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Southeast Archeological Center
Tallahassee, Florida

ARCHEOLOGICAL INVESTIGATIONS AT SHILOH INDIAN MOUNDS NATIONAL HISTORIC LANDMARK (40HR7)
1999-2004
VOLUME 1 of 2

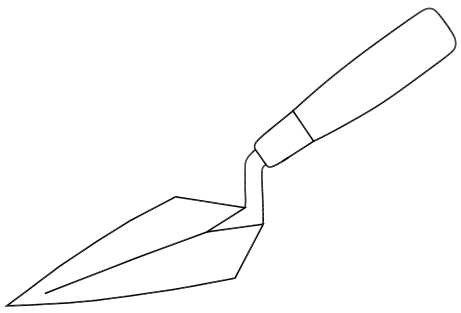


SOUTHEAST ARCHEOLOGICAL CENTER

The Southeast Archeological Center (SEAC) is a support operation of the National Park Service's Southeast Region. In assisting parks with their cultural resource management needs, SEAC facilitates long-term protection of archeological resources and compiles and utilizes the archeological information obtained from these resources. In addition to annually generating numerous archeological reports, as mandated by federal law and park operations, SEAC is the repository for over eight million artifacts that make up the Southeast Region's research collections and contribute to its cultural database. SEAC is staffed by professional NPS archeologists and regularly employs archeology students from Florida State University and other anthropology programs throughout the Southeast.

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ARCHEOLOGICAL INVESTIGATIONS
AT
SHILOH INDIAN MOUNDS
NATIONAL HISTORIC LANDMARK (40HR7)
1999-2004
SHILOH NATIONAL MILITARY PARK
HARDIN COUNTY, TENNESSEE
VOLUME 1 of 2

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Forward

By Kirk Perry, Executive Officer, Chickasaw Nation Division of Historic Preservation, August 9, 2013

In 2002, Chickasaw Nation Governor Bill Anoatubby received an invitation from the superintendent of the Shiloh National Military Park to begin face-to-face consultation to preserve part of Shiloh Mounds. Governor Anoatubby requested that I represent the Chickasaw Nation[1]. Consultation with Native American Tribes is required by the National Historic Preservation Act, but at the time it was relatively new to many federal agencies in southeastern states.

The Shiloh Mounds site is located within part of our aboriginal homelands in Tennessee, and we had limited knowledge about the ancient place. We wanted to learn about our ancient culture, and understood that in their work archaeologists sometimes must remove ancestors' graves; a terrible thing we always strive to avoid. We tentatively began discussions.

We learned first that below the bluff the Tennessee River was eroding the Mounds and the national cemetery along the high riverbank. We also realized protection of the Mounds was not a part of Congressional authorization for the park in 1894, so creation of the Shiloh National Military Park was fortuitous. It meant the Mounds became a National Historic Landmark in 1989, and were protected.

It also became clear that a part of Mound A would be lost to erosion down the bluff. Orderly removal and scientific study were the best solutions as it posed an opportunity to investigate one of the few remaining undisturbed Mississippian period mounds. We did not know in 2002 that the assembled archaeologists were among the most respected in the study of similar mound sites. Based on previous investigations at Shiloh, the archaeologists expected to find no graves in Mound A. This news relieved our main concern and ultimately proved correct for the portion of the site that they studied. We listened closely to recommendations about a variety of recent scientific methods to remove and replace Mound A. The value of those choices was that new information would be saved for future study as evidenced by this publication. Saving the ancient mounds and learning from the task became a shared interest.

At Shiloh, a respectful relationship evolved allowing the Chickasaw Nation to remain directly involved throughout the years of investigations. As we learned more about how our ancestors once lived at Shiloh, their sophistication and activities, once unremembered, became interesting, new and important. The project helped expand the tribal historic preservation program for sharing information with Chickasaw people in Oklahoma and with other southeastern tribes.

At the Mounds, we were invited to view artifacts like the Shiloh pipe. Realizing our respect for ancestors' objects, park superintendent Woody Harrell donated a replica of the Shiloh pipe to Governor Bill Anoatubby. It is now on display at the Chickasaw Cultural Center[2] in Sulphur, Oklahoma, where Chickasaw people and their children learn about our past. The Chickasaw Nation Multimedia Department shot a historical period film in the area of a Chickasaw warrior hunting near the sacred mounds. Shiloh park staff, who knew much about the Civil War battle at Shiloh, also learned more about the Mounds, and made us feel welcome when we visited the removal and restoration work site.

Gradually, good relationships grew between the broader southeastern archaeological community and Chickasaw Nation preservationists. In recent years, several tribes have accepted invitations to the Southeastern Archaeology Conference where they offer presentations about their own tribal preservation activities, and learn from archaeological collaborations such as those at Shiloh Mounds.

As we study the Shiloh Mounds, we continue to gain pride in our ancient people while learning and sharing more about our ancestors with Chickasaws. The project helps us to reconnect with our ancestors and lands where we once lived, laughed and created special places that fortunately last today. We have had a good experience in saving the past for the future at Shiloh Mounds. It represents historic preservation for all people.

The Chickasaw Nation includes Shiloh Indian Mounds in our annual elders' homelands tours to Mississippi, Tennessee and Alabama. It is there that they learn how Chickasaw ancestors once lived and enjoyed the forests, plants and rivers.

The hospitality and openness offered by the Shiloh park staff helped to build our reconnection to another place in our former homelands. Recently a bus filled with Chickasaw elders visited Shiloh and reported they were pleased when park superintendent John Bundy walked out to the bus and welcomed them.

Shiloh Indian Mounds had become obscure and forgotten to Chickasaws and other Native people. One outcome of the scientific work is that Chickasaw people now have a chance to appreciate, learn and understand the ancient people who lived here. We hope to continue to visit Shiloh Mounds where our children will have a chance to feel reconnected to a place and to its people.

We also ask you to accept Governor Bill Anoatubby's invitation to visit the Chickasaw Nation located in south central Oklahoma. We hope visitors will make a connection to Chickasaw people at the Chickasaw Nation.

Footnotes

[1] Chickasaw Nation link http://www.chickasaw.net/

[2] Chickasaw Cultural Center link http://www.chickasawculturalcenter.com/

Dedication

This technical report is dedicated to the one person most responsible for allowing this important archeological testing to go forward - former Superintendent Haywood “Woody” Harrell. His consistent attention and guidance allowed the archeological crew to work in a very productive manner. The authors of this document express our heartfelt thanks to Woody, his staff at Shiloh National Military Park, and to all the people at the Southeast Archeological Center that made this work possible.

In Memoriam

Dr. Rachel L. Horlings - Crew member 2001—2002
Dr. Paul W. Parmalee - Project researcher

MANAGEMENT SUMMARY

Due in large part to changing river patterns, a large portion of Mound A of the Shiloh Mound complex and Shiloh National Military Park is eroding into the Tennessee River. Mound A is one of the largest late prehistoric Mississippian period Indian mounds in the Tennessee River Valley, and one of the largest mounds on National Park Service land. The mound and village complex were built in the centuries immediately following A.D. 1000, when the site was the political and ceremonial center of a society dominating this part of the region. Unfortunately, in spite of a long history of casual and professional scholarly interest in the site, until comparatively recently very little was known about when precisely it was occupied, what happened there, and how its fortunes changed through time.

All this changed in the late 1990s, when engineering studies demonstrated that Mound A was seriously threatened by erosion, and that, regardless of whatever stabilization and mitigation efforts were employed, at least 25 or more feet of the mound and adjoining bluff line in the site area would be lost to erosion within the next few decades. This loss was above and beyond what had already occurred, which based on analyses of early maps included ca. 25–35 feet of the eastern side and a small portion of the summit of the final stage of Mound A, as well as portions of the summits and sides of earlier construction stages deeper within the mound that extended into this area. The National Park Service took the threat to the Shiloh Indian Mounds seriously, and had been exploring options for dealing with this problem since the late 1970s, when deep testing in Mound A was conducted. Under Section 106 of the National Historic Preservation Act, The National Park Service had the responsibility to assess and mitigate the effects of the ongoing loss to cultural resources. The site had been formally recognized as an endangered and threatened archeological resource within the National Park system since the 1990s, and was placed on the Watch List of endangered properties within the National Park Service system submitted to Congress each year. The erosion was recognized not only as a cause of ongoing destruction to the park's cultural resources, but also as a potential threat to public safety, since the mound area and summit were open to park visitors. The archeological project reported herein was undertaken to mitigate, in part, the damage brought about by the ongoing erosion.

Mitigation activities conducted by the National Park Service included a massive program of bank stabilization, the production of a synthesis of previous archeological investigations at the site, and the archeological fieldwork reported herein. The archeological investigations included remote sensing, mapping, and excavations from 1999–2004 by personnel from the Southeast Archeological Center of the National Park Service. Preparation for the fieldwork also included contracting for a detailed synthesis of earlier investigations by Paul D. Welch of Southern Illinois University, Carbondale, work which was completed in 2001. The archeological investigations reported here were multidisciplinary in nature and took place over five field seasons (1999, 2001, 2002, 2003, and 2004). Intensive remote sensing and archeological testing programs were conducted in the vicinity of Mound A and to a lesser extent elsewhere over the mound complex in 1999 and 2001. These followed by planning workshops held in mid-2000 and early 2002 involving a number of scholars and land managers to decide how to proceed. A large scale archeological mitigation program was started and partially completed from 2002–2004, with the vast majority of the fieldwork occurring in 2002 and 2003. Unfortunately, the fieldwork stopped when the mitigation program was only about half complete due to due to changing priorities in Washington, D.C., and the need for agency authorities to make difficult choices. While two more field seasons comparable in scale to those undertaken in 2002 and 2003 were originally planned, these never came to pass. As a result the loss to erosion of portions of

the site can only be considered partially mitigated.

Each field season through 2003 progressively more extensive excavations occurred, documenting cultural resources in the Mound A area. The 1999 field season involved extensive ground penetrating radar work over the entire complex and ground truthing excavations in select areas of the plaza. More than 100 ground penetrating radar transects were run by Mr. David Bean over the entire mound complex, with particular attention paid to Mound A. Transects were oriented north-south and east-west, and spaced two meters apart. Well defined signatures of stages deep within Mound A were found, indicating a more complex construction than had originally been thought. Ground penetrating radar transects were also run over the plaza area around the mounds, successfully locating signatures of dozens of excavation units opened by Frank Roberts New Deal era crews. In addition to the ground penetrating radar, thirty one 1x1 meter units were opened to depths of from 10–30 centimeters to ground truth the ground penetrating radar signatures. These proved highly successful in locating trench edges, which were clearly delimited in many units. All proveniences examined during the 1999 fieldwork were mapped using a total station/laser transit and with a global positioning system unit, and tied to a series of permanent datums. Locations of anomalies detected by the ground penetrating radar and metal detectors, and the locations of the excavation units, are thus known to within a few centimeters, permitting their relocation in the future.

The second field season occurred during the summer of 2001 and involved the first full scale investigations into Mound A. This season involved remote sensing, coring, precision mapping, dispersed test pitting, and the excavation of a 1 meter wide step trench into two sides and across the top of the mound, designated the control trench. During the 2001 remote sensing work a series of 20x20 meter squares were examined, encompassing the top, north, west, and south sides of Mound A, and adjoining areas of the plaza between Mounds A and B. These survey areas were laid out using a total station and were tied into the site grid system. The remote sensing survey employed the use of a fluxgate gradiometer, an earth conductivity meter, ground penetrating radar, electrical resistance, and magnetic field survey, all of which were operated by independent contractors with several years' experience. All of the equipment indicated that a variety of subsurface features, including structures and the outlines of trenches excavated by Frank Roberts in the 1930s, were present in the plaza and apron surrounding Mound A. The surface of Mound A was found to be extremely disturbed and yielded little useful information.

In addition to the remote sensing activities, a total of 77 1x1 meter units encompassing some 50 cubic meters of soil were opened in four areas, on the south, west, and north sides of the mound, and on top of the mound. All of the units on the north and south sides and atop the mound were opened in the direct impact area, within roughly 10 meters of the bluff edge, since these portions of the site will be lost to erosion. Some shallow units were opened to the west of the mound, in disturbed areas, to relocate excavation units opened in this area in the 1930s. All units were excavated in arbitrary 10 centimeter levels, with all fill being dry-screened through ¼ inch mesh. No extensive work was undertaken in portions of the site that are currently undisturbed. More than 20,000 individual artifacts and 2,500 bags of artifacts were recovered during this first season.

In 2002, an additional 179 one meter units were opened, and some 100 cubic meters of fill was removed. All of the 2002 excavation activities took place on Mound A. Excavations within the control trench were continued, but primarily focused upon the summit and the south slope. New 1x1 meter excavation units were opened up to the east and west of the control trench. All of these units were excavated stratigraphically using the east and west profiles of the control trench as guidelines. Regardless of whether a unit was excavated stratigraphically or using arbitrary levels, all fill was water screened through ¼ inch mesh. No additional remote sensing was conducted. During the 2002 field season, samples from the final three mound stages were collected, and more than 90,000 individual artifacts were recovered.

In the 2003 field season significant changes in

field procedures occurred, increasing the rate and effectiveness of the excavation, taking advantage of knowledge about the mound's contents based on the preceding work. All units were excavated stratigraphically, and the control trench was abandoned. In addition, only a small sample of the fill was selected for water screening, and a few select strata were collected as a 100 percent flotation sample. During the 2003 field season, an additional 74 units were opened up, bringing the total number of units excavated to 330. Towards the end of this season a back-hoe was utilized to remove mound stage fill quickly and effectively. The south portion of the mound was removed in successive one meter profiles, with sample units excavated by hand, and the fill water screened through ¼ inch mesh. Once a flat face was achieved, it was photographed and profiled. During this field season numerous structures were documented on the third construction stage from the summit, and four additional construction episodes were found deeper in the mound, for a total of seven in all. The deeper stages were identified in a trench opened along the bluff edge at the southeast corner of the mound, in an area threatened by imminent loss. Subsoil was reached approximately three meters below the current elevation of the plaza in this area. Two 1x1 meter units were excavated stratigraphically down to subsoil, using the western profile of this trench as a baseline. The 2003 excavations were proceeding rapidly through the mound when the project team was notified that the mitigation was being halted for lack of funds. Two additional extended field seasons had been planned and budgeted, at a level that would have allowed the Southeast Archeological Center team to complete the mitigation program, including completely removing the portion of the mound threatened with loss due to erosion.

In 2004, when it was clear no further field investigations would be occurring, Southeast Archeological Center personnel returned to Shiloh National Military Park for two weeks in order to collect a few additional samples, dismantle the remaining infrastructure, and backfill and temporarily stabilize the excavations. Two additional 1x1 meter units were opened on the southeast side near the bluff edge and carried to the base of the mound, to help resolve its construction history and dating total of four units along the eastern edge of the mound documenting the four lowest or earliest construction episodes. The preservation in these units however, was extraordinary. More bone and shell was collected from these four units than from all of the proveniences examined in the three prior years of mound excavation combined. The area where the fieldwork at Mound A occurred was temporarily stabilized in August of 2004. More than 30 dump truck loads of clay-rich soil were brought in to protect the excavations. .

The excavations conducted at Mound A from 1999–2004 recovered information from the top to the bottom of the mound on the east side, a vertical span nearly 7 meters in height on the south end and 9 meters on the north side. Seven major construction stages and over 600 features were found in the portion of Mound A examined. The major mound stages were labeled I through VII, from highest to lowest within the deposits, in the order in which they occurred stratigraphically, and were encountered during the excavations. Stages I through III, clear examples of mound construction, were the most extensively examined during the fieldwork. Much smaller excavation samples were obtained from Stages IV through VII, more or less level filling episodes around and below the base of the Stage I–III mounds. While smaller, older mounds may exist deeper in the deposits, within the area covered by the Stages I–III mounds, this possibility has not been confirmed by the excavations and remote sensing undertaken to date. Apron fills, shown to be up to 2 meters deep on the south and west sides of the mound by the 1933–34 and 1999–2004 fieldwork, are absent on the north side, and whether they existed on the former east side is unknown, given the erosion that has occurred. It is likely such fills were present, however, given that our primary evidence about Stages IV–VII comes from a small number of units opened on the southeast side of the Stages I–III mounds, by the modern bluff edge.

In this report evidence for the construction and use of Mound A found during the 1999–2004 excavations is recounted stage by stage, including

occupation surfaces, structures, individual features, and major construction episodes. Geoarcheologically-based interpretations of how the mound was built and used are presented, together with analyses of the material remains found associated with each stage. These include the results of radiocarbon and thermoluminescence dating, analyses of the soil chemistry of occupation surfaces and summary discussions of the lithic, ceramic, and paleosubsistence remains (i.e., carbonized plant remains, bone, phytoliths, and shell) found in the deposits. Additional analyses document the carbonized textiles found in the deposits. The primary assemblage cataloging and analysis data are included in the project appendices, which include daily field notes, standardized square/level, feature, and special sampling forms, and the drawings of floors and profiles, and nearly 12,000 digital high resolution photographs taken during the fieldwork. They also include the artifact catalog and database, and the primary analysis data produced by project specialists.

No archeological fieldwork has occurred in the vicinity of Mound A since 2004, although a great deal of effort directed to analysis and reporting has taken place in the years since, because partial funding for specialized analyses was obligated in 2003, prior to the close of the field program. The results of the fieldwork and analyses contain a wealth of information about the construction and use of Mound A, and life at the center by the site's Mississippian inhabitants. The excavations at Shiloh conducted from 1999–2004 in many ways shed new light on and provide new means of interpreting the importance of these structures to the people who built them. While a great deal of information was recovered, much of the portion of the site threatened with loss remains unexplored.

The excavations documented substantial portions of the Stage I through III mounds in the area threatened with loss before fieldwork ceased, as well as much smaller samples of the underlying Stage IV through VII construction episodes. Between one quarter and one third of the impact area was carefully examined during the fieldwork. The fieldwork ended before the last buildings on the Stage III mound were removed, in an area encompassing about 20–30 square meters in the north central part of the summit, under Structures 1 and 3. One and possibly two possible floors were evident in this area in the profile by the erosional face, in ca. 75 centimeters of fill. Likewise, whether earlier buildings underlay the structures found at the north end of the summit on the Stage III surface was also unresolved. Our knowledge of the underlying mound, comprising roughly half its overall height, in construction Stages IV through VII, is minimal because only a tiny fraction of it was examined.

The Shiloh Indian Mounds and Village site, and particularly the area near Mound A, is an endangered National Historic Landmark and National Register of Historic Places Property. The National Park Service has a legal and ethical responsibility for the mitigation of its eventual loss. Given the significance of Mound A and the amount of information that remains under imminent threat, particularly in the largely unexamined lower portions of the mound, it is strongly recommended that additional fieldwork, analyses, and reporting be undertaken before this important cultural resource is lost forever. The results of the archeological investigations undertaken from 1999–2004 will provide valuable insight when mitigation planning resumes. Much of the preliminary research and analysis needed to guide such investigations has already been completed, making final mitigation more efficient and cost effective than it might have been otherwise, had the fieldwork continued as originally planned. That as much fieldwork occurred as actually did from 1999–2004, and that a detailed final report was ultimately produced, remains a remarkable scientific achievement. As such, it reflects positively on the leadership and commitment of National Park Service personnel at the Shiloh National Military Park and the Southeastern Archeological Center, as well as the voluntary efforts of the citizens and scientists associated with the project.

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More than 100 specialists, volunteers, and SEAC employees were involved in the six year field project and the subsequent analysis and writing, which occupied another six years. Without their tireless efforts and dedication this project would be nowhere near as successful. For this we are truly grateful. Special recognition should go to SEAC Crew Chiefs, Charles F. Lawson, R. Steven Kidd, Jessica McNeil, and Tammy D. Cooper, and to Emily M. Yates, our Volunteer Coordinator, and Rachel Horlings, who assisted in so many ways, especially with the coring work, for their dedication and professionalism. Christopher M. Lydick did

an extraordinary job creating the initial version of the appendices in electronic format. Although an extraordinary number of individuals have been involved in this project over the years, there are a few who deserve special consideration. Volunteer and later SEAC employee Heather L. Mustonen, whose work ethic was exceptional, carpenter extraordinaire Ehren J. Habela, and volunteers and crew members Tamira Brennan, Brett Giles, Meghan Howey, Corin Pursell, Donna Jean Rausch, and Josh Wells, are among those who created a lasting impression. Donna Rausch, a Chickasaw, later wrote about her personal experiences at Shiloh, and what the excavations meant to her as a Native American (Rausch 2013). All of the project team members and volunteers are listed in Chapter 3 and on the project electronic appendices, and deserve our thanks for their hard work.

We would like to thank Boyce Driscoll and the staff at the Archeological Research Laboratory at the University of Tennessee. Boyce oversaw the activities of many of the specialized contractors. Their professionalism and high quality work contributed greatly to this undertaking. Many of the infrastructure built to help with the fieldwork, like the rail system to move earth off the mound, were based on designs that Boyce had developed at the Dust Cave excavations in Alabama.

To all who sweated, froze, ran from lighting, dealt with snakes, stinging insects, and rain, snow and leaf falls, we are deeply indebted for your efforts. This report is a tribute to your hard work, and for that we simply say thank you.

Spending months on a major battlefield, working on a community that was an important ceremonial center and sacred place occupied for centuries, made an impression on all of us. The spectacular views of the mound area as the seasons changed, and of the river valley far below that we watched from the same vantage as the Native peoples a millennium ago, make Shiloh a very special place for us.

CHAPTER 1

INTRODUCTION TO THE EXCAVATION OF MOUND A

DAVID G. ANDERSON AND JOHN E. CORNELISON, JR.

Project Overview

Shiloh National Military Park (SHIL) (Figure 01-01) is located in Hardin County, Tennessee, on the west bank of the Tennessee River. The park is approximately 17 miles north of the Mississippi state line and currently contains over 15,782 hectares (ha) of the battlefield and surrounding areas. The park was established in 1894 to commemorate the significant battle that took place on April 6–7, 1862, in the Corinth Campaign. The scene of the first major battle in the western theater of the American Civil War, Shiloh was one of the most important and certainly one of the bloodiest battles in which American military forces have participated. The early establishment of the park served to protect and preserve not only the battlefield, but also a significant Native American site contained within it, the Shiloh Mounds and Village (40HR007, ASMIS SHIL-02, National Register Number 7900279), which was designated a National Historic Landmark on May 5, 1989. The approximate 110,000 Americans that engaged in the two-day battle left a distinctive signature on the land that is reflected in the numerous monuments commemorating the event, including marked mass graves and a national cemetery honoring the dead. Signatures left by Native American occupation, the subject of this monograph, are as visually striking and historically relevant as the short but cataclysmic two-day battle and the monuments erected to commemorate it.

The Shiloh Mounds and Village site, which will henceforth be referred to as the Shiloh Mound Complex, is located just to the south of Pittsburg Landing and Dill Branch on bluffs overlooking the Tennessee River (Figure 01-02). Approximately 22ha in extent, this complex includes the remains of an extensive palisade line, dozens of small circular rises or house mounds, and seven large, flat-topped and dome-shaped mounds arrayed around a central plaza **(**Figure 01-03**)**. Mound A, the largest of these mounds and the one closest to the bluff edge, is one of the largest Mississippian period mounds in the Tennessee River Valley**.** A number of archeological excavations have taken place at the mound complex since the 1890s (Chapter 2), but surprisingly little information had been written and published about this work prior to the investigations conducted from 1999 to 2004 by personnel from the Southeast Archeological Center (SEAC) of the National Park Service (NPS). Preparation for the fieldwork included contracting for a detailed synthesis of earlier investigations by Paul D. Welch (2001, 2006) of Southern Illinois University, Carbondale (SIUC), which

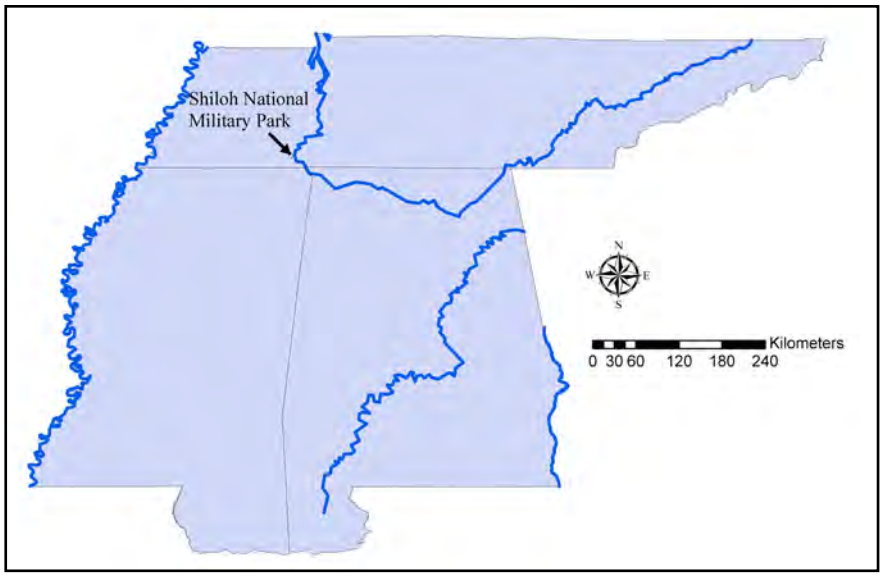


Figure 01-01. Location of the Shiloh National Military Park and the Shiloh Indian Mounds National Historic Landmark in western Tennessee.

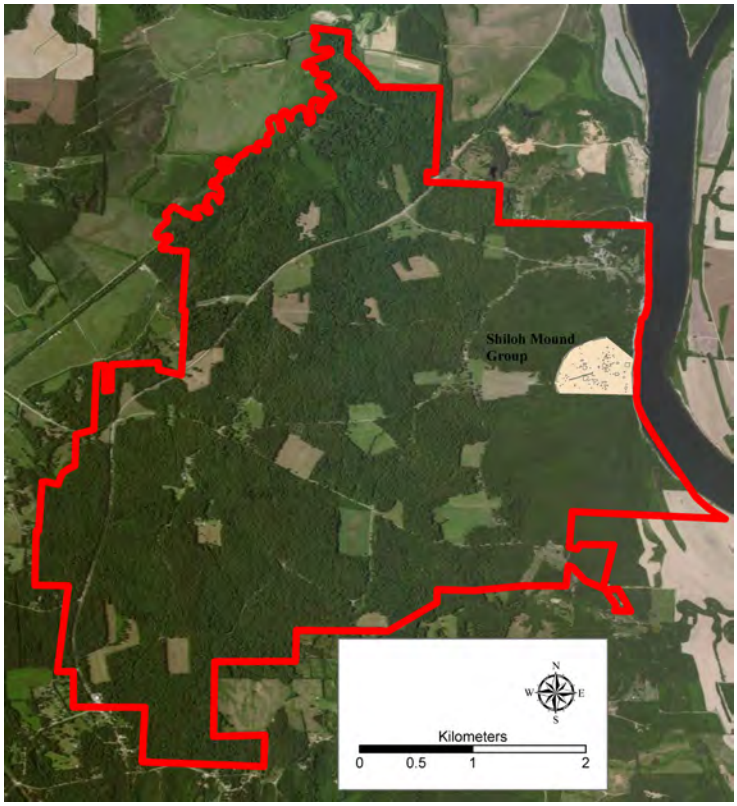


Figure 01-02. Location of Shiloh Mound Complex within Shiloh National Military Park.

complements and provides additional background to the work reported here. The research summarized by Welch and herein has demonstrated that the site was built and intensively occupied from about A.D. 950 to 1350. In the latter part of this interval, the Shiloh Mound Complex was the primary political and ceremonial center of a Mississippian society that dominated an appreciable portion of the middle and lower Tennessee River Valley.

The NPS fieldwork from 1999 to 2004 was undertaken because the eastern portion of the park adjacent to the Tennessee River, including the area encompassing the Shiloh Mound Complex, was undergoing severe erosion. Due to changing river patterns in recent centuries the land defining the eastern part of the park had been eroding into the Tennessee River. This erosion has accelerated markedly since the early 1930s following the construction of the Pickwick Landing Dam and subsequent hydropower generation and river traffic. These activities have resulted in more frequent and more pronounced fluctuations in water levels and in wave action, increasing erosion along the river bank. While the original extent of the site is unknown, approximately 30 meters (m) of the eastern margin have been lost since the first detailed mapping data was collected in the winter of 1933/1934 as part of a New Deal era archeological relief project (see Chapters 2, 7). In recent decades this erosion has included portions of Mound A, which was the closest of the mounds to the river. Mound A and adjoining areas of the site are now situated at the edge of an approximately 25m high sheer bluff face adjacent to the Tennessee River. The damage is dramatically illustrated in a 1979 photograph of the bluff face, where the exposed and eroding deposits making up the eastern side of the mound are clearly visible (Figure 01-04). By the late 1990s, when the mitigation activities were initiated by NPS that included a massive program of bank stabilization and the archeological fieldwork reported herein, a horizontal span of at least 8 to 10m of the mound had been lost. We now know that this included most of the eastern side and a small portion of the summit of the final stage of Mound A, as well as portions of the summits and sides of earlier construction stages deeper within the mound that extended into this area (see Chapters 9, 10).

As the responsible federal land management agency, NPS took the threat to the Shiloh Mound Complex seriously and had been exploring options for dealing with this problem since the late 1970s, when deep testing in Mound A was conducted (see Chapter 2). The site had been formally recognized as an endangered and threatened archeological resource within the NPS system since the 1990s, and was placed on the Watch List of endangered properties within the NPS system submitted to Congress each year. The erosion was recognized not only as a cause of ongoing destruction to the park's cultural resources, but also as a potential threat to public safety, since the mound area and summit were open to park visitors. Because it is on federally managed land, furthermore, under Section

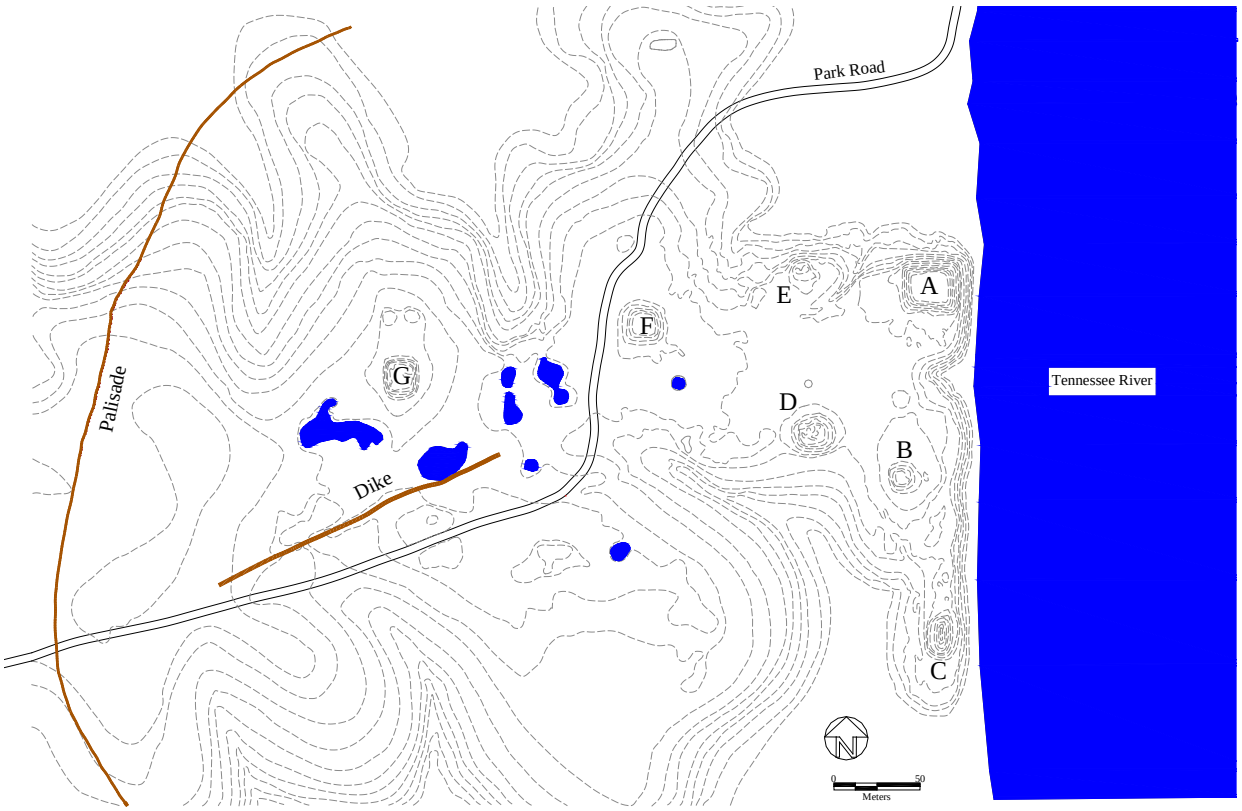


Figure 01-03. Major mounds and topographic features at the Shiloh Indian Mounds. Mound A is located on the northeast side of the site on the edge of a bluff overlooking the Tennessee River (Map developed by Paul Welch, based on original mapping data from Roberts 1933/1934 excavations).

106 of the National Historic Preservation Act, NPS had the responsibility to assess and mitigate the effects of the ongoing loss to cultural resources. A major stabilization effort was mounted to minimize the losses that were occurring, but it could not stop them completely, mandating the excavations reported herein. Preservation in place, which is always the preferred option in historic preservation and by the NPS, was simply not feasible.

The 1999 to 2004 fieldwork, and indeed much of the archeology conducted at the Shiloh Mound Complex since the late 1970s, was funded by the NPS to assess the extent and likely future course of the erosion that was occurring, and to recover as much information as possible from threatened areas before they were lost. A detailed history of the project is presented in Chapter 3, including a discussion of the planning, fieldwork, analysis, and reporting activity that resulted in this volume. The mitigation program included shoreline stabilization, described in the next section, and funded the preparation of a synthesis of all previous archeological work at the site conducted through 1999 by Paul D. Welch (2001, 2006), information briefly summarized in Chapter 2. Mitigation planning also included intensive remote sensing and archeological testing programs at Mound A, and to a lesser extent elsewhere over the mound complex, in 1999 and 2001, followed by workshops in mid-2000 and early 2002 involving a number of scholars debating how to proceed (Anderson et al. 1999a, 1999b; Anderson and Cornelison 2000, 2001a, 2001b, 2001c; Anderson and Stevens 2000; Clay 2001; Jones 2001; Lydick 2008; Nickel 2001; Welch et al. 2006). A large scale archeological mitigation program was started and partially completed from 2002 through 2004, with the vast majority of the fieldwork occurring in 2002 and 2003 (see Chapter 3). Unfortunately, the fieldwork stopped when the mitigation program was only about half complete due to changing priorities in Washington, and



Figure 01-04. The eroding east face of Mound A in the late 1970s, atop a ca. 25m (80ft) bluff overlooking the Tennessee River. The majority of the mound is in the area of light soil bounded by the dark layers near the top of the bluff.

the need for agency authorities to make difficult choices. While two more field seasons comparable in scale to those undertaken in 2002 and 2003 were originally planned, these never came to pass. The archeological mitigation program was intended to evaluate the nature of the resources present in and around Mound A and, once that was achieved, to mitigate their impending loss to erosion. Although no further funding was available, the Mound A area was revisited in August of 2004 to temporarily stabilize the excavation area with a clay cap. Prior to the capping, two new excavation units were opened on the southeast side near the bluff edge and carried to the base of the mound, to help resolve its construction history and dating, matters unresolved at the end of the 2003 field season. No archeological fieldwork has occurred at the mound since 2004, although the years since have seen a great deal of effort directed to analysis and reporting, for which, fortunately, partial funding for specialized analyses had been obligated in 2003, prior to the close of the field program (see Chapter 3).

As a result, a vast amount of important information about Mound A and the Shiloh Mound Complex in general was recovered before the fieldwork ended, and the results of the analyses from that material are presented here. Prior to this volume, these findings were only preliminarily reported in internal NPS documents, in papers given at professional conferences, in journal articles, or in book chapters (e.g., Anderson 2012; Anderson and Cornelison 1999b, 2000, 2001a, 2001b, 2001c, 2002a, 2002b, 2002c, 2002d, 2003a, 2003b, 2004, 2005; Cornelison and Anderson 2005; Sherwood and Kidder 2011; Welch 2006; Welch et al. 2003, 2006). This volume and the associated data appendices encompass all of the fieldwork and analyses conducted at the Shiloh Mound Complex by NPS archeologists from 1999 to 2004, and the assemblage cataloging, analysis, and writing that occupied the next several years. Previous investigations at the site are briefly summarized in Chapter 2, while Chapter 3 recounts the effort mounted during the 1999 through 2004 SEAC fieldwork, and the analysis and write-up work that followed until this technical monograph was completed.

The Erosional Challenge

The Shiloh Mound Complex has been eroding into the Tennessee River for decades, with some 30m of the eastern margin, including part of Mound A, lost since the 1930s, when the first detailed mapping data from the mound group was collected (see Chapters 3 and 7). This erosion has become more pronounced in recent decades, encroaching on Mound A, and extending up and down the river beyond the mound group, threatening portions of the battlefield and, critically, the National Military Cemetery at the north end of the park. Limited testing occurred at Mound A in the late 1970s, including, incredibly, the excavation of a 1x1m unit taken from the summit down some 6.8m (Beditz 1980a, 1980b; Beditz and Bellomo 1980; Welch 2006:28–30; see Chapter 2). While an impressive accomplishment and reflecting great

derring-do, little interpretable internal stratigraphy was recognized, leading to the interpretation that the mound may have been built in a single stage (Beditz 1980b:25). As a result, the amount and significance of the information that would be lost should Mound A erode into the river was, to some extent, underestimated, and the seriousness of the threat minimized. Following the 1979 testing, in fact, formal mitigation planning did not begin again in earnest until the 1990s, when the extent of the threat became increasingly apparent, and of direct concern to park supervisory personnel. The incident that helped precipitate this change in attitude was the abrupt loss of about a meter of the mound summit and an unknown portion of the eastern face below it one Fourth of July weekend in the early 1990s, when a park ranger and his family were watching a fireworks display in the town of Savannah some six miles to the northeast from the top of the mound, a location offering an ideal vantage to see miles along the river. While no one was injured in the collapse, the incident dramatically highlighted the seriousness of the problem. Access to the mound summit by the public was subsequently reduced, and a strong new safety fence was erected well back from the bluff edge.

In the late 1990s planning was initiated by park personnel under the leadership of Superintendent Woody Harrell in consultation with the Nashville District office of the U.S. Army Corps of Engineers to evaluate the effect of erosion on the mound group as well as the remainder of the park, and to come up with ways to slow or stop these losses. An engineering study of the bluff margin based on soil cores and high precision mapping estimated that—barring any major stabilization effort along the upper portion of the bluff line—at least 7.62 horizontal meters of Mound A and the upper part of the bluff within approximately 61m to the north and south of the mound would be lost over the next 25 years (U.S. Army Corps of Engineers 1998). The loss of ca. 7.62m was considered an absolute certainty, with the loss of up to 12.2m of Mound A and adjoining areas over the same 25 year interval given a roughly 50 percent probability. Since Mound A was approximately 6.7m high and 38m in diameter, the extent of loss predicted was appreciable, especially given that the eastern slope of the mound was already gone at the time of the study. The archeological mitigation program that was planned was, for these reasons, directed to the presumed area of total loss, within 7.62m of the current bluff margin.

A major stabilization program intended to halt further erosion of the riverbank and bluff was implemented by NPS and the Nashville District Office of the U.S. Army Corps of Engineers in 2000. Over the next three years a massive stone barrier in the form of gabions was built, and then rebuilt and reinforced, against the bluff along the river's edge (Figure 01-05). This barrier, which was some 9.1m in vertical elevation and almost 30.48m wide, extended for almost 2km from the southern boundary of the mound group below Mound C to the National Military Cemetery at Pittsburg Landing at the northern end of SHIL, to protect the Shiloh Mound Complex, as well as portions of the battlefield, park roadways, and the cemetery, which were all being damaged by the erosion. During the initial construction phase in 2000 and 2001, the stabilization effort experienced a significant hydrogeologically influenced structural failure, with some slumping and collapse of portions of the gabions into the river. Construction operations were temporarily halted to permit the NPS and the Nashville District time to assess the extent and significance of the structural deterioration, and then plan and implement a solution, which entailed encasing the stone in rebar mesh to hold it in place. The stone barrier was completed in 2004 and remains in place below the mound group, with no major changes in shape or position evident as of late 2012.

The engineering project thus appears to have successfully stabilized the lower portion of the bluff along the riverbank, although only time will actually tell. There was no feasible means to stabilize the upper portion of the bluff, including the exposed face of Mound A, however, and slumping has continued to occur, although fortunately not of the mound itself. The upper portion of the



Figure 01-05. Stabilization barrier below the south side of Mound A illustrating the ongoing erosion of the bluff face, February 2001.

bluff will continue to erode over the next several decades until a natural slope or angle of repose is achieved. The estimates of the extent of the mound and adjoining site area that would be lost provided by the Nashville District in their 1998 study were based on the assumption that the stabilization barrier would work, and prevent further erosion to the bluff base in the years to come. However, the initial predictions remain, that ca. 7.62m of the mound, and perhaps 12.2m or more, would be lost with 100 percent and 50 percent certainty within roughly twenty years. Thus, up to about half of the remaining portion of the mound remains threatened.

The Shiloh Mound Complex in the vicinity of Mound A, in fact, continued to erode, as expected, after the stabilization was initiated. A major bank collapse below Mound A was observed and documented by the NPS and the Nashville District in February 2001 (see Figure 01-04), and between the 2002 and 2003 field seasons an estimated 2m of the summit and eastern edge were lost in a ca. 10m area at the edge of the bluff near the center of the mound summit. While the large-scale excavations conducted by NPS from 2001 to 2004 were underway the mound had a nearly vertical face devoid of vegetation in places (see Figures 01-04, 01-05), creating major safety and logistical challenges, and potentially accelerating the erosion (see Chapters 3 and 6). To counter this, during the 2003 field season only samples of the fill from the mound stages under examination were screened, the rest was dumped over the eastern edge to help create a natural angle of repose. When the fieldwork was closed out in the summer of 2004, backfilling was accomplished using clay, creating a thick impermeable cap over the excavation area on the top and slopes of the mound, encompassing the entire area of predicted 100 percent loss. This cap was then covered with a thin layer of topsoil and seeded, with the clay and overlying vegetation providing a protective barrier for the unexcavated archeological deposits below. The mound has not obviously collapsed further since that time, although systematic monitoring of the bluff line and mound face has not been conducted. Given that nearly 14 years have passed since the original engineering study with little subsequent loss, the capping appears to have slowed the erosion significantly, although it will likely continue to occur until a stable angle of repose is achieved.

A major challenge thus facing NPS authorities in the years to come, given that erosion is likely to continue, will be completing the mitigation program at and near Mound A. Fortunately, so much has been learned about how to do this from the excavations and analyses conducted to date that completing the excavations should be able to proceed efficiently and effectively. Hopefully this archeological fieldwork will occur before significant additional erosion occurs, and the unexamined portions of the mound and nearby site areas are lost forever.

Project Research Design and Questions

Exploratory testing and remote sensing were conducted by SEAC archeologists in the vicinity of Mound A in 1999, followed by more extensive testing in 2001, extensive excavations in 2002 and 2003, and limited data collection associated with the closing of the excavation in 2004 (Figures 01-06, 01-07). The project's history is presented in detail in Chapter 3, and the research results are given throughout the remainder of this report, with primary data in accompanying appendices. Detailed research designs were prepared prior to fieldwork for each major phase and field season of the project (Anderson et al. 1999a; Anderson and Cornelison 2001a, 2002a, 2003a), and a detailed mitigation plan for archeological work at the mound was prepared following the 2001 testing and subsequent planning and consultation (Anderson and Cornelison 2002b). These documents are included in the electronic appendices produced in conjunction with and supplementing this technical report. The remainder of this chapter summarizes the research approach that guided the project, drawn from the research designs prepared for each field season, and from the overall mitigation plan. As in any large multi-season archeological project, research approaches changed somewhat from season to season based on what was encountered.

Throughout the work at Mound A, a wide range of scholars were consulted or actively employed on the project, to help ensure that the work was accomplished as smoothly and rigorously as possible. The research design for the 1999 fieldwork was prepared by SEAC archeologists Anderson, Cornelison, and George S. Smith, assisted by Paul D. Welch, with review and consultation provided by NPS archeologists Bennie C. Keel and John Ehrenhard (Anderson et al. 1999a). Following the 1999 remote sensing and testing program, when it became clear that additional fieldwork would be necessary to properly evaluate the Mound A area, and begin consideration of what effective mitigation might entail, consultation was greatly expanded and formalized. In June of 2000 a group of some 20 prominent archeologists, NPS land managers, state of Tennessee officials, and a representative of the Chickasaw Nation met at the park for two days to discuss how the fieldwork might proceed, and the kinds of research questions that should be explored. Written suggestions were provided by several of the participants in advance of the meeting, and helped shape the discussion (Blitz 2000; Pauketat 2000; Schroedl 2000; Smith 2000; Steponaitis 2000; Welch 2000). A detailed transcript of the workshop, which was videotaped, was produced (Anderson and Stevens 2000). The results of the discussion were used to prepare the research design that guided the 2001 field season (Anderson and Cornelison 2001a). Following the 2001 intensive testing program at the mound, a second planning meeting was held, this time in Nashville in January of 2002, again with some 20 participants from state and federal agencies, the Chickasaw Nation, and members of the archeological profession familiar with large scale mound excavation. The meeting was again videotaped and the input obtained, coupled with the results of the 2001 fieldwork, were used to prepare a formal mitigation plan as well as specific plans for the 2002 field season (Anderson and Cornelison 2002a, 2002b). The results of the Mound A work were additionally presented annually from 1999 through 2005 at regional and national archeological conferences, in public talks and meetings, and in informal consultation with archeological and NPS colleagues, particularly the management and staff at SHIL, with whom the work was coordinated throughout. The technical report was written from 2004 through 2012 and sent out for review in September 2012, with final



Figure 01-06. Test excavations on the south side of Mound A, August 20, 2001. Test trenches 1m wide and up to 2m deep were opened on the north and south sides and across the summit of the mound, to help evaluate the deposits and guide subsequent mitigation planning. Top to bottom: project volunteers Susan Hollyday, Christopher Gillam, and SEAC archeologist Rachel Horlings.

release occurring in 2013 following review by NPS, Chickasaw Nation, Tennessee State Historic Preservation Officer (SHPO) personnel. The draft with a request for commentary was also sent to the report authors and all of the archeologists who attended the 2000 and 2002 workshop. The revisions to the report were completed in February 2013. . An abridged version of the final technical report will be submitted for consideration for publication by the University of Tennessee Press later in 2013, with formal publication expected to occur the following year.

The research questions listed below are derived, with only minor modification, from the Mound A mitigation plan that was produced following the 2001 field season and the January 2002 planning workshop in Nashville (Anderson and Cornelison 2002b). These questions guided the mitigation phase excavations at Shiloh that took place in 2002, 2003, and 2004, and evolved somewhat as new discoveries were made, particularly concerning the depth and consistency of the mound deposits, such as the great care that went into the selection and preparation of fills in some stages of the mound, the remarkable preservation of textiles on the Stage III surface and, toward the base of the mound, the presence of well-preserved floral and faunal remains.

The following broad general questions, as they were stated in 2002, were considered during the 2002 to 2004 data recovery excavations at Shiloh.

(1) When was construction initiated at Mound A? When did it end and why? Two radiocarbon dates from near the base and from the top of the mound obtained during the 2001 testing program indicated mound construction began shortly after AD 1000 and ended about AD 1400, dating refined considerably by subsequent work. However, possible earlier construction episodes deeper within the mound may be present, and additional radiocarbon, archeomagnetic, and other absolute dating should be used to determine construction history more precisely (as was done, see Chapters 9, 10, 12,14, and 21).

(2) How many construction stages were used to create Mound A? How often was a new stage built? How much time separated the construction of each stage from the next? The 2001 testing found evidence for three upper stages, with hints of deeper stages indicated based on strata observed on the south side of the mound. However, only tiny fractions of these stages were examined in 2001. Additional mound stages are almost certainly present deeper within the mound, and must be located and sampled. The total number of stages, and how each was used (i.e., whether associated structures, decorative coloring, etc. was present) must be determined. The dates of construction, use, and abandonment for each stage should be determined as precisely as possible (see Chapters 9, 10, and 12).



Figure 01-07. Excavations at Mound A toward the end of the fieldwork, November 4, 2003, showing the extent of the excavations that were ultimately undertaken from 2001 to 2003. View to the north.

(3) What did Mound A look like during use? That is, what did the slopes and upper platform look like? What types of vegetation, if any, were present on the surface? What structures, if any, were present atop each stage, and what kinds of activities were occurring in them or on the stage surface? The 2001 testing documented the presence of structures atop and at the base of the mound, as well as the use of brightly colored surfaces on some mound stage slopes, but only tiny portions of these were examined. The size and nature of the structures on and near the mound, as well as the coloration and decoration used on the mound slopes, must be better documented (see Chapters 9 and 10).

(4) How were slopes of Mound A used? Was trash dumped randomly down the sides, or down a favored side or corner, as documented at some Mississippian sites (e.g., Smith and Williams 1994)? Do these assemblages suggest special ceremonial or feasting behavior? Artifact density was fairly low in the areas examined in 1999 and 2001, with no evidence for major trash deposits on or near the mound. This might change as larger areas are opened. The discovery of extensive ceramic remains in a stratified dump deposit, for example, may enable the development of a fine-grained chronological and cultural sequence for the site, and hence better date events in its history (see Chapter 14). Finally, the remarkable colored fill layers and possible banding found on the upper surfaces of the mound summit and slopes, and the colored soils used within these stages for fill, are in need of further examination (see Chapter 10). Are other decorative colors and possibly designs or symbols present?

(5) Do changes in stage structures and contents suggest changing political fortunes of the site occupants over the life of the center? That is, is the political history of the center in any way reflected in successive mound stage episodes? To examine this question, the architectural evidence and archeological remains associated with each successive mound stage surface will need to be documented and compared. Each of these stages provides a view of the mound, and the society that built it, at a different moment in time (see Chapters 9 and 21).

(6) Is there evidence for a Late Woodland to Mississippian transition to be found at the site, and if so, what happened, and why? Presumed Late Woodland ceramics were common in the mound fill deposits examined in 2001, with almost as many identifiable grog tempered plain and cord marked sherds recovered as shell tempered ceramics. While Late Woodland ceramics were common, no unequivocal Late Woodland features or structures were found in the area examined, nor was there any obvious stratigraphic evidence

for a replacement of grog tempered ceramics by shell tempered ceramics in the units opened in the apron south of Mound A. Indeed, shell and grog tempered ceramics were uniformly present from the top of the deposits to the bottom everywhere examined (save for in fills where no artifacts are present). If materials from the Late Woodland period can be found in better context, they will be compared with remains from the successive Mississippian construction episodes. Since part of the project geoarcheological research initiated in 2001 includes determining where mound fill came from, it is possible that it will locate the source of these Late Woodland remains. Particular attention will also be given to ethnobotanical remains, which are common and well preserved at the site. These should prove useful for exploring how intensive maize agriculture was adopted locally, something known to have occurred at this time. Another research question that can be examined is the transition from grog tempered to shell tempered pottery that occurs over this interval. Do the two wares overlap in time, or does one abruptly give way to the other? Careful stratigraphic control and absolute dating of features or strata with these materials present in the fill may help answer these questions (see Chapters 14 and 20).

(7) Are earlier Woodland, Archaic, or Paleoindian occupations present on the site, or within Mound A? That is, is there evidence for an earlier, possibly Middle Woodland period mound within Mound A, or for earlier occupations on the site itself, where some of the fill used to build the mound and apron presumably came from? Remains dating earlier than the Late Woodland period were only minimally noted during the 2001 fieldwork, and it currently appears that the Mound A area, and indeed probably the Shiloh site, was first intensively occupied during the Late Woodland period. Whether mound construction itself began in the Late Woodland or Mississippian is unknown, although it appears to have begun around or soon after ca. A.D. 1000, as suggested by a radiocarbon date obtained from the lower part of the mound in 2001, and by the presence of shell tempered pottery in fill associated with the mound stages examined in 2001 (see Chapters 9, 12, 13, and 14).

(8) What is the function of the up to two meter thick deposits on the south and west sides of the mound currently described as the 'apron'? Is it a late addition, or was the apron built first, with Mound A later built on top of it? What kinds of features are associated with, that is, on or in the apron? The 2001 fieldwork conclusively demonstrated that the upper part of the apron, at least south of Mound A, was built toward the end of the site's occupational history since it abutted and covered earlier stage slopes. Was it part of a final stage that was never completed? Or an elevated approach to the mound, or an effort to level the surrounding area? The 2001 fieldwork also indicated that the apron was built in several episodes. Buildings were constructed on some or all of these apron layers, as indicated by the discovery of postholes and wall trench lines at varying depths. The size, shape, function, age and duration of these structures should be explored (see Chapters 8 and 9).

(9) Is there evidence for status differentiation, or changes in status and wealth over time among the mound's inhabitants? As the assemblages associated with each mound stage and associated buildings are documented, it should be possible to explore this question. Given the minimal bone preservation encountered in 1999 and 2001, and the absence of any evidence for burials, however, mortuary data are unlikely to be found that might allow exploration of this topic.

(10) Is there evidence for the onset of intensive maize agriculture at the site? When did it occur and why? Excellent carbonized plant preservation was documented in the flotation samples collected during the 2001 testing, including some corn cob fragments and cupules. Documenting native use of cultigens as well as wild plant remains will be a major focus for research during the mitigation program. Extensive use of flotation/fine screening will occur, together with ancillary analyses examining pollen and phytoliths, as well

as plant residues on ceramic and lithic artifacts (see Chapters 16–18).

(11) Why were bright colors apparently used in the fill and on the surfaces of some of the stages of Mound A? How extensive are these colored surfaces, and does the use of colors such as red and white reflect the kind of symbolism observed among Southeastern Indians during historic times (i.e., war, peace)? Is there greater evidence for warfare during the periods when the mound had red soil layers present on the sides or summit, or in the fill, for example, and is less warfare indicated when these colors are not present (see Chapters 9, 10, 21)?

Answers to some of these research questions were assumed likely to come from the archeological mitigation program, although it was also recognized that some might be unanswerable, and that many additional questions could be explored. As will be seen in the pages that follow, that is exactly what happened. The answers to many of the original research questions were obtained over the course of the fieldwork and subsequent analyses, and many unanticipated findings were made as well, as is often the case in scientific research. While the major research questions listed above were developed early on, after the 2001 field season, they were never intended to be rigid or inflexible, but rather a constant reminder and guide to the kinds of topics we hoped to answer. The discovery of extensive paleosubsistence remains from strata near the base of the mound in 2003, for example, prompted increased attention to research questions associated with these remains and were, in fact, the primary reason why additional samples were collected in 2004 prior to the final backfilling and capping of the excavation area. Each season, in fact, the research questions changed somewhat, typically becoming more focused and specific in nature, given the results of the previous season's investigations.

Project Field Methods

The mitigation plan also included a detailed listing of and justification for the specific field procedures that would be used to answer the proposed research questions (Anderson and Cornelison 2002b). A modular approach to the excavation and analysis was proposed, with multiple field seasons, and enough time between each to permit initial assemblage processing and analyses to occur, so the lessons learned from the preceding field season could be absorbed and used to guide the next. Specific excavation, analysis, and reporting activity for each stage of the project were to be detailed in formal research designs prepared in advance of each field season. When each season happened would be dictated primarily by funding availability, with the mitigation envisioned as occurring over four or five field seasons spread out over four or five years, from ca. 2002–2006, with analysis and reporting taking another 36 months after the completion of the fieldwork. As it happened, only two more field seasons occurred, in 2002 and 2003, after which the project was halted due to a lack of funds, and the analysis and reporting, itself only partially funded, took appreciably longer to complete (see Chapter 3). The research questions and field procedures advanced here remain available for consideration when additional mitigation activity is conducted at the mound.

In brief, the mitigation was to proceed by deepening and expanding the 1m wide trenches opened atop and on the north and south sides of Mound A in 2001, until all archeological deposits in the direct impact zone, within 7.62m of the bluff margin were excavated, from the top to the base of the mound and in the adjoining area along the bluff margin. The fieldwork had as major goals exposing structures within and at the base of the mound, and determining how many stages were present within the mound.

The proposed fieldwork was to include the following activities, and for the most part actually did, at least as far as the work proceeded. These are listed in the approximate order in which they were to be undertaken:

(1) *Continue the detailed mapping of the site area started in 2001, and the placement of a 1m excavation grid in the direct impact area, using a total station and close interval point mapping.* The grid will conform to that used by the SEAC team in its 2001 testing investigations at the site, to ensure that all units opened in the vicinity of Mound A are consistently oriented and placed. The grid will be tied in to a series of permanent site datums placed on the site in 2001. New permanent datums will be placed on the site as needed. Using the total station, the detailed high resolution contour map of the Shiloh Mound Complex initiated in 2001 will be continued, extending across the central mound/plaza complex (defined as the largely cleared area bounded by Mounds A through G), and in the wooded areas beyond this. The purpose of this map will be to correct deficiencies in the 1934 map (currently the only complete site map, although subsequent research has shown that locations of some site features on this map are up to 6.1m (20ft) off), and to resolve microtopographic variation within the site, that might indicate the location of former houses, ditches, borrow pits, or areas where cutting and filling occurred. This work is summarized in Chapter 7.

(2) *Follow-up remote sensing of the direct impact area, as needed, using a variety of possible procedures, including coring/augering, ground penetrating radar (GPR), metal detecting, and other predominantly noninvasive procedures.* In June and July 2001, a series of remote sensing procedures were used on and near Mound A at Shiloh, to develop a record of potential subsurface remains occurring in this part of the site, to guide the archeological excavations (Clay 2001; Jones 2001; Nickel 2001a). This work is summarized in Chapter 8. These investigations complemented an earlier program of GPR work and associated test excavation conducted in 1999 (Anderson and Cornelison 1999a, 2000; Anderson et al. 1999a, 1999b). The 1999 and 2001 investigation documented a variety of subsurface features around the base of the mound and, consequently, not much more work of this nature was anticipated. However, as circumstances dictate, limited follow-up work might be conducted to clarify site deposits non-invasively or, through coring, obtain additional information from unusual site environments (i.e., ponds) or at greater depths. In particular, once the trench into the sides and top of Mound A was deepened appreciably, or lower stage surfaces were exposed, GPR work might allow us to obtain better information about conditions deep within the mound. No additional remote sensing was conducted after the 2001 season, as described in Chapter 8.

(3) *Open block units in the threatened areas to the north and south of Mound A near the bluff edge to define all structures at the base of the mound.* Based on the 2001 excavations and remote sensing results, large structures appear to exist at the base of Mound A on both the northern and southern sides. Well defined posts and wall trenches from structures were found in the units placed in these areas, although the excavations were too limited to determine the size, age, or function of these buildings. These features were found at varying depths, typically beginning upwards of 60cm below the current surface on the south side, where washing episodes off the mound were also present, and indicate that a series of structures were apparently built, and rebuilt, in this area. Patches of red sandy loam soil from burning episodes were also found in the apron area on the south side of the mound, that appear to be associated with these structures. As part of the effort to explore the mound in the direct impact zone, block units will be opened immediately adjacent and to the east of the existing 2001 trenches and taken to subsoil in the direct impact area to the north and south of Mound A. These block units will be placed so that part of them extends over the lower slope of the mound, to facilitate the excavation of the mound stages as described below in steps (5) and (6).

The block units will be excavated using 1x1m squares to maintain horizontal provenience control, with all observed features mapped and excavated using the procedures described below. Fill will be removed using arbitrary 10cm levels

or by observed cultural or natural strata, again within 1x1m squares within the larger block. At least initially all fill will be removed by hand rather than using heavy equipment, although if distinctive occupational surfaces can be recognized with no overlying features, the overburden within the apron may be removed using heavy equipment, such as with a backhoe or gradall. As knowledge develops over the course of the project as to the depth at which features (i.e., structures, apron or mound stage surfaces, etc.) appear, the depth of fill removed in stratigraphic or arbitrary levels will likely vary to accommodate conditions in different parts of the direct impact area. Eventually, the excavations will encompass the entire area within the direct impact zone, that is, within 7.62m of the bluff edge, as safety conditions permit.

Block unit profiles and level surfaces will be mapped and photographed as necessary to document what was found. Fill from stratigraphic levels will be removed with an approximately 10 percent sample (with volumetric control maintained) water-screened through ¼-inch mesh, with special soil, charcoal, and flotation/fine screen samples taken as necessary. Block unit profiles and level surfaces will be mapped and photographed to document what was found. All fill from structure floors or surfaces will be removed in 1x1m units, and water-screened through ¼-inch mesh, with special 5 liter (L) flotation/fine screen samples taken from every unit, to document activities occurring on these surfaces (in actual practice during the mitigation, the entire structure floor surfaces found atop the mound, and not just a sample, were floated using 1x1m provenience control). All fill from deposits removed using arbitrary 10cm levels, with the exception of soil associated with human burials, will be water screened through ¼-inch mesh, again with special samples taken as necessary. All features found in the block units will be mapped, photographed, and excavated, with all feature fill processed using flotation/fine screening or, if the volume is so great that this is not feasible, through ¼-inch mesh with fine screen/flotation samples taken as appropriate. Only limited work away from the mound was conducted before the fieldwork ceased, as described in Chapter 9.

(4) *Open excavation units in the threatened areas on the top of and within Mound A to define each mound stage surface, and examine any structures or other features associated with them.* The mitigation program will be directed to documenting the structures and activities that took place atop each mound stage within Mound A. The total extent of each stage within the direct impact zone, that is, within 7.62m of the bluff edge, will be excavated. Block units will be opened immediately adjacent and to the east and west of the existing 2001 trench with the goal of delimiting stage surfaces and any structures or other features located upon them. Once the portion of a mound stage surface in the direct impact zone has been completely examined, mound fill will be removed to just above the next mound stage, as per step (6). The stage surface will then be fully exposed and carefully documented, and the process will be repeated until the base of the mound has been reached.

The excavation units used to reach and then explore each mound stage surface will proceed employing 1x1m squares and arbitrary or natural levels to maintain provenience control. Mound profiles and stage/level surfaces will be mapped and photographed as necessary to document findings. Fill from stratigraphic levels/filling episodes will be removed with an approximately 10 percent sample water-screened through ¼-inch mesh, with special soil, charcoal, and flotation/fine screen samples taken as necessary. All fill from mound stage surfaces or structures on them will be removed in 1x1m units, and water-screened through ¼-inch mesh, with standardized 5L flotation/fine screen samples taken from every unit, to document activities occurring on these surfaces. All fill from deposits removed using arbitrary levels or natural layers, with the exception of soil material associated with human burials, or fill removed using heavy equipment, will be water screened through ¼-inch mesh, again with special samples taken as necessary, as described in (8) below. All features found in the

block units will be mapped, photographed, and excavated, with all fill processed using flotation/fine screening or, if the volume is so great that this is not feasible, through ¼-inch mesh with fine screen/flotation samples taken as appropriate. This work is described in Chapters 9 and 10.

(5) *Complete the excavation of the 1m wide "control" trenches on the north, top, and south sides of the mound using fine grained stratigraphic control and systematic fine screen/flotation sampling.* The 1m wide trenches opened on the top, north and south sides of Mound A in 2001 will be continued, to explore deeper into the mound while retaining fine-grained stratigraphic and artifactual control. These trenches will be taken down in conjunction with the removal of fill in areas to the west and east [described in steps (3), (4), and (6)], to ensure no profiles are more than ca. 1.6m in height, for safety reasons. The control trench will ultimately be taken through the entire mound from top to bottom, and from one side to the other. Completion of the control trench, however, will require the excavation of sufficient fill from either side of the control trench to ensure safety requirements are met. Fill from every unit in the "control trench" will be water screened through ¼-inch mesh, with special soil samples taken as necessary from features and strata. As in 2001, a special fine screen/flotation sample will be taken from every level in every unit, typically a minimum of 5L. When features are encountered, they will be mapped, drawn, and photographed, with all fill retained for flotation/fine screening. If suspected features were later found to be modern disturbances, the fill will be ¼-inch screened, and kept as a separate provenience apart from the general level contents. As documented in Chapters 3, 9, and 10, after the 2002 field season, when stage surfaces could be easily recognized in the profiles opened to that point, use of the control trench was abandoned.

