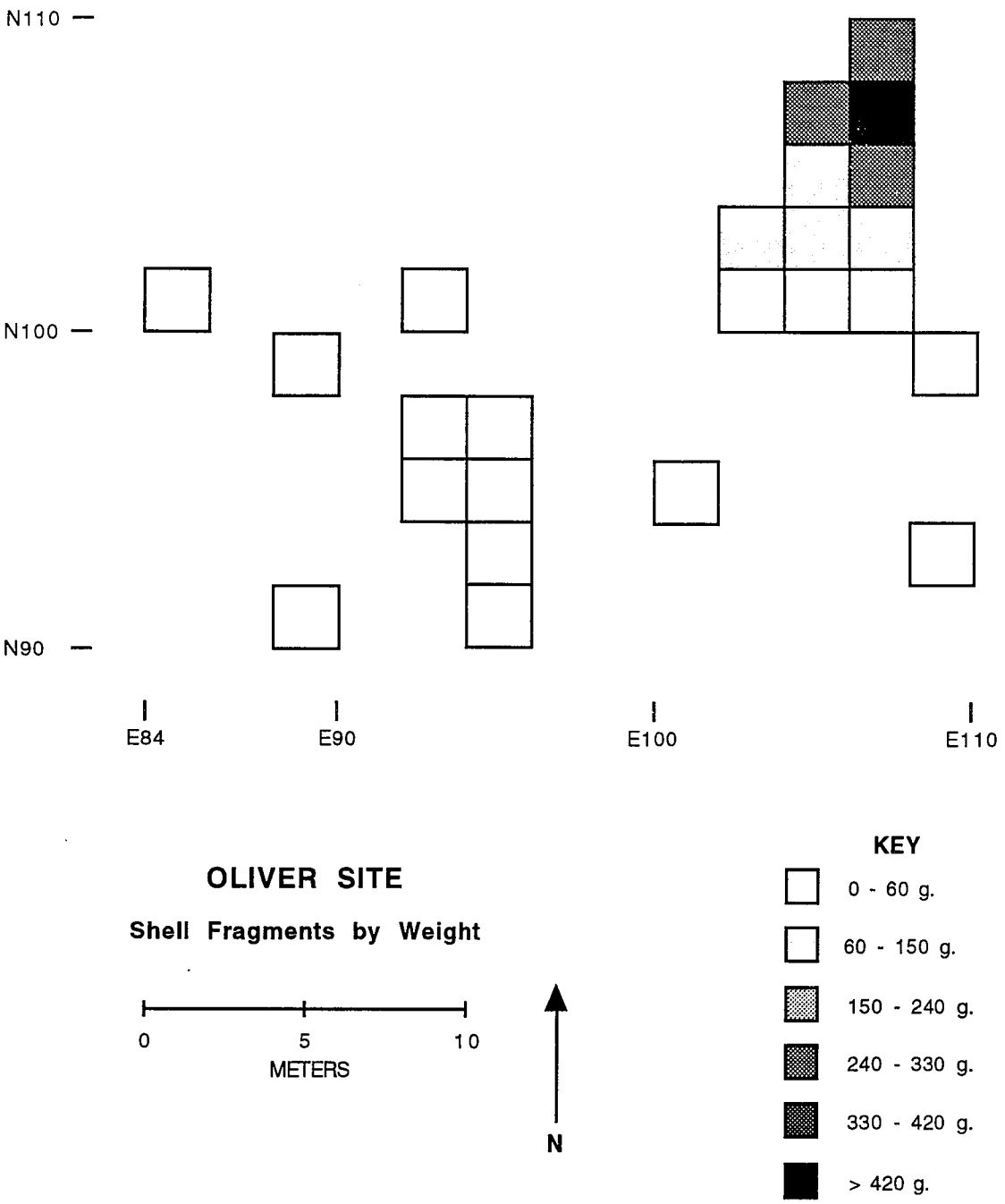


Figure 34. Spatial Distribution of Shell Fragments by Weight, Oliver Site.

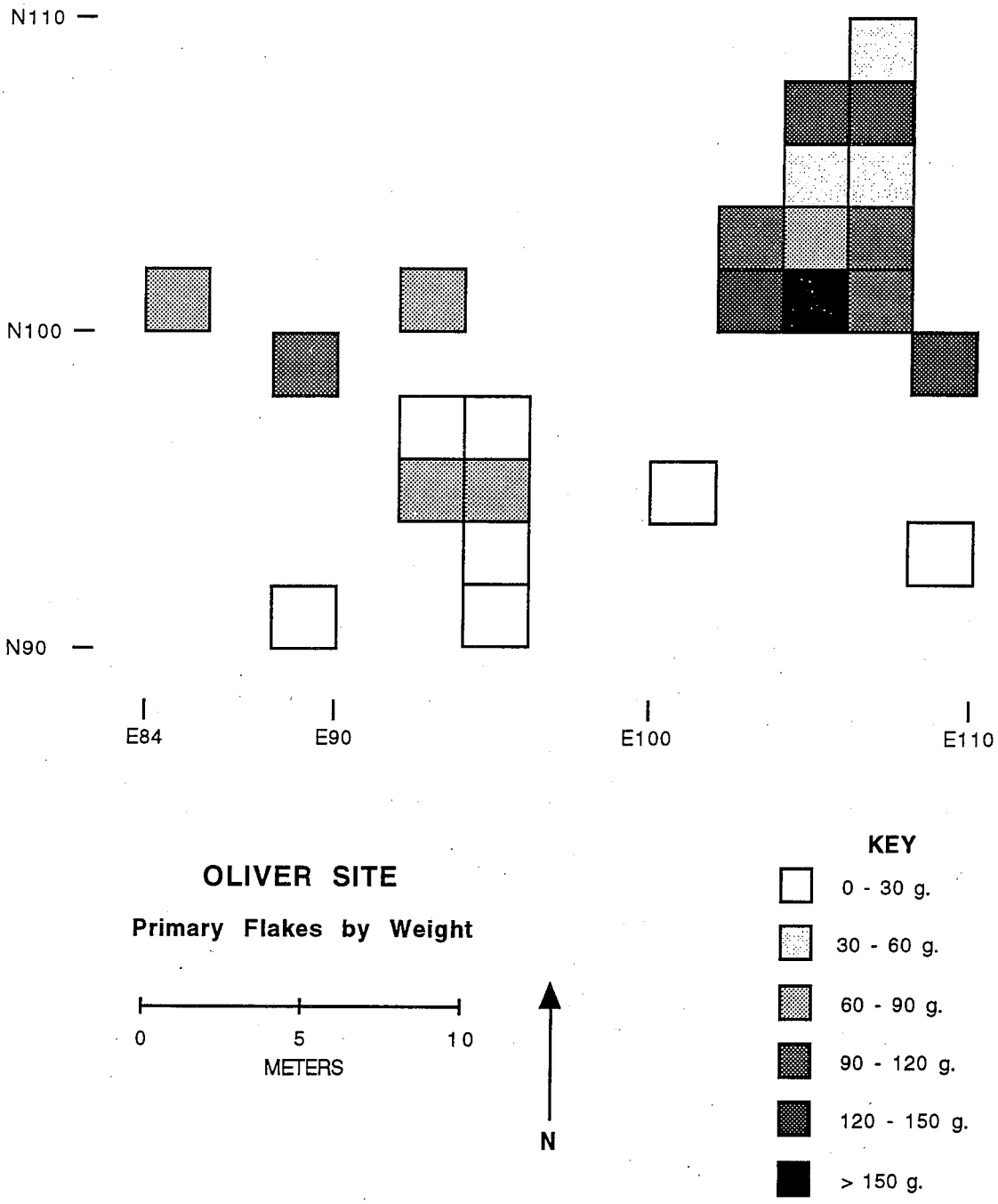


Figure 35. Spatial Distribution of Primary Flakes by Weight, Oliver Site.

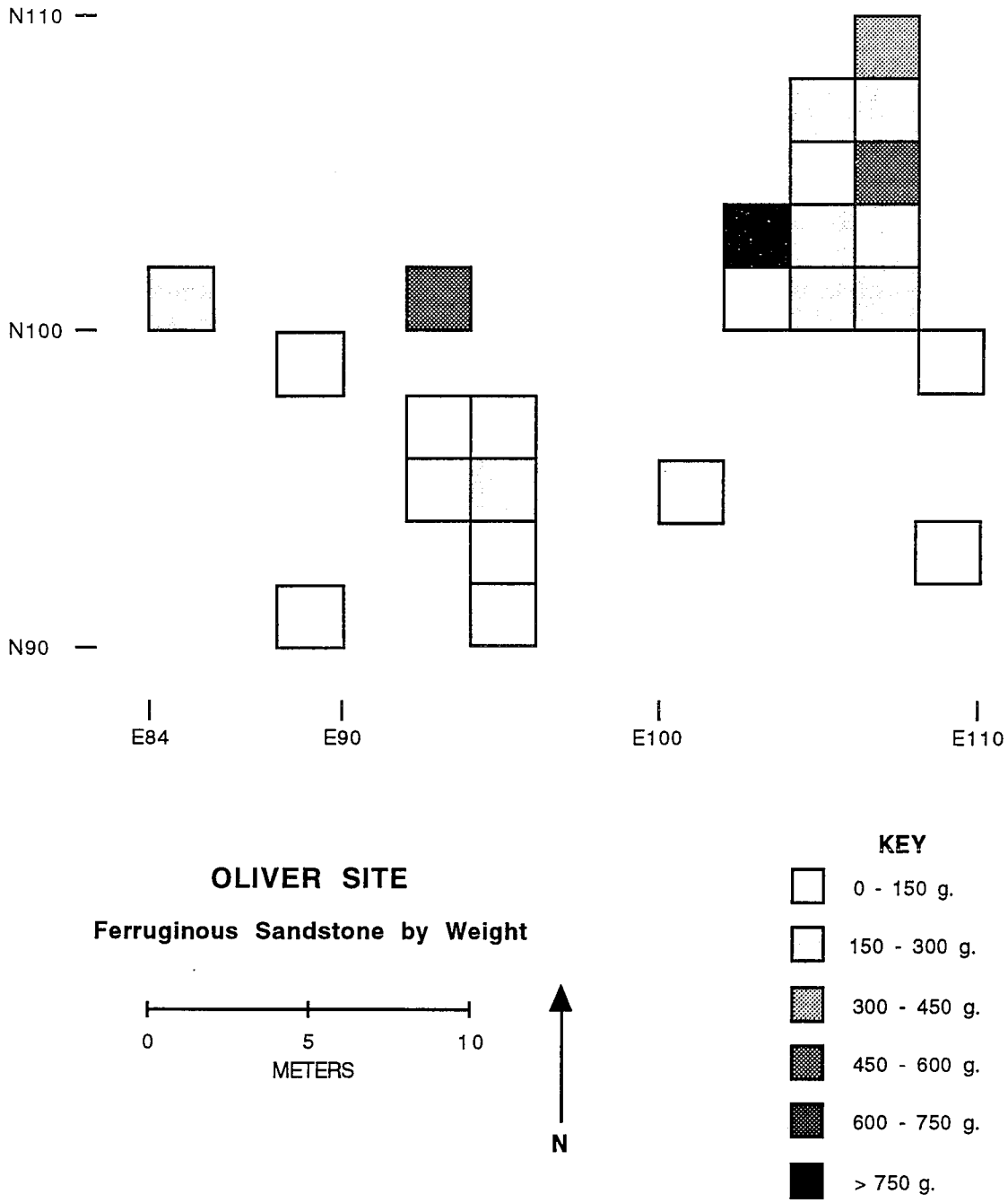


Figure 36. Spatial Distribution of Ferruginous Sandstone by Weight, Oliver Site.

RADIOCARBON DATES AND CHRONOLOGY

Collection of charred organic materials from good contexts for radiocarbon dating was a major objective during fieldwork at the Oliver site. Unfortunately, few features containing sufficient charcoal for conventional dating were uncovered during the excavations. Eight charcoal samples (four from each of the two excavation areas) were submitted to the University of Texas Radiocarbon Laboratory for analysis; the resulting assays were corrected for $\partial^{13}C$. Four additional samples, one of which proved to be of insufficient size for conventional dating, were subsequently sent to Beta Analytic; due to an oversight on our part, these were not corrected for $\partial^{13}C$. All results are summarized in Table 62 and Figure 37.

Sample	Provenience	Composition	Radiocarbon Years	Calibrated Date
TX-7786	N104E104, L4, burned area	wood charcoal, 10.0 g.	920 ± 60	A.D. 1022 (1044, 1090, 1122, 1139, 1152) 1192
TX-7787	N104E104, F-130	wood charcoal, 11.3 g.	970 ± 80	A.D. 988 (1025) 1159
TX-7788	N94E94, F-8A	wood charcoal, 10.0 g.	810 ± 70	A.D. 1160 (1223) 1277
TX-7789	N92E94, F-46	wood charcoal, 10.0 g.	880 ± 90	A.D. 1024 (1161, 1185) 1258
TX-7790	N104E104, F-130	wood charcoal, 10.0 g.	840 ± 170	A.D. 1001 (1212) 1280
TX-7791	N94E94, F-9	wood charcoal, 15.8 g.	795 ± 50	A.D. 1208 (1234, 1236, 1257) 1277
TX-7792	N96E92, F-96	charred nut hulls, 11.5 g.	850 ± 60	A.D. 1068 (1195, 1196, 1208) 1258
TX-7793	N104E106, PM-1	wood charcoal, 21.4 g.	1010 ± 60	A.D. 982 (1001, 1012, 1017) 1148
Beta-62149	N96E92, F-96	charred nut hulls, 12.0 g	1270 ± 80	A.D. 660 (692, 699, 712, 748, 767) 863
Beta-62151	N102E102, F-71	wood charcoal, 12.0 g	1240 ± 80	A.D. 672 (774) 887
Beta-62152	N108E106, L-3	wood charcoal, 10.0 g	810 ± 50	A.D. 1164 (1223) 1275

Table 62. Radiocarbon determinations for the Oliver site. Note: All TX dates corrected for $\partial^{13}C$.

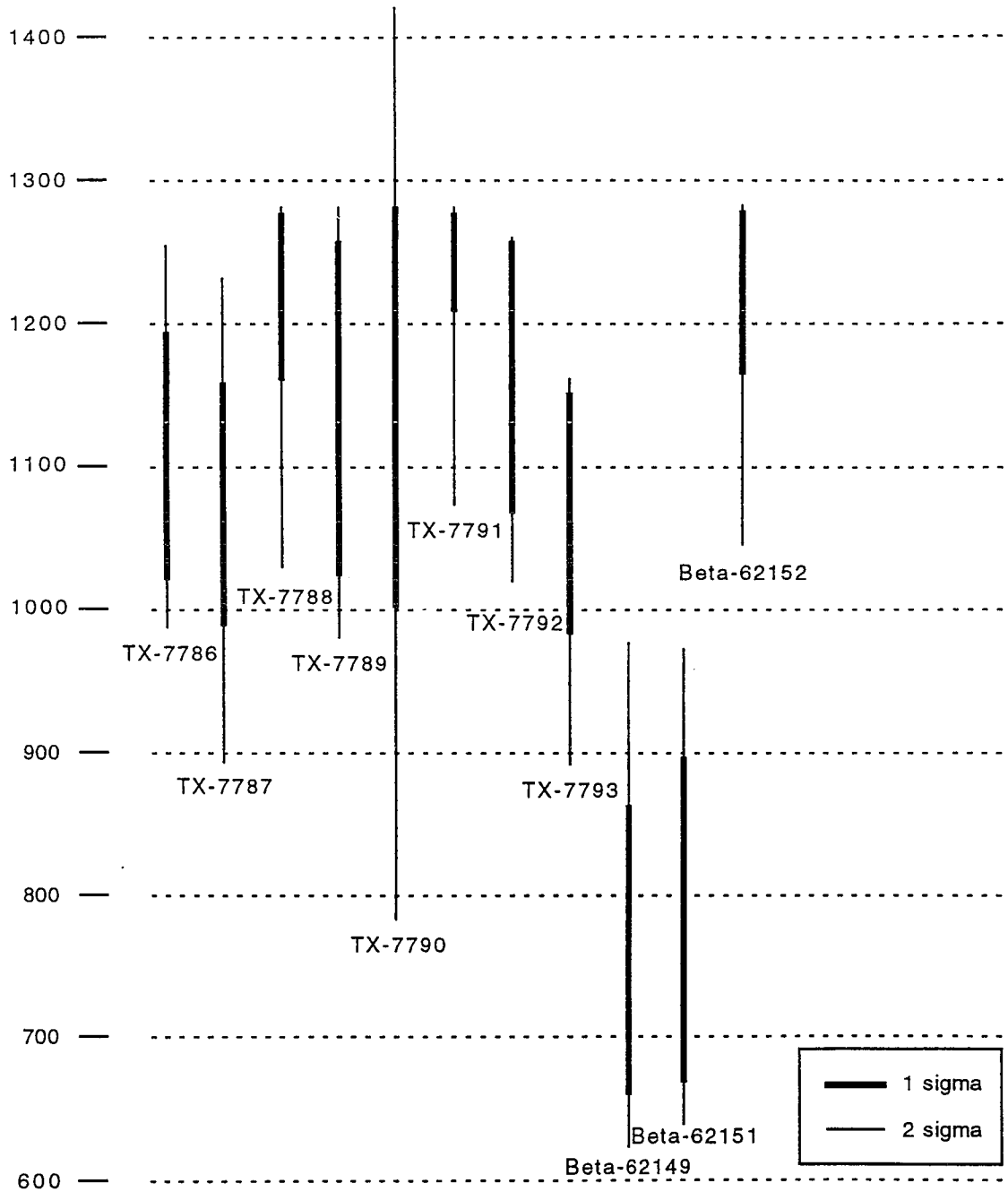


Figure 37. Calibrated Radiocarbon Determinations, Oliver Site.