(6) *Examine mound stage filling episodes adjacent to the "control trench" on the north, top, and south sides of Mound A, using stratigraphic units or layers.* This step complements Step 4, which focused primarily on how exposure of stage surfaces atop the mound would proceed, but instead discusses how the fill making up the mound stages will be explored, that is, between the occupation/stage surfaces. Using the profiles from the control trench and the block units opened and described in steps (3) and (4) as a guide, mound fill adjacent to the 1m wide control trench will be removed following the strata, by hand or using heavy equipment. The primary goal will be to quickly but carefully remove and document stage fill to just above mound stage surfaces, which as per step (4) will be thoroughly documented. The excavations will proceed using strata recognized in the profile, with major proveniences ideally defined by readily identifiable layers of mound fill, and bounded by mound stage surfaces. Decisions about which strata to remove, unit thickness, and special sampling activity will be made by the project directors, as conditions warrant. Profiles of mound fill will be cleaned, drawn, and photographed as necessary to document what was found. Fill from different strata or identifiable mound filling episodes will be removed and samples water-screened through ¼-inch mesh, with special soil, charcoal, and flotation/fine screen samples taken as necessary. All features that are found will be mapped, photographed, and excavated, with all fill processed using flotation/fine screening or, if the volume is so great that this is not feasible, through ¼-inch mesh with fine screen/flotation samples taken as appropriate. Provenience control will make use of 1x1m squares, with all mound stage fill in the direct impact zone removed until the next stage surface is exposed. Following this, the process will be repeated until the base on the mound has been reached, and all stage surfaces examined. As considered appropriate by the project directors, use of arbitrary levels not to exceed 10cm in thickness may occur, to document special features or strata. Given that it would be prohibitively expensive and technically inappropriate to excavate the entire mound in arbitrary 10cm levels, use of 10cm levels away from the control trench will be minimal during the mitigation field program. Once mound stage surfaces or stage

side slopes have been exposed and documented, excavations will proceed until lower stage surfaces or sides are exposed within the mound, each of which will be exposed and documented in turn. This work is described in Chapters 9 and 10.

(7) *Excavate and profile one or more of Roberts' trenches found in the apron west of Mound A in 2001.* During the 1999 and 2001 SEAC excavations and remote sensing activity, the partial outlines of three of Frank Roberts' 1933–1934 excavation trenches were located at the base of and directly west of Mound A. The edges of these trenches were mapped and marked with large metal nails, and can be easily relocated. If human remains were found during the mitigation effort (none were, it should be noted), one of Roberts' trenches was intended to serve as a reburial area for these remains. Additional detail on this point, and on procedures to be used in the event human remains were encountered, is found in the next section, the discussion of the Native American Graves Repatriation Act (NAGPRA) consultation that took place as part of the planning for the fieldwork. Using a backhoe, one of these trenches would be opened to within a few centimeters of the undisturbed walls, one or both profiles would then be cleaned, drawn, and photographed, and special samples taken as conditions warrant. Artifacts found in the walls during cleaning would be collected and their location documented. Small units (ca. 50–100cm wide by 10–20cm deep) may be opened into the wall to collect artifacts or charcoal to better determine the age of the deposits. No new excavation of undisturbed fill, beyond the special sample collection, was expected to occur. This step never occurred, since no human remains were encountered in the 2001 to 2004 fieldwork.

(8) *Conduct specialized analyses (i.e., radiocarbon, phytolith, ethnobotanical, archeomagnetic, pollen, microstratigraphy/ geoarcheology, soils, plant residue, protein residue, and lithic raw material sourcing, etc.), as necessary to advance project research objectives.* Specialized sampling will be a routine part of the archeological data recovery. The kinds of sampling that will be conducted are discussed below, in general terms. Sampling will proceed in consultation with technical authorities in each area of specific research. It is expected that as the mitigation proceeds, various specialized sampling procedures will be adopted, and others discarded, as our understanding of site contents and conditions develop.

Charcoal samples from secure contexts will be collected and submitted for radiocarbon dating, to determine the age of Mound A and its stages, and hence construction history (see Chapters 9, 12, 14, and 21). Samples will be taken from identified features or stage surfaces, and ideally building construction debris (wall posts, cane thatching), to ensure reliable dating. Samples from redeposited general midden fill will not be dated. If reliable samples for OSL (optically stimulated luminescence) or TL (thermoluminescence) dating can be obtained, they will be processed (see Chapter 14). Archeomagnetic samples will be taken from burned clay surfaces, as appropriate and feasible (see Chapter 3, electronic appendices). The original goal was to process up to 100 dates of all kinds over the course of the mitigation program, assuming samples in secure context could be located. Close to fifty Accelerate Mass Spectrometry (AMS) and TL dates were actually obtained during the investigations (see Chapters 9, 12, 14, and 21), a large number given the fact that the fieldwork ceased early in the mitigation program.

Specialized identification and analysis of project lithic and ceramic artifacts, and other modified objects such as of bone or shell, will be undertaken with materials recovered during the excavations (see Chapters 13–19).

Geoarcheological research will be a major part of the project, to document mound and apron construction history, appearance, and contents (see Chapter 10). Sampling of stage surfaces will be conducted to see how long they may have been open and exposed to erosion, and what they may have looked like when in use (see Chapters 9–11). In addition, stage fill, structure wall (i.e., wattle and daub), and floor soils as well as the

site depositional matrix itself will be explored, to determine where building materials came from, and what preservation to expect throughout the mound, and in adjoining areas. Careful sampling of the surfaces of each construction stage will be essential to resolve what activities were occurring and what these surfaces actually looked like. Dr. Sarah Sherwood, the project geoarcheologist, will be assisting the project team throughout the data recovery project, following up on research initiated in 2001. Soil/sediment column samples intersecting a number of stage surfaces or other features will be collected. The geoarcheological research will encompass microstratigraphic and micromorphological analyses, to help determine how long individual mound stages may have been in use and hence exposed to erosion, what these mound stages and particularly the stage sides may have looked like when in use, sources for the colored soil/sediment materials used in their fill, and what preservation conditions to expect throughout the mound and in adjoining site areas.

Ethnobotanical analyses will also comprise an important part of the project research (see Chapter 16). The 2001 fieldwork demonstrated that excellent preservation of carbonized plant remains occurs on the site. Flotation samples will be routinely taken from recognizable features and stage surfaces to collect carbonized and uncarbonized plant remains. The volume of each sample will be recorded, and each will be dried prior to processing. A Flot-Tech Model A flotation machine will be used to process all of the samples. Processing will be done in the field or at the SEAC lab in Tallahassee. Soil samples will also be collected for soil chemistry, phytolith (silica structural components of plants) and pollen analyses (see Chapters 5, 11, 20, electronic appendices).

If secure samples can be obtained, a pollen core record sequence will be developed to document vegetational conditions in the general site area over the past several millennia A 2m core from a pond just south of Mound G in the center of the site was collected in 2001 by Anderson, Doran, and Horlings and was assessed by Drs. Hazel and Paul Delcourt (2001). Remarkable pollen and plant macrofossil preservation was present. In the lower half of the core, the replacement of a hardwood forest through burning and clearing was indicated, with sunflower and *Chenopodium* coming in, among other disturbance species. The core was interpreted by the Delcourts as representing a record of considerable antiquity, possibly up to several thousand years. An AMS date run from leaves found at the base of the core produced a modern date (Beta 160789), however, suggesting the carbon sample was contaminated in some way. The pond may be a Mississippian borrow pit, but it differs from several others nearby in having standing water and masses of duckweed present, suggesting it may have appreciable antiquity, and may have been a permanent fresh water source inside the palisade lines. If ultimately shown to have appreciable antiquity (as was subsequently done with a second core collected in July 2004 by Scott Meeks, as documented in Chapter 5), the core or others like it from this location should prove highly valuable for reconstructing paleoenvironmental conditions in the site area.

Zooarcheological and malacological (shell and snail) remains were essentially nonexistent in the deposits examined in 1999 and 2001 from the vicinity of Mound A. Preservation of shell and bone was so poor in the upper part of the mound and apron that, unless unusual depositional environments are encountered, such as pits full of shell, the need for such analyses was considered unlikely. Specialists were enlisted to work with such remains if they were found, however, which proved fortunate as well preserved paleosubsistence remains were found at and near the base of the mound in the 2003 field season, and were the subject of careful collection and analysis on 2003 and gain in 2004 (see Chapters 17 and 18).

Consultation with Native Americans, specifically the Chickasaw Nation, will continue throughout the project to guide the treatment of human remains and any possible human burials. If human remains are encountered in the threatened area, as per the agreement negotiated between NPS and the Chickasaw Nation and discussed below, sufficient analyses will be conducted to determine

their cultural affiliation, since historic era, and particularly Civil War period remains, may be present. Shortly after the Battle of Shiloh in 1862, for example, a number of Union soldiers were buried in Mound G to the west of the plaza, and the bodies removed to the National Military Cemetery after the war. The burial pit was relocated using remote sensing procedures in 1999 and 2001 (see Chapter 8), and may prove to be an area where follow up work should eventually be undertaken, since the pit offers a deep profile into the mound, and there are indications in the remote sensing data that some remains were left behind. Minimal excavation is anticipated in non-threatened site areas during the mitigation program, and no human remains will be excavated from areas encountered outside the direct impact zone, unless they are clearly non Native American historic burials (i.e., Civil War era), and only then following appropriate planning and consultation with NPS officials.

Ideally, each specialist will visit the site one or more times as necessary during the excavations, to guide sample collection. This is a multidisciplinary project, and communication between project participants will be encouraged to ensure appropriate feedback. The project directors will serve as a clearinghouse for this information, seeing that results are passed back and forth among team members. At the discretion of the project directors, analysis results and other project findings and reports will also be posted on a project web site, like the public website with pictures and text posted on a daily basis during the 2001 through 2004 fieldwork [see http://www.nps.gov/history/seac/research/fp/shil/photography.htm; these files are also in the electronic appendices].

(9) *If it can be done without undue risk to crew health and safety, profile the eroding east face of Mound A.* A complete profile of surviving portions of the eastern margin of Mound A exists along the bluff line (see Figure 01-04). This profile is partially overgrown and undercut, however, and is poised above a ca. 12m drop down to the stabilization boulders placed along the riverbank beginning in 2000. If this profile can be safely accessed and cleaned, perhaps through rappelling or climbing from below, it could prove to be an invaluable guide to understanding the construction history of Mound A. Investigators would have to be tied in to safety lines secured from above, and would have to be careful to avoid undercut areas. As increasing amounts of fill are removed from the mound, and as the project team becomes more familiar with the site environment, ways to examine the mound profile safely may be found. Cleaning and profiling the mound face was done to a limited extent in 2002 and 2003, as described in Chapters 3 and 6.

In excavations at the edge of the bluff, safety lines and harnesses will be used. That is, workers in any units opened past the safety fence erected in 2001 on the east side of the mound summit will be required to wear safety lines and harnesses tied in to one of the trees further to the west on the mound summit. These safety lines are to be short enough, with minimal slack, so that in the event of a collapse of the bluff face project crew will be secured.

The two large trees on top of the mound in the direct impact zone will need to be removed prior to the start of the data recovery excavations, since the new work will likely significantly undercut the root systems of these trees. Their removal must proceed in such a way that debris does not fall on and damage the stabilized excavation trenches opened in 2001, nor lead to further collapse of the mound face. These trees were, in fact, removed in 2001 and their stumps removed in 2002, once the excavations exposed their root systems.

(10) *Conduct sufficient artifact processing, cataloging, technical analysis and reporting activity to produce a final report on the fieldwork.* The results of the mitigation stage fieldwork, the 2001 site testing, and the limited testing and remote sensing undertaken by SEAC in 1999 are to be combined into a single technical report. The final report will be subject to technical review by personnel within NPS, the State of Tennessee, the Chickasaw Nation, and by any other interested parties, as appropriate. The present volume and associated electronic appendices constitutes the fulfillment of this step of the mitigation.

(11) *Stabilize the excavation area at the close of the fieldwork each season, and at the completion of the field data recovery program.* At the close of each field season the excavation area will be covered with lumber and plastic, and shored or braced with wooden retaining floors and walls as needed to protect the archeological excavation units, as was done at the close of the 2001 fieldwork. Upon completion of the archeological data recovery field program, the mound area will be stabilized in such a way as to prevent erosion from occurring over the long term. This will take place following careful planning to determine the most effective course of action. Such procedures would be developed in consultation with technical specialists and interested parties. The Chickasaw Nation will be a consulting party regarding the stabilization and final appearance of the remaining mound. The capping and reseeding of the mound in 2004 was intended to provide temporary stabilization, until the mitigation could resume (see Chapters 3 and 6).

As with the research questions that guided the mitigation program, the proposed field methods were also adapted as circumstances changed. During the 2003 field season, for example, considerable archeological and geoarcheological attention was directed to documenting the construction of the fills making up the mound stages themselves, as well as to the occupations the stage surfaces, when it became clear that the Native American builders had exercised considerable effort, ingenuity, and apparent ceremony in the construction of the mound. Some mound stage fills were more intensively screened and sampled than originally planned, while others received less attention, the latter typically when initial sampling showed the fill to be devoid of artifacts. When the excavations were closed down in late 2003, two field seasons earlier than expected, a decision was made to obtain additional artifact, absolute dating, and paleosubsistence samples from the bottom two meters of the mound, which had been only minimally sampled to that point. This work took place in August of 2004 in conjunction with the backfilling and long term stabilization of the excavation area.

Native American Consultation

The archeological field investigations conducted at Mound A during the intensive testing and subsequent partial mitigation program from 1999 to 2004 proceeded in direct and sustained consultation with representatives of the Chickasaw Nation (Figure 01-08). The Chickasaw ceded the lands west of the Tennessee River in the Shiloh area by Treaty signed on October 19, 1818, at Old Town, Mississippi (Public Statutes at Large 1846:192); lands east of the Tennessee River had previously been ceded by the Cherokee by Treaty of 1807 and by the Chickasaw by Treaty of 1816. In terms of inadvertent discoveries at Shiloh, the Chickasaw are the tribe with NAGPRA consultation standing unless there is something in the discovery itself that establishes *ipso facto* cultural affiliation to some other tribe, given that there is no prior determination of any cultural affiliation of the site with any other tribe (Tim McKeown, personal communication to J. Anthony Paredes, 2001). Formal consultation under NAGPRA was the responsibility of the Shiloh Superintendent, Mr. Woody Harrell, who initiated formal consultation with the Chickasaw Nation. Mr. Kirk Perry, the Administrator of Heritage Preservation for the Chickasaw Nation, attended both the June 2000 and January 2002 planning workshops, and met face-to-face with NPS personnel at the Park on a number of occasions over the course of the project, when planning was occurring, while the excavations were underway, at professional archeological conferences, and following the close of fieldwork.

A formal Memorandum of Understanding (MOU) was signed in 2001 between representatives of the Chickasaw Nation, SEAC, and SHIL, whose provisions guided the excavation, analysis, and reporting. Designated representatives of the Chickasaw Nation were sent the drafts of the research designs developed for fieldwork and analyses undertaken as part of the work at Mound A from 2001 onwards, including the overall



Figure 01-08. Kirk Perry, Administrator of Heritage Preservation for the Chickasaw Nation, addressing members of the Chickasaw Nation and Shiloh Chief Ranger Stacy Allen on the apron to the west of Mound A, May 10, 2002.

mitigation plan, and comments were received and implemented in the final documents. The Chickasaw Nation was also sent a copy of the draft technical report and provided the opportunity to comment.

In formal consultation and under the provisions of the MOU, a series of specific field and analysis procedures were strictly followed during the Mound A mitigation effort. These procedures are detailed in the paragraphs that follow, and were incorporated into the project mitigation plan and research designs:

> In the event Native American human remains and associated funerary objects are found during the excavation in the direct impact/threatened area, the sacred burial area including the human remains, associated burial objects, and the soil surrounding the grave for a distance of three feet, or the extent of the burial pit if this should prove larger or smaller, shall be removed as a single feature. No water screening of these remains shall occur. No human remains will be excavated in areas of the site that are not threatened. No human remains and associated funerary objects found during the project will be made available for public photography, video, webcast, or other display. In the event of the discovery of human remains the public will be temporarily excluded from the area, until appropriate treatment (i.e., removal or, in non-threatened area, reburial/re-covering in place) has occurred. Only the consulting parties will be involved in the treatment of human remains found during this project.

The Chickasaw have NAGPRA standing and will be contacted immediately if human remains are encountered in threatened site areas, and these remains will be treated in accordance with the provisions of the project research design. All such remains will be excavated with care and sensitivity. Sufficient analyses by a physical anthropologist will be conducted on these remains to determine their cultural affiliation, as well as non-invasive measures of status, health, diet, and evidence for trauma or disease. No invasive or destructive analyses of any kind will be conducted with Native American remains, nor will these remains be subject to water screening.

Historic period non-Native American human remains from the Civil War or early contact era may be present in the upper Mound A fill, and in adjacent site areas. If these are identified as non-Native American, they will be excavated and examined separately, and re-interred in accordance with the wishes of surviving descendant populations. If no descendant populations are located, re-interment in an appropriate area, to be determined in consultation with local civic and religious authorities, will occur following analysis.

If human remains are found and are determined to be Native American, but can be shown to belong to a specific group other than the Chickasaw, then consultation will proceed with that group, in coordination with the Chickasaw. The concerns of these groups will be treated with equal respect. All communication

concerning human remains will be made available to the Chickasaw Nation. A physical anthropologist will be on call to identify any bone encountered as necessary.

Only upon agreement between the consulting parties will the burial feature fill, including human remains and associated funerary remains, be re-interred with all ceremony appropriate to their cultural origin. In coordination with the Chickasaw Nation and, as warranted, other interested parties, Native American human remains, associated funerary objects, and sacred grave fill will be re-interred with all due ceremony in a re-excavated 1934 trench immediately west of Mound A, in the mound apron. This part of the site is believed to be secure from erosion for the foreseeable future, and lies within the sacred mound precinct. Indeed, the apron may represent a final stage of Mound A construction. Reburial here will require minimal disturbance to this part of the site. Following re-interment the surrounding ground surface shall be allowed to return to its natural state with no identifying marker to indicate the exact re-interment location. No future walkways or further ground disturbance shall ever be allowed at the re-interment site that would disturb this relocated gravesite.

Consultation between NPS and the Chickasaw Nation will occur regarding the disposition of artifacts found during this project, specifically their availability to the Chickasaw Nation. The artifacts are considered the property of the US Government, and will be curated at SEAC in a facility in accord with federal standards and regulations (36CFR 79). The Superintendent may consider making certain artifacts available to the Chickasaw Nation.

If the Occupational Safety & Health Administration (OSHA) safety requirements affect the treatment of human remains and associated funerary objects, all consulting parties must be involved in any changes that may occur to the research design. OSHA was contacted prior to the start of the 2001 fieldwork, to offer the opportunity for a representative to visit the SHIL to assess safety procedures, and to provide guidance, with any comments received incorporated into the research design, and subject to review by consulting parties. No comments were received related to human remains.

The Chickasaw Nation will be a consulting party in the long term, throughout this project. This will include consultation regarding long term affects to Mound A and the surrounding site area, and regarding the stabilization and final appearance of the threatened areas. Copies of information and all reports written as an outcome of the mitigation program will be shared with the Chickasaw Nation.

Implementing the Mitigation Plan

The field team each season from 1999 through 2004 consisted of Anderson and Cornelison, who served as co-Principal Investigators (PIs) and project directors, and a number of SEAC crew chiefs and archeological technicians, as well as specialists from a wide range of disciplines visiting the project area for a few days to a few weeks each field season. Interested members of the general public were also present as visitors or volunteers helping with the fieldwork and analysis, and ultimately contributed approximately one fifth of the total labor expended. The field team and volunteers were housed in private rental property in nearby communities and in park housing at Shiloh. A field lab was maintained each season at the park, and the lab and crew quarters had telephone and dialup internet access.

A project website was established in 2001, and displayed news and pictures of the work on a daily basis each season in 2001, 2002, and 2003. The website contents are in the electronic appendices, and can be accessed at http://www.nps.gov/seac/research/fp/shil/photography.htm. No pictures of burials, grave goods, or other culturally sensitive materials were placed on the project website.

Seven major construction stages were found within Mound A during the fieldwork, which ultimately included the collection of material at depths of over >6.5m below the existing summit on the south side of the mound (Table 1-1).

The artifacts and all other data collected or produced during the mitigation program in the field and in the lab were treated with care and respect, and prepared for long term curation. The paper records are maintained on acid free paper and pdf copies are included in the project electronic appendices, as are all of the photographs taken during the fieldwork (nearly 11,000), which are maintained in high resolution jpeg format. Blank excavation unit, feature special sample, and field specimen log forms are also included in the appendices, should any subsequent researchers wish to use them as templates in their own projects. If items were found during the investigations that appeared to be too fragile to move or if uncertainty existed as to the best or most appropriate treatment of the object, work ceased until consultation took place, with SEAC's collections manager and, as appropriate, with outside specialists. The discovery of well-preserved but extremely fragile carbonized textiles deep within the mound in 2003 prompted one particularly memorable example of this kind of activity. Advice was sought from Dr. James Adovasio of Mercyhurst College, who was called and gave advice via speakerphone to the field recovery team on the mound summit (see Chapters 3, 20). NPS conservators were available, on call, throughout the mitigation program, and used as appropriate, as in the case of the textiles encountered. Consultation with representatives of the Chickasaw Nation also occurred during such activity.

The classification and subsequent cataloging of the artifacts was accomplished by SEAC personnel and contracted specialists following NPS guidelines as set forth in the Museum Handbook, Museum Records, Part II (NPS 1984) and the Cataloging Manual for Archeological Objects Vols. I, II, & III (NPS 1990). The artifact cataloging and analyses were guided by and entered into the computer using SEAC's Southeast Archeological Cataloging System (SACS). All project catalogs, analysis results, and databases are included in the current report volume or in the associated electronic appendices. The curated artifacts (provided they were large enough and stable enough) were labeled with the park acronym and their assigned catalog number in indelible ink in such a way as to avoid obscuring important detail, such as decoration on pottery or functional surfaces on stone tools. Small or delicate materials were not labeled, but the specific information was recorded on the bag or vial within which the artifacts were placed as well as on a tag, which was placed within the container. All materials sent to non-NPS specialists had appropriate loan paperwork completed.

The data collected and generated as a result of this project are curated at the SEAC in Tallahassee, Florida under appropriate SEAC Accession Numbers. These data include but are not limited to: field notes, maps, shovel test forms, photographic logs and negatives, field specimen (FS) logs, SEAC artifact analysis forms, artifacts, correspondence, and any reports generated as a result of this project. All of the project materials were turned over to the Collections Management Section where they were placed in their proper curation location, from which they were distributed to the appropriate project personnel as necessary.

Maintaining personnel safety was a critical aspect of this project, since the work was undertaken in a high risk environment, near the edge of a substantial drop. NPS and OSHA safety guidelines were followed, and OSHA personnel were asked to visit the site and make recommendations about safety procedures. All SEAC permanent staff involved in the project maintained current American Red Cross First Aid and CPR training, and one such Red Cross training session was held at the Shiloh Visitors Center at the start of the

2003 field season. No serious accidents involving project personnel occurred during the fieldwork.

Previous archeological investigations at Shiloh are briefly summarized in Chapter 2, and a detailed history of the 1999 to 2004 fieldwork and the analyses and writing that followed is presented in Chapter 3. Analysis results and interpretations comprise the remainder of this volume, and the associated electronic appendices. Many of the field procedures advanced in the project research and mitigation plans, and summarized here, were also employed, although some had to be modified as conditions warranted. In spite of the data recovery ultimately being incomplete due to the early closing of the excavation, significant progress was made on many of the specific research questions that were asked and that have been recounted in this introductory chapter. Some of the research questions, of course, particularly those related to the earliest occupations and activities in the mound area, will remain unanswered until such time as the mitigation program is completed. What was learned during the 1999 to 2004 field program and subsequent analyses should provide useful guidance.

Table 01-01. Major construction stages documented on the south side of Mound A from 2001-2004, by depth below datum and below the existing summit.

Construction	Depth CM Below Datum		Depth CM Below Surface	
Stages	Start	Finish	Start	Finish
I	160	190-220	0	30-60
II	190-220	320-360	30-60	160-180
III	320-340	610-620	160-180	450-460
IV	610-620	630-640	450-460	470-490
V	630-640	720-730	470-490	560-570
VI	720-730	780-790	560-570	620-630
VII	780-790	800-820	620-630	650-660
Subsoil	>800		>650	

CHAPTER 2

PREVIOUS ARCHEOLOGICAL RESEARCH

DAVID G. ANDERSON, JOHN E. CORNELISON, JR., AND PAUL D. WELCH

Mound Exploration in American Archeology

In this chapter we review previous work at Shiloh, which can be seen as part of the much larger story of the development of American archeology in general and mound exploration in particular. The excavation of mounds in eastern North America has been a subject of great interest to archeologists since the earliest days of the profession and, indeed, people were excavating in mounds long before there was an archeological profession on the continent. One of the earliest systematic excavations of a Native American mound was undertaken in the late eighteenth century, possibly in 1783, by the then future president, Thomas Jefferson, who published an account of the work in his famous overview *Notes on the State of Virginia* (Jefferson 1787:157–162, 223–226; Wilson 2004:119, 123). Jefferson engaged in explicit problem oriented research, with the goal of discovering the reason mounds were built by excavating one near his Virginia estate at Monticello. As he noted "That they were repositories of the dead, has been obvious to all: but on what particular occasion constructed, was a matter of doubt" (Jefferson 1787:156). He approached this work in an orderly manner and made a number of important observations, including that the mound had been plowed down from 3.6m to 2.3m in the dozen years it had been in cultivation. Jefferson

> …first dug superficially into several parts of it, and… proceeded then to make a perpendicular cut through the body of the barrow, that I might examine its internal structure. This passed about three feet from the center, was opened to the former surface of the earth, and was wide enough for a man to walk through and examine its sides. At one end of the section were four strata; at the other three; the strata in one part not ranging with those in another (Jefferson 1787:158, 160).

Jefferson's procedures have proven effective to this day for quickly determining mound strata, as the use of exploratory trenches and test pits in the work at Mound A, Shiloh demonstrates. Jefferson observed distinct layers or strata of bones and earth, and gave a number of specific reasons why the mound had to have been built slowly and by accretion over time, burial episode by burial episode, including

> 1. The number of bones. 2. Their confused position. 3. Their being in different strata. 4. The strata in one part having no correspondence with those in another. 5. The different states of decay in these strata, which seem to indicate a difference in the time of inhumation. 6. The existence of infant bones among them (Jefferson 1787:261).

Careful scientific reasoning and the publication of the results of fieldwork like Jefferson's, unfortunately, did not become standard in North American archeology until well into the nineteenth century, and stratigraphic observations only became the standard in the twentieth century. Jefferson's approach to archeology provides important lessons to this day for anyone exploring mounds, and in many ways the 1999 to 2004 work at Mound A were guided and informed by them.

In the nineteenth century, excavations were conducted into thousands of mounds in Eastern North America, most of them unfortunately to standards well below those pioneered by Jefferson. Although the Spanish explorer and conquistador Hernando De Soto had traveled from mound center

to mound center during his expedition through the southeastern United States in the mid-sixteenth century, and had seen and interacted with the builders and inhabitants of various mound groups, by the eighteenth century the possibility that Native Americans had built these mounds was not widely accepted. Indeed, some of the most impressive reports on mounds written in the first two thirds of the nineteenth century gave them mysterious or fanciful origins, and failed to connect them with the American Indians. As noted by Bruce Smith "these mounds, and the identity of the mound builders, would remain at the center of archeological interest and debate through much of the succeeding nineteenth century" (Smith 1985a:5). The study of mounds was thus of interest since long before archeology was even a formal discipline, something that did not occur until the 1840s and after, first in Europe and then in North America (Daniel 1967; Silverberg 1968; Willey and Sabloff 1993:31–32).

In the final decades of the nineteenth century, the exploration of mounds in eastern North America increased dramatically, and became more scientific. The Bureau of Ethnology was established within the Smithsonian Institution by an act of Congress in 1879, and John Wesley Powell, who had lost his right arm at the Battle of Shiloh, was appointed the director. Soon thereafter the sum of $5000 per year was appropriated to determine who built the mounds that dotted the landscape of the then rapidly expanding United States. Within the Bureau, the Division of Mound Exploration was established, and Cyrus Thomas, a lawyer, entomologist, and from 1875 to 1881 a professor of natural science at Southern Illinois Normal College (now Southern Illinois University-Carbondale), was placed in charge (Anonymous 1910). Between 1882 and 1891, personnel from the Mound Division examined some 2,000 mounds in 140 counties in the eastern United States (Powell 1894; Thomas 1894). Choosing to remain in Washington, D.C., Thomas employed permanent assistants to conduct the fieldwork. With a clear set of directives and a daunting task ahead of him, Thomas created a well defined research design for his assistants to follow, including a sampling strategy, and a clear set of excavation and collections management procedures (Smith 1985a:5–17). The work of the Mound Division was reported in the annual reports of the Smithsonian Institution throughout the 1880s, with a massive synthesis published in the 12th annual report in 1894, entitled *Report on the Mound Explorations of the Bureau of Ethnology* (Thomas 1894), a volume that is today regarded as one of the truly monumental classics of the profession (Smith 1985a:5). Surprisingly, given that Powell had been involved in the battle, no work was conducted at the Shiloh Mound Complex by the Mound Division, possibly out of deference to the hallowed nature of the grounds, and the battle that had raged on them a quarter of a century earlier, which remains one of the bloodiest in American history.

Thomas' work, like Jefferson's a century earlier, was explicitly problem oriented, highlighting the importance of research design in archeology: "The most important question to be settled is, 'Were the mounds built by the Indians?'" (Thomas 1894:21). Hundreds of pages of supporting evidence led to the conclusion that the mounds were built by "the ancestors of the Indians" (Thomas 1894:730). The report helped to dispel the overtly racist theories of the time, that the mound builders had been more 'civilized' folks than the Indians, with possible candidates suggested including Hindus, Israelites, Aztecs, Toltecs, or some other 'lost' race who vacated the territories that were eventually taken over by Native Americans (Willey and Sabloff 1993:34). The original builders of the mounds were, in fact, the ancestors of modern peoples like the Chickasaw, the Cherokee, and the Choctaw, to name a few of the many descendant groups still present in the region. Thomas (1894:528) demonstrated that the mounds were not built by a single group, but by many "different tribes or nations" and argued that the "mound-building period" likely had great time depth. He drew attention to the fact that the connection between the mound builders and American Indians had already been established in the writings of members of De Soto's expedition and those of the early French explorers. He further solidified this connection by noting that the material culture obtained from his explorations

matched the descriptions of the early explorers (Thomas 1985:17–18). Although not the first to connect the construction of the earthen mounds to American Indians (see Jones 1869:65; Jones 1999 [1873]:131–132), Thomas' work served to settle the question. Given the mass of supporting evidence, and the superb logic employed in its organization and interpretation, the report provided "the death blow to the concept of a lost Mound Builder race" (Stoltman 1973:126). An important lesson to take from the efforts of the Mound Division is the need to report the results of fieldwork. Observations or hypotheses alone have little value unless supported by evidence, and fieldwork unreported, especially if records and collections were not carefully made and responsibly curated, eventually becomes fieldwork that might as well have never happened.

After the close of operations by the Mound Division, mound exploration occurred only sporadically in eastern North America for the next four decades, until the New Deal era of the 1930s and early 1940s. This work in the late nineteenth and early twentieth century was conducted primarily by people from museums or universities, and was frequently directed to site types or areas yielding elaborately crafted artifacts, like the Hopewell culture sites and tombs of the lower Midwest, or the cemeteries yielding elaborate ceramic vessels in the Mississippi River Valley and the Caddo area. Comparatively little sustained archeological fieldwork was conducted in the Southeast during this interval, although important excavations at specific sites did occur, at places like Etowah, Nacoochee, and Stalling Island (Claflin 1932; Heye et al. 1918; Lyon 1996; Moorehead et al. 1932). One major exception to this pattern was the work of a wealthy Harvard educated businessman, Clarence Bloomfield "C. B." Moore (Figure 02-01), who, after retiring from running the family business, the Jessup & Moore Paper Company, at about age 40, spent the next three decades visiting, mapping, and excavating hundreds of mound sites across the Southeast. Most importantly, he published the results of his work in a timely fashion, in lengthy and well-illustrated reports produced to the professional standards of the time, took extensive field notes, and saw to the long term curation of his notes and the major artifacts found during this work. All of these are things that are now expected professional practice in American archeology, but were decidedly uncommon at the time. Moore's work reminds us that collections and records, properly maintained, can be accessed over and over again by subsequent generations of researchers. The materials from the 1999 to 2004 Shiloh Mound A excavations, maintained by NPS at their SEAC curation facility in Tallahassee, are themselves available for study, with most of the records also available in electronic format for ease of access and transport.

Between 1892 and 1918, Moore traveled up and down the major river drainages of the Southeast visiting as many Native American mounds as he could obtain access to, and where he thought the likelihood of recovering interesting artifacts and information was high. He made use of his personal riverboat as transportation, the *Gopher of Philadelphia*, a flat bottomed paddle steamer. In the winter he would scout ahead to find



Figure 02-01. Clarence Bloomfield Moore and the Gopher of Philadelphia. Moore visited Shiloh in 1914, but other than mapping the site, conducted no excavations there. Images courtesy Harvard University Archives and Knight 1996:2, http://bama.ua.edu/~alaarch/prehistoricalabama/index.htm

sites and obtain the necessary permissions, and would return with his full crew later in the winter or in the spring to conduct excavations. On board, in addition to a crew of trained excavators, was his friend, secretary, and physician, Dr. Milo G. Miller, who also served as the project osteologist. Moore would often hire additional crew members locally as needed to perform simple tasks, such as backfilling his excavations. During the off months Moore would analyze his findings and prepare reports of the past season's field work for publication, at his own expense, in the *Journal of the Academy of Natural Sciences of Philadelphia* (Knight 1996:1–4; Larson 1998:3–5). These reports were often lavishly illustrated, contain a wealth of information about many sites that have since been lost to agriculture, development, and looting, and although fortunately since reprinted, in their original format are highly valuable collectibles. In honor of his extensive field and reporting efforts, since 1990 the Lower Mississippi Survey and the Southeastern Archaeological Conference have maintained an award in Moore's name for excellence in southeastern archeology by a young scholar. Fieldwork and reporting continue to be highly regarded in the region, long after Moore's day (Brown 1994).

Moore (1915) visited Shiloh in 1914, and drew a detailed sketch map of the mound group (Figure 02-02), but was not able to obtain permission to excavate at the site. The preservation of the larger mounds, earthworks, borrow pits, and house mounds at the Shiloh Mound Complex owes much to the minimal clearing and cultivation in the area, a beneficial outcome of the battle and the creation of the military park. He did record the dimensions of a number of the mounds, and further noted that the park superintendent had built a house atop Mound A, access to which had eroded the mound surface (Moore 1915:224–225; Welch 2006:21). Moore's lettering system for designating the mounds, which was typically either from largest to the smallest in alphabetical order, or by geographic proximity, is still used at Shiloh, and is how Mound A received its name. In Moore's labeling system, Mound 'A' was almost always the largest mound at a given site, as is the case at Shiloh.

In general, Moore was disappointed with his Tennessee River expedition. The only mounds which even approached those which he had explored at Moundville, Alabama the previous decade (Moore 1905, 1907) were those at Shiloh, and he was denied access. Moore generally concentrated his investigations on highly visible sites, and most often on burial mounds; he viewed flat topped mounds as of little interest as they rarely contained burials and, consequently, grave goods. He did however, often conduct trial excavations in flat topped mounds in the hopes that they might contain burials, unfortunately only rarely noting evidence for summit structures or internal stages. Although unsophisticated by today's standards, in many cases Moore's work represents the only documentation we have for sites or mounds that have since been destroyed, or that have seen no subsequent excavations (Polhemus 2002:7-14). Had Moore worked at Shiloh, he would have produced a report on his work, which unfortunately cannot be said about the New Deal era investigations at the site (described below), which were only recently summarized by Welch (2006).

With the passage of the Antiquities Act in 1906, archeological resources on federal land were given a measure of protection from looting (Harmon et al. 2006). Archeological preserves had been established by the federal government as early as 1892 at Casa Grande, Arizona, although the protection the Shiloh Mound Complex received was primarily due to the establishment of the National Military Park on December 27, 1894, and its transfer from the War Department to the NPS on August 10, 1933. With the onset of the Great Depression and the election of Franklin D. Roosevelt as president a number of federal programs were established to put people to work, and archeology was quickly recognized as a low cost way to employ large numbers of unskilled or semiskilled laborers (Lyon 1996:28; Wauchope 1966). The first federally funded relief era excavations occurred from August through November 1933 in Marksville, Louisiana under the auspices of the newly established Federal Emergency Relief Administration (FERA), and directed by Frank Seltzer and James A. Ford (Lyon 1996:1–4). Shortly after the creation of FERA, the

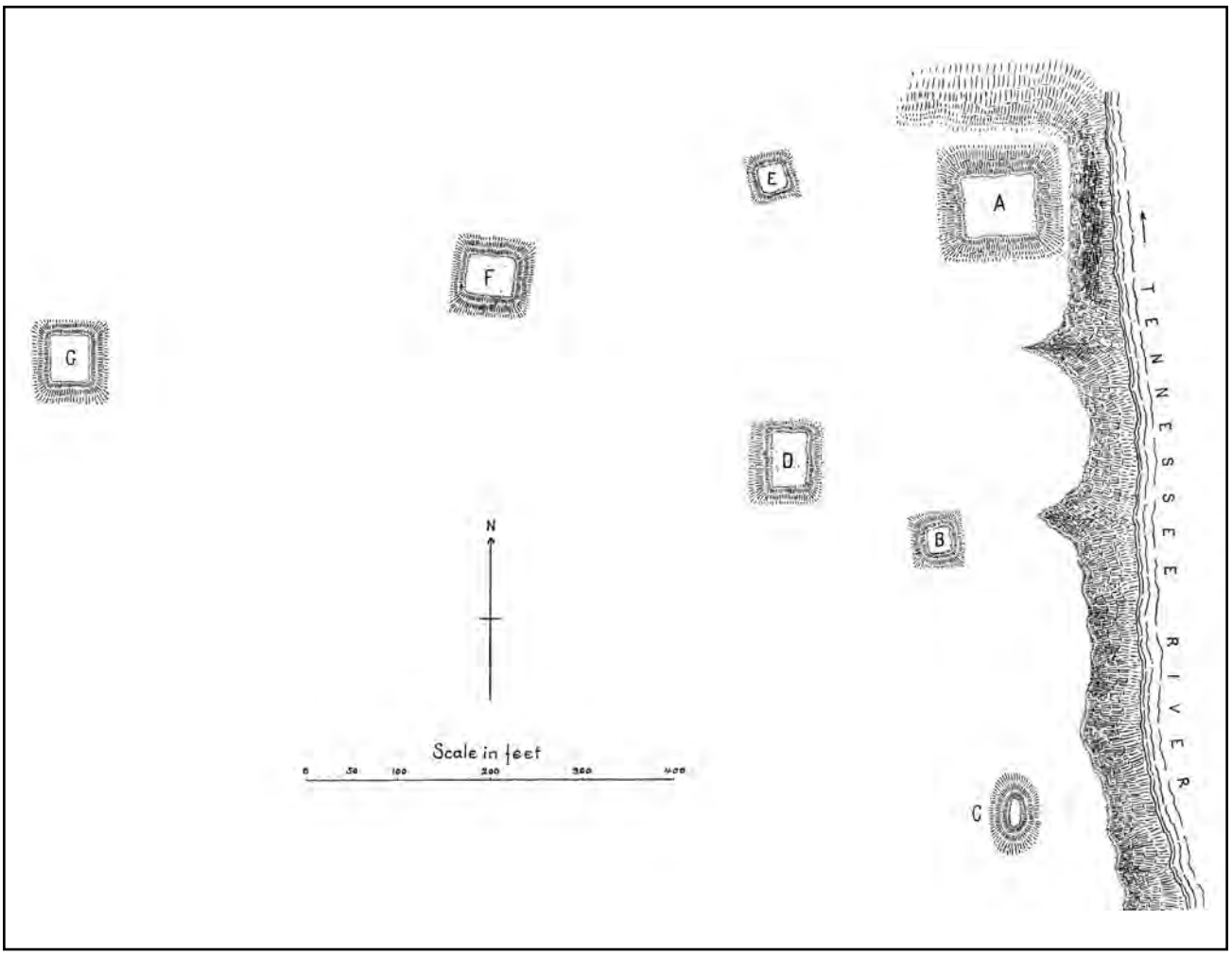


Figure 02-02. Sketch map of the Shiloh Indian Mound Group by C.B. Moore based on his 1914 visit, and produced by Dr. M. G. Miller (Moore 1915:224; Welch 2006:20). Moore's letter designations for the mounds remain in use to this day. Note Mound A was intact at the time, with a noticeable gap between it and the buff line overlooking the Tennessee River.

Civil Works Administration (CWA) was established late in 1933, primarily to help people through the winter months as a supplement to FERA. Utilizing large crews of unskilled laborers, CWA funded crews conducted large scale excavation projects at sites such as Ocmulgee in Macon, Georgia, and the Shiloh Mound Complex in Tennessee. When the funding for the CWA program ended in March of 1934, so did many of the projects, including that at Shiloh (Haag 1985; Setzler and Strong 1936). Archeology under the CWA was a highly successful federal aid program. More than 90 percent of the funds went towards labor, providing immediate relief for a large number of people. In terms of archeological research potential however, the program was not as successful. Lack of planning left large numbers of unskilled laborers without adequate supervision (Setzler and Strong 1936:306). Another criticism was that the work was directed to excavation, not analysis and reporting, with the result that many large projects, including the work at Shiloh in the winter of 1933–1934, were not reported in detail until decades later (Welch 2006).

After the disbanding of the CWA, there was a lull in funding for archeological projects until the establishment of the Works Progress Administration (WPA) in 1935 (Haag 1985). A vast amount of archeological fieldwork was done across the Southeast over the ensuing six years, much of it at sites with visible mounds of earth or shell, although

no further work was conducted at Shiloh and, as at Shiloh, much of this work went unreported or was only minimally reported at the time. Towards the end of the 1930's the WPA administrators insisted that all archeological projects receiving federal funding maintain laboratory facilities, the most successful of which was in Birmingham, Alabama. Some New Deal archeology programs, like those run by the Tennessee Valley Authority (TVA) in many parts of the Midsouth, were notable in the amount of analysis and reporting that did occur, much of it due to the diligence of scholars like William S. Webb, Thomas M. N. Lewis, and Madeline Kneberg (Pritchard and Ahlman 2009). It is perhaps unfortunate that the work at Shiloh did not occur later during the Depression, when record keeping and reporting was at a higher quality. By the early 1940s, federally funded archeological projects began shutting down as preparations for World War II got underway, which offered new employment opportunities for many supervisors and crew (Haag 1985). The New Deal era projects resulted in massive amounts of records and collections, and an oral and written history that has inspired and occupied the attention of subsequent generations of archeologists. One of the more interesting mound excavation projects undertaken during the New Deal occurred at the Irene site on the outskirts of Savannah, Georgia, where the main mound, which was comparable in size to Mound A at Shiloh, was completely excavated over a period of nearly two and a half years from 1937 to 1940 by an all-female WPA crew of 117 people, the vast majority African Americans, under a series of white male archeological supervisors (Claassen 1993; Whalen and Price 1998). The care with which the mound stages were exposed, excavated, and documented serve as a model of fieldwork and reporting, and indicate the time and level of effort needed to excavate and adequately document a large mound, like Mound A at Shiloh.

Mound excavations occurred at many locations in eastern North America in the first two thirds of the twentieth century, and it is during this era that the concept of a late prehistoric Mississippian culture first developed, named because of the numerous sites of this period found in the Mississippi River Valley and its major tributaries. Probably the best known Mississippian mound complex is at Cahokia a few miles east of St. Louis in Illinois, near the confluences of the Missouri and the Little Illinois rivers with the Mississippi. With over 100 mounds and located near two other huge contemporaneous centers, in East St. Louis and St. Louis, it has been suggested that much of what we consider to be Mississippian culture originated at these sites (Alt 2012; Anderson 1997; Pauketat 1991, 2004, 2007, 2009; Pauketat and Emerson 1997). Given the recovery of artifacts that may have originated from Cahokia at Shiloh, notably the famous 'Crouching Man' carved effigy pipe found in Mound C in 1899 (Figure 02-03) and several pottery vessel fragments found during subsequent excavations (see Chapter 14, Welch 2006), connections of some kind undoubtedly existed between the two areas. Named for the Trappist Monks who once had a monastery nearby, Cahokia's main mound, Monks Mound, covers 5.3 ha and is about 30.4m high, rivaling the Pyramid of the Sun at Teotihuacan, in basal

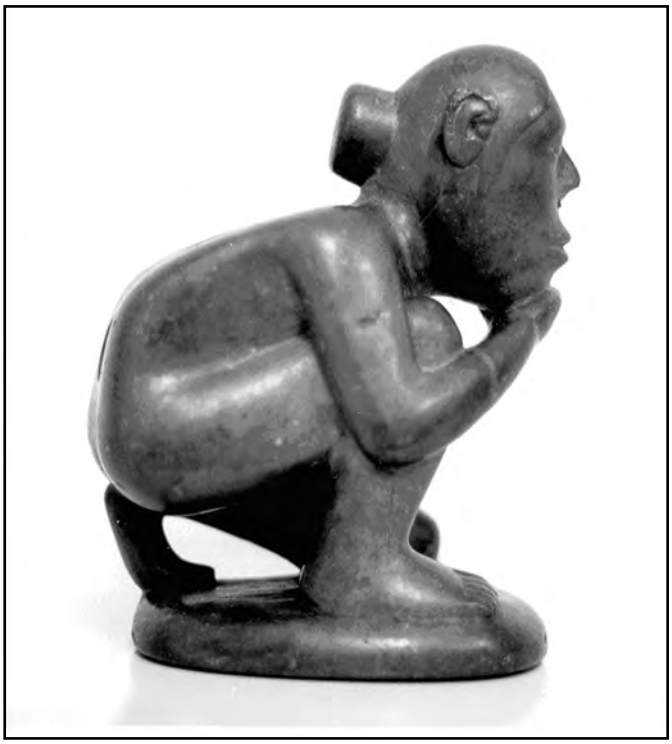


Figure 02-03. The Shiloh 'Crouching Man' effigy pipe recovered from Mound C in 1899. Photograph courtesy The Art Institute of Chicago.

dimensions if not in height (the latter is 75m high). Monks Mound is, in fact, the second largest earthen mound in the Americas, second only to the Great Pyramid at Cholula in central Mexico. The American Bottom and adjoining upland areas in and near Cahokia have a long history of excavation activity, making it perhaps the most studied Mississippian locality, with the possible exception of Moundville, which has an equally long and illustrious excavation history (e.g., Fowler 1997; Knight 2010; Knight and Steponaitis 1998a; Pauketat 2004, 2009).

The first extensive archeological investigations at Cahokia occurred during the 1920s under the direction of Warren K. Moorehead (1923, 1929, Kelly 2000) and the University of Illinois. Moorehead was perhaps the closest of any professional archeologist of the time to C. B. Moore in the extent of his fieldwork and reporting in Eastern North America, although like Moore he too never dug at Shiloh. Given the methods both employed, although to the standards of their time, this is probably fortunate. Modern archeological practice is to avoid excavation at protected sites unless they are endangered, as at Mound A, Shiloh or, when warranted, are in need of additional technical or public interpretation. Moorehead's work at Cahokia, which was threatened with development, was instrumental in the preservation of portions of the site by the State of Illinois (Hall 1991; Kelly 2000). It was also at this time, in April 1922, that the earliest known aerial photographs of an archeological site in the Americas were taken, at Cahokia and of Monks and other mounds, information collected as part of a debate as to whether the mounds were artificial creations or geological formations (Crook 1922; Hall 1968, 1991:4). Aerial photography was considered during the 1999 to 2004 fieldwork at Shiloh, but given the overgrown nature of the site, and the dangers of flying low over a public park to obtain photographs, the procedure was never adopted. Instead, pictures of the excavations and the bluff line were obtained from portable deer stands, and from boats on the river (see Figures 01-04, 01-05, 01-07). Given the resolution of current LIDAR mapping, which penetrates vegetation cover, this form of imagery should be tried at Shiloh, complementing the other remote sensing procedures that were employed (see Chapter 8).

During the early 1940s Harriet Smith of the Chicago Field Museum of Natural History supervised a WPA project excavating Mound 55 at Cahokia. This project was never completed, however, due to the beginning of World War II. In the 1960s and after a series of large scale excavations were conducted at and near Cahokia, work that continues to this day. This included a number of large scale cultural resource management (CRM) projects resulting from construction of highways and a visitor's center at the Cahokia site itself, work that has involved many organizations (e.g., Bareis and Porter 1984; Fowler 1969, 1997; Pauketat 2009). Major slumping of the sides of Monks Mound in 2004 and 2005 led to extensive excavation and geoarcheological research, and the recognition that, as had been observed at Shiloh Mound A, construction of the mound had been a complex process, and apparently included great care and ceremony in the selection and placement of fills (Pursell 2004; Schilling 2010; Schilling and Kelly 2009; Sherwood and Kidder 2011). The inspiration for the construction procedures employed in some of the mound stages at Shiloh, given the other artifacts likely from the American Bottom present such as the effigy pipe and several sherds of Ramey Incised and Powell Plain pottery (Welch 2006:48–49; see Chapter 14), may thus ultimately derive from Cahokian ceremony and ritual.

In the decades following World War II, archeological investigations continued in Tennessee, including at a number of Mississippian mound sites. Work has tended to concentrate on survey and more limited excavations, and on distribution analyses and settlement pattern studies, and the relationship between culture and the environment (Willey and Sabloff 1993:153–154). Mounds, due to their potential to contain human remains and the significant financial and labor investment required in their excavation, have generally gone unexcavated unless they were directly threatened. Major excavation programs have occurred from time to time, but only rarely using field crews of the size available during New Deal era archeology.

In and near Tennessee, sustained long term excavation programs directed to Mississippian period occupations have occurred in the Nashville Basin area where in many cases development directly threatened these late prehistoric sites. These excavations were primarily under the direction of personnel from the Tennessee Division of Archaeology and from Middle Tennessee State University (Moore 2004, 2005, 2006; Moore and Breitberg 1998; Moore and Smith 1993, 2001, 2008; Moore et al. 2006; Norton and Broster 2004; Smith 1992; Smith and Miller 2009; Smith et al. 2004; Spears et al. 2008). Mound excavations have also been undertaken at the Woodland period Pinson mound group near Jackson, Tennessee, one of the largest known Woodland mound sites in the region (Mainfort 1980). The Ames, Obion, and Chucalissa mound sites, and the 40SY488 house site, all in the western part of Tennessee have also seen recent work (Barker 2006; Garland 1992; Franklin and McCurdy 2006; Franklin et al. 2005; Mickelson 2008), as have a number of Mississippian sites in central Tennessee such as Averbuch, Castalian Springs, Link Farm, and Mound Bottom (Klippel and Bass 1984). Work and reporting at the latter three sites is ongoing, all of which are being examined through university field schools.

The largest modern mound excavation in recent decades in Tennessee occurred in the 1970s at the Toqua site, in conjunction with the construction of the Tellico Reservoir on the Little Tennessee River (Koerner et al. 2011; Polhemus 1987). The main mound at this site was 7.62m high and 46.9m in diameter, with 12 stages, many of which had paired structures on the summit. A second mound some 1.8m in height and 30.48m in diameter yielded numerous cremated burials. The Toqua excavations come the closest in scale to a New Deal era project in Tennessee in the modern era and were far larger in terms of level of effort and scale than the work reported here from Shiloh Mound A. Polhemus' 1987 report has been justly described as "one of the most thorough site investigations in Tennessee to date" (Koerner et al. 2011:13). The Toqua work, and Knight's (2010) superb monograph recounting a decade of mound excavation at Moundville, Alabama, provided models to guide the present reporting effort.

Archeology at Shiloh National Military Park

Archeological investigations at Shiloh have a long history, with much of the effort until quite recently directed to prehistoric archeology and at the mound complex. Paul Welch (2006; Welch et al. 2003) produced a detailed review and synthesis of the fieldwork through 1999, and his interpretations serve as the definitive scholarly reference for the site as a whole. Additional information on the specific projects reported in what follows may be obtained from Welch's synthesis, which includes references to the documents produced by these earlier investigators, or to their notes and collections, where these exist.

The 1899 Trenching in Mound C

The first recorded excavations at the Shiloh Mound Complex took place in 1899 when Colonel Cornelius Cadle, then Superintendent of the Shiloh Military Park, excavated a 1.37m wide trench from the north edge to the center of Mound C (Cadle 1902; Reed 1914; Welch 2006:10–16). The mound was a large linear ridge-top mound with a domed summit (after Fowler 1997:188–189), unlike the remaining six large mounds at the site, which are flat topped subpyramidal structures (see Figures 02-02 and 02-04). Four human skeletons were found together with a number of artifacts, including the Shiloh 'Crouching Man' Effigy Pipe (Figure 02-03) and numerous vessel fragments. Three of the individuals were found in a log burial chamber located at what Cadle thought was the base of the structure with the mound built over them. The fourth was located "very near the center and 3 ½ feet from the top" (Cadle 1902:220) and was thought to be a later intrusive burial. The 1899 excavation trench was relocated during the 1933–1934 excavations, when much of the remainder of Mound C was excavated, and is clearly visible in a photograph taken at the time (Figure 02-04). No additional burials or unusual grave goods were found during the later re-excavation (Welch 2006). Mound C is the only mound at the site where Mississippian



Figure 02-04. The 1899 excavation trench opened into Mound C, as exposed during the 1933-1934 FERA excavations. (Image courtesy Smithsonian Institution, National Anthropological Archives, Negative 79-12-606; Welch 2006:16).

period human burials have been found to date, although Union casualties from the Civil War battle were interred in Mound G in 1862, and were later excavated and removed to the National Cemetery after the war. The Shiloh effigy pipe is made of the same reddish 'fireclay' or 'flint clay' as a number of other American Bottom figurines, such as the well-known Birger figurine (Emerson and Hughes 2000, Emerson et al. 2001, 2003). With the source area for this material as close as 40km from the American Bottom, where the majority of the known figurines have been found and dated to the Stirling phase, ca. A.D. 1100–1200 (Emerson et al. 2003), it is likely that the Shiloh pipe was made in or near Cahokia and was brought to Shiloh from there, probably in the twelfth or thirteenth century (see James Brown 2004). Cadle apparently also dug into a second mound at Shiloh in 1903, possibly Mound B, but he stated in a letter written that year that he 'found nothing,' and no report survives on this work (Welch 2006:16–19).

C.B. Moore's Visit in 1914

As noted in the preceding section, in the winter of 1914/1915 C. B. Moore (1915:223–227) visited the Shiloh Mound Complex but was not allowed to conduct any excavations (Welch 2006:19–21). He did produce a site map that is surprisingly accurate in its placement of the seven largest mounds, suggesting he may have used surveying instruments, although no smaller house mounds or contours beyond those along the bluff line were illustrated (cf., Figures 01-03 and 02-02). Moore's (1915:224) map also labeled the mounds with letters which are still in use today to designate the seven largest mounds at the site. His map does show that at the time of his visit all of Mound A was still intact, with a ca. 15m level area between the eastern base of the mound and the bluff edge. Whether this area was built up, with the ca. 2m thick deposits like that

found on the south and west sides of the mound, or was appreciably lower, like the terrain on the north side of the mound, is unknown. Moore (1915:224–225) described Mound A as "a superb mound (A) with steep sides, on which a house has been built for the use of the superintendent of the park. This mound, as are five of the others, is square or nearly square, with a flat summit-plateau, the sides approximately facing the cardinal points." Moore (1915:224) observed that considerable erosion had occurred on the sides of Mound A, the result of foot traffic associated with the use of the superintendent's residence. Moore (1915:225) also noted that traces of the burial trenches were still visible atop Mound G, where Union soldiers had been placed and then removed after the Civil War, and also noted that many of the smaller humps, presumably house mounds, had been "dug considerably, owing, perhaps, to their convenient size." Finally, Moore (1915:227), perhaps irritated by not being allowed to dig, recounted Cadle's work in Mound C, and after illustrating and describing the effigy pipe found during those excavations, noted that it "is now in the office of the superintendent of Shiloh National Military Park at Pittsburg Landing, where it is exposed to fire, theft, and breakage. Its place is in the National Museum at Washington." The pipe is currently at the Tennessee River Museum in Savannah, displayed near where it was found.

The 1933–1934 CWA Excavations

The most extensive archeological investigations undertaken to date at Shiloh occurred during the Depression era, in one of the first archeological relief projects conducted by the federal government following the success of excavations at Marksville earlier in the year (Welch 2006:95–172; much of what follows derives from Welch's reconstruction). In December 1933, Frank H. H. Roberts, Jr., of the Bureau of Ethnology of the Smithsonian Institution was appointed to direct an excavation at Shiloh Mound Complex using labor supplied by the CWA. Moreau B. C. Chambers, a native of Mississippi who had previously worked with James A. Ford, was Roberts' field assistant. Fieldwork commenced on December 21 and ran through March, 1934. During the 1933–1934 excavations 1.5m (5 feet wide is the length of a shovel) wide trenches of varying lengths were opened in many places on the site with larger excavation blocks or areas opened up at the locations of structures and features to be investigated further. Trenches were excavated in Mounds C, E, and F (Roberts 1935), and a number of 1.5m wide trenches were opened west of Mound A in the apron (Figures 02-05, 02-06, see Figure 02-04,). Unfortunately, as Welch (2006) determined in his reporting on the work, the surviving notes and records are quite limited, making reconstructing the work challenging. Complicating matters, only brief statements describing the work were published at the time (Roberts 1935; Seltzer and Strong 1936; Stirling 1935). No detailed site report on the work ever appeared, and while a topographic map of the central portion of the site was produced encompassing the area of the major mounds and plaza and was used by subsequent researchers (i.e., Beditz 1980a:11; Welch 2006:5–6, 98–99), if a map was created detailing the location of the excavation units, it has not turned up. As a result, the numbers, sizes, and locations of most of the 1933–1934 excavation units are unknown. Mapping data was collected, however, and photographs of some of the units survive, as do coordinates from some unit corners (unfortunately these data did not include the size of the units). This information was used by Paul Welch to reconstruct a site map, and infer where specific units were opened (Welch 2006; see Figures 01-03, 02-05, and 02-06; Chapter 7, herein). Portions of the trenches on the apron on the west side of Mound A, and illustrated in Figures 02-05 and 02-06 were, in fact, located during the 1999 remote sensing and test excavations, supporting Welch's reconstructions of the 1930s excavations in this area of the site (see Chapter 8, Welch 2006:121–131, and Welch et al. 2006). The 1999 testing program showed that earlier excavation units could probably eventually be relocated, given enough time and effort, through a combination of remote sensing and test excavations directed to locating trench margins. Any new work at the site, accordingly, should assess whether excavations have already occurred in the area to be examined.



Figure 02-05. Excavation trenches opened in the apron west of Mound A during the 1933–1934 FERA excavations. (Image courtesy Smithsonian Institution, National Anthropological Archives, Negative 79-12-681; Welch 2006:124).

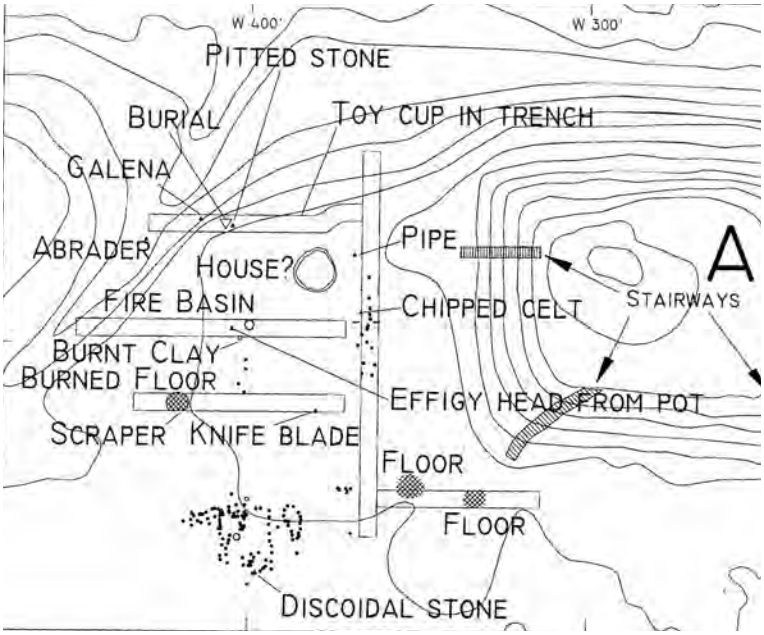


Figure 02-06. Reconstruction of excavation units and features in the vicinity of Mound A, as reconstructed by Welch (2001, 2006:122). Some of these trenches were relocated in the 1999 and 2001 fieldwork.

The crew size during the 1933–1934 excavations fluctuated, reaching as many as 118 men. Philip Philips was present for some time and helped direct work, though we do not know his precise role (Williams 2003:xiv). Excavation commenced before the site had been gridded, and some of the excavations were given trench numbers rather than grid designations. There were also excavations of irregularly shaped areas, usually following lines of postmolds. Three of the mounds (C, E, and F) were dug into, as were extensive areas of the plaza, portions of as many as 20 house mounds, and part of a palisade line found encircling the site away from the bluff edge. The only published reports of all this work at the time were two brief summaries (Roberts 1935; Stirling 1935). The Smithsonian Institution served as the repository for the project, and currently retains possession of the artifact collection, Roberts and Chambers field notebooks, plane table topographic maps of the site showing features encountered (but not excavation unit boundaries), 115 field black and white photographs, and a 13 and a half minute long, silent, black-and-white film. The absence of a map detailing where fieldwork occurred, as noted, has proven to be a significant problem both for assessing what Roberts did and in planning later work at the site.

The goals of the 1933–1934 excavations appear to have been simply to explore the site. Despite his Harvard University doctoral study of pottery chronology at Pueblo Bonito (Roberts 1927), there is no indication that Roberts was interested in chronological issues at Shiloh. However, Chambers, a recent graduate of the University of Chicago field school, kept records of pottery categories by level. Sometimes these were arbitrary levels, but in other instances they were true stratigraphic layers. Excavation techniques differed in several notable respects from the Chicago field school techniques, so that if Roberts was at this time following techniques he learned at Harvard; the Harvard technique was distinctively different from the Chicago technique (*contra* Browman 2002). The short, published summaries of the excavation failed to report several details that became important in later years. First, what appears to be the ground surface around the mound is actually, at least on the south and west sides, an artificial apron up to 2m deep. This means that the mound was actually 2m taller than has been thought. Second, profile drawings of trenches through Mounds E and F show red clay surfaces on buried mound summits. The importance of this architectural detail became apparent during the excavations in Mound A, when similar red clay surfaces were found atop the Stage II and Stage III mounds (see Chapters 3, 9, and 10). Although Mound A was not examined during the 1933–1934 fieldwork, the apron to the west of the mound was extensively trenched (see Figures 02-05 and 02-06). During planning for the 1999 to 2004 NPS fieldwork, and following consultation with representatives of the Chickasaw Nation, the re-excavation of one of these trenches was proposed, if it proved necessary, to provide a reburial area within the sacred mound precinct for any Native American remains found (see Chapter 1). Two buildings of single set posts were found on the apron about 25m to the southwest of Mound A during Roberts' fieldwork, a roughly square shaped structure measuring ca. 4.3 to 4–4.8m (the location of the south wall was uncertain) and, a meter to the east, an oval arrangement measuring 3.2 x 1.3m (see Figure 02-06). Welch (2006:124–126) interprets these as some kind of elite building and a possible 'granary or free-standing structure.' Four other possible house floors or floor fragments were observed on the apron to the west and southwest of the mound, suggesting many other structures might be present, including in the threatened area near the bluff margin. The 2001 to 2003 remote sensing and excavation work, in fact, proved this to be the case (see Chapters 8, 9).