With the exception of Beta-62149 and Beta-62151, the radiocarbon determinations are remarkably consistent and, if accepted at face value, would imply that the Oliver site was occupied primarily between approximately A.D. 1050 and 1150. Even when considered at two standard deviations (see Figure 37), the calibrated dates cannot be used to support an age older than A.D. 1000.

The utility of this suite of consistent radiocarbon assays is difficult to assess, and a lengthy discussion of this matter will be avoided here. Rather, several relevant considerations will be presented and, in light of these, a suggested occupation age range will be offered.

First, it must be pointed out that there are virtually no comparable radiocarbon determinations from western Kentucky, western Tennessee, or southeast Missouri. Sussenbach and Lewis (1987) present several assays from the Marshall site in Carlisle County, Kentucky, which has a ceramic assemblage roughly comparable to the Oliver site, albeit with a component that clearly postdates Oliver. Unfortunately for comparative purposes, these radiocarbon determinations are derived from house basins encountered during very limited testing, making it virtually impossible to relate the dates to a specific ceramic assemblage. Moreover, ceramics are tabulated only by unit (not by unit and level), further limiting the utility of the dates in question.

Second, reliance on the American Bottom sequence (e.g., Bareis and Porter 1984) as a framework within which to assess the Oliver site dates would be, at best, premature, despite certain obvious ceramic parallels. It is also worth noting that although the American Bottom sequence is strongly anchored in stratigraphic evidence, the correspondence between the interpreted ages of various phases and the relevant radiocarbon assays is far from satisfactory at this point (cf. Kelly 1990: 118-119).

Nonetheless, a few comments about the American Bottom sequence as presently understood (Kelly 1990) are unavoidable. Stumpware, of which there are several examples from the Oliver site, appears in the American Bottom *circa* A.D. 800 and continues until about A.D. 1050-1100. Potentially more informative for chronological purposes is the occurrence of cordmarked seed jars and Wickliffe Thick funnels in the Oliver site assemblage. Seed jars are associated with post-A.D. 950 contexts in the American Bottom, while the funnel form is not represented prior to approximately A.D. 1000. Examples of Kersey Incised, a significant minority type in the Oliver site assemblage, occur in Edelhardt phase (A.D. 950-1000) contexts in the Cahokia area (Kelly 1990). Additionally, the very high ratio of jars to bowls at the Oliver site is compatible with, for example, the Edelhardt and Lohmann phases.

Therefore, to the extent that current interpretations of American Bottom ceramic technology and chronology are correct, and to the extent that these are applicable to northwestern Tennessee, an occupation span of approximately A.D. 900 to 1000 might be inferred for the Oliver site.

Of potentially greater relevance to the age of the Oliver site are the radiocarbon data from Zebree (Morse and Morse 1980), which represent the results not only of careful sample selection, but also of unusually thorough cleaning by the laboratory prior to performing the analyses. At two sigma, all of the calibrated dates (Teltser 1992) overlap between A.D. 900 and 1000, excluding SMU-457, which is considered to be questionable, and SMU-460, which derives from a feature that contained a Matthews Incised sherd (Morse and Morse 1980). It may be of note that both features from which these suspect dates were obtained contained Wickliffe Thick sherds. Although many of the dated features at Zebree contained some sand tempered Barnes series sherds,

Varney Red and Mississippi Plain are by far the majority types. Interestingly, no other site in the Central Mississippi Valley has produced a ceramic assemblage that is strictly comparable to Zebree.

Since shell tempered wares represent a fairly small minority of the ceramic assemblage from the Oliver site (see below), it could plausibly be argued that the primary occupation at Zebree postdates that at Oliver. This, in turn, would imply that the Oliver site should date no later than approximately A.D. 900, if one assumes that ceramic trajectories in northwestern Tennessee closely paralleled those in northeastern Arkansas. Such an assumption is unwarranted, however, because grog tempering is not characteristic of northeastern Arkansas at any time (Morse and Morse 1990). Further clouding the issue is the occurrence of Kersey Incised and Kimmswick Fabric Marked at Oliver, neither of which are present at Zebree (Morse and Morse 1980 and personal communication). Finally, Kelly (1982: 366) considers the Zebree site to postdate the Merrell Tract assemblage at Cahokia (i.e., post-A.D. 950), a view contested by the Morses (1990: 163).

The Kirby Pocket site (40OB127), near the eastern edge of Reelfoot Lake, has produced a ceramic assemblage that is clearly of the same general age as that from Oliver (Mainfort 1988; see below). Of the three radiocarbon determinations, all run on charcoal samples from good contexts, two date prior to A.D. 1. The third, 830 ± 60 bp (TX-5595), is rather consistent with the Oliver site dates and, at its lower range, would be fairly reasonable. This does little, unfortunately, to resolve questions about the actual age of the Oliver site.

As discussed in more detail below, the Oliver site ceramic assemblage is remarkably similar to that of the Hoecake site in southeastern Missouri (R. Williams 1974). There are three published radiocarbon assays from this important site. Two can clearly be dismissed. These are 1530 ± 80 bp (GaK-1307), which pertains to Feature 8, and 1310 ± 130 bp (M-2212 and 2213 combined) on a sample from a probable Middle Woodland burial mound within the site that likely predates the most intensive utilization of Hoecake. Charcoal from Feature 32 returned an assay of 765 ± 90 bp (GaK-1308), which falls within the upper range of the Oliver site dates, but also overlaps with the lower range of dates for the Powers phase (Price and Griffin 1979), Lilbourn (Chapman *et al* 1977), and early/middle period at Wickliffe (Wesler 1991). This does not seem plausible.

A bit farther afield, three internally consistent radiocarbon assays on Structure 3 at the Andalex site in west-central Kentucky produced a calibrated average date of A.D. 1023 (1038) 1159 (Niquette 1991). The associated ceramic assemblage is virtually entirely shell tempered. Not surprisingly, diagnostic Central Mississippi Valley types such as Varney Red and Kersey Incised are not present at Andalex, making crossdating a somewhat shaky proposition. Nonetheless, the Andalex dates lend a measure of support to a pre-A.D. 1050 date for the Oliver site.

In our judgment, major occupation of the Oliver site occurred between approximately A.D. 900 to 1000. At two sigma, 7 of the calibrated radiocarbon dates partially overlap this time range. As discussed below, Mulberry Creek Cordmarked inslanting jars are by far the dominant vessel form in the ceramic assemblage. This, as well as the relatively sparse representation of shell tempered ceramics, seems to militate against an age beyond A.D. 1000-1050. On the other hand, the presence of Varney Red, Wickliffe funnels, stumpware, seed jars, and the frequency of Mill Creek chert supports an age of no earlier than about A.D. 900.

CERAMIC ASSEMBLAGE

The Oliver site ceramic assemblage represents one of the only moderately large excavated samples of Emergent Mississippian ceramics from the Central Mississippi Valley and affords a useful window on the range of types, vessel forms, and decoration. This section focuses on a total of 739 identifiable vessels represented by rims; a small number of additional vessels could not be assigned to a ceramic type and are not considered here. Since so little published data is available on the Emergent Mississippian period in this region, sherd counts and rim attribute data will also be provided for a number of additional sites located within or in the vicinity of the Reelfoot Lake Basin (Mainfort 1989).

The vast majority of the ceramics recovered from the Oliver site are easily and appropriately assignable to types described by Phillips (1970). No formal published definitions are available, however, for northwestern Tennessee and southwestern Kentucky. In contrast to our earlier consideration of Tchula period pastes and type-varieties, we will forgo defining new Emergent Mississippian varieties for this region, with a few exceptions discussed below. Our rationale (or excuse) is based on the fact that the Oliver site assemblage is characterized by an overwhelming abundance of Mulberry Creek Cordmarked which, macroscopically, is virtually indistinguishable from thousands of comparable sherds from the Reelfoot Lake Basin that we have examined. Detailed compositional analyses might, and probably would, provide a basis for finer distinctions, including new varieties. Such technical analyses are beyond the scope of this study. At present, we feel that creating a new Emergent Mississippian "variety" for the Oliver site and the Reelfoot Lake Basin would be no more useful than the semantic difference between Neeley's Ferry Plain (Phillips *et al* 1951) and Mississippi Plain, *var. Neeley's Ferry* as employed by most researchers (but see Lumb and McNutt 1988).

A general discussion of the clay tempered paste that is predominant at the Oliver site is presented below, as is a brief description of the minority untempered paste group. We also present a formal description of the vaguely-defined type Kersey Incised (Marshall 1965) based on specimens in the Oliver site assemblage, as well as a lengthy discussion of Kimmswick Fabric Impressed sherds.

It seems necessary at this point to comment briefly on some Emergent Mississippian "provisional" ceramic varieties proposed and utilized by University of Illinois researchers in the Mississippi River counties of Kentucky (Sussenbach and Lewis 1987), an area located north and northwest of the Oliver site. The varieties in question are designated Baytown Plain, *var. Mayfield* and Mulberry Creek Cordmarked, *var. Sandy Branch*, both of which are characterized by "fine to medium" pastes (Sussenbach and Lewis 1987: 59). The former is said to be difficult to sort consistently from Bell Plain, the distinction being based on surface finish; sherds with smoothed or burnished surfaces are classified as Bell Plain, while those with "wiped or roughly smoothed" exteriors were sorted as *Mayfield*. Sussenbach and Lewis correctly note that Bell Plain is often grog tempered. Distinguishing a Baytown Plain variety (which carries unavoidable temporal and cultural connotations) from Bell Plain simply on the basis of surface treatment is not sound practice, however. For example, at the Late Mississippian site of Chucalissa, Lumb and McNutt (1988) note that roughly 50% of the Bell Plain is not polished. True, these authors do not mention any "roughly smoothed" Bell Plain, but their data casts some doubt on the advisability of the sorting criterion proposed by Sussenbach and Lewis.

The case of *Sandy Branch* also poses some difficulties. At Oliver and numerous comparable sites in the Reelfoot Lake Basin (Mainfort 1989), the size of grog particles exhibits a wide range from relatively fine to, more typically, somewhat coarse. After initial attempts to sort grog tempered ceramics from the Reelfoot Lake Basin by temper size (cf. Mainfort *et al* 1986), it became evident that the resulting "varieties" represented only arbitrary divisions of a continuum and were not useful in attempts to temporally order the relevant sites. Finally, it is rather curious that *Mayfield* and *Sandy Branch* are the only varieties of Baytown Plain and Mulberry Creek Cordmarked reported from the type site of Marshall. We have examined large sherd collections from several sites in the Reelfoot Lake Basin that are roughly contemporaneous with Marshall (cf. Mainfort 1989), and have not examined any assemblage in which all, or even a majority, of the grog tempered ceramics were characterized by very small grog particles.

Analysis procedures

After cleaning, ceramic artifacts were separated for analysis. Rims, decorated sherds, and unusual specimens were earmarked for detailed study. Body sherds with diameters of greater than approximately 2.5 cm were grouped according to paste and surface treatment, counted, and weighed. Smaller sherds and burned clay were simply weighed.

Since over 10,000 specimens of prehistoric ceramics were recovered from the Oliver site, analysis focused on rimsherds. Initially, rims from individual excavation units were inspected and grouped by minimal vessel to the extent possible. The search for likely members of identified vessels was subsequently expanded to include nearby units. When possible, portions of vessels were reassembled, although surprisingly little refitting could be accomplished.

Temper was examined macroscopically. The minority shell tempered wares were easily sorted from the predominate Late Woodland paste series wares (see below). Voids left by leeched out organic matter were occasionally observed within otherwise typical Late Woodland paste; several tests with dilute hydrochloric acid were negative.

Cordmarking is by far the most common surface treatment. Although no detailed analysis of cord twist was conducted, all readily identifiable examples on rims were S-twist. Although not noted as such in the vessel analysis, a substantial number of cordmarked sherds had been smoothed over to some observable degree, often to the extent that cordmarking was difficult to discern. Sherds grouped as plain exhibit no traces of cordmarking.

Incised, punctated, fabric marked, and red filmed surfaces are also present in the Oliver site assemblage; the latter was observed only on shell tempered wares, although it is likely that red filming was formerly present on the interior of some cordmarked specimens (cf. R. Williams 1974).

Identified vessel forms include jars, seed jars, bowls, pans, funnels, and stumpware. Jars are characterized by a point of inflection between the shoulder and rim, while bowls lack an inflection point. Seed jars are essentially bowls with restricted orifices; the maximum vessel diameter is well below the lip. Pans are distinguished by low-sloped, outcurving walls and are shallow containers. Several fragments of Wickliffe Thick funnels and stumpware were also identified; descriptions of these forms are given by Phillips (1970) and Bareis and Porter (1984), respectively. Our approach to vessel form analysis was fairly conservative; relatively small rims generally were not assigned to a specific vessel form.

Since few large rim sherds were recovered, identification of rim orientation was usually limited to simply inslanting, outflaring, vertical, and everted. Inslanting and everted rims are always associated with jars in the Oliver site assemblage, while outflaring rims are typical of bowls and pans.

Analysis of certain lip attributes may be of dubious value because considerable variation often occurs within sections of a single rim. Lips designated here as flattened exhibit fairly conclusive evidence of an attempt to produce a flat, level surface. Most other lips were classified as rounded or indeterminate. Presence of cordmarking, smoothing, and miscellaneous treatments (most importantly, notching) was recorded as appropriate. Clear evidence of rim thickening, often incorrectly referred to as "folding," was also noted.

Determination of vessel orifice diameter, an attribute upon which functional determinations are often made, was attempted in relatively few instances, those being limited to moderately large sections of rims. By way of caution, in our experience, inferred diameters for rim sherds that were subsequently reassembled differed by as much as 20 cm.

Late Woodland/Emergent Mississippian series paste

Baytown Plain, Mulberry Creek Cordmarked, Kersey Incised (including incised over cordmarked), and most examples of Kimmswick Fabric Marked, *var. unspecified* are included in the "Late Woodland/Emergent Mississippian" paste series, which is defined macroscopically by the presence of baked clay particles in a relatively hard paste that may exhibit a degree of sandiness. The clay particles are of a lighter color than the surrounding matrix and, although of variable size, are generally small (see earlier discussion of ceramic pastes and types). No evidence for the use of crushed sherds as temper was observed in the Oliver site assemblage. Fine sand particles are present in most sherds, but few are distinctly sandy to the touch. The latter appear to be technologically identical to other Late Woodland/Emergent Mississippian paste series sherds and varying degrees of sandiness are currently attributed to variations within clay sources. Most sherds have well-fired cores and exhibit a buff or yellowish brown (10YR6/4) color, but colors range from dark gray (10YR4/1) to light gray (10YR7/2) to reddish yellow (7.5YR6/8).

The Late Woodland/Emergent Mississippian series paste described here is characteristic of virtually all clay tempered ceramics associated with components in the circa A.D. 700-1050 time period in the Reelfoot Lake Basin, as well as the Oliver site.

Oliver site ceramic types

Brief descriptions of all ceramic types identified in the assemblage are presented below, including total sherd counts, as are descriptions of miscellaneous ceramic artifacts. Two categories of ceramics, Kersey Incised and textile-marked ceramics, received more detailed analysis, as reflected in the discussion that follows.

Mulberry Creek Cordmarked, *var. unspecified* (N=8,832)

Clay tempered cordmarked ceramics comprise nearly 80 percent of the Oliver site assemblage (this figure does not include incised over cordmarked sherds or cordmarked sherds with punctations). Temper and paste correspond to the Late Woodland/Emergent Mississippian clay tempered paste series, as described above. Red filming is present on the interior surface of 2 sherds. A minimum of 2,031 sherds exhibit some degree of smoothing; cordmarking is scarcely visible on some of these.

Mulberry Creek Cordmarked, *var. Tishomingo*

The small sample of *Tishomingo* (N=36) provides evidence of a pre-Emergent Mississippian occupation at the Oliver site, although some sherds may simply represent sandy paste variants of typical Late Woodland/Emergent Mississippian paste.

Baytown Plain, *var. unspecified*

Clay tempered plainware comprises less than 10 percent of the Oliver site ceramic assemblage (N=931). All sherds were scrupulously examined for residual traces of cordmarking. Temper and paste correspond to the Late Woodland/Emergent Mississippian clay tempered paste series, as described above.

Baytown Plain, *var. Tishomingo*

As in the case of their cordmarked companion type, this small group of sherds (N=49) may reflect a pre-Emergent Mississippian occupation at the Oliver site.

Kersey Incised

To the best of our knowledge, intensive testing at the Oliver site produced the largest excavated sample (N=210) of the distinctive, but loosely defined, ceramic type Kersey Incised (Marshall 1965: 94-97). It seemed appropriate, therefore, to establish a more formal definition of this type based on the Oliver site assemblage. The resulting definition is presented below (see Figures 38 and 39).

Temper: Moderate (10-30%) clay temper (baked clay particles) of variable size, evenly distributed throughout the paste. Occasional micaceous flecking may be indicative of non-local sherds of this type.

Texture: Hard with jagged, angular breakage. Some sherds noticeably sandy to the touch.

Color: Most sherds cluster around light yellowish brown (10YR6/4), but range through dark gray (40YR4/1) and light gray (10YR7/2) to reddish yellow (7.5YR6/8).

Thickness: Mean: 5.7 mm. Range: 3.6-11.1 mm.

Surface Finish: The more numerous (N=145) incised over cordmarked specimens exhibit incised lines applied over a typical Mulberry Creek Cordmarked surface. Among the examples lacking cordmarking (N=64), the interior and exterior were smoothed by wiping the vessel while still wet or by using a smooth, wet tool. Incised lines were then applied to the exterior surface.

Rims: Inslanting rims predominate; three vessels exhibit everted rims. Notching is present on over half (N=17) of the identified vessels.

Appendages: An unidentified rim adorno, possibly from a bowl, is the only example.

Vessel Form: With the exception of one possible bowl, jars (N=31) are the only identified vessel form. Several large rims suggest that jar forms were similar to Bluff jars.

Sorting Criteria: Incised bands of rectilinear decoration on the exterior surface of Late Woodland paste series vessels. Decoration may extend from the lip to the shoulder and occasionally includes punctations.

Comments: The most common observed decorative pattern is a band of chevrons comprised of 2 to 6 lines. These bands were generally framed by a notched lip/rim area above and/or horizontal lines below. At chevron junctures, lines either abut or cross, producing a hachured effect. Two sherds exhibit a diamond pattern. Line-filled triangles may be represented, but no complete examples of this pattern have been recorded at the Oliver site. Unlike the sample described by Marshall (1965), no specimens exhibit pairs of vertical lines with alternating plain spaces.

Relationships: There are close stylistic parallels between Kersey Incised and Mazique Incised, which occurs in Coles Creek contexts in the Lower Mississippi Valley (Phillips 1970). Similarities with decorated ceramics of the lower Ohio River Yankeetown phase are also evident and have been noted by Redmond (1990). The McKelvey Mound (Hardin County, Tennessee) has produced examples of comparable incising, in some instances over smoothed-over Wheeler Check Stamped (Haag 1942: 518; Webb and DeJarnette 1942: Plate 14).

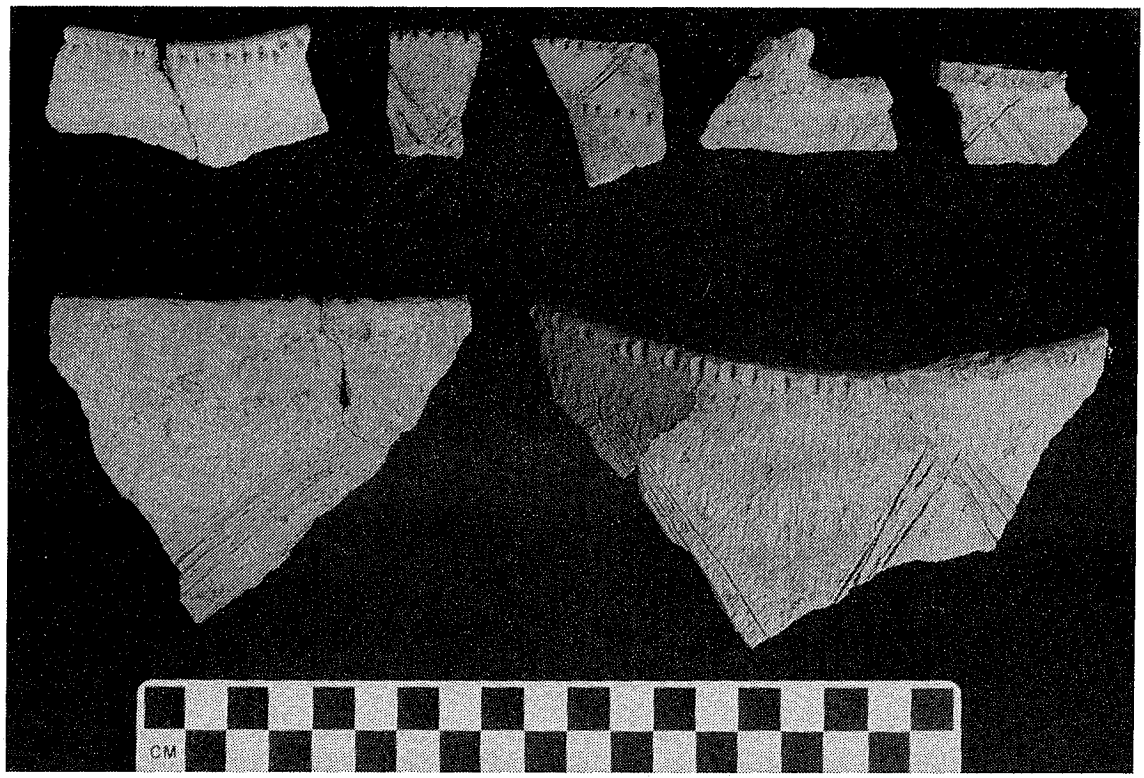


Figure 38. Kersey Incised Ceramics, Oliver Site.

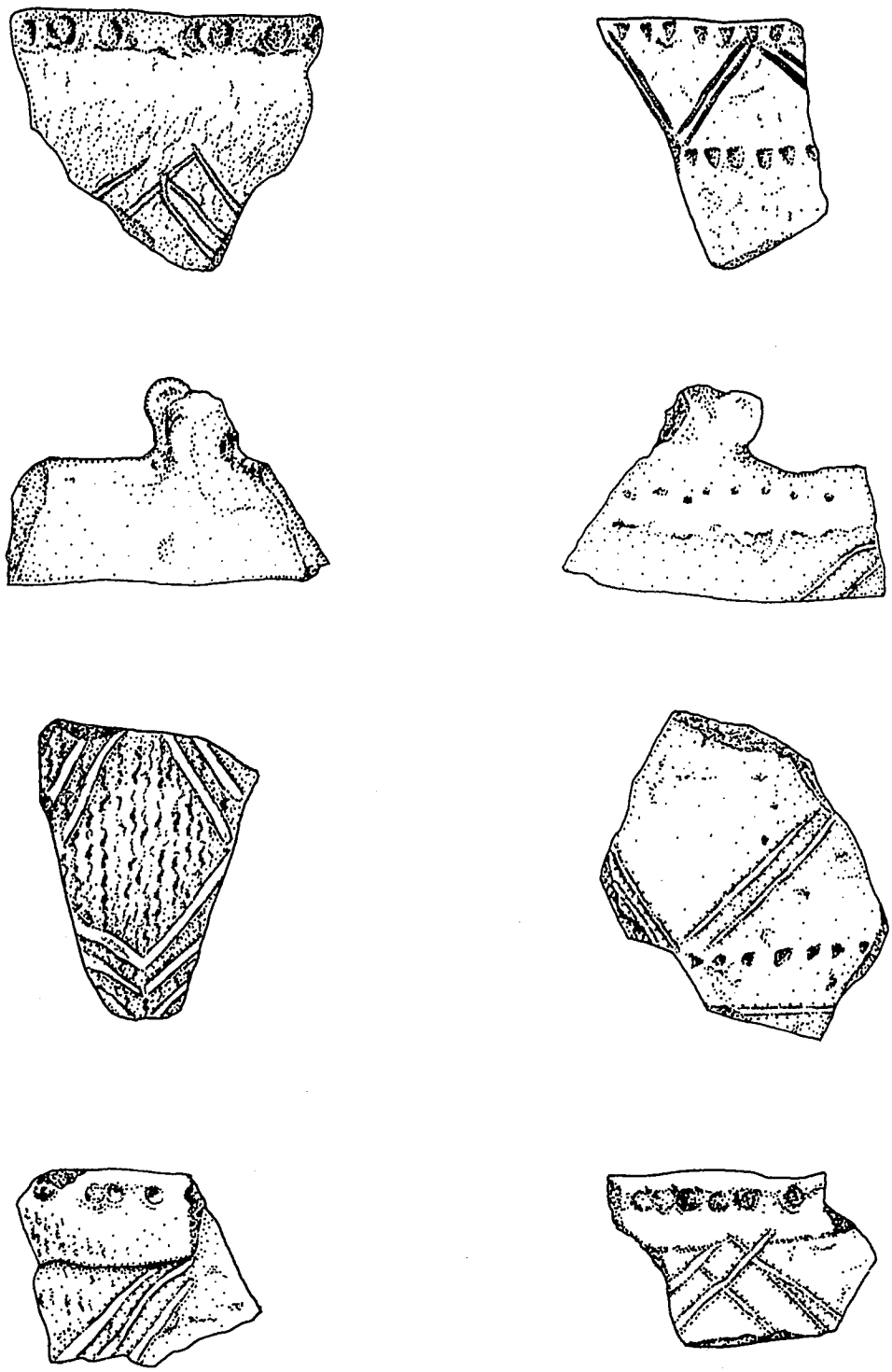


Figure 39. Kersey Incised Ceramics, Oliver Site.

TEXTILE-IMPRESSED CERAMICS (Jamie C. Brandon and Robert C. Mainfort, Jr.)

Textiles are an important aspect of North American aboriginal culture. Unfortunately they are also very perishable and not often preserved in the Southeast outside of cave and shelter contexts (Scholtz 1975). However, information about prehistoric textiles is sometimes preserved through the medium of fabric impressed ceramics.

In the Midsouth, the earliest examples textile-impressed ceramics are the Tchula/early Middle Woodland types Withers Fabric Marked and Saltillo Fabric Impressed (Phillips *et al* 1951). The impressed fabrics represent what Drooker (1990,1992) refers to as "weft-faced," that is, the textile structure is compact and only the weft elements are visible (Figure 40). These structures are probably plain twining, but as Drooker notes (1992), they also can be interlacing. Two examples are present in the Oliver site assemblage, and are classified as Withers Fabric Marked, *var. Cypress Creek*.. suggesting limited use of the site circa A.D. 1.

The "salt pans" of the Mississippian period are perhaps the best known examples of textile impressed ceramics in the Midsouth. This vessel form has been long established in the archaeological literature, and is thus called because of its proposed use in salt production and repeated associations with saline springs (Walker and Adams 1947; S. Williams 1954; Phillips 1970; Brown 1980). The exterior, and occasionally the interior, of these vessels exhibit a textile impressed surface treatment, which seems to be a by-product of manufacture. Fabrics apparently were used to aid in the removal of these oftentimes large vessels from earthen molds (Drooker 1992; Kuttruff and Kuttruff, in press). The textiles employed in the manufacture of salt pans are generally an open weave that may exhibit a diverse and often complicated series of structures including, but not limited to: simple weft twining, alternate weft pair twining, interlacing, and knotting (Drooker 1990, 1992; Kuttruff and Kuttruff 1992, in press; Garland 1992).

In the Central Mississippi Valley, Mississippian period salt pans are usually subsumed within the shell tempered type Kimmswick Fabric Impressed (S. Williams 1954; Phillips 1970). The fabric impressed ceramics from the Oliver site generally conform to published descriptions of this type, but the vast majority are clay tempered. When Phillips (1970) created the regional supertype Kimmswick Fabric Impressed, he did so without specifying temper, although his definition of Kimmswick Fabric Impressed, *var. Kimmswick* specifically mentions coarse shell tempered paste.

The designation Kimmswick Fabric Impressed, *var. unspecified* has been used by some researchers to distinguish the primarily grog or mixed grog/shell paste variants often seen in western Kentucky and Tennessee (Lewis 1986; Kreisa 1991; Stout 1987). Allen (1976) introduced the clay tempered *variety Dedmon* based on field work in Marshall County, Kentucky. *Dedmon* subsequently was used by Clay (1979, 1984) in several papers on Kentucky ceramic sequences.

In 1987, researchers from the University of Illinois proposed the provisional variety *Marshall* for the Mississippi River counties of Kentucky. *Marshall* is defined as having a "well compacted paste" with "a high density of grog temper." Fabric impressions are described as "widely spaced, coarse rectilinear or diamond shaped patterns" that are at times smoothed over. The presence of red filming is noted, and the interiors are described as "highly polished or smoothed." *Marshall* sherds are noted to be thicker than other varieties of Kimmswick Fabric Impressed (Sussenbach and Lewis 1987: 58).

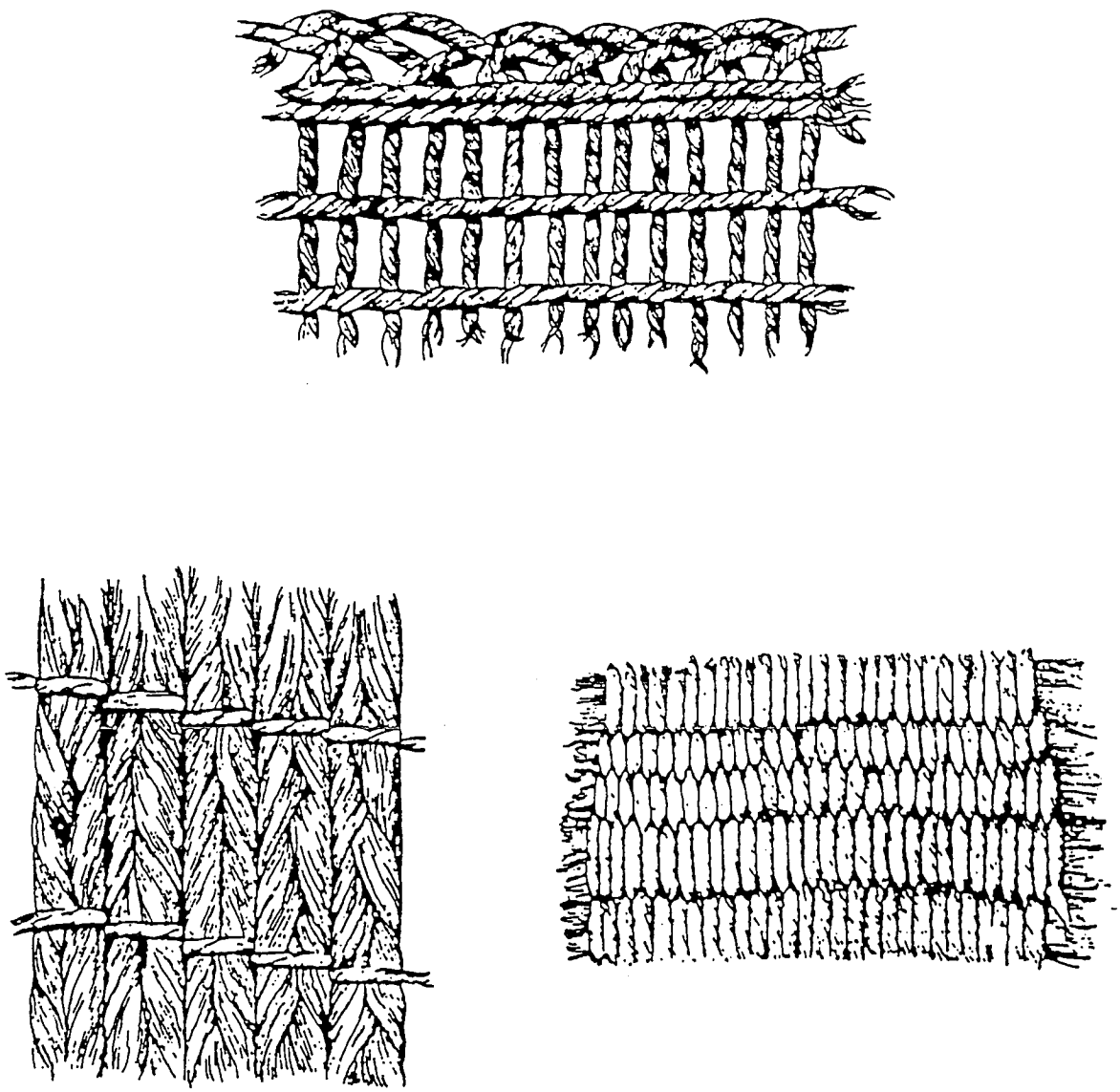


Figure 40. Some Common Textile Structures in the Midsouth: (upper) simple twining over a plied warp; (lower left) simple twining over a braided warp; (lower right) compact or "weft-faced" structure (After Holmes 1884).

The paste of Kimmswick Fabric Impressed, *var. Marshall* is implied to be (although not specifically stated to be) comparable to Baytown Plain, *var. Mayfield,* Mulberry Creek Cordmarked, *var. Sandy Branch,* and Varney Red Filmed, *var. Carlisle*. These varieties are described as having a fine grog tempered paste "difficult to sort . . . consistently from Bell Plain" (Sussenbach and Lewis 1987: 59-60).

Virtually all of the Kimmswick Fabric Impressed sherds from the Oliver site are tempered primarily with baked clay particles. Three exhibit a mixed shell and clay tempered paste similar to Mississippi Plain, *var. Mitchell* (Lumb and McNutt 1988). No sherds strictly correspond to Kimmswick Fabric Impressed, *var. Kimmswick* (Phillips 1970).

Based on the assemblage from Oliver and the occurrence of similar material at roughly contemporary sites in western Kentucky, a clay tempered variety of Kimmswick makes sense. However, *Marshall* is not applicable to the fabric marked sherds from Oliver because the "fine temper" of the *Mayfield/Sandy Branch/Marshall/Carlisle* group is not represented at the Oliver site.

Therefore, we will employ the designation Kimmswick Fabric Impressed, *var. unspecified* for all Late Woodland/Emergent Mississippian fabric impressed ceramics (N=137), and variations in temper will be noted within this type. A description of the Kimmswick Fabric Impressed sherds from the Oliver site follows below.