Until Paul Welch's work the 1933–1934 fieldwork had never been reported in any detail, indicating the importance of his synthesis and, given the poor condition of the field records he had to work with, the service to the profession he performed. As noted, Welch (2001, 2006:6) put together a base map using original notes, photographs, and artifact provenience information, but it must be cautioned, and as he readily admits, this map, while correct in some details, is only a best guess on many

others, particularly where excavation units were opened. For this reason a new map was produced of the Shiloh Mound Complex during the Mound A mitigation program (see Chapter 7). However, unless a map depicting the excavation units turns up, archeology and remote sensing would appear to be the only way to determine precisely where most of the 1933–1934 units were placed, save in a few locations where extensive photography occurred.

The 1976 Excavations in the Plaza and along the Palisade

After the New Deal era, no further excavations at the Shiloh Mound Complex are known to have occurred until the 1970s. In 1976, under contract from SEAC and in an effort to learn more about the site in general, Gerald Smith (1977; see Welch 2006:23–28) of Memphis State University conducted archeological excavations at the site, in the plaza and along the palisade. Smith excavated two areas in the plaza and found disturbances near Mound B that he thought were caused by Roberts' excavation trenches. He also found evidence that the plaza area was filled and leveled in prehistoric times. Coring conducted by Glen Doran during the intensive testing program in 2001 at five locations between mounds A and B confirmed that up to 60cm of fill had been added to level the plaza (see Chapter 3). Smith placed two excavations on the western portion of the palisade line, which is characterized by a low rise ca. 30cm high by 2 to 3m wide at the base that extended, with some breaks and much less distinct sections, for several hundred meters on the southwestern and western side of the mound group (see Figure 01-03). Smith was able to locate closely spaced postmolds from a single palisade line (no evidence for rebuilding was observed), and excavated what he interpreted to be a bastion measuring ca. 3.2 x 3.0m (Welch 2006:25–26). Smith placed three permanent datums consisting of rebar set in concrete that were to aid future researchers in locating his excavations. Unfortunately, however, it has not proven possible to relocate these datums, which are thought to have been removed by bush hogging or other maintenance activity, or are simply covered over (Welch 2001, 2006:24). Given the problems with mapping that characterize earlier work at the site, the SEAC excavations from 1999 through 2004 were tied in to well-defined datums set in concrete, with locations determined to submeter accuracy using GPS units (see Chapter 7). The excavation grid and site map were additionally tied in to landmarks and markers across the mound group. Smith's test excavations reconfirmed the existence of the palisade and bastions first observed by Roberts, and determined that, at least in some cases, unmapped 1933–1934 excavation units could be distinguished from undisturbed areas. The work helped guide the 1999 testing and remote sensing in the location of Roberts' trenches near Mound A, and prompted survey and GPS mapping of the visible portion of the site palisade line during the 2001 to 2004 mitigation program.

The 1979 Deep Testing into Mound A

In 1979, concern about the erosion of the river bluff resulted in test excavations into Mound A in an attempt to learn its construction history (Beditz 1980a, 1980b; Welch 2006:28–30). Archeologists under the direction of John E. Ehrenhard from SEAC excavated three excavation units into Mound A, 2 1x1m pits on the top and 1 measuring 1x0.5m on the south side. The goal of these investigations was to determine how Mound A was constructed and if significant information would be lost if the mound continued to erode into the Tennessee River. Each unit was excavated in 20cm levels, with all fill dry screened through ¼-in mesh. The units were tied into a datum presumably created by Gerald Smith which has since been lost, rendering their location somewhat uncertain (Welch 2006:30), although clear signatures from Units 1 and 2 on the summit were obtained during the 1999 and 2001 remote sensing activity (see Chapter 8). The first 1x1m unit, #1, was placed "slightly to the west and south on the mound top" (Beditz 1980b:4). Historic artifacts were encountered in the fill to a depth of one meter below surface and at that point the unit was abandoned, since it appeared to represent a disturbance of some kind, which they assumed

was associated with the superintendent's cottage built atop the mound in the early twentieth century.

The second 1x1m unit, #2, was placed in the southwest quadrant of Mound A several meters east of the first unit and was opened to a depth of 6.8m below the summit surface, ceasing when a very hard culturally sterile red clay was encountered, which the excavators assumed was subsoil (see Chapters 9 and 10). Access to this deep unit was by means of rappelling, and miner's lamps had to be worn to see clearly deep in the mound. The excavations were challenging and required great stamina and courage, since vibrations were felt by those in the unit whenever a barge passed on the river below (John Ehrenhard: personal communication) (Figures 02-07a, 02-07b, and 02-07c). A presentation on the fieldwork made at the 1979 meeting of the Southeastern Archaeological Conference was particularly memorable to all attending (Beditz and Bellomo 1980; Welch 2006:29). Basket loading and other variation in fill was observed in the profile, but no clear mound surfaces were apparent (Beditz 1980b:18), although the excavators did later note that the use of miner's helmets and lights made it difficult to record the stratigraphy. As a result, the excavators concluded that the mound was built in a single episode, with no internal stages. Viewed in hindsight, it is clear that the major subdivisions observed in the unit #2 profile do roughly correspond with some of the mound stages observed during the mitigation program (Figure 02-08). Thus, the first major strata in the 1979 test, extending to a depth of almost 2m, corresponds to the thin Stage I and much thicker Stage II mounds, counting from the top. The Stage III mound is identified by distinctive mottled loaded fills and a gap in the occurrence of ceramics. Both grog and shell tempered ceramics were found in the top and bottom third of the mound in unit #2, with none reported from levels 14 to 21, or 280 to 420cm (Table 02-01; Beditz 1980b:7). These depths correspond almost exactly to the extent and composition of the Stage III mound documented in the 2002 and 2003 fieldwork, which was characterized by carefully selected and placed fills with few artifacts present (see Chapters 9 and 10). Lithics occurred throughout the fill, although in much lower incidence from Levels 14 to 21 than in the levels above and below (Beditz 1980b:13).

Other parallels with the deposits found in the 1999–2004 mitigation program are evident in the unit #2 deposits. In the lower part of the mound, shellfish remains occurred in greatest incidence from ca. 520 to 620cm below the surface. A similar pattern was also observed in the 2003 and 2004 fieldwork, when shell and bone was found in large quantity in the fills making up the Stages VI and VII construction episodes, located just above the subsoil (see Chapters 9, 10, 17, 18). A secondary concentration of shell found in unit #2 in 1979, from 180 to 260cm, appears to be associated with the living surface atop the Stage III mound, which in the area examined in the testing and mitigation program from 2001 to 2004 consisted of stacked structure floors, albeit with only traces of shell evident. Test Unit # 2, which was taken to 6.8 m below the summit, was thought by the 1979 SEAC investigators to have been opened to sterile subsoil, extending slightly below the base of the mound. This remains uncertain, however, since subsoil was found at a depth of approximately 6.5m below the



Figure 02-07. Excavations in Mound A in 1979 included a 1m unit taken 6.8m into the mound. A) Former SEAC Director John Ehrenhard rappelling into the 1m unit taken to the base of the mound, B) Randy Bellomo rappelling into the 1m unit, and C) Possibly Lindsay Beditz excavating in the base of the unit.

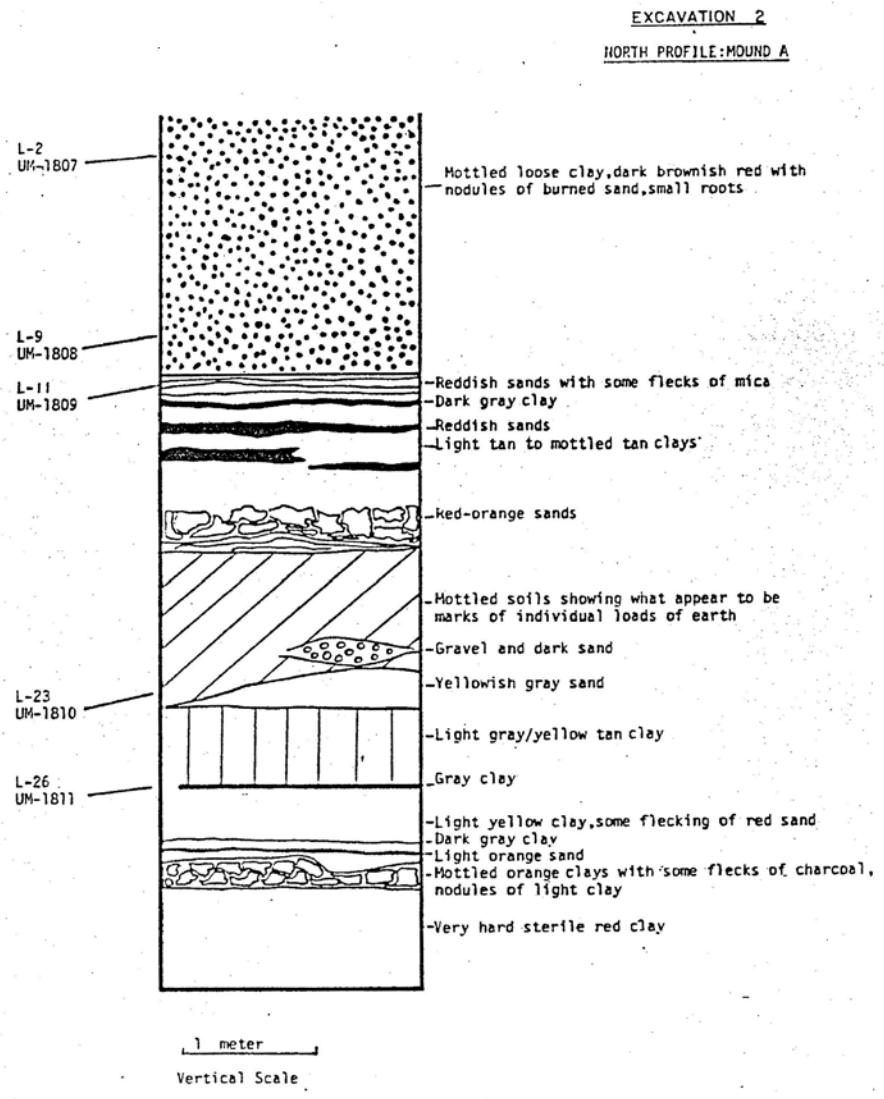


Figure 02-08. The stratigraphy in the 6.8m deep Test Unit 2 opened into Mound A in 1979 (Modified from Beditz 1980b:18).

summit on the southeast side of the mound in the areas examined in 2003 and 2004, and at about the same depth in the cores taken in the apron on the west side in 2001 (see also Welch 2006:29, 121; Chapters 3, 9, and 10). It is possible that the center of Mound A was over a low rise on the bluff, although there is no evidence for this, and a better idea of the deposits underlying the mound will likely have to await future mitigation excavations.

The third test unit, designated #3, measured 1.0x0.5m and was taken to a depth of 1.4m on the south slope of the mound near the crest in an effort to determine whether a ramp was located here, although no trace of one was found. In the report on the excavations no specific details were provided on the artifacts found in units #1 and #3, with reporting directed to materials found in the deep stratigraphic test, #2. These materials were available at SEAC in Tallahassee and were examined, with no substantive change in identifications. The artifacts found in unit #2 examined in 1979 indicated that the mound was built during the Mississippian period, since shell tempered pottery was found throughout the levels, with only a slight hint for an increase in later Woodland period Mulberry Creek Cordmarked pottery with depth (see Table 02-01; Beditz 1980b:7). A Madison triangular base was found at a depth of 5.6m below the surface, reinforcing the impression that the mound was built using fill with Late Woodland and Mississippian period remains mixed together, although the possibility that the lowest deposits were earlier was suggested by radiocarbon dates which came from the levels. Seven dates were obtained, from charcoal picked from throughout the fill of the level dated, with the midpoints ranging from A.D. 1090 to 405 B.C. (Beditz 1980b:15; Beditz and Bellomo 1980:21; Table 02-02; see Chapters 9 and 21). A near logical ordering was obtained from top to bottom, although only the latest date falls within the Mississippian period, while the next three are Late Woodland and the bottom three Early and Middle Woodland in age. Given subsequent investigations,

Table 02-01. Ceramic and lithic artifacts found in Test Unit 2 opened in 1979 at Mound A (adopted from Beditz 1980b:7, 12). The low incidence of artifacts in levels 14–21 closely corresponds, in both depth and content, to the Stage III mound fill examined in the 2001 to 2004 fieldwork.

Level	Mulberry Creek Cordmarked	Baytown Plain	Neeley's Ferry Plain	Moundville Incised	Kimmswick Fabric Impressed	Wheeler Check Stamped	Bell Plain	O'Byam Incised	Total Ceramics	Unmodified Rocks	Unworked Flakes/ Debitage	Worked Flakes & Tools	Total Lithics
1	9	4	15						28	53	25	4	82
2	9	2	9	1					21	16	3	1	20
3	11	2	14						27	11	3	1	15
4	4		8						12	13	2		15
5	3	1	10						14	12	2	1	15
6	9	4	15						28	19	3	1	23
7	3	1	20						24	15	8	1	24
8	6	4	7		2				19	8	7		15
9	6	1	16						23	10	7		17
10	10	2	18						30	8	5		13
11	3	1	10		1				15	12	3		15
12	4	2	2						8	11	2		13
13	2		3					1	6	1	1	1	3
14									0	7	1		8
15									0	4	1		5
16									0	1			1
17									0	8	1		9
18									0	9	1		10
18									0	7			7
20									0	3			3
21	1								1	4			4
22			1						1	3			3
23			1						1	4	2		6
24	3	1	5			1			10	7	1	1	9
25	3	2	19						24		5		5
26	7	1	4						12	3	3	1	7
27	4		5				2		11	8	3	2	13
28	1		2				1		4		6	1	8
29	10		3		1				14	2	9	1	12
30	4		2						6		10		10
31	2	1							3	3	9	1	13
32			1						1				0
33									0	1			1
34									0				0
Total	**114**	**29**	**190**	**1**	**4**	**1**	**3**	**1**	**343**	**263**	**123**	**14**	**404**

Table 02-02. Radiocarbon dates obtained in Test Unit 2 opened in 1979 at Mound A (adopted from Beditz 1980b15).

Provenience	Lab ID	Date 14C BP	s.d.	13C Ratio	Material	Reference
Level 2	UM-1807	860	70	-25.0e	wood charcoal	Johnson and Stipp 1980:1123
Level 9	UM-1808	1190	60	-25.0e	wood charcoal	Johnson and Stipp 1980:1124
Level 11	UM-1809	1130	80	-25.0e	wood charcoal	Johnson and Stipp 1980:1124
Level 23	UM-1810	1220	50	-25.0e	wood charcoal	Johnson and Stipp 1980:1124
Level 26	UM-1811	1810	180	-25.0e	wood charcoal	Johnson and Stipp 1980:1124
Level 26	UM-1872	2280	90	Yes	marine shell	Johnson and Stipp 1980:1124
Level 26	UM-1873	2360	70	Yes	marine shell	Johnson and Stipp 1980:1124
Level 31	UM-1874	2270	80	Yes	marine shell	Johnson and Stipp 1980:1124

where AMS determinations were run from secure feature context in the mound stages, and that indicate that construction in the Mound A area postdates A.D. 900, it is probable that the earlier dates obtained in 1979 were run on old charcoal or shell, perhaps from earlier occupations in the area.

The 1979 SEAC investigators concluded that "Mound A was constructed during a short period of time rather than over an extended period. It was built on top of an area which had been occupied over a period of time. The fill used to construct the mound was carried in from at least two separate areas, at least one of which was probably located on the river floodplain" (Beditz and Bellomo 1980:21). Unfortunately, they not only concluded that the mound had been built in a single stage, but also stated that "it is unlikely that further excavations of Mound A will provide any significantly new information. It is probable that no burials or evidence of structures or features exist here, and the only artifacts which might be found are those associated with the fill used to construct the mound" (Beditz 1980b:19). That there might be the structures or other features on the mound summit or at the base from the Mississippian or earlier time periods was considered unlikely, because 'no features or evidence of structures' had been noted (Beditz 1980b:17). Only three 1m units were opened, however, an area under 1 percent of the existing summit, and one of these was actually on the south slope. The significance of the superintendent's cottage was not even considered, even though historic artifacts from a feature or disturbance thought related to it had been found in test unit #1. By the standards of the time, however, structures atop or under mounds were considered more important than how the mounds were built, and historic sites commonly had to date prior to the twentieth century to receive much research attention.

By the late 1990s the conclusions and recommendations from the 1979 fieldwork were recognized as extremely unlikely. They still, however, had to be overcome during the planning for the testing programs in 1999 and 2001. Fortunately, this proved to be fairly straight forward, based on the results of the 1999 GPR fieldwork showing probable internal stages or construction episodes in the mound (see Chapter 8). At the June 16–18, 2000 excavation planning workshop held at Shiloh (see Chapter 3), furthermore, a photograph of part of the profile from the 1979 deep test unit enlarged to poster size was displayed on the wall of the meeting room, showing multiple filling episodes (Figure 02-09). This picture made it clear to all attending that the deposits in the mound were much more complex than had been indicated in the original report (see Figures 02-08 and 02-09). While stage fills and surfaces could not be delimited at the time in Test Unit #2—although as noted above some now can be, based on hindsight, and a much larger excavation sample and mound profile—additional testing and evaluation was considered essential. It should be noted that John Ehrenhard, who by the late 1990s was the director of SEAC, fully concurred with this recommendation, and

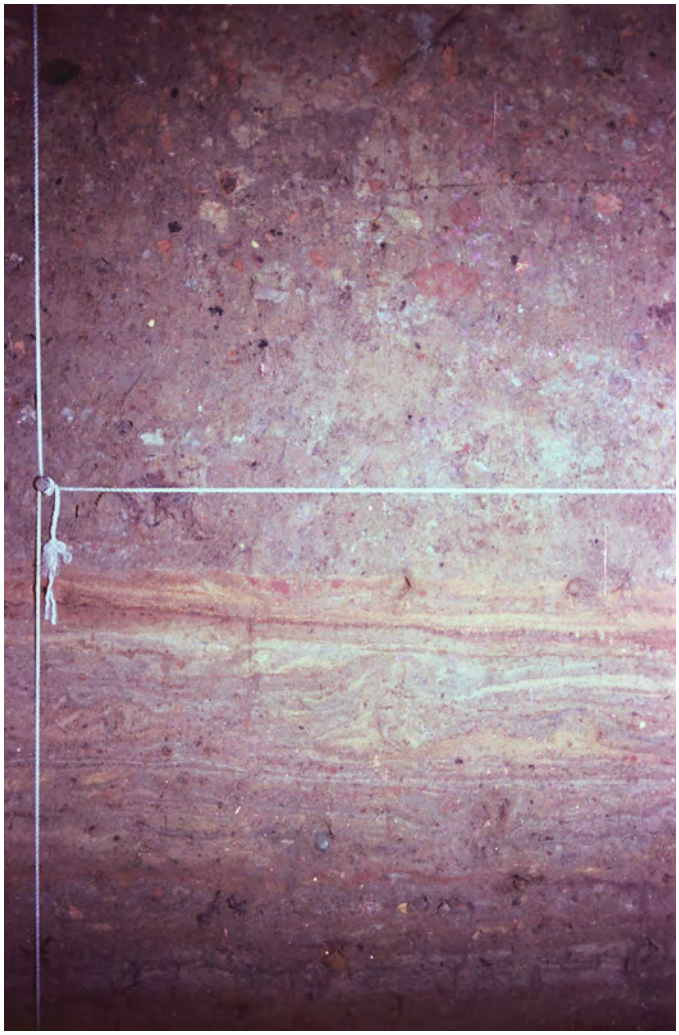


Figure 02-09. Photograph of the stratigraphy observed in the upper part of the 1979 1m unit opened into Mound A. This image, together with the results of the 1999 remote sensing work on Mound A, helped support further test excavations into the mound in 2001.

in fact strongly supported the planning and subsequent excavation effort from 1998 to 2004.

House Mound Excavations in 1998–1999

The next major excavations at the Shiloh Mound Complex took place some twenty years after Smith and Ehrenhard's 1970s work. During the summers of 1998 and 1999, Paul Welch, then at Queens College, after coring 25 house mounds to determine their basic stratigraphy, conducted excavations at two of them, #7 and #44 or Mound N to the southwest and west of the plaza, respectively, near Mounds F and G (Welch 2006:173–230). Welch (1998a, 1998b, 2006:28, 32–36) became interested in the Shiloh Mound Complex several years previously, obtaining copies of field records from Bruce D. Smith at the Smithsonian, who had himself been interested in the site in the late 1970s, and had compiled what information remained in the files about the site. With funding from NPS's Lower Mississippi Valley Regional Initiative obtained with the help of Superintendent Harrell, Welch was able to obtain three AMS determinations on materials collected during the 1933–34 excavations. These dated to the eleventh through thirteenth centuries, in accord with the results obtained from the mitigation program (Welch 2006:34; see Chapters 9, 12, 21). Harrell also supported Welch's plan to excavate house mounds at Shiloh, and in fact provided funds for Welch's 1999 fieldwork. In many ways, the testing and mitigation program ultimately adopted at Shiloh from 1999 onward owes its impetus to those two individuals.

The goal of Welch's 1998 and 1999 excavations was to examine assemblages from house mounds and determine if there were differences between them based on their distance from the palisade and the other mounds on the site, including Mound A. Welch was also contracted by NPS to prepare a synthesis of all previous excavations at the site, work completed in 2001 and published in 2006 (Welch 2001, 2006). The information from Welch's excavations was also intended to aid in the planning of an interpretive trail through the mound site, work that continued over the following decade. Welch's excavations obtained screened samples of artifacts, flotation samples, radiocarbon samples, and other data to combine with the extensive but coarse-grained information available on house mounds at the site collected during the 1933–1934 excavation. A burned house (#7) was found near the edge of the site in 1998 that had very few artifacts, with only a few small flint flakes on the floor near the walls. Welch (2006:201) interpreted this as indicating the house had been intentionally abandoned and its contents removed before it burned. In 1999, a second burned house near the plaza (Mound N) was also explored that had also apparently been abandoned well before being

consumed by fire. Unlike the structure examined in 1998, this one yielded substantially more debris, including collapsed wall and roof debris, and mica fragments. Fill was deposited atop this burned house, perhaps from a borrow pit located less than 20m away. This fill contained a more diverse set of artifacts than were found in and around the house excavated the year before, including a wider variety of pottery vessel shapes as well as mica fragments, chert drills, and sandstone saw blades, suggesting crafting activity, possibly shell bead manufacture (Welch 2006:220, 230). Although possible house mounds were examined in the 1933-1934 excavations, notably Mound J (Welch 2006:116–121), the two that were examined by Welch are the best documented from the mound group to date.

The 1999 Remote Sensing and Archeological Testing Project

As discussed in detail in the following chapter, in 1999 the first of four seasons of intensive fieldwork in the vicinity of Mound A took place under the joint field direction of David G. Anderson and John E. Cornelison, who prepared a formal research design in advance of the project and a preliminary summary of findings shortly after the close of the fieldwork (Anderson and Cornelison 1999a, 1999b). A detailed report on this work was later completed by Welch, Anderson, and Cornelison as part of the synthesis effort recounting the first 100 years of investigations at the site (Welch et al. 2006:231–251). Remote sensing using GPR was undertaken in many parts of the site, including on all of the major mounds (see Chapter 8), followed by the excavation of a number of 1x1m units to a shallow depth to check the accuracy of the remote sensing results (Welch et al. 2006; see Chapter 3). Several trenches from the 1933–1934 fieldwork were located, which were found to assist with Welch's preparation of a map of the old excavation units, and partly to gain information relevant to the impending mitigation excavation on Mound A. Welch (2001, 2006:39–40) summarized four objectives and the results of the project as follows:

Remote sensing survey south of Mound F, north and east of Mound D, and west of Mound A to relocate excavations from 1933–34. GPR was expected to be the technology of choice, given the problems that historic metal objects and variation in moisture content would present for magnetometry and resistivity techniques.

Test excavations to check the "ground-truth" of the remote-sensing results, and to provide in-the-ground locations for 1933–34 excavation units which would permit precise matching of the 1933–34 grid and the 1998 grid.

Test excavation in the "Dike" to assess its construction history. The "Dike" is an artificial, linear, earthen ridge of unknown age or significance [located on the west side of the site (see Chapter 10)].

A survey of the full extent of the palisade and bastions, using global-positioning satellite (GPS) equipment.

These objectives were fulfilled in exemplary fashion. The palisade was mapped fully, and the GPS receiver also provided decimeter-level Universal Transverse Mercator (UTM) coordinates for the 1998 grid datum and all the major mounds at the site. The GPR survey succeeded beyond my wildest hopes, not only because it rapidly provided highly accurate indications of the location of the 1933–34 excavations, but because it proceeded so rapidly that there was time to conduct at least two, orthogonal transects across every major mound at the site. The GPR transects across the mounds not only detected the

> excavations from 1933-34, but also detected mound stratigraphy. In instances where excavations permit us to check the validity of the GPR indications of stratigraphy, the GPR results are usually right on target. Reassuringly, much of the stratigraphic interpretation of the GPR was done "blind," without the interpreter knowing what excavations had previously revealed. A preliminary report on the remote sensing results was presented at the 1999 Annual Meeting of the Southeastern Archaeological Conference (Anderson, Cornelison, Bean, and Welch 1999).
>
> The test excavations to "ground truth" the GPR indications of 1933–4 excavation units had mostly positive results. In a minority of cases there were no old excavation units found at a location where the GPR had indicated such might exist. But in most instances, the edges of the old excavations were within 20cm of the location suggested by the radar output. One of the important results of the GPR survey and test excavations is the demonstration that the 1933–4 excavations were far more widespread than either the written or photographic records suggest (Welch 2001, 2006:39–40).

The remote sensing work in other parts of the site, including at other mounds, it should be noted, was an explicit objective of the 1999 research design prepared in advance of the fieldwork:

> GPR transects will be run over the seven major mounds (A through G), as well as over the dike, palisade line, and one or more house mounds. A transect will also be run over the plaza, to see if there is a central support post or evidence for intentional leveling as at the great plaza at Cahokia (Anderson and Cornelison 1999a:7).

A summary of the 1999 fieldwork and analysis results by SEAC personnel is presented in the next chapter and specific results as warranted in various other parts of this report, particularly in Chapter 8 on the remote sensing activity. Detailed information about the work, including information about the artifacts and features found, is presented in the 2006 synthesis volume by Welch (Welch 2006; Welch et al. 2006).

Archeological Projects at Shiloh Away from the Shiloh Mound Complex

Beginning in the late 1970s a number of archeological projects occurred at Shiloh away from the mound group that focused on the battlefield itself, or that were related to resource management issues mandated by proposed construction. In 1979, John Ehrenhard, then an archeologist at SEAC, undertook testing for a Hamburg Road bypass. This testing consisted of 1m and 0.5m excavation units placed at the hubs of the right of way. No significant artifacts were encountered and construction was approved (Brewer 1987). In 1984, James Atkinson, then an archeologist at SEAC, conducted a walkover investigation of the trail leading to the mound complex from Cloud Field and portions of Cloud Field that were being considered for an agricultural lease (Atkinson 1984). It was determined that the trail would not adversely impact the mound complex and it was recommended that the field should be disked and examined for artifacts on the surface. There is no record of this examination ever taking place. In 1987, David Brewer, then an archeologist at SEAC, produced an overview of archeological research at Shiloh to that point (Brewer 1987; Welch 2006:30–32), in which he noted that Randy Bellomo and John Ehrenhard conducted a limited magnetometry survey at the mound site in 1981. Bellomo and Ehrenhard removed 10 soil samples for analysis, though the sample locations are not mentioned. Results of this fieldwork were included in Bellomo's M.A. thesis

at Florida State University (Bellomo 1983; Welch 2001, 2006:30–31). In early 1991, Bennie Keel, then SEAC Regional Archeologist, conducted an Archaeological Resources Protection Act (ARPA) assessment north of the Peach Orchard (Keel 1991) following the arrest of two individuals for looting within the park boundaries. Also in 1991, James Atkinson, then an archeologist at SEAC, conducted shovel testing at seven locations prior to the construction of sewage facilities (Atkinson 1991). During this testing Atkinson recorded three prehistoric sites that he considered ineligible for the National Register of Historic Places. One of the sites was located to the west of the visitor center. Atkinson did not delineate the sites beyond the extent of the construction. One site produced Mulberry Creek Cordmarked and Baytown Plain ceramics, and is temporally assigned to the Late Woodland period based on the artifacts. In 1994, David Brewer, then a SEAC archeologist, traveled to the park to conduct a survey of Bloody Pond that was urgently needed as a part of an ongoing murder investigation. When the crew arrived in the park the murder weapon had already been recovered and the examination and metal detecting of the dried pond bottom was no longer needed (Brewer 1994). In late 1997, Tom Des Jean, Big South Fork National River and Recreation Area Archeologist, conducted an ARPA assessment in the park following the discovery of areas of looting. While in the park, Des Jean conducted an investigation around the base of the General Sherman Monument #11. These investigations consisted of shovel testing and metal detecting (Des Jean 1998). A number of Civil War artifacts were located during the metal detecting and the shovel testing produced a clear understanding of the soil stratigraphy. Clearance to proceed with the construction was granted.

In 1999 Ellen Shlasko of Memphis State University conducted archeological testing at the Larkin Bell field and at the interpreted site of the Cantrell House, a battlefield hospital (Bennie Keel, personal communication; Shlasko and Henline 2000). Shlasko conducted shovel testing, metal detecting, and excavations. The results of the metal detecting survey were somewhat limited as very low quality metal detectors were used by inexperienced student operators. Excavations were undertaken within the footprint of the Cantrell House. In 2001, Ellen Shlasko conducted additional metal detecting in the unnamed field located east of the Peach Orchard in an attempt to locate historic structures that were known to have existed in that area. The remains of one historic structure were located through metal detecting (Shlasko 2002).

In 1999, the SEAC crew engaged in the remote sensing and testing work at Mound A also conducted shovel testing and metal detecting under the direction of John E. Cornelison, Jr. at Cloud Field, which was several hundred meters west of the mound group, where a new parking lot was planned. The shovel testing was undertaken because of the proximity of the area to the mound complex, to insure that no prehistoric resources were present. Metal detecting was also undertaken in the Water Oaks Pond area prior to the placement of a new monument. From 2001 to 2003 while the SEAC team was at Mound A, additional metal detecting activity was undertaken in several areas of the battlefield by teams of SEAC archeologists and volunteers under the direction of Cornelison, with much of the work occurring voluntarily on weekends in areas of interest or concern to park management. The results of these projects added new information about the battle, and the extent of the archeological information that remains, and were synthesized in one final report (Cornelison and Cooper 2007).

Conclusions

From 2001 through 2004 a team of SEAC archeologists under the direction of David G. Anderson and John E. Cornelison, Jr. conducted an extensive mitigation program in and near Mound A, work described in detail throughout the remainder of this report. The excavations and subsequent analyses dramatically altered our understanding of how the mound was built and what it looked like when it was in use some 800 years ago. As reviewed in this chapter, however, a great deal of archeological research had already occurred at Shiloh prior to the study reported herein, both related to the Native American occupation, as summarized by Welch

(2006), as well as encompassing the subsequent historic period, with particular attention directed, understandably, to the massive battle fought in the area on April 6th and 7th, 1862, during the American Civil War.

Three great periods of mound exploration have occurred in American archeology, in the 1880s and 1890s, in the 1930s and early 1940s, and in the era of CRM archeology from the 1970s to the present day. Work occurred at Shiloh during all three of these periods, most during the New Deal and CRM eras. With only limited exceptions, most of this work was funded by the federal government, although in recent decades some work has also been conducted by university field schools and with the help of volunteers. Prior to the 1999 to 2003 SEAC excavations, the only large-scale excavations at the Shiloh Mound Complex were those conducted in the 1930s, work that was not reported at the time, resulting in significant loss of information about the site. While extensive work was conducted near Mound A on the apron in the 1930s (see Figures 02-05 and 02-06), the only work on the mound itself prior to the 2001 to 2004 mitigation were the three test units opened in 1979 by SEAC archeologists under the direction of John Ehrenhard. The mitigation program reported here thus provides much needed information on the largest mound at the site, as well as about the site in general.

Excavations since 1999, coupled with restudy of the earlier excavation records and artifacts (Welch 2006), have led to a major shift in thinking about the Native American occupations at Shiloh, as documented in the remainder of this volume. The Shiloh Mound Complex has seven major mounds and nearly one hundred smaller house mounds, many of which are still visible on the surface since the site has never been plowed. These all occur atop high table-land, bounded on the east by a precipitous bluff overlooking the Tennessee River. To the north and south of the site are steep-sided ravines cut by small streams that feed directly into the river. On the west side, the site was protected, at least for a time (given evidence for only one building episode), by a 900m long bastioned palisade wall, built of stout timbers and possibly coated with clay. The habitable area demarcated by the palisade, the ravines, and the river bluff amounts to roughly 19ha. Shiloh is only one of several contemporary sites along this stretch of the Tennessee River. Residents at numerous, scattered farmsteads in the river floodplain, and at those outlying sites with one or two mounds apiece, would have regarded Shiloh as a central settlement or town. Shiloh was not the only such town in this stretch of the river valley, for there was also a multi-mound, palisaded town at the location of modern Savannah, Tennessee (Welch 1998a, 1998b) We do not know whether the Savannah site was contemporary with, or later than, Shiloh. In either case, Shiloh was an unusually large town for its time.

The 1999 to 2004 investigations also demonstrated that there is appreciable important information remaining to be obtained from the portions of the site and mound that will be lost to erosion, and that archeological research is the only way this information can be recovered. Given this, and the fact that Mound A remains threatened with loss, appreciably more archeological research will almost certainly occur at Shiloh in the century to come, hopefully equal to or exceeding what has occurred to date.

CHAPTER 3

A HISTORY OF INVESTIGATIONS AT MOUND A, SHILOH: 1999-2004 AND AFTER

DAVID G. ANDERSON AND JOHN E. CORNELISON, JR.

"A mist halos the meadow and a soft wind
Breathes a whisper through the trees.
As I lean against a hickory I close my eyes and I can almost see…
What happened here is more than we can grasp
Standin' in the presence of the past." (Darryl Worley, Shiloh)

This chapter provides a detailed history of the NPS's investigations at the Shiloh Mound Complex from 1999 to 2004. The reason the project took place and the approach to research and fieldwork that were adopted were presented in Chapter 1, while previous archeological investigations at Shiloh, both historic and prehistoric, and the context in which they occurred were summarized in Chapter 2. These first three introductory chapters provide the context and historical framework for the research reported in the remainder of the volume, and the information included in the supporting appendices. A history and synthesis of archeological investigations conducted at the Shiloh Mound Complex from 1899 to 1999 was published by Paul Welch in 2006 by the University of Alabama Press. That volume encompassed all of the fieldwork conducted at the site prior to the investigations reported here, and included a summary of the results of the 1999 initial testing and remote sensing program conducted by NPS (Welch 2006, Welch et al. 2006). Welch's (2006) book is a scholarly compilation and an expansion of an earlier synthesis produced under contract from the NPS that was issued in 1999 as part of planning for a possible mitigation program (Welch 2001). It provides an excellent overview of previous archeological investigations at Shiloh Mound Complex and its position in the Mississippian world. Prior to Welch's synthesis, and in spite of a long history of casual and scholarly interest in the site, very little detailed knowledge was available about when it was occupied, what happened there, and how its fortunes changed through time. Welch's volume, and especially the concluding chapter, "Shiloh in Context" (Welch 2006:252–267), served as a foundation upon which the results of the 2001–2004 NPS research and excavation program at Mound A recounted in this report were produced. While previous archeological investigations at the Shiloh Mound Complex and in the park in general were recounted in Chapter 2, readers interested in a more thorough description of the initial century of fieldwork at the site, and how the results of this work were used to place it in a broader historical context, will want to look at Welch's synthesis, and then at the primary accounts he references, many of which are included in the electronic appendices accompanying this report.

1999 Field Season

Introduction

An extensive program of remote sensing and ground truthing, involving GPR transects and the excavation of small 1x1m test units, was conducted at SHIL, Tennessee by archeologists from SEAC in the summer of 1999, with much of the work focusing on the mound complex and particularly the area in and near Mound A (Welch et al. 2006). GPR transects were run over all seven of the major mounds at the site, oriented along the major axes or along cardinal directions, as well as over portions of the plaza and village area, as well as in other parts of the park. They documented a wide array of Civil War era military features, New Deal era archeological excavation trenches, probable structures at the bases of Mounds A and B, and construction stages or other features in many of the mounds (Chapter 8). Some probable New Deal era excavation trenches in the plaza and in the apron west of Mound A were verified with 1x1m or larger excavation units. The locations of several Civil War era mass graves were also examined using GPR, both at Mound G and in portions of the park away from the mound group. Concurrent with the

fieldwork at the Shiloh Mound Complex the 1999 field team also conducted metal detector work at Cloud Field just to the west of the mound group on the Shiloh Battlefield and at one other area, and in Corinth, Mississippi, locating the remains of a Civil War fortification, Battery Robinett (Cornelison and Cooper 2002, 2007). The artifacts, notes, and records from the 1999 SEAC fieldwork at the mound group were turned over to Paul Welch, who analyzed and reported on them in his synthesis of work conducted at the site through 1999 (Welch 2001, 2006; Welch et al. 2006). Because the 1999 work had direct relevance to the subsequent investigations conducted at the mound by NPS personnel, a detailed summary of the investigations is presented here. Analysis results from that work, beyond those reported in Welch's syntheses, are also included in the current report as they relate to the subsequent mitigation program.

The Research Design for the 1999 Fieldwork

By the late 1990s, SEAC personnel, primarily John Ehrenhard, Bennie C. Keel, David Anderson, John Cornelison, and George Smith, with the encouragement of SHIL Superintendent Woody Harrell and Park Historian Stacy Allen, together with Paul Welch, then a professor at Queens College, were actively planning how to address the ongoing erosion to portions of the park, and specifically the mound group. As discussed in Chapter 1, the erosion of the primary mound and adjoining bluff line at the site was an obvious issue that needed to be addressed. Paul Welch had initiated a program of research in the Shiloh area in the mid-1990s and in 1998 and 1999 conducted excavations at two presumed Mississippian period house mounds at the site, as recounted in Chapter 2, (Welch 2006:173–230). In 1999 SEAC, in response to a proposal Welch (1999) was invited to prepare, issued him a contract to produce a synthesis of all previous archeological investigations at the mound group. To complement Welch's work, and to gather additional information useful to the development of a mitigation program, a limited program of remote sensing and test excavation was concurrently proposed by Anderson and Cornelison, in consultation with Welch. A detailed research design for the work that was eventually conducted from July 12–25th, 1999 was produced in May 1999 (Anderson et al. 1999a). Internal review of the proposal at SEAC was handled by Keel, then NPS Southeast Regional Archeologist, Smith, then head of the Investigations and Evaluations Branch, and Ehrenhard, then SEAC Director and, interestingly, the archeologist who twenty years earlier, in 1979, and as recounted in Chapter 2, had conducted a program of testing into Mound A, and thus had spent a great deal of time working on Mound A (Beditz 1980a, 1980b; Beditz and Bellomo 1980). The 1999 SEAC project was planned and conducted in direct coordination with then Park Superintendent Woody Harrell, Park Historian Stacy Allen, and the Park Cultural Resources Manager, Brian McCutchen. SEAC and SHIL jointly provided the funding for the work.

The 1999 NPS investigations had four major goals, as recounted in Chapter 2. As stated in the May 1999 research design, these were: (1) delimiting Frank Roberts' 1933 excavation grid through the relocation of several of his units using remote sensing followed by limited excavation to confirm their precise locations; (2) excavation of a slot trench through a linear dike-like feature south of Mound G to document its origin and content; (3) precision mapping of the palisade line inferred to exist around the mound group through the use of a GPS; and (4) documenting the stratigraphy of Mound A and other prehistoric and historic site features in the park and at the mound group through the use of noninvasive remote sensing procedures (Anderson et al. 1999a:2). The 1999 research was intended to complement, and was coordinated and ran concurrently with a field school being conducted at the site by Paul Welch (2006), who was excavating a house mound on the south side of the plaza near Mound F. The information to be collected under was intended to assist park management, specifically beginning the process of determining whether and what kind of mitigation program might be needed at Mound A, and to collect information useful to Welch's development of an overview of past archeological

work at the site. Additional goals of the 1999 SEAC fieldwork included (5) locating the earthworks for Battery Robinett at Corinth, Mississippi, the location of a major battle in 1862 and a subunit of SHIL, and (6) evaluating two small areas of proposed development away from the mound group on the battlefield, research summarized elsewhere (Cornelison and Cooper 2002, 2007).

Relocating Frank Roberts' 1933–1934 Excavation Units

During the Great Depression, extensive excavations were undertaken in the vicinity of Mounds A through F at Shiloh by Frank H. H. Roberts of the Smithsonian Institution (Welch 1998b, 2001, 2006; see Chapters 2 and 8). A relief project of the Civil Works Administration (CWA), fieldwork ran from December 21, 1933 until March 26, 1934 and employed up to 118 laborers. Two brief accounts of the work appeared soon afterwards (e.g., Roberts 1935; Stirling 1935), but no formal site report or detailed descriptions of the findings were ever produced. The synthetic overview of past archeological fieldwork at the site prepared by Paul Welch was designed, in part, to remedy this omission, since a vast amount of prior archeological work had occurred at the park, and could prove useful to an eventual mitigation program.

Notes and artifacts from the 1933 excavations were curated at the Smithsonian Institution's National Museum of Natural History in Washington, D.C., and had been examined by Welch beginning in the mid-1990s. Because a site map showing where the excavation units had been placed was missing from the collections in 1998 Paul Welch, using Roberts' detailed mapping notes, together with records from other investigations conducted at the site, reconstructed such a map, showing the location of major site features, like mounds, the bluff margin as it was in 1934, and other cultural and natural features. The map included excavation units, although their number, size, and placement was only approximate because Roberts' mapping grid was not tied into any permanent datum or feature, and because many unit locations and sizes were either not reported or only ambiguously reported in the field notes. Relocating and mapping several of Roberts' unit corners, it was thought, might permit the reestablishment of his old grid, and thus allow for the precise relocation of at least some of his excavation blocks and trenches, at least those for which grid coordinates or other information survived. These units could then be tied into a modern site grid system and a series of permanent datums, the establishment of which was another goal of the 1999 SEAC fieldwork. Even though a number of 1933–1934 units were found in 1999, and Roberts' grid was partially re-established, significant surveying errors were found on the base contour map, with some site features up to 6.1m (20ft) out of place. In addition, old excavation units were found to be much more numerous than expected, and in some cases in unexpected locations. Accordingly, a decision was made to revise the old map as best as possible, and at the same time start a new map of the site, something that was accomplished during the ensuing mitigation program (see Chapter 7).

Various remote sensing procedures were considered, such as GPR, electrical conductivity, and proton magnetometry. While in 1999 only the first procedure was employed, in 2001 during follow up intensive testing investigations, as described below and in Chapter 8, all three methods were used. These were successful in locating a number of areas where Roberts' units appear to have been placed. Output was obtained in hard copy and electronic form for each transect and area examined, with precise locations documented using a total station. A permanent and noninvasive remote sensing database encompassing portions of the site area was thus developed in 1999 and 2001, and is curated with the project records. The research design prepared for the 1999 fieldwork also called for a limited program of ground truthing once anomalies were detected by remote sensing, in an attempt to locate Roberts' unit walls and corners. Use of hand augering was to be attempted first, in an effort to resolve stratigraphy and soil conditions followed, as necessary, by the excavation of small test units or slot trenches. Excavation units were to be taken to the base of the A-horizon, to a depth

of approximately 10–15cm, at which point it was assumed former excavation boundaries would become clear. If Roberts' units had been backfilled with no regard for putting the deposits back in the order it came out, the fill was expected to be mottled, with a distinct break between the undisturbed and excavated areas. Both Anderson and Cornelison had dug out old excavation units several times before in their careers, and were confident that would be able to recognize such features, should they be encountered. While the augering yielded ambiguous results and was quickly discontinued, distinct unit edges and fills were quickly found a short distance below the surface in test units placed in several areas where the possibility for their existence had been indicated by the GPR work.

The plowzone/A-horizon of units selected to ground truth the GPR results was to be removed as a single level, with fill below the base of the A-horizon removed using 10cm levels. It was assumed that old units would be apparent almost immediately, so deeper excavation was considered unnecessary. Indeed during the 1999 fieldwork, most units were opened only a few centimeters, to the base of the modern humus zone, at which point old unit boundaries were quite distinct, if they were present at all. Given that the boundaries of anomalies detected through the remote sensing procedures could be mapped to within 25 to 50cm or so, it was also assumed that only one or at most two 1m units would be needed to evaluate whether an old excavation unit was present, and this too proved to be the case, at least where old units were present. While the use of a backhoe with a toothless bucket was proposed as an alternative procedure to the hand excavation of the A-horizon, this proved unnecessary, since old trench fill and boundaries were noted almost immediately in several units opened by hand. All excavated fill was to be dry screened by the SEAC field team through ¼-inch (in) mesh for each specific provenience unit, with the corners mapped with a total station. All artifacts and project records were to be turned over to Paul Welch for subsequent cataloging and analysis, and he in fact produced a report on the work a year and a half later as part of his synthesis (Welch 2001, Welch al. 2006).

Another procedure proposed in the original 1999 research design, but not adopted that year or indeed in any of the seasons that followed, primarily because of lack of time, resources, and necessity, was the use of a backhoe to re-excavate one or more of Roberts' old trenches, to determine their depth and document the stratigraphy in the walls. Few profiles exist in the limited surviving records from the 1933–1934 work, making any such information that could be collected of great value. Such a procedure would allow deep profiles to be obtained from many parts of the site, whenever old units had been placed, with minimal damage to undisturbed deposits. Given that the locations of many old excavation units were documented in 1999 and after, including where a number of Union soldiers had been buried in Mound G during the Civil War—the pit had, in fact, been opened twice, since the bodies were re-excavated and moved to the National Cemetery at Pittsburg Landing after the war—this strategy would appear to have great potential to examine profiles in many site areas in a minimally invasive way, and bring modern analytical approaches to bear on the deposits. In the MOU signed with the Chickasaw Nation in 2000, furthermore, if Native American human remains were found during the fieldwork, they were to be placed in a re-excavated trench, ideally one of those on the apron to the west of Mound A (see Chapter 1). No human remains were found during the 2001 to 2004 fieldwork at Mound A, making the procedure unnecessary.

Welch assumed that to re-establish Roberts' grid, it would be necessary to find one or more corners for at least one and ideally several squares or trenches. This was because Roberts' notes delimited the location of many of his excavation units, where they were noted at all, by a single grid coordinate. Unfortunately, which corner of the unit he was referring to was unknown. Likewise, the available notes provide little detail on how large the units were. Some were 1.5m (5ft) wide trenches of varying length, while others were apparently 1.5x3m (5x10ft), 3x3m (10x10ft), or 6.1x6.1m (20x20ft) in size, and some appear to have been

irregular in size and shape (Welch 2006:95–172). Fortunately, a number of photographs survive from the 1930s fieldwork, including some near Mound A, and it is possible to see excavation units or portions of units in them (Welch 2006:122, 124; see Chapters 2 and 8). Some of the trenches located in the 1999 fieldwork, such as those on the apron west of Mound A (see Figures 02-05 and 02-06), in fact, are almost certainly those shown in these photographs. Given the 65 years that had elapsed between the 1933–1934 excavations and the 1999 fieldwork, it was possible to only approximately determine the locations of the old units visually. This was because it was not possible to be absolutely certain that the large trees currently at the base of the mound corresponded to those in the photographs, although some might have been the. Should further work occur at the site, however, the surviving photographs and, most remarkably, a ca. 13½ minute film of the fieldwork might prove useful in locating additional old units. The 1933–1934 photographs and the film clip, as well as transcribed copies of the surviving field notes, are included in the electronic appendices.

Welch (2006:101–102) was able to determine that Roberts used a standard quadrant grid system, with an imaginary origin point (N0, W0) that would have been well to the east of the site in the Tennessee River. His east-west baseline divided the site roughly in half, and ran approximately between Mounds A and B. Welch further believed Roberts' units north of the baseline were designated by their southeast corner, while units south of the baseline were designated by their northeast corner. That was uncertain, however, mandating the relocation of several of Roberts' identified units to be sure, at least one north and south of the baseline, and ideally one in each quadrant. Perhaps the most unambiguous reference to a unit north of the baseline was a 3.05x12.2m (10x40ft) excavation south of Mound F, at N50–60, W780–820. South of the baseline, a number of units were located in the vicinity of Mound D between the baseline and a nineteenth century road. Welch's (2001, 2006) map is thus his best estimate of where Roberts' units were located, and what size they likely were. The remote sensing work conducted in 1999 and 2001 suggests that while many units are likely present in or close to the locations Welch put them, additional unrecorded units are also present. Furthermore, some units in Welch's reconstruction were not detected by the remote sensing, meaning they were either not present in those locations or were difficult to detect with the remote sensing technology employed in 1999 and 2001. Future researchers should bear these facts in mind when working with the reconstructed map of the 1933–1934 excavations.

Roberts also apparently opened an extensive series of east-west trenches from just north of Mound B to just south of Mound C (Welch 2006:109; see Chapter 8). Unfortunately, prior to the 1999 fieldwork precise information on the location and spacing of many of these trenches was lacking. Roberts also opened a number of units between Mounds A and F. While it was hoped that the GPR transects would be able to crosscut and delimit most of these excavations, providing information on their location and spacing, the results were ambiguous (see Chapter 8). The history of investigations at the Shiloh Mound Complex, particularly the extensive work during the New Deal era (See Chapter 2), demonstrate the importance of writing up and publishing archeological fieldwork thoroughly and in a timely fashion, while notes, records, and investigators are still around. The current report, although it took somewhat longer to complete than originally expected, was written by the original project directors, and within a time frame not at all atypical for large mound excavation reports produced in the modern era (e.g., Fowler et al. 1999; Knight 2010; Polhemus 1987; Schnell et al. 1981).

Examining the Dike Feature

A second goal of the 1999 fieldwork was examining a linear embankment approximately 180m in length, 5 to 10m wide, and 0.7m high located roughly midway between the main group of mounds (A–F) and the presumed location of the palisade line on the western part of the site. This feature, called the "Dike," is oriented ENE/WSW and is located about 100m due south of Mound G. Prior to the fieldwork it was not known whether this was a historic feature, possibly of Civil War origin, or a

prehistoric feature. Excavations were to be directed to determining its age, method of construction and, if possible, function. While it was hoped that remote sensing would prove useful in delimiting internal stratigraphy—unfortunately only ambiguous results were obtained in 1999—the excavation of a 1m wide trench was also proposed and ultimately opened across the feature, perpendicular to its long axis. The trench was to be opened using 1m squares excavated in arbitrary 10cm, or natural strata if these could be recognized, with all fill screened using ¼-in mesh and special samples collected as considered appropriate. The excavations were conducted near the west-central portion of the dike, just east of the E379400 UTM grid line, where it was particularly well defined. As with the remote sensing, as discussed below, the results of the excavations were ambiguous, although a prehistoric age for the feature was suggested.

Precision Mapping the Palisade Line and Other Site Features

A lengthy palisade line is located on the western side of the site, some 200m west of Mound G, portions of which had been examined in earlier excavations (Smith 1976; Welch 2006; see Chapter 2). This palisade line is thought to have encircled the major mound and plaza complex and run to the bluff line overlooking the Tennessee River, although its actual extent beyond the area due west of the mound group, where it is clearly visible for about 100m or so as a low rise a few meters across, was unknown prior to the 1999 field season. The feature appears to have been a defensive work, since several bastions are indicated by projections along the rise, one of which was examined by Smith (1976), confirming is function. These inferred bastions, where recognizable, are spaced approximately 15.2m (50ft) apart, permitting accurate and deadly protective covering fire using bows and arrows (Milner 1999; Dye 2009). Prior to the 1999 fieldwork the palisade, which is located in wooded terrain, had never been mapped over more than a short distance. The 1999 SEAC fieldwork at Shiloh had as an explicit goal the finding and mapping of site major features, such as the presumed Mississippian palisade line, previous excavation units, the house mounds and larger earthen mounds, modern access roads, ponds or possible borrow pits, and so on. While some of these goals were accomplished, in particular the mapping of a substantial portion of the presumed palisade line and the locations of the major mounds, the dike, and the immediate area around Mound A, as well as everywhere the GPR was used, detailed mapping of the entire site area, much of which was overgrown or included steep gulleys, was quickly recognized as a major challenge, one that required appreciable effort over several seasons of fieldwork (see Chapter 7). The limited mapping undertaken in 1999 was sufficient to check the accuracy of the 1933–1934 map, document where the fieldwork occurred that summer, and could be quickly accomplished employing a total station and, in areas choked with underbrush where extensive clearing would have been necessary, such as along the palisade line, a GPS signal receiver. During the mapping of the palisade line, an additional goal included noting any visible bastions, ditches, embankments, or other features such as historic disturbance along its length.

GPR Work on Mound A and Elsewhere

The highest priority for the SEAC team in 1999 was evaluating the internal construction history of Mound A using remote sensing, particularly on the east side eroding into the river in the direct impact zone where some form of mitigation was considered likely in the future. Previous archeological fieldwork at Mound A in 1979 had concluded the mound had likely been built in a single construction episode, with no apparent evidence for internal stages, structures, or other features (Beditz 1980a, 1980b; Beditz and Bellomo 1980; Welch 2006:28–30; see Chapter 2). If this assessment was correct, it would mean structures would be likely only at the very top or at the base of the mound. No evidence for internal stages was assumed to be present, although different filling episodes were indicated by the 1979 testing (e.g., Figures 02-08, 02-09). The mound was, in fact, evaluated as being unlikely to yield 'significantly new information',

meaning no further work was necessary (Beditz 1980b:19); these recommendations also precluded looking for features or structures atop or under the existing mound. Within little more than a decade, fortunately, these recommendations were recognized as needing re-evaluation. At the time of the 1979 testing, however, very little thought was given to how mound stages were built or what their fill consisted of, at the Shiloh Mound Complex or indeed anywhere else in the region for that matter. The prevailing opinion in southeastern archeology was that the features on top of mound stages, or under mounds, were of greatest research importance. Little thought was given to how the mounds and their successive stages were built, beyond fairly crude estimates of how much labor may have been involved. This began to change in the 1980s and after as archeologists began to realize that it was the process of mound building that was an important aspect of Mississippian religion and society (e.g., Knight 1986), and not just how the completed monument was used. Perhaps the greatest contribution of the testing and mitigation program conducted at Shiloh from 1999 to 2004 was in helping to reverse that opinion, with respect to Mound A, and Mississippian mound building in general (see Chapters 9, 10, and 21; Anderson 2012; Pauketat 2007; Sherwood and Kidder 2011). Whether Mound A was built in one or multiple stages was, however, unknown and in need of evaluation in 1999, since the answer would guide how the erosional threat was to be managed and, if necessary, whether and how the mound should be excavated in the future.

Given the size of Mound A, construction in one episode was considered unlikely by the late 1990s. Indeed, construction in a single stage is virtually unheard of on other Mississippian sites where mounds of this size have been examined (Blitz and Livingood 2004; Hally 1993, 1995). We now know, in fact, that seven major construction episodes, designated Stages I through VII, are associated with Mound A (see Chapters 9, 10). The approach employed in the 1979 testing, isolated 1x1m vertical test units, was by the time mitigation planning renewed also acknowledged as encompassing too small an area for resolving whether earlier stages were present, or if there were structures or other features underneath it. Small excavation units, we now know, can easily pass through successive mound stages and miss features crucial to their resolution. Indeed, in Cyrus Thomas' massive 1894 report summarizing excavations at the hundreds of Mississippian sites examined in the 1880s and 1890s by the Mound Division of the Bureau of Ethnology, in which the use of small units sunk from the top was a common strategy, only rarely was useful information about internal mound stratigraphy noted (see Chapter 2). Had the same effort been directed to opening a trench sideways into the slope of the mound in 1979, a strategy adopted in the 1930s during the New Deal era by most archeologists in the region, and as was done at Mound A in 2001, the complexity of its construction would have likely become quickly apparent. But arguments that the mound was likely to be more complex remained speculative in the absence of new evidence, since internal stages hadn't been noted in the 1979 testing.

At the time the 1999 research design was being assembled, however, Welch, based on his work with Roberts' 1930s field notes, suggested that Mound A was built atop a 2m thick apron that in turn rested on subsoil. Since evidence for the apron and internal stages had not been recognized in the 1979 testing—although premound midden deposits as well as subsoil were possibly reached, as noted in Chapter 2—it was considered likely that they may have been missed. In his synthesis Welch (2006:29) suggested that the 1979 test was too small and poorly lit to resolve evidence for internal stages in Mound A. Lest these comments seem overly critical of the 1979 field work, it should be noted that the testing was an epic undertaking, with a great deal of fill moved quickly under dangerous conditions—the excavators described feeling vibrations from barges passing on the river when they were deep within the mound—and that it yielded high quality data from the top to the bottom of the mound that remains useful to this day (see Chapter 2). A major lesson from the 2001–2004 fieldwork, which involved augering, test trenching,

and large scale excavation, in fact, was that the only way to document internal mound stratigraphy and to recognize and follow construction episodes and stage surfaces was to expose and record profiles over large areas. Augering and small or shallow test units or trenches, quite simply, did not provide enough of a window to make sense of the deposits in the mound. Another lesson was that the recording of multiple profiles, taken at close intervals as the excavations proceeded, was especially critical to documenting how the mound was erected, given the recognition that construction behavior could change dramatically over short intervals (as discussed below and in Chapters 9 and 10).

A primary goal of the 1999 fieldwork was thus using remote sensing procedures to non-invasively examine Mound A for internal features and stages. Transects would be run along the eastern margin of the mound, in the area of greatest erosion potential, and ideally at close intervals over the entire summit, something that was indeed accomplished (see Chapter 8). Additionally, transects would be run over the apron immediately west of Mound A, where Roberts was reported to have opened trenches 1.5m (5ft) wide and of varying length and up to 1.8m (6ft) in depth, and that were illustrated in surviving field photos (see Chapter 2, see Figures 02–05 and 02–06). If one of Roberts' 1933–1934 trenches near Mound A could be relocated, and a short segment opened and re-profiled, it would greatly aide in the interpretation of events in this part of the site. No coring or excavation was to be conducted on any of the mounds, since NAGPRA consultation was just being initiated, and noninvasive approaches were preferred by all parties. No excavations were to be conducted in the vicinity of Mound A, furthermore, unless it was clear from the GPR and other remote sensing data that an old excavation unit was present. The only invasive excavation procedure used in 1999, in fact, in all site areas save for a small segment of the dike, was the removal of upper humus layers to expose old trench margins whose presence had been indicated by the GPR.

An additional goal of the 1999 fieldwork was to conduct remote sensing at other site and park features, specifically the other major mounds (B through G) and, as time permitted, features from the Civil War battle, such as the marked mass graves of Confederate soldiers located elsewhere on the park. The objective was to develop a database of remotely sensed information that could be used to guide future investigations. GPR transects, it was proposed, would be run over the seven major mounds (A through G), as well as over the dike, palisade line, and one or more house mounds. Transects would also be run in the plaza area, to see if there was evidence for central support posts or for intentional leveling, as at the great plaza at Cahokia (Dalan et al. 2003; Holley et al. 1993). All of this proposed work was conducted with generally quite positive results, and the electronic data files and hard copy output generated are curated with the rest of the assemblage (Chapter 8).

Coupled with the remote sensing work, the SEAC team also proposed to briefly examine the east river bank profile below Mound A, if it could be done safely. No excavation or profile cleaning would be conducted, although work like this was done in subsequent seasons. The purpose of the visual inspection would be to assess erosional conditions, and to see what the potential was for working on the face, or on the mound surface above it, should that prove necessary. Particular goals were evaluating whether a premound midden, apron, and internals stages were present, and how far along the eroding bluff face such deposits extended. Examining the eroding face was thought to be a way to quickly resolve the mounds construction history, a procedure used to great effect at other sites in the region. Most notably, the primary mound at the Mulberry site near Camden, South Carolina, probably the central town of the sixteenth century province of Cofitachequi, has been eroding into the Wateree River for decades, and only a tiny fraction of it is now left. In 1952, A. R. Kelly and then again in 1972 Leland Ferguson (1974) profiled the eroding bank, and learned a great deal about the mound's construction history in the process. It was hoped that it would be possible to adopt a similar strategy at Mound A should mitigation prove necessary. It quickly became apparent upon examining the eastern face in the summer of 1999,

however, that it was too dangerous to inspect directly, since it was characterized by a few meters of steeply sloping terrain immediately below the summit, followed by a sheer drop of almost 25m to the river (see Figure 01-04). Neither appropriate climbing/rappelling gear nor personnel trained in their use were available at the time of the 1999 fieldwork, although during the 2001 field season and after, as documented below, portions of the eroding mound face were cleared and examined. Some of the strata first encountered during the rappelling activity, in fact, were later excavated as the fieldwork moved deeper into the mound.

Results of the 1999 SEAC Fieldwork

The 1999 fieldwork took place from July 12–25, 1999, and involved a variety of investigative techniques including GPR, GPS and total station mapping, and test excavations, the results of which are described in detail by Welch (2006:131–151). The work was conducted by a SEAC archeological team under the direction of John E. Cornelison, Jr. and David G. Anderson, who were working together for the first time, in what was to become a partnership that continued over more than a decade of fieldwork and writing. The field team consisted of ten people, seven of whom were students at Florida State University serving as archeological technicians on this and other summer projects. Crew members included Tammy D. Cooper, Rolando Garza, R. Steven Kidd, Meredith Hardy, Emily Moss, Jodi Skipper, and Barbara Vargo, assisted by Paul Welch, who was himself concurrently running a Queens College field school examining one of the house mounds just off the plaza near Mound G (see Chapter 2). The remote sensing was conducted by GPR operator David Bean, who spent seven days on the project. While the focus of the project was the Mound A area and the eroding eastern bluff line, several locations were examined at Shiloh and in Corinth, northeastern Mississippi, at the site of what later became the Corinth Civil War Interpretive Center.

All of the project objectives were addressed, most quite successfully, and a number of additional, unanticipated discoveries were made. The GPR work produced results that for the time and even by today's more sophisticated standards were quite remarkable (Welch 2001; Welch et al. 2006; see Chapter 8). Over 100 GPR transects totaling 3552m of output were run at the mound group, including over all seven of the major mounds and their surrounding aprons or margins (Figure 03-01). These revealed internal features in each, including presumed construction stages and old excavation units. The most extensive GPR work was done at Mound A, using transects oriented north-south and east-west, and spaced 2m apart. Well defined signatures of construction episodes deep within the mound were found (Figure 03-02), data that helped make the case that additional testing should be conducted in the mound to ground truth the findings and further assess the significance of the deposits, to see whether full mitigation was warranted. The intensive fieldwork to ground truth the GPR results within the mound was accomplished in 2001 and after, as discussed below.

Importantly, the GPR output also revealed where past excavation activity had occurred in the site mounds, information important for management purposes. Major excavation units or trenches opened



Figure 03-01. Project remote sensing specialist David Bean dragging a GPR unit along a survey grid on the plaza at Shiloh Mounds National Historic Landmark.