Temper: Most of the sample (N=134, 98%) is clay tempered. Temper size is variable, but falls within range of the Late Woodland/Emergent Mississippian clay tempered paste described above. A mixed shell/clay temper paste similar to Mississippi Plain, *var. Mitchell* (Lumb and McNutt 1988) makes up the remainder (N=3).

Texture: Hard with jagged, angular breakage.

Color: 10YR3/1 (dark grey brown) to 2.5YR5/8 (red), with most clustering around 10YR6/3 (pale brown)

Thickness: Mean: 8.9 mm; range: 5.2 mm to 12.8 mm

Surface Treatment: Fabric impressed into the wet clay of the exterior surface; 3 instances of fabric marked over cordmarking. Red filming present on the interior of one shell/clay tempered sherd.

Vessel Form: Most sherds are assumed to represent pans, although relatively thin specimens suggest the possibility of other vessel forms.

Vessel Diameter: unknown (no data)

References: S. Williams (1954); Phillips (1970); Sussenbach and Lewis (1987)

Accurate analysis of fabric structure requires that both sides of a textile be examined and that one or two selvages be present (Drooker 1992; Emery 1980; King 1978). Several difficulties occur when performing textile analysis on ceramic fabric impressions. Warp can never be positively distinguished from weft, and fiber may not be accurately identified (King 1978). Nonetheless, basic aspects of textile structure may be identified through positive clay impressions of these ceramics (Rachlin 1955; King 1978; Drooker 1990, 1992).

Positive clay impressions of all fabric impressed ceramics from the Oliver site were produced using Sculpey, a ceramic-like compound which does not dry out and can be fired at a temperature as low as 275 degrees (see Figures 41 and 42). This offered flexibility in working materials, and the ability to make impressions permanent through low temperature firing. The resulting impressions were then examined in an attempt to identify textile structure and characteristic elements of these structures. Of the 139 fabric impressed sherds recovered from the Oliver Site, 21 percent (N=28) of the textiles were unidentifiable and are excluded from the descriptions below.

Twining, a structure in which pairs of adjacent elements turn about each other on their path through the fabric (Emery 1980) is by far the dominate structure (N=104 , 95.41%). Two subcategories of twining were identified in the Oliver site assemblage. Plain twining over a well processed 2-plied yarn warp accounts for 54 percent (N=59) of the sample, while plain twining over braided bundles of unspun fibers comprises 41 percent (N=45).

Three possible cases of oblique interlacing, plain interlacing with one set of elements (Emery 1980; Drooker 1992) were noted. All sherds were small and their structures are not easily deciphered. No alternate pair twining (Figure 40) was observed which is interesting in light of the fabric impressed assemblages from several other sites in the Midsouth. Knotting, basket impressions, and other types of textile structures are not present in the Oliver site assemblage.

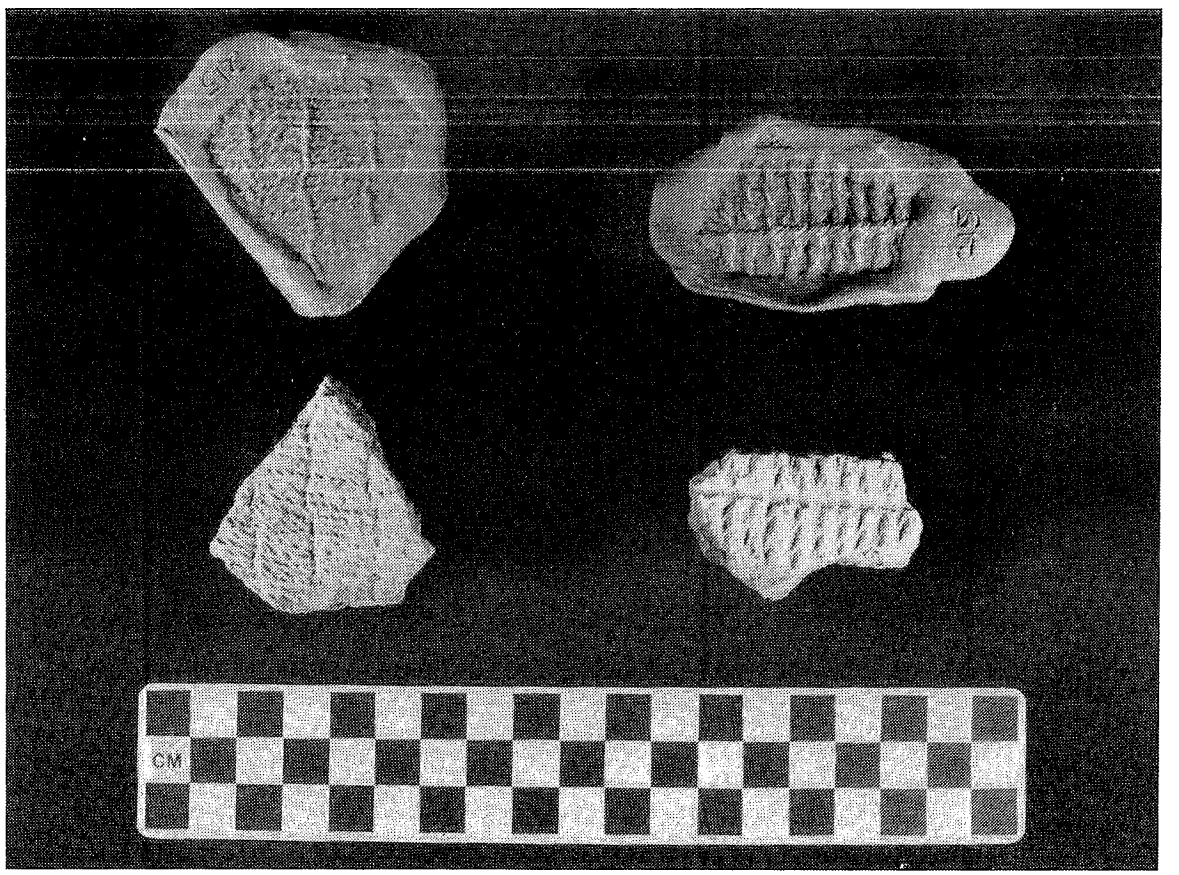


Figure 41. Kimmswick Fabric Impressed Ceramics, Oliver Site.

Figure 42. Fabric Impressed Ceramics, Oliver Site. Far right specimen is "weft-faced."

Identified textile structures represented in the Oliver site assemblage are summarized in Table 63 below. In two cases multiple fabrics were used on the same vessel, making identification impossible. No selvages or joins were positively identified during the study, and while many textiles appeared worn (especially the braided warps), only a single case of clearly damaged fabric was noted.

Plain Twining with a Plied Warp	59	(54.1%)
Plain Twining with a Braided Warp	45	(41.3%)
Total Twining	104	(95.4%)
Possible Oblique Interlacing	3	(2.8%)
"Weft-faced" or Compact Structure (Withers Fabric Marked, *var. Cypress Creek*)	2	(1.8%)
TOTAL IDENTIFIED	139	

Table 63. Textile structures at the Oliver site.

Note: Of the shell/clay tempered sherds, two had plain twining structures (one with a red filmed interior), and one exhibited the plain twining with a braided warp variation over cordmarking.

The textile impressed ceramic assemblages from three sites in the Midsouth have been described in detail. These are Wickliffe Mounds, Mound Bottom, and the Obion site, all of which are multi-mound towns and, thus, are not strictly comparable to Oliver. Moreover, major occupation of all these sites probably postdates the Oliver site by 100 years or more. Nonetheless, some instructive comparisons can be made.

Wickliffe Mounds is a small Mississippian town located near the confluence of the Ohio and Mississippi Rivers. The site seems to have been used primarily between A.D. 1100 and 1350 (Wesler 1989, 1991). Textile impressed ceramics comprise approximately 2 percent of the total assemblage. Drooker (1992) analyzed 1,559 textile impressed sherds from the site, including 194 rims. Simple plain twining (55%) and alternate pair twining (30%) were the most common fabric structures identified. A plethora of fabric structures are represented in the remainder of the sample, including weft-faced structures (7%), knotting (0.6%), and interlacing (0.06%). Virtually all structural elements exhibited an S-twist (Drooker 1990,1992).

Smoothed-over rims were noted at Wickliffe, with smoothing strips as wide as 6 cm. Most specimens analyzed were over one centimeter thick, but vessels (pans?) as thin as 3 mm were noted (Drooker 1992). Few examples of interior fabric impressions were recorded in the Wickliffe assemblage; selvages are not uncommon.

	Oliver		**Wickliffe**		**Mound Bottom**		**Obion**	
Simple plain twining	104	(95.4%)	830	(55.4%)	266	(76.9%)	238	(52.1%)
Alternate pair twining	0		450	(30.0%)	59	(17.1%)	139	(30.4%)
Complex combination twining	0		6	(0.4%)	0		0	
Other twining	0		93	(6.2%)	0		0	
Total twining	104	(95.4%)	1,379	(92.1%)	325	(93.9%)	377	(82.5%)
Weft-faced	2	(1.8%)	109	(7.3%)	5	(1.5%)	80	(17.5%)
Knotting	0		9	(0.6%)	0		0	
Interlacing	3	(2.8%)	1	(<0.1%)	0		0	
Complex structure	0				16	(4.6%)	0	
TOTAL IDENTIFIED	139		1,498		346		457	

Table 64. Identified fabric structures at selected sites.

Note: In the case of Wickliffe Mounds (Drooker 1992), "Plain Twining" and "Alternate Pair Twining" represent fabrics that exhibit those structures and no others. All combinations and variations of these structures are listed under "Complex/Combination" for comparative purposes. "Other Twining" category includes unknown twining structures, wrapped twining over single warps, and twining over nonalternating paired warps. Kuttruff and Kuttruff (1992) refer to Drooker's (1992) "Weft-faced" category as "Compact." Garland's (1992) "Closed Simple Twining" and "Plaited" structures, which were combined here due to the admitted difficulty in sorting the two, are comparable to "Weft-faced" and "Compact."

Mound Bottom is a large Mississippian town situated on a horseshoe bend of the Harpeth River near Nashville, Tennessee. Nine radiocarbon assays bracket occupation of the site between approximately A.D 900-1250 (Kuttruff 1979). All of the Mississippian ceramics are shell tempered, and no sherds exhibit interior fabric marking (Kuttruff and Kuttruff 1992).

Textile impressed ceramics constitute 3 percent (N=510) of the ceramic assemblage, of which 354 specimens could be analyzed. Among the identifiable textiles, 77 percent (N=260) were identified as simple twining, 17 percent (N=59) as alternate pair

twining, one percent were described as "compacted" (Drooker's "weft-faced"), and the remaining 5 percent represented complex structures such as interlacing. No examples of knotting or netting were observed, and no Z-twist fabrics were recorded. Smoothed-over rims are not mentioned, but 7 Kimmswick Plain saltpans were noted. Sherd thickness is not discussed (Kuttruff and Kuttruff 1992).

The Obion site is an Early/Middle Mississippian multi-mound town located on the North Fork of the Obion River in the extreme northeastern section of west Tennessee. Mississippian occupation at the site began *circa* A.D. 1050 and lasted perhaps 200 years (Garland 1992).

The vast majority of the Kimmswick Fabric Impressed sherds from the Obion Site (N=639) are clay ("grog") tempered, and hence should not have been classified as *Kimmswick* (*contra* Garland [1992]: 71). Only 17 specimens are shell tempered, while 46 exhibit both shell and clay particles in the paste. All are interpreted as fragments of slat pans.

Most vessels were fabric marked to the lip, but the occurrence of plain pan sherds was also noted. Two unidentified fabric impressed sherds made on Obion Plain paste, which represent a straight jar rim and a non-saltpan(?) body sherd respectively.

Simple twining is exhibited by 238 sherds and "twilled twined" (Drooker and the Kuttruffs "alternate pair twined") by 139 specimens. Fabric structures were not identifiable for the remainder. Neither sherd thicknesses nor ply direction are reported.

Several notable similarities are evident among the assemblages from Oliver and the other sites. Virtually all of the fabric impressed ceramics from Oliver, Mound Bottom, and Wickliffe exhibit an S-twist. Simple twining is the dominate structure at all four sites; frequencies range from 52 percent at Obion to 55 percent at Wickliffe, 77 percent at Mound Bottom, and 95 percent at Oliver. Small numbers of "weft-faced" structures are present at each site, most probably representing pre-Mississippian components.

Significant differences are also apparent, perhaps most important, the absence of alternate pair twining at Oliver. Perhaps alternate pair twining is a later innovation and this reflects the relatively early age of the Oliver site. Temporal considerations aside, the lack of alternate pair twining at Oliver suggests that the inhabitants invested considerably less time in producing fabrics than occupants at the other sites considered here. Alternate pair twining is a relatively complex, labor intensive technique (Drooker 1992; Kuttruff and Kuttruff 1992). Also worth mentioning is the occurrence of fabric marking over cordmarking only at Oliver.

Thickness data are available only for Oliver and Wickliffe; the fabric marked sherds from Oliver appear to be generally somewhat thinner than those from Wickliffe. The lack of fabric marked rim sherds in the Oliver assemblage is somewhat curious. Perhaps plain rims are characteristic of early Mississippian fabric impressed wares, although Drooker (1992) reports several smoothed over rims from Wickliffe. The "plain" pans from Mound Bottom and Obion may possibly represent smoothed over fabric impressions. Consideration must also be given to the possibility that vessel forms other than pans were produced using the earthen mold technique.

Untempered Plain and Cordmarked

Ceramic analysis identified a small number of what appear to be miniature untempered plain bowls at the Oliver site, represented by 105 sherds; a single miniature bowl and a pinch pot were identified during the analysis and we suspect that all other examples derive from similar vessels. Two varieties of paste have been noted, the less common of which is macroscopically fairly similar to the Late Woodland/Emergent Mississippian paste series, but lacks visible clay particles. The other variant, which is of greater interest, is very silty and friable. Firing temperatures appear to have been low and we suspect that vessels with this paste were made from soil present at the site. Color is typically yellowish brown (10YR6/4).

The only vessel form recorded for this paste are miniature pinch pot/bowl forms. Surfaces are smooth but lumpy, indicative of smoothing with the fingers, which tends to accentuate thick and thin portions of the vessel wall. A single example is cordmarked on the exterior. Rims are uneven and lips are pinched or rounded.

Three untempered cordmarked sherds were also recorded.

Varney Red, *var. Varney*

A total of 170 sherds of this variety were recovered from the Oliver site. The variety is defined by the presence of thick red filming on one or both surfaces of shell tempered (relatively coarse) vessels, particularly pans. There are obvious potential problems in distinguishing some *Varney* sherds from Old Town Red. Many examples from the Oliver site are indistinguishable from those in the Zebree site assemblage (Morse and Morse 1980, and personal inspection of collections).

Varney Red, *var. Foxhole*

This variety subsumes a small number of sherds (N=12) that are identical to *Varney* in all attributes except temper. *Foxhole* has been established as a clay tempered variety of Varney Red in the Reelfoot Lake Basin (cf. Mainfort 1989). Use of *Foxhole* is preferred to designating the relevant sherds as a variety of Larto Red, because the latter option would needlessly obscure their close relationship to *Varney*. All sherds probably derive from pans.

Wickliffe Thick, *var. unspecified*

These thick sherds derive from funnels and (perhaps) other unusual vessel forms; some may be fragments of stumpware boots. None of the sherds in the small sample (N=38) are shell tempered.

Mississippi Plain, *var. unspecified*

Coarse shell tempered plain sherds constitute slightly more than one percent of the Oliver site assemblage (N=161). It is likely that some of these are actually Varney Red sherds from which all traces of pigment have eroded.

Miscellaneous Ceramic Types

A number of additional ceramic types are represented in the large Oliver site ceramic assemblage, some of which pre-date major use of the site (e.g., Furrs Cordmarked and *Cypress Creek*). Due to very low frequencies, these will simply be listed: clay and shell temper plain (N=4); clay and shell tempered cordmarked (N=2), clay tempered adorno/effigy fragments (N=2), clay tempered trailed (N=1), stumpware (N=6), Baytown Plain, *var. Madison* (N=1), Mulberry Creek Cordmarked, *var. Westover* (N=1), Withers Fabric Marked, *var. Cypress Creek* (N=2), Tishomingo series paste eroded (N=1), Bell Plain (N=1), shell tempered cordmarked (N=6; 3 with red filmed interiors), shell tempered eroded (N=8), Obion Plain (N=2), Baldwin Plain (N=1), Furrs Cordmarked (N=1), Baldwin series paste eroded (N=1), bone tempered plain (N=1).

The presence of the Obion Plain sherds is of interest because terminal use of the Oliver site was probably contemporary with the earliest occupation at the Obion site (Garland 1992).

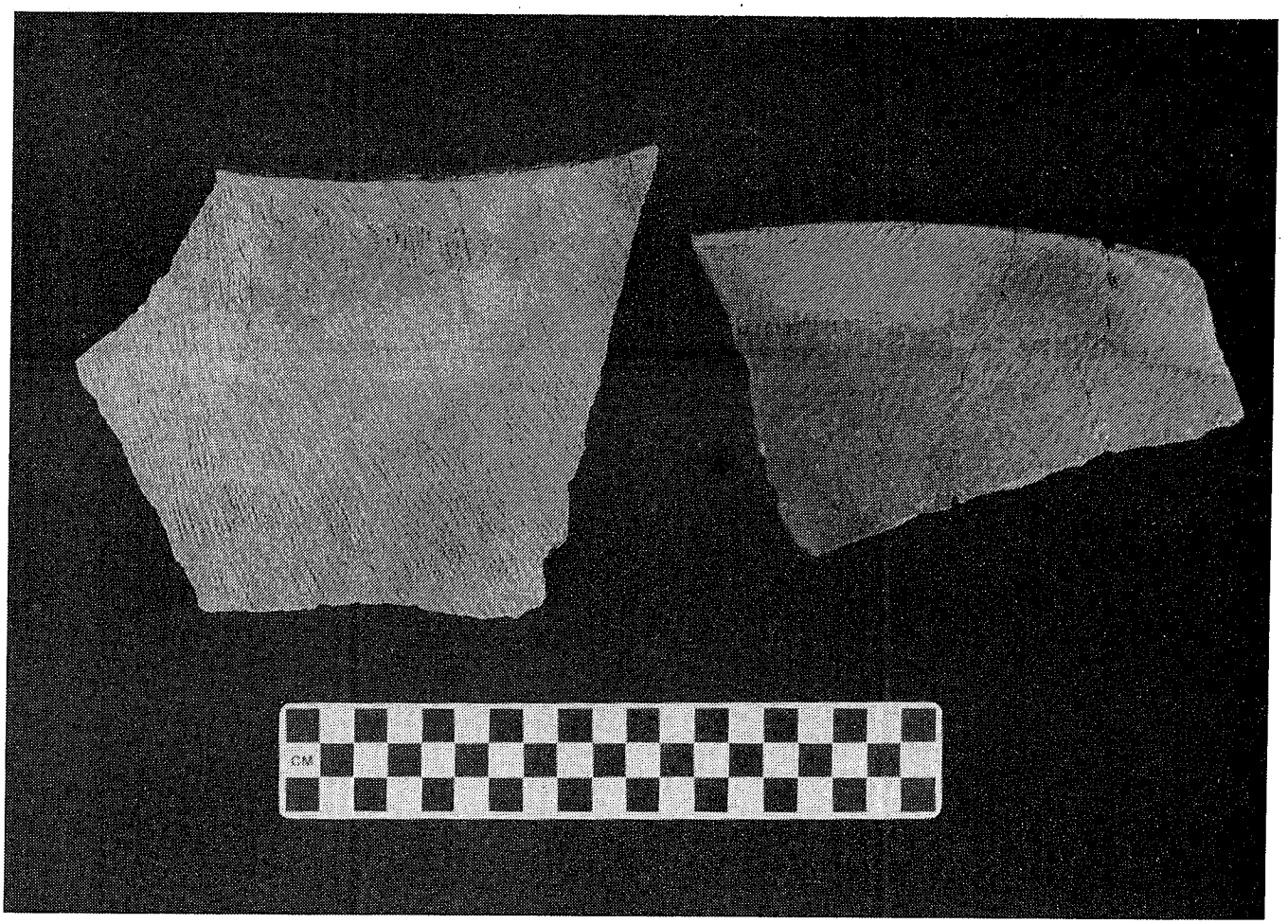


Figure 43. Mulberry Creek Cordmarked Rims, Oliver Site.

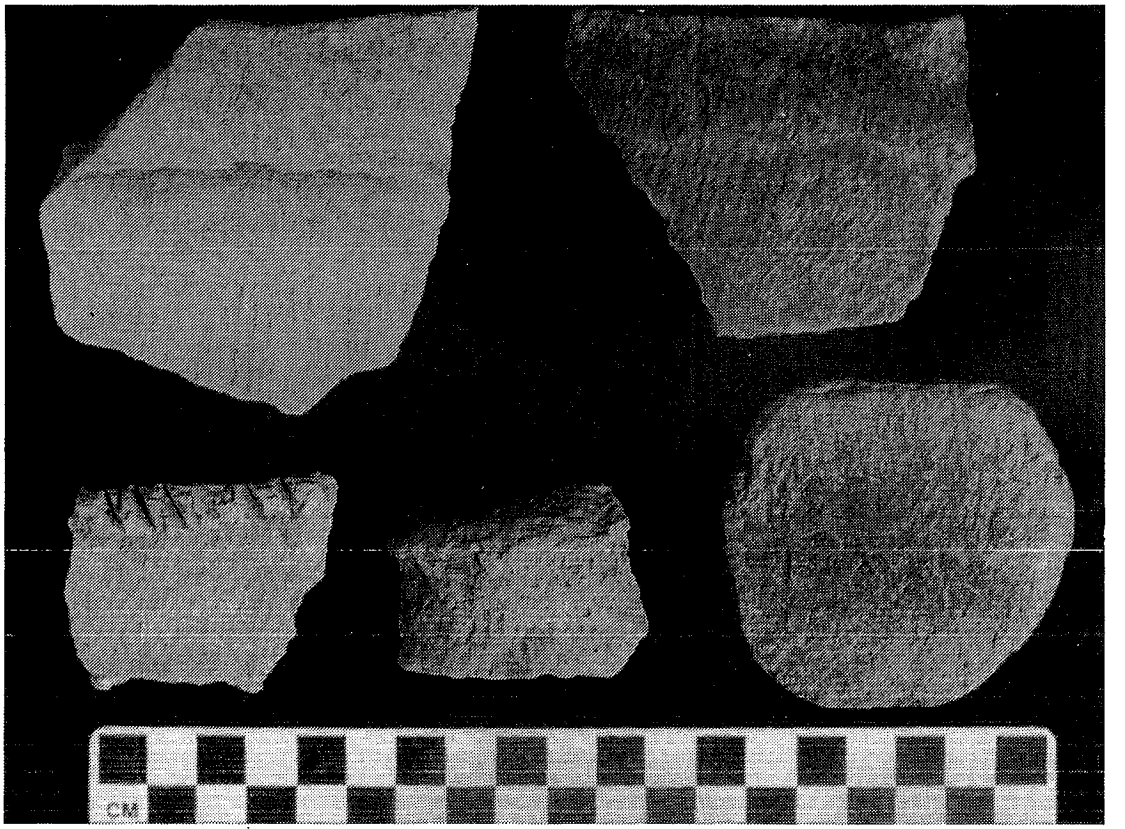


Figure 44. Selected Rims and Ceramic Disk, Oliver Site.

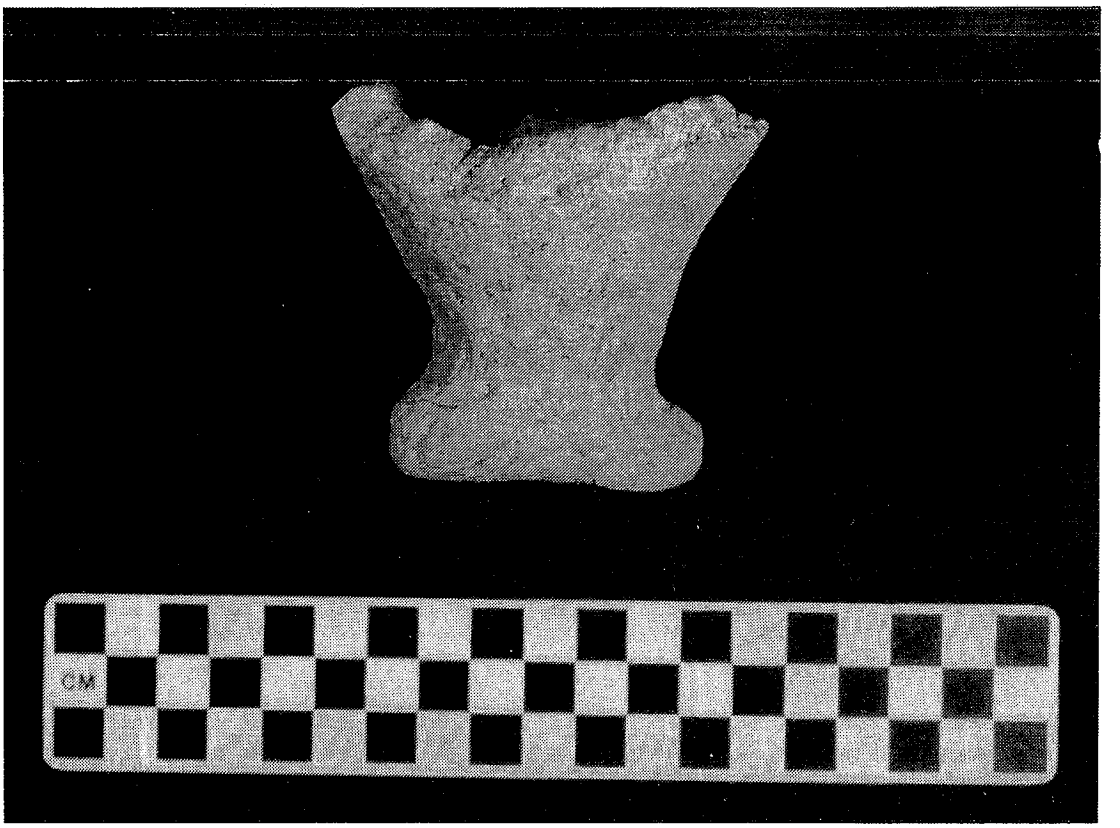


Figure 45. Base of Stumpware Boot, Oliver Site.

Ceramic vessel analysis

A total of 739 minimal vessels are represented by rims in the Oliver site assemblage, the overwhelming majority of which (N=579) are assignable to the type Mulberry Creek Cordmarked. The form of 301of these could be confidently identified; almost 75 percent (N=222) are interpreted as jars.

Most rim interiors are smooth (N=175) or slightly rough (N=39); three examples are burnished. Among those vessels on which the direction of cordmarking on the exterior could be discerned (and was of consistent orientation), 109 exhibit vertical cordmarking, with 64 examples of diagonal cordmarking. Exterior punctations were noted on 6 vessels; these probably represent small portions of Kersey Incised vessels. Rim thickening (often incorrectly referred to as "rim folds") was observed on slightly more than half (N=123) of the Mulberry Creek Cordmarked jars. Notching occurs on 39 jars of this type. Clear evidence of lip flattening is present on 129 vessels.

The small size of most rims rendered analysis of rim orientation less exacting than was planned. A total of 171 vessel rims are inslanting, while 29 are inslanting/ incurving and 14 are inslanting/outcurving. Three everted Mulberry Creek Cordmarked jars were noted; this rim form is typically associated with shell tempered vessels.

Approximate orifice diameters were determined for 63 Mulberry Creek Cordmarked jars. Diameters range from approximately 6 to 46 cm, with a mean of 22.5 cm.; the diameters of 3 jars are less than 10 cm. Based on a sample of 343 jar rim sherds, mean thickness is 8.8 mm, with a range of 2 to 16 mm, and a standard deviation of 2.3 mm.

The relatively small sample of identifiable non-jar Mulberry Creek Cordmarked does not lend itself to detailed consideration. Other identified vessel forms include bowls (N=28), seed jars (N=26), and pans (N=19). Of note is the occurrence of seed jars, a vessel form not previously identified at Emergent Mississippian sites in this section of the Central Mississippi Valley.

Vessel attributes among minority ceramic types in the Oliver site assemblage will be briefly summarized, again due to small sample size. Of the 62 Baytown Plain vessels, 15 are identified as jars, 4 as bowls, and one as a pan. The jars include 8 examples of inslanting rims and 6 everted; to reiterate, the latter are reminiscent of early shell tempered vessel forms. The occurrence of "Mississippian" vessel forms on a clay tempered paste indicates that the evolution of Mississippian vessel forms represents a technological trajectory at least somewhat independent of the use of shell as a tempering agent. Approximate rim diameters were determined for 7 jars, and range from 8 to 38 cm. Jar rim thickness ranges from 5 to 13 mm, with a mean of 7.9 mm.

The sample of 37 Kersey Incised vessels includes 31 jars, of which 17 exhibit rim notching. There are 3 everted jars, most of the remainder (N=26) being inslanting. A crude rim appendage is present on one vessel (Figures 31 and 32). Approximate rim diameters were determined for 8 jars, and range from 8 to 24 cm. Of potentially greater interest, jar rim thickness ranges from 3 to 10 mm, with a mean of 6.3 mm. This suggests that Kersey Incised jars generally have thinner walls than Mulberry Creek Cordmarked jars, but the small sample size precludes a more forceful statement.

Varney Red (including one example of *Foxhole*) accounts for 20 minimal vessels, including 7 pans, 6 jars, 2 seed jars, and a bowl. Five of the 6 jars exhibit everted rims. Six of the 9 identifiable Mississippi Plain vessels are jars. All of the shell tempered vessel rims in the Oliver site assemblage are quite small.

Eight Wickliffe Thick funnels were identified on the basis of rim sherds. One is decorated with fingernail punctations applied over smoothed cordmarking. Thickness ranges from 1.1 to 2.1 cm. Three stumpware vessels are represented by two rims and a single base (Figure 39). All exteriors are cordmarked. At least three additional thick rim sherds probably derive from stumpware or some other unusual vessel form.

	Mulberry Creek Cordmarked	Kersey Incised
Rim interior		
smooth	175	27
smooth-rough	39	4
burnished	3	0
Rim exterior		
cordmarked	22	6
cordmarked-smoothed	20	4
cordmarked-vertical	109	6
cordmarked-vertical-smoothed	0	0
cordmarked-diagonal	64	2
cordmarked-diagonal-smoothed	0	0
smoothed	4	0
smoothed-rough	2	0
cordmarked-smoothed-rough	0	0
cordmarked-smoothed-punctated	0	0
punctated	3	0
Notched	39	17
Thickened	123	8
Rim type		
inslanting/incurved	29	7
vertical/incurved	2	1
inslanting	171	16
inslanting/outcurved	14	3
outslanting/incurved	0	1
everted	3	3
vertical	1	0
incurving	0	0
Lip treatment		
smooth/flat	74	8
smooth/rough	30	4
smooth/round	16	5
smooth	0	0
cordmarked/smoothed/flat	20	0
cordmarked/flat	43	0
round	0	4
unmodified	0	0
cordmarked/smoothed	3	0
cordmarked/smoothed/round	0	0
cordmarked/round	3	0
flat	12	3
flat/incised	0	0
smooth/rough/round	0	0
smooth/rough/flat	0	0
burnished	0	0

Table 65. Jar rim attributes at the Oliver site (40OB161).

Other ceramic artifacts

CERAMIC DISCOIDAL AND DISK

A ceramic discoidal that is slightly biconvex in cross-section was recovered from Feature 126. The paste is slightly sandy and appears to be tempered primarily with baked clay particles. Fire clouding is present on one surface. This specimen has an average diameter of 5.8 cm and an average thickness of 3.5 cm.

Slightly less than half of a small, fired disk was found in a midden context. All surfaces, including the edge, are partially burnished. The original diameter was approximately 4.2 cm; the maximum thickness is 1.05 cm.

SHERD DISKS

Excavations at the Oliver site yielded seven sherd disks. The site owner retained one of these, for which no metric data is available. All specimens were carved from Mulberry Creek Cordmarked sherds. Both faces on the smallest disk are concave; all other specimens have relatively flat, unmodified surfaces. Two rim sherds are represented, one of which exhibits a thickening strip and probably was part of a pan. On the second example, much of the flat rim was left unaltered. With a single exception, the paste of all sherd disks falls within the range of the Late Woodland/Emergent Mississippian clay tempered paste discussed above; one disk exhibits a micaceous paste. Diameters range from 3.6 cm to 7.0 cm, with thicknesses ranging from 6.8 mm to 14.5 mm.

CLAY BEADS

Four clay beads were recovered during excavations at the Oliver site. The site owner requested immediate return of two specimens; no metric data is available for these. Both beads curated by TDOA are fairly small, with approximate diameters of 6 and 10 mm, respectively; both are of irregular shapes. In both instances, the hole measures approximately 2 mm in diameter.

CLAY EARPLUGS

One complete fired clay earplug (which was retained by the site owner) and 5 fragments of earplugs were recovered. No evidence of temper was observed in the paste.

CERAMIC PIPE FRAGMENT

The single example represents half of a stem portion, and is tempered with shell and clay particles. Maximum diameter of the smoke hole is approximately 5 mm. The exterior surface is smooth.

BAKED CLAY OBJECT

The spherical plain baked clay object provides additional evidence of a Tchula or Early Marksville component at the Oliver site.

MISCELLANEOUS CERAMIC ARTIFACTS

Two intentionally shaped, fired, untempered clay objects are interpreted as temper bricks. The function, if any, of 6 other shaped clay objects is unknown. A single fisted clay lump was also recovered.

COMPARISONS WITH OTHER SITES

The Reelfoot Lake area

Ongoing research by the Tennessee Division of Archaeology, the University of Illinois, and Memphis State University has produced moderately large ceramic collections from a number of sites, primarily within the Reelfoot Lake Basin, with major Late Woodland and/or Emergent Mississippian components (Mainfort 1988). Given the location of most of these sites on the rich alluvial soils adjacent to the relic channels that now comprise Reelfoot Lake, all might be appropriately considered to be Emergent Mississippian occupations. In the absence of excavated data, those sites referred to below as "Late Woodland" are so noted simply to reflect a lack of shell tempered ceramics. Collections curated by the Tennessee Division of Archaeology and the C.H. Nash Museum-Chucalissa were reanalyzed for comparative purposes in conjunction with this project. These data are presented in Tables 66 and 67. Since descriptions of these sites have not previously been published, summary comments about each are presented below.