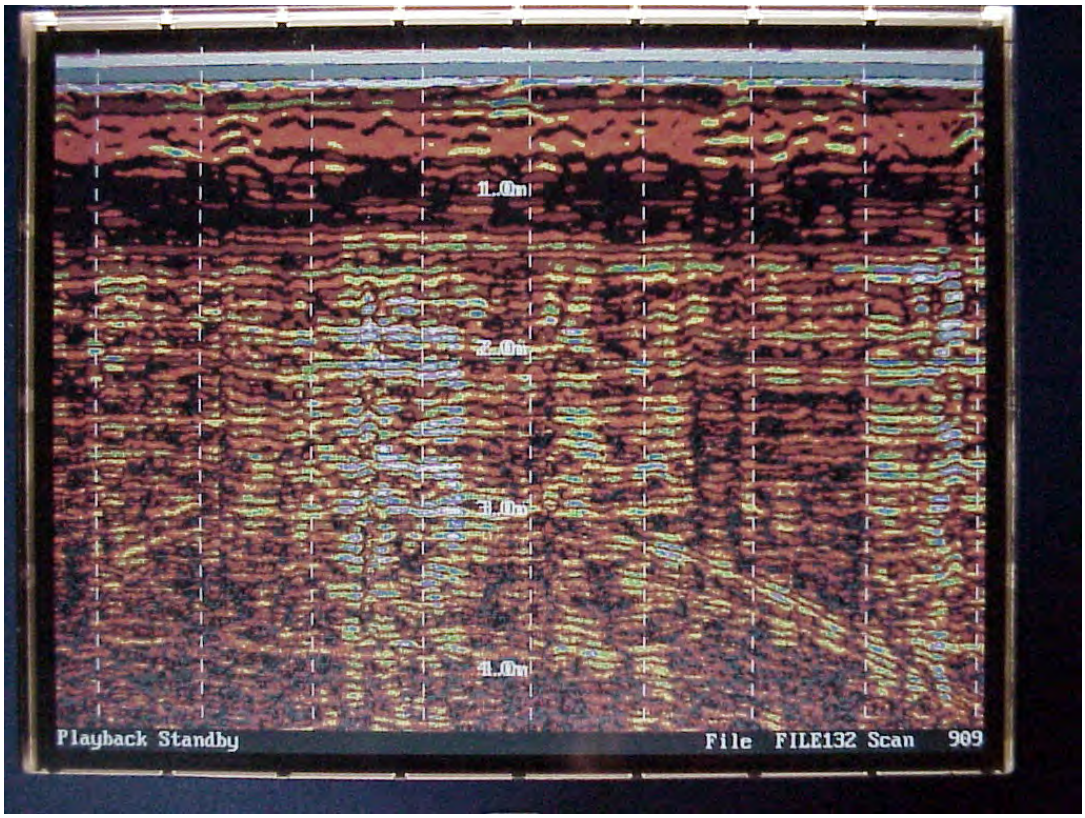


Figure 03-02. Evidence for possible interior surfaces or independent construction episodes within Mound A on the display screen of the GPR unit, from one of the first transects run on the top of the mound on July 15th 1999.

into the mounds, it was discovered, in some cases left pronounced and readily identifiable signatures, meaning these units could be easily relocated, re-excavated, and profiled, documenting mound construction details efficiently and non-invasively, should that prove necessary or desirable in the future. In Mound A the 1979 1m test unit carried to the base of the mound was relocated, and signatures of Roberts' old trenches were found in the apron to the west. Mound C, where the famed Shiloh effigy pipe was discovered in the late nineteenth century during Superintendent Cadle's investigations, and that was re-examined by Roberts' in the 1930s, had been thought to have been completely dug away and then rebuilt. Instead, undisturbed stratigraphy was indicated in places, particularly around the margins, albeit much of the mound had indeed been removed by the earlier work. The Union burial trenches placed in Mound G after the battle were relocated, and the GPR output suggested that one or more soldiers, or perhaps unusual metal objects may have been inadvertently left behind when the remains were relocated to the nearby National Cemetery, given the pronounced radar signatures observed (Chapter 8). Mound G, it is suggested, where the remains of possible Union soldiers may still be present, should receive particular archeological consideration in the future. The GPR was also used to examine five of the Confederate mass graves on the Shiloh Battlefield, providing information on their location and depth, as well as some information about the depth and placement of burials—shallow and stacked in layers—within the trenches. The information obtained proved critically important for management purposes, since the mass graves were not invariably located or oriented in the directions indicated by their markers, which were erected long after the battle. GPR transects were also run over the plaza and around and between the mounds in several areas, successfully locating signatures of some of the excavation units opened in 1933–1934 by Roberts' WPA crew (Chapter 8).

Thirty one 1m units were opened to depths of from 10 to 30cm to ground truth the GPR signatures, 12 to the west of Mound A and 19 to the south of Mound F. These proved highly successful in locating trench edges, which were clearly delimited in both areas, where the trench fill contrasted sharply with that used by the Native Americans to build the apron or plaza (Figure 03-03). All proveniences examined during the 1999 fieldwork, at the Shiloh Mound Complex and elsewhere, were mapped using a total station/laser transit and with a GPS unit, and tied to a series of permanent datums. Locations of anomalies detected by the GPR and metal detectors, and the locations of the excavation units, are thus known to within a few centimeters, permitting their relocation in the future (see Chapter 8). Two 1m units were also opened in a section of the dike or what we called at the time the 'causeway' in an area previously examined using the GPR. Although one unit was taken to a depth of 70cm, no artifacts were encountered, nor any evidence for recent disturbance, making it difficult to assess whether it was prehistoric or historic in age (Welch et al. 2006:247–250).

Two areas where minor construction was scheduled to occur at Shiloh were also examined in July 1999 using shovel testing and systematic metal detection. The shovel testing proved negative, but the metal detecting located large numbers of Civil War era artifacts. One area, a Union camp occupied for a month prior to the battle located in Cloud field, was located to the west of the mound group just beyond the palisade line. It produced predominantly utilitarian items and unfired rounds, while a second area, where extensive fighting occurred, produced large numbers of dropped and fired rounds. The Civil War era archeology at Shiloh conducted during 1999 and in subsequent seasons by Cornelison and his colleagues (Cornelison and Cooper 2007) help put a human face on the battle, and illustrate the important role archeological fieldwork can play in helping us understand even the most seemingly superbly documented historical events.

The 1999 SEAC testing team also traveled to Corinth, Mississippi from Shiloh on July 18–22, where GPR work, followed by limited test pitting, was used to successfully locate the earthworks for Battery Robinette, the location of a major engagement fought in late 1862 (Cornelison and Cooper 2002). The earthworks had been leveled after the battle, and the area had been converted into a municipal park. The outline of the earthworks was known from historic maps, but no surface traces remained. A systematic program of metal detection, shovel testing, and limited test pitting in May 1999 had delimited appreciable Civil War activity, and eliminated most areas from consideration, but had not found the earthworks themselves. The very first GPR transect laid out during the July 1999 fieldwork yielded a pronounced ditch-like disturbance signature, the outline for which



Figure 03-03. One of the 1933-1934 excavation trenches opened by Frank Robert's crew west of Mound A found by the GPR and ground truthed using a series of 1m test units in July 1999. The old trench had lighter mottled fill and was bounded by the undisturbed apron fill.

was followed with subsequent transects. Four 1m units subsequently opened in three areas to ground truth these signatures showed they were earth and brick filled depressions forming the base of the earthwork, the outline of which was ultimately completely traced using the GPR.

The information collected during the 1999 fieldwork at Shiloh proved invaluable for park management and interpretive purposes and, most importantly, in the planning of the testing and mitigation program conducted in succeeding years at Mound A. The data collected from the Shiloh Mound Complex also serves as a valuable record on the condition and internal structure of the other mounds, and the location of past excavation activity. In areas where Roberts was known to have excavated, but for which his notes were ambiguous as to the size and spacing of his units, the 1999 fieldwork demonstrated that the use of remote sensing and ground truthing through the removal of the humus layer from small areas could provide precise information, at least in some cases, on where these excavations had occurred. If deeper excavations at the site are ever considered necessary, for example, to create reburial areas for Native American human remains, or determine whether Civil War burials are still present in Mound G, or to evaluate stratigraphy in other parts of the site, examining old excavation units would be an appropriate way to proceed. As discussed in Chapter 1, in consultation with the Chickasaw Nation, any excavations away from the direct impact area during the testing and mitigation were to occur in areas that had already been examined, to minimize disturbance to the mound group. The testing data also proved useful in the planning for the interpretive center at Corinth, which was subsequently built on the tract of land near where Battery Robinett was located, and opened in July 2004. Likewise, knowing the precise location and condition of the mass graves on the Shiloh battlefield will facilitate their preservation and management.

The unusual success of the GPR in 1999 was due to two factors. First, the team was fortunate to have a highly skilled operator, Mr. David Bean of Aiken, South Carolina, who for the previous eight years had been a full time GPR technician on the Department of Energy's Savannah River Site in South Carolina. His interest in the technology was such that he had purchased his own equipment, and has used it on other historical projects. Second, having an archeologist continuously monitoring the output allowed for rapid adjustment of the instrument settings, permitting better resolution of subsurface features. Finally, the mapping work conducted to document the location of the GPR transects found that the contour map of the site based on Roberts' mapping notes was off by as much as 6.1m (20ft) in places, a systematic error made in the 1930s that had never been caught. These deficiencies were corrected through a program of mapping conducted at the site by SEAC and UT personnel over subsequent field seasons (see Chapter 7).

2000 and 2001 Planning Activity

Excavations were ultimately conducted in and near Mound A over three extended field seasons and several shorter periods of activity from mid-2001 until mid-2004. This work did not occur without extended planning, with input received from a number of sources. A workshop devoted exclusively to project planning involving a number of specialists was held in June of 2000 at the park, numerous phone calls and meetings were held with personnel from within NPS and other state and federal agencies, consultation with the Chickasaw Nation was formalized, and a synthesis of previous investigations at the park was completed (Welch 2001). As a result of this preparation, a detailed research design was prepared to guide efforts during an initial intensive testing program at the mound. By the time this fieldwork for this testing started in July 2001, a great deal of effort had been spent in preparation, as discussed in the paragraphs that follow.

Planning Workshop, Crump, Tennessee, 16–18 June 2000

Following the summer 1999 fieldwork, it was apparent that significant cultural resources were likely present in and near Mound A. Extended discussions then followed between SEAC, SHIL,

NPS Southeast Regional Office, and Tennessee SHPO/Division of Archaeology (DOA) personnel about how to proceed. It was decided that a research design planning workshop held at the park would be a good way to begin, and after appreciable preparation one was held from June 16–18, 2000 in a conference room at the Tennessee Technology Center in Crump, a few miles from Shiloh. Ancillary yet related goals for the workshop included beginning planning the development of interpretive information about the mound complex, specifically a popular brochure or booklet on the site and its importance, and whether and how a walking trail on it could be established. NPS paid the travel expenses for a number of non-agency archeologists, and for observers from the Chickasaw Nation. The purpose of the workshop was to begin thinking about how to go about developing a research design and budget for "doing the right thing" about the eventual loss of Mound A and adjoining areas along the Tennessee River margin. This research design/budget could then be used to generate funding to accomplish the work. The park was strongly committed to supporting a mitigation program, but specific plans about how to proceed were needed.

Mound A at Shiloh was acknowledged as one of the largest prehistoric Indian mounds in the Tennessee River Valley, and among the largest on NPS land anywhere in the country. Mitigation planning, it was recognized, would require the advice and assistance of Native peoples as well as a range of specialists within the archeological profession. Should excavations occur, they would likely be among the largest undertaken in the region, comparable in scale to excavations undertaken during the New Deal era of the 1930s and early 1940s (Lyon 1996). To proceed properly, the NPS wanted the best advice possible. The June meeting began early Friday afternoon and ran through Sunday noon. Much of the meeting was held in an informal round table format, addressing a number of topics, and centered on discussions of how to proceed. That evening three of the participants, Anderson, Cornelison, and Welch, gave public talks on the Shiloh Mound Center and its significance, and the results of the 1999 fieldwork, at the Tennessee River Museum in Savannah, Tennessee. The public talks and the entire workshop were video filmed, with the tapes used to produce a detailed transcript over the next several months (Anderson and Stephens 2000).

Those attending the Crump planning meeting included Stacy Allen, Acting Chief Ranger/Historian, SHIL; Janet Ambrose, Education Specialist, SHIL; David G. Anderson, Archeologist, SEAC, NPS; Jennifer Bartlett, Federal Review/SHPO Archaeologist, Tennessee Department of Environment and Conservation (DEC); John H. Blitz, Department of Anthropology, University of Alabama; John E. Cornelison, Jr., Compliance Program Manager, SEAC, NPS; David H. Dye, Department of Anthropology, University of Memphis; Nick Fielder, State Archaeologist, Tennessee DEC, Division of Archaeology; Rolando Garza, Archeological Technician, SEAC, NPS; Haywood "Woody" Harrell, Superintendent, SHIL; J. Anthony Paredes, Chief, Ethnography and Indian Affairs, Southeast Regional Office, NPS; Timothy R. Pauketat, University of Illinois, Urbana-Champagne; Kirk Perry, Administrator of Heritage Preservation, The Chickasaw Nation; Gerald F. Schroedl, Department of Anthropology, University of Tennessee; George S. Smith, Associate Director, SEAC, NPS; Kevin E. Smith, Department of Anthropology, Middle Tennessee State University; Vincas P. Steponaitis, Research Laboratories of Anthropology, University of North Carolina; Paul Welch, Department of Anthropology, Queens College; and Emily Yates, Archeological Technician, SEAC, NPS.

The technical specialists invited to attend were authorities in Mississippian archeology, and most of them were experienced in mound or large site excavation work. Prior to the meeting the archeologists invited were asked to prepare a ca. 500 to 1000 word statement or outline about how they thought the government should proceed, encompassing field excavation and data collection procedures, why the mounds are important, what could be learned from them, etc. Statements were received in advance of the meeting from six archeologists (e.g., Blitz 2000; Pauketat 2000; Schroedl 2000; K. Smith 2000; Steponaitis 2000;

Welch 2000), and were included in an agenda and information packet that was prepared and distributed to all of the participants at the meeting (Anderson and Cornelison 2000b). The workshop proceeded in a casual, round table format, and all of those involved were asked if they wished to serve on an advisory panel about future work that might arise as a result of the planning effort. All did, and many attended a subsequent planning workshop held in January 2002 and visited the site during the fieldwork during the 2001 through 2004 field seasons.

The workshop participants came up with a number of ideas as to how NPS might proceed to test and if necessary ultimately mitigate as well as interpret the mound group. The discussion was lively and far ranging, and included possible research objectives, field and analytical procedures, safety concerns, Native American consultation, public education and involvement, and estimated costs. The primary conclusion was that prior to committing to an extended mitigation program at least one major field season of work, essentially an intensive testing effort, was needed at Mound A. The purpose of the testing would be to ground truth the remote sensing results suggesting internal stages were present in the mound, and to evaluate the nature and significance of the archeological remains that would be lost to erosion. The workshop commentary was used later in 2000 and early in 2001 to help develop a research design for the intensive testing program conducted at the site later that year (Anderson and Cornelison 2001a), and the input also helped shaped subsequent mitigation planning.

Meeting With Nashville Corps of Engineers (COE) Personnel, July 24, 2000

A major unresolved concern as planning proceeded in 1999 and 2000 was how much of the Mound A area would be lost to erosion (see Chapter 1). That erosion was actively occurring was not in doubt. The entire east slope of Mound A was illustrated on Welch's reconstruction of Roberts' 1934 site map, for example, but had been lost since that time, and in recent years portions of the level top of the mound had started to fall into the river. Several feet of the summit gave way in the early 1990s, in fact, when park ranger and historian Stacy Allen was nearby, and witnessed the collapse. A preliminary engineering study conducted by Emily Carr and Don Getty of the Nashville COE and dated August 12, 1998 estimated that at least 7.62m (25ft) of Mound A and the bluff margin within ca. 75m to the north and south, and possibly appreciably more, would be lost over the next 25 years. The loss of 7.62m (25ft) was considered an absolute certainty, while the letter also stated that "inland from that point, the potential for long term stability increases." Exactly what was meant by this was unclear, however, and it was decided that follow up discussions to help clarify what their study implied were worthwhile.

On July 24, 2000, Chief Ranger Allen, David G. Anderson, and Superintendent Harrell met with Emily Carr and Don Getty of the Nashville COE at the park. Carr and Getty stated that the original estimate still held, that ca. 7.62m (25ft) of the mound would almost certainly be lost in the next 25 years, and that the probability of loss, while impossible to calculate absolutely, decreased with increasing distance from the bluff edge. There was, for example, a ca. 50 percent probability that up to 12.2m (40ft) of Mound A and adjoining areas would be lost over the same 25 year interval. The 12.2m (40ft) estimate, furthermore, was based on the assumption that the proposed stabilization plan the COE was in the process of implementing would work, and prevent even further erosion to the site in the years to come. Carr and Getty emphasized that it was not possible to calculate a hard and fast line beyond which failure would never occur. Up to 7.62m (25ft) was thought certain to eventually erode into the river, but beyond that when and how much more would be lost could not be known with any certainty.

It was decided that a good way to approach the erosional threat would be to determine how much of the mound would need to be removed to create a surface that would be stable over the long term. A strategy emphasizing long term stability would be ideal, to ensure the preservation of as much of the site area as possible, while minimizing the amount of excavation needed. The discussion revolved on what angle of repose would be the most stable, within reason. Obviously, a very gentle slope would

be more stable than a steep slope, but would require removal of a much greater portion of the site. The steeper the slope, the greater the likelihood of failure, and the lower the long term reliability of the solution. Carr noted that a slope of 1.0 vertical units per 1.5 horizontal units (an angle of ca. 35 degrees) was a good ratio for stabilization, since it allowed vegetation to catch hold and thrive. She noted that trees were important for stabilizing slopes, and should be left in place or worked around if possible. As a rough guess, she thought the resulting area ultimately impacted would be ca. 10.6m (35ft) back from the current fence line/bluff edge.

A general discussion of stabilization issues followed. A soil mass exposed to water (i.e., with no vegetation or other cover) would be the least desirable, since it would be highly dynamic and vulnerable system. Drought followed by heavy rain could lead to a catastrophic failure. The mound fill was a mixture of materials, furthermore, and hence less predictable and possibly less stable than the underlying deposits. Likewise, seepage increased the likelihood that layers could break away, so anything that discouraged seepage would be optimal. Thus, if possible, anything that would encourage drainage toward the plaza and away from the bluff edge would be ideal in the mound area. In particular, how the mound was excavated and backfilled would alter drainage conditions, and care would be needed when backfilling to ensure long term stability. When backfilling/preparing surfaces and areas for stabilization, fill would have to be compacted to minimize future seepage. Additional measures should include the placement of a clay buffer over the archeological deposits, perhaps with filter cloth or some other material designed to enhance root stability, followed by the growth of vegetation cover to absorb/deflect water, and prevent erosion. Degradable matting might be put in place initially to allow vegetation to catch hold. The stabilization effort should also be directed to increasing or improving vegetation cover on the bluff slope below the mound as well as over the mound itself. Once vegetation was planted, its growth would have to be monitored and encouraged for at least one to two years, until the vegetation was established. Many of these recommendations were adopted in August of 2004 when the excavations were backfilled, although the stabilization measures were considered temporary.

Some discussion also occurred as to whether it would be feasible to accelerate the stabilization of the bluff line mechanically. That is, in addition to excavations directed to the archeological deposits (i.e., removing the threatened deposits to the depth necessary to create a stable slope, including a cap or buffer), would it be possible for engineering contractors using cranes and other heavy equipment to create a stable slope along the bluff in the vicinity of and below the site. The extent of fill that would need to be removed along the bluff line and where necessary deposited below it would have to be carefully calculated. This could be accomplished through precision mapping of the mound/bluff edge and slope, something best accomplished when the leaves were off the trees. A detailed topographic map of the bluff face in the vicinity of the mound over the entire threatened area would need to be prepared, and this information would then be used in conjunction with data on soil characteristics to calculate an appropriate angle of repose upon which revegetation, and a surface stable over the long term, could occur. A very rough estimation of the cost of preparing the slope over the entire current threatened area was thought to be between $200,000 and $400,000, exclusive of the archeological costs of determining whether the bluff edge and slope deposits had significant archeological remains in them, and if so then mitigating them. The logistics of conducting such work were discussed. Prepared pathways along fixed routes, with gravel or matting, for example, would allow for vehicle movement and protect the archeological deposits. A crane would be needed to remove slope fill below the mound to the desired angle. The crane's operation would have to be carefully monitored and its movement along routes designed to ensure minimal damage to the cultural deposits. Getting a crane into place where it could remove the lower slope deposits to the appropriate slope would entail some removal of trees, which might be counterproductive. Fortunately, there were few large trees below the

mound, since the slope was so steep. Superintendent Harrell asked whether the Nashville COE provide detailed recommendations about how a such a slope stabilization effort should proceed, should such an approach be adopted, specifically how much material would need to be removed from each part of the bluff face in the mound complex area, to create an angle of repose/slope that would be stable over the long term following successful treatment (i.e., filling and revegetation). Mechanical shaping of the bluff line was ultimately not adopted, however, since the archeological fieldwork itself was never completed, and since what was done showed that archeologically significant remains were present in the vicinity of the mound and apron right up to the bluff edge. This, before mechanical contouring could proceed, extensive archeological fieldwork would need to be conducted.

A consensus was also reached that the immediate bluff edge mound should be closed to the public and avoided for safety reasons. Carr recommended immediately moving the fence back at least 6.1m (20ft), while Allen suggested a barrier of some kind, with signs explaining why the area beyond that point was off limits to park visitors. Following the meeting the mound area was fenced off and cautionary signs were placed around it explaining the restricted access, and the next year a permanent stairway and safety rail was built on a north-south axis up one side, across the top, and down the other side of the mound ca. 6.1m (20ft) from the bluff margin. This was done to restrict access to areas of potential collapse as well as facilitate the archeological fieldwork, which involved moving large quantities of personnel and equipment in the vicinity of the mound. A consensus was also reached that any archeological workers near the bluff face should be tied/harnessed in to safety lines, and that substantial safety fences should be put in place by the drop off. These procedures were adopted during the fieldwork that took place over the next three years.

Research Design for the 2001 Intensive Testing

A detailed project research design was prepared over the winter and spring of 2000–2001, and finalized in June 2001 detailing how the NPS proposed to assess the significance of the Mound A area and develop a mitigation plan to avoid or lessen the impact of ongoing erosion (Anderson and Cornelison 2001a). The 1999 GPR work had indicated that Mound A had a complex internal structure, and had likely been built in a series of stages over several generations. Whether this was actually the case, however, would remain uncertain until ground truthing/excavation occurred at a sufficient level to determine the kinds and significance of remains within the mound, and whether additional mitigation was warranted. The testing program that was proposed included remote sensing, coring, precision mapping, dispersed test pitting, and the excavation of a step trench into two sides and across the top of Mound A. Following the completion of the fieldwork and an assessment of the recovered data, recommendations on how to proceed would be advanced to the park superintendent. The research design was prepared in consultation with the Chickasaw Nation, NPS and COE agency personnel, the Tennessee SHPO, and other archeologists and members of the public. A draft version of the research design was circulated to these individuals and agencies, and their commentary guided its final production.

The intensive testing, above all, was to be undertaken with sensitivity to and in accordance with Native American concerns, following terms agreed upon through formal consultation. On May 3, 2001, SHIL Superintendent Harrell sent a draft of the research design to the Chickasaw Nation for their review. On May 18, 2001 comments were received from the Chickasaw Nation and on June 22, 2001, a face-to-face meeting was held at SHIL between representatives of the Chickasaw Nation and the NPS, prior to the start of fieldwork at the site. The comments received in the May 18, 2001 letter and at the June 22, 2001 meeting were fully incorporated into the revised research design, with a provision that any changes resulting from additional meetings would also be incorporated as necessary. The Chickasaw Nation subsequently entered into a MOU between themselves, SEAC, and the SHIL.

The project mitigation plan that was adopted for the 2002–2004 fieldwork and subsequent

analysis was discussed at length in Chapter 1, including an overview of the research questions and field and analysis methods that were proposed. For the research design for the initial testing program in 2001, a series of ten questions similar to those guiding the mitigation program were advanced, and a detailed discussion of the field and laboratory methods that would be used was provided. The description of the 2001 field work, methods, and initial results is presented in the next section, while the research questions are listed below, to offer a perspective on how they evolved.

(1) When was construction initiated at Mound A? When did it end and why?

(2) How many construction stages were used to create Mound A? How often was a new stage built?

(3) What did Mound A look like during use? That is, what did the slopes and upper platform look like? What types of vegetation, if any, were present on the surface? What structures were present atop each stage, if any were present, and what kinds of activities were occurring in them?

(4) How were the Mound A slopes used? Was trash dumped down the sides, or down a favored corner, as evidenced at many Mississippian sites? Do these assemblages suggest special ceremonial or feasting behavior?

(5) Do changes in stage structures and contents suggest changing fortunes over the life of the center? That is, is the political history of the center in any way reflected in successive mound stage episodes, if these are found to be present?

(6) Is there evidence for the Late Woodland to Mississippian transition to be found at the site? What happened, and why?

(7) Are earlier occupations present on the site, or within Mound A? That is, is there evidence for an earlier, possibly Middle Woodland period mound within Mound A?

(8) What is the function of the apron? Is it a late addition, or was it built first, with Mound A later built on top of it? What is the nature of features associated with it?

(9) Is there evidence for status differentiation, or changes in status and wealth over time among the site's inhabitants?

(10) Is there evidence for the onset of intensive maize agriculture at the site? When did it occur and why?

Assuming funding was available, additional excavations would begin as soon as possible after the close of the 2001 fieldwork, but not before thorough mitigation planning occurred. In reality, some down time between the testing and any proposed mitigation was thought to be essential, to allow the thorough evaluation of the testing phase fieldwork. If a mitigation program did occur, the results of the 2001 testing would be incorporated into a single final report, which this volume represents. If funding for mitigation did not occur, the results of the testing would be released in a technical report to be completed within two years after the close of the fieldwork, including time for agency, Chickasaw Nation, and SHPO peer review.

2001 Field Season

Introduction to the 2001 Fieldwork

During the summer of 2001, from late June through early September, a team of some 20 archeologists and technicians from the SEAC conducted remote sensing, coring, precision mapping, dispersed test pitting, and the excavation of a 1m wide step trench into two sides and across the top of Mound A at Shiloh. The investigations were directed by Anderson and Cornelison under the overall fiscal

administration of George S. Smith, SEAC Associate Director, Investigation and Evaluation Division, an arrangement that remained in place throughout the mitigation. The testing produced a number of findings that dramatically altered understanding of how the mound was built and what it looked like when it was in use. The 2001 testing also demonstrated that appreciable important information was present and could be obtained from the portions of the site and mound that would be lost to erosion, and that additional archeological research was the only way this information could be recovered.

During the project the crew and visiting archeologists and volunteers stayed in housing provided by the park, including a house on Hagy Lane that was used in all subsequent seasons as a lab and rendezvous point in the mornings, Quarters 50 by Shiloh Church, and Quarters 4 in the residence circle near the visitor's center. As an aside reflecting perhaps the spirit of the times, when the New Deal era excavations started, the director, Frank H.H. Roberts, started his journal with the following entry: "Arrived Shiloh evening of Dec. 19, 1933. Cold & raining. Found only very poor quarters for living. Discouraging start." (Roberts 1934, cited in Welch 2006:97). In contrast, and commemoration, Anderson's (2003) first entry in his field book for the 2001 season, was "Arrived Shiloh 2:15 pm local time. Housing fine, weather warm and sunny, crew began arriving. Encouraging start!" The fieldwork conducted at Shiloh was undertaken with a spirit of optimism throughout, although like the earlier work in the 1930s, and indeed probably all archeological projects, it was not without its triumphs and trials, as noted in the pages that follow.

A detailed project information manual was prepared and distributed to all project personnel at the start of each field season, or when they arrived on site. This manual covered a wide host of subjects, and was revised each season as the project progressed, taking advantage of lessons learned the preceding year. A project website was prepared, and every day the project was operating from 2001–2003 images and text describing daily activities was posted, typically by John Cornelison, who developed the template, or David Anderson, who selected the pictures from among those taken each day; Emily Yates posted information while present during the 2001 season. This web site and images, which also include pictures of the project crew, volunteers, and visitors, are available online at http://www.nps.gov/history/seac/research/fp/shil/photography.htm and in the electronic appendices, which also have copies of the project information manuals and supervisor's field journals. Fieldwork each day was from 7:00 am to 3:30 pm with a half hour for lunch, which was typically eaten at the site. Most days after the fieldwork ceased the project directors put in another several hours organizing records and photographs, maintaining notes and the project web site, planning forthcoming fieldwork, and dealing with personnel matters.

Remote Sensing Procedures Employed in 2001

The first field investigations conducted in 2001 were a series of remote sensing procedures on and near Mound A, to develop a record of potential subsurface remains occurring in this part of the site, to guide the archeological excavations. These investigations were accomplished by three specialized contractors, R. Berle Clay (2001), Geoffrey Jones (2001), and Robert K. Nickel (2001a), whose work was designed to evaluate, and expand upon, the earlier GPR investigations and associated test excavations conducted in 1999 (Anderson and Cornelison 1999b, 2000; Anderson et al. 1999a, 1999b; Lydick 2008; Welch et al. 2006; all of the remote sensing work conducted at the Shiloh Mound Complex in 1999 and 2001 is summarized in Chapter 8). The 2001 remote sensing took place on the top, north, west, and south sides of Mound A, and adjoining areas of the plaza between Mounds A and B. These survey areas were laid out using a total station by SEAC personnel under the direction of John E. Cornelison, Jr. who oversaw all mapping when the SEAC team was in the field, with the results tied in to the site grid established in 1999 by Welch; Welch was present at the park and worked with the remote sensing team on June 28th and 29th. The results of all of the project remote sensing work briefly recounted was integrated and interpreted by Christopher Lydick (Lydick et

al. 2005, Lydick 2008; see Chapter 8), who made use of these data for his MA thesis at Florida State University, which was completed in 2008.

An FM36 fluxgate gradiometer and an EM38 earth conductivity meter were used on and near Mound A on June 28–29, 2001 by Berle Clay (2001) (Figure 03-04). Over this two day period Clay examined 11 20x20m square sample areas, encompassing 4400m^2. These areas included in the plaza between Mounds A and B; a single 20x2m square atop Mound A and another at the base of the mound to the north bracketing an apparent house mound; and a 10x10m area atop Mound G, in an effort to document the Union burial pit detected in 1999. A number of probable prehistoric features, likely the remains of hearths or burned areas, were found in the plaza, including the remains of a structure associated with Mound J. The resistance/conductivity survey also located the outlines of trenches on the apron immediately west of Mound A that were almost certainly those excavated by Roberts in the 1930s. One conformed to a trench found in the 1999 remote sensing and subsurface testing. Clay attempted to conduct a survey of the Mound A summit using the fluxgate gradiometer, but the area was found to be too disturbed by metal from historic construction and visitation to yield useful results. The possible floors of two burned structures were found in the 20x20m area examined to the north of Mound A. The fluxgate gradiometer was also used to examine the top of Mound G, where Union soldiers were buried after the Battle of Shiloh in 1862, and then removed to the National Cemetery in 1866. In addition to the probable battlefield grave shafts, a large rectangular feature of possible metallic origin was found, but whether it was related to the Civil War era interments could not be determined (see Chapter 8).



Figure 03-04. Dr. Berle Clay using the EM-38 on the plaza west of Mound A in June 2001.

A GPR survey was also conducted on June 28–29, 2001 by Robert and Kay Nickel (2001) (Figure 03-05). They examined approximately 5000m^2, using the same 20x20m grid system employed concurrently by Clay, encompassing areas in the plaza to the south and west of Mound A between Mounds A and B, as well as on the summit of Mound A, the northern half of Mound B, and the top of Mound G. The top of Mound A was found to be extremely disturbed, but as in the 1999 GPR work surfaces were detected within the mound, that we now believe were likely fills associated with the construction of the Stage II or Stage III mounds. A pronounced linear feature extending for several meters was found on the east side of the mound near the river that may be associated with the edge of the Stage IIb platform found during the subsequent excavations, but this is uncertain. Other reflections were found in the upper part of the mound that appear to be historic disturbances, perhaps old tree throws or features associated with the superintendent's cottage that was on the summit in the early twentieth century. Anomalies associated with a possible ramp on the south side of Mound A were found, and a similar disturbance, also a possible ramp, was noted on the south side of Mound B, as well as evidence for a possible structure within that mound. In Mound G, a pronounced signature from the probable Union burial pit found during the 1999 GPR work, and by



Figure 03-05. Robert and Kay Nickel operating a ground penetrating radar device at in the plaza area at Shiloh Mound Complex, June 2001.

Clay's work, was also observed; all three analyses were in close agreement as to the size and location of this feature. In the plaza south and west of Mound A, a number of circular features were found that appear to be of cultural origin, possibly structures, pits or other disturbances of some kind. Suggestions of 1930s excavation trenches were also noted in many places near and between Mounds A and B, but these were "only intermittently detectable" suggesting that the fill of the trenches "does not differ markedly from the unexcavated adjacent soil" (Nickel 2001:24). Nickel (2001:24, citing Welch 2000:261, see also Welch 2006:137) did not find this too surprising, given portions of the plaza area was apparently of cut-and-fill construction, with redeposited midden used in places. That is, the difficulty in resolving Roberts' trenches was because "most of the archeological trenches [in the plaza] displaced soil that was already disturbed soil in its last prehistoric context" (Nickel 2001:24).

A third program of remote sensing, employing electrical resistance and magnetic field gradient surveys, was conducted near Mound A by Geoffrey Jones (2001), on July 25–27, 2001 (Figure 03-06). Nine 20x20m grids to the south and west Mound A in the area examined by the earlier surveys, and a 20x20m and a 20x15m grid to the north of the mound were examined using resistance survey. The two grids to the north of Mound A were also examined using magnetic field gradient survey. The top of Mound A was largely covered by boardwalks and a screening platform by this time, and was no longer accessible for remote sensing work. Numerous features from possible house floors and wall lines were found in the plaza and apron areas to the south and west of Mound A. In addition, three possible rectangular anomalies were found in the apron that may be remains of excavation trenches opened by Roberts in the 1930s. The investigations north of Mound A detected evidence for at least two, and possibly several structures, in close agreement with the findings by Clay (2001). Because the remote sensing work involved multiple procedures, each interpreted by the specialist that conducted them with minimal comparative analysis, the synthesis Lydick (2008; see Chapter 8) produced provides a more complete picture than can be obtained from the individual reports. The primary data collected remains available for use, and given the precision mapping employed, observed patterns and anomalies in the output can be quickly and accurately relocated in the future.

Precision Mapping Activity in 2001

Starting in late June, and continuing over the course of the fieldwork in 2001, precision mapping of the Mound A area was conducted using a total station, under the overall direction of John Cornelison and Tammy Cooper (Figure 03-07). The site grid initially established by Paul Welch in 1997 and used during the 1999 testing was re-established, and temporary datums were placed at 20m intervals over a large area of the plaza and around Mound A. A number of these datums were later replaced with permanent concrete benchmarks, and the locations of all these benchmarks, and at least one corner of



Figure 03-06. Geoffrey Jones conducting magnetic field gradient survey at Mound E, assisted Sudah Shah (left) and SEAC archeologist Jessica McNeil (right), July 2001.

every excavation unit, were determined to submeter accuracy using a GPS. The mapping effort was to ensure that future generations of archeologists would be able to quickly relocate where the SEAC investigations were undertaken at the site, something currently not possible with much of the earlier work.

Several thousand elevation points were obtained from the vicinity of Mound A using a one meter grid, as part of an effort to produce a highly accurate site map, work that continued over subsequent field seasons (see Chapter 7). Areas north, west and south of the mound were mapped,



Figure 03-07. (L to R) SEAC archeologists Donna Rausch, Jessica McNeil, and SEAC crew chief Tammy Cooper establishing a grid for topographically mapping Mound A, May 2001.

as well as all locations where fieldwork occurred, such as the remote sensing 20x20m grids, where excavation units were placed, and where core samples were taken. The fine grained mapping permitted the resolution of subtle microtopographic variation that points to the existence of a variety of cultural and natural features, such as house mounds, old back dirt piles, paths and roadways and, of course, general site features like gullies, mounds, and plaza areas (Figure 03-08). Subtle topographic variation was, in fact, sometimes found to be closely associated with cultural features revealed by the remote sensing, particularly an association of low circular rises with evidence for possible structures below the surface. Given how subtle some of these associations are—such as the remote sensing evidence for structures to the north of Mound A associated with areas of only slight or no obvious relief—there are probably many more house mounds on the site than currently assumed.

Coring Activity in 2001

On July 18th and 19th 2001, a series of sixteen 5.1cm (2in) cores were taken at various locations within the Shiloh Mound Complex by Dr. Glen Doran of Florida State University with a Geoprobe vibracore. The core samples were sealed in clear plastic tubes with flexible airtight plastic caps, and the location and depth of each hole and the length of each core was measured; both measurements were essential since some compaction occurred in the samples. Several cores were taken near Mound A, on the south, west, and north sides, to determine what the fill of the apron was like, with others taken in outlying plaza and presumed borrow pit areas. While initially coring of Mound A itself was planned, it proved impossible to safely get the vibracore to the top of the mound. Doran tried to drive it up the old access path on the south side, but could only get about one-third of the way up. In discussion with park maintenance personnel, it was thought possible to get the Geoprobe to the top using a boom truck, but for safety reasons the idea was abandoned. Getting the unit out from the low area on the north side of Mound A had proven challenging enough, since it got stuck in the loose

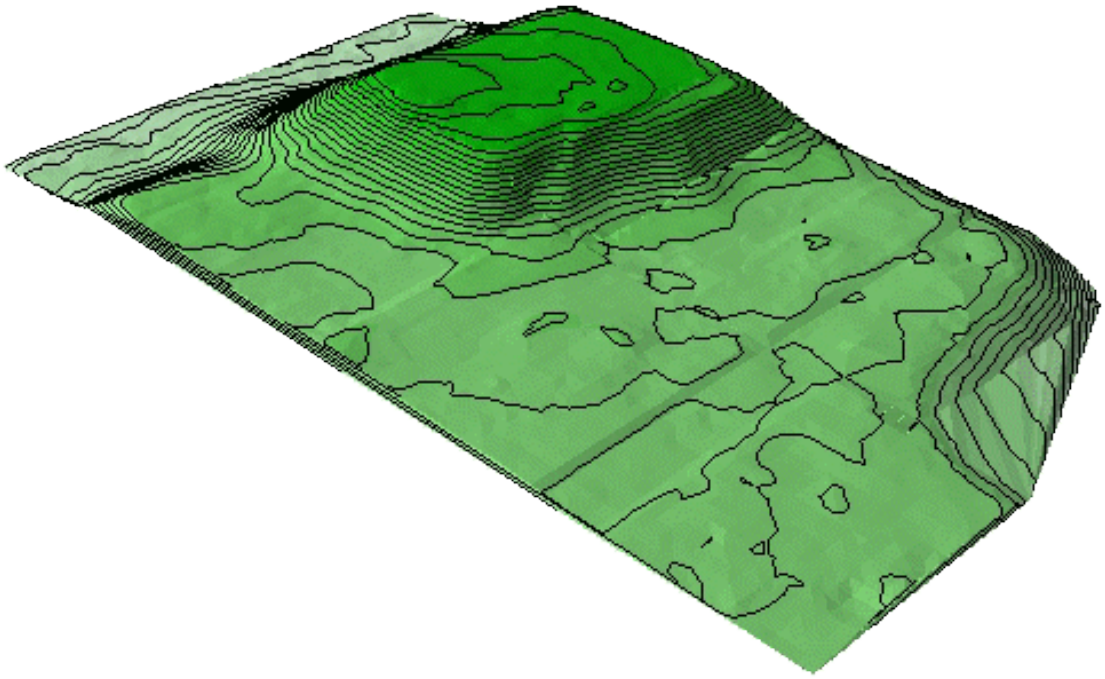


Figure 03-08. Three Dimension topographic map of Mound A produced in 2001.

deposits, and similar problems occurred getting it into and out of the pond examined near Mound G, as noted below. In spite of these difficulties, the vibracore provided extremely valuable information.

One core each was taken from within and immediately adjacent to one of Roberts' 1933–1934 excavation trenches that had been found in 1999 in the apron west of Mound A, whose fills were readily distinguished (Figure 03-09). Three cores were taken to the north and two cores to the south of Mound A, within a few meters of the base of the mound, revealing deposits of varying depth over the subsoil (Figure 03-10). Five cores were also taken from the plaza area between Mounds A and B, to determine the depth of cultural deposits, and get a sense of how much cutting and filling may have occurred to level the area (ca. 0.5 to 1.0 m). One core each was taken at the bottom of, and immediately adjacent to a dry presumed borrow pit near House Mound N on the west side of the plaza near Mound F; the bottom of the borrow was on apparently culturally sterile subsoil. Another core was taken from a mounded feature in the center of a much larger borrow area nearby, and the loose nature of the fill suggested it was an old back dirt pile, probably from the 1933–1934 excavations, that had been dumped into the borrow pit (Figure 03-11). The vibracore samples were preliminarily examined in the field to determine the likely depth of cultural deposits, and get a sense of the underlying sediments. Usually a distinct break was evident between anthropogenic strata and



Figure 03-09. Geoprobe Specialist and Florida State University professor Glen Doran coring the apron west of the step trench on the southern edge of Mound A, July 17, 2001.



Figure 03-10. FSU Geoprobe Specialist and Florida State University professor Glen Doran coring the southern margin of Mound A, July 17, 2001.

undisturbed materials. The coring confirmed, for example, that the apron south and west of Mound A was, as Roberts had documented, between 1 and 2m in depth, and that cutting and filling had occurred to a depth of almost a meter in the plaza area between Mounds A and B, with the depth to subsoil quite varied, depending on whether low areas were filled.

Unquestionably, however, the most significant result of the coring program was the discovery of well preserved pollen in the sediments of a small pond located immediately to the south of Mound G (Figure 03-12) (Chapter 5). Upon questioning the park staff it was learned that the standing water and masses of duckweed were present as long as they could recall, even in the driest of years. This feature was assumed to be an old Mississippian borrow pit, but the presence of water plants suggested some antiquity. In the late 1980s, during an archeological survey of the L'Anguille River basin in northeast Arkansas, Anderson had worked with Hazel and Paul Delcourt (Anderson et al. 1989; Delcourt et al. 1989, 1997), two renowned paleoenvironmental scientists then at UT, in an effort to locate preserved pollen records. This work had proven successful, with a 13,000 year record discovered at Hood Lake. The pond near Mound G thus immediately registered as a location having the potential for intact pollen. Doran was able to maneuver the vibracore to the edge of the pond, and obtain a two meter core, albeit not without appreciable difficulty given the nature of the deposits (it got thoroughly stuck and had to be pulled out using another vehicle). The core was sent to Hazel and Paul Delcourt to assess whether it contained pollen and plant macrofossil data useful for paleoenvironmental reconstruction. Well preserved remains thought to span much of the Holocene were found, although absolute dating run on samples from the core yielded ambiguous results, suggesting some contamination. This prompted the removal of a second core in July 2004 by Scott Meeks, yielding a particularly fine grained and well dated record for the past 2000 years, encompassing the major periods of prehistoric and historic occupation at the site (see Chapter 5). The recovery of such a detailed paleoenvironmental record from within the boundaries of a Mississippian site is, to our knowledge, unprecedented in American archeology.



Figure 03-11. Project Geoprobe Specialist Glen Doran and SEAC archeologist Rachel Horlings remove a core sample from a smaller mound in a larger borrow pit on the west side of the plaza, 18 July 2001. The 'mound' appears to be a backdirt pile from one of Roberts' excavations.

As the excavations progressed, much more detailed stratigraphic information soon became available from the Mound A area, so the other cores were not subsequently examined in detail. They are curated with the project collections and remain available for analysis, however, and are among the only recent information collected from



Figure 03-12. Glen Doran, Rachel Horlings, and David Anderson using the vibracore to obtain a core in the pond near Mound G, July 18, 2001.

some parts of the site, such as the plaza and the borrow areas. One of the major conclusions from the 1999 to 2004 project was that understanding mound content and construction requires undertaking large excavations and exposing, recording, and sampling large profiles at close intervals (see Chapters 9 and 10). As an initial method of documenting the deposits in the site area, however, coring proved a quick way to obtain information on their depth, content, and composition.

General Excavation Activity in 2001

Excavations began in the vicinity of Mound A on July 10, 2001, and continued until September 4, 2001. A total of 77 1m units encompassing some 50m^3 of were opened in the control trenches 1m wide opened on the north and south sides of the mound, and across the top. Thirty-nine1m units were opened north, south, and west of the mound, the latter to relocate excavation trenches opened by Roberts in the 1930s, a continuation of the strategy used in this area in the 1999 testing. All of the units opened into the mound and on the north and south sides were in the direct impact area, within roughly 5–7m of the bluff edge, since these portions of the site would be lost to erosion. The units opened on the west side of the mound were placed near the 1999 excavations, to better define old New Deal era trenches in the event human remains were located, and needed to be reburied, as per the MOU with the Chickasaw Nation. Otherwise no work was undertaken in portions of the site that were undisturbed or unthreatened.

The first few weeks the fieldwork was underway the park maintenance staff constructed solid wooden stairways on the north and south sides of the mound, and a walkway across the top. These were placed well back from the eroding bluff edge in a continuous north-south line approximately 1.5m west of the excavation trenches opened in 2001, , and were completed by the end of July. The boardwalk was tied in to the stairways on the north and south sides of the mound. A safety barrier, essentially the guardrail for the stairs and the boardwalk, was placed on the east side, facing the eroding bluff margin and excavation area. A wooden platform about 4.6m (15ft) on a side was also built atop and near the center of the mound summit to the west, and connected to the boardwalk with a short walkway, to provide an area where dry screening could occur, and where project personnel could regularly meet atop the mound without causing erosion (Figure 03-13). This platform area was eventually covered with a sunscreen and a work table was placed there, and was where a lot of discussion, sample collection, and the filling out of forms, tags, and sample bags occurred throughout the project, from 2001 to 2004.

The stairs facilitated the safe and efficient movement of personnel and fill up and down the sides of the mound, while the boardwalk and screening area reduced damage to the top. This was important, since extensive movement would erode the mound surface, and the mound slopes were



Figure 03-13. Project crew members and volunteers screening mound fill on the newly constructed platform atop Mound A, 24 July 2001 (facing W).

decidedly slippery following rains, which happened frequently during the project. Indeed, the crew became adept at quickly covering the excavations with tarps, and getting themselves under cover when rain and thunder storms came up, which happened frequently, and often quite suddenly (see Chapter 6). The project team had park radios with them at all times, and messages about impending severe weather were routinely relayed to all park personnel and the excavation team from the headquarters complex, giving plenty of warning. Torrential rains did occur frequently, however, if not when people were on the site than at other times. After experiencing damage from leaking or poorly weighted tarps early on, we quickly realized that placing rows of sandbags was essential along the tops of the trenches and over the tarp edges, to prevent water from running in and damaging the excavations. The tarps themselves had to be kept intact, to prevent water from leaking through holes or tears into the units and disturbing cleaned floors. Care also had to be taken when lifting the tarps off the units, since small mammals and various poisonous and nonpoisonous snakes were found in and under them from time to time, including a large drowned rat following Tropical Storm Barry, which dumped extensive rains on the mound in early August.

The 2001 1m excavation units were opened in arbitrary 10cm levels, with one exception. The initial level in each unit opened in the control trenches on the sloping north and south sides of the mound were taken to level at the lowest surface point. This first "level" was thus a triangular solid in shape, and encompassed a fairly appreciable volume, the extent of which could, however, be calculated from the dimensions and profile drawings of the mound slope in the event comparison of the contents with other proveniences was warranted. The trenches on the sides of the mound, accordingly, initially had a staircase like appearance, which facilitated access as well as safety (Figure 03-14). These trenches came to be known as the north and south step trenches. The initial 'level' in these steps for the most part fell within the final mound construction episode, Stage I. Subsequent levels, which were 1x1m by 10cm thick, sometimes crosscut different strata or stages, particularly when they intersected mound side slopes, which was sometimes confusing. Use of steps and arbitrary levels was considered faster and preferable to attempting to resolve filling episodes from the top, however, which does not work well when complex or sloping archeological deposits are involved, as in mounds or rock shelters, unless a profile exists from which to work. We were thus following procedures employed in mound excavations in the Southeast since the New Deal era, using guide trenches opened fairly quickly to expose strata, which could then be removed as natural layers where these could be resolved. We proceeded slowly this first season, given the status of the mound group as a National Historic Landmark, and because Mound A's internal contents were not well known. Careful hand excavation and screening was considered a more appropriate way to open a profile, at least initially, then using heavy equipment like a backhoe, or even hand excavation in the absence of screening or careful level control. Such cruder approaches had, in fact, been raised as possibilities, but were considered inappropriate given how little



Figure 03-14. SEAC field crew excavating in the south step trench July 27, 2001, view to north.

was known about the mound. Since the possibility existed that burials or tombs were present, as had proven the case at Mound C in the 1890s and 1930s (see Chapter 2), or that unusual features or structures might be on stage summits that could be lost or damaged by machine trenching, we wanted to proceed with all due caution and respect. There also remained the possibility that a large profile might potentially be available on the eroding face of the bluff, if safety considerations could be overcome.

No excavation unit opened in 2001 was taken below a depth of about 2m, for safety reasons. Depth control in each unit was maintained using a transit or level, with elevation readings taken over four fixed datums established on the south, west, and north sides of the mound, and atop the mound, and tied in to one another. Three stakes made of boards 10x15cm (2x4in) wide and 0.3m (1ft) long were driven into the ground, with small holes drilled in the top, to ensure the pointed ends of the transit tripod legs were set up over the same point each day. Nails were driven into trees located at between 90 and 180 degree angles from one another and used as a level check, to ensure that the height of instrument readings were consistent. Wall profiles were maintained using first plumb bobs and then, when it was realized these were too thick and costly, washers attached to strings. Great time and effort was taken, in this and all subsequent seasons, to ensure consistent unit size and clean, straight wall profiles. Bowed walls could be cut back, but undercut or gouged walls would require the cleaning of a large area to correct. Great care was thus taken to prevent damage to the profiles, with only the most skilled excavators allowed to work near or clean unit walls or mound faces. The project profile photographs show how successful we were in this regard, including in preventing erosion to profiles during rainstorms or between field seasons.

The primary excavation activity in 2001 consisted of a near contiguous one meter wide trench opened up the south side of the mound, across the top, and down the north side. Trench placement was dictated by safety considerations, vegetation (i.e., the presence of large trees), recent cultural features (i.e., an existing stone stairway), and the need to work within the direct impact area as close to the edge of the mound as possible, since this would be the first material to be lost to erosion. The north step trench (n=15 1m units) and the trench atop the mound (n=13 1m units) were located on the same north-south grid line, E181, while the south step trench (n=10 1m units) was offset one meter to the west, along the E180 grid line, to avoid a large tree as well as stone stairs constructed in this area during the New Deal era. The large tree on the south edge of the mound summit was removed the following year for safety reasons, while the stone steps were removed in 2003 as the excavations expanded. The control trenches were placed within ca. 3–5m of the eroding mound edge, in areas certain to be lost to erosion in the near future (Figure 03-15). The goal of the trenching was to fairly quickly determine mound stratigraphy, while obtaining well controlled samples of the mound fill. The exposed and eroding eastern face of the mound, while closely inspected once we were in the field, was not profiled in 2001, for safety reasons. The eastern face was undercut in places, and once past the first few meters or so of steeply sloping deposits, was characterized

by a ca. 15m shear drop to the large boulders in the stabilization barrier along the river. While rappelling over the edge and cleaning the face was considered, the possibility of a collapse was considered too great. Only when a much greater area at the top of the mound had been opened and some of the upper deposits removed in subsequent seasons, permitting a greater familiarity with conditions on the bluff margin, was limited clearing and inspection of the eastern face conducted.

Based on the remote sensing results, as well as ideas about where subsurface features might be expected given the presence of topographic or cultural features (i.e., the mound ramp, suspicious rises or depressions), eighteen 1m units were opened in the direct impact area to the north and south of Mound A, within a few meters of the bluff edge. Two of the units opened away from the base of the mound on each side were later incorporated into the step/control trenches, which were extended out to them to examine mound/apron or mound/nonmound contacts, on the south and north sides of the mound, respectively. These units were excavated using 10cm levels, and many were taken to culturally sterile deposits. The units opened on the north side of the mound, interestingly, quickly reached subsoil, indicating the apron had only been placed on the south and west sides; whether the apron was once on the east side of the mound is unknown, as that area has eroded into the river.

Twenty-one 1m units were also opened in the apron area to the west of the mound, to relocate Roberts' old excavation units, as well as to better delimit the apron in this area. One of Roberts' trenches, oriented north-south, had been found in this area in 1999. Three trenches were ultimately located, including one the first day of the excavations, July 10th, in three 1x1m units arranged into a 1x3m trench. These New Deal era trenches were readily apparent almost immediately below the humus zone, with mottled and typically much lighter colored fill than the surrounding undisturbed apron deposits.

During the 2001 fieldwork, fill from every unit excavated was dry screened through ¼-in mesh, with special samples taken as necessary from features and strata. The screened fill was placed on tarps and covered with black plastic to prevent erosion and spreading, which local rains would quickly do; the resulting backdirt was then used to fill sandbags to protect the excavation units, and to backfill the units opened in the apron at the close of the fieldwork (Figure 03-16). When features were encountered, they were mapped, drawn, and photographed, with all fill retained for flotation/fine screening. Fill from disturbances like animal burrows, root stains, or modern posts was screened through ¼-in as well and kept as a separate provenience apart from general level contents.



Figure 03-15. Initial excavations across the top of the summit of Mound A, July 2001.

A special fine screen/flotation sample was taken from every level in every 1m square in the control trenches in 2001, save for those units opened to the west of the mound to delimit Roberts' trenches. This sample was typically taken from the northeast corner of each unit, and comprised a minimum of 5 liters (L). Over the course



Figure 03-16. SEAC field crew and Project volunteers screen mound fill on the southern apron of Mound A, 30 July 2001.

of the project from 2001 to 2004, flotation samples were also routinely taken from all recognizable features, as well as from many filling episodes, structure floors, and stage top and side surfaces. A total of 1568 samples were ultimately collected during the work at Mound A. The purpose of these samples was to provide fine screened samples of the mound contents, and to obtain samples of any carbonized and uncarbonized plant remains that might be present (Chapter 16). Where well defined stage surfaces or structure floors were encountered on the top and sides of the mound in later field seasons, the fill from these surfaces was floated in its entirety, employing 1m sampling units. The volume of each sample was recorded, and each was dried and weighed prior to processing, which was done with a Flot-Tech Model A flotation machine that was present the last three weeks of the 2001 fieldwork (and throughout the two seasons that followed), having been purchased new and shipped directly from the factory to our field lab, arriving on August 13th. Just loading and unloading this machine from the truck it was shipped in on, parenthetically, took several people and a front end loader, although once unpacked it could be moved by two people by hand.

The project research design, as noted, was approved by the Chickasaw Nation, who commented on various drafts, and subsequently entered into an MOU between themselves, SEAC, and SHIL, that included provisions for dealing with human remains, should these be encountered. The excavations proceeded in accordance with the provisions of this MOU and research design, and to ensure possible remains were identified correctly, a physical anthropologist, Dr. Elizabeth Monahan Driscoll, was in the field for much of the 2001 season. Bone preservation was poor in the upper part of the mound (Chapter 17), and of the few fragments found, none proved to be human. No human remains were found in any of the fieldwork conducted at Mound A, although better bone preservation was found deeper in the mound in subsequent seasons.

Geoarcheological research was considered an important part of the project from the beginning of the 2001 fieldwork, to document mound and apron construction history, appearance, and contents. This assumed even greater priority as the unusual nature of the mound fill in some proveniences became increasingly apparent. Anderson had worked with geoarcheologists and paleoenvironmental scientists at a number of points in his career, most notably in the Richard B. Russell Reservoir and along the L'Anguille and Savannah Rivers (e.g., Anderson and Schuldenrein 1985; Anderson et al. 1989, 1995), and even before the start of the 2001 season had enlisted geoarcheologist Sarah Sherwood, who he had met at Dust Cave, as a consultant. Sherwood visited the project from September 2–4, 2001, just prior to shut down, and collected block samples intersecting a number of stage surfaces or other features (Figure 03-17) (see Chapter 10). The initial goals of the geoarcheological research

included determining how long individual mound stages may have been in use and hence exposed to erosion, what these mound stages and particularly the stage sides may have looked like when in use, sources for the materials used in their fill, and what preservation to expect throughout the mound and in adjoining site areas. These goals were expanded greatly as were the resources devoted to geoarcheological research in subsequent seasons.

Zooarcheological (i.e., typically vertebrate fauna) and malacological (i.e., shell and snail) investigations were proposed, to determine what the site inhabitants ate, whether specialized feasting behavior took place on or near Mound A, and what the site environment was like when the mound was in use (Chapters 17 and 18). Shellfish and particularly snail remains are excellent indicators of local environmental conditions, and it was hoped that they could be obtained from stage surfaces, feature fill, and from general midden areas. These investigations had to be shelved due to the minimal preservation encountered during the 2001 fieldwork, although much better preservation of both vertebrate fauna and shellfish was found near the bottom of the mound in 2003, reinvigorating this research. Dr. Evan Peacock, the project's proposed specialist for shell remains, visited the site on July 20, 2001, and agreed that the preservational conditions for shell and other faunal remains were very poor. Some snail and shell had been found deep within the mound during the 1979 test pitting (Beditz 1980a, 1980b; Welch 2006:28–30), however, suggesting better preservation of these remains might occur deeper within the mound, something that indeed did prove to be the case.



Figure 03-17. Project geoarcheologist Sarah Sherwood taking soil samples in the south step trench, assisted by SEAC archeologist Charles Lawson, September 3, 2001.

Extensive high resolution color digital, and conventional color slide and black and white photography occurred during the 2001 fieldwork. Several thousand images were taken and cataloged, and the digital color images (n=1761) are included in the electronic appendices. Color slides were initially processed locally within a day or so, to ensure that the shots had come out, but the adoption of digital photography, which could be evaluated instantly, ended the need for rapid turn around and checking. The digital images were also used to prepare a project web site, with new shots posted each day the fieldwork was underway. Several hours of digital video film was also taken of various excavation activity, and some of these clips were also posted on the web site. The photography documented the fieldwork each day, as well as the features encountered in the excavation units. Every wall profile was drawn on graph paper and photographed in the trenches opened into the sides and atop the mound, and at least one wall profile was drawn and photographed in the 1x1m units opened on the north and south sides of the mound. Soil smears were taken and included on the profile and feature drawings; basically, a small amount of moistened soil was collected and rubbed on the feature recording form or graph paper. Soil smears were also taken and included on unit level sheets. These smears proved a good way of documenting soil color and texture, and served as a backup to the more traditional process of simply recording Munsell color and soil texture descriptions. Their only drawback is that the

sheets must be curated horizontally (i.e., lying flat) rather than vertically in binders, to reduce the amount of soil coming off with handling.

The project was visited by a number of archeologists in 2001, and hosting them, as well as volunteers, reporters, and interested members of the general public, many of them park visitors, was an important public outreach and consultative aspect of the work. Evan Peacock and Janet Rafferty brought their field school from Mississippi State University on July 20th. They looked at the profile and made a number of cogent observations about the strata, including that there were apparently sloping stage surfaces or filling episodes evident in the south trench, and these had been exposed for some time, given the existence of several washing episodes at their base. Lisa LeCount of the University of Alabama and John Blitz of the University of Oklahoma visited on July 27th and also provided commentary on the deposits. Tim Pauketat and Susan Alt brought their University of Illinois field school by for a visit on July 31st, whose participants included Jeff Kruchten, Ian Fricker, Stephanie Ellienke, Tamira Brennan, Tracy Steffgen, Phil Millhouse, and Alleen Betzenhauser, most of whom have gone on to careers in archeology. In examining the stratigraphy, Pauketat agreed with the excavator's interpretation that the mound appeared to have been built in several stages, and that the colored soils observed in the profiles likely reflected ceremonial capping episodes associated with the construction. Mike Moore visited the site on August 1st from the Tennessee Division of Archaeology offices in Nashville. Ellen Shlasko from the University of Memphis visited on August 2nd. Drew Wilburn and Brenda Longfellow, classical archeology students from the University of Michigan, came by on August 5th. On August 16th Terry Van Eaton, a columnist for 'The Courier' a weekly newspaper in Savannah, Tennessee, came out and observed the work and interviewed the crew, for a story that appeared later that month. Kirk Perry of the Chickasaw Nation, and Paul Welch from SIU Carbondale visited on August 20th with NPS interpretive specialists Chad Beale and Bruce Hopkins from Harpers Ferry, and Superintendent Harrell and Ranger Janet Ambrose, as part of planning for an interpretive walking trail and signage as a means of presenting the mound group to the public. Welch had been present since August 17th, working with the SEAC team. SEAC senior staff archeologists and managers Janice Burke, John Ehrenhard, Bennie Keel, John Jameson, and George Smith visited the project on August 21st for about four hours, arriving on the NPS plane which had been chartered for the trip, and met with the project team and Superintendent Harrell (Figure 03-18). Joe Crystal, Bob Felker, and Ed Moery of NPS's Denver Services Center, and Lee Edwards, SERO FHA liaison, visited the site on August 22nd, also as part of planning for an interpretive walking trail. Kevin Smith and a number of members of the Cumberland Archaeological Society came by on 25 August.

The 2001 project crew included a number of archeologists and technicians, most of whom have continued on in the profession (Figure 03-19). These included Monte Abbott, Tammy D. Cooper, John Detring, Elizabeth Driscoll, Pamela Edwards (now the Mississippi State Archaeologist), Jill Halchin, Meredith Hardy, Robert Hellman, Rachel Horlings, R. Steven Kidd, Charles Lawson, Jessica McNeil, Guy Prentice, Donna Rausch, Margo Schwadron, Arianna Slemmens, Jay Sturdevant, Erin Westfall, Chene Williams, and Emily Yates. We also had help from a large number of volunteers, and many more came and helped in subsequent seasons; their photographs were posted on the project web site and are included in the electronic appendices. Susan Hollyday of Nashville, for example, an outstanding field technician, came out in late August and helped out, and returned each season. Chris Gillam from the University of South Carolina's South Carolina Institute of Archaeology and Anthropology worked on the project for a week in late August, from the 19th to the 24th, helping with the final profiling. Donna Fried from UT visited the project and volunteered for a week in August. Perhaps the most interesting volunteers were a group of local women from a chapter of the Daughters of Union Veterans, who came out one day a week for much of the project. Emily Yates served as volunteer



Figure 03-18. Former SEAC Director John Ehrenhard, David Anderson, and Former Southeast Regional Archeologist Bennie Keel discussing the fieldwork at Shiloh, 21 August 2001.

coordinator as well as the designated public relations specialist during the 2001 fieldwork, making sure volunteers were properly logged in and informed of safety procedures, and giving tours to visitors who walked up to the project area, which happened frequently. Whenever possible, visitors and volunteers were taken to the nearby Hagy's Catfish Hotel for lunch or dinner, providing a pleasant break from the fieldwork.

Excavations on the South Side of Mound A in 2001

Excavations were initiated first on the south side of Mound A, because the mound slope in this area was comparatively gentle and about two meters less in height compared to on the north side of the mound. Additionally, the presence of what appeared to have been a ramp on the south side near the center suggested it may have been an entrance area of some kind. A total of ten 1m units were opened in a contiguous linear trench oriented north-south and located immediately west of the New Deal era stone stairway (Figure 03-20). The trench ran from the top of the mound to the base, a distance of between 6 and 7m, and out into the level apron area for another ca. 3m. An additional ten individual 1m units were opened in the apron.

A number of features were located in the apron deposits at and away from the base of the mound, including post pits, wall trench lines and, at the south end of the main trench, a raised clay surface that may be part of a house platform (Figure 03-21). These features were found at varying depths, typically either immediately below the humus layer, or at appreciable depth, where they are apparently associated with earlier construction episodes. A series of large buildings were apparently built and rebuilt in this area. The presence of large structures in the area south of Mound A was indicated by the remote sensing work (see Chapter 8), although appreciably more excavation would need to occur to determine the size, shape, and function of any structures that may have been present. Only limited work, however, was done in the apron area after 2001.



Figure 03-19. The intensive testing field crew, posing on the south side of Mound A, August 1, 2001.



Figure 03-20. Project leader John Cornelison, SEAC crew chief Charles Lawson, and SEAC archeologist Jay Sturdevant hanging washers from strings in the profile wall of the South trench in order to ensure the accuracy of unit boundaries and margins, July 26, 2001.