Samburg (40OB1/126): Although recorded as two sites, the latter is simply an eastern extension of 40OB1 on the east side of Tennessee Rt. 22. Located north of Samburg, Tennessee, near the mouth of Indian Creek, this site consists of an extensive occupation area, a reported cemetery, and at least two platform mounds. The larger mound was destroyed in 1947 by road construction; it was rectangular in shape and stood approximately 6 m tall. considerably altered by plowing, the surviving mound is about 30 m square and 3 m tall. Total site area is estimated to be 9 ha. Based on its size, the presence of several platform mounds (a number of presumably contemporary conical mounds are located on the bluffs immediately to the east), and density of occupational debris, this site is considered to represent the apex of the Emergent Mississippian settlement pattern in the Reelfoot Lake Basin (Mainfort 1989).

40OB98: This Late Woodland village is located on the east side of Reelfoot Lake, about 5 km north of the Samburg site. Site area is estimated to be 2.8 ha, which may be a bit generous. Fieldnotes at the C.H. Nash-Chucalissa museum report the presence of a midden deposit approximately 30 cm thick, although subsequent inspections by TDOA staff have not verified the existence of surviving midden. No shell tempered or red filmed sherds have been collected from the site to date.

Kirby Pocket (40OB123/127): This site complex is located approximately 1.5 km north of Samburg, near Kirby Pocket, and represents another instance of a single site divided by SR 22. Limited testing of the 40OB127 locality by TDOA in 1987 exposed a number of subsurface features and (redeposited?) midden deposits prior to construction of a silt retention dam. According to local informants, the major portion of the site (40OB123, on the west side of the road), including numerous subsurface features, was destroyed during development of Reelfoot Lake State Park. Ceramic evidence suggests partial contemporaneity with the Samburg site. As is the case with the latter site, a number of small blufftop mounds (40OB122) appear to be contemporary with the Kirby Pocket site.

Murphy (40OB128): Another Late Woodland village, located 2 km north of Kirby Pocket. Dark midden staining covers an area of approximately 2.5 ha.

Lindamood (40LK5): This 4.7 ha village is located northeast of Tiptonville, Tennessee, near the southwestern portion of Reelfoot Lake, and was initially surveyed by Memphis State University staff in 1970 (Gerald P. Smith, personal communication). Local newspaper accounts document the presence of at least one cemetery area. Recent survey and limited testing by TDOA revealed the presence of intact midden deposits below the plow zone.

Badger (40LK6/13): Another case of a single site divided by a road, this extensive (9.7 ha) Late Woodland village is located several kilometers north of Reelfoot Lake Airpark Inn on the west side of the lake. A pronounced midden stain is present over at least 20 percent of the site area.

Auston Tract (40LK45): Reported by Donaldson (1946) and relocated by TDOA, this 4 ha site formerly included 13 conical mounds, only one of which still survives. A fairly extensive habitation area, assumed to be contemporary with the mounds, is also present.

Rice (15FU18): Some researchers consider this to be the paramount Late Woodland site in the Reelfoot Lake Basin (e.g., Kreisa 1988), based on its size (reportedly 15 ha) and the presence of three possible mounds. Very limited testing by Kreisa (1988) and TDOA indicates that the "mounds" are natural geomorphological features. A published map (Kreisa 1988: 133) indicates that the total site area is approximately 7.5 ha, a figure closely approximating the estimate of the original investigators (Schwartz and Sloan 1960). Repeated visits by TDOA suggest that artifact density is fairly low across most of the site area, a pattern more consistent with multiple small farmsteads than with a major "village." The Rice site is located northeast of Reelfoot Lake, adjacent to a relict channel of the Mississippi River.

Sanger (15FU19): With an area of approximately 15 ha, this is the largest Late Woodland/Emergent Mississippian site recorded in the Reelfoot Lake Basin. An enormous amount of cultural material is present on the surface and heavy midden staining is obvious. The site is located north of Reelfoot Lake along a rise adjacent to a relict channel of the Mississippi River, several kilometers southwest of 15FU3. An extensive middle period Mississippian site, including a large cemetery, partially overlaps the western portion of the site, making precise boundary determinations difficult.

15FU45: This is an intensively occupied Late Woodland component located within the Middle Woodland Hickman (Kentucky) earthworks complex (Mainfort and Carstens 1987). Precise site dimensions have not been determined, but the site covers at least several hectares.

The relatively small samples of rim sherds from these sites, as well as the fact that most were obtained from surface contexts (the assemblage from the Kirby Pocket site being an exception), precludes detailed comparisons with the Oliver site assemblage. However, since this constitutes the only comparative data that exist, presentation of the raw data, as well as a brief discussion, serves to place the Oliver site assemblage in context.

Based on the occurrence of shell tempered ceramics, the Reelfoot Lake Basin sites (as well as 15FU45) may be tentatively divided into two groups (see Table 66). The presumably earlier of these includes Badger, Murphy, Rice, Sanger, and 15FU45, all of which lack shell tempered wares (the Mississippi Plain rims from Sanger are probably associated with a middle period Mississippian component that partially overlaps the Emergent Mississippian component). The second includes sites within the "red filmed horizon" (Mainfort 1988); these are the Auston Tract, Samburg, Kirby Pocket, and Lindamood.

Neither group, nor any individual site, closely approximates the composition of the Oliver site assemblage. The Samburg and Kirby Pocket sites, as well as, to a lesser degree, Lindamood, have much higher frequencies of shell tempered wares than does Oliver; Baytown Plain is also much more abundant at these sites. Turning to vessel forms (Table 67), bowls are more numerous in these assemblages than at Oliver, as are pans. As one might expect, everted rims also seem to be more common at these sites, although the sample sizes are quite small; inslanting jars are common, as well.

Variations in the assemblages of sites in the first group provide hints of temporal differences between sites. The lack of Kersey Incised in the relatively large sample from the Badger site is notable in this regard; this type is also absent from the somewhat smaller collection from the Murphy site. Bowls are also more numerous at these two sites and at 40OB98. Also of potential significance is the higher ratio of round to flat lips at the Badger and Murphy sites relative to Rice and Sanger.

Returning to the placement of the Oliver site within the Reelfoot Lake Basin sequence, a brief and uncontroversial assessment can be offered. Simply put, Oliver almost certainly predates the major occupations at the Samburg, Kirby Pocket, and Lindamood sites, and postdates the remaining sites, with the possible exception of the Auston Tract.

	Lindamood	Badger	Auston Tract	Samburg	40OB98	Kirby Pocket	Murphy	Rice	Sanger	15FU45
Baytown Plain	38	3	2	20	2	28	4	4	7	1
Mulberry Creek Cordmarked	31	83	22	29	41	34	41	50	46	22
Kersey Incised	2	0	0	1	1	1	0	6	2	0
Varney Red	1	0	2	17	0	18	0	0	0	0
Varney Red, *var. Foxhole*	5	0	0	7	0	17	0	0	0	0
Mississippi Plain	8	0	1	13	0	9	0	0	4	0
Wickliffe Thick	1	0	1	2	0	1	0	2	0	2
stumpware	0	1	0	0	1	0	0	1	0	0
TOTAL	86	87	28	89	45	108	45	63	59	25

Table 66. Rim sherds from Late Woodland/Emergent Mississippian sites in the vicinity of the Oliver site.

	Lindamood	Badger	Auston Tract	Samburg	40OB98	Kirby Pocket	Murphy	Rice	Sanger	15FU45
Mulberry Creek Cordmarked	31	83	22	29	41	34	41	50	46	22
jar - inslanting	18	31	6	16	13	10	29	34	44	10
jar - everted	0	0	0	0	0	2	0	0	0	0
jar - other	1	0	1	0	0	3	0	0	0	2
bowl	7	11	8	3	7	8	5	4	2	5
pan	1	0	0	0	0	5	0	0	0	0
Baytown Plain	38	3	2	20	2	28	4	4	7	1
jar - inslanting	11	1	0	6	2	13	3	3	2	0
jar - everted	0	0	0	1	0	1	0	0	1	0
jar - other	2	0	0	3	0	5	0	0	0	0
bowl	5	0	0	5	0	0	0	0	2	1
pan	0	0	0	0	0	2	0	0	0	0
Mississippi Plain	8	0	1	13	0	9	0	0	4	0
jar - inslanting	4	0	1	3	0	3	0	0	2	0
jar - everted	1	0	0	1	0	3	0	0	0	0
jar - other	2	0	0	4	0	3	0	0	0	0
bowl	0	0	0	1	0	0	0	0	1	0
pan	0	0	0	1	0	1	0	0	0	0
Varney Red	4	0	2	24	0	35	0	0	0	0
jar - inslanting	3	0	0	1	0	5	0	0	0	0
jar - everted	0	0	0	1	0	4	0	0	0	0
jar - other	1	0	0	6	0	4	0	0	0	0
bowl	0	0	1	4	0	7	0	0	0	0
pan	0	0	0	7	0	7	0	0	0	0
hooded bottle	1	0	0	0	0	2	0	0	0	0

Table 67. Major ceramic types and vessel forms from Late Woodland/Emergent Mississippian sites in the vicinity of the Oliver site (based on rim sherds).

	Lindamood	Badger	Auston Tract	Samburg	40OB98	Kirby Pocket	Murphy	Rice	Sanger	15FU45
Rim interior										
smooth	19	30	8	16	13	11	28	31	30	12
smooth-rough	0	0	0	0	0	0	1	2	0	0
burnished	0	0	0	0	0	5	0	0	0	0
Rim exterior										
cordmarked	0	0	0	0	1	2	0	0	1	1
cordmarked-smoothed	1	2	0	0	0	4	3	3	0	1
cordmarked-vertical	5	7	2	3	7	4	10	11	14	5
cordmarked-diagonal	13	17	5	12	5	5	15	20	15	3
Notched	5	1	0	2	1	2	0	1	7	0
Thickened	6	23	4	8	4	12	15	14	17	6
Rim type										
inslanting/incurved	7	4	1	0	4	4	2	14	8	2
vertical/incurved	0	0	0	0	0	1	0	0	0	0
inslanting	5	22	4	15	5	6	18	20	20	6
inslanting/outcurved	6	5	1	1	4	0	9	0	1	2
outslanting/incurved	1	0	1	0	0	1	0	0	0	1
everted	0	0	0	0	0	2	0	0	0	0
vertical/outslanting	0	0	0	0	0	0	0	0	0	1
Lip treatment										
smooth	0	1	0	0	0	0	1	2	1	0
smooth/rough	0	0	0	1	1	4	0	1	2	0
smooth/round	3	2	2	4	2	0	10	1	2	2
smooth/rough/round	0	0	0	0	0	0	0	0	0	0
smooth/rough/flat	0	0	0	0	0	1	1	1	0	0
smooth/flat	11	11	4	9	5	2	8	11	3	0
cordmarked	0	1	0	0	1	1	1	3	3	1
cordmarked/smoothed/flat	1	2	0	2	1	1	2	2	1	3
cordmarked/flat	3	9	0	2	2	2	2	10	12	3
cordmarked/smoothed	0	3	0	0	0	0	2	0	1	3
cordmarked/smoothed/round	0	0	1	0	1	0	2	0	0	0
cordmarked/round	0	1	0	0	0	0	1	0	2	0
burnished	0	0	0	0	0	0	0	1	0	0
pinched	0	0	0	0	0	2	0	0	0	0
unmodified	0	0	0	0	0	0	0	0	0	0
flat - total	15	22	4	13	9	7	12	18	16	6
round - total	3	3	3	4	3	0	13	1	4	2

Table 68. Attributes of Mulberry Creek Cordmarked jar rims from Late Woodland/ Emergent Mississippian sites in the vicinity of the Oliver site.

Obviously, it would be premature to make sweeping statements about Late Woodland/Emergent Mississippian chronology in the Reelfoot Lake Basin based on the available data. Moreover, a multi-year research project recently initiated by TDOA in the Basin is certain to dramatically alter current interpretations. At the same time, it is important to recognize that, in the absence of large-scale excavations and a robust radiocarbon chronology, the best means for dealing with area chronology lies in the kind of analysis described and presented here.

Southeast Missouri

Among sites in the Central Mississippi Valley for which there are published data, the ceramic assemblage from the Hoecake site in southeast Missouri exhibits the greatest degree of similarity to that from the Oliver site (R. Williams 1967, 1974). Hoecake is a very large and complex site, and the extent of investigations by professional archaeologists is incommensurate with the site's importance. Unfortunately, the limited amount of published data is somewhat obsfucated by rather convoluted attempts to define various "phases" or subphases at the site (e.g., R. Williams 1967, 1974).

Limited testing at Hoecake was undertaken in 1966, at which time excavations were conducted in four areas within the site. The remains of 11 rectangular, semi-subterranean houses with individually set posts were exposed, as were a number of pit features, several hearths, and two burials. Importantly, over 95 percent of the excavated ceramics were obtained from Excavation Area 1. As a result, attribution of different chronological placement to individual excavation areas (R. Williams 1967, 1974; Morse and Morse 1990) is rendered meaningless due to overwhelming sampling problems; there simply is no basis for making such inferences.

The Hoecake ceramic assemblage (cf. R. Williams 1974: 76-78) is dominated by Mulberry Creek Cordmarked (approximately 50 percent) and Baytown Plain (approximately 35 percent). It seems likely that much of the material identified as "Baytown Plain" is actually smoothed over Mulberry Creek Cordmarked, although some examples of loop handles are reported (e.g., R. Williams 1967: 93). Strong minority types include Mississippi Plain (approximately 7 percent) and Larto Red (approximately 8 percent). Based on the material with which it is associated, the sherds identified by R. Williams as Larto Red probably correspond to Varney Red, *var. Foxhole* at Oliver and other northwestern Tennessee sites; this inference is supported by the recovery of a "Larto Red Strap or Loop Handle" from Feature 19 at Hoecake (R. Williams 1967: 91).

Other minority types include Varney Red (approximately 1 percent), Kersey Incised, Wickliffe Thick, and Kimmswick Fabric Marked. Contemporaneity of the shell and clay tempered wares is strongly supported by their consistent co-occurrence in pit features (R. Williams 1974: 72-73), a situation also observed at several sites in the Reelfoot Lake Basin (Mainfort 1989). Also present are examples of stumpware (R. Williams 1974: 85) and two shell tempered vessels with sharp angular shoulders that can be placed on a Lohmann or Early Stirling phase timeline; very similar examples have been recovered from 40OB6 near Reelfoot Lake (Mainfort 1989) and the Obion site (Garland 1992). With the exception of the latter vessels, the Hoecake ceramic assemblage is strikingly similar to that from the Oliver site and it seems virtually certain that the sites were at least partially contemporary. Unfortunately, the two published radiocarbon dates from habitation area contexts at Hoecake (R. Williams 1974: 85) are of no value in resolving questions of chronology.

LITHIC MATERIAL

Excavations at the Oliver site produced a relatively large sample of lithic artifacts, representing the first substantial, excavated assemblage from an Emergent Mississippian site in the Reelfoot Lake Basin and immediate vicinity. While analysis was hindered by a lack of lithic source studies within the region, the overwhelming majority of chert artifacts (including both debitage and tools) consists of what is assumed to be locally available gravels, with coloration in the yellowish-brown to light brown range. Non-local specimens, consisting primarily of Mill Creek hoe flakes, are discussed below.

With the exception of projectile points, few lithic tools were identified in the Oliver site assemblage. In part, this may reflect the expedient use of unmodified flakes as tools.

Projectile Points

A total of 24 complete or partial examples of Madison or Madison-like projectile points were recovered from the Oliver site. Among the complete specimens, lengths range from 1.6 to 4.0 cm; the larger examples fall outside the range of comparable points from the Reelfoot Lake Basin. Basal widths vary between 1.2 and 1.8 cm; both straight and slightly concave bases were noted. Many examples exhibit relatively crude flaking, characterized by asymmetrical cross-sections and multiple hinge fractures, but several (including the largest point) are quite well-made. Two points were reworked from larger artifacts. Most Madison points were manufactured from caramel-colored to brown cherts rather similar to the lithic materials that typify sites in the Reelfoot Lake Basin; these cherts probably originate from local gravel deposits. Two examples were produced from a bright red, almost jasper-like, chert of unknown origin. All of the small triangular points are presumably associated with the Emergent Mississippian occupation of the site. A small corner-notched point, similar to a Scallorn, is probably of comparable age.

Four points in the Oliver site assemblage are pre-Emergent Mississippian age, although it is quite possible that these were collected and utilized by the later inhabitants of the site. The Eva point was produced from a large flake of dark gray chert, possibly from the Fort Payne formation in the Tennessee River valley; a portion of the base is missing. Manufactured from Dover chert, the fragmentary expanded stem point may represent an example of a Mud Creek or related Woodland type. The relatively large (length = 6.9 cm) tapered shoulder point is probably related to Ensor's (1981) Tombigbee Stemmed type; the base comes to a virtual point. A basal fragment from a small corner-notched point has not been identified; it was produced from a flake of light gray (possibly Fort Payne) chert with inclusions, and exhibits some basal thinning.

Fifty-three unidentifiable projectile point fragments were also recovered from the Oliver site. Many of these are distal elements that probably derive from Madison points.

Unhafted Bifaces

A total of 30 unhafted bifaces or biface fragments are represented in the Oliver site assemblage. Of the complete specimens, all are roughly triangular in shape. Some of these artifacts probably represent abortive attempts to produce projectile points. It is likely that some dart point fragments were inadvertently included in this category.

Drills

Only four artifacts classifiable as drills were collected. All are bifacially retouched and exhibit a pointed tip. All appear to be reworked projectile points.

Adz

This fragmentary specimen appears to be a portion of a flaked chert woodworking tool.

Retouched and Utilized Flakes

These categories are very poorly represented in the Oliver site assemblage. Five flakes exhibit small retouch scars along one margin. Only one flake exhibits edge damage that could be confidently attributed to prehistoric use.

Flake Cores

These artifacts are characterized by the presence of two or more flake scars, usually from several faces. All 19 specimens fall within the color range of presumably local chert.

Primary (Decortication) Flakes

As used during analysis of the Oliver site collections, primary flakes exhibit extensive areas of cortex on the dorsal surface. A total of 1,336 examples were recovered.

Secondary (Decortication) Flakes

Represented by 1,136 specimens, this category includes reduction flakes with small areas of cortex.

Bifacial Thinning Flakes

These flakes are produced during the final stages of tool manufacture or during resharpening of a tool. Examples in the Oliver site assemblage (N=43) are of small size and exhibit scars from previous flakes. Only unmistakable specimens were included in this analysis category.

Blocky Shatter

The large number of specimens assigned to this category (N=1,467) are not identifiable as flakes or cores. Shattered core remnants and minimally worked angular chert fragments are included here.

Groundstone Discoidal

Manufactured from a multicolored sandstone, the single example is concave on both faces and is heavily pitted. It measures 6.35 cm in diameter and 2.8 in thickness.

Pitted Stone

Two metamorphic rocks exhibit one or more small pits on the surface, and resemble objects often referred to as "nutting stones."

Abraders

Both specimens, one of limonite, the other of white sandstone, exhibit multiple narrow grooves, suggesting their use in arrow or bone tool manufacture. The white sandstone probably derives from deposits along the base of the bluffs on the east side of Reelfoot Lake.

Hammerstone

This igneous rock exhibits numerous battering marks at both ends and presumably served as a hammerstone for chert tool manufacture.

Hoe Flakes

Despite the relatively limited extent of excavations at the Oliver site, a surprisingly large number of polished hoe flakes were recovered. These flakes presumably are associated with the rejuvenation of hoes or similar agricultural implements. Virtually all of the hoe flakes for which the source material could be identified are of Mill Creek chert (N=138), a coarse grained material that varies in color from light gray to pale blue to tan, often with banding. The major source area for Mill Creek chert is southwestern Illinois, where it occurs as large, flat slabs and nodules.

Mill Creek hoes circulated over a wide range throughout the Mississippian period, first appearing in circa A.D. 900 contexts at Cahokia (Brown, Kerber, and Winters 1990). It is of some interest that the Oliver site has yielded almost 4 times the number of Mill Creek hoe flakes as the Zebree site in northeastern Arkansas (N=35; Morse and Morse 1983: 225).

A single polished flake of Dover chert was recovered at the Oliver site. Dover chert was second in importance only to Mill Creek chert for the production of hoes during the Mississippian period. Contrary to a number of published references (e.g., Brown, Kerber, and Winters 1990), Dover chert derives from the St. Louis Limestone, not the Fort Payne formation (Marcher 1962).

The sources of an additional 20 polished flakes have not yet been identified. Colors range from white to gray. Macroscopically, none of the former appear to be examples of Burlington/Crescent Quarry chert. A number of specimens fall within the known range of variability of Fort Payne chert, but none could be conclusively identified as such.

Miscellaneous Lithic Material

A large quantity of unworked lithic material was recovered during excavations at the Oliver site. After washing and initial sorting, this material was simply counted and weighed. Totals are as follows: ferruginous sandstone (N=1,169; 5,154.5 g); ferruginous siltstone (N=108; 692.3 g); miscellaneous sandstone (N=394; 2,266.6 g); firecracked rock (N=4,382; 8,590.3 g); limonite (N=433; 4,031.8 g); miscellaneous unmodified rock (N=1,740; 9,299.1 g).

FAUNAL ASSEMBLAGE (Emanuel Breitburg and Robert C. Mainfort, Jr.)

Approximately 2,900 faunal specimens were recovered during the 1992 excavations at the Oliver site (Table 69). Faunal data from large-scale excavations in Mississippi River counties of northwest Tennessee and western Kentucky are conspicuously lacking, so the Oliver site assemblage represents an important opportunity to examine prehistoric animal exploitation patterns in the region. Despite the relatively small size of the assemblage, the good contextual data and the absence of comparable samples from the region make the Oliver site remains an important addition to our knowledge of prehistoric lifeways during the period of about A.D. 900 to A.D. 1000.

An extended discussion of the Oliver site faunal assemblage lies beyond the scope of this volume, but will be presented in a subsequent publication. Emphasis here is on presentation of essential data, with appropriate commentary to highlight notable findings.

Faunal elements were generally very well preserved and were initially divided into two groups: identifiable and indeterminate mammal, bird, reptile, amphibian, fish, or shell. To the extent possible, specimens were identified to species and anatomical element and position. Evidence of burning, cutting, and intentional modification were also recorded. The resulting inventory was used to determine the minimum number of individuals (MNI) represented for each identifiable species. Calculations of meat yield will appear in a later publication.

The 2,885 specimens of bone, teeth, and shell represent 284 individuals from 18 mammal (N=60), 16 bird (N=144), 7 reptile (N=20), 1 amphibian, 11 fish (N=42), and 10 freshwater bivalve (N=17) species, genera, and orders (Table 69). Identified elements are comprised of 36.8% (N=1,058) mammal, 47% bird (N=1,357), 11.4% reptile (N=328), 0.1% amphibians (N=3), 3.4% fish (N=98), and 0.9% bivalve (N=26). Slightly more than 30% (N=877) of the specimens have been exposed to fire or heat. Eleven specimens exhibit cut marks attributable to butchering activities, and 43 specimens exhibit modifications associated with tool manufacture.

Of the 1,058 identifiable mammalian remains, 676 (63.9%) represent a minimum of 11 white-tailed deer. Antler, craniofacial elements, and dental fragments comprise 22.0% of the deer remains. Strong representation of deer is characteristic of most archaeological sites of virtually any time period throughout eastern North America. Gray and fox squirrels comprise nearly 19% (N=201) of the assemblage; at least 20 individuals are represented. Cottontail rabbit (N=42) and raccoon (N=47) are the most numerous of the remaining mammal species.

A variety of habitats are indicated by the mammalian remains, including forests (raccoon, gray squirrel, opossum), open and semi-forested areas (woodchuck, fox squirrel, cottontail rabbit, skunk), and riparian or aquatic localities (mink, muskrat, beaver, swamp rabbit). Individuals from the latter habitat may have been obtained from the Obion River bottomlands or the Reelfoot Lake Basin.

Of particular note in the Oliver site faunal assemblage is the extraordinarily large number of passenger pigeon remains (N=1,181), which constitute almost 41% of the total number of specimens and represent over 100 individuals. One third of the specimens have been burned.

This quantity of passenger pigeons is virtually unprecedented in archaeological contexts . Historic accounts (e.g., Schorger 1955: 133-134) indicate that it was not uncommon for entire Native American settlements to relocate at roosts, where large numbers of pigeons were easily taken by netting or by felling trees on which thousands of birds were perched. The high incidence of passenger pigeon remains in the Oliver site assemblage may plausibly be interpreted as reflecting the close proximity of the site to a pigeon roost.

Swanton (1946: 298) states that passenger pigeons were second in importance only to wild turkey among game birds exploited by Native Americans of the southeast. During a journey through the Carolinas, Lawson (Lefler 1967: 50-51) observed vast quantities of pigeon oil that was used as a form of butter by Native Americans. In light of the historical accounts, it is somewhat remarkable that passenger pigeons are not more strongly represented in archaeological faunal assemblages. A number of factors may contribute to under-representation, including procurement strategy, preparation techniques (e.g., rendering oil), and poor preservation of the delicate bones due to soil conditions.

Three upland species, turkey, prairie chicken, and quail, are the most numerous among the other avian remains, accounting for 142 elements (6.2%) and 28 individuals. The low frequency of aquatic bird species, represented by only 3 ducks, warrants mention, since Reelfoot Lake, a major stopover on the Mississippi Flyway, is located a relatively short distance to the west of the Oliver site.

The majority (N=258, 11.3% of the total assemblage) of the identifiable reptile specimens are those of box turtles, which are characteristic of open wooded areas (Ernst and Barbour 1972: 89). Very few turtle species associated with wetland habitats are represented. Relatively few fish remains are present in the Oliver site assemblage (N=98, MNI=42), with the majority identified as catfish (N=41) and garfish (N=29, including 14 scales). All identified fish were of small size.

Among the modified faunal elements are 5 mussel (mucket; several were retained by the site owner and are not tabulated below) shell hoes (see Morse and Morse 1980), one mussel shell (Pistol-grip) with a worked edge, 8 *Leptoxis* beads, 4 antler drifts, several bone fishhooks (all but one retained by the site owner), and 5 splinter awls, all of which were manufactured from mammal long bones.

The faunal assemblage from the 1992 excavations at the Oliver site suggests a subsistence strategy focused on upland species. Notable in their apparent lack of importance are aquatic waterfowl and fish. If, as suggested above, the location of the Oliver site was chosen specifically to exploit a pigeon roost, this may be somewhat understandable. Passenger pigeons, however, were migratory, and the intensity of occupation at the Oliver site does not appear to be attributable to seasonal habitation. Additional large scale excavations at the site are necessary to resolve the intriguing questions raised by the faunal assemblage.

Taxa	Count	MNI	Burned	Cut	Modified
Deer	676	11	168	10	21
Striped Skunk	11	2	4	0	0
Mink	1	1	1	0	0
Raccoon	47	6	9	1	1
Dog	4	1	0	0	0
Wolf/Dog	1	N/A	0	0	0
Gray Fox	3	1	0	0	0
Muskrat	1	1	1	0	0
Beaver	10	1	2	0	0
Fox Squirrel	102	10	29	0	0
Gray Squirrel	99	10	29	0	0
Squirrel	8	N/A	1	0	0
Woodchuck	6	2	0	0	0
Cottontail Rabbit	42	5	15	0	0
Swamp Rabbit	13	4	3	0	0
Rabbit spp.	9	N/A	2	0	0
Common Mole	1	1	1	0	0
Opossum	24	4	7	0	0
Passerine spp.	7	2	1	0	0
Meadowlark	2	1	0	0	0
Redheaded Woodpecker	1	1	0	0	0
Yellow-shafted Flicker	2	1	0	0	0
Woodpecker spp.	3	N/A	0	0	0
Passenger Pigeon	1181	106	392	0	0
Turkey	37	6	7	0	0
Prairie Chicken	30	3	6	0	0
Quail	75	19	22	0	0
Red-tailed Hawk	3	1	1	0	0
Buteo spp.	3	N/A	0	0	0
Hawk spp.	4	N/A	0	0	0
Turkey Vulture	1	1	1	0	0
Teal-size Duck	1	1	1	0	0
Mallard *et al*	6	2	1	0	0
Duck spp.	1	N/A	0	0	0
Colubrid Snake	45	1	16	0	0
Viperid	19	1	5	0	0
Snake spp.	1	1	0	0	0
Softshell spp.	1	1	1	0	0
Box Turtle	258	14	121	0	0
Map/Painted Turtle	2	1	1	0	0
Stinkpot	2	1	2	0	0
Frog/Toad spp.	3	1	1	0	0
Drumfish	9	9	2	0	0
Bass family	2	2	0	0	0
Channel Catfish	2	2	0	0	0
Catfish spp.	39	16	12	0	0
Redhorse spp.	3	2	0	0	0
Sucker family	3	2	1	0	0
Cyprinidae	2	1	0	0	0
Esox cf. lucius	1	1	0	0	0
Esocidae	2	2	0	0	0
Garfish	28	4	6	0	1
Bowfin	7	1	1	0	0
Crayfish	3	0	2	0	0
Mollusc	26	17	0	0	5
Butterfly shell	1	1	0	0	1
Fusconaia spp.	2	0	0	0	0
Mucket	8	2	0	0	3
Pistol-grip	1	1	0	0	1
Pocketbook spp.	2	2	0	0	0
Sandshell spp.	1	1	0	0	0
Villosa spp.	2	1	0	0	0
Washboard	1	1	0	0	0
Leptoxis spp.	8	8	0	0	8
Large mammal - UID	5	N/A	2	0	5
Medium mammal - UID	1	N/A	0	0	1
Bird - UID	5	0	0	0	5
Misc. - UID	1	N/A	0	0	1
TOTALS	2885	284	877	11	51

Table 69. Faunal remains from the Oliver site.

ARCHAEOBOTANY (Andrea B. Shea and Robert C. Mainfort, Jr.)

During excavation of the Oliver site, numerous soil samples of standard volume were retained from both feature and midden contexts. Samples were subsequently selected for processing by flotation or waterscreening through standard windowscreen.

Flotation was performed on soil samples from 16 features, resulting in a total analyzed sample weight of 20.1 g. Charred hickory nutshell fragments were identified in all samples, and comprises over 60 percent of the total sample by weight. Among the identified wood species, oak (8 features), hickory (5 features), and ash (4 features) are most numerous and occur in the most features. This is consistent with the upland setting of the Oliver site. Three maize kernels and 2 cupules were recovered from 2 features (Features 69 and 109). Probable native cultigens include chenopod, curcubit, maygrass, and knotweed, which were present in one feature each. Flotation of soil samples from non-feature (primarily midden, but also several postholes originally interpreted as features), yielded 4.7 g of identifiable botanical remains. The recovered nutshell and wood remains mirror proportions in the feature samples.

Although it would have been preferable to float more of the soil samples, time and budgetary constraints militated against doing so. As a more expedient alternative, soil samples from 26 features (including some for which flotation was also performed) were waterscreened through standard windowscreen, resulting in the recovery of 67.4 g of identifiable botanical material. Hickory nutshell comprises nearly 60 percent of the identifiable remains. Relative proportions of wood species closely approximate those from the floated samples. Seven specimens of maize were distributed among 3 features (Features 1, 97, and 137), bringing to five the total number of features from which maize was recovered. Knotweed, (N=100, from 3 features) was especially numerous in the waterscreened feature samples.

Numerous soil samples from midden and post hole contexts were also waterscreened. Identifiable botanical remains weighing a total of 130.0 g were recovered from these contexts, of which over 60 percent (80.8 g) consisted of hickory nut shell fragments. Oak, hickory, and ash are the most common wood species, occurring in relatively the same percentages as seen above. Among the seeds, morning glory, knotweed, and bean are most numerous, while a total of 40 specimens of maize were recovered.

There are no truly comparable data sets from the Central Mississippi Valley with which the Oliver site botanical remains can be compared. Nutshell fragments, particularly those of hickory, comprise approximately 60 percent of the botanical sample by weight, with relatively minor amounts of hazelnut, pecan, walnut, and acorn. Oak, hickory, and ash dominate the wood charcoal spectrum, although at least 16 tree taxa are represented.

Although the seed assemblage generally falls within the range of expectations for an Emergent Mississippian site, it must be noted that the overwhelming majority of the seeds from feature contexts were recovered from a single feature. Including totals from flotation and waterscreening, Feature 97 contained all of the chenopod (N=23), morning glory (N=19), gourd (N=1), persimmon (N=3), wild bean (N=3), maygrass (N=50), bullrush (N=6), sida (N=2), sedge (N=2), and sumac (N=1). Feature 97 also yielded 100 of the 108 knotweed seeds, and 7 of the 10 bean seeds, as well as maize.

	Features - flotation	Features - waterscreen	Midden - flotation	Midden - waterscreen
Total weight	20.1	82.8	5.7	135.7
Residual	6.7	15.4	1.0	5.7
NUT (weight)				
Hickory (*Carya* sp.)	8.4	39.6	2.7	80.8
Hazelnut (*Corylus americana*)	<0.1	0.1	0.0	0.2
Pecan (*Carya illinoensis*)	0.0	0.3	<0.1	0.3
Walnut (*Juglans* sp.)	0.0	0.1	0.1	0.5
Acorn (*Quercus* sp.)	0.2	0.8	0.0	0.8
WOOD/GRASS (total weight)	5.3	26.3	2.2	47.0
WOOD/GRASS fragments				
Cane (*Arundinaria* sp.)	2	5	0	8
Grass stem	0	1	0	0
Maple (*Acer* sp.)	0	6	0	15
Hickory (*Carya* sp.)	30	118	19	144
Redbud (*Cercis canadensis*)	1	0	0	1
Dogwood (*Cornus* sp.)	2	3	1	1
Persimmon (*Diospyros virginiana*)	0	14	0	9
Beech (*Fagus grandifolia*)	3	4	1	10
Ash (*Fraxinus* sp.)	13	51	13	74
Honey Locust (*Gleditsia triacanthos*)	3	12	4	15
Sweetgum (*Liquidambar styraciflua*)	0	3	0	7
Osage Orange (*Maclura pomifera*)	0	0	0	2
Mulberry (*Morus rubra*)	3	7	0	6
Sycamore (*Platanus occidentalis*)	0	0	1	4
Cherry (*Prunus* sp.)	0	0	0	0
Oak (*Quercus* sp.)	40	136	36	197
Willow (*Salicaceae*)	0	4	0	1
Elm (*Ulmus* sp.)	1	3	0	4
Bark	0	0	0	4
Diffuse porous	1	5	2	21
Unidentifiable	1	13	3	29
SEEDS/FRUITS (total weight)	0.25	0.8	<0.1	1.25
SEEDS/FRUITS (number)				
Amaranth (*Amaranthus* sp.)	0	1	0	0
Chenopod (*Chenopodium* sp.)	23	0	0	0
Squash/Pumpkin (*Curcubita* sp.)	2	2	0	0
Morning Glory (*Ipomoea* sp.)	0	19	1	70
Little Barley (*Hodeum pusillum*)	0	0	0	1
Gourd (*Curcubita* sp.)	0	1	0	0
Persimmon (*Diospyros virginiana*)	0	3	0	5
Wild Bean (*Strophostyles* sp.)	2	3	0	3
Maygrass (*Phalaris caroliniana*)	48	2	0	0
Bean family (*Fabaceae*)	3	7	0	28
Grass family (*Poaceae*)	2	0	0	0
Knotweed (*Polygonum erectum*)	8	100	0	45
Bullrush (*Scirpus* sp.)	0	6	0	0
Sida (*Sida* sp.)	2	0	0	0
Maize (*Zea mays*) total N	5	7	0	40
Kernels	3	4	0	15
Cupules	2	3	0	25
Tuber fragments	0	0	0	2
Sumac (*Rhus* sp.)	0	1	0	0
Sedge (*Cyperus* sp.)	2	0	0	3
Small, mint-like	0	3	0	0
Maize stem?	0	0	0	3

Table 70. Botanical remains from the Oliver site.