In the west wall of unit N35, E180, on the flat surface of the apron at the base of the Stage IIIg fill, a distinctive burned surface ca. 3cm thick was found in 2001. It was sampled and an AMS determination of 930±40 B.P. was obtained (A.D. 1020 uncalibrated; Beta 161308), suggesting when this particular stage or construction episode may have begun. Subsequent AMS dating conducted in later seasons indicates that this date is probably a century or so early (see Chapters 9, 12, and 21). This burned lens was more fully exposed in the 2003 fieldwork, when it was found to lie at the base of one of the Stage III mound outer fills, IIIe-7b, near a large charred post, suggesting these features were associated with a structure. Not all apparent features on the apron, however, were prehistoric in age. Several units opened around a low rise on the modern ground surface, and thought to be a house mound, found it instead to more likely be an eroded back dirt pile either from Roberts' excavations or some other recent construction activity.

The sloping surfaces of several successive mound construction/filling episodes were found in the step trench opened into the south side of the mound. Stage slope fills were typically thin at the base of the mound, where they had feathered out, and thickened rapidly higher up and further into the mound (Figure 03-22). Due to the volume excavated in 2001, it was possible to link strata from the bottom to the top of the south step trench, at least for the final Stage I mound, as well as identify filling episodes later documented as coming from the Stage II and III mounds (see Chapters 9 and 10). The upper part of the apron, at least the upper 60cm or so, appears to have been laid down in one filling episode late in the site history, given that it was placed against the sloping exterior fills of the Stage II and Stage III mounds, which apparently share a common lower face in this area (see Chapters 9, 10).

While the Stage I fill was uniform in color and texture, and appeared to be midden from the surrounding site area, the underlying Stage II and Stage III mounds had unusual and diverse surfaces and fills that could be easily followed. One of the distinctive filling episodes in the Stage III mound found in



Figure 03-21. Post molds, a possible wall trench, fired areas, and a prepared surfaces in the apron on the south side of the mound in N30-33 E180, August 25, 2001 (floor at 220).



Figure 03-22. N37 E180, showing the lower parts of filling episodes west wall profile.

2001, Zone IIIg-3b (see Chapters 9 and 10), was a red sandy loam with numerous small pale whitish yellow chert pebbles, that may have been chosen for its symbolic associations. The colors red and white have great importance to many southeastern Indian groups, and it appears a conscious attempt was made to include both in the creation of this fill. Thin red bands were observed extending out into the apron area, some of which appear to derive from this filling episode, suggesting that it may been open or exposed long enough for rainfall and erosion to occur. These deposits might also indicate that at times when Mound A was in use, portions of the south face may have been colored red. Many thin laminar fills from apparent washing episodes, some bright red and others lighter and darker (i.e., white or pale yellow and darker brown or black) in color were, in fact, observed running out onto the apron, suggesting some erosion took place while the mound was in use (Figure 03-23).

The 2001 units in the south trench did not extend deeper than about 2m into the mound, enough to demonstrate that multiple stages and construction episodes were present, but not enough to fully document them, or determine how many older and smaller mound stages were present deeper or further into the mound. The excavations in the south step trench did, however, demonstrate that great care went into the selection and mixing of sediments used in the fill, at least in some periods.

Excavations on the Top of Mound A in 2001

A one meter wide trench was opened across the top of Mound A in the direct impact zone approximately one meter west of the safety barrier near the eroding mound edge, and about 3m east of the boardwalk (see Figure 03-15). This trench, opened soon after the south step trench was started, was intended to determine the condition of remains dating to the last Mississippian period use of the mound, as well as to assess the extent of subsequent historic summit use and disturbance. The trench did not extend all the way across the mound, but instead stopped about 3m short of both the north and south slopes. Large hickory trees were located in these areas, and the gaps in the trench helped facilitate access to the boardwalk immediately to the west, which would have proven increasingly difficult as the trench grew deeper.

Little evidence for the remains of any final Mississippian temples/chiefly residences were found at and immediately below the surface atop Mound A, in what is now known as the Stage I



Figure 03-23. Washing episodes over a burned area where an AMS date of 960±40 BP was obtained (AD 1020 uncalibrated; Beta 161308) on the south side of Mound A, west wall profile, N35 E180, September 3, 2001.

mound. The fill of this zone was a dark yellowish brown silt loam, and it appears any such features and associated debris layers have either been churned by plant growth and historic use, or eroded away, or were located farther to the west, in the center of the mound (see Chapters 9 and 10). A number of root and rodent burrows were encountered immediately below the surface in the summit trench that may have originally been pit and post-like features subsequently taken over by animals digging in the presumably softer feature fill, but this is only speculative. The upper few centimeters of the mound fill was rock hard in most places, presumably from generations of park visitors trampling on it. A number of historic artifacts were also found in the upper soil layers, from park visitors, and possibly from activity associated with the superintendent's cottage that was atop the mound in the early years of the twentieth century. A charred beam fragment was found just below the surface that may be from this structure. It looked like a piece of cut wood, and hence was not dated (see Chapter 9). The fill of Stage I appeared to have come from general site midden, since prehistoric artifacts of stone and pottery were fairly common within it (see Chapters 9, 13).

A second, internal stage surface, in a much better state of preservation, was first found at a depth of about 60cm in several excavation units in the north central part of the trench (Figure 03-24). This surface, now identified as the summit of the Stage II mound, was characterized by a pronounced red sandy/silt layer that did not appear to derive from burning. A burned clay and charcoal lens was found on this surface in N48, E181 (Figure 03-25), and an AMS date of 510±40 B.P. (A.D. 1440; Beta 161309) was obtained from it, suggesting a possible terminal date for mound use. Based on the large numbers of dates obtained in subsequent seasons, we now know that this date postdates major use of the site and this stage by its Mississippian inhabitants by at least a century (see Chapters 9, 12, and 21).

Toward the north end of the summit trench this reddish Stage II surface layer had been placed atop a filling episode of gray silt, now designated Stage IIb, the 'gray platform' mound. A similar small platform mound, made up of more diverse fills, designated



Figure 03-24. Prepared orange-red surface atop the Stage II mound, originally designated Feature 26, in N52-N53 E181, August 20, 2001.

Stage IIa, was located below this reddish surface at the south end of the trench. The underlying Stage III mound thus had two small platforms built on top of it on this part of the summit before it was closed off and covered with the final Stage II mound cap (see



Figure 03-25. Area from the Stage II summit sampled for AMS dating, 3 September 2001. A date of 510±40 BP (AD 1440; Beta 161309) was obtained, suggesting a possible terminal date for mound use, but slightly later than subsequent dating suggests for this surface.

Chapters 9 and 10). The Stage IIb gray platform mound had a pronounced red veneer of sandy clay over it a few mm thick, designated Zone IIb-1b, that formed a sharp and well defined contact separating the platform from subsequent filing episodes. At the south end of this platform at about N50, E181, this thin red surface sloped downward, but was only followed about 40cm before the excavations ended in 2001 (Figure 03-26). The base and extent of this platform was not determined until the 2003 field season, when it was delimited atop the Stage III mound surface, overlying a structure that had been on that surface. The red cap and underlying gray silt fill appeared to end in unit N55, E181, at the northern end of the 2001 trench, suggesting an end to the platform in this area. The presence of a large tree in the next unit, however, precluded resolution of this question until subsequent field seasons. Excavations in 2002 and 2003, in fact, showed the gray silt fill had merely dipped, and that it continued on for several more meters to the northern edge of the mound (see Chapters 9, 10).

Excavations on the North Side of Mound A in 2001

Excavations on the north side of Mound A were initiated on August 1, 2001. The work was deferred until this time because of safety issues--the northern slope or face was much higher and steeper than the slope on the south side, in part because there was no ca. 2m thick apron at the base. Work did not begin, in fact, until the stairway was completed on the north side of the mound by the park maintenance staff, to lessen the chances of people, equipment, or buckets of fill falling on those working below. A total of fifteen 1m units were opened in a contiguous north-south trench that ran from the top of the mound to the base, a distance of between 12 to 13m on the slope, and out into the level apron area for another ca. 2m (Figure 03-27). An additional eight 1m units were opened in the adjoining area at the base of the mound; two of these units were later connected to the north end of the main step trench.



Figure 03-26. The IIb 'gray platform' mound with thin red veneers on its south side and top, as first encountered in N51 E181, August 27, 2001. Floor at 260cm.

Comparatively few features were found in the units opened at the base of the mound, even though the remote sensing had suggested one or more houses were present in the area examined. Thin patches of reddish-orange silt/clay, possibly daub or fired clay fragments, were found in a few units that may be from possible structures. One well defined pit, Feature 25, containing rock and fired clay was found at the base of the mound that may be from a large post (see Chapter 9).

Evidence for internal mound stage filling episodes or slope surfaces was found in the north trench, particularly in units opened deeper into the mound. The Stage I or final mound fill was found in every unit, and in some cases was a meter or more in thickness. In a few units at the top and just below the crest of the final Stage I mound summit, in N59-60, E181, a thin red clay cap later recognized as a continuation of the Stage II summit was observed. Slightly further down the mound, in N61, E181, the Stage I fill directly overlay the northern end of the Stage IIb gray platform mound. The northern margin of the gray fill in this unit also had a possible embankment of a different and more resistant fill to the north, something also observed in 2003 on the east side of the gray platform, as discussed below (Figure 03-28). Further down slope, evidence for several successive fills was observed, from the Stage I and possibly the Stage II and III mounds, with the lowest at the same level as



Figure 03-27. Excavations on the north side of Mound A, with Kevin Smith and the Middle Cumberland Archaeological Society, August 31, 2001.

the fills making up Stage III on the south side of the mound (Figure 03-29; see also Figure 09-01).

No evidence for multiple red lenses or washing episodes was found at the base of the mound at the northern end of the trench. This may be because comparatively few units reached subsoil in this trench, although the two northernmost units appear to have done so. It may also, however, be because earlier mound stages did not extend out this far, or because only certain portions of the mound may have been covered with bright red material. A mottled fired clay surface from a presumed mound stage cap or perhaps a horizontal fill was found near the base of the mound in N69 and N70, E181 (see Chapters 9, 10). Dr. Sarah Sherwood, the project geoarcheologist, upon examining it, was uncertain whether it was an accidental feature or not, and suggested that firing might have been a part of the process by which mound surfaces were stabilized. The discovery of this feature, and indications for other burned surfaces, led us to attempt archeo-magnetic dating in the mound area during the 2002 field season. Unfortunately, the samples that were taken produced aberrant results, suggesting the fired clay surfaces had been moved somewhat since the time of firing, perhaps because they were prepared elsewhere and brought in, or due to roots, which intruded many of the features sampled (Lengyel 2003). Little additional work was done on the north side of the mound after 2001.

Excavations West of Mound A in 2001

A total of 21 1m units were opened into the apron west of Mound A to locate one or more of Roberts' New Deal era trenches (Figure 03-30). The 1999 test excavations by SEAC personnel had shown that Roberts' trench fill was distinct from the surrounding apron, being much lighter and more mottled in appearance. The north-south trench immediately west of Mound A that had been originally found in 1999 was quickly relocated, as well as the outlines of several of the 1999 backfilled units themselves. The edges of an east-west trench were also located that ran close to, but did not connect with, the north-south trench. A short portion of another probable north-south trench was found at the west end of this east-west trench. Time did not permit the backhoe excavation, cleaning, and profiling of these trenches. Prior to backfilling, however, the trench margins were carefully mapped and outlined with numerous large nails driven flush with the edges, and then all the units were lined with black plastic and backfilled (Figure 03-31). Relocating and then excavating these New Deal era trenches to re-examine the apron stratigraphy should thus be a comparatively easy process.

Stabilizing the Excavation Units at the End of the 2001 Field Season

During the last several days of the 2001 field season, from September 3rd through 5th, backfilling and stabilizing of the existing excavation units occurred, since further work was assumed likely to occur at the site, probably in 2002. The 1m units opened in the apron away from the main trench were lined with black plastic sheeting and then completely backfilled, each with a 46cm (18in)



Figure 03-28. Apparent northern end of the Stage IIb gray platform on the north side of the mound, with a possible low embankment (the darker brown fill under the north arrow) for containing the fill, in N61 E181, September 4, 2001.

piece of iron rebar placed in the southwest corner, and coins, typically pennies dated 2001, placed on the bottom of the unit in one or more corners under the black plastic.

The trenches atop and on the sides of Mound A were not backfilled, but were instead stabilized, permitting excavations to begin in them almost immediately once fieldwork resumed (Figure 03-32). The floors and walls of these trenches were lined with two layers of thick black plastic, held in place around the margins of the trench by a double layer of white polypropylene sandbags filled using screened back dirt from the excavations. Canvas bags, which were used initially to prevent water from running into the units, were found to quickly rot and smell. The trenches were then covered with plywood sheets that were braced all the way around on their underside using boards 10x15cm (2x4in) nailed into the plywood. Each sheet of plywood so reinforced was itself nailed to the adjoining piece as they were placed across the trench. A third layer of black plastic was then placed over the entire frame, and covered with two more layers of sandbags. The trenches were thus covered with three layers of black plastic sheeting, a plywood cover reinforced by boards 10x15cm (2x4in), and protected with multiple layers of sandbags. This stabilization proved remarkably successful; when the units were reopened the following year, damage to the walls and floors was minimal.

After the covering was put in place, the site area was carefully cleaned, including removing all of the back dirt from the screening platform and other areas atop the mound. Over 1,000 sandbags were filled, most using screened back dirt from atop the mound. This removed only a small fraction of the fill actually present. Remaining fill from atop the mound was carried in wheelbarrows to back dirt piles established on the south side of the mound, which were then partially consolidated by hand, and covered with plastic. As part of site cleaning, Anderson ran multiple loads of debris to the nearby Crump dump and recycling center in his tan and green 1993 Dodge Dakota pickup, which served as a field vehicle in this and all subsequent field seasons; he got to know the dump staff quite well, and they allowed him to drop trash off even though the vehicle had out of state plates.

Observations at the End of the 2001 Field Season

The 2001 excavations in and near Mound A made a number of important discoveries, perhaps the most important of which was determining, at least in part, how the upper stages of Mound A were built and what the mound may have looked like when it was used by the Mississippian inhabitants of the Shiloh Mound Complex. The original mound surfaces were unlikely in mowed grass, as they are maintained at present, but were instead covered with clay or silt clay, and perhaps colored or decorated, at least over portions of their surfaces. The mound itself was built using a diverse array of fills, some of which



Figure 03-29. Two and possibly three major mound stage fills, from the Stage I and possibly Stage II and III mounds, half way down the north trench, in N65 E181, September 5, 2001.

were derived from general midden deposits, while others had been carefully selected and prepared (see Chapters 9, 10).

Evidence for large structures in the form of posts and burned areas was found at the base of the mound on the south side, and possibly on the north side, the latter supported more by the remote sensing program then the excavations. The possibility of summit structures was suggested by occasional features, but their existence was not confirmed until subsequent seasons. At least two upper mound stages were extensively sampled, the final Stage I mound, and some 60cm below the summit, the upper surface of the Stage II mound. A platform of gray silt loam and capped with a red sandy clay veneer was found at the north end of the mound, that in ensuing field seasons was found to rest atop the Stage III mound summit. A similar platform was present at the south end of the mound summit below the Stage II surface, but its existence and extent was not recognized until the 2003 field season.

Some 50m^3 of fill was collected and screened during the 2001 fieldwork. Artifact density on and in the two highest stages, I and II, where most of the



Figure 03-30. Excavation units opened on the apron west of Mound A in 2001 to continue locating Frank Roberts' 1933-1934 trenches.



Figure 03-31. Backfilling the excavations on the apron west of Mound A, after lining them with black plastic to make relocating them easier, August 16, 2001. Project Co-Principal Investigator backfilling with an unnamed volunteer.



Figure 03-32. Closing down the excavations at the end of the 2001 field season. Plywood sheets reinforced and tacked together with 2x4s placed over and then covered with multiple layers of sandbags and plastic.

fill came from, was low, suggesting they had been cleaned after abandonment. Of the almost 9,000 potsherds recovered, almost all were very small, and less than a third could be identified to a specific type or variety, suggesting they came from midden contexts (see Chapter 14). Most of these were grog- or shell-tempered plain wares, or grog-tempered cord-marked pottery. While over 1,300 shell tempered Mississippi Plain *var. Shiloh* sherds were identified, only 28 shell tempered sherds and three grog tempered sherds with incising were recovered, all too small to conclusively identify to specific types or varieties. Only 30 projectile points were found, all small or medium sized triangular-shaped forms (see Chapter 13). A predominantly Late Woodland and early Mississippian occupation was indicated by the artifacts recovered, with no evidence for earlier occupations. Paste and surface finish was monitored carefully, and whitish colored grog fragments were observed in a number of the sherds, like those reported from the early Mississippian Obion site in western Tennessee (Garland 1992). Likewise, a small percentage of the sherds had both grog and shell temper, suggesting the transition between these pastes was not abrupt locally.

Perhaps the most important finding from the 2001 fieldwork was that Mound A had a complex construction history, probably over many generations, and was likely dramatically different in appearance when it was in use than at present. During the Mississippian era, a series of large buildings were located around the edge of the mound, and possibly on the summit. These probably represented ceremonial structures, storage areas, temples, and elite residences. Mound A was thus the center of an elaborate and vibrant ceremonial complex, not the grass and tree covered earthen mass it now appears. If the sides of the mound were devoid of vegetation, and colored when it was in use, it would have presented a dramatic vista from a distance. The structures erected on and near Mound

A were themselves likely massive elaborately decorated wooden structures, based on descriptions from early historic accounts, like that of the temple at Talimeco in the province of Cofitachequi that DeSoto visited and looted (e.g., Garcilaso de la Vega, in Clayton et al. 1993:298–304). The buildings on and around Mound A probably served as the primary temples and residences for the leaders of the society centered at Shiloh.

The traditional interpretations and illustrations about how this mound looked, and indeed probably how most, if not all, Mississippian as well as earlier mounds in Eastern North America looked when in use—as green, grass covered earthen masses with simple thatched buildings on top, and few if any structures near the base—was thus thought, at the close of the 2001 season, to be almost certainly wrong (see Pursell 2004, Welch 2006). While they would have grown up in vegetation after abandonment, when in use their appearance was likely dramatically different. The way earthen mound sites are maintained and interpreted at parks across the Southeast, the 2001 fieldwork suggested, was in need of rethinking and revision (Anderson and Cornelison 2001c). The subsequent fieldwork at Mound A in 2002 and 2003, it should be noted, only reinforced this view. Indeed, when Anderson and Cornelison gave a paper at the 2002 Southeastern Archaeological Conference, and presented views of mounds as green, and then colored, audible gasps were heard throughout the audience (Figures 03-33 and 03-34) (Anderson 2012; Anderson and Cornelison 2002c).

The 2001 intensive testing also overturned earlier interpretations about the mound's construction history. Limited archeological testing conducted in the late 1970s had concluded that Mound A was built in a single stage, and suggested that no additional fieldwork was necessary to mitigate the loss to erosion that would eventually occur (Beditz 1980b, Beditz and Bellomo 1980; Welch 2006:28–30). The 2001 fieldwork demonstrated that Mound A was built in a series of successive stages, and that great care and ceremony may have accompanied the construction. The latter point was highlighted by the finding of red and reddish-orange fills, caps, and veneers on the sides and tops of at least some mound stages and filling episodes, and gray fills were found in the sloping sides of the mound and at the north end, on and near the summit. While some fills, such as those making up Stage I, were clearly midden deposits gathered from nearby areas, as often as not the materials appeared to have been carefully selected and processed, in some cases including white, red, and gray materials. Some of these colors, such as red and white, were known to have been highly symbolic to many southeastern Indian groups (Hudson 1976: 126–127, 132). Among some groups, the color red was associated with "conflict, war, fear, disunity, and danger" while white was "the color of that which is old, established, pure, peaceable, holy, united, and so forth" (Hudson 1976: 235). These colors were also associated with kinship groupings such as clans and even whole towns, reflecting social divisions within the societies. What this color symbolism meant to the people who used the Shiloh Mound Complex is unknown, but since the work in 2001 it has become evident—in large part through the work of Paul Welch and his student Corin Pursell—that the use of color played a major role in the construction of other mounds at Shiloh, and at other centers across the region (Pursell 2004, 2012; Welch 2006; see also Anderson 2012, Sherwood and Kidder 2011, Chapters 9, 10, 21 herein).

Comparatively limited information about the elaborate nature of the Mound A area—such as the existence of colored mound fills and surfaces, and large and presumably elaborate structures atop and beside the mound—was collected in 2001. Only the two highest and most recent stages were examined on top of the mound in any detail. Appreciably more fieldwork, it was quite clear, would be needed to understand what was once present, and to document what would likely soon be lost. We did not know, for example, the size, shape, or function of the buildings atop and around the base of the mound, nor the extent to which the mound sides and fills were colored, nor whether these colors formed designs or patterns of some kind. In addition, because the trenches opened in 2001 were only able to go just over 2m in depth, and the mound itself was some



Figure 03-33. View of the Cahokia mounds as traditionally interpreted in cropped green grass. Painting by L. K. Townsend, courtesy Cahokia Mounds State Historic Site.

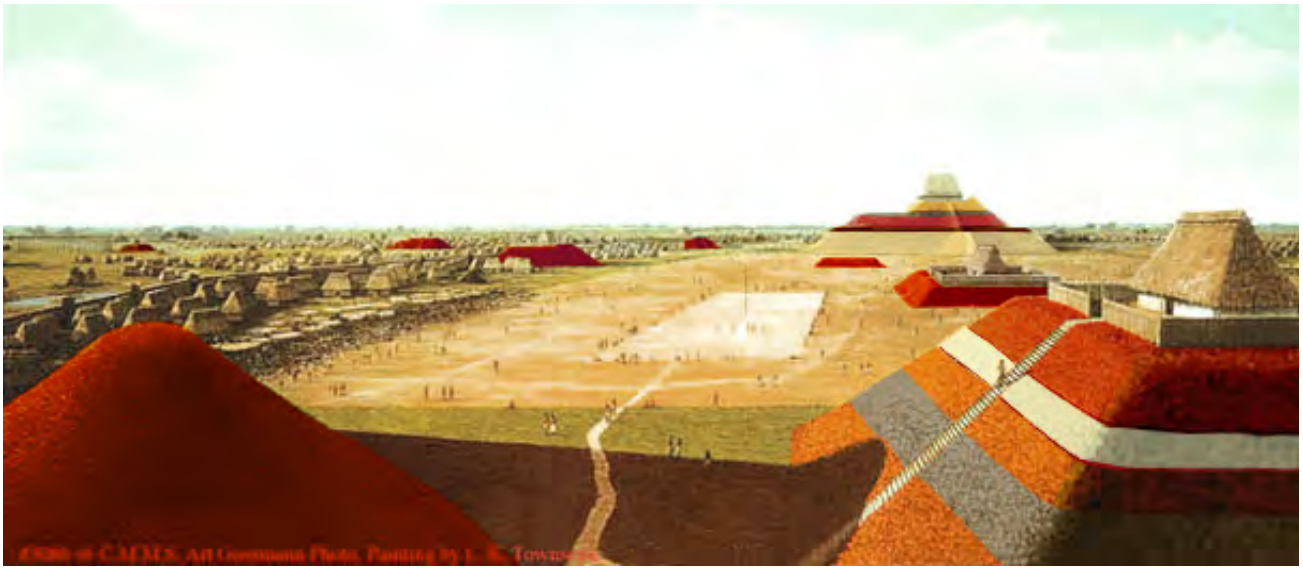


Figure 03-34. View of the Cahokia mounds as interpreted following the work at Shiloh in 2001 and 2002 and used in a paper by Anderson and Cornelison at the 2002 meeting of the Southeastern Archaeological Conference. Painting by L. K. Townsend, courtesy Cahokia Mounds State Historic Site.

7m high, there were undoubtedly many more stages and buildings remaining to be discovered. That is, smaller mounds were thought likely in the interior, whose tops or sides did not extend far enough out to be intersected by the trenches opened in 2001. On the tops of each of these interior mounds, furthermore, there were likely to be buildings. The remains associated with each stage could likely tell a great deal about the changing history, and successive occupations, at the center. Accordingly, we began to think about how mitigation might proceed even before we were out of the field in 2001.

2001 and 2002 Planning Activity

The 2001 fieldwork demonstrated that area in the direct impact zone around and including Mound A had a complex and, indeed, remarkable archeological record, possessing information of

great significance to the interpretation of local, regional, and national prehistory and history. Given this, planning for full mitigation of the erosional problem at the site began in earnest during and particularly following the close of the 2001 field season. A detailed draft mitigation plan and budget was prepared in late 2001, as well as a draft research design for the first season of data recovery that we assumed would occur in mid-2002 (see Anderson and Cornelison 2002a, 2002b for final versions). These documents were sent out for evaluation and commentary to a number of interested parties and scholars in January 2002, and were discussed at a second planning workshop held on February 22, 2002, in conjunction with the Current Research in Tennessee Archaeology (CRITA) meetings in Nashville, Tennessee. This workshop involved resource managers from state and federal agencies, the Chickasaw Nation, as well as a number of members of the professional archeological community (Anderson and Cornelison 2002c). The mitigation plan was revised following the meeting and submitted to NPS authorities for their review and consideration, and upon finalization was used to help guide subsequent excavations at the site (Anderson and Cornelison 2002a). The research design and budget for the first season of data recovery excavations to be conducted in 2002 was also finalized, and included specific field procedures to be used, areas to be examined, and research questions to be addressed, as well as a detailed budget (Anderson and Cornelison 2002b).

Mitigation Plan Development 2001–2002

The cultural resources in the area around and including Mound A were regarded as of extreme significance, comprising in some ways the heart and political and religious center of the late prehistoric society occupying the Shiloh Mound Complex. Accordingly, complete excavation, rather than random or intuitive sampling of this area, was considered the appropriate way to proceed from both a scientific and resource management perspective by all parties consulted. It was recognized going in that this would be a massive, time consuming, and expensive field, analysis, and reporting effort. The carefully controlled excavation of approximately 1500–2000m^3 of archeological deposits in the mound and adjoining areas, it was estimated, would be necessary, essentially encompassing the surviving portions of the apron and mound within ca. 7 to 8m of the current bluff line. As information about mound stratigraphy was gained during the ongoing fieldwork, judicious sampling of stage fill rather than complete hand excavation and screening was thought possible, a procedure that would maximize information return while minimizing the subsequent analysis, cataloging, reporting and curation effort.

Five additional seasons of fieldwork, each comparable to the 2001 testing effort, were thought necessary to examine the direct impact zone—the area of total loss—and address the research questions proposed during the planning process. A modular, or multi-season approach, with down time between major periods of fieldwork was recommended, to ensure lessons learned from preceding seasons and analyses guided the subsequent work. The 2002 fieldwork encompassed the first field season of the mitigation effort, about one fifth of the overall recommended level in terms of labor and funding. Funding for one additional season at a comparable level of effort was available, but work beyond that was uncertain and, unfortunately, never happened. Finding and justifying funding for a project of this magnitude proved to be a major challenge, even within a federal agency that had a legal responsibility to deal with the loss of a significant resource like the principal mound at Shiloh. The work that was ultimately done—and a remarkable amount was in fact conducted—was because Shiloh Superintendent Harrell fought for and found financial and administrative support for the project.

The cost of the mitigation, including the processing, analysis, curation, reporting, and post excavation stabilization, was estimated to be $2.5 million beyond what had already been expended through 2001 if accomplished by personnel from the NPS, SEAC.[1] An estimated 12–15 months of mitigation stage fieldwork was considered be the minimum necessary, either continuously or spread over several field seasons, with analysis

and reporting extending for 36 months beyond the completion of the final fieldwork. The mitigation plan that was prepared detailed the specific research questions and procedures that would be employed, and was summarized in Chapter 1 of this volume. A multidisciplinary and multi-season program of field and laboratory archeological research was proposed, to mitigate what would be lost, and to recover information important to interpreting and managing the remaining portions of the site. The mitigation program as conceived encompassed the complete excavation of the direct impact zone for features and other architectural and archeological remains, coupled with informed sampling of the fill. Specific procedures for the excavation, analysis, reporting, curation of materials, and the post-excavation stabilization of the site area were also advanced. Because no archeological research design, like no military battle plan, proceeds exactly as expected once fieldwork begins and new discoveries are made, the mitigation plan included the provision that formal research designs would be prepared in advance of each new field season of work. In the event modifications in bluff stabilization efforts changed the area of direct impact, by either enlarging or reducing it, the mitigation plan would itself be modified, as best as possible, to accommodate such changes.

Planning Workshop, Nashville, Tennessee, February 22, 2002

By late 2001 SEAC archeologists were aware that funding for at least one and possibly two more field seasons comparable in scope to the work conducted in 2001 was available from the park. As the overall mitigation plan and the research design for the first season of data recovery were being prepared, additional consultation was considered crucial given the scope and scientific significance of the project. Accordingly, a planning workshop was held in Nashville, Tennessee on Friday afternoon, February 22, 2002, to discuss the mitigation plan and research design, with the same parties invited who had participated in the earlier planning workshop in 2000. The workshop was held at the Ellington Agricultural Center in Nashville, in the same location where the annual CRITA meeting was to be held the next day. Archeologists from all across Tennessee and the Midsouth attend these meetings, and many come in the day before, making this an ideal venue. Nick Fielder, the Tennessee State Archaeologist with the Tennessee Division of Archaeology and Dr. Kevin Smith of Middle Tennessee State University obtained access to the building, and helped with the set up for the workshop.

A detailed information manual with copies of the draft mitigation plan, the draft research design for the proposed 2002 field season, and a copy of a preliminary report on the results of the 2001 fieldwork was sent to all those invited to the workshop. Following brief introductions by Anderson, Fielder, and Harrell, the meeting kicked off with a detailed, roughly hour long presentation by Anderson and Cornelison encompassing the results of the fieldwork in 1999 and 2001 as well as a summary of the proposed mitigation plan and research design for the 2002 fieldwork. The next three hours were devoted to questions, comments, and discussion among the participants about how to proceed. The dialogue helped shape the approach to the work that followed, and the revisions to the draft planning documents, and almost all of the workshop participants subsequently visited the project while the excavations were underway the next two years.

Participants attending the 2002 workshop included Chief Ranger Allen, SHIL; David G. Anderson, Archeologist, SEAC, NPS; Jennifer Bartlett, Federal Review/SHPO Archaeologist, Tennessee Dept. of Environment and Conservation; John H. Blitz, Department of Anthropology, University of Oklahoma; John Broster, Archaeologist, Tennessee Department of Environment and Conservation; John E. Cornelison, Jr. Archeologist, SEAC, NPS; Tom DesJean, Big

1 Approximately $1.6 million was spent on the fieldwork, analyses, and reporting at Shiloh from 1999 to 2005. This included funding for about half the proposed mitigation budget, given monies committed previously for fieldwork, analysis, synthesis, and planning from 1999 to early 2002, and subsequently to specialized technical analyses. Much of the final analysis, curation, and reporting effort came from voluntary labor by the project specialists and directors, or through support provided by SEAC administrators, who its staff to continue working on the project long after project funding ended in FY 2005.

South Fork National Park, Tennessee; Nick Fielder, State Archaeologist, Tennessee Department of Environment and Conservation, Division of Archaeology; Woody Harrell, Superintendent, SHIL; Charles Lawson, Archeological Technician, SEAC; Jessica McNeil, Archeological Technician, SEAC, NPS; Mike Moore, Tennessee Division of Archaeology; Kirk Perry, Administrator of Heritage Preservation, The Chickasaw Nation; Steve Rogers, Tennessee Historical Commission, Nashville; Gerald F. Schroedl, Department of Anthropology, University of Tennessee; Kevin E. Smith, Department of Anthropology, Middle Tennessee State University; Sam Smith, Archaeologist, Tennessee Dept. of Environment and Conservation, Nashville; Lynne Sullivan, Frank H. McClung Museum, University of Tennessee; Paul Welch, Department of Anthropology, University of Illinois, Carbondale; and Emily M. Yates, Archeological Technician, SEAC, NPS. The meeting was videotaped by Anderson and Yates, and while the discussion was not subsequently transcribed, the tapes have been migrated to DVD format, and are curated with the rest of the project records at SEAC.

2002 Field Season

Introduction to the 2002 Fieldwork

From May through August 2002, a team of archeologists from the SEAC, under the direction of David G. Anderson and John E. Cornelison, Jr. and crew chiefs Tammy D. Cooper and Charles F. Lawson, conducted a second season of multidisciplinary investigations at Mound A at the Shiloh Indian Mounds National Historic Landmark in western Tennessee. While the emphasis in what follows is on what was accomplished in 2002, the work built on what has been done the previous year and, indeed, expanded from the same trenches and profiles into the mound, which had been covered rather than backfilled. The 2001 fieldwork, as discussed in the last section, encompassed remote sensing, deep coring, precision mapping, dispersed test pitting, and the excavation of a 1m wide control trench into two sides and across the top of Mound A. This trench was deepened and significantly expanded in 2002, when the removal of the mound summit and slopes began in earnest in the direct impact zone. No units were opened in the apron west of the mound to relocate Roberts' old trenches. The work in 1999 and 2001, which had located three such trenches, was considered sufficient should re-excavation of one or more of them prove necessary.

Precision Mapping Activity in 2002

Precision 1m grid interval mapping of the site area continued in 2002 under the direction of Cornelison (see Chapter 7). Several thousand elevation points were collected, almost all in the vicinity of Mound A, as part of an ongoing effort to produce an accurate site map. As noted previously, a contour map was produced from the 1930s field records, but SEAC investigations in 1999 and after using total stations and high precision GPS receivers has shown that some major site features were as much as 7.62m (20ft) off on this map. Furthermore, in spite of efforts employing remote sensing and test excavation in 1999 and 2001, the vast majority of the New Deal era units remain to be found or accurately mapped nor, unfortunately, has it always been possible to locate units subsequent investigators placed at the site (Welch 2006:23–24). The SEAC team had placed permanent concrete benchmarks near the mound, and their locations, and the locations of every excavation unit opened in 1999, and hence for the grid employed thereafter, has were determined to submeter accuracy using a high precision GPS. Given the problems with mapping that have occurred at the site in the past, the SEAC excavation team did not want the same thing to be said of our work in a century or so. In early 2002, Cornelison visited the site to continue the high precision systematic mapping started during the 2001 summer field season. The trip was conducted during the winter months in order to access areas of the site that are covered in dense foliage during the summer.

Coring Related Activity Undertaken in 2002

The 2m core taken from the pond just south of Mound G in July 2001 using the vibracore was assessed later that year by Hazel and Paul Delcourt

(2001), who were asked to evaluate whether preserved pollen was present, and if it was, what level of effort would be required to conduct a thorough analysis. They noted that remarkable pollen and plant macrofossil preservation was indeed present. In the lower half of the core, the replacement of a hardwood forest through burning and clearing was indicated, with sunflower and *Chenopodium* coming in, among other disturbance species. Unfortunately, two modern AMS dates were obtained from organic material from near the bottom of the core, together with an OSL date of several thousand years B.P. from the same sediments (see Chapter 5). While the Delcourts thought a pollen record spanning a great deal of time, and of considerable antiquity was present, some contamination was clearly apparent, that they thought likely occurred during the recovery process. A detailed analysis of this particular core was, accordingly, not considered worthwhile given the ambiguity that would always be associated with its dating and hence content. As part of specialized analyses associated with the project, a goal was set to obtain a second core from the pond, and one was ultimately collected in July 2004 by Scott Meeks, then a student of the Delcourts (see Chapter 5).

General Excavation Activity in 2002

In the vicinity of Mound A, seventy-seven 1m units encompassing some 50m^3 of fill were opened in 2001. Another 179 1m units were opened during the 2002 field season, all on Mound A, and another ca. 100m^3 of fill were removed. The use of 1m units, as per the research design, was to maintain fine grained provenience control, and to standardize fill samples. A total of 256m^2 were examined on and near Mound A through the 2002 field season, just under one half of the total direct impact area and, by volume, 150 m^3, roughly 10 percent of the estimated 1,500 to 2000m^3 that needed to be removed. Fortunately, we learned to dig progressively faster each season, while retaining excellent control. By the close of the 2002 field season we believed it was realistic, as our mitigation plan proposed, to be able to examine the entire impact area in four more field seasons comparable to the one we had just finished. The 2003 field season, in fact, saw yet another dramatic increase in the volume of mound fill examined, as recounted in below, but unfortunately that year also proved to be the last full field season. Finding the funding to complete the investigations ultimately proved to be the biggest, and ultimately insurmountable, logistical challenge the project faced.

Excavation of the 1m "control trench" started in 2001 continued in 2002, to determine mound stratigraphy while obtaining well controlled samples of mound fill. The 1m units in the control trench were opened in arbitrary 10cm levels unless obvious features were recognized, such as prepared surfaces, posts, or hearths. The fill in units to either side was removed using natural or cultural stratigraphy, typically features or mound surfaces, or depositional/filling/erosional episodes. Examining the eroding eastern bluff face was not attempted early in the 2002 field season, again primarily for safety reasons, and because we needed to better understand how the mound was built, to facilitate interpretation of exposed profiles. As the excavations moved downward into the mound they also expanded toward the drop off, however, and later in the season and again in 2003 work did take place on the eroding edge and eastern face, which sloped down and out for several meters before plunging to the gabion wall along the river.

Crew safety, of necessity, was of particular concern, and received great emphasis throughout the project. A detailed safety plan for the mitigation program was prepared by Law Engineering, Inc., who at the time were handling the construction of the erosional barrier along the river. This safety plan included engineering soils analyses to assess the possibility of profile or mound surface slumping or collapse. Practical training in safety procedures was provided to the excavation team on June 6th and 7th, 2002, including CPR, basic first aid, and the proper use of safety harnesses, fences, and ropes. Gary W. Rhodes of Law Engineering gave the presentation on the soils engineering that was done, while Scott Wells gave the safety lecture. Every person working within 3m of the edge of the mound or on the eroding slope wore safety harnesses tied in with

ca. 5000 pound test nylon rope to massive hickory trees located on the mound summit. Great attention was paid to protecting the rope from wear or abrasion, and ensuring there was minimal slack. As part of the safety program the park arranged to have Captain George Vaughn of the US Public Health Service give the field crew, and indeed the entire park staff, a detailed lecture on Tick-borne Diseases in the Southeast Region, which was held on June 7th, following the earlier safety lectures that day. One of our crew members subsequently contracted Ehrlichiosis from a tick bite during the 2002 field season and required extended hospitalization. Her symptoms were not immediately recognized by local doctors, complicating her treatment, although she fortunately fully recovered. Tick bites can be potentially life threatening, and are an occupational hazard every bit as serious as snakebites, lightening, or other accident common in southeastern fieldwork.

As the excavations expanded in 2002 the safety fence by the edge had to be relocated, mandating the careful clearing of vegetation from the upper part of the eroding slope. When the existing wooden fence had been reinforced in essentially the same location on the level summit in 2001, fill from new postholes was screened, but this practice stopped when the safety barrier was relocated onto the eroding bluff slope in 2002 and after. The reinforced wooden safety fence was removed at the start of the 2002 season and replaced by a multistrand steel cable safety fence at the outer edge of the work area. This fence was relocated downward and outward several times as the excavations progressed over the next two years. The cables were tied in to large trees to the north and south along the bluff, to ensure the barrier would remain in place, and offer a refuge, in the event of a collapse of a portion of the summit. The safety fence was ultimately removed at the end of the 2003 field season, to facilitate the backfilling that occurred the following year.

Fortunately, no significant equipment or collapse/fall related injuries occurred during any of the field seasons. Insects were a problem, however, primarily ticks, yellow jackets, sweat bees, and fire ants, although mosquitoes were rare atop the mound. Other unwelcome visitors included snakes and small mammals, which were sometimes found in and near the units. A copperhead, for example, was found under a step on the stairway on the west side of the mound on May 31, 2002, and snakes were occasionally found under the tarps when they were pulled off in the mornings. Perhaps the most serious and constant threat were thunder storms, which came up frequently in late summer. Mound A and the site area proper was one of the highest pieces of land overlooking the river, and hence was a likely target for lightening. Fulgurites, soil fused by a lightning strike were, in fact, found in the mound fill on occasion. Storm warnings were relayed to the crew from the park's visitor center via radio, giving us ample warning in most cases, although occasionally bolts of lightning struck nearby, prompting evacuation into on-site vehicles or a large equipment trailer we had placed on the apron on the west side of the mound during the 2002 and 2003 seasons. From our vantage point high above the river we could watch or hear storms developing, especially to the east given the view of the river valley, and the crew became quite proficient at quickly covering the units and getting under cover.

One lesson we learned the hard way in 2002 was to always make copies of time and expense forms before shipping them off from the field to our offices in Tallahassee for processing, including crew payment. This was a standing order, in fact, but the technician we had assigned to send the records assumed nothing could possibly go wrong, and had skipped making the copies on occasion without telling the project directors. On July 26, 2002, the Federal Express Boeing 727-232AF carrying our records undershot the runway on its final approach to the Tallahassee airport at 5:36A.M. and crashed (Figure 03-35) The accident report is available online at http://www.1001crash.com/index-page-description-accident-Fedex_B727-lg-2-crash-98.html. No one on the plane or ground, fortunately, was killed or injured, but the project records for the preceding two weeks were lost and had to be reconstituted, which proved quite time consuming since original purchase receipts were included. Surprisingly, the Fed Ex package was actually delivered several months later to

SEAC, having survived the crash. Needless to say, cutting corners like that did not happen again.

During the 2002 field season and again in 2003, the fill from every unit was water screened through ¼-in mesh, replacing the dry screening employed in 2001. The latter was too considered too slow and damaging to fragile artifacts, given the fine grained sediments, usually silt clays or silt loams, that comprised much of the mound fill (see Chapters 6 and 10). While erecting tripods or platforms for dry screening was a comparatively easy matter, setting up water screening, given the volume of fill to be processed, required considerable skill and ingenuity, and a substantial investment in equipment. After some trial and error, the water screening and indeed all project logistical challenges were overcome, typically by Cornelison, who enjoyed solving problems like these, and in fact had come out to the project early, from May 6–14 with several SEAC staff members, to get started on the set up (see Chapter 6). In this case, however, the challenges were particularly daunting. Water had to be obtained from the Tennessee River some 24 to 30.4m (80 to 100ft) below the site, which we did first using a series of staged gasoline powered pumps.



Figure 03-35. Fed Ex crash near Tallahassee, Florida, July 26, 2002. Although no one was injured, project time sheet and other financial records were temporarily lost because the technician sending them to SEAC failed to make a copy. The package with the records was delivered several months later, having survived the crash. Image courtesy: http://www.securiteaerienne.com/ill/FedEx-1478-Boeing-727-crash.jpg

As refueling the pumps proved exhausting as well as dangerous given the slopes involved, this system was replaced by submerging a well point with the lift to reach the mound in the river, powered by an electric line from a gasoline generator set up near the mound. Water was pumped from the river to a 9,463L (2,500 gallon) heavy duty plastic storage tank placed on the apron south of the mound, from which it was dispersed to water screening areas in hoses using a gasoline powered pump. These same hoses were also used to spray down the deposits during the excavations, which tended to dry out rapidly in the sun and heat. The electric generator was also used to power hand tools, such as a grinder for sharpening tools, saws and electric drills for building equipment, and fans in the trailer and other areas. Electric reciprocating saws proved to be particularly effective in cutting and removing tree roots of all sizes in the excavation area with minimal damage to the surrounding archeological deposits.

A roller coaster-like rail system was used to remove 55 gallon barrels of fill from the mound to a water screening area at the bottom on the north side (Chapter 6). While the barrels reached a top speed of ca. 24km (15 mph)—we timed their motion to determine this—they were slowed by gravity, through a slight rise at the end of the rail line, to nearly zero at the water screening area, which was designed to hold and process several barrels at a time. Most days 30 or more barrels of fill were sent down the rail system. While a few delivery failures occurred initially due to overfilling or overzealous launches, placing a plastic cap over the tops of the barrels prevented a loss of fill if they tipped over. Once the crew became familiar with the system, such failures were rare. Barrel control and movement was itself a logistical challenge, since at any given moment fill from a dozen or more proveniences might be being collected, and when the barrels reached a critical level, usually about half to at most two thirds full, they were sent down, since full barrels were difficult to unload at the screens and being a bit top heavy, had a greater likelihood of spilling. Moving barrels around, in the event those further back in the line were ready to go earlier than those closer to the drop, was

accomplished using sidings and switching systems essentially like those employed by model railroaders.

Over 1,000 barrels representing approximately 100m^3 of fill were collected and screened during the 2002 fieldwork. Given the massive volume this represented, >98,420L (26,000 gallons), siltation fences and hay bales were placed around the screening area at the base of the mound to control runoff, and the crew became expert at channeling and diverting the mud. So much fill accumulated in the water screening area, and managing this proved so time consuming, that it was necessary to raise the height of the screening platform, and the rail line itself, at the start of the 2003 season. All of the barrels were tagged with a piece of duct tape inscribed with a permanent marker stuck to the top on the outside, with a filled out provenience card inside a plastic bag placed in the fill itself. The number of barrels from a provenience was recorded. Everything in the water screen frame, save for modern organic debris like roots, was collected and returned to a laboratory trailer at the end of each day where it underwent a second round of washing followed by sorting and bagging. This laboratory was by a house made available to the project team in the resident's circle by the park visitor's center. The system provided excellent control over artifact recovery, and given the extensive fine screen/flotation samples collected each season, as well as the care exercised to record the volume of each provenience, it is possible to quantify the differences between the various recovery strategies employed, such as dry versus water screening, or the use of fine screen versus ¼-in mesh.

In 2002, as the excavations expanded away from the control trench, individual filling episodes or strata were removed in their entirety using 1x1m squares for horizontal provenience control, which enabled a much greater volume of fill to be removed than when 10cm levels were employed. In some cases these strata were up to a meter in thickness, requiring many barrels of fill from specific proveniences. Profiles were photographed or drawn showing these strata, complementing the level/strata forms, with elevation readings for depth control routinely taken using a transit or auto level from fixed datums. Beginning and ending elevations were recorded from the NE, NW, SE, SW and center of every unit for each level or strata removed. Digging by natural units proved quite challenging, especially when subtle color changes might be all that indicated separate filling episodes or surfaces, or when structure floors found on stage summits were sometimes stacked, in some cases vertically separated from one another by no more than a few centimeters. The mound proveniences also sometimes changed dramatically or had varying degrees of preservation over short horizontal or vertical distances. As the excavations progressed, however, the field team became progressively better at recognizing filling episodes and surfaces and, if anything, probably erred more often on the side of caution than haste in removing fill.

Wall profiles were kept straight through careful eyeballing the unit strings and wall lines from above, actual instrument measurement and, as recounted in the 2001 season summary, by a technique as basic as washers suspended from strings. This was a reinvention of a classic New Deal era field procedure that can be seen on the commemorative poster celebrating the 60th anniversary of the Southeastern Archaeological Conference that NPS SEAC sponsored in 1998, and that is available at http://www.nps.gov/seac/tnk/seacposter/sac/sac.htm (Figure 03-36). As discussed in Chapter 6, a number of strategies were used during the fieldwork as progressively larger areas were opened. Squares of plywood roughly 1x1m in extent were used as platforms to walk on or work from when standing on the mound surface, to avoid damaging cleaned floors, or contaminating deposits with tracked in soil. Having water hoses present meant that wetting down large areas could be accomplished quickly and easily, both to bring out colors for photography and profile drawing, and to prevent the deposits from baking out, which they had a tendency to do in the hot summer sun. Hand held sprayers were more typically used for individual features or unit profiles, and could be easily filled from the hoses.

A fine screen/flotation sample at least 5 liters in volume was taken from the northeast corner of each level in the control trench, and the fill of every

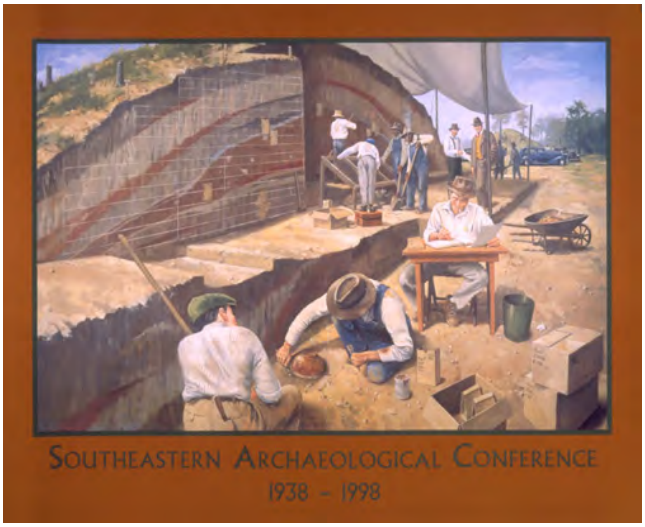


Figure 03-36. Oil painting of a southeastern mound excavation during the New Deal era by Martin Pate commissioned by NPS SEAC for the Southeast Archaeological Conference's 60th anniversary in 1998. The painting showed procedures for mound excavation and maintaining straight profiles employed at Shiloh in 2001 and after.

feature encountered was floated in its entirety. All fill from every well defined floor or surface encountered on the top and sides of the mound was also collected and floated, to ensure the recovery of paleosubsistence evidence as well as fine screened samples from these proveniences. A total of 1648 flotation samples were collected during the 2001 to 2004 fieldwork, all of which were processed using the Flot-Tech Model A flotation machine, which was based at the field laboratory until the end of the 2003 season. Monte Abbott, a graduate student at Washington University in St. Louis, served as the project in-field ethnobotanist in 2001, and saw to the processing of samples collected that season. In 2002 and 2003 the samples were collected and floated by the members of the project team who had become familiar with the flotation machine during the preceding season, and who trained new crew members in its use. Abbott (2003) spent the 2002 season analyzing samples, and produced a report on his findings that helped guide subsequent analyses by Kandace Hollenbach (see Chapter 16). Fill from obvious disturbances like roots or animal burrows was kept as a separate provenience apart from general level or strata contents and screened through ¼-in mesh, but was not typically assigned a feature number. Large pieces of charcoal found anywhere in the excavations was routinely saved for ethnobotanical identification and for radiocarbon dating, with particular care taken to preserve larger pieces of wood, seeds, or corncobs intact by wrapping them in foil or gauze or both.

An attempt to collect samples for archeomagnetic dating was made in 2002, based on the observation from the previous season that fired clay areas were present in the mound. Stacey Lengyel visited the project from June 4–6, and trained several members of the project team in the collection of samples from fired surfaces (Figure 03-37). Six samples were collected in 2002, three from fired surfaces found in 2001 and left intact because of their potential for archeomagnetic dating, and three from well defined surfaces in the upper part of the mound exposed in 2002. Unfortunately, no useful determinations were obtained when the samples were processed, which Lengyel (2003) thought might be because some of them, although appearing to have been fired, may have actually come from deposits that were either disturbed or had not been fired *in situ*. She suggested, in fact, that the soils might have been brought in from somewhere else, and had possibly been processed prior to their use in construction by firing, to bring out reddish colors (see Chapters 9 and 10). Lengyel suggested that future samples should only come from clearly undisturbed, well fired features having a high clay content, such as hearth basins or the floors of burned structures. Some of the sample cubes had not been properly taken, furthermore, with edges that were incompletely squared off or that had contextual data that was partially obscured by lumps of plaster. Taking these samples, each of which required several hours to prepare, the results indicated, requires a great deal of training, patience, and skill. Several of the presumed fired surfaces examined were within 50–60cm of the present ground surface, on the Stage II summit, furthermore, and could very well have been disturbed even if they had been originally well fired. Given that fired clay hearths were found on the Stage II and Stage III summits, and that fired surfaces were also found deeper in the mound (see Chapters 9 and 10), when mitigation investigations occur in



Figure 03-37. Stacey Lengyel teaching SEAC archeologists how to take archeomagnetic samples from possible fired areas atop the Mound Stage II summit, June 5, 2002.

the future at Mound A, new attempts should be made to collect samples for archeomagnetic dating. In such an event, however, more time should be devoted to training, or the samples should collected by people for whom this is a routine activity.

Several large trees were removed from on or near the mound summit in 2002 for safety reasons, since the excavations in 2001 had begun to seriously cut into their root systems, and their removal was essential to further excavation. Tree and subsequent stump removal proved a major logistical challenge in 2002, with a great deal of time invested in the careful removal of fill from around the roots, to facilitate their cutting with hand and power saws (Figure 03-38). Park maintenance staff again provided extensive help to the project, returning on several occasions to remove progressively lower-lying portions of the root mass as the excavations progressed into the mound, and cutting back roots in the profiles. In a twist on the classic archeological dictum that the best features are found under backdirt piles, hearths were found near or even intruded by stumps at both the north and south ends of the Mound A summit (e.g., Features 83, 85, see Chapter 9). While originally well-defined fired clay basins, these had been extensively cracked by root intrusions, rendering them unsuitable for archeomagnetic dating. A dense concentration of small chert blade-like flakes in association with some thin black shell tempered sherds was found *in situ* directly under the southernmost stump and designated Feature 71, possibly representing caching behavior (i.e., materials in a small bag that had since vanished) or, perhaps, the casual pitching of knapping and other debris down a hole of some kind. Like all features, the fill was removed in entirety for flotation (see Chapters 9 and 13).

A large trailer roughly 6.1x3.6m (20x12ft) in size was placed on the apron on the west side of the mound, and was where we stored equipment each evening, and was used as a shelter during rain storms. It had lights and an air conditioning unit attached, which could be operated when the generator was running. Typically, though, this trailer was only used for storage and as a temporary shelter, and locked at night to deter possible theft. A second, somewhat larger trailer that used as a lab was located near the crew house in the residence circle near the park's visitor center. Both trailers were maintained throughout the 2002 and 2003 field seasons. In 2002, the trailer near the crew house in the resident's circle was where flotation samples were processed initially, and where incoming artifact and sample bags were stored and kept in order. Flotation activity was moved to the Hagy House crew quarters later in the 2002 field season, since the process yielded a lot of sediment runoff that was difficult to manage and unsightly, and located near both park staff housing and the park visitor's center. On rainy days the lab trailer provided a means to keep both paid crew and some of the many volunteers who assisted the project productive during the inclement weather.

Sunscreens were placed over the excavation area to reduce the direct sunlight; during the 2002 season these were opaque and typically blue or



Figure 03-38. Stump removal from the Mound A summit.

green colored tarps suspended by cords tied to trees. Metal frame awnings were also placed over the screening platform in the center of the mound, to shade work tables and chairs where project notes and records were maintained, like bag tags, sample lists, square level and feature forms, and so on. A second awning was placed at the base of the mound on the apron on the west side, between the trailer, and the original stairway up the mound that was located here. This general area was where the crew ate lunch each day, usually sitting around in a circle. A smoking area was located by the side of the trailer, the only place where this was allowed during the excavations. Two additional portable awnings were used to cover excavation units atop the mound, and were moved as necessary to provide relief from either sunlight or rain.

As during earlier seasons, the excavations also had quite a few visits from archeologists and NPS personnel interested in seeing the work from a professional standpoint. Shiloh Superintendent Harrell and Chief Ranger Allen, staunch advocates of the project, came by the mound almost every day, and invariably asked insightful questions about how the work was coming, what we were finding, and what park personnel could do to help (Figure 03-39). SEAC archeologists and staff members John Ehrenhard, George Smith, Bob Wilson, Joan Gardner, Janice Burke, and Mike Russo flew to the site on the park plane on June 19th visiting for a few hours, followed by a lengthy planning meeting at Hagy's Catfish Hotel over lunch. Some archeologists came with field school students, while others brought professional crews working in the general area. Sarah Sherwood brought her Middle Tennessee State University field school by the site on June 17th. On June 20th, Larry McKee, Matt Logan, Isaac Deter Wolf, and Sirena



Figure 03-39. Superintendent Harrell (top of trench, left), project leader Cornelison (top of trench, center), and Ranger Allen (top of trench, right) watching as SEAC archeologist Steven Kidd scribes the western profile wall of the Mound A 'backhoe trench' prior to mapping that profile, October 28, 2003.

Bragg from the Nashville office of TRC, Inc. stopped by to visit the project. On June 24th, Boyce Driscoll and several of his colleagues from UT's Archaeological Research Laboratory (ARL) came by with field school students working at Dust Cave in northern Alabama. The SEAC team visited the Dust Cave work later that week, on June 27th, when fieldwork at the mound was rained out in mid-morning. At Dust Cave, Sherwood gave a talk on the geoarcheological research she was doing. Her work there, and earlier meetings with her at Dust Cave and at professional conferences had prompted the decision by Anderson and Cornelison to involve geoarcheology in the Shiloh project at a high level, probably the best personnel decision we made given the help she provided in interpreting the mound stratigraphy, as detailed in Chapters 9 and 10. Mark Norton from the Tennessee Division of Archaeology came by on June 25th from his lab at Pinson Mounds near Jackson. Three archeologists from the TRC Garrow Atlanta office, William Duneworth, Mildred Hartley, and George Price, stopped by on June 26th. Paul Welch visited the project from June 28–30, and again on August 6–7, the latter time with Brian Butler. Butler suggested that an unusual hearth we had found on the Stage IIa summit, Feature 75, with two bowl-shaped depressions on one side, might be an incense burner. Given its unusual nature, during the 2003 field season we removed this feature intact, by wrapping it in gauze and coating it in plaster. Butler also suggested that drip lines might be present on stage surfaces outside wall lines and trenches.

Charles McNutt from the University of Memphis came by on July 17th, driving right up to the mound with two hitchhikers he had picked up in the park. On July 29th and 30th Tim Pauketat, Susan Alt, and seven student supervisors came by from the Grossman site field school in Illinois, Alleen Betzenhauser, Tamira Brennan, Steffanie Ellienke, Ian Fricker, Jeff Krochten, Paul Millhouse, and Tracy Steffgen (Figure 03-40). Tim suggested that the south face of the mound may have accreted horizontally in places, with clay buttress-like caps placed at the edges of surfaces, and that the seemingly rippled surfaces observed in places might have been an attempt to prevent/reduce erosion.

The 2002 SEAC field crew included Klint Baggett, Ben Barnes, Jennifer Bedell, Tammy D. Cooper, Rolondo Garza, Zuleya Gokay, Rachel Horlings, Kellei Jefferson, R. Steven Kidd, Charles Lawson, Christopher M. Lydick, Jessica McNeil, Robert Moses, Heather Mustonen, Corin Pursell, Donna Rausch, Josh Wells, and Emily M. Yates (Figure 03-41). Many avocationals and professionals also visited and volunteered their time, with almost 400 person days contributed to the fieldwork in 2001 and 2002 alone, equivalent to roughly one quarter of the paid effort. Volunteer coordination was handled by Emily Yates both seasons, who also gave tours to many of the park visitors who walked the mile from the welcome center to the mound group. The road running by the mounds that crossed Dill Branch had been closed to reduce access, since the mound excavations were culturally sensitive and the work area itself, which was fenced off, could be somewhat hazardous. Surprisingly, quite a few people, usually several each day, walked out to the mounds to see the fieldwork. Everyone who did so was greeted at the outer nylon fencing around the apron by one of the NPS team, usually Emily, and given a tour. All of the senior staff members involved with the project grew used to answering questions and giving tours. We quickly found that using a laser pointer was far easier than jumping in and out of the units when showing people features and strata in the deep excavation trenches,.

Sometimes larger groups came by, such as Boy Scout troops or local historical societies (Figure 03-42). The Hardin County Historical Society visited the site on August 22nd, for example, and the members were given a lengthy tour by the project directors. Two scouts from the local area volunteered for a week, earning the Archaeology merit badge in the process from Anderson and Cornelison, who had both been Eagle Scouts. Among the many volunteers who came by was Cornelison's mother, Ann Miller, who worked on the site from June 18 –20. On June 29th and 30th and again in July 13th and 14th, the SEAC team under Cornelison's direction worked with about a dozen avocational volunteers



Figure 03-40. Project co-leader Anderson (fifth from left) gives a guided tour of Mound A excavations to supervisors and crew chiefs from the University of Illinois Urbana-Champaign Grossman Site field school under the direction of Tim Pauketat and Susan Alt, July 30, 2002.

from the Chattanooga Area Relic and Historical Association, who conducted systematic metal detector survey work at a number of locations on the battlefield, and who came out the following year on two occasions as well (Cornelison and Cooper 2007). Graduate student Megan Howey from the University of Michigan spent almost three weeks on the site in late July and August, while Tamira Brennan from the University of Illinois worked for two weeks in August, as did Nicole Drews from UT, Knoxville. Susan Hollyday, an avocational from Nashville, who had volunteered in 2001, came back and spent a week at the site in mid August. Many other volunteers were present from a day to much longer periods, and their pictures were placed on the project web site.



Figure 03-41. Some of the 2002 SEAC crew at the base of Mound A (L to R): Steven Kidd, Josh Wells, Nicole Drew (volunteer), Ben Barnes, Robert Moses, Donna Rausch, Emily Yates (volunteer coordinator), Heather Mustonen, Christopher Lydick, Jessica McNeil, Rachel Horlings, Jennifer Bedell and Addison Carter (volunteer) (facing NNE).

Geoarcheological research continued to be a major part of the project, to document mound and apron construction history, appearance, and contents. Sarah Sherwood, then at Middle Tennessee State University, came out to the project twice, on May 9th to collect samples, and again June 17th with her field school. The project directors were in regular communication with her from the 2001 season onward, planning sampling visits, and exploring how to involve her in the project at a much higher level, which ultimately happened when a contract was negotiated to do just that the following year, as detailed below. Goals include determining how long individual mound stages may have been in use, what they may have looked like when in use, and sources for the colored soils and other materials in their fill. One important finding Sherwood made early on was that the bright red silts and the gray clays used in some of the mound filling episodes appeared to have come from the immediate site area, since similar deposits were observed in the bluff profile below the mound. Terminology used to describe mound construction episodes and content throughout the report, wherever possible, are taken from Sherwood's work (see Chapter 10).

High resolution digital images (N=3135) continued to be taken during the 2002 season, usually about 50 to 75 every day we were in the field (Figure 03-43). The digital images continued to be used to prepare the project web site, with images and text documenting the fieldwork on a



Figure 03-42. Project Volunteer Coordinator Emily Yates leading tour of Cub Scouts at Mound A, July 14, 2001.

day by day basis, in most cases posted the same day the shots were taken. Each night during the fieldwork the content and exposure (lighting, contrast, color values) for every digital shot was carefully examined to see if it needed to be retaken. This was typically done while selecting images for the web page. All features, floors, and mound surfaces and profiles were mapped, drawn, and photographed, in most cases at ca. 1x1m or 1x2m resolution, with wider area maps and images produced as appropriate, as well as numerous shots documenting the excavation procedures and crew members. In fact, taking shots of the fieldwork one to several time each day became a standard practice, as another check to determine which units and tasks were undertaken, and by whom, in the event such information was needed to resolve discrepancies in field forms or bags. Since all of the forms and sample tags were checked by the crew chiefs at the work station atop the mound each day, this rarely proved necessary. Almost every level/strata of every unit where anything unusual was noted was photographed, as well as every feature, using both side or oblique and overhead views. A total of 38 feature numbers were assigned in the 2001 field season, and another 53 in 2002, for a total of 91. These figures indicate the pace of the excavations was picking up, but the real numbers came in 2003, when 523 new features were added, for a total of 614. Another 8 features were found in the brief testing conducted in August 2004, for a grand total of 622 from Mound A from 2001 through 2004.

Because water damage could cost us days of effort to clean up, and irrevocably damage profiles and floors, a great deal of thought went into developing procedures to protect the excavations in 2002 (see Chapter 6). Sheets of plywood reinforced using 10x15cm (2x4-inch [in]) beams were typically laid down over deeper units, which were then covered by thick (4 mil) black plastic. This worked fine in 2001, when the area examined was never more than a meter wide, albeit in trenches of varying length and depth. As the excavations expanded in 2002, however, the area that had to be covered and uncovered each day grew to between 200 and 300m^3 on the top and sides of the mound, and was in some cases up to 3m deep, albeit with



Figure 03-43. Project co-director Anderson taking a picture in the southern trench as SEAC archeologist Rachel Horlings (in trench) and volunteer Susan Holiday look on, August 25, 2001. Anderson took most of the technical shots during the excavations, often using innovative means to get the best possible images.

stepping. A series of 6.1m (20ft) long 10x15cm (2x4in) beams tied into specially constructed frames were used to cover the progressively deeper and more sloping surfaces. The 1.2x2.4m (4x8ft) reinforced plywood sheets that were sufficient to cover the excavations in 2001 reached 1.2x6.1m (4x20ft) in length in 2002, requiring the efforts of several people to put them in place. Once they were set down, two layers of thick black plastic were then pulled over the top of the 10x15cm (2x4in) beams or reinforced plywood sheets, with the edges of the plastic weighed down with sandbags. As rainstorms were a frequent and sometimes remarkably sudden phenomenon, we became adept at covering and uncovering the units, although this still took the entire crew—which was typically between 15 and 20 people each day in 2002—some 15 to 20 minutes in emergency conditions. As the excavations grew larger and deeper, this approach grew increasingly untenable, and in 2003 an ideal solution was finally reached, when it was realized that two or three large, ca. 15x30m (50x100ft) heavy duty tarps could be quickly pulled over the excavation area and sandbags placed intermittently around the margins in a matter of minutes.

Excavations on the South Side of Mound A in 2002

The south side of Mound A witnessed extensive effort in both 2001 and 2002, in part because the slope was comparatively gentle compared to the north side, because the presence of a ramp suggested this side of the mound may have been a formal entrance area, and because a remarkable series of filling episodes were found soon after excavations began, prompting continued investigation. In 2001 a trench 10m long and 1m wide was opened on the south side, running 7m up to the top of the mound, and another 3m out onto the apron, with an additional ten units opened in the apron. In 2002 the area on each side of this trench was opened from the base of the mound to the summit, and from the stairway to the eroding bluff edge, to better document the features and stages that had been found the preceding year. The main work was directed to units 1m to either side of the control trench in 2002, with only portions of the upper humus/Stage I fill removed further away; it was not until the 2003 season that the entire slope on the south side of the mound in the direct impact zone was removed.

The sides of the last three construction episodes were exposed, the Stages I, II, and III mounds, using stratigraphic levels taken from either side of the control trench. The A horizon was first removed over a large area, as well as the stone slabs and an underlying pea gravel fill from the New Deal era stairway (Figure 03-44). The final stage, whose exterior is the modern mound surface, was called Stage I. We reversed the traditional practice of counting stages in construction order from the bottom, since even at the close of the excavations in 2004 we had no idea how many construction stages and interior mounds were actually present in Mound A, beyond the seven we documented. This final, Stage I mound surface was heavily eroded and disturbed by root action, making pronouncements about its original appearance difficult.

The first interior stage, or the second counting from the top or ground surface recognized on the south side of the mound was actually the southern end and slope of a small platform mound (IIa) built atop the Stage III mound. Two filling episodes were noted initially in the south trench, designated IIa-5 and IIa-6 (see Chapters 9 and 10), that comprised this mound's exterior surface. It was somewhat undulating in appearance (see Chapter 9), and there appear to have been steps or breaks intentionally placed on the slope, and if not accidental or the result of erosion, perhaps served as decoration, to reduce erosion, or to facilitate movement up and down side of the mound. At the top of the Mound IIa slope at a depth of about 50-60cm below the modern ground surface a thin reddish-orange layer a centimeter or so thick was found that was initially thought to be fired. This surface, actually two or more successive surfaces in places, was found to extend horizontally across the entire summit, over an intervening depression (IIc) and a second small mound at the north end of the direct impact area (IIb). It was designated the Stage II summit, and was assumed to represent a final veneer or fill, possibly



Figure 03-44. The south trench into Mound A at the end of 2002 field season, showing colored surfaces and fills, and the depressions where the New Deal era stairway was located to the east. August 22, 2002.

from a formal termination episode, placed over the tops of the two small mounds and the depression between them. While indistinct or missing in much of the E179 west wall profile, this surface was easily tracked during the excavations, including in units opened directly over the depression, and was removed as a distinct filling episode during the fieldwork (see Figure 03-24). Its existence indicates that when the two small IIa and IIb mounds were abandoned and the area between them filled in, a prepared layer, what Sherwood (see Chapter 10) called a 'consistent surface,' was placed over the summit, prior to the deposition of the very different Stage I fill over it. Most of the hearths and eroded clay features that were found on this final Stage II surface may have been associated with buildings atop the IIa and IIb mound summits, although at least one hearth fragment was found on the surface over the IIc depression. This suggests the orange layer may itself have been an occupation surface for a time, or perhaps a fill brought in as a termination episode. That is, the colored and perhaps even fired soil making it up may have been laid down prior to building the final mound stage, perhaps with fires built on it as part of the process. The eastern edges of the Stage II summit surface were lost to the bluff erosion, but additional work in the central portion of the mound, to the west of the area examined in 2001–2004, will probably help resolve more about the nature and extent of this surface.

The sloping surface and some of the outer filling episodes of the Stage III mound were also examined on the south side of Mound A in 2002. At the top, where the summit and slope of this stage joined, a reddish brown sandy clay layer with a smoothed upper surface was found, designated IIIg-4, that extended down the slope from the crest for some 20-30cm (see Chapters 9 and 10). This surface, an apparent prepared floor or veneer, extended across the summit to the north, and was associated with several structures, which had been built on it or on similar surfaces at that approximate level. The bright

red color of the surface initially made us think that it might have been fired, perhaps as part of the initial preparation of the surface, or as part of a process of clearing and possible burning of structures found with it. The geoarcheological research subsequently conducted by Sherwood indicates that this surface was prepared of materials that were likely colored this way naturally (see Chapter 10).

Comparatively few artifacts were found on the slopes or at the base of the Stage II and III mounds on the south side, suggesting these surfaces were carefully cleaned when in use and that, at least in this area, these were not locations where debris was tossed even after abandonment and covering by later stages. The fill used to build each stage was typically laid down in distinct episodes, or thematic compositional loads, with distinctive individual basket loading or the use of soil blocks (Van Nest et al. 2001; see Chapter 10) only noted in a few places. Some of these mound fills were quite homogeneous and consistent in appearance over large areas, making them easy to follow. Some were completely or nearly completely devoid of cultural material, typically the brightly or multicolored thematic loads, while other deposits, apparently derived from nearby midden areas, contained modest to large quantities of artifactual debris, typically lithics and ceramics in the upper layers and these types of artifacts and paleosubsistence remains deeper into the mound (see Chapters 9, 10, and 16–19). Based on the kinds of artifacts recovered, occupation of the area the fills came from was during the Late Woodland and Mississippian periods, with only minimal evidence for earlier occupations recovered..

The upper or outer sloping surface and fills of Stage III on the south side of Mound A had dramatic colored fills, at least in places, particularly on the west side of the control trench, perhaps because this side was closer to the center of the mound, where a presumed entrance ramp was thought to be located. We now realize that the south end of the Stage III mound was made up of a number of distinctive filling episodes that had been added progressively outward, each with its own slope, and each of which had likely served as the mound's exterior face for a time (see Chapters 9 and 10). We did not know this at the start, of course, when the work on this stage was literally just scratching its exterior surface. Even so, we quickly recognized that the Stage III mound was highly unusual. It was clearly not built the way presumed 'typical' Mississippian mounds were, or even the subsequent upper stages of Mound A, with undifferentiated and indeed rather homogeneous midden fill. We now know that use of unusual fills occurred fairly commonly during Mississippian mound construction, although in 2001 and 2002 it was news to us, and indeed to many southeastern archeologists (e.g., Anderson 2012; Pursell 2004, 2012; Sherwood and Kidder 2011).

At the base of the Stage III mound a number of washing and possible slumping episodes were noted, suggesting some erosion to the face, designated IIIe-5, IIIg-6a, IIIg-6b, and IIIg-7a (see Chapter 10, see Figure 03-23). Some of these were a reddish material, suggesting mound sides may have been deliberately colored, as was presumed to be the case with the summit of the Stage II mound. The lower meter or so of the exterior surface of Stage III, over fills IIIg-7b and IIIg-4, in fact, had a faint reddish hue. Above this a gray clay cap was found that extended upward another 1.5m that varied from thin and intermittent to intact and up to several centimeters thick. It may have been a patch designed to stop erosion to the underlying fill or, perhaps, a decorative feature closer to the mound center or ramp, since it was only found on the west side of the trench. Above this was the outer surface of a yellowish-orange fill (IIIg-7b) that extended to the top of the slope, where it intersected and underlay the bright red (IIIg-4) clay veneer or floor on the Stage III summit that we thought had been fired, as noted previously. No evidence for an A horizon was observed on the side of the Stage III mound during the fieldwork, that is, for a vegetation layer, nor was much artifactual debris noted on it, suggesting the mound looked like this, and hence was banded in appearance, at least in this area, when this stage was in use. Some of the outer coloring, particularly the inferred reddish layers, may have been fairly ephemeral, and may not have lasted very long, even if they were initially thicker or brighter. This coloring was probably more distinctive when the

mound was in use, given that some of it appears to have eroded out onto the apron, as evidenced by thin bands of reddish colored deposits observed extending out for several meters from the base of the stage. Whether colored soils were reapplied from time to time when the mound was in use, to retain a brighter reddish appearance, is unknown.

The mound when Stage III was in use was considerably smaller than its final size when Stage I was added. The prepared surface on the summit of the Stage III mound was over 1.6m below the final summit. The slope and summit of the Stage III mound was occupied for a fairly lengthy period of time, with several capping and rebuilding episodes, something more fully recognized in the 2003 field season when much more of it had been excavated. By the close of the 2002 season we were thus aware that the appearance of Mound A had changed fairly dramatically over time, and particularly from Stage III to Stages II and I, since the latter stages had no evidence for banding nor intentionally colored surfaces on their slopes, although the Stage II slope did appear to have a somewhat undulating appearance.

The 2002 fieldwork in the south trench did not go appreciably deeper than in 2001, for safety reasons and because by the time we were able to go deeper, having stepped the sides appropriately, we were out of time. However, some things that puzzled us in 2001 were resolved, such as the extent of some of the loads, such as those designated and discussed above. The highest of these red strata, IIIg-3b, which we had seen portions of in 2001, was fully exposed for the first time in 2002. Like the mottled red, gray, orange and white layer above it, IIIg-7b, it was followed from the bottom to the top of Stage III, and was recognized as a distinct filling episode within it. The IIIg-3b strata consisted of a strikingly bright red sandy loam mixed with large numbers of beige/white chert pebbles that were almost pure white when split open. It became progressively thicker from the bottom to the top of Stage III, and while we originally thought it might be a stage surface, this now appears unlikely, as the material was so friable and sandy that it would quickly wash away, probably in one or two heavy rains, leaving only the pebbles behind. Instead, it now appears this layer was a filling episode associated with the construction of Stage III, and one that was only open for a short time given the absence of substantial evidence for erosion. It was apparently quickly covered by the thick and comparably impermeable mottled red, gray, orange and white silty clay loam layer (IIIg-7b layer), which likely protected it from erosion.

The colors red and white, as noted, have great symbolic importance to many southeastern Indian groups, and given the care taken to place and then quickly cap the IIIg-3b strata, a conscious attempt was apparently made to use both colors, perhaps with great attendant ceremony, although of course this is purely speculative at present. Chert pebbles occur with the red sandy loam locally in the Pleistocene Terrace deposits, and the fill was thought to be derived from them (see Chapter 10), but whether it was prepared in any way, perhaps with more pebbles added in, remains unknown. Likewise, the apparent deliberate banding of the upper exterior surface and the coloring of the lower exterior surface of the Stage III mound also suggests appreciable concern for color symbolism. Finally, the fact that small but enigmatic masses of red, yellow, and other, odd colored inclusions were sometimes observed within existing loads may also reflect ceremonial inclusions, and a concern for color symbolism, although they might alternatively simply represent filling episodes inadvertently employing differing materials.

Excavations on the Top of Mound A in 2002

The vast majority of the 2002 excavation effort was directed to the mound summit. The control trench across top of Mound A, opened approximately 1m west of the wooden safety fence by the drop in 2001, had encompassed only 13 1m units. In 2002 over 100 additional 1m units were opened on top of the mound, encompassing almost the entire threatened area, and all that could be safely reached until these units could be taken deeper, since the erosional face on the east side of the mound sloped out several meters before the drop off. By the close of the season, the excavation area was 6m wide, and every unit on the summit had been opened to

depths of between 70 and 160cm below the surface. The surface associated with the Stage II summit at ca. 50–60cm was examined in its entirety to the safety fence line, but the units directed to reaching the Stage III summit, which was at a depth of ca. 160cm, were still being taken down at the close of the fieldwork. Several dozen features were identified associated with the Stages I, II, and III mounds, including individual postmolds, hearths, eroded clay walls or ledges, and prepared floors. No recognizable structure outlines were found in 2002, although several well defined buildings were found on the Stage III summit the following year (see Chapter 9).

Little evidence for features associated with the final Mississippian occupation, the Stage I mound were found, even though remains should have been right at or just below the modern ground surface. Historic artifacts and features were found in the upper 20–30cm, however, both on the summit and sides of the mound, which appeared to come from the Civil War battle, more recent park visitors and maintenance activity, and from the superintendent's cottage on the summit in the early years of the twentieth century. One possible foundation support, a pit filled with stone slabs designated Feature 50, and a scatter of large charred wood fragments, Feature 44, were found right below the surface that may be from this cottage (see Chapter 9). A long linear depression with decaying wood fragments in it, Feature 67, was found immediately below the surface where the mound slope dropped off toward the river, and, given a fairly recent radiocarbon date, may have been where logs were placed near the edge of the summit sometime in the twentieth century (see Chapter 9).

Evidence for the summit or final filling episode associated with the Stage II mound was found at a depth of about 60cm across much of the top of Mound A, as discussed previously. Identified primarily by the presence of one or more ca. 1-2cm thick reddish-orange colored layers, these surfaces varied from patchy or nonexistent in some areas to exceptionally well defined in others. Over the northern third of the summit, above what we now know was the IIb 'gray platform' mound, and over much of the IIc depression, this surface was continuous and well defined, while to the south, over the IIa mound, it rarely extended for more than a few meters in any direction before disappearing or becoming patchy or ambiguous. Complicating matters, at least two bright colored surfaces or floors were present in many of the summit units, separated from one another by one to a few centimeters of fill at most. These layers might represent discrete occupation surfaces, or possibly termination episodes associated with the abandonment and covering of the IIA and IIb mounds. Each of these surfaces was floated in its entirety, and the intervening fill layers were retained as separate stratigraphic proveniences. The intervening fill, like the fill of the surfaces themselves, had virtually no artifacts associated with it.

Four presumed hearths or groups of hearths were identified on the Stage II summit, Features 59, 75, 83, and 85, all heavily fired clay basins ranging from 30 to 60cm in diameter at the base, and between ca. 3–4cm thick (see Chapter 9). All, unfortunately, were extensively disturbed by root action and in the case of Feature 83 by an intrusive post, rendering them inappropriate for archeomagnetic dating. One or more of these "hearths" may have been specially prepared ceremonial basins, although all were characterized by greasy charcoal-rich fill suggesting a final use as hearths. A partial basin, Feature 62, may be a fifth hearth fragment, although no carbonized material was found associated with it. The most unusual hearth/basin, Feature 75, found near the south edge of the summit on the IIa mound, had two depressions that were clearly a part of it and not intrusive posts, since the fired clay extended around them and across their bottom. These depressions may have been specially prepared supports for small posts, or alternatively, small storage areas. Brian Butler, upon seeing the feature during his visit to the site in August, suggested that it might be an incense burner of some kind.

Five suites of archeomagnetic samples were taken from the upper two surfaces of Stage II in 2002, although these yielded ambiguous results (i.e., no consistent orientations), suggesting the fill was not burned in place, but instead likely obtained

and prepared somewhere else and brought in. An AMS date of 510±40 B.P. (Beta 161309) had been obtained from a burned clay and charcoal lens on the highest or most recent of these two surfaces in 2001, suggesting a near terminal date for mound use. This date, based on subsequent determinations obtained from the mound, when coupled with other lines of evidence suggesting the site was abandoned soon after A.D.1300 (see Chapters 5, 9, 14, 21), appears to be about a century or more too late.

The Stage II mound summit surfaces at ca. 50–60cm in depth were thought to be associated with structure floors for several reasons. Well defined posts and wall trench fragments were observed originating on these surfaces, although unfortunately they were few in number and no evidence for complete wall lines or structures was found (see Chapter 9). Eroded ledges or benches of reddish-orange silt clay were found atop these surfaces at the north end of the Mound A summit, atop the IIb 'gray platform' mound (Figure 03-45). These resemble features found on the floor of the council house/earth lodge at Macon Plateau in the 1930s, and suggest a structure was once likely present atop the IIb mound or built after it had been abandoned, on the overlying final surface(s) (Figure 03-46). The uppermost surface in this area was highly uneven in places, suggesting it had been open and eroded for a time. Complicating matters, a 2–5cm thick deposit of several bright reddish-orange surfaces, with little or no separation between them, was found on the top of the IIb mound, possibly reflecting multiple floors or termination episodes. Virtually no debris was found on the surfaces atop Stage II, however, neither atop the IIb mound, nor anywhere else on the summit. This suggests that the small mound summits, and the surface covering the entire Stage II summit, were thoroughly swept prior to the addition of the final mound Stage I fill.

On the south side of the IIb or 'gray platform' mound, however, the situation was dramatically different. A thin red silty clay veneer covered the slope, and at least two additional thin red layers were observed extending out from the platform, suggesting they may have been replaced or patched two or three times when in use (see Figures 03-



Figure 03-45. Eroded clay ledges on the highest surface of the Stage II summit at the north end of Mound A in N51-N58, E179-E183, August 2, 2002.



Figure 03-46. Ledges at Macon Plateau in the council house/earthlodge excavated in the 1930s.

26, 09-18). That is, the sides of this platform, and probably the floors on top as well, were renewed on occasion, much like the final surfaces covering the entire Stage II summit; the sides and top of the Stage III mound showed similar evidence for renewal, as discussed below and in Chapter 9. The red veneers appear to have been carefully mixed and applied, possibly when damp (see Chapter 10). A number of laminated and varied washing episodes were observed at the base of the IIb platform on the south side, designated IIb-2c, IIB-5a, IIb-5b, and IIb-5c, which the geoarcheological research indicated included not only gray silt loam from the mound itself, but also microartifacts like charcoal, suggesting they derived from occupations atop the IIb mound or possibly elsewhere on the summit.

The distinctive red veneer over the IIb mound extended away from the base across the summit to the south, and was fully exposed in the 2003 fieldwork (see Figure 03-47). While distinctive, it was also very thin and easily removed. It ran under the IIc depression, which appears to have been placed directly over it. In 2003, structures were found to occur on the uppermost Stage III surface (IIIg-4), underneath both the IIa and IIb mounds and the IIIc depression (see Chapters 9 and 10). Termination episodes apparently associated with the abandonment of these structures included covering them with unusual fills. The red veneer on the face and extending out from the IIb mound may be a similar phenomenon. Within the IIb mound itself it was possible to recognize individual dumping episodes for the gray silt loam mantle used for the majority of the fill. While seemingly 'basket loads' these were not true soil or sod blocks with constituent A and B horizons, a construction procedure only rarely observed in Mound A, with one exception being in Stage IIIc. Large quantities of the gray IIb-1 silt loam were water screened and found to be also almost completely devoid of artifacts. This is what would be expected if it came from the Pleistocene bluff deposits below the mound, as the project geoarcheologists' research has suggested (see Chapter 10).

The Stage III mound below the IIa, IIb, and IIc construction episodes was only examined in a few units on the summit in 2002, in the control trench and in a cross trench opened near the center of the summit to provide additional stratigraphic control and at the top of the south side control trench. The two upper reddish-orange surfaces on Stage II and the intervening meter of fill between Stages II and III had to be removed, which is why little of Stage III was reached in 2002. Quantities of red clay,



Figure 03-47. The red veneer over the gray platform mound as fully exposed in 2003.

charcoal, and other artifactual debris (i.e., sherds, lithics) were observed in the fill above the Stage III surface in the control trench, however, suggesting this summit hadn't been cleaned as carefully as Stage IIs. When we exposed the Stage III final summit surface over a much larger area in 2003, however, while evidence for several structures was found, comparatively few artifacts were associated with them, suggesting carefully cleaning prior to their abandonment. The artifactual material in the control trench found in 2002, we now realize, was in the IIc depression between the IIa and IIb mounds, and may have included structural and other debris from the clearing of those summits.

Excavations on the North Side of Mound A in 2002

Excavations on the north side of Mound A continued to be challenging, since the slope was extremely steep, and because the greater height of the mound. A 15m trench was opened from the top of the mound to the bottom in 2001 that extended out from the mound for about 2m, with an additional eight 1m units opened away from the mound to the north. No evidence for intentional filling, or apron deposits, was observed in the units placed to the north of the mound. Instead, cultural deposits were fairly shallow, extending no more than about 50cm, which indicated this area was not consciously built up, unlike on the western and southern sides of the mound, where up to 2m of apron deposits have been found. A fired clay surface was found at the base of the mound to the north, but few other features were evident in the units opened away from the mound, even though the remote sensing suggested structures were present.

Excavation continued in the units in the north control trench using arbitrary 10cm levels in 2002. Although a program of stratigraphic excavation and stepping like that undertaken in the south trench was planned, only the A horizon was removed in units adjacent to the trench. A decision was made early in the 2002 fieldwork to focus most of our efforts on the top and south sides of the mound, since the payoff in terms of stratigraphic resolution of internal mound stage sides and surfaces was considered to be much greater for far less labor and safer working conditions in these areas. After 2002, in fact, no further work was initiated on the

north side of the mound, although the upper part of the northern face was considerably reduced, by about 1.6m, as the Stage III summit was exposed.

A number of interesting discoveries were made in the north trench, even given the limited area and volume examined which, it should be noted, was still roughly equivalent to the volume of fill moved through 2002 on the south side of the mound. Distinctive stage surfaces and filling episodes were identified in several units. On the crest and initial slope of the mound in N59–N62, E181, the Stage I mantle was about 50–60cm thick and overlay the thin reddish-orange silt clay layer corresponding to the Stage II summit surface; this surface ended abruptly below the crest, and its edge appears to have been removed during the Stage I construction or may have slumped down slope. In the units opened below the crest of the mound, the Stage I mantle, which was similar in appearance and content throughout the control trenches, was progressively deeper down slope, reaching up to ca. 1m in thickness. This mantle overlaid more varied deposits that are assumed to represent the side and fill of the Stage II mound and perhaps even potions of the Stage III mound, since some of the fills are at the same horizontal level as the latter. Both compositional loads represented by distinct layers, as well as unequivocal evidence for the use of soil blocks or basket loads, were noted in places. What specific construction stages these various fills were associated with remains uncertain, however, and will remain so until more work is done at the mound, and it is possible to fully expose stage surfaces from one side to the other.

A gray clay layer overlying gray silt clay basket-loaded fill was observed about half way up the mound in the north trench (see Figure 03-29) that may be equivalent to the Stage II or III surface on the top and south sides, where similar features were observed (i.e., the gray clay cap over part of Stage IIIg-7b on the south side, and the IIb-1 gray silt loam making up the fill of the Stage IIb 'gray platform'). Profiles in the north trench remain difficult to interpret, however, since even the deepest rarely show evidence for more than one or two filling episodes or strata, suggesting much greater horizontal and vertical separation of construction episodes than on the top or south side of the mound. Few of these strata could be followed for more than a few units, furthermore, complicating interpretations in 2002 and after.

No evidence for red silt clay filling episodes, reddish exterior surfaces, or slope wash was found on the north side of the mound, unlike the situation observed on the south side. Few units reached subsoil at the base of the mound, or deep enough into the mound on the slope, however, to document whether such layers were present. The filling episode characterized by bright red sandy loam with whitish yellow chert pebbles (IIIg-3b) found on the south side, for example, occurred almost a meter into Stage III. Use of red soils for loads or stage covering may have only taken place in certain parts of the mound. The north side, lacking an apron or any evidence for a ramp, and much higher and steeper than the other three sides, may not have been an entrance area or been easily seen by visitors to the site or from the river below, and as have received less decorative treatment or maintenance.

Excavations West of Mound A in 2002

No additional work was conducted in the area west of Mound A in 2002 or afterwards.

Stabilizing the Excavation Units at the End of the 2002 Field Season

Just as at the end of the 2001 season, during the last several days of the 2002 fieldwork, from August 24–26, the excavation units were carefully covered, since further investigations were planned for the spring, summer, and fall of 2003 (see Chapter 6). The floors and walls were lined with two layers of thick black plastic, held in place around the margins by a double layer of sandbags. The summit and south side excavations were then covered using twenty 1.2x2.4m (4x8ft) reinforced plywood sheets that were themselves nailed together. The plywood sheets on the summit were sloped gently toward the river to facilitate runoff. On the north side, where only the 1m wide trench needed to be covered, 1.2x2.4m (4x8ft) reinforced plywood sheets were used, the same procedure employed in 2001. A

third layer of black plastic was then placed over the wooden frame, and the edges covered with two more layers of sandbags.

Observations at the End of the 2002 Field Season

During the 2002 season we began to get a handle on how Mound A was constructed, and particularly how unusual some of the filling behavior actually was, at least given expectations from earlier work and from the vast majority of archeological reports from the region emphasizing stage summits and structures, and not stage fills and construction. The 2002 work confirmed what we strongly suspected by the end of the 2001 field season, that great care went into the choice of fills used in the construction of at least some parts of the mound. The Stage III mound appeared to be appreciably different in construction and appearance than the Stage II and Stage I mounds, for example, at least on the south side. We also were beginning to recognize that the mound itself was not built in a uniform way, with consistent fills extending from one side to the other, at least below the final Stage I mantle. Two small mounds, IIa and IIb were built on the top of the Stage III summit, and the northern one was of gray silt loam covered with a thin red veneer on the sides while the southern one had more diverse fills. When these two small mounds were abandoned the area (IIc) between them was filled in, and the entire Stage II surface capped with one and in many places two reddish-orange surfaces. What lay below the Stage III mound, however, or even what the fill more than a meter or so into that stage was like, however, remained unknown at the end of the 2002 field season.

The 2002 field work also continued to reinforce the conclusion that occupation in the site area, or at least in the areas where the mound fill came from, was almost exclusively Late Woodland or Mississippian in age given that large and small triangular projectile points, grog tempered plain and cord marked pottery, and shell tempered plain and incised pottery were about the only diagnostics recovered. Few earlier Woodland or Archaic diagnostics were found, and Welch's (2006:53–54, 77–83) synthesis indicates they were only rarely recovered during past work. This strongly suggested that the site area was first intensively occupied during the Late Woodland or early Mississippian period (see Chapter 13).

The excavations demonstrated that the use of carefully selected colored fills played a major role in the construction and use of some of the construction stages in Mound A. The Stage II and III mounds, for example, were apparently colored with surfaces and possibly bands of red, gray, white, and yellowish material, and some interior filling episodes in these stages made use of similar bright or unusual colors. Large and elaborate structures were apparently built on the summits of the Stages II and III mounds, and two raised platforms, possibly paired mounds, with a bright reddish-orange summit surfaces were built atop the Stage III summit. There was some evidence, in the form of the reddish-orange surfaces atop Stage II, to suggest large areas of that mound were ritually capped upon abandonment. By the end of the 2002 fieldwork it was becoming apparent to us that Mississippian ceremonial centers, at least in some cases like Shiloh, were more dramatic and dynamic ceremonial landscapes than archeologists had traditionally given them credit for, and that artists illustrating how they may have looked when in use had portrayed them.

2002–2003 Planning Activity

Research Design Planning for the 2003 Fieldwork

As before each of the preceding seasons, a detailed research design was prepared for the 2003 fieldwork and submitted for review within NPS and by the Chickasaw Nation (Anderson and Cornelison 2003a). This research design detailed the plan of action for a third season of excavations at Mound A, which were scheduled to occur from June through November 2003. Whether additional fieldwork would take place beyond the 2003 field season was unknown at the time, and was beginning to appear unlikely given changing governmental priorities, so the document described how the excavations would be shut down and the site area stabilized, and offered a schedule for analysis and reporting. As it turned out, no further funding was available,

so the 2003 investigations did prove to be the last, although limited additional data collection was conducted in August 2004 in conjunction with the backfilling and capping the excavations, to obtain additional information from the lower part of the mound. Co-Principal Investigators and SEAC archeologists Anderson and Cornelison continued to have responsibility for the fieldwork, analysis, and reporting, while overall administrative, financial, and quality assurance, as during earlier seasons, was by George S. Smith, Associate Director, Investigation and Evaluation Division.

The 2003 fieldwork was designed to try to locate and sample all of the construction episodes in Mound A. To do this, excavation of ca. 15m into the interior of the mound was proposed, between one-third and one-half the present diameter of the mound. The excavations would ideally be taken to the original ground surface and encompass approximately 500m^3 of fill. The work would proceed on two fronts, downward from the mound summit and inward from the south side, exposing and peeling off strata and surfaces identified in the step and summit trenches. Following the completion of archeological fieldwork, and assuming no funding for further investigations in 2004 and beyond was forthcoming, the excavation units were to be backfilled and stabilized. This would include filling the existing trenches and covering excavation areas with a thick protective layer of culturally sterile resistant clay or silt/clay, and then shaping the sides and top of the mound to an angle of repose (ca. 35–45 degrees) that would ideally be stable and blend in conformably with existing surfaces in the mound area. Topsoil and hay would then be laid down, and the capped area would be covered with filter cloth and planted with vegetation to reduce or eliminate erosion, giving the area as close to a natural appearance as possible.

The research questions and field procedures for the 2003 fieldwork followed those from the earlier mitigation plan and research designs, albeit modified somewhat based on the results of the 2001 and 2002 fieldwork (see Chapter 1). The 2003 project was to encompass approximately 2000 days of field and concurrent laboratory work, some of which was done in Tallahassee. Funding for specialized analyses was also included in the budget, to ensure they were completed in the event no funds were available in 2004 and after, as indeed proved to be the case. While the original mitigation plan had the analysis and reporting occurring from 2004 through 2006, over a three year period, a revised schedule was proposed that had the draft final report to be submitted at the end of 2004. Following review and revision of the draft, release of the final report would occur in 2005. This schedule proved to be overly optimistic, since a contract was in preparation for specialized analyses that themselves would not be completed until the end of 2005 and the final analyses and preparation of the collections for curation not until several years beyond that date.

Planning for Specialized Analyses in 2003

Funding totaling almost $200,000 for specialized analyses was included in the 2003 budget, and planning how to allocate it was underway from late 2002 onward. Following negotiations in the winter and spring of 2003 with Sherwood of the UT, ARL, a proposal detailing the work to be accomplished was produced and, upon review, a contract was issued for it in July 2003. The objectives were to ensure that post-fieldwork specialized geoarcheological, paleoenvironmental and associated archeological analyses could be completed with materials collected at Mound A in support of the overall project research objectives. The technical analyses were coordinated by Sherwood in consultation with Anderson and Cornelison, who selected many of the samples chosen for analysis or dating and made arrangements for their transfer to ARL and to project specialists, as well as follow up discussions about their context and research importance with many of these scholars. The selection and shipping of the samples took place in 2004, after the 2003 fieldwork had been completed. The technical analyses were to encompass such things as AMS and conventional radiocarbon and other forms of absolute dating, such as OSL or archeomagnetic sampling; paleobotanical analyses, such as of plant macrofossils, phytoliths, and pollen; microstratigraphic/geoarcheological analyses, including of soil particle size and

chemistry; residue analyses from artifact and mound surfaces; and specialized lithic and ceramic analyses including of typology, function, raw material sourcing, microdebitage, residue analysis and wear patterning.

The analyses were to proceed in consultation with technical authorities in each area of specific research, some of whom had been identified and the remainder of whom would be identified as needed. The research was to be conducted in 2003 and 2004, with a draft report to be submitted by November 31, 2004, and the final early the following year. These deadlines were extended, since project fieldwork was not completed until August 2004, and the transfer of samples for analysis was contingent upon their being sorted and prepared for loan by the project directors and other SEAC personnel, including the collections manager. Under Sherwood's overall direction, most of the proposed analyses were conducted and many remarkable research results were obtained. Perhaps even more remarkably, a draft report was submitted by Sherwood and her colleagues on May 31, 2005, and following review by Anderson and Cornelison, was submitted in final form in December 2005. The results of these analyses, modified somewhat by the authors for this report, are presented in Chapters 5, 10–11, and 13–20.

2003 Field Season

Introduction to the 2003 Fieldwork

The third and final season of excavation at Mound A at the Shiloh Mound Complex occurred from June 17–November 20, 2003. The goals of the project were to (1) excavate the south trench to ground surface ca. 15m into the mound, and (2) conduct excavations on those portions of mound stages found in the direct impact area. The work involved approximately 2000 person days of paid labor and another 500 person days of volunteer help. Over the 2001 and 2002 field seasons combined, a total of 256m^2 of the Mound A area was examined, with approximately 142.85m^3 of fill removed and screened. In 2003, another ca. 500m^3 of fill was removed from the direct impact zone, bringing the total to approximately one-third of the amount recommended for removal in the mitigation plan (Anderson and Cornelison 2002a). The investigations expanded downward and to the east toward the river from the units and trenches opened during the 2002 season, and was directed exclusively to those parts of the site that would assumed to be lost to erosion. The investigations were undertaken with sensitivity to and in accordance with Native American concerns, following terms agreed upon through formal consultation, and as formalized in the MOU between the Chickasaw Nation, SEAC, and SHIL.

Project set up dominated the initial weeks of the fieldwork (see Chapter 6). An advance team traveled to the site in mid-June, and began cleaning the project houses and site area, removing the stabilization cover from the top of the mound, and setting up field support equipment. Given the amount of fill to be moved, everything had to be in place to handle the effort. During the 2003 season the field team stayed in park housing at Shiloh and in rental quarters at Pickwick Landing. Earlier that spring Anderson and Cornelison had traveled to the park area, on March 16–17th and again in early May, and had located the houses, which were either available free from the park save for repair and renovation costs, or at a surprisingly low rental rate, since the real estate market at Pickwick Landing was depressed at the time. Cornelison stayed at Pickwick Landing with the team members quartered there, while Anderson stayed at the Hagy Lane house near the park entrance throughout the project, which also doubled as a field lab. An unoccupied structure the park owned, the Harrison house, was renovated and was one of the places where volunteers and crew stayed during the project, particularly during the summer months, when large numbers of people were present. As the project continued into the fall and crew size dropped, crew and volunteers stayed the Pickwick Landing houses, which were modern and fully furnished. The lab and all crew quarters had phone and internet access, for safety as well as communication.

As in 2002, a large trailer was maintained on the apron west of Mound A to provide shelter for the

crew in the event of inclement weather, and security for project equipment. Two port-a-lets were placed by the road to the site near Mound F (as they had been each year since 2001, in fact), and a generator was maintained at the site, to provide electricity for project equipment. Unlike 2002, when the generator was maintained on the southwest side of the apron near the mound, in 2003 it was relocated to behind Mound B, with power lines run to Mound A and the well point in the river. The reduction in noise, which we had grown accustomed to the previous year, was remarkable, and made working atop the mound much more pleasant. It also highlighted the fact that project logistics and our approach to the excavations improved dramatically each season, as we learned how to run a project of this magnitude (see Chapter 6).

When the protective covering over the mound was removed to begin setting up the rail system and other equipment needed for the excavations, little damage to the floors and profiles was noted, beyond some white mold that had grown in a number of places and that was quickly trowelled away. In 2003, large blue tarps were used each day to cover the units, unlike the more cumbersome wooden frames and black plastic covers used in earlier seasons (Figure 03-48). These worked superbly, and could be quickly pulled off the units and placed on the side or ends of the mound. Since they were both durable as well as highly flexible, their shape closely conformed to the units being covered, offering excellent protection, although when it when it rained it meant that low areas filled with massive quantities of water that had to be removed before it was possible to lift the tarps off the excavations. A gasoline water pump and hose, briefly used as a means of bringing water from the river to the bluff top at the start of the 2002 excavations, was employed to pump out the water when large quantities were present. Hand bailing was also tried, but only worked effectively for small amounts of water. The only precautions with the use of the blue tarps were (1) we had to check them daily to see that no holes had been cut or punched in them that water could leak through, and (2) as in earlier seasons, when pulling them off the excavations, everyone had to check carefully to see what animals might be on or under them. We found that cuts or punctures, which were rare, could be quickly and securely patched with duct tape; snakes remained common visitors, but no one was ever bitten.

The movement of fill from the top and sides of the mound to the water screening area continued using the procedures initiated in 2002, employing the rail and barrel system designed by John Cornelison (see Chapter 6). Since a great deal of fill was to be taken off the mound as the excavations proceeded, and because the mound itself was getting lower in height as more and more fill was removed, the upper end of the rail line was placed in the excavation area at the north end of the summit, on a layer of sandbags to protect the underlying archeological deposits. If we hadn't done this, and left the rail system as it was in 2002, we would have been lifting fill from the excavation area up over the west wall profile and walkway to the unexcavated portion of the mound summit only to then send it down to the screening area, a great deal of unnecessary effort. As it was, by early September 2003 the excavations were 1.5 to 2m below the original



Figure 03-48. Tarps 50x100 feet in size were used to cover the excavation area in 2003, a simple yet effective strategy that allowed us to cover the units in a matter of minutes.

summit in most places, mandating the construction of a stairway into them from the walkway just to easily get into and out of them. Adjusting the rail track proved fairly time consuming at first, since the barrels moved at different speeds depending on the elevation they started from, and ensuring the safe and unspilled delivery of the barrels to the bottom was essential. As the project continued we became quite proficient at adjusting the rail line, however, making it a far more efficient and safer way to move fill than using wheelbarrows or buckets. The rail segments, which were about 1.5m (5ft) long, were removed from south to north as the work progressed into the mound. Within a couple of months, as structures were found on the central and northern parts of the Stage III surface, we had moved the track to the very north end of the mound. While several crew members asked if they could 'ride the rails' as it were, this was strictly forbidden, and they were told that if they survived it would be a firing offense; fortunately, no one ever tried. Anyone seeing project videos of early tests of the system using barrels filled with water would understand why we were concerned, since the first barrels we sent down while we were designing the system did not always stay upright or on the track. No one was allowed near the end of the track at the bottom until these bugs were worked out.

Water screening systems designed to minimize erosion and ensure that no siltation ran into the Tennessee River below the site were set up on both the north and south sides of the mound. The station on the south side was small, employing standing screens resting on sawhorses, with fill delivered to it in wheelbarrows, since it was only a short distance from where the excavations were occurring. The screening platform on the north side of the mound was raised 1m and an elevated walkway run out to it, since the work area had quickly become awash in mud and even partially buried during the 2002 fieldwork, given the amount of fill being processed. (Figure 03-49). This proved an excellent decision, given the amount of fill moved off the mound to this area in 2003. Despite this, fill still had to be frequently shoveled away from the platform at the bottom. As in 2002, hay bales and siltation fences were placed downslope from the screening areas, to catch sediment runoff.

In late June 2003 the park had a boom truck come out to the site, and remove dead/overhanging branches as well as some trees around the mound for safety, or because they were in areas slated for excavation. The stumps from these trees were themselves ground down or cut out and carried off (see Figure 03-38). One of the trees, cut and dropped off down the bluff edge the previous season, had to be cut into smaller sections and removed in late October 2003 because by that time the excavations had reached that far down into the mound. While we briefly considered using a boom truck or aerial scissors lifts/elevated work platforms to take overhead photographs of the excavations, getting such equipment near or atop the mound, and having it available on a regular basis, was unfeasible. The solution we arrived at was novel, but altogether predictable given we were working in the rural south, and since the answer could be seen at the edges of fields everywhere we went away from the park.

Deer stands were set up in two places during the 2003 excavations and used as photographic platforms. One, about 7.62m (20ft) high, was securely cabled to a tree on the south side of the mound by the 2500 gallon water storage tank, and the second, a large tripod about 4.57m (15ft) high, was kept on the top of the mound, and moved as necessary to provide overhead shots. These deer stands proved an excellent means of taking overview shots of the fieldwork, and the one attached to the tree to the south provided a fixed vantage point. Photographs were taken from these deer stands nearly every day during the project, and most weeks before closing down for the weekend the summit was cleaned up for a documentary shot to illustrate the work's progress (Figures 03-50, 03-51, and 03-52). The pictures taken from the south side of the mound, from essentially the same place every time, when viewed over a period of days, weeks, or months, illustrate the dramatic changes to the mound area that were occurring, and the amount of fill being moved. For close up overhead or oblique shots of features or smaller portions of floors, we



Figure 03-49. The screening platform on the north side of the mound was raised up three feet and an elevated walkway run out to it, and safety railings installed around the margins, since the work area had quickly become awash in mud and even partially buried during the 2002 fieldwork, given the amount of fill being processed.

also routinely set up a 2.4 or 3.04m (8 or 10ft) ladder in the units, resting the legs on plywood sheets.

The 2003 fieldwork also continued the detailed mapping of the site area in the vicinity of Mound A, and the 1m excavation grid in the direct impact area, using a total station and close interval point mapping. The excavation grid conformed to that used by SEAC in its 2001 and 2002 investigations, to ensure that all units opened in the vicinity of Mound A were consistently oriented and placed, and could be easily relocated should this prove necessary in the future. All unit locational and elevation data was obtained using an autolevel or total station set up over the datum station located on the unexcavated summit of the mound, just to the west of the walkway at the top of the stairs on the south side. Only one datum station was used in 2003, unlike the three employed in earlier seasons when we were working on the north, south, and west sides and the top of the mound. A collapsible 10m stadia rod was needed to obtain readings from the deepest units opened in 2003, which were opened near the bluff edge on the southeast side of the mound.

The total profile ultimately exposed in 2003 was over 7m in height, in two sections, one just over 4m high immediately below the walkway, and another almost 3m deep on the southeast side of the mound near the bluff margin where a 10m long trench was taken to subsoil late in the 2003 fieldwork (Figure 03-53). Construction scaffolding was necessary to enable the crew to profile and obtain geoarcheological samples from the ca. 4m high mound section on the southwest side of the mound toward the end of the 2003 season (Figure 03-54). A sturdy wooden fence was placed around the apron on the west and south sides of the mound, replacing a nylon fence that had been used in earlier years, to deter casual visitors when the crew was away from the site. A large metal sign noting that this was a work area was posted near the front



Figure 03-50. View of the excavations from the deer stand south of Mound A at the end of one week, on 11 July 2003.



Figure 03-51. View of the excavations from the deer stand south of Mound A at the end of nine weeks, on 19 September 2003.



Figure 03-52. View of the excavations from the deer stand south of Mound A at the end of nineteen weeks, on 17 November 2003. Final samples were being collected and profiles being drawn prior to closing down the excavations for the season.

gate, which was hinged to allow vehicles to move in and out. This sign was later used to transport a hearth found to contain carbonized textiles that we removed as a block in late August (see Chapter 19).

Early in the fieldwork in June 2003, and again in September and October, the steel cable safety fence by the drop was moved outward as the excavations continued to expand, and this season crew members in rappelling gear spent appreciable time examining the profile on the east side of the mound, in the hopes of obtaining detailed information about its construction, to see if identifiable strata could be recognized, and to clear vegetation from areas we assumed we would be excavating later in the project (Figures 03-55, 03-56) (see Chapter 6). The vegetation clearing was also needed to eliminate light mottling from vegetation that had grown up on this side, that shaded the units early in the day. The clearing and inspection of the steep (ca. 60–70



Figure 03-53. Profile from the deep trench opened on the southeast side of the mound, and the profile on the west side of the excavations. The total height of these profiles was some 7 meters high.



Figure 03-54. Use of construction scaffolding to profile the excavation E179 west wall at Mound A, October 31, 2003.

degree) slope was done over a period of three days in mid-July by SEAC archeologists Charles Lawson, Chris Lydick, and Robert Moses. The work focused on the central part of the summit, where the erosion appeared greatest. In this area the existing surface/slope extended for about 4–5m out and 10–12m down from the cable safety fence, to where a sheer drop of some 15m to the bank stabilization barrier occurred. Some of the fill on the slope came from slumping from the summit. A narrow profile about a meter wide was opened using a shovel, and strata were found some distance down slope that were later recognized in the excavations underlying the Stage III mound fill (Figure 03-56). Based on the results of this inspection, no further attempts were made to profile the eastern face of the mound, since it was clear a great deal of slumpage would have to be removed (i.e., pushed over the drop), making the exposed face much more vulnerable to erosion.

Safety/rappelling harnesses were also used when erecting the safety fences, sunshades over the work area, and the deer stand on the south side of the mound, since these tasks required attaching steel cables to high points in the trees, sometimes upwards of 6m or more above the ground. Cables were used to secure the deer stand and ladder up to it to keep it from tipping over or collapsing when in use, and they were also used to suspend sunscreens over the units. Unlike the opaque tarps used in earlier seasons, in 2003 we adopted sunscreens which admitted about half the ambient light. These were placed above the excavation area and along the east side of the mound by the cable safety fence, since the sun rose from this direction each day, and the light and heat was quite intense within a few hours, at least during the summer and early fall. When the steel cable safety fence was eventually moved outward, as it was in early September 2003, and again in mid October, the sunshade on the east side had to taken down and restrung, but otherwise once established they were pretty much left in place. Each day during the fall, however, as leaves fell, we had to use the stadia rod to poke the shades from below to shake out leaves that accumulated in them, which would have created undesirable mottling in project photographs.



Figure 03-55. SEAC crew chief Charles Lawson (white helmet) and SEAC archeologist Christopher Lydick (red helmet) clearing vegetation while repelling over the eastern face of Shiloh Mound A (facing N), July 15, 2003.



Figure 03-56. SEAC crew chief Charles Lawson (foreground) and SEAC archeologist Christopher Lydick cleaning a profile on the eroding eastern face of Mound A, July 15, 2003. A pronounced red filling episode, exposed later in the excavations, and clearly visible in Figures 03-53 and 03-54, was found about 3 meters down on the eroding eastern face.

The 2003 SEAC field crew was the largest used during the project, and besides Anderson and Cornelison included Susan M. Alt, David A. Bleckley, Heather Creasy, Zack Gibbs, Bretton T. Giles, Ehren Habela, Tobi Howard-Ingle, R. Steven Kidd, Charles Lawson, Christopher M. Lydick, Jessica McNeil, Heather A. Miller, Michael Shawn Moore, Robert T. Moses, Heather L. Mustonen, Sarah Parson, Dee Paulk, Ann M. Powell, Corin C. Pursell, Lauren A. Qualls, Donna J. Rausch, Case A. Robbertson, Steven C. Robbins, Shannon Weatherby, Edward Teddy Wells III, and Emily M. Yates. Most of these individuals were present for at least two months, and some were there for the entire project. Unfortunately, no collective crew shot exists for the 2003 season because the project lasted so long and the crew changed so much that no one picture of everyone could be taken. The closest we have is a shot of those still on the crew in late September, when senior NPS officials visited the park and everyone went to Hagy's Catfish Hotel for lunch (Figure 03-57)

As during earlier seasons, we had a lot of visitors, and dealing with them took a great deal of time. Since we were government employees, and the work was in a major national park, we made every effort to be courteous to anyone coming up to the work area. For routine park visitors we designated specific SEAC technicians to handle the interaction, in large part to save wear and tear on the project directors, whose attention was frequently required for technical matters, given some 20 to 30 people were working at the site most days. Once the excavations had been underway for a couple of weeks, tours led by a park interpreter were set up at 10A.M. and 2P.M. most days, with a schedule posted and announced over the public address system in the Visitors Center in advance. Groups who climbed the stairs and watched the work included

Boy Scout troops, school and church groups, individuals and families, and local community and park personnel. Well over a thousand park visitors toured the excavations over the six months we were in the field in 2003, and some later came back and volunteered to work with us.

Professional colleagues who visited the site included Rena L. (Bell) Duncan, Historic Preservation Officer for the Chickasaw Nation on July 22. Tim Pauketat came out on July 25th in one of his many visits to the project. Tennessee Commissioner of Tourism Susan Whitaker with Eliza Sedgwick and Beth Lunford visited the site on August 20th, and were given a tour by Superintendent Harrell and Anderson. A film crew from the Chickasaw Nation filmed activity on the site that same day, and included Joey Lansdale, Jerrell Newby, and James Blackburn, the latter of whom was in ca. 1750's dress (Figure 03-58). On September 23rd we were visited by SEAC Director John Ehrenhard and Associate Director George Smith, Deputy Regional Director Wally Hibbard, and Associate Director for Cultural Resources Paul Hartwig from the NPS Southeast Regional Office, as well as science reporter Mike Toner from the Atlanta Journal-Constitution, and artist Martin Pate from Newnan, Georgia. These individuals met with Superintendent Harrell at Hagy's Catfish Hotel and later at the park visitor's center to discuss the work (see Figure 03-57). Mike Toner published an article entitled "Mounds put Long-Ago Culture in New Light" in the October 12, 2003 Atlanta Journal-Constitution. This article was apparently reprinted widely throughout the south, resulting in a dramatic increase in visitation the last months of the 2003 season. Martin Pate produced a series of paintings of what life at the center might have been like the following year, including a reconstruction of how the mounds might have appeared; these paintings were later used in the development of an interpretive walking trail (Figure 03-59). Jenelle Soo from the Jackson Sun newspaper visited the site on 30 September 2003, while historian Jerry Hay of the riverboat the *Delta Queen* stopped by to visit the excavations on October 1st.

On October 1, 2003 NPS Southeast Regional Archeologist Bennie Keel came out and spent the day at the excavations and in discussion with Anderson and Cornelison (Figure 03-60), making a number of recommendations about what we should do before closing down. These included (1) finding the northern end of stage 3 mound; (2) looking for structures on the south end of the mound, (3) if possible, find and expose as much of the underlying stages as possible; and obtaining a sample of the features at the base of the mound. Most of these objectives were in fact accomplished by the close of the 2003 field season, although only comparatively small areas were examined from lower stages in the mound. Charles Hubbert from Huntsville, Alabama visited on October 2nd. SEAC archeologists Guy Prentice and Margo Schwadron came out to the site in mid October for two weeks, helping with the excavations. On October 17th, University of Mississippi archeologists Jay K. Johnson, Janet Ford, Bryan Haley, and Jason Zangari visited the excavations and offered useful advice. A local history professor, Greg Williams, visited on October 23rd, and after setting up the arrangements, his students volunteered on the project over the next week as a class exercise. On the 29th Greg brought pizza, soda, and cookies for the Shiloh team for lunch as his way of showing thanks for the



Figure 03-57. The 2003 crew enjoying a long lunch at Hagy's Catfish Hotel restaurant, brought about by a visit from SEAC senior archeologists, September 23, 2003.



Figure 03-58. A film crew from the Chickasaw Nation visited the site to document the setting as part of work for their cultural center. James Blackburn is shown here in ca. 1750s dress with Mound D in the background, August 20, 2003.

learning experience. John Blitz, Ashley Dumas, and Amanda Regnier from the University of Alabama visited the project for several hours on October 30th. John Broster and Mike Moore from the Tennessee Division of Archaeology visited the site for several hours on November 4th. That same day photographer Bob Schatz from Nashville came and took pictures of the fieldwork for a special cover story article entitled "Shiloh: Emergency Archaeology" that appeared in the summer 2004 issue of *American Archaeology* magazine (Figure 03-61). The article was written by Michael Finger, who came by on November 5th. On November 7th archeologist Major McCollough from the University of the South and two of his students, David Michaels, and Robert Chapman visited. That same day Edwin Bearrs, Chief Historian Emeritus, NPS (retired) unexpectedly visited the site with a Civil War roundtable group of about 20 people, and were given a tour by Anderson. Cornelison, unfortunately, had left for Tallahassee earlier that day to meet with George Smith about the final closedown and go on to the Southeastern Archaeological Conference the



Figure 03-59. Reconstruction of life at Shiloh about AD 1250, showing the possible colored mound surfaces. Painting by Martin Pate, courtesy Shiloh National Military Park.



Figure 03-60. NPS Southeast Regional Archeologist Bennie Keel and project co-director Cornelison and SEAC archeologists Stephen Kidd, Robert Hellmann, and Jill Halchin overlooking the excavations, October 1, 2003.

following week, and in the process unknowingly missed one of his heroes in Civil War research.

During the 2001 to 2003 field seasons, almost 800 person days of volunteer help were donated to the project, including some 500 person days in 2003 alone. Among the many volunteers in 2003 included Lisa McNeely from the Fort Bragg Cultural Resources Management Program, who worked in July for two weeks, and Ann Miller, Cornelison's mother, who volunteered for several days in late September, as she had also done in 2002. A 47 minute documentary on the project, "In Vivid Color" was produced by Cindy Tomlinson Brummer, a UT-Austin journalism student, who spent two weeks on the site from in late October and early November filming the work and interviewing the crew and park personnel (Figure 03-62). Brummer had her own equipment, and over the next year created the film, which was released in 2005. A 22 minute version is available online at http://www.archaeologychannel.org/?option=com_content&view=article&id=259:in-vivid-color-voices-from-shilohs-mound&catid=78&Itemid=527, hosted by The Archaeology Channel This film illustrates the work at the site, and highlights the ceremony that went into the construction of the mound, which included the use of many different colored soils. A remarkable achievement produced voluntarily, it makes many of the technical as well as cultural results of the work available to the public. The full version of the film is available in the project electronic appendices and is also curated at SEAC with the other project records.

Geoarcheological research was a major part of the 2003 fieldwork, as it was during earlier seasons at the site. Project geoarcheologist and specialized analyses director Sherwood visited the site from September 15–18, October 29–31, and November 16–19 to conduct research (Figure 03-63). She gave instructions to SEAC personnel on proper profile documentation during her September visit, lessons that were put to great effect in the recording that took place thereafter on near a weekly basis, as new profiles were exposed, drawn, and photographed in 1m increments as we moved into the mound. She also examined and corrected the profiles when visiting in October and November, and during her subsequent analyses.

The project website established in 2001 continued to be posted on a daily basis, this year primarily by Anderson in coordination with Cornelison; as during earlier seasons, all project photos were downloaded and organized each day after the fieldwork, and images were selected from among them for posting. No pictures of burials, grave goods, or other culturally sensitive materials were placed on the project website. We learned caution about proper use of a government web site the hard way early in the project when we put up a picture of a birthday party held after hours at one of the project houses that we didn't realize had a crew member in it holding a can of beer. We received a call almost immediately from SEAC administrators to take it down, which we did.

Excavations on Mound A in 2003

In 2003, the fieldwork was directed to taking down the mound stages in their entirety in the threatened

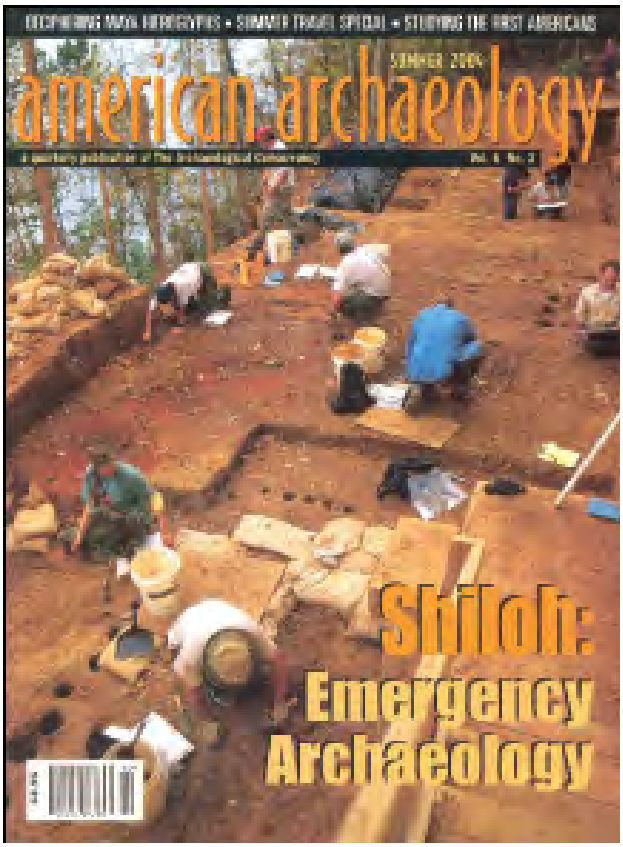


Figure 03-61. The summer 2004 issue of American Archeology magazine had a special cover story article entitled "Shiloh: Emergency Archaeology" written by Michael Finger, with photographs by Anderson and Robert Schatz.



Figure 03-62. Cindy Tomlinson Brummer filming Sarah Sherwood collecting geoarcheological samples in the deep trench on the southeast side of Mound A on October 29, 2003. Brummer's work was later released as a documentary film entitled "In Vivid Color: Voices from Shiloh's Mound."

area. We anticipated moving ca. 500m^3 of fill in the 2003 field season, and ultimately in fact moved close to this, a volume roughly three times that moved in 2001 and 2002. This was accomplished by extensively screening summit surfaces, features, and unusual filling episodes, and taking only samples from the remaining deposits, with the rest removed by hand or with a backhoe. As an example, much of the fill between Mound Stages II and III was removed without screening, since this strata had been sampled extensively in the control trenches. Fill from the Stage III mound was removed a meter east-to-west segment at a time once the overlying summit structures and other features had been removed, moving from south to north into the mound. The profile of the ca. 7–9m segment was cleaned, drawn, and photographed, with flotation, geoarcheological, or other specialized samples taken as necessary; typically at least one 1m column from the profile was selected and hand excavated and screened in its entirety. When taking samples from filling episodes, provenience control was maintained in reference to the excavation grid system, with the location and extent of each sample carefully documented. Fill from mound stage surfaces, the floors of structures, features, and unusual filling episodes, in contrast, were typically screened or floated in their entirety using 1m provenience control within the existing excavation grid. These procedures, it should be noted, met with the approval of the project research and advisory team, and greatly increased excavation efficiency.

The fieldwork started in early July with most of the crew working atop the mound, first taking down the remaining portions of the Stage I fill, primarily from the north end of the mound, and then the Stage II surface, followed by excavation into the fill



Figure 03-63. Sarah Sherwood training Stephen Kidd and Robert Moses in drawing the N39 E179- 183 profile, September 17, 2003.



Figure 03-64. Excavations on the mound summit, July 2003. Field record photographs of cleaned floors and features rarely give a sense of the amount of labor needed to produce them, or working conditions in large excavations. Most days during the 2003 field season between 20 and 30 people were working in the excavation area on and near Mound A, including in the screening area at the base of the mound and the record-keeping station on the unexcavated portion of the summit.

between the Stage II and III surfaces (Figure 03-64). Most fill was run down the adjacent rail system to the screening and storage area. The work soon lowered the height of the mound to first the Stage II surface and later in the fieldwork to the Stage III surface, which required adjustments to the rail system. Both fill selected for screening and to be discarded without screening was typically removed in barrels using the rail system, where it was dumped off to the side of the screening area when they reached the bottom. So much fill was being moved, however, and the screening area became overwhelmed so quickly some days, that a decision was made to dump some of the fill from already sampled strata directly over the east side of the mound, onto the eroding face, which also helped to create an adequate angle of repose. Little of this fill reached the shear drop down slope, and efforts were made to avoid this, since the goal was to help stabilize the upper surface; the meeting with Nashville COE personnel in July 2000 discussed previously had made everyone realize that creating an adequate angle of repose along the bluff from the final mound summit down to the stabilization barrier would require massive amounts of fill, far more than existed in the few meters of the mound we were examining near the bluff edge. All fill discarded without screening in the units atop the mound taken down to the Stage III summit was removed by hand, with shovel skimming the standard procedure, meaning features or larger artifacts would be detected.



Figure 03-65. Use of heavy equipment to remove disturbed and eroded Stage I mound fill from the southeast corner of Mound A, July 8, 2003.

Almost from the beginning of the fieldwork on the south side of the mound in 2003 hand excavations were supplemented with the use of heavy equipment to remove fill, although its regular use did not actually begin until early September. The park backhoe, (a.k.a. the 'big yellow trowel') was used for the first time on July 8th to remove disturbed and eroded Stage I mound fill from the southeast corner of Mound A (Figure 03-65). The southern step trench was first carefully covered, to avoid loose dirt spilling into it. The fill that was removed was used to backfill the southern end of the stop trench where it had run out into the apron, as well as ruts and depressions elsewhere in the apron. The existing southern trench opened in 2001 and 2002 was used to guide the removal of fill from mound Stages I, II, and III, which consisted for the most part of sloping deposits below the crest of the final Stage I mound summit. Once the backhoe had removed the upper half meter or so of fill, the Stage II surface and then successive underlying fills were exposed, documented, and then removed using shovels and trowels, working to the east toward the drop and north to the Stage III summit from the south trench. Although attempts to locate a red covering over the Stage II mound were inconclusive, the red sandy loam with yellowish white chert pebble load (IIIg-3b) was exposed and followed, and was found to cover about half the area examined (see Chapters 9 and 10). In practice, following strata on the south side of the mound proved quite challenging until extended profiles could be established, since fills sometimes changed dramatically over short distances. This is one of the reasons we devoted appreciable effort to documenting profiles as we moved down and into the mound.

On the southern side of Mound A, the backhoe followed by hand shoveling and trowelling was used to remove the Stage I fill, which extended to about N37. Once the Stage III mound surface had

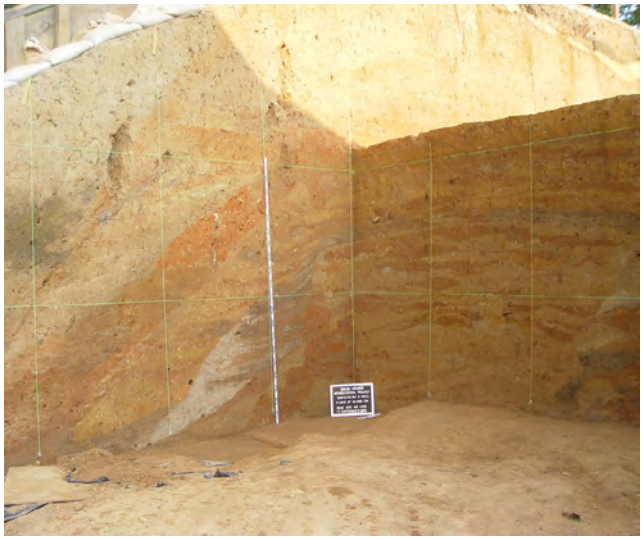
been completely exposed, and the structures found atop its the south end excavated, and the sloping Stage II and Stage III fills on the south side of the mound had been removed in N38, E179–183, some 2m of underlying Stage III construction was present before the surface at the level of the existing apron was reached. Excavations proceeded from this point moving inward into the mound, with profiles cleaned and documented at 1m intervals and fill samples taken as warranted, work that began in earnest in early September 2003 (Figure 03-66). Once the profile had been carefully trowelled clean, a grid of 1m squares was placed over the face, using colored nylon string attached to the profile using large nails. The vertical strings conformed to the site grid, and were used to guide photography, drawing, and sample selection. Overlapping close up photographs of the profiles, typically using overlapping 2–3m sections were taken, as well as shots of the entire profile, which was between 7 and 9m in extent.



Figure 03-66. Cleaning the N38 E179-185 profile on the south side of the mound after using the backhoe to remove the initial ca. 80-90cm of fill. View from the top of the mound summit looking down and to the east. The holes on the surface above the profile are the wall of Structure 2b on the Stage III summit, September 11, 2003.

This approach provided two major kinds of profiles from the fieldwork, one a north south view along the E179 grid line through the mound on the west side of the excavation area, and the other a series of successive shorter profiles opened from south to north into the mound, and encompassing primarily fills within Stage III (Figures 03-67 and 03-68). After photography the profile was drawn, with the separate fills described and Munsell readings and soil smears taken from each. The backhoe then removed ca. 80–90cm of the next meter of mound fill, with the deposits hauled away using the front end loader (Figure 03-69), after which the profile was cleaned by hand, photographed, and then drawn, and the process repeated. This occurred seven times over the project, from early September until late October, with information obtained along the N38 to N44 gridlines. We were able to average about one such profile every five days, a rate dictated by how quickly they could be drawn and sampled, and what other work was occurring elsewhere (i.e., removal of summit structures further to the north), since the excavation, cleaning, and photography of a 1m segment could usually be done within a day. Most of the profiles drawn in 2003 were produced by SEAC archeologist R. Steven Kidd, assisted on occasion by Robert Moses; Lara Homsey drew profiles of the two 1x1m units opened on the southeast side of the mound in 2003.

The E179 or west wall profile ultimately reached over 4m in height and was directly below the stairway and walkway across the summit (Figure 03-67). The other, north facing profiles extended out from and were perpendicular to the west wall profile, ran east-west along successive faces from N37 to N45, and were typically from 1.5–2.0m in height, the extent of the Stage III mound fill below the summit to the ground surface/apron on the south side (Figure 03-68). The two profiles in combination proved an effective means of delimiting interior filling episodes, and towards the end of the fieldwork we were able to move to the north into the mound about a meter each week. It was anticipated that these procedures would be employed until another interior mound slope and summit was reached, from a Stage IV mound, or





Figures 03-67 and 03-68. The N39 E179-186 profile as seen looking toward the corner with the west wall in N36-39 E179, and directly from the south as the crew cleans up the summit for documentary photographs, September 17, 2003.



Figure 03-69. Backhoe removing another meter of moundfill from the southern profile of mound A and dumping it off the steeply eroded eastern face of Mound A (facing SE).

until we had gone all the way through the mound to the north side. The fieldwork ended in 2003 before this happened, however, although inspection of the profile that was obtained suggests that a second set of paired summit platforms may have been emerging, or a much smaller interior mound. There are almost certainly several more interior stages and construction present within Mound A that could be delimited using the methods employed from 2001 to 2003 should future work occur. Excavations opened deeper into the mound on the south side late in the 2003 field season, in fact, found evidence for several additional construction episodes, Stage IV through VII, although in the area examined they were flat, and appeared to be from construction of the apron and terrain preparation prior to mound construction.

Documenting the Stage II Mound

Atop the mound excavations began in 2003 by talking down units adjacent to the control trench, removing the Stage II mound upper surface using the same procedures followed in 2002 to ensure analytical consistency. The distinctive reddish-orange layers that made up the Stage II surface(s) were exposed and the fill from and immediately above these surfaces was screened

or floated in entirely. Every effort was made to locate features on and immediately below this surface, specifically postmolds and wall trenches. Features on the Stage II surface were carefully exposed and documented (see Chapter 9). Because Feature 75—an unusual hearth found atop the Stage IIa mound in 2002 that appeared to be a possible incense burner—would be lost as the excavations proceeded down into the mound, a decision was made to remove it in its entirety for curation. One of the student crew members, Ehren Habela, had worked on paleontological expeditions and directed the recovery (Figure 03-70). The feature was first pedestalled and then encased in gauze and plaster and, after carefully undercutting the soils and roots from the bottom, which was also encased, it was placed on a sheet of plywood and later transported to SEAC in Tallahassee as a special block sample.

Once the Stage II summit surface had been documented, the fill between it and the Stage III summit was removed. The fill making up the Stage II mound was not screened in its entirety, since extensive samples were obtained from it from the control trench in 2001 and 2002. To facilitate fill removal and stratigraphic interpretation, a second line of 1m excavation units was also opened on the eastern edge of the mound above the Stage III summit from N38, E185 north, and quickly taken down to a short distance above the Stage III summit. The west profile of these units was then cleaned and used to guide the removal of fill between this face and the original summit control trench in E181. The units were not all taken to the same depth simultaneously, but instead each unit moved downward at the pace of the workers, and whether features or unusual filling episodes were found that required attention. Toward the base of the mound on the south side an unusual blanket filling episode, Zone IIIk, with thin (<.5cm) layers of black, yellow and red sediment was found that we called the 'multicolored basin fill' or MCBF for its shape and composition (Figure 03-71). This and other unusual fills in the mound, such as those making up the Stage IIb gray platform. were either intensively sampled or removed in their entirety.

The Stage IIb fill had, as noted, been recognized early on as highly unusual, both because of the color and homogeneous consistency of the fill, and because since faint red veneers had observed over and extending out from its southern



Figures 03-70. Removal of Feature 75 from atop the Stage IIa mound in 2002. Since it would be lost as the excavations proceeded down into the mound, a decision was made to remove it in its entirety for curation.



Figure 03-71. Chief Ranger Allen (left) and SEAC archeologist Donna Jean Rausch (right) stand beside the 'multicolored basin fill' upon initial exposure, that appears to reflect a termination episode associated with the abandonment of the underlying Structure 2a on the Stage III mound summit, or an initiation ritual associated with the start of the overlying IIa platform.

end in the 2001 and 2002 field seasons. A decision was made to try to document the extent of both the veneer and the fill itself during the 2003 field season, something we accomplished (see Figure 03-47). The red veneer on the south side of the IIb mound was exposed first, and then after the summit surfaces were removed, the gray fill was removed as a single strata. The veneer ran from the base of the IIb mound to the south for several meters, until it was ended under a mass of wash (IIa-8) coming off the IIa platform on the southern side of the summit. Although the platform fill and surfaces had apparently been carefully prepared and cleaned, a few artifacts were found associated with them, including two large shell tempered sherds, one each at the top and at the base of the platform (see Chapters 14, 15). The gray platform fill, which was quite distinctive, was removed in August and September 2003, with east-west profiles drawn every meter to determine its shape. A possible wall trench, very faint and ephemeral, was observed on the summit of the platform on the southern margin, and a few well defined isolated posts were located elsewhere in the upper fill intruding from above, but no well defined structures were recognized. A small piece of worked copper was found at the base of the gray fill in N51, E179 (see Chapters 9 and 13). Three structures were eventually found under the gray platform and the red veneer running off it in 2003, Structures 3, 4, and 5, as discussed below.

Filling episodes in the IIa mound at the south end of the summit, in contrast, were not very distinct until near the bottom of this feature was reached, when the thin fill of red, black, and yellow sediments, designated the MCBF as described above, was found. These deposits appear to be from an initiation ritual for the IIa mound, or a termination ritual for at least two successive structures, designated 2a and 2b, which underlay it on the Stage III summit. While the IIb platform was recognized early on, it was not until we were able to see a much larger and deeper profile that we realized that a second small platform, the IIa mound, had also been built on the Stage III mound.

Documenting the Stage III Summit

The Stage III surface was located approximately 1.6m below the existing ground surface, and about a meter below the Stage II surface(s). Where exposed at the end of the 2002 field season, at the top of the south trench and near the base of the gray platform at the center of the mound, it was characterized by a bright red to reddish black prepared floor that was fairly easy to find and expose. Well preserved remains of structures were found that were atop the Stage III mound when it was in use, although unfortunately there were few associated artifacts. The first area we encountered structures on the Stage III summit was on the south end, under the IIa mound, where instead of one floor or surface, there appear to have been a number of separate rebuilding or renewal episodes, including portions of two nearly complete and two or more partial structures, designated 2a, 2b, 6, and 8 (see Chapter 9), with successive floors or fills separated from the next by at most a few centimeters of fill. These fills and features were removed separately where they could be delimited. The same strategy was employed across the summit, removing successive floors, fills, and features associated with summit structures as they were encountered.

The Stage III summit was found to be extremely complex, with evidence for multiple

rebuilding episodes, characterized by thin fills and the floors, wall trenches, and lines of posts from structures, some of which were more complete than others (see Chapter 9). Care was taken in the construction and later the removal of these buildings by the Mississippian inhabitants, with the result that virtually no artifacts were found on the floors or in the associated wall trenches or post holes. No evidence for burning of the summit structures was observed, although well preserved central hearths were found in three buildings, designated Structures 1, 2b, and 6 (see Chapter 9). Instead, when a new structure was erected in the same location as a preceding one, and also when the summit was abandoned altogether and the Stage II mound started, posts were pulled out and the floors swept clean of debris, including the materials (i.e., daub, thatch, and wooden wattle and posts) used to build the structures. The prepared surface comprising the floors of the final structures was left intact, however, and was found to be remarkably well preserved across the mound surface. Underlying floors, in contrast, were often fragmentary, and in some cases had been partially removed before new structures were put up.

Whenever features such as heaths, posts, or unusual filling episodes or artifact concentrations were found, they were carefully cleaned, mapped, photographed, and sampled. Summit stage surfaces were subdivided into 1m units, using the existing site grid from previous field seasons, and excavated using these proveniences. Individual features on stage surfaces were mapped and photographed, as were the cleaned stage floors or side surfaces in their entirety. Fill from ca. 2–3cm above a recognizable structure floor or other special surface was water screened by 1m unit, with flotation and soil chemistry and paleoethnobotanical samples taken from each square for specialized analyses (see Chapters 11 and 16). Where floors were well defined, they were removed and floated in entirety using 1m units, with three ca. 50cc soil samples also taken from roughly the center of each square for pollen, phytolith, and soil chemistry analyses, and to ensure that samples existed for possible future specialized analyses.

The first filling episode removed in its entirety on, or actually just above, the Stage III summit in late July was the ca. <.5cm thick filling episode of successive black, yellow, and finally red fills that was so pronounced that we called the "multicolored basin fill," or MCBF, as described previously, and that was designated Stage IIIk by the project geoarcheologist (see Figure 03-71 above, Chapters 9 and 10). The fill appears to reflect a termination episode for the structures on the underlying Stage III mound, or an initiation ritual for the IIa mound raised above it. The fill was removed in its entirety, with samples taken from each layer.

On August 14, 2003, a dramatic discovery was made of charred textile/cordage fragments together with some broken pottery in a hearth, Feature 147/160, located at the center of a structure, later designated 2a, that had been built and later dismantled on the south end of the Stage III summit (see Chapters 9, 19). Twists in the cordage were apparent upon close inspection (Figures 03-72 and 03-73). The carbonized materials were extremely fragile, crumbling at almost the slightest touch. For this reason we left them unexcavated until we could obtain advice on how to protect and remove them successfully. Pictures of the cordage were posted on the web site later that morning, and again that evening, following calls to textile specialists James Adovasio and Penelope Drooker, the former of whom ultimately wound up receiving and examining the materials from the mound (see Chapter 19). Both called back almost immediately, and recommended removing the fabric in a single mass, and keeping as much of it in the matrix as possible to protect it (*en bloc*). The following morning Adovasio called again after viewing the latest pictures, and he and his lab director, Jeff Illingworth gave us very explicit instructions on how we should remove the material. His call was taken atop the mound, and was relayed via speakerphone to all those who would be working on the feature. Adovasio also very graciously express mailed us a copy of a book he had written on textiles, *Basketry Technology: A Guide to Identification and Analysis* (1977), and provided detailed instructions on how to deal with the material. Over the next several days the entire



Figure 03-72. Carbonized textiles and potsherds in the upper part of a hearth, Feature 147/160, found on the prepared floor of Structure 2a at the south end of the summit, August 15, 2003.

hearth was pedestalled, encased in a wooden frame and then wrapped in plastic, gauze, and plaster, and placed on with a thick piece of sheet metal—the park sign formerly by the entrance to the excavations that was made available to us)—and removed as a block (Figures 03-74 and 03-75). It took eight of us to carry the hearth from the mound and load it into the back of Anderson's truck for removal to the field lab. Soon thereafter a second mass of what appeared to be charred matting was found in N46, E179, at the base of the IIc depression. This area was also removed, this time in two sections, due to a major root disturbance in the center. By the close of the 2003 field season several more such masses of textile had been removed *en bloc*, and were shipped to in a small rental truck to Adovasio at Mercyhurst University by SEAC technicians (see Chapter 19).



Figure 03-73. Close ups of the heavy cordage by the sherds in Feature 147/160, August 15, 2003.

Slowly but surely the excavations proceeded from south to north across the Stage III summit, exposing floors and removing features encountered in the process. Ultimately four well defined structures were found as well as portions of several others; each is described in detail in Chapter 9. Because the summit was actually composed of several successive well to poorly defined floors, separating them and linking features to them sometimes proved difficult. Significant stratigraphic relationships and associations were resolved, although some will never be known with certainty. One exciting moment came when we recognized on August 22nd that the highest prepared surfaces (IIIh-2, IIIg), which we were following from the south end of the summit, were found to directly underlie the reddish veneer and associated washing episodes running off the south side of the Stage IIb gray platform. At this point we realized that the gray platform would have to be removed in its entirety if we were to follow this floor out to the north side of the mound, which we ultimately did, finding several structures or structure fragments in the process. Given these developments, a decision was made soon after this to document as much as possible of the Stage III mound summit rather than focus solely on the south side of the mound. Once the Stage III summit was cleared, we believed it would be possible to quickly remove its underlying fill, allowing us to go deeper into the mound, into what were subsequently recognized as the Stages IV through VII construction episodes. Given the speed we were starting to move into the mound, by September we thought that given another field season comparable in scale to the one underway in 2003, that it should be possible to remove the entire direct impact zone, as originally planned. Unfortunately, it didn't happen, although by that point even had we known when the excavations



Figure 03-74. The removal of the hearth from Feature 147/160 with the charred fabric in Structure 2a on the Stage 3 surface. Kirk Perry of the Chickasaw Nation, with his son Jason Perry, and James Blackburn (in partial 1750s period Chickasaw garb) visited the excavations and observed the hearth removal, August 21, 2003.



Figure 03-75. It took a crew of eight to move the ca. 200 pound gauze and plaster wrapped hearth, Feature 147/160, with carbonized textiles in the fill, off the summit and into David Anderson's pickup by the edge of the mound for hauling to the field lab, August 21, 2003.

were going to cease when they did, it is unlikely that we could have accelerated our pace much more, at least not without substantially damaging or destroying much of the information remaining in the threatened portion of the mound. If archeologists go back to Mound A before much more of the mound slides into the river, our decision to proceed cautiously will have been the correct one. If not, however, we make no apologies, since the approach we adopted was thoroughly detailed from the start of the mitigation, and was proceeding well according to expectations when the work ceased.

In exposing and documenting the structures on the Stage III summit in 2003, it was clear that the prepared surfaces of floors associated with them had, in at least some cases, been truncated or cut through by wall trenches or lines of posts. The features associated with structures were drawn and photographed, with each posthole assigned a separate number, and the surrounding wall trench fill collected by segments delimited by the 1m grid unit, or by the side of the structure it was located on. Unlike the buildings and hearths on the Stage II summit, those on the Stage III summit were in a much better state of preservation, with well defined wall lines and fired basins, and even the occasional presence of carbonized textiles.

A ca. 4x4m wall trench building, designated Structure 1, was found under the Stage IIc depression and the red veneers and washing episodes running off the Stage IIa and IIb mounds, with two stacked floors, indicating it had been rebuilt at least once, and a well defined central hearth slightly offset to the south (Figure 03-76; see Chapter 9). A deer mandible and tibia and a small concentration of charred material, possibly matting or burned wall material, were found in the wall trenches associated with Structure 1 or underlying buildings, some of the best preservation we observed on the Stage III summit. To the south under the IIa platform were two wall trench buildings were found, designated Structures 2a



Figure 03-76. SEAC field crew members finishing troweling the Structure 1 floor prior to documentary photography (facing S).

and 2b, the highest yielding the hearth with the charred fabric in the fill. More buildings appear to have been present in this area, since a superbly preserved clay lined hearth (Feature 440; see Chapter 9), a fragmentary wall trench, isolated posts, and a partial structure were all found, the latter extending under the prepared Structure 1 floor. The partial building, designated Structure 6, had fragments of its west, north, and east walls present, but its southern margin had been removed, probably in clearing associated with summit renewal and the construction of Structure 2b (see Chapter 9). Extensive rebuilding on the Stage III summit was evident, but whether some of this was from structures built on underlying platforms on an earlier, Stage IV mound, as was the case with the IIa and IIb platforms built on the Stage III summit, could not be determined, since only a portion of the Stage III fill, roughly the southern one third, was completely excavated. Even so, there remains the possibility that the extensive rebuilding on the south side of the Stage III summit may have been because it was where the upper part of an underlying platform on the Stage IV mound may have located.

A third discrete building, Structure 3, was found under the IIb 'gray platform' that was covered over with a red silt clay mantle, much like that over the IIb mound itself (Figure 03-77, see Chapter 9). A clay ridge was found running around part of the east and south sides of this structure, resembling the ridges found on top of the Stage IIb mound above it. The parallel is striking, and suggest some continuity or memory of the earlier construction persisted over the interval between the two stages, which based on the radiocarbon dates from the mound were apparently built fairly quickly one after the other sometime in the mid-thirteenth century (see Chapters 9, 21). When the red surface and ridges were removed, a well defined floor and wall trenches with closely spaced postholes within them were found. This structure, which was ill defined on its north and west sides, appeared to extend into the mound beyond the western profile. Interestingly, the red fill IIIg-4 underlying the prepared floors of Structures 1, 2, and 3 sloped abruptly downward on the east side of the mound in N44, E184, just past the wall trench from Structure 1, suggesting these surfaces were intentionally prepared to put structures upon them and were colored in the process. How far down the slope this colored surface extended was unknown, because the surface ran to the edge of the eroding bluff. Once the floor of the what we had designated Structure 3 was removed in its entirely, upon going deeper posts and wall lines from earlier structures were found, including a wall line designated Structure 5 (see Chapter 9), although these were not fully explored in 2003. Between and under Structures 1 and 3, however, in and near the Structure 5 area, a thick layer of fired daub was found that appeared to reflect debris from a structure that had apparently burned; discolored soil from firing was found over the underlying surface. An elaborate chunky stone and another small mass of charred material were found in this same area.



Figure 03-77. Project co-leader Cornelison oversees the mapping of structures on the Stage III summit. Structure 3 is in the foreground; Structure 1 in the background.



Figure 03-78. Excavations at the north end of the Stage III summit, through the gray IIb platform fill. Note the way floors were protected with plastic and plywood sheets when we were not working on them, October 2, 2003.

On October 2nd, a 3x7m trench was started by hand to the north of Structure 3, running to the north end of the summit, through the distinctive gray fill of the IIb mound (Figure 03-78). The trench was restricted in horizontal extent because the rail system was still in place to the east, in units N57–N62, E179 and 180, and because the goal was to find out what was here, not completely expose this end of the summit. Because large samples of the IIb mound had been previously screened, the fill was shovel skimmed and sent down the north face of the mound via barrels, over the east side down the bluff slope, and in backfilling of the north step trench, which had been lined with black plastic the month previously. This north-south trench was taken down ca. 80cm until a well defined prepared clay surface was found, essentially similar to the surfaces on the Stage III summit to the south, although somewhat lower in elevation. The excavations were stopped about 5cm above the floor over most of the area examined, save for small exploratory probes to locate it, to protect the floor itself while we were removing the fill above it, and because a few artifacts were observed at this point, which might have been associated with whatever structures may have been present here. The fill immediately above the floor was removed separately and water screened. Once the fill above the floor was removed lines of posts from a building designated Structure 4 were found (see Chapter 9).

The prepared surface for Structure 4 was some 50cm lower in elevation than where structures were found to the south, suggesting less summit construction or rebuilding occurred in this area. If the Stage IV mound had paired platforms on its top, as the Stage III mound did, they may not have extended this far to the north, or the northern platform, if it existed, may have been lower in height. Alternately, Structures 2a and 2b may have been atop an underlying south platform on the Stage IV mound, Structures 3 and 5 over a northern platform, and Structure 4 may not have been built over a preexisting platform.

All this, of course, assumes platforms were present associated with the Stage IV construction episode, something that at this point we have no real evidence for one way or the other. Only the Structure 4 floor was removed, and whether underlying structures or floors were present remains unknown, although unlike the situation to the south, no sign of them was observed. When exposing structure floors, the surfaces were thoroughly cleaned and photographed. An unusual upward sloping surface was found on the east side of the mound over Structure 4 that appears to have been an embankment of some kind. Given the arrangement of posts associated with Structure 4, which ran under this apparent embankment, it was associated with materials placed down after the structure was abandoned. It may have been an embankment designed to contain the overlying IIb gray platform mound fill, which given its texture could have washed away fairly easily unless bounded in some way. A similar possible embankment was noted at the north end of the IIb mound, in N61, E181, as noted in the discussion of the north 2001 control trench, suggesting the Mississippian builders recognized the vulnerability of the fill to erosion and had taken steps to contain it.

Posts appear to have been pulled up when the structures on the Stage III summit were removed. Some post holes were filled with red clay, but most appear to have been filled with surrounding material or midden, and in a few cases were hollow, only incompletely filled before being covered over. Only in a few cases were they found to be charred (e.g., Feature 429 in Structure 2b, see Chapter 9), suggesting uncontrolled summit fires were rare, at least in the area examined. Sometimes cobbles were included as probable supports, such as the clay filled posthole with a large smooth quartz cobble in the fill, Feature 294, found in N41, E140, unassociated with any obvious structure. One very large posthole associated with Structure 2b on the south end of the Stage III summit, Feature 375, had fragments of preserved wood present in the fill. It appears to have been a large support or marker post associated with an earlier structure or stage, and had a well-defined insertion ramp extending to the west.

Documenting Deeper Construction Episodes in Mound A

Starting in late September 2003 a number of units were opened on the south side of Mound A, below the portions of the Stage I, II, and III mounds that had been removed to document what was below this depth, in an effort to locate possible interior construction episodes, and possibly smaller mounds. Fill in the units immediately under Structures 1 and 2a was taken down, in hopes of finding additional well preserved floors. The presence of post lines indicated earlier structures had been present, but in both areas only the highest or final floors were well preserved. A second structure was found under 2a that was designated 2b, as well as a number of fragmentary structures that suggested multiple construction episodes took place in this area. In addition to the remains of earlier structures, at the base of the IIIg-4 and IIIh-2 zones where evidence for structures was found, some unusual yellowish red and yellowish brown filling episodes were observed in the vicinity of N42, E179, designated IIIf-5 and IIIf-6 (see Chapters 9 and 10). These were originally thought to be some of the last fills laid down in the construction of the Stage III mound prior to erecting summit structures, but they could also have been the upper part of a platform on an interior, Stage IV mound summit. Highly varied fills underlay the Stage III summit as far into the mound as we were able to examine in 2003, from ca. N37 to N45, and were designated IIIc through IIIg by the project geoarcheologist (see Chapter 10).

By early September 2003, it was apparent that digging down through the Stage III mound summit from the top would never allow us to reach the bottom of the mound quickly, especially since we were encountering multiple stacked structures in several areas, each of which had to be carefully documented. At the apron level, immediately south of the last east-west face removed using the backhoe in 2003, nine units (in N42–N44, E180–182; and N43, E185–186) were hand excavated using arbitrary levels, exposing a number of strata we later recognized were part of the Stage IV and V construction episodes, although whether mounds

were atop them remains unknown (see Chapters 9, 10, and 21). While a number of filling episodes and well preserved paleosubsistence remains were identified in these units, with the end of the 2003 season looming we decided that the use of small, hand excavated units was too slow and ambiguous a means of exploring and sampling the lower deposits.

Accordingly, using the backhoe, a ca. 10m trench from ca. N35 to N44 was opened on the southeast side of the mound to subsoil just to the east of the E185 gridline on October 24, 2003 (Figure 03-79). The use of heavy equipment to open the trench, which was placed right at the edge of the drop, was considered justifiable because the deposits in this area were right at the edge, with a sheer drop below them, and hence were among the most likely to be lost to erosion. Because further work at the site was looking increasingly unlikely, at least in the near future, furthermore, learning something about the lower deposits in the vicinity of the mound, while minimizing damage to them as much as possible, was considered critical. The excavations were closely monitored by Anderson and Chief Ranger Allen, the latter's presence because of the challenging aspects of removing fill with a piece of heavy equipment near the edge of a steep drop. The purpose of this trench was to document what strata were lower in the mound in this area, to obtain samples from these layers, and determine whether any structures were located in lower stages or at the base of the mound. Many mounds in the Southeast were built over earlier structures (Cobb 2013), and since a number of posts and wall lines were found in the apron deposits on the south side of the mound, how deep these structures might be found was unknown.



Figure 03-79. Excavation of the ca. 10m long deep trench on the southeast side of the mound just to the east of the E185 gridline, October 24, 2003. Chief Ranger Stacy Allen, David Anderson, and Charles Lawson and film maker Cindy Tomlinson Brummer monitor the work.

Almost 2m of deposits were found in the trench opened along the bluff margin, only the upper meter of which had been recognized and minimally sampled prior to this (see Figure 03-53 above). The western wall, which was quickly cleaned and photographed, exhibited multiple filling episodes and features like hearths, wall trenches, posts, and prepared floors associated with well defined surfaces and fills (see Chapters 9 and 10). Large quantities of paleosubsistence remains including charcoal, shell, and animal bone were visible in the profile in the lower zones. A pronounced red band of sandy clay ca. 20cm thick (a part of a thematic mantle designated IVa-1a; see Chapter 10) at north end of this trench, that had been previously recognized in the test units opened to document lower stages (N43, E180–181; N43, E185–186), was found to underlie much of the Stage III mound at this end of the site. This band had also been noted three months earlier by the rappelling team on July 22nd indicating how much of the mound had been examined in the interim (see Figures 03-55 and 03-56). The base of the mound was found to lie unconformably on red sandy clay subsoil, some 7m below the summit. The subsoil in this area had no overlying soil horizons, and was below the modern ground surface to the west of the mound, suggesting the mound in this area was built over a depression or on terrain sloping downward from west to east, rather than on level terrain or a slight natural hill as we originally thought. The project geoarcheologist thought that perhaps as much as 1–2m of soil had been removed from in this area (see Chapter 10).

The walls of the deep trench were cleaned, gridded into 1m areas using nylon string, photographed, and then profiled over the next

several days, and 1m screened column samples were started in three units to better document the deposits. On October 29th through 31st Sherwood came out and guided the profiling, and collected numerous soil samples from the deposits (see Figures 03-53, 03-62; see Chapter 10). Given the remarkable amount of information evident in the exposed E185 deep profile, two 1m units opened into it in N38 and N40, E184 were taken to subsoil and a third, in N42, E184, was opened almost a meter. The preservation of paleosubsistence remains of bone, shell and charcoal was considered so remarkable that as part of the final backfilling and shutdown of the mound in August 2004, another two 1m units were excavated, N37 and N39, E184, all in natural strata and using the profile as a guide, to create a 1x4m sample. The fifth unit opened into the profile, N42, E184, that was started in 2003 and taken to a depth of a meter, was not taken down further. A well defined floor and wall line from a structure extending to the north and west had been found and, since it might be more thoroughly exposed in the future, we decided to leave it intact. In the four 1m units that did reach subsoil well defined posts were found at the base of the mound, and posts and other features were also observed originating in overlying strata, as well as evidence for hearths and structure surfaces (see Chapters 9 and 10). Fill from these units, which was water screened or floated, had to be lifted out of the units in five gallon buckets, or in wheelbarrows pushed up a ramp built at the south end of the trench for that purpose. All the water screening from these units was done near the base of the deer stand at the south side of the apron, just north of a large gully located in this area.

Final Activities in 2003

The last several weeks of the fieldwork in 2003 crew members were working on several levels, on the Stage III summit, in the deep trench on the south side of the mound, and at the very top of Mound A, where elevation readings were still being taken, and where the records workstation was maintained. Portable scaffolding was brought in to facilitate the cleaning, mapping, and detailed close up photography of the west wall profile, which was over 4m high in places (see Figure 03-54). Concurrent with the fieldwork, every day water screening continued at the site, and flotation samples were being processed in the lab at the Hagy House, where materials from screened provenience as well as special samples were being organized and boxed. As the fall wore on, working with water in flotation and water screening activity became increasingly difficult, as temperatures did not rise above the low 50s some days; the hot summer days were long past. Hypothermia was a potential problem, and crew members engaged in these activities had to be careful to stay as dry as possible. Fortunately, excavation activity was still fairly comfortable, especially later in the day. With fall advancing, the leaves were falling off the trees on and near the mound, making cleaning the summit more challenging for photography. Areas cleaned for photography could become covered with dead leaves with a gust of wind, and the sun shade had to be shaken out every few hours. The bare trees and reduced underbrush did, however, make for great views of the Tennessee River as well as the eroding slope below the site.

The crew continued working at the site daily through November 20th, completing the removal of floors from exposed structures on the summit, and in cleaning, photographing, and drawing the mound. Anderson and Cornelison (2003b) attended the Southeastern Archaeological Conference in Charlotte from November 12–15, where they gave paper on the work to date on Saturday morning, and then returned to the project. SEAC archeologists Robert Moses presented a talk on the project to the Mississippi Educational Association on November 14th. The project rental houses at Pickwick Landing were also cleaned that week, as everyone had to be out of them by the weekend of the 15th and 16th. The remaining crew members, by now numbering less than a dozen, relocated to the Hagy House for the last few days of the project. The last excavation at the mound in 2003 occurred on November 17th, when the 1m units on the southeast side of the mound were completed, although water screening of the fill took another day. Remarkably, on the last day a large incised bone pin (see Chapter 13) was found in the fill in N38, E184, about 50cm above

the subsoil by crew member David Bleckley, who with Ehren Habela were among the few technicians on the project from start to finish in 2003. That same day Sherwood was at the site for the third time this field season collecting samples for geoarcheological analyses, work finished two days later as darkness was descending on the 19th. The covering of the excavations occurred the next day, with everyone on the way back to Tallahassee on the 21st. Anderson's field notes on the last day of the excavations had as their final entry "took a nasty fall as we were closing down, but seem to have avoided serious injury" words about slipping on the earthen ramp leading up from the southeastern trench by the bluff edge. Given all the things that everyone had done, the fact that no one had been seriously injured during the fieldwork—save for one very serious tick-induced illness fortunately caught in time—reflects the emphasis on safety that was maintained throughout.

Closing Down and Stabilizing the Excavation Units at the End of the 2003 Field Season

By the late summer 2003, it was clear that no funding for further investigations in 2004 and beyond would be forthcoming. Given this, planning for a formal shutdown and stabilization of the mound excavation area was initiated, although the actual final backfilling and stabilization did not occur until August 22, 2004, following a brief program of excavations on the 20th and 21st of August directed to obtaining additional samples from near the bottom of the mound. Initial shutdown actually began in mid-September 2003 with the backfilling of the 2001–2002 excavation trench on the north side of the mound, under the direction of Cornelison, who also oversaw the final shutdown and capping of the mound in 2004. The units in the north trench were lined with black plastic, and the backfilling was accomplished with fill removed from the summit and from the screening area at the base of the mound. It was done since there were no plans to work on the north slope of the mound, especially the lower portions, in the time remaining in 2003. On the 19th and 20th of November, the excavation area was covered with the blue 15.24x30.48m (50x100ft) tarps and the edges thoroughly lined with sandbags. The tarps were placed to conform closely to the contours of the excavation units, so any rainwater accumulating in them would not pull the sandbags loose, and the tarps were carefully checked to ensure there were no holes water could leak through onto the underlying walls and floors. When the tarps were removed in August 2004, little damage to the underlying deposits was observed, and it was evident that this strategy of covering the mound was just as effective, yet far less cumbersome and labor intensive, as the plywood covers and multiple sheets of thin black plastic used in earlier seasons. Each season, in this as in so many things, we were able to improve upon many of the field procedures.

Observations at the End of the 2003 Field Season

During the 2003 field season a number of important discoveries were made, and these, and the results of earlier investigations, are examined at length in the remainder of this volume. Mound A, it was clear, had a very complex history, with many distinct construction episodes and activities occurring on and around it. Structures were present around, on top of, and under the mound, and where these could be examined in detail, as on the Stage III surface, some were quite small. No evidence for massive temples or elite residences was found; instead, smaller buildings were typical and these were likely domiciliary in nature given the presence of hearths. These may have been residences for the elites or their relatives and retainers, suggesting the mound area may have been a chiefly compound, with many related individuals present, rather than where one or a few people lived.

The fieldwork also showed that when summit structures were rebuilt varying amounts of disturbance to previous surfaces was fairly common, with some removal or addition of fill and features. Typically only the highest structures on a stage were well preserved, that is, with reasonably complete post or wall trench patterns or prepared floors still present. This was particularly evident on the Stage III surface, where evidence for extensive rebuilding was found. The Stage III surface was upwards of 50cm thick in places, with evidence for numerous

construction and rebuilding episodes. While several fairly well defined and more or less intact structure outlines were encountered on the highest parts of this summit, isolated posts, fragmentary wall lines, and portions of buildings were found underneath these buildings. Some of these structural remains were incomplete and ambiguous, while others were quite distinct. So many complete and fragmentary floors and filling episodes were found on the Stage III summit, in fact, that it is obvious that the removal and replacement of structures sometimes involved appreciable cutting, leveling, and filling activity. The Stage III surface may have been used for an appreciable length of time, probably several decades and perhaps as much as a century, based on the radiocarbon dates obtained from the mound (see Chapters 9, 12), and the extensive rebuilding may also be due to the presence of earlier and possibly paired platforms below the summit that also had structures built on their tops, a pattern observed with the Stage II mound.

Lower and hence earlier construction episodes, designated Stages IV through VII, were found and examined in several units in the trench opened on the southeast side of the mound in 2003. These were horizontal fills in the area examined, rather than interior mound sides or summits, although such features may have been present further into the interior, in areas that were not reached. Some or all of these lower construction episodes may reflect preparation of the ground surface prior to construction of the mound, raising and leveling it out, for example, probably with associated ritual activity in some cases, given the unusual nature of some of the loads(see Chapter 10). Since evidence for structures was found on some of these lower surfaces, it is clear that they were open for a fair amount of time. The radiocarbon dating subsequently conducted with materials from the mound stages suggests activity in the Mound A area for as much as a century or more before the Stage III mound was built in the thirteenth century (see Chapters 9, 12, and 21). Extensive, well preserved paleosubsistence remains were found in the strata near the base of the mound. Because preservation of such remains was rare in higher deposits, and because having information on the age and artifact assemblages associated with these lower mound surfaces was deemed essential to understanding mound and site history, collecting and analyzing such samples was given a high priority both in 2003 and again in 2004, as noted below. The preservation of structures, surfaces, textiles, and paleosubsistence remains clearly got better with increasing depth in the mound, something future investigators should bear in mind when examining these deposits.

Having geoarcheologist visit the project visit the project periodically, as Sherwood did one or more times each field season, and several times in 2003, was an invaluable asset. Not only did she provide a fresh and informed perspective on what appeared to be going on in the mound to the excavators, but she helped us better document what we were finding. In particular, her training helped ensure that the final profiling had accurate descriptions of the fills, and noted things that might otherwise have been missed.

Another invaluable resource to interpreting what was done and found during the excavations were the project records themselves, which were extensive, encompassing tens of thousands of pages and images, and which are curated but also provided in electronic form in the project appendices. These included daily field notes; standardized square/level, feature, and special sampling forms; and the drawings of floors and profiles. They also include the artifact catalog and database, and the primary analysis data produced by project specialists. Nearly 6000 high resolution digital photographs were taken in 2003, and nearly 12,000 in total during the fieldwork that occurred from 1999 to 2004. These images proved to be an invaluable complement to the paper records, and their close examination frequently lead to insights not always or fully realized in the field.

The excavations ended in 2003 before we were able to remove the last buildings we knew were present on the Stage III mound, in an area encompassing about 20 to 30m^2 in the north central part of the summit, under Structures 1 and 3. One and possibly two possible floors were evident in this area in the profile by the drop off, in ca. 75cm of fill. Likewise, whether earlier buildings underlay

Structure 4 at the north end of the summit was also unresolved, although no evidence was found for them when the prepared floor was removed, nor were any observed in the north step trench profiles.

The 2003 field season was the first time high level NPS officials from the southeast regional office visited the site and met with the superintendent, giving us hope that the excavations would continue beyond this field season. Unfortunately, no such support materialized, which was disappointing, given the site is an endangered National Historic Landmark and National Register of Historic Places Property, and NPS has a legal responsibility for the mitigation of its eventual loss. The agency was facing severe funding cuts at that time, and completing the mitigation was apparently considered something that could be deferred until the budgetary situation improved, and advocates for the work could again be found. Unfortunately, the shut down meant that much of the effort and expense directed to project logistics was lost when the equipment on and near the mound was removed, like the rail system and screening area, the photo towers and safety fences, the 2500 gallon water storage tank, and the sun shades. All were dismantled, although salvageable materials turned over to the park and some of them, like the rail segments, might be available for use in the future. The project team had also learned how to quickly and carefully excavate the complex fills and floors of the mound, and this expertise too was dispersed, although hopefully the level of detail provided in this report and the accompanying appendices will serve as a guide to how such work could proceed in the future. That as much work occurred as actually did from 1999 to 2004 and after and that a detailed final report was ultimately produced remains a remarkable scientific achievement. As such, it reflects positively on the leadership and commitment of NPS personnel at SHIL and the Southeastern Archeological Center, as well as the voluntary efforts of a lot of citizens and scientists associated with the project.

2004 Fieldwork and Closedown

In April of 2004, a limited program of excavations associated with the final capping of the mound was proposed for later that year, including (1) opening additional 1m units into the deep profile on the southeast side of the mound; (2) removing the remaining portions of the summit structures on the Stage III surface; and (3) continuing to move into the mound in 1m increments using heavy equipment to remove fill, as in 2003, to see if additional interior mound stages were present. Only the first goal was actually achieved, through the excavation of two additional 1m units, in N37 and N39, E184, by the SEAC crew during the final capping of the mound, which took place over a period of three days in August 2004.

The excavation of the two 1m units took place on August 21–22, 2004. The two units were shoveled and troweled out, with each surface or feature encountered cleaned and photographed, and special samples taken for screening or flotation from the fill of each feature, and where well preserved paleosubsistence remains were noted. Several prepared floors, a hearth, and a number of posts were found and documented, and the west profile of the four congruous units removed in 2003 and 2004, in N37–40, E184, was cleaned and photographed. The NPS crew in 2004 included Cornelison, Jill Halchin, and Steven Kidd, Charles Lawson, Chris Lydick, Jessica McNeil, and Shannon Weatherby. David Anderson participated in the excavations, driving over from UT, Knoxville for the fieldwork, and took over 200 photographs, leaving before the final capping of the mound occurred. Anderson had been offered a faculty position by the university's Department of Anthropology the previous year, and had accepted it in November, with the understanding he would not start work until the main excavations at Shiloh were completed. His participation in the Shiloh project since January 1, 2004 in the analysis and reporting, as a result, reflected a continuation of the partnership with Cornelison built up over the previous seasons at Shiloh.

The capping of the mound was accomplished under the direction of John Cornelison and the SEAC team, assisted by park maintenance personnel, and following advice provided by SEAC director John Ehrenhard, who had overseen archeological stabilization efforts at a number

of locations across the country. The mound's flat surfaces were partially covered with a layer of black filter cloth, onto which were placed some thirty dump-truck loads of yellowish brown silt clay. The fill was dumped on the south side of the mound, and then spread using a small bulldozer, which pushed the fill ahead of it, providing a foundation to avoid damaging the underlying mound surface (Figure 03-80, Chapter 6). The profiles on the west and east sides of the excavations were left uncovered to prevent the vertical plastic sheeting from becoming an erosional face. The distinctive capping fill was then spread up to the top of the 2–4m high E179 west wall profile below the stairway and walkway. Fill was also spread over the excavation units and trenches all the way to the bluff edge to the east. The filled surface was then raised until it was flush with the mound summit, and sloped to give it an angle of repose of ca. 15–30 degrees near the walkway and ca. 45 degrees by the bluff edge (Figure 03-81). The area was contoured, covered with a thin layer of topsoil the following year, and planted in grass, creating a surface that was assumed to be stable, and an appearance that would blend in conformably with the remaining unexcavated portions of the mound. The goal was be to leave the mound in such a condition that, barring a collapse of the underlying bluff, the surviving unexcavated archeological deposits in the direct impact zone would likely be preserved more or less intact and undisturbed until such time as additional work in the impact area could be conducted. As of 2012, this appears to have proven the case, as neither significant erosion nor a major collapse has occurred.

Most of the soils that accumulated in the screening areas on the north and south sides of the mound were left there upon project closedown, meaning future archeologists working in these locations should be aware that the upper layer is the result of our excavation activity, and not that of the prehistoric inhabitants of the site. As we found in 2001, when one of Roberts' backdirt piles was located in an old borrow pit, documenting where archeological backdirt piles were located can be important in future work at sites. Finally, in July of 2004, archeologist Scott C. Meeks from UT traveled to Shiloh and obtained a second pollen core from the pond by Mound G using a square-rod Livingston piston sampler and an open drive sampler (see Chapter 5). No other formal visits to the mound area by SEAC personnel to check on the stabilization effort have occurred, although in mid-2012 Jessica McNeil visited the area and found the mound to be relatively stable and uneroded.

Conclusions: The 2004–2013 Analysis and Reporting Effort

As recounted in the preceding pages, a major program of archeological field research was conducted in the vicinity of Mound A from 1999 to 2004. Table 03-01 delimits just how much fieldwork took place, and how much material was found, a truly vast amount of information, whose analysis and reporting occupied several years. When the field mitigation program closed down in late 2003, the examination of the 7.62m (25ft) zone



Figure 03-80. SEAC archeologist John Cornelison overseeing the final capping of the excavation area, August 23, 2004.



Figure 03-81. SEAC archeologists Steven Kidd and Charles Lawson after completion of a 2005 reseeding project. The surfaces conform, as closely as possible, to the original mound shape.

of total loss within Mound A was about 50 percent complete. Unfortunately, only minimal funding was available for assemblage processing, analysis, and writing following the 2003 field season, although some of this work had occurred at SEAC after the 1999, 2001, and 2002 field seasons, and concurrently with the 2003 field work. Fortunately, when it was becoming evident that no further work would be supported by NPS, a contract had been issued in July 2003 to Sherwood to oversee a series of specialized technical analyses with materials from the mound, work that happened over the next two years. Had that contract not been issued when it was, this technical monograph would have been much reduced in scope. The fact that the report has appeared in the shape it is reflects the hard work and dedication of a large number of people, many of whom worked voluntarily, and because the SEAC administration provided salary and resources for staff to conduct the necessary final processing, analyses, curation preparation, and writing.

A major reason the reporting was delayed several years longer than might have occurred otherwise was because Anderson had left NPS at the start of 2004 to take a teaching position at UT, Knoxville. The work that he did on the Shiloh project after December 2003 was done voluntarily, over and above his new full time position. This research, besides the writing that appears under his name in this volume, included selecting or helping with the selection of the samples that were ultimately examined for the specialized paleoethnobotanical, radiocarbon, soil chemistry, phytolith, and zooarcheological analyses and, working through and with Sherwood and Cornelison, in helping coordinate the research that was undertaken with the various project specialists. Unlike the project consultants, who were paid for their services, and SEAC staff, whose salaries were covered, once Anderson left NPS, no similar financial support was available. Because he viewed it as an ethical and professional commitment, Anderson devoted appreciable personal time and funds, as well as support provided by the Department of Anthropology at UT in the way of startup funds and student labor, to assist in the completion of the report. At SEAC it was Cornelison's support and patience, and the positive encouragement of David Morgan, who became SEAC Director in 2009, that resulted in the report being completed as quickly as it was. Indeed, John Cornelison and his staff worked with Anderson on the data analysis, writing, and editing, and above all in prodding him to complete the reporting. They provided summaries of the materials found during the excavations, and prepared the illustrations and figures for the report. Readers who wonder why this volume took as long as it did to come out should be aware of these circumstances, and should also be aware that many comparable mound excavation projects produced under similar circumstances—like those by Knight (2010) at Moundville from 1989–1998, or Fowler in the 1960s at Mound 72 Cahokia (Fowler et al. 1999), Kelly and Larson at Etowah in the 1950s (King 2001a, 2003), or Lewis and Kneberg (1946) at Hiwassee Island in the 1930s—took as long or in some cases far longer to complete.

The technical analyses by outside specialists were largely completed within two years of

Table 03-01. The Shiloh excavation assemblage, as tabulated in mid-2004, as the analyses were being initiated.

29,546 person-hours spent working on the project from 2001 to 2003 of that number 17,644 (60%) were spent in the field		
331 Excavation Units were excavated		
4,709 Field Specimen (FS) numbers were assigned		
620 Features were identified		
6 Archeomagnetic samples were collected		
147 Micromorphology samples were collected		
15 Thermoluminescence samples were collected		
1,648 Flotation samples collected in the field, from 773 separate proveniences, weighing a total of 655,733 grams		
Faunal Remains	**13,046**	**29,560 grams**
Bone fragments:	(5,780)	(3,367 grams)
Shell fragments:	(7,266)	(26,193 grams)
Prehistoric Lithic Artifacts	**89,358**	**240,419 grams**
Fire Cracked Rock	(14,740)	(63,146 grams)
Shatter	(40,080)	(105,085 grams)
Flakes	(33,102)	39,789 grams)
Heated	[10,549/32 percent]	[10,822 grams/27 percent]
Cortical	[15,004/45 percent]	[22,957 grams/58 percent]
Flake Tools	(656)	(3,827 grams)
Abrader	(4)	(244 grams)
Burnishing Stone	(1)	(56 grams)
Projectile Points	(127)	(204 grams)
Cores	(446)	(17,569 grams)
Chunkey Stone	(1)	(443 grams)
Prehistoric Ceramic Vessel Fragments & Discoidals	**64,953**	**122,266**
Under 1/2"	(46,541)	
Grog only	(7,895)	
Shell only	(7,125)	
Shell and Sand only	(2,609)	
Shell and Grog only	(143)	
Major Prehistoric Ceramics Types		
Mississippi Plain, *var. Shiloh*	7,423	
Mulberry Creek Cordmarked, *var. Mulberry Creek*	3,953	
Baytown Plain, *var. McKelvey*	2,343	
Mulberry Creek Cordmarked, *var. Obion*	735	
Obion Plain, *var. Obion*	467	
Bell Plain, *var. unspecified*	227	
Baytown Plain, *var. The Fork*	163	
Mulberry Creek Cordmarked, *var. Coffee Landing*	150	
Mississippi Plain, *var. unspecified*	136	
Kimmswick Fabric Impressed, *var. Langston*	89	
Baytown Plain, *var. unspecified*	73	

completion of the fieldwork although some, like the work with the textiles from the mound conducted voluntarily by Adovasio and his team, are ongoing to this day (see Chapter 19). A particularly challenging part of the research and reporting that occurred following the close of the fieldwork was selecting AMS samples from secure context to ensure reliable dating, which was handled by Thomas Stafford of Stafford Research Labs, Inc.; http://www.staffordlabs.com (see Chapters 9, 12, and 21). Detailed typological and technofunctional analyses of samples of ceramic artifacts from the Shiloh Mound A excavations were conducted by Paul Welch of SIUC, who developed the original typology for Shiloh ceramics (Welch 2001, 2006; see Chapter 14). Welch also coordinated the selection of ceramics for TL dating, which was accomplished by James Feathers and the petrographic thin sectioning analyses of sherds from the mound area by James B. Stoltman (see Chapter 15). Nonceramic prehistoric artifacts of stone, bone, and shell as well as historic artifacts were examined by Jessica McNeil (see Chapter 13). Faunal analyses from the project were conducted by Judith A. Sichler (see Chapter 17), while shellfish were examined by Paul Parmalee of UT's McClung Museum (see Chapter 18).

Multidisciplinary research was a critically important part of the Shiloh Mound A excavation project, which is why Sherwood, then at UT and now with Suwannee University, was designated the paleoenvironmental and specialized research coordinator, and for that and many reasons is a co-author of this technical monograph. The geoarcheological research had three main objectives, as discussed in the planning for the 2003 fieldwork: to assist the archeologists in delineating stratigraphy and understanding the physical construction process of mound building, to identify and interpret microstratigraphy in the mound, and to identify the source areas for the sediment used to build the mound. These were accomplished with great acumen, as documented in the pages that follow, particularly in her detailed technical reporting in Chapter 10.

Paleoethnobotanical analyses in 2004 and 2005 were conducted by Kandace D. Hollenbach, Amanda Tickner, and Kimberly A. Schaefer (see Chapter 16), who examined 88 of the 1648 samples collected through the close of the 2004 fieldwork. This study followed up on an earlier analysis by Monte Abbott (2003), who had examined 50 samples from the 2001 work. The analyses by Abbott and Hollenbach and her colleagues, while limited in scope, demonstrated that well preserved paleobotanical remains are present in the mound, and can be used to address a range of research questions.

Specialized fill samples were systematically collected from structure floors and mound stage surfaces by 1m unit for phytolith (silica structural components of plants), pollen, and soil chemistry analyses, and these comprised another major part of project research. These samples tended to be about 50cc in extent, and consisted of intact pieces of the floors or surfaces where it possible to collect them, and loose fill where it was not. A complex series of analyses with 155 samples from structure floors and unusual filling episodes from the mound was conducted by E. Christian Wells, with results that offer some insights into how both kinds of areas were used in the past (see Chapter 11). A pilot study of phytolith remains from 8 proveniences was conducted by Katherine R. Mickelson, who documented the presence of extensive, well preserved remains useful to addressing a range of questions should future work occur in the mound, or with the samples that were collected from 2001–2004 (see Chapter 20). As part of the specialized analyses, a second pollen core was obtained from the pond just south of Mound G in 2004 by Scott Meeks, to help reconstruct past environmental conditions in the site area (see Chapter 5). The subsequent analyses included absolute dating, as well as the inspection of pollen, charcoal, and plant macro and microfossils.

The results of these analyses contain a wealth of information about the construction and use of Mound A at Shiloh by the sites Mississippian inhabitants. As summarized in the pages that follow,

the fieldwork conducted by the NPS lead team at Mound A learned a great deal about life at the center, and how mounds themselves were sometimes put together. As such, while many mounds have been excavated in the past in eastern North America, the excavations at Shiloh conducted from 1999 to 2004 in many ways shed new light on the importance of these structures to the people who built them. Darryl Worley's song *Shiloh* was released in May 2003, and suggests that 'What happened here is more than we can grasp,' referring to the epic battle fought here. The song emphasized how dramatic the setting was that we were working in, and the challenges anyone faces trying to understand the past. Since Worley was from the nearby town of Savannah, Tennessee, we heard the song many times while we were working at Mound A that year and after. The lyrics inspired us, and made us appreciate even more where we were working, and the opportunities it provided. The goals of the archeological projects conducted at Shiloh, and at Mound A in particular, this volume testifies, is that it is indeed possible to get a sense of that remarkable past.

CHAPTER 4

MODERN ENVIRONMENT

MEREDITH D. HARDY AND JILL Y. HALCHIN

The Shiloh Mound Complex is located on a high bluff along the west bank of the Tennessee River in Hardin County, roughly 6 miles southwest of Savannah, Tennessee, and 23 miles northeast of Corinth, MS (see Chapter 1). The Tennessee is the largest tributary of the Ohio River, and serves as the boundary between the Mississippi River basin and the Cumberland Plateau. Major tributaries to the river include the Clinch, Powell, French Broad, Duck, Elk, Bear Creek, Sequatchie, Little Tennessee, and Hiwassee rivers, among others. The river itself stretches over 1,770km (1,100mi) from its headwaters in Virginia to its mouth in Paducah, Kentucky, where it meets the Ohio River (Figure 04-01). The Tennessee River watershed covers nearly 103,600 square kilometers (km^2) (41,000mi^2) (U.S. FWS 1995). From western Virginia the river flows southwest through eastern Tennessee into north Alabama, through the limestone formations of the Cumberland Plateau until it reaches Muscle Shoals, where it crosses the Fall Line and drops some 42m (137ft) into rapids. These shoals and rapids proved to be a challenge to eighteenth and nineteenth century commerce, and it was not until the 1930s and the creation of the Tennessee Valley Authority and construction of dams that the shoals were controlled, and the river made navigable. The river turns west-northwest and then north until it reaches the Ohio River. In Hardin County, the river floodplain is roughly 5.6km (3.5mi) wide, although in the vicinity of the mound group it is somewhat narrower, ca. 3.2km (2mi) in extent, all on the east side of the river (Proffitt et al. 1963:123-124).

The vicinity of the Shiloh Mound Complex is characterized by a temperate to humid subtropical climate, with mild winters and hot, humid summers. Data collected through 1955 show averages of 42.4° Fahrenheit (F) for January and 80.4° F for July. About two-thirds of the summer days will see temperatures rise above 90° F. Winters are punctuated by cold spells when below freezing temperatures can occur. The ground may freeze to a depth of about 7.62cm (3in), but it thaws again within a few days. The growing season is about 200 days. Rainfall, averaging between ca. 137–147cm (54–58in) per year, is fairly evenly spread throughout the seasons, with the wettest months between January and April, averaging 15.2cm (6in) in February and March. The fall is the driest time of year, with an average of 7.62cm (3in) of rainfall in October. Due to the proximity of the Highland Rim, which causes air currents to lift, the Shiloh area has a higher precipitation rate than much of Tennessee. Violent weather, including tornadoes, thunder storms, and ice storms, is not uncommon (Proffitt et al. 1963:124–125; NPS 1980:71–73, NPS 1981:25).

The location of the Shiloh Mound Complex is notable in several respects, beyond its dramatic placement on a high bluff above the river. The site is located by three major physiographic regions, the first of which is the Tennessee River Valley or Western Valley Region, which includes the river, its active flood plain and the adjoining terraces. The Tennessee River flows through the Western Valley region along the edge of the Highland Rim Valley. In Hardin County, the river flows northward toward its confluence with the Ohio River. Western Valley elevations range from 106–137m (350–450ft) above mean sea level (AMSL). On either side, the hills of the adjacent regions rise 61–91m (200– 300ft) above the floodplain (Proffitt et al. 1963:123–124).

Immediately to the west and south of the Shiloh area are the Western Uplands, which are usually included in the Gulf Coastal Plain, a region of low, rolling relief created when the area was covered by shallow seas millions of years in the past. Elevations really exceed 152m (500ft) and diminish westward with the general slope down toward the Mississippi River. East of the river valley lies the Western Highland Rim. The Western Highland Rim was created by erosion of the western side of an ancient uplift known as the Nashville Dome.

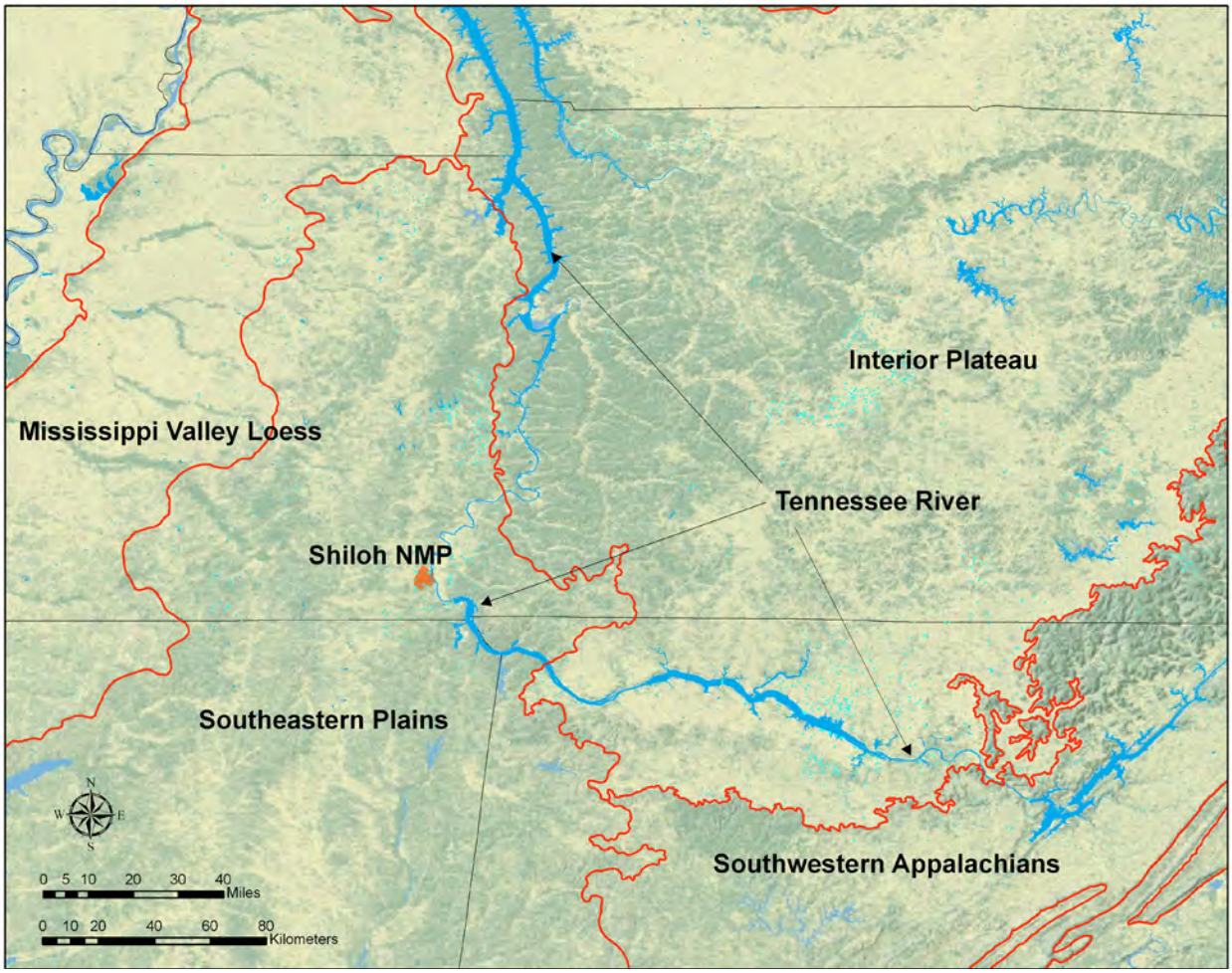


Figure 04-01. The surrounding physiography of Shiloh National Military Park. Map generated in ArcGIS using data obtained from USDA 2013, USDA NAIP 2013, and USDA NDOP 2013.

Erosion exposed the tilted layers of limestone, chert, shale and sandstone. Differential weathering of the various layers resulted in a rolling landscape of ridges and sharp valleys with numerous streams. Elevations typically range from 182 to 365m (600 to 1200ft) AMS (Proffitt et al. 1963:123–124).

The Tombigbee River basin lies only short distance to the southwest. The closest major tributaries of each system to Shiloh are Yellow Creek, a tributary of the Tennessee, and Mackey's Creek of the Tombigbee system, which nearly meet at the divide between the valleys. In fact, the short distance between the river systems was finally breached in the late twentieth century by the Tennessee-Tombigbee Waterway project. Not only did the location of Shiloh provide its prehistoric inhabitants with a selection of environments and their diverse resources, but it gave them access to other cultures that were located elsewhere along the Tennessee, as well as major rivers like the Ohio, Mississippi, Tombigbee, and the Black Warrior.

Drainage within the park is provided by small streams which empty into the Tennessee River. One of these, Dill Branch, enters the river through a ravine on the north side of the Shiloh Mound Complex. The archeological site is thus nestled between the Tennessee River to the east, Dill Branch Creek to the north, and a small creek that drains to Browns Landing to the south (Figure 04-02). There is no floodplain for the Tennessee River on the western side of the river, at the base of the bluff the site is located on,

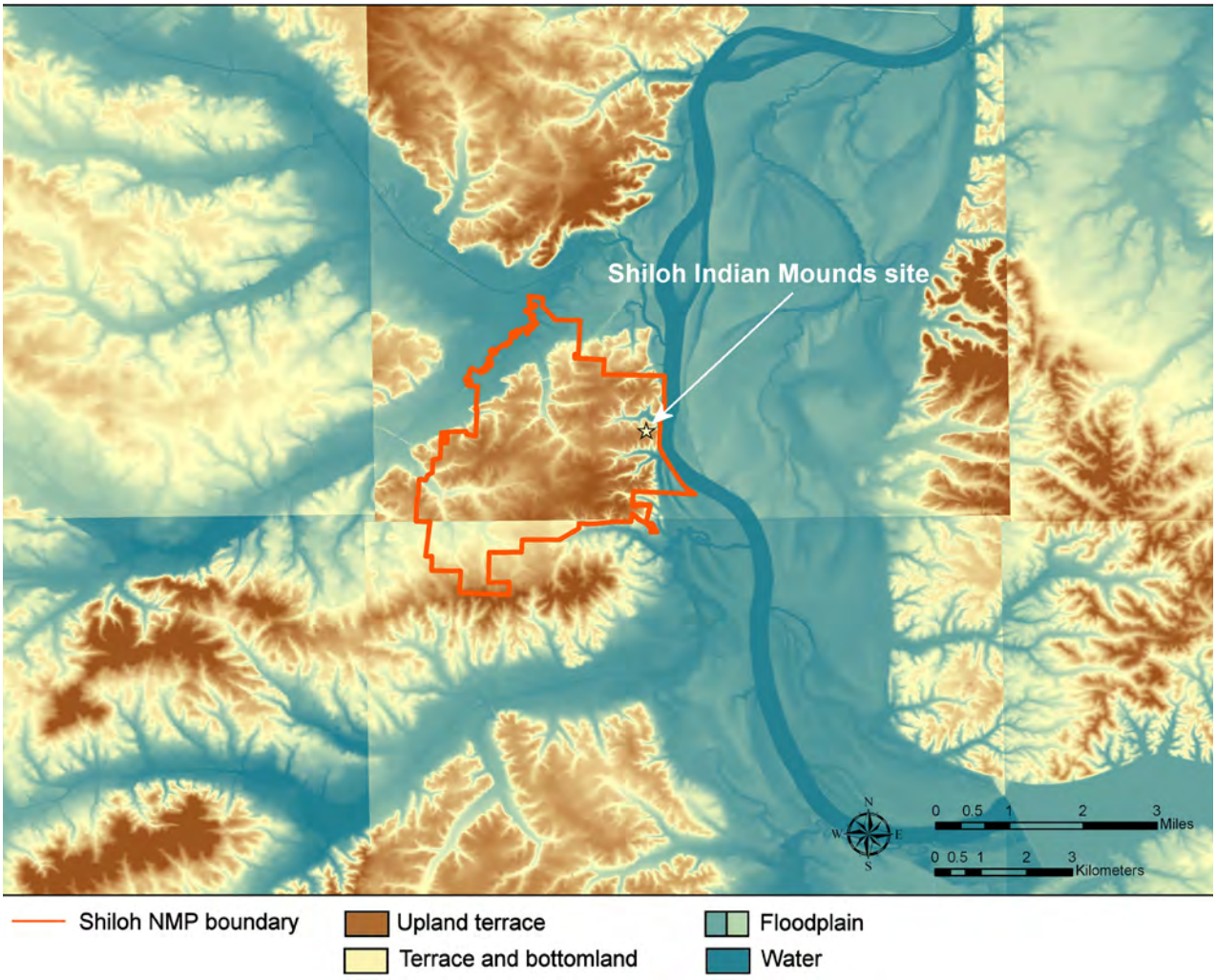


Figure 04-02. Geomorphology of Shiloh National Military Park and surrounding area. Map generated in ArcGIS using data obtained from USDA 2013, USGS NHD 2013., USGS WRD 2013, and USGS WBD 2013.

although to the east across the river, as noted, the floodplain is approximately 3.2km (2mi) wide.

Geology and Soils

Sitting at roughly 137–152 m (450–500ft) above sea level, SHIL is located on step-like alluvial terraces of clays, sands, and gravels that were created by sediments deposited by the Tennessee River and its tributaries during the Tertiary (65–1.8 million years ago, or mya) and Quaternary Periods (roughly 1.8 mya to present) (Pfeiffer 2008). The upper zone of soil in the park area is typically sandy silt floodplain deposit ranging from a 1m to more than 6m thick. Below that is a laminated and interbedded zone of sand, clay and gravel laid down during the Cretaceous. This diversity of materials is at least partially responsible for the bluff collapses that threaten the archeological deposits in the park, and Mound A in particular. Because of their different characteristics and the layering of looser materials with less permeable ones, the soils react differently to changes in the river level, which is controlled by Pickwick Dam 11km (7mi) upstream. The site's location on the outside of a deep bend in the river also exacerbates erosion of the bluff, since barring stabilization the river would migrate towards it (NPS 1980:75–76).

There are four geologic units in the site area, which from top to bottom are: (1) alluvium; (2)

upland or Quaternary Terrace Deposits, consisting of poorly sorted gravels composed of sandy loams overlaying silty loams (primarily loess); (3) the Cretaceous Period (144–65 mya) Coffee Sands Formation, consisting of laminated sediments that are present in interbedded zones of quartz sands and clays that were deposited on lagoons, barrier bars, and shorelines of an ancient warm, tropical sea that then covered western Tennessee; and (4) the Eutaw Formation, consisting of marine micaceous clays laminated with mica and sands (Thornberry-Ehrlich 2009). Typical soil profiles consist of a thin layer of loess overlaying thick alluvium deposited during the Pliocene (5.3–1.8 mya) and Pleistocene (1.8 mya–10,000 yrs) (Proffitt et al. 1963:4; NPS 1981); loess is a wind-born and deposited fine-grained soil comprised of silt-sized particles mixed with small amounts of clays and very fine sand. During the Pleistocene, in the summer glacial meltwater created rivers and streams that carried glacially-ground bedrock downstream, while during the winter, dry winds would blow these silts across the landscape, eventually blanketing the landscape in thick deposits that demonstrate little stratification (Waters 1996:202).

Soils in site area are classified in the Paden-Pickwick-Waynesboro Association, which are typical of the high terraces along both sides of the Tennessee River (Figure 04-03). These areas are typically rolling to hilly with broad, flat areas of higher ground between drainages. The soil profile consists of a thin layer of loess over very thick alluvium deposited by the river and its tributaries during the Pliocene and Pleistocene (Proffitt et al. 1963:4; NPS 1980:75). The lower alluvial terraces drew the attention of Native Americans seeking prime locations for agricultural crops. In the immediate site area, the soils are Paden silt loams. These are moderately well drained soils that developed within the loess. In many areas a fragipan has developed about 50–76cm (20–30in) below the surface, often within a gravelly substratum. Paden silt loams are strongly acidic and low in fertility (Proffitt et al. 1963:38–39) (see Chapter 10 for detailed soil descriptions).

Waynesboro Fine Sandy Loams and Waynesboro Very Gravelly Sandy Loams are found on the high terraces overlooking the river, while Almo, Huntington, and Waverly series (Huntington Silt Loams, Waverly Silt Loams, and Pickwick Silt Loams) soils are found in floodplains, with parent material consisting of either loess over loamy alluvium (Almo series) or loamy or silty alluvium derived from interbedded sedimentary rock. The adjacent Tennessee River floodplain, where the Shiloh villagers likely grew some of their crops, has soils of the Woftever-Beason-Egam association. Currently there is no floodplain at the base of the bluff where the site is located, but it begins to widen northward of Pittsburg Landing. On the opposite bank of the river, the floodplain stretches about 3.2km (2mi). Of course, the distribution of floodplain changed continually in the past as the river shifted its course. The Tennessee River floodplain across the river to the east of the Shiloh Mound Complex is characterized by only minimal relief. The soils range from well-drained on lower terraces to poorly drained silt loams on low terraces and are moderately low in fertility. Acidity ranges from medium to strong. Flooding in spring and winter is not uncommon (Proffitt et al. 1963:11, 24, 54, 57–58).

Several kinds of lithic resources of value to Native American populations are available in the vicinity of the Shiloh Mound Complex, including outcrops of various types of chert. Fort Payne chert outcrops are found on both sides of the Tennessee River, and Camden chert outcrops are located to the north. Tuscaloosa chert is found where streams have cut into the formation of the same name, exposing chert pebbles, sandstone, quartzite and conglomerate mixed with irregular beds of sand and clay (O'Hear et al. 1985:8). Most of the lithic artifacts recovered during the excavations at Mound A were made on Fort Payne or Camden chert, although some prehistoric stone tools were made of Tuscaloosa chert (Chapter 13, see also Welch 2006).

Post-Pleistocene Climate and Resources

During the last glacial period, sea levels were some 100m below present because enormous ice sheets present on the continents locked up massive

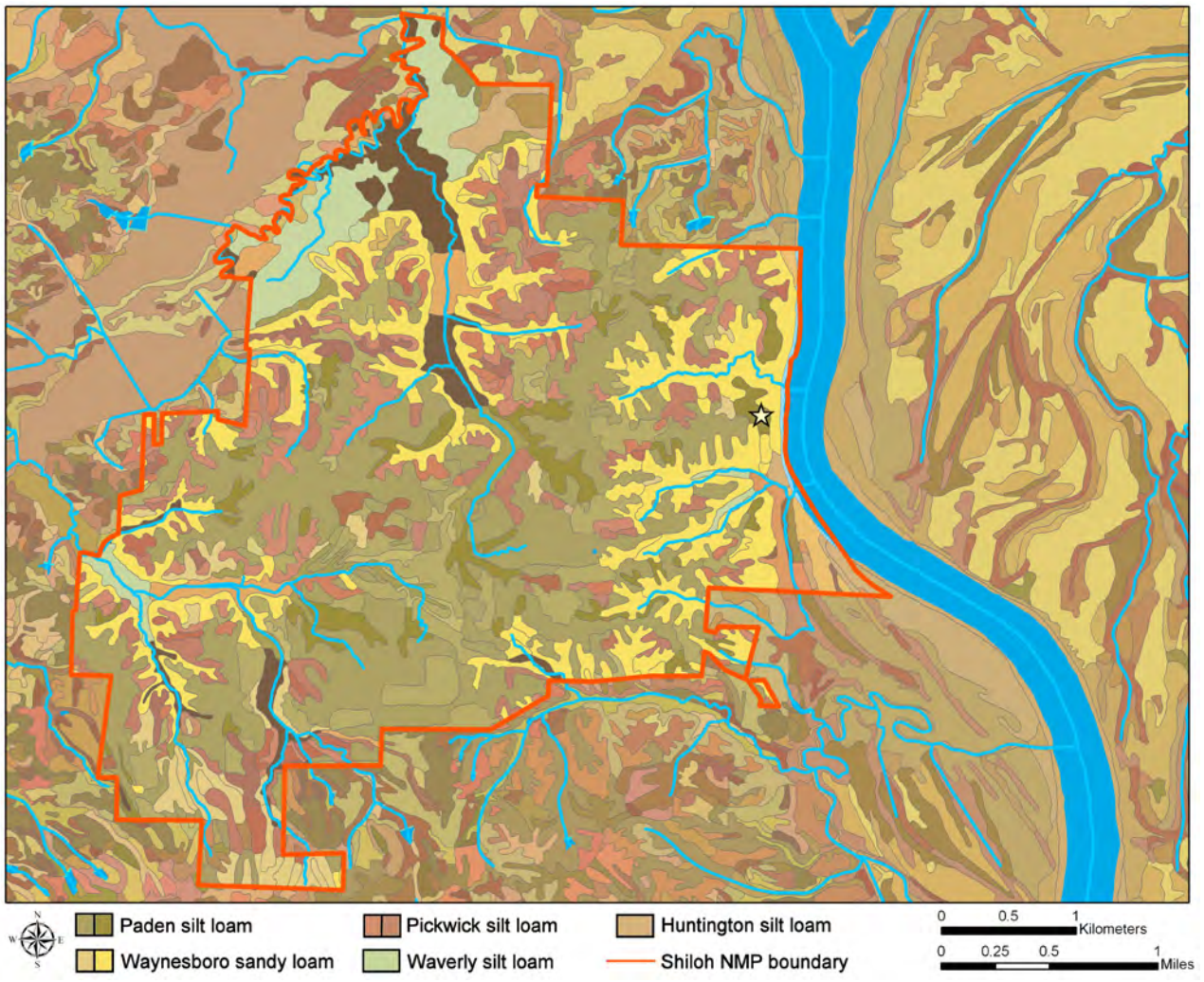


Figure 04-03. Soil types of the Shiloh National Military Park and surrounding area. Map generated in ArcGIS using data obtained from USDA NRCS SSURGO 2013.

quantities of water. This meant that the coastal plains of North America were considerably broader than they are today. Around 15,000 years ago, the climate grew warmer and, as the ice sheets melted, sea levels rose. When the glacial retreat began, boreal forests had reached as far south as central Tennessee while the lower Southeast was covered by mixed hardwood forests dominated by oak and hickory. Pollen studies indicate that by 12,500 B.P. central Tennessee supported ash, ironwood, hickory, beech, butternut, willow, elm, birch and sugar maple. A fairly modern forest mix was established in the area by 9000 B.P. (P. Delcourt and H. Delcourt 1987; O'Hear et al. 1985:12; see Chapter 5). Many of the animal species present at that time still inhabit the region today, but megafauna such as giant sloth, saber-toothed tiger, mammoth and mastodon were extinct by the end of Pleistocene, ca. 11,450 B.P. Whether humans, who moved into the Southeast by ca. 13,000 B.P. or earlier, played some part in the extinctions is currently unknown.

After a short colder episode near the end of the Paleoindian period, temperatures began to rise rapidly. Around 8900 to 8000 B.P. there was another cooler period when the previously rapid sea level rise slowed dramatically. During the subsequent Mid-Holocene era, from 8000 to 5000 B.P., seasonal temperature extremes and aridity increased. Pines began to replace oaks and prairies expanded at the expense of forests. After 5000 B.P.,

the climate was slightly cooler than the preceding period, and by the end of the Archaic period around 3200 B.P. climate, vegetation, and sea level had approached essentially modern conditions (Anderson 2001:160–161; O'Hear et al. 1985:12).

Human populations throughout prehistory gravitated to river valleys where resources were plentiful and varied. The Woodland and Mississippian cultures, which followed the Archaic, were marked by increased use of horticulture, although hunting, fishing and gathering continued. There is evidence for modest climatic fluctuations that may have influenced cultural changes. It has been suggested that warmer, wetter periods favored increased reliance on crops, and drier or cooler periods led to failed harvests and stress which was manifested in warfare and political unrest (Anderson 2001:164–166).

Ecological Setting

SHIL is located in the West Tennessee Valley, on a physiographic boundary between the Mississippi Valley Loess Plain and the Interior Plateau (Highland Rim) known as the Southeastern Plains Ecoregion (Figure 04-04). An ecoregion is defined as an area within which ecosystems are generally similar, with similar patterns of geology, physiography, vegetation, climate, soils, land use, wildlife, and hydrology. Ecoregions are organized in a nested hierarchical classification system, in which broader regions (Level I) are subdivided into smaller regions and areas (Levels II, III, and IV) (USEPA 2013). Specifically, the park is located in the Southeastern Plains and Hills (Level IV region) of the Southeastern Plains Ecoregion (Levels III and II), of the Eastern Temperate Forest (Level I). The Southeastern Plains is the largest ecoregion in the eastern United States, stretching from just north of the shore of the Gulf of Mexico to southern Maryland. In this ecoregion, the sands, silts and clays of the Cretaceous or Tertiary period contrast with the Paleozoic metamorphic and igneous rocks of the Piedmont and the limestones, cherts, and shales of the Interior Plateau. Not as flat or gently rolling as the Mississippi Valley Loess Plain, the Southeastern Plains Ecoregion is also not as high in elevation nor as sharp in relief as the Piedmont.

Just to the west, stretching from the Ohio River in western Kentucky to Louisiana, the Mississippi Valley Loess Plain Ecoregion consists of gently rolling hill, irregular plains, and bluffs of thick loess; these bluffs are steep, deep, silty, and highly erosive. The Mississippi Valley Loess Plain Ecoregion is comprised of irregular plains with oak-hickory and oak-hickory-pine vegetation communities. To the east lies the Western Highland Rim of the Interior Plateau Ecoregion, with a dominant oak-hickory forest interspersed with bluestem prairie and cedar glades. The open hill and tableland landforms are composed of limestones, cherts, sandstones, siltstones, and shale.

Flora

Shiloh is located near the interface of two major vegetation zones. The Western Highland Rim and Western Valley belong to the Western Mesophytic Forest region. Just to the south of Shiloh, in northern Mississippi and Alabama is the Oak-Pine Forest Region. About two-thirds of the park is currently in forest. The Southeastern Plains Ecoregion is dominated by longleaf pine and smaller areas of oak-hickory-pine and Southern mixed forest. Because of the park's location at the boundary between these regions, there are overlaps of different groupings of floral species that result in a great diversity of plant life; during a 2004 vascular plant survey of the park, 740 plant species or lesser taxa were identified (Pfeiffer 2008).

The park's wooded areas can be divided into three rough vegetation zones, (1) upland oak-hickory woods, (2) bottomland oak-sweetgum mesic hardwoods, and (3) mixed hardwood floodplain/ravine forests (Jones 1983). The upland zone, which covers the majority of the park, is dominated by oaks (white, willow, southern red, post and blackjack) supplemented by hickory, elm, red cedar, short leaf pine and black walnut. Bottomland forests are dominated by cherrybark oak, and sweetgum and river birch are found along Oak Creek and other low-lying areas that are sometimes flooded. The ravine environments, located where streams such as Dill Branch cut down through the

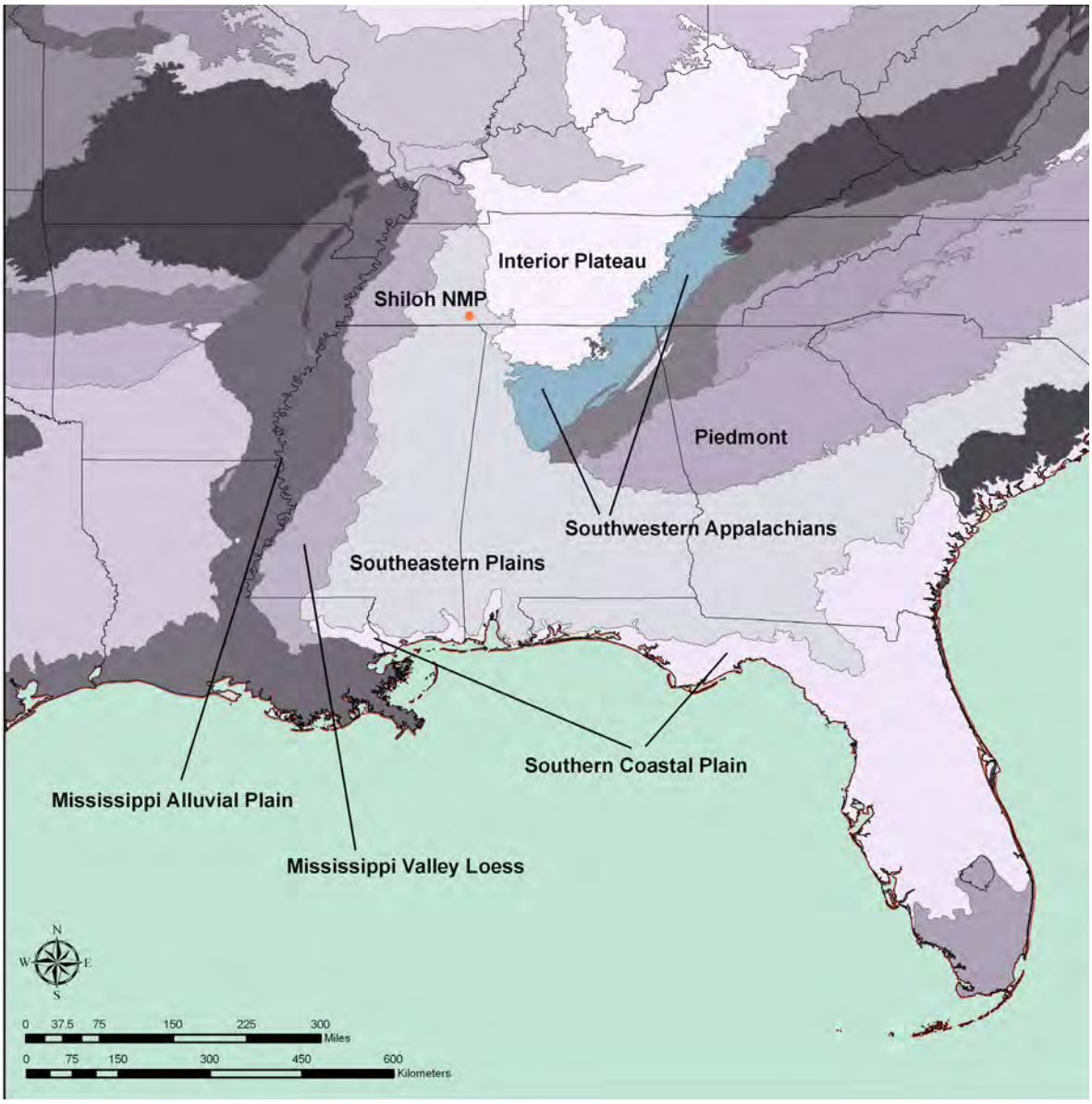


Figure 04-04. Ecoregions surrounding Shiloh National Military Park. Map generated in ArcGIS using data obtained from USEPA 2013.

terrace edge to reach the river, support sweetgum, sycamore, tulip poplar, basswood and some uplands types (NPS 1980:82). Other species of vegetation found in the park include dogwood, redbud, serviceberry, wild plum, azalea, honeysuckle, sumac, poison ivy, Virginia creeper, fox grape, coralberry and Solomon's seal (NPS 1980:84–85).

Much of the park today is covered in second-growth mixed forest that post-dates the Civil War. Ravines typically have plants allied with Appalachian vegetation types, while the oak-hickory woods are similar to western and southern upland forests; the bottomland forests actually represent the northern boundary of the Mississippi River alluvial plain forests. Oak-hickory-pine communities are found in all topographic settings, from ridges to valley floors (J. Sullivan 1995), and have been described as the "largest and most diverse forest type in the eastern United States" (J. Sullivan 1995). Plateaus are typically covered in deciduous

forest which, in the Southeast, typically consists of pine and oak-pine forest. Oak-hickory forests are dominated by white (*Quercus alba*), black (*Quercus velutina*), and northern red (*Quercus rubra*)oaks, bitternut hickory (*Carya cordiformis*), elm (*Ulmus americana*), and shagbark hickory (*Carya ovate*). Other trees include black hickory (*Carya texana*), black walnut (Juglans nigra), southern red oak (*Quercus falcata*), and post oak (*Quercus stellata*), with the occasional presence of white pine (*Pinus strobes*) and eastern hemlock (*Tsuga canadensis*). The understory typically consists of flowering dogwood (*Cornus florida*), blueberries and huckleberries (*Vaccinium* spp.), greenbrier (*Smilax* spp.), poison-ivy (*Toxicodendron radicans*), and Virginia creeper (*Parthenocissus quinquefolia*).

Bottomland forests are dominated by American sweetgum (*Liquidambar styraciflua*) and cherrybark oak (*Quercus pagoda*); at Shiloh, there is also a remnant cypress-tupelo gum swamp, consisting of bald cypress (*Taxodium distichum*) and water tupelo (*Nyssa aquatic*), with an understory that includes deciduous holly (*Ilex decidua*), green hawthorn (*Crataegus viridis*), river birch (*Betula nigra*), and swamp privet (*Forestiera acuminata*). Woody vines include smilax (*Smilax rotundifolia*), crossvine (*Anisostichus capreolata*), and climbing hydrangea or woodvamp (*Decumaria barbara*). Other plants include red maple (*Acer rubrum*), water-elm (*Planera aquatic*), and American elm. Stream and river floodplains include sugar maple (*Acer saccharіunum*), sugarberry (*Celtis laevigata*), green ash (*Fraxinus pensylvanica*), and black willow (*Salix nigra*).

Fauna

The Tennessee River has the highest freshwater faunal diversity in North America, largely due to the range of habitat types represented in the several physiographic provinces it flows through, such as a small portion of the Coastal Plain, the Highland Rim (caves and springs), the Cumberland Plateau, the Ridge and Valley, and the Blue Ridge province (Nature Conservancy 2008; Olson and Dinerstein 1998). The Tennessee has 240 species of fish, with 30 endemic species. Fifty species of fish were identified at SHIL during a baseline study conducted in 1997–1998. Fish found in park waters include large-mouth bass (*Micropterus salmoides*), white bass (*Morone chrysops*), bluegill (*Lepomis macrochirus*), black crappie (*Pomoxis nigromaculatus*), sauger (*Sander canadensis*), several species of catfish (*Siluriformes* spp.), and carp (*Cyprinidae* spp.).

The Tennessee River also has the most diverse molluscan fauna in North America (USGA NAWQA 2013). Roughly 102 native freshwater mussels have been identified in the Tennessee River Basin. In Kentucky Lake, the impounded portion of the river roughly 200 miles north of SHIL, twenty-four species of fresh-water mussels have been identified (Pfeiffer 2008). Around SHIL, 36 species have been identified just a couple of miles downstream from Pickwick Dam, and many of these species were recovered in the deposits in the lower portion of Mound A that had been exploited by the Native inhabitants (see

There are ca. 59 species of reptiles and amphibians in or near the park boundaries, including the eastern box turtle (*Terrapene carolina*), five-lined skink (*Eumeces fasciatus*), eastern hognose snake (*Heterodon platyrhinos*), black racer (*Coluber constrictor*), slimy salamander (*Plethodon glutinosus*), American toad (*Bufo americanus*), spring peeper (*Hyla crucifer*), and gray treefrogs (*Hyla versicolor* and *Hyla chrysoscelis*). Herpetofauna are important indicator species for environmental and biological conditions for a particular area; because they are sensitive to changes and stresses in an ecosystem, herpetofauna are often the first species to be affected by either natural or human-caused events (Dale and Beyeler 2001; Wake 1991; Welsh and Ollivier 1998). Some of the venomous snakes which frequent the park include canebrake rattlesnake, pigmy rattlesnake, cottonmouth water moccasin, timber rattlesnake and copperhead (NPS 1980:88, NPS 1981:30). As noted in Chapter 3, cottonmouths and copperheads were observed on several occasions during the Mound A excavations, in some cases on or under the tarps

covering the units. A large copperhead was found under the steps leading to the summit on the west side of the mound, and had to be removed for crew safety.

Over 180 species of birds have been documented as either permanent residents or seasonal visitors at Shiloh (Pfeiffer 2008). These include the red-bellied woodpecker (*Melanerpes carolinus*), downy woodpecker (*Picoides pubescens*), yellow-billed cuckoo (*Coccyzus americanus)*, Carolina wren (*Thryothorus ludovicianus*), northern parula (*Parula americana*), Great Blue heron (*Ardea herodias*), Ring-necked duck (*Aythya collaris*), wood duck (*Aix sponsa*), and the ruby-throated hummingbird (*Archilochus colubris*) (Pfeiffer 2008; Watson 2005). Migratory birds that travel through the park include the common loon (*Gavia immer*), the northern harrier (*Circus cyaneus*), and the warbling vireo (*Vireo gilvus*). Year-round residents include the mockingbird (*Mimus polyglottos*), cardinal (*Cardinalis cardinalis*), red-tailed hawk (*Buteo jamaicensis*), eastern bluebird (*Sialia sialis*), great-horned owl (*Bubo virginianus*), and the northern bobwhite (*Colinus virginianus*). Bald eagles were occasionally observed along the river below the bluff during the excavations, in some cases flying quite close to the fieldworkers. Wild turkeys were commonly observed on the park driving to and from the site, and in some cases were observed in groups in the plaza.

A large number of mammals species are typically found in southeastern oak-hickory forests; at SHIL, there are potentially 42 species (Pfeiffer 2008). Mammals that can be found in and around Shiloh include big brown bats (*Eptesicus fuscus*), little brown bats (*Myotis lucifugus*), eastern chipmunk (*Tamias striatus*), eastern grey squirrel (*Sciurus carolinensis*), eastern cottontail rabbit (*Sylvilagus floridanus*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), beaver (*Castor canadensis*), river otter (*Lontra canadensis*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), grey fox (*Urocyon cinereoargenteus*), and white-tailed deer (*Odocoileus virginianus*). Deer were common in large numbers throughout the park, even during hunting season, although none, fortunately, got into the excavations.

Threatened and Endangered Species

Currently, the U.S. Fish and Wildlife Service lists 100 species in Tennessee as either threatened or endangered (NPS 2013; USFWS 2013). For SHIL specifically, four species listed as endangered: two are clams (pink mucket, *Lampsilis abrupt*, and the orangefoot pimpleback, *Plethobasus cooperianus*), and two are mammals (Indiana bat, *Myotis sodalis*, and the gray bat, *Myotis grisescens*). The bald eagle (*Haliaeetus leucocephalus*) has been delisted but continues to be monitored. There are 29 state-listed threatened and endangered species, including the sharp-shinned hawk (*Accipiter striatus*), osprey (*Pandion haliaetus*), the meadow jumping mouse (*Zapus hudsonius*), southern bog lemming (*Synaptomys cooperi*), the American chestnut (*Castanea dentate*), and Torrey's mountainmint (*Pycnanthemum torrei*) (Pfeiffer 2008).

Riverine Erosion and Threats to the Site

The Shiloh Mound Complex occurs on the outer and downstream side of a sharp bend in the river, making it susceptible to erosion by undercutting (see Chapters 1, 2, and 3). Somewhere between 15.2 and 30.5m (50 and 100ft) has been lost on the eastern edge of the site in the vicinity of Mound A, most of it since the formation of Pickwick Dam in the 1930s. Additional factors that contribute to the continued erosion of the western side of the river bank include (1) infiltration of soils by water during flooding episodes and high current; (2) the creation of Pickwick Dam 14.4km upstream and Kentucky Dam roughly 290km downstream, which impounded the river and created Kentucky and Pickwick Lakes, resulted in fluctuating currents and rapidly rising and falling water levels; and (3) wave action from boats and barges on the river. Power generation and river traffic have arguably been the most devastating to SHIL cultural resources, given the amount of erosion documented since the

1930s, to both the Shiloh mound Complex and the National Military Cemetery. Since 1984, the U.S. Army COE, with the NPS, has developed and implemented bank stabilization plans. As described in Chapters 1 and 3, the river shoreline from the mound group to Pittsbugh Landing was stabilized using rip-rap in the early twenty first century.

CHAPTER 5

PALEOECOLOGICAL ANALYSIS OF SEDIMENTS FROM MOUND G POND

SCOTT MEEKS

Introduction

Recent paleoecological research in the southern United States suggests that Native American cultural practices, primarily the use of fire, impacted ecosystems in the region and that such impact was a precursor to the profound influence that subsequent Euro-American settlement would have on the composition of presettlement vegetation (Cridlebaugh 1984; Delcourt and Delcourt 1997, 1998; Delcourt et al. 1986, 1998). Further, the fossil charcoal records indicate both local and intense fires in the southeastern United States after A.D. 100 (i.e., Middle Woodland, Late Woodland, and Mississippian periods), suggesting that many of the fires occurring in the region during later prehistory were the result of anthropogenic activities (although the importance of climate regimes cannot be discounted as a cause and/or contributing factor to late prehistoric fires). These data, when viewed together with extant fossil pollen and paleoethnobotanical records, indicate that the primary reason fostering this post-A.D. 100 disturbance regime was the development of food production (Delcourt et al. 1998). This view runs counter to the traditional idea that presettlement forests in North America were pristine wildernesses prior to Euro-American arrival, and that the composition of presettlement forests was determined by physical and biotic processes rather than anthropogenic practices (cf. Kay 1995; Peacock 1998; Vale 2002).

Historical and ethnographic accounts document the intentional use of fire by Native Americans for land clearance/agriculture as well as for a variety of other purposes, including hunting, maintenance of trails, and warfare (Hammett 1992; Kay 1994; Patterson and Sassaman 1988; Russell 1983). Although the presence of Native Americans in the southeastern United States as early as the late Pleistocene likely led to increased fire frequencies, it is difficult to determine whether the anthropogenic alteration in fire regimes significantly affected the vegetation and whether the effect of these fire regimes operated on local or regional scales.

The question is not whether Native Americans modified their environment via the use of fire. Rather, the question is how significant were these effects on presettlement vegetation relative to natural causes such as lightning-ignited fires and climate change and were these anthropogenic disturbances localized or did the accumulated impact of Native American disturbance result in time-transgressive changes of the natural vegetation regime? In order to address these questions, this study employs a multi-proxy paleoecological analysis of the sediments from a small pond near Mound G at the Shiloh Mound Complex to investigate the interaction of pre-contact Native American populations with their physical environment in the upper Coastal Plain region in general, and the immediate site area in particular, during the Late Holocene. Specifically, the objectives of this study focus on 1) documenting the history of both natural and anthropogenic disturbance regimes, 2) contrasting pre- and post-settlement vegetation and disturbance regimes, and 3) examining Late Holocene vegetation dynamics at the site level resulting from environmental change, disturbance, and species succession.

Environmental Setting

Located approximately 37m southeast of Mound G on the west side of the mound group near the plaza margin, Mound G Pond (35°08´31´´N, 88°19´23´´W) is a small woodland hollow (20m x 30m; surface area ~420m^2) with a maximum water depth of 48cm (see Figure 01-03 for the location of the pond and Mound G within the site). The pond is situated atop an east-west trending ridge along the eastern escarpment of the Coastal Plain at an elevation of 143m AMSL. The eastern escarpment

is characterized by a narrow (~30km wide) dissected and hilly upland with an average elevation of 150m AMSL (Miller 1974). Underlain by sandy Cretaceous deposits, soils in the immediate vicinity of Mound G Pond are well-drained silt loams developed in a thin mantle of loess overlying old alluvium (Proffitt et al. 1963).

The eastern escarpment of the Coastal Plain marks the eastern boundary of the Mississippian Embayment section of the Western Mesophytic Forest region defined by Braun (1950). A mixed hardwood forest, predominantly oak-hickory, surrounds Mound G Pond today, exhibiting a gradient in species with elevation (see Chapter 4). In the xeric uplands, oak forest dominates the ridge top vegetation, including black (*Quercus velutina*), blackjack (*Q. marilandica*), post (*Q. stellata*), southern red (*Q. falcata*), and white (*Q. alba*) oaks. Other upland taxa include hickory (*Carya*), elm (*Ulmus*), red cedar (*Juniperus virginia*), shortleaf pine (*Pinus echinata*), and walnut (*Julgans*). Vegetation along the adjacent mesic ravines is comprised of mixed hardwoods, including ash (*Fraxinus*), basswood (*Tilia*), beech (*Fagus grandiola*), maple (*Acer*), sweetgum (*Liquidambar styraciflua*), sycamore (*Plantanus occidentalis*), and tulip poplar (*Liriodendron tulipifera*). The bottomlands are largely dominated by hydric species, including black gum (*Nyssa sylvatica*), cherrybark oak (*Q. pagoda*), cottonwood (*Populus*), and river birch (*Betula nigra*). Given its small size, Mound G Pond has a restricted catchment area and receives pollen primarily from local vegetation (~20m to 200m) growing on the surrounding ridgetop and slopes of the adjacent ravines with only minor contributions from regional sources (~200m to 1km; including the alluvial valley to the east).

The modern climate of the study area is warm-temperate. At Savannah Tennessee, 10km northeast of Mound G Pond, the monthly averages for temperatures based on data from 1961 to 1990 are 3.7° Celsius (C) in January, 16.6°C in April, 26.3°C in July, and 16.3°C in October, with a mean annual temperature of 15.9°C. The frost-free period in the area is approximately 210 days, lasting from mid-March to mid-November. Average monthly values for precipitation based on data from 1931 to 1995 are 150.1mm in January, 121.6mm in April, 99.7mm in July, and 78.4mm in October, with a mean annual precipitation of 1,454.7mm (Proffitt et al. 1963; WorldClimate 2013).

Sampling Methods and Procedures

Sediment Coring

In October 2001, a 203cm sediment core was extracted from the northeastern edge of Mound G Pond by Drs. David Anderson and Glen Doran using a Geoprobe vibracore. Preliminary paleoecological analysis of sediments from this core by the Delcourts indicated the presence of well preserved pollen, charcoal, and plant-macrofossils (Delcourt and Delcourt 2001; see electronic appendices). Analysis of the lower portion of the core (three samples) revealed the replacement of hardwood forest (primarily oak-hickory) through a combination of burning and clearing as evidenced by the increase in various disturbance-adapted, open-ground species. Unfortunately, two radiocarbon dates obtained from organic remains from the base of the core produced modern dates indicating that the core sediments had been contaminated by modern material. However, subsequent Optically Stimulated Luminescence (OSL) dating of sediments from the base of the core produced a determination of 8910±820 years (Forman 2001; see electronic appendices), suggesting that the lower core sediments dated to the Early Holocene.

In order to test the feasibility of obtaining a viable sediment core for paleoecological analysis from the Mound G Pond, a 135cm sediment core was extracted from the center of the pond by the author in July 2004 using a square-rod Livingston piston sampler (0–80cm) and open drive sampler (80–135cm). The core segments were transported to UTK where they were split lengthwise and the sediments described for stratigraphy, texture, and color. For the present study, the ensuing discussions focus on the analysis conducted on the upper 100cm of sediments from the Mound G Pond core to document vegetation conditions, disturbance regimes, and environmental changes

in the site area emphasizing the period of primary aboriginal occupation (Late Woodland and Mississippian [ca. A.D. 900–1350]) at the site.

Core Chronology

Chronology for the Mound G Pond core was established through radiocarbon dating of six bulk organic sediment samples. AMS was used to maximize the precision and accuracy of the date and to minimize the volume of core required to obtain sufficient carbon for the date. All conventional radiocarbon dates were calibrated employing the CALIB v4.4 program (Stuiver and Reimer 1993) and the INTCAL98 dataset (Stuiver et al. 1998). In order to provide single calendar dates for both estimating rates of sedimentation and constructing age-depth plots for the core, it was necessary to acquire a fixed date based on the calibrated age ranges. This was accomplished by deriving a fixed date using the weighted mean of the calibration probability distribution (at two sigma [95.4 percent]) as defined by the CALIB v4.4 program (*sensu* Telford et al. 2004). Using the single calendar dates provided by this technique, the deposition rates and deposition times for the sediments were constructed using the midpoint depths of each dated sample. Based on these sedimentation data and assuming a constant sedimentation rate between dated intervals, an age-depth curve was derived by linear interpolation between dates and used as the age model for interpreting the paleoecological record contained within the Mound G Pond core.

Sediment Properties and Pollen/Charcoal Analysis

A calibrated brass sampler was used to obtain 1cc sediment samples (n=23) at intervals of 2cm and 4cm in the upper part of the core for sedimentological analysis (loss-on-ignition [LOI] analysis, water content, and bulk density), pollen analysis, and charcoal analysis. Processing of the sediment samples for these analyses was conducted in the Laboratory of Paleoenvironmental Research, Department of Geography at UT. Sediment samples of 0.5cc were analyzed for water content and LOI. Water content was determined by drying each sample at 100° C for 24 hours. Estimates of weight percent organic matter and carbonate content for each sample were obtained by the LOI of dried sediments for 1 hour at 550° and 1000° C, respectively (Dean 1974). The noncombustible sediment (residue) was categorized as noncarbonated minerals and assumed to be comprised primarily of silicate minerals. Dry bulk density for each sample was measured from water, organic, and mineral contents.

Sediment samples of 0.5cc were analyzed for pollen and microscopic charcoal. Samples were processed using standard palynological procedures (Faegri and Iverson 1989) and spiked with known quantities of exotic *Lycopodium* control spores (Stockmarr 1971) to calculate concentrations and accumulation rates of pollen grains and charcoal particles. A minimum sum of 300 pollen grains (excluding indeterminate grains) was tabulated for each of the samples at magnifications of 400x and 1000x. All pollen grains were identified using standard pollen keys (Kapp 1969; McAndrews et al. 1973), along with pollen reference collections housed at the UT McClung Museum.

Charcoal particles were tabulated for each of the 23 samples prepared for pollen analysis. A minimum of 100 charcoal particles were tallied for each sample; *Lycopodium* pollen grains were tabulated during counting. Classification of charcoal was restricted to black, completely opaque, angular fragments (Clark 1982; Patterson et al. 1987; Swain 1978). Following procedures outlined in Swain (1978), a calibrated graticule grid (one grid is 165.12μm^2) was used to tally the number of charcoal particles within one of six grid categories: 0.5–1.0, 1.0–2.0, 2.0–3.0, 3.0–4.0, 4.0–5.0, >5.0**.** Particles >5.0 grids (>825μm^2) in area were measured individually due to their large contribution to total area; charcoal particles <0.5–1.0 grids (<83μm^2) were not analyzed due to their great quantity and minimal contribution as a fire proxy (Patterson et al. 1987). To determine cross-sectional area, number and geometric mean total area of charcoal particles were measured for each grid class (Patterson et al. 1987). Charcoal accumulation rate values were corrected by

multiplying by 0.632 to account for differential orientation of particles (Clark and Hussey 1996).

Results

Chronology and Sedimentation Rates

Five AMS dates were obtained from bulk organic sediment samples in the upper 100cm of sediments from the Mound G Pond core (Table 05-01).[1] A modern date (101.3 ± 0.5 pMC [percent modern carbon]; Beta-194567) was obtained from sediments near the top of the core (6cm) and was considered contaminated by young carbon introduced from roots penetrating the upper sediments of the core. The remaining four dates spanned approximately 1330 years from A.D. 1390 (16cm; Beta-194568) to A.D. 60 (100cm; Beta-195932); however, a minor reversal (~200 years) in the dates occurred between depths of 30cm (A.D. 690; Beta-194569) and 65cm (A.D. 890; Beta-195931). Three linear regression models were constructed in an attempt to determine if one of the reversal dates provided an accurate prediction of the rate of sedimentation in the pond (Figure 05-01). The age-depth relationship was best fit ($r^2 = 0.9575$; see Figure 05-01C) by including the date of A.D. 890 in the regression model and omitting the date of A.D. 690 (30cm) from the model. Based on the regression analysis, the date of A.D. 690 was considered contaminated by older, reworked carbon entering the pond resulting from increased sedimentation due to land clearance associated with the primary aboriginal occupation of the Shiloh Mound Complex (discussed below). This date was eliminated in the final age-depth model used in the analysis.

The age-depth model used for interpreting the paleoecological record contained within the Mound G Pond core was based on three AMS dates (A.D. 60, A.D. 890 and A.D. 1390) and a date of A.D. 2004 (year of extraction) for the top of the core (Figure 05-02). Assuming a constant sedimentation rate between dated intervals, the age-depth model was derived by linear interpolation between the midpoint depths of the dated intervals. Based on this age-depth model, the upper 100cm of the Mound G Pond core spans approximately 1940 years (~A.D. 60–present) and encompasses both prehistoric and historic occupation in the region, including Woodland (Middle Woodland [B.C. 100–A.D. 700] and Late Woodland [A.D. 700–1000]), Mississippian (A.D. 1000–1500), and Post-Contact (A.D. 1500–present) periods. The age-depth model indicates that trends in sedimentation rates, in general, correspond with these three broad cultural periods (see Figure 05-02).

The sedimentation rate (0.042cm yr^{-1}; ~A.D. 60–900) encompassing the majority of the Woodland Period in the region is low compared to the subsequent sedimentation rate. The paucity of Middle Woodland artifacts at the Shiloh Mound Complex indicates that the site was not intensively occupied during this sediment interval.[2] The highest rate of sedimentation (0.096cm yr^{-1}; ~A.D. 900–1350) occurs during the latter part of the Woodland Period and continues across the majority of the Mississippian Period. Based on the ceramic assemblage from the site and radiocarbon dates from Mound A, the area surrounding the pond was first occupied during the terminal Late Woodland with the primary occupation of the site and associated mound construction occurring during Mississippian times (see Chapters 2, 9, 10, 12, and 21 for discussions of site ceramics, absolute dates, and occupation history). Following Mississippian abandonment of the Shiloh Mound Complex (~A.D. 1350), the rate of sedimentation (0.026cm yr^{-1}) drops almost four fold indicating

1 The sixth date (Beta-195933; 8990 cal B.P [cal b.c. 7040]) obtained from the Mound G Pond core is not included in the construction of the age-depth model used in this analysis for the upper 100cm of sediments since it occurs at a depth of 128cm below the water/sediment interface. The focus of the research presented in this present study is to document vegetation conditions, disturbance regimes, and environmental changes in the site area emphasizing the period of primary aboriginal occupation at the site, therefore, samples were selected to provide a high resolution paleoecological record for the past 2000 years (i.e., the upper 100cm of sediments). Samples are available for analysis from the sediments below 100cm to provide a paleoecological record covering both the Early and Middle Holocene.

2 The low intensity of Middle Woodland occupation of the Shiloh Mounds site is supported by diagnostic materials recovered from both mound and non-mound context at the site. Based on data provided in Welch (2006; Tables 3.2 and 3.3) detailing the counts of both diagnostic ceramics (n=4369) and hafted bifaces (n=30) associated with Middle Woodland, Late Woodland, and Mississippian occupations, only 1 percent (n= 36) of the diagnostic artifacts are associated with the Middle Woodland period (see also Chapters 13, 21).

Table 05-01. Radiocarbon (^{14}C) dates from Mound G Pond, Shiloh Mound Complex.

Sample	Laboratory number[a]	Depth (cm)[b]	Material dated	Radiocarbon age years B.P. (2 σ)	Corrected δ13C	Calibrated age years B.P. (2 σ)c	Relative area under the calibration curve	Weighted mean calibration age years B.P.	Weighted mean calibration age A.D./B.C.
MGPD-1	Beta-194567	4-8	Organic sediment	101.3 ± 0.5 pMC	-28.6 ‰	--	--	--	Modern[d]
MGPD-2	Beta-194568	14-18	Organic sediment	530 ± 40 B.P.	-28.3 ‰	640-590 cal B.P.	.271	560 cal B.P.	cal A.D. 1390[e]
						560-510 cal B.P.	.729		
MGPD-3	Beta-194569	28-32	Organic sediment	1350 ± 40 B.P.	-28.6 ‰	1330-1320 cal B.P.	.026	1260 cal B.P.	cal A.D. 690[f]
						1310-1220 cal B.P.	.828		
						1210-1180 cal B.P.	.146		
MGPD-4	Beta-195931	63-67	Organic sediment	1140 ± 40 B.P.	-28.1 ‰	1170-1160 cal B.P.	.044	1060 cal B.P.	cal A.D. 890[e]
						1150-960 cal B.P.	.956		
MGPD-5	Beta-195932	98-102	Organic sediment	1940 ± 60 B.P.	-27.3 ‰	2040-2030 cal B.P.	.001	1890 cal B.P.	cal A.D. 60[e]
						2000-1730 cal B.P.	.999		
MGPD-6	Beta-195933	126-130	Organic sediment	8080±50 B.P.	-23.5 ‰	9250-9220 cal. B.P.	.049	8990 cal. B.P.	cal. B.C. 7040[g]
						9210-9200 cal. B.P.	.004		
						9190-9170 cal. B.P.	.019		
						9130-8930 cal. B.P.	.715		
						8920-8900 cal. B.P.	.042		
						8890-8850 cal. B.P.	.052		
						8830-8780 cal. B.P.	.118		

[a]Beta: Beta Analytic Laboratory, Florida. [b]Midpoint depths were used in the construction of all age-depth models employed in this study. [c]All calibrated dates have been rounded to the nearest decade. [d]Dated material was living within the last 50 years. [e]Date used in construction of the final depth-age model for analysis of the core. [f]Sample rejected as too old based on regression analysis (see text and Figure 2 for further explanation). [g]Date not included in age-depth model for analysis of upper 100cm of sediments (see footnote provided in the text for further explanation).

that the area in the immediate vicinity of Mound G Pond was largely undisturbed during historic times.

Lithostratigraphy and Sediment Properties

The lithology for the upper 100cm of the Mound G Pond core can be subdivided into three main units: 1) brown fibrous silt; 2) light brownish sandy silt; and 3) reddish brown silty clay. A detailed stratigraphic description of the core is given in Table 05-02 and summarized graphically in Figure 05-03, together with other measured sediment properties including water content, LOI, and bulk density.

The percent water content, dry bulk density, and LOI curves exhibit patterned variation throughout the length of the core: 1) LOI values for both organic matter and carbonates mirror

Table 05-02. Core lithology from Mound G Pond, Shiloh Mound Complex.

Depth (cm)[1]	Unit	Sediment description
0-15	I	Brown (7.5YR 5/2) fibrous silt; charcoal flecking and charcoal present; high organics present; leaf litter and roots throughout; gradual boundary with Unit II.
15-21	II	Light brownish gray (10YR 6/2) sandy silt with a few red clay inclusions; charcoal flecking; organics material present; some small roots; abrupt boundary with Unit III.
21-100	III	Reddish brown (2.5YR 5/3) silty clay with gray mottles, small (~5 mm) chert inclusions near base of unit; charcoal flecking; organic material present (but less abundant compared to upper units); few small roots.

[1]Depth below water/sediment interface.

trends displayed by the bulk density values; and 2) LOI values for noncarbonate minerals follow the trends displayed by water content (Figure 05-03). From a depth of 100 to 66cm (~A.D. 60–900; Pollen Zone 3 as defined in the ensuing section), there is little variation in water content, dry bulk density, and LOI values. Water content ranges from 98.1 to 99.0 percent (mean=98.7 percent) and dry bulk density values range from 0.19 to 0.32 grains/cm^3 (mean=0.22 grains/cm^3). LOI values for organic matter range from 20.1 to 34.0 percent (mean=25.6 percent), values for carbonates range from 4.3 to 7.2 percent (mean=5.8 percent), and values for noncarbonate minerals range from 61.7 to 74.7 percent (mean=68.6 percent).

Between 66 and 22cm (~A.D. 900–1350; Pollen Zone 2), water content ranges from 98.0 to 99.5 percent (mean=98.6 percent) and dry bulk density values range from 0.09 to 0.37 grains/cm^3 (mean=0.25 grains/cm^3). LOI values for organic matter range from 14.9 to 37.9 percent (mean=30.0 percent), values for carbonates range from 3.5 to 7.9 percent (mean=5.2 percent), and values for noncarbonate minerals range from 56.8 to 81.7 percent (mean=64.8 percent). Values for water content, bulk density, and LOI exhibit little variation in the upper portion of this interval of sedimentation. However, the basal sediments (66cm) for this interval record rather pronounced fluctuations in the three values occurring at the contact with Pollen Zone 3.

In the upper 22cm (~A.D. 1350–present; Pollen Zone 1), water content ranges from 98.2 to 99.6 percent (mean=99.1 percent) and dry bulk density values range from 0.08 to 0.20 grains/cm^3 (mean=0.17 grains/cm^3). LOI values for organic matter range from 10.8 to 41.6 percent (mean=29.9 percent), values for carbonates range from 1.3 to 2.8 percent (mean=2.4 percent), and values for noncarbonate minerals range from 56.1 to 87.8 percent (mean=67.7 percent). Although all sediment property values are rather uniform in the upper part of Pollen Zone 1, there are noticeable departures from mean values of water content, bulk density, and LOI occurring in the basal sediments (22cm) of this zone.

Pollen and Charcoal Records

A total of 38 pollen and spore taxa were identified in the Mound G Pond core, 34 of which are included in the upland pollen sum (Figure 05-04). Pollen diagrams were constructed based on percentages of trees, herbs, ferns, ruderals, and cultigens. Pollen zones were defined by major changes in assemblages to contrast the pre- and post-settlement vegetation and disturbance regimes over the course of the terminal Late Holocene. It is important to note that only 10 of the 23 samples analyzed for pollen contained a minimum of 300 native pollen grains. Largely confined to the lower sediments of the core, the remaining samples produced counts ranging from 20 to 214 grains—possibly related to periodic drying of the pond and desiccation of pollen grains. Those samples containing less than 300 grains are denoted in Figure 05-04 and are apparent by low pollen concentrations (grains/cm^3) and low pollen accumulation rates (PAR; grains·cm^{-2}·yr^{-1}).

In order to document the history of natural and anthropogenic disturbance regimes contained in the Mound G Pond core, primarily the use of fire, both the numbers of charcoal particles (cm^{-2}·yr^{-1}) and their cross-sectional areas (mm^2·cm^{-2}·yr^{-1}) were calculated (Figure 05-05). Following Delcourt et al. (1998), the six charcoal particle grid size classes

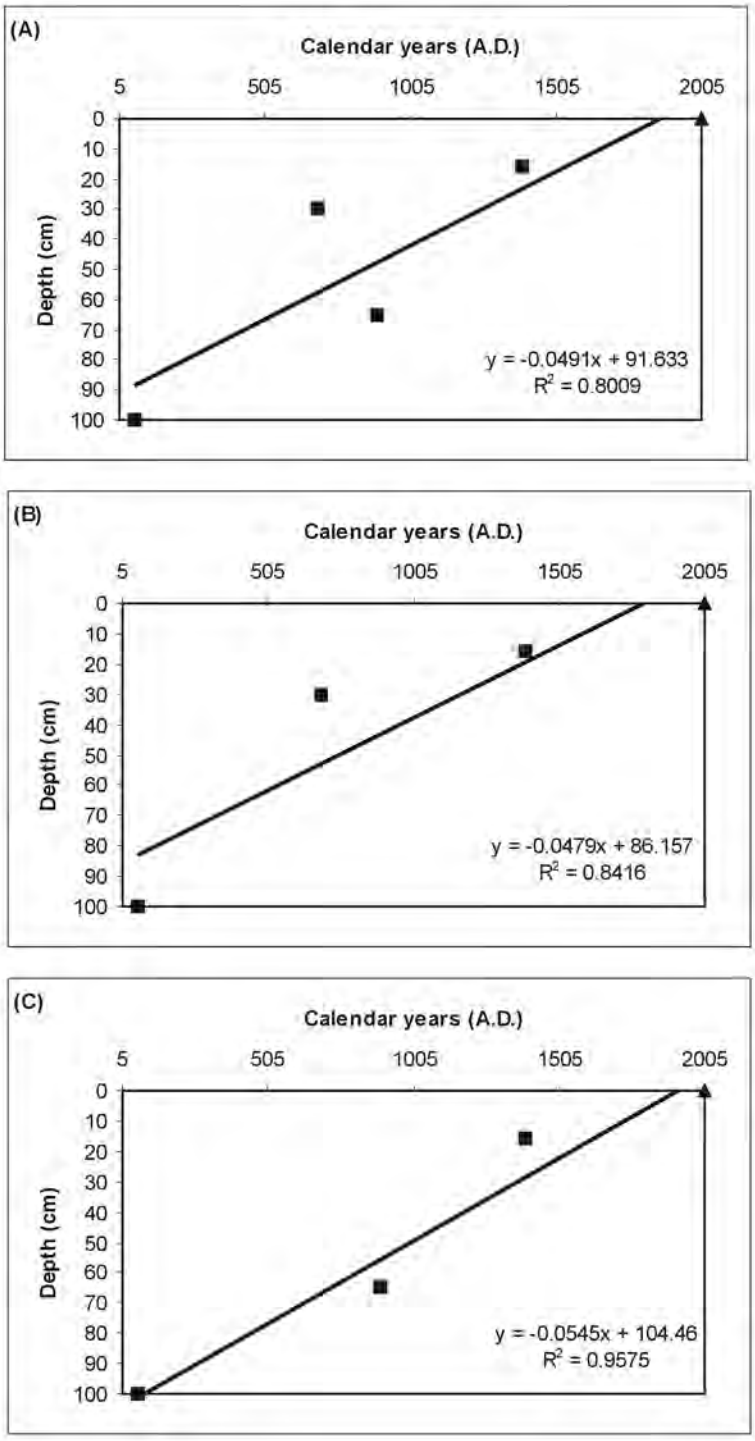


Figure 05-01. Comparison of linear regression models of radiocarbon ages versus depth for bulk organic samples in the Mound G Pond core. (A) Model includes all pre-modern radiocarbon dates (Beta-195931, 195932, 194568, 194569). (B) Model excludes date of A.D. 890 (Beta-195931). (C) Model excludes date of A.D. 690 (Beta-194569). For all regression models, a date of A.D. 2004 (core extraction date) was used to date the top of the core (denoted by triangle).

used in this analysis provide the following information relating to proximity of burning events in relation to Mound G Pond: 0.5–1.0 size class represents wind transport of minute particulates from a extra-regional sources; 1.0–2.0 to 4.0–5.0 size classes represent deposition at the watershed level; and, >5.0 grid class represents local fires.

Pollen Zone 3 (~A.D. 60–900; 66–100cm)

Pollen Zone 3 is dominated by arboreal pollen taxa (70–84 percent, mean=78 percent), mainly oak with an average value of 47 percent (Figure 05-04). Other principal arboreal taxa contributors are hickory (7 percent) and pine (7 percent). Minor taxa averaging between 1 and 4 percent of the upland pollen sum include maple, willow (*Salix*), sweetgum, cedar, walnut, ash, beech, elm, and tulip poplar. Trace amounts of arboreal pollen in this zone include chestnut (*Castanea*) and hornbeam (*Ostrya/Carpinus* type). Upland herbs average 15 percent of the upland pollen sum, including grasses (Poaceae, 8 percent), sedges (Cyperaceae, 6 percent), and nettle (*Urtica*, 1 percent). Ruderals (4 percent) and cultigens (1 percent) are recorded by ragweed (*Ambrosia*, 4 percent) and trace amounts of sunflower (*Helianthus*, ranging from 0 to 2 percent). All sunflower occurs in the upper portion of this zone at the contact with Pollen Zone 2. Shrubs, represented by buttonbush (*Cephalanthus occidentalis*, 2 percent) and alder (*Alnus rugosa*, 1 percent), comprise 3 percent of the upland pollen sum. Hazelnut (*Corylus*, ranging from 0 to 3 percent) is also present in trace amounts. The average pollen concentration for this zone is 9,419 grains/cm^3 (ranging between 4,320 and 28,474 grains/cm^3) and the pollen accumulation rate (PAR) averages 396 grains$\cdot$cm$^{-2}\cdot$yr^{-1} (ranging between 181 and 1,196 grains$\cdot$cm$^{-2}\cdot$yr^{-1}).

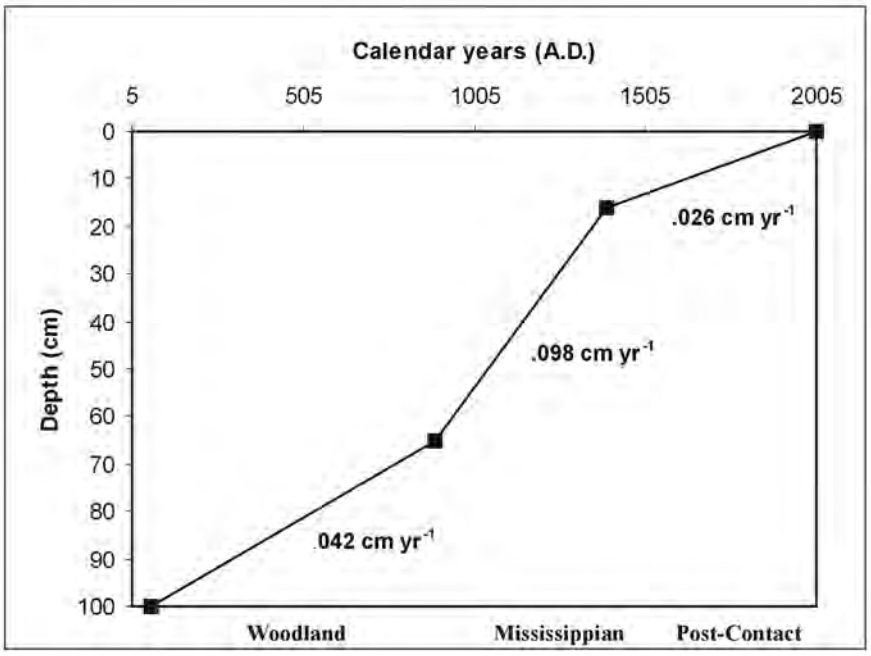


Figure 05-02. Age-depth model used in the paleoecological analysis of the Mound G Pond core and relationship to general cultural periods for the region. Model based on AMS dates provided in Table 1 and a date of A.D. 2004 (core extraction date) used to date the top of the core. Sedimentation rates (cm yr-1) based on linear interpolation between dated intervals.

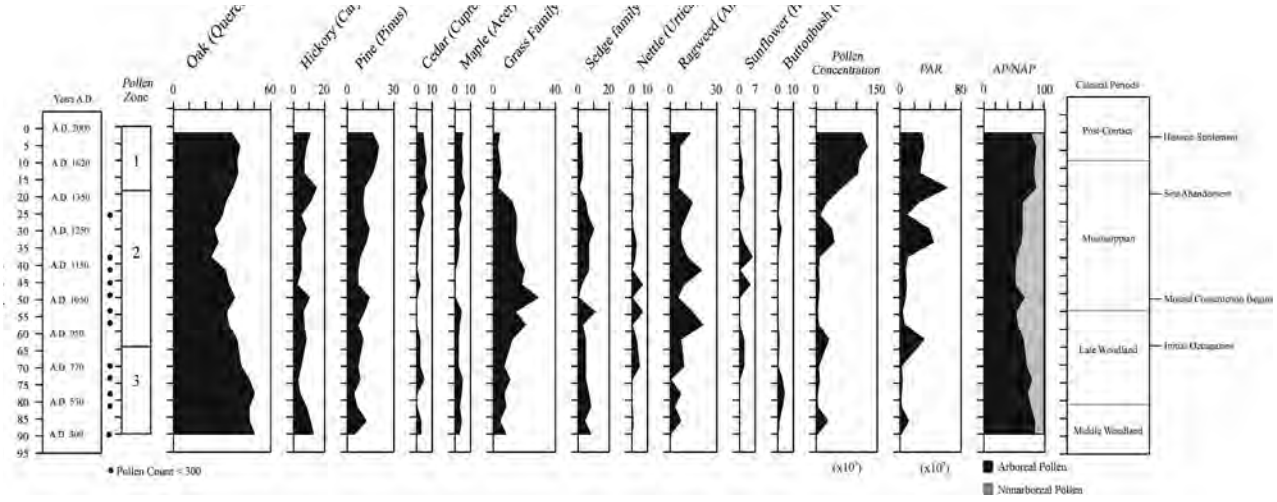


Figure 05-03. Summary of lithostratigraphic description and depth distribution of water content, bulk density, and loss-on-ignition (LOI) for the Mound G Pond core.

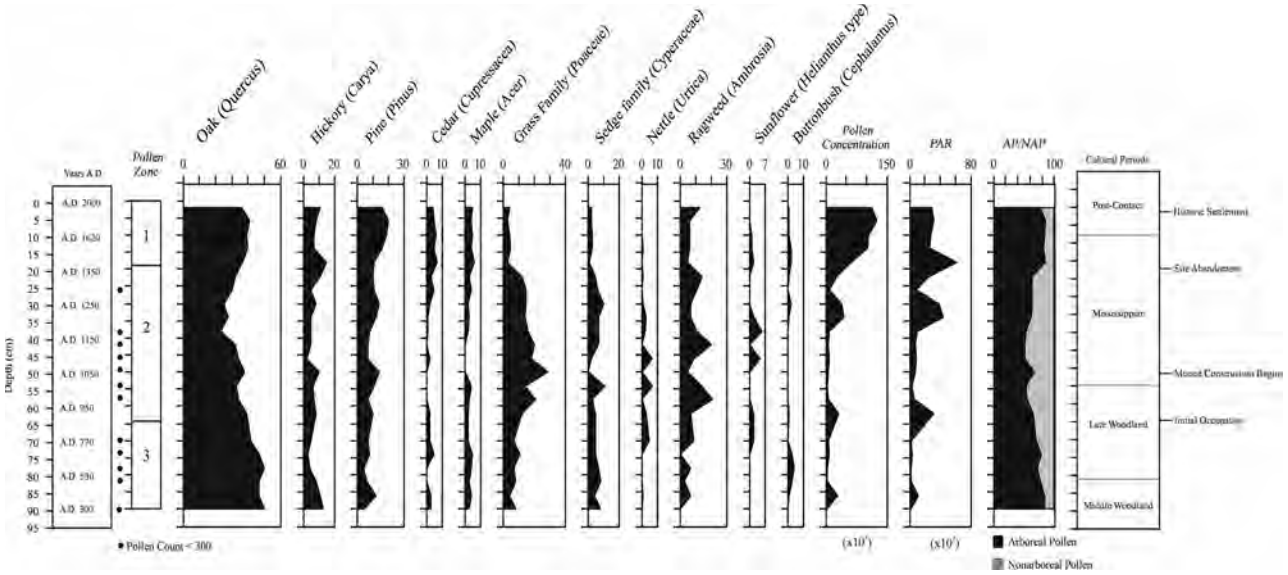


Figure 05-04. Summary diagram from Mound G Pond for selected pollen taxa (percentages based on the sum of upland pollen grains and spores), pollen concentrations, pollen accumulation rates (PAR), and percentages of arboreal and nonarboreal pollen (AP/NAP).

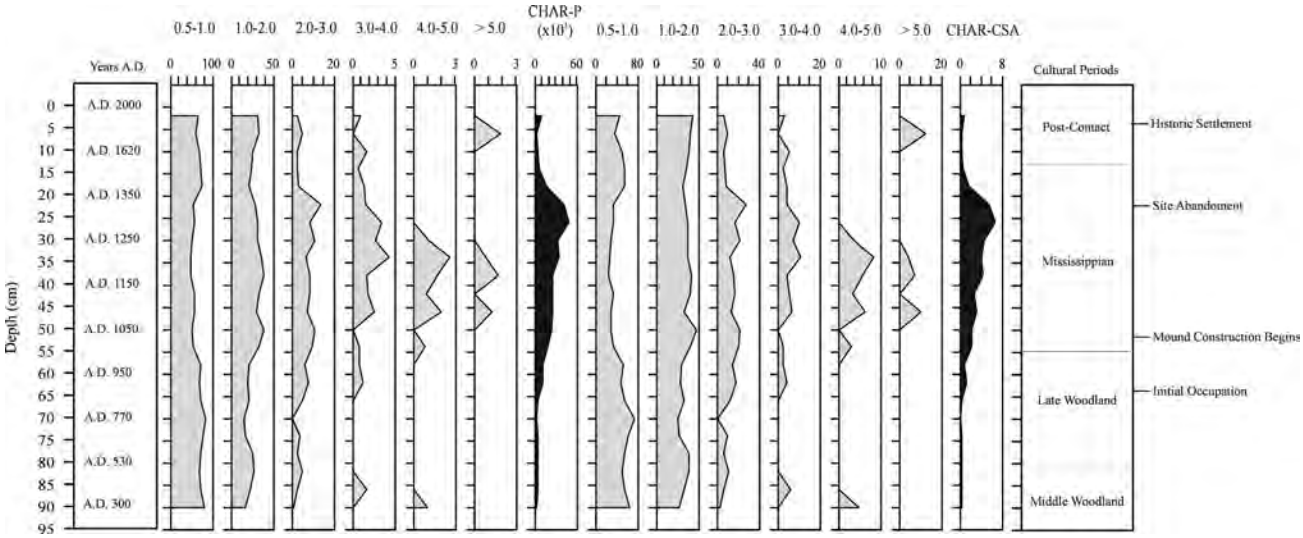


Figure 05-05. Summary charcoal diagram from Mound G Pond for percentage of total number of charcoal particles by grid, total charcoal particle accumulation rate (CHAR-P), percentage total cross-sectional area by grid, and total charcoal influx for cross-sectional area (CHAR-CSA).

The smallest-size class (0.5–1.0 grid) of charcoal comprises 69 to 85 percent of the total particle numbers and 49 to 74 percent of total cross-sectional area (CSA) (see Figure 05-05). The intermediate-size classes (2.0–3.0 to 4.0–5.0 grids) comprise 24 percent (ranging between 15 and 31 percent) of particle numbers and average 41 percent CSA (ranging between 26 and 51 percent). The largest class size (>5.0 grids) is absent in this pollen zone. Total charcoal influx for cross-sectional area (CHAR-CSA) ranges from 0.21 to 0.44$mm^2 \cdot cm^{-2} \cdot yr^{-1}$ with a mean of 0.34$mm^2 \cdot cm^{-2} \cdot yr^{-1}$. Based on the these charcoal signatures, the charcoal record for Pollen Zone 3 indicates charcoal particles derived largely from distant source fires with some fires occurring at the watershed level.

Pollen Zone 2 (~A.D. 900–1350; 22–66cm)

Compared to Pollen Zone 3, Pollen Zone 2 is characterized by a marked decrease in arboreal

pollen taxa with values ranging from 52 to 65 percent (mean=59 percent) (see Figure 05-04). Oak is still the dominant species, averaging 32 percent of the upland pollen sum with values ranging between 23 and 39 percent. Hickory remains at 7 percent but pine rises from an average of 7 percent in Pollen Zone 3 to an average of 10 percent in this zone with values ranging from 7 to 14 percent. Minor taxa averaging between 1 and 2 percent of the upland pollen sum include maple, willow, sweetgum, cedar, walnut, elm, and tulip poplar. Trace amounts of black gum, heath family (Ericaceae), sumac (*Rhus*), birch, basswood, sycamore, fraxinus, and flowering dogwood (*Cornus florida*) are also represented in this zone. Nonarboreal