Maize was recovered from 5 (11.9%) of the 42 features sampled, and 40 specimens were identified from non-feature contexts. To the extent that comparisons with the American Bottom are warranted, the percentage of features containing maize is quite low. Of course, the maize from non-feature contexts might derive from unidentified features. Curcubit and beans are not well-represented, but they typically do not preserve as well as maize.

OLIVER SITE SUMMARY

Excavations at the Oliver site have provided important baseline data about the Mississippian emergence in the Central Mississippi Valley that will be of lasting importance. Despite the relatively limited extent of excavations, no other site dating to the A.D. 800-1050 time range in the river counties of western Tennessee and western Kentucky has been as intensively investigated.

The Oliver site represents essentially a single component occupation, and is located in the uplands near the headwaters of a tributary stream of the Obion River, northwest of Union City, Tennessee. Given the presence of numerous large sites of presumably comparable age in the floodplain environment of the Reelfoot Lake Basin (Mainfort 1989), it is somewhat ironic that the first intensively tested Emergent Mississippian site in the area occupies a somewhat incongruous upland setting.

Intact midden deposits were found across the area excavated, but are much better preserved in the northernmost units. A considerable amount of prehistoric ceramics, lithics, and bone was recovered from the midden. Although a number of pit features and posts were disclosed, no clear evidence of actual structures was recorded. Since no wall trenches were encountered, it seems likely that houses were of single-post construction. Artifact frequency distributions suggest the presence of functionally differentiated loci within the area excavated, but drawing conclusions about the organization of a 4.5 ha site based on a 96 m^2 sample would be rather pointless.

Analysis of the large ceramic assemblage focused on the analysis of rims from 739 minimal vessels. Inslanting Mulberry Creek Cordmarked jars are by far the predominant vessel form; few bowls were identified. Other identified vessel forms include seed jars, pans, funnels, and stumpware. Although broad conclusions could not be drawn about the vessel assemblage due to the lack of comparable data sets from the region, detailed analysis of rims from the Oliver site and selected sites from the Reelfoot Lake Basin will be of enormous value to long-term research efforts in the region.

Additionally, the Oliver site assemblage afforded an opportunity to formally define the type Kersey Incised and to study fabric pseudomorphs preserved on fabric marked ceramics. The occurrence of shell tempered ceramics (Mississippi Plain and Varney Red) in the same context as clay tempered wares is conclusive, and has also been noted at other sites in the region.

Lithic tools were not numerous, consisting primarily of small triangular projectile points. The relatively large number of polished Mill Creek hoe flakes is especially noteworthy, and provides fairly strong support for a post-A.D. 900 age for occupation at the Oliver site.

The evidence at hand suggests that maize was a relatively minor dietary component at the Oliver site, and the frequency of this tropical cultigen falls considerably below levels reported for sites of circa A.D. 800 age in the American Bottom. Although white-tailed deer bones dominate the faunal assemblage, the extraordinary abundance of passenger pigeon remains strongly suggests that the location of the Oliver site can be attributed to the presence of a pigeon roost in the immediate vicinity.

One of the highest priorities of fieldwork at the Oliver site was to obtain a battery of accurate radiocarbon determinations from unimpeachable contexts. The results were very disappointing. An age of circa A.D. 1100 for the Oliver site, as implied by the calibrated assays, simply is not credible. As discussed above, several lines of evidence suggest an age of circa A.D. 900-1000.

In the Reelfoot Lake Basin, there are numerous sites believed to date within the A.D. 750-1050 time range, and there are obvious grounds for viewing these as components of hierarchical settlement systems (Mainfort 1988). Thus, these sites correspond to concepts of Emergent Mississippian not only in terms of material culture, but also political organization. Since no upland sites comparable to the Oliver site are presently known in the area, it is not known if Oliver represents a component of an emerging political hierarchy. Hence, although we use the term "Emergent Mississippian" in reference to the Oliver site, we do so cautiously, and with the understanding that corn, shell tempered ceramics, and hoe flakes do not, by themselves, constitute Emergent Mississippian.

PROJECT SUMMARY

Under the terms of a Memorandum of Agreement between the Memphis District, U.S. Army Corps of Engineers and the Tennessee Division of Archaeology, archaeological site survey encompassing approximately 3,232 acres was conducted within the West Tennessee Tributaries Project mitigation lands, which are located in the Obion River drainage of western Tennessee. Intensive testing of several prehistoric archaeological sites was also undertaken within the scope of the MOA. Based on discussions with the Memphis District, U.S. Army Corps of Engineers and the State Archaeologist after completion of the initial phase of field survey, two items specified in the MOA were deleted. No significant architectural resources were observed during any phase of the project. Additionally, archaeological and geological field investigations strongly suggest that no deeply buried, intact cultural resources are present within the project area. Major accomplishments of the investigations are summarized below.

Relatively few archaeological sites were recorded within the mitigation lands, and none of the recorded sites exhibits intact subsurface archaeological deposits. Only 11 archaeological sites were recorded; 9 previously recorded sites within the mitigation lands were resurveyed. While determinations of eligibility for the National Register of Historic Places fall outside the scope of the MOA, it should be noted that only a single recorded site (40WK110) within the mitigation lands appears to be eligible for inclusion on the National Register.

Additional archaeological survey was conducted in areas immediately adjacent to the mitigation lands, during which 11 more archaeological sites were recorded. Based on information provided by local informants, several sites within the Obion River drainage, but located some distance from the mitigation lands, were recorded as part of efforts to select sites suitable for sample intensive testing. This resulted in the identification of the first midden mounds recorded within the Obion-Forked Deer Drainage. Others are certain to be present, and the preliminary data presented in this report should assist future researchers in locating these sites.

As stipulated in the MOA, sample intensive testing was undertaken at several sites "to aid in defining the chronology and context within which to determine the significance of area cultural resources." Given this stated purpose, the excavation results must be viewed as somewhat disappointing. Several sites initially selected for intensive testing were found on inspection to have been virtually destroyed by relic hunters. Unfortunately, these were sites with intensive pre-Woodland period components, representing time periods that are especially poorly documented in western Tennessee. Additionally, the stratified occupation deposits reported to be present at site 40GB42 were found upon testing to be virtually nonexistent.

Nonetheless, the prehistoric ceramic assemblage from 40GB42 served as the springboard for a reassessment of previous typologies for ceramics of the Tchula and Middle Woodland periods, and the formulation of an explicit, new set of ceramic paste and type-variety definitions for western Tennessee. Ceramic collections from numerous sites were analyzed (or reanalyzed) for comparative purposes, demonstrating the applicability of the new classificatory system over a broad area. The results have major implications for interpreting regional chronologies, and the new type-varieties are already being employed by other investigators throughout the region. Indeed, the extensive discussion of Tchula and Middle Woodland ceramic typology presented herein arguably constitutes the most substantive and significant accomplishment of this project.

Intensive testing at the Oliver site provided a rare opportunity to investigate an upland Emergent Mississippian site in the Obion River drainage. Data from this site will provide an important baseline for researchers throughout the Central Mississippi Valley for many years, and analysis of the ceramic assemblage provided an opportunity for comparisons with roughly contemporary sites in the Reelfoot Lake Basin. We strongly feel that the analytic approach employed for the Oliver site ceramics, i.e., emphasizing vessel forms and rim attributes, will be the key to unraveling the complex Late Woodland through Mississippian archaeological record of the Reelfoot Lake Basin and beyond.

In sum, the research accomplished under the terms of the MOA has significantly advanced our understanding regional prehistory, especially with regard to the Tchula, Middle Woodland, and Emergent Mississippian periods. Much additional work remains to be done, however, particularly with respect to preceramic occupations. The research approach specified by the MOA, that is, site survey within the project area, as well as sample testing at sites in the general vicinity that have potential for elucidating cultural sequences within the project area is a sound concept that greatly expands interpretive potential.

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APPENDIX

Memorandum of Agreement

MEMORANDUM OF AGREEMENT

U.S. ARMY CORPS OF ENGINEERS, MEMPHIS DISTRICT

AND

STATE OF TENNESSEE

DEPARIMENT OF CONSERVATION

DIVISION OF ARCHEOLOGY

This Agreement entered into this 6th day of February, 1991, by and between the U.S. Army Corps of Engineers, Memphis District, (hereinafter Corps) and the State of Tennessee, Department of Conservation, Division of Archeology, (hereinafter TDA) acting through J. W. Luna, Commissioner, Tennessee Department of Conservation.

WHEREAS, the Corps obtained approximately 13,000 acres of land, more particularly described in Exhibits 2 through 7, for the purpose of mitigating the impacts of the West Tennessee Tributaries Project.

WHEREAS, the mitigation land is to be transferred in fee from the Department of the Army to the State of Tennessee.

WHEREAS, the Department of the Army seeks to transfer the mitigation land to the State of Tennessee, and the State Historic Preservation Officer (SHPO) and Presidents Advisory Council on Historic Preservation have determined that adequate restrictions and conditions are included in this Agreement to ensure preservation of the property's significant historic features.

WHEREAS, this Agreement will be binding upon the Corps and TDA and their assignees, successors, respective commissioners and officers, agents, servants, employees, grantees, and all legal entities in concert or privity with the parties.

NOW, THEREFORE, the parties agree as follows:

1. TDA agrees to undertake a cultural resources program to sample survey and test West Tennessee Tributaries Project mitigation lands turned over to the State of Tennessee in strict compliance with the requirements set forth at Exhibit 1, which is attached and hereby incorporated by reference into this Memorandum of Agreement.

2. The Corps agrees to transfer the sum of $233,833.00 to the State of Tennessee Department of Conservation for the sole purpose of TDA accomplishing the activities on the mitigation land described in Exhibit 1, Paragragh A.1. and A.1 subparagraphs. Payments by the Corps shall be made quarterly to the Department of Conservation. The TDA shall be paid upon the receipt of an estimate of work to be performed the first quarter. The amount of the payment for subsequent quarters will be determined by the District Engineer based on the progress of the work. Estimates shall be made quarterly of the amount and value of the work actually performed by TDA and the estimate of work to be performed the following quarter under this Agreement. The estimates shall be prepared by TDA and accompanied by any supporting data required by the Corps. Upon approval of the estimate by the District Engineer, payment upon properly executed vouchers shall be made as soon as practicable of ninety percent (90%) of the approved amount less all

previous payments. Also, whenever the District Engineer determines that the work is substantially complete and the amount retained is in excess of the amount adequate for the protection of the Corps, the District Engineer may release the excess amount to the Department of Conservation. Final payment shall not be made until the final report referenced in Exhibit 1, Paragraph A.1.9 is accepted by the District Engineer.

In witness whereof, the parties hereto have duly executed this Agreement on the day and year indicated and this Agreement shall become effective upon the date it is executed by both parties.

U.S. ARMY CORPS OF ENGINEERS,
MEMPHIS DISTRICT

CLINTON W. WILLER, COLONEL
District Engineer

11 Jan 1991
Date

STATE OF TENNESSEE, DEPARTMENT OF CONSERVATION

J. W. Luna, Commissioner

1/28/91
Date

Approved by:

STATE OF TENNESSEE, DEPARTMENT OF FINANCE AND ADMINISTRATION

DAVID L. MANNING, Commissioner

BAR

2-6-91
Date

Cultural Resources Stipulations for Transferring West Tennessee Tributaries Mitigation Lands to the State of Tennessee

A.1. The Tennessee Conservation Department, Division of Archeology (TDA) shall undertake a cultural resources program to sample survey and test all lands previously acquired in the Obion and Forked Deer river basins by the Memphis District for the purpose of mitigating West Tennessee Tributaries project impacts. The program shall have 10 discrete components as described below:

A.1.1. Background and Literature Search. Prior to performance of other program components, TDA will examine current sources of cultural resources data relating to mitigation lands.

A.1.2. Geomorphic Study. TDA shall perform or have performed a geomorphological examination of the acquired mitigation lands for the purpose of determining the probable presence and location of significant subsurface cultural resources, and to supply data for construction of a research design addressing other program components. Examination shall include at least two palynological columns collected, in so far as possible, in such a manner as to allow taxa to be interpreted in paleoecological and paleoclimatic terms, during specific periods covering the full temporal range of human occupation in the area. Investigations, however, shall not include soils known to predate possible human occupation.

A.1.3. Research Design. Prior to beginning any cultural resources fieldwork, TDA shall prepare a research design addressing future cultural resources activities on the acquired mitigation lands. The research design shall be reviewed and approved by the Tennessee State Historic Preservation Officer and the Memphis District Engineer or their representatives, and by the Advisory Council on Historic Preservation. The research design shall be consistent with current professional standards and the Secretary of Interior's Standards and Guidelines for Archeological Documentation (48 FR 44734-37).

A.1.4. Sample Intensive Survey. TDA shall perform a cultural resources sample intensive survey of at least 25 percent of acquired mitigation area (3,223 acres). The survey shall be of such a nature as to identify all significant archeological sites in the area examined. All survey activities shall be consistent with the Secretary of Interior's Standards and Guidelines for Identification (48 FR 44720-23).

A.1.5. Sample Deep Testing. Sample deep testing shall be performed by TDA for the purpose of determining the presence and nature of buried cultural resources deposits in the study area.

A.1.6. Sample Intensive Site Testing. Intensive testing of selected sites shall be undertaken by TDA in order to aid in defining the chronology and context within which to determine the significance of area cultural resources. Testing shall be consistent with current professional standards. All data

obtained shall be applicable to the study area.

A.1.7. Sample Architectural Survey. TDA shall perform an architectural survey of a portion of mitigation lands to help establish a context within which to determine architectural significance, and to identify significant structural remains within representative portions of acquired mitigation lands. The survey shall include examination of at least 25 percent of acquired mitigation area (3,223 acres); however, properties examined need not be the same as those examined in other cultural resources activities. Recording and analysis in this survey shall be consistent with the Secretary of Interior's Standards and Guidelines for Documentation (48 FR 44728-37).

A.1.8. Analysis/Curation. Data analysis performed by TDA shall be of sufficient scope to address research questions contained in the research design, and shall be consistent with current professional standards. TDA shall be responsible for cataloguing and curating all artifacts and documents generated in mitigation land cultural resources studies in accordance with standards specified in 800 CFR 79.

A.1.9. Report Preparation. TDA shall prepare a draft and final report of all cultural resources activities undertaken under this agreement. TDA shall afford the Tennessee State Historic Preservation Officer and the Memphis District Engineer or their representatives an opportunity to review the draft report. At the option of each reviewer, formal reviews may be included as an appendix to the final report. Twenty-five copies of the final report will be supplied to the Memphis District without cost.

A.1.10. State Protection Plan. TDA shall develop and execute a State Protection Plan for the long term protection of significant cultural resources throughout mitigation land areas. The plan shall detail methods by which requirements of A.2. below will be implemented as well as methods to be used to protect resources from potential damage from members of the public. The plan shall be submitted to the Tennessee State Historic Preservation Officer and the Memphis District Engineer or their representatives for review and comment within 6 months of the execution of this agreement.

A.1.11. All activities described in Section A.1. of this agreement shall be completed within 30 months from the date of execution of this agreement. All funds transferred for cultural resources studies pursuant to this agreement, shall be expended solely for activities described in Section A.1.

A.1.12. Monthly reports detailing cultural resources activities undertaken pursuant to Section A.1. of this agreement, shall be submitted by the 10th day of each month until the final report described in A.1.9. above has been completed. Representatives of the Memphis District and the Advisory Council on Historic Preservation may be present at any of the activities described in the agreement.

A.2. Future Cultural Resources Activities. TDA will insure that actions described below are undertaken in order to protect significant cultural

resources in mitigation land areas after turnover to the state of Tennessee:

A.2.1. Prior to any future land altering activities on mitigation lands, from any source, the TDA shall intensively survey and evaluate properties to be affected by such activity, to determine if significant cultural resources may be affected.

A.2.2. The deed conveying the mitigating land shall include a condition requiring the State of Tennessee, in close coordination with the Tennessee State Archeologist, to avoid affecting or allowing to be affected, significant cultural resources or shall mitigate impacts on any such resources through excavation, preservation or data recovery.

A.2.3. The Tennessee State Archeologist will establish criteria for determining the significance of cultural resources in the acquired mitigation land area.

A.2.4. The Tennessee State Archeologist will work with other State agencies to enforce appropriate state laws for protecting significant cultural resources in mitigation land areas.

A.2.5. In the event that human remains are encountered in any activity described in this agreement, they will be treated in accordance with applicable state laws.

A.2.6. All cultural resources activities undertaken pursuant to this agreement shall be consistent with applicable Secretary of Interior's Standards and Guidelines (published at 48 FR 44738-9, 48 FR 44720-23 and 48 FR 44728-37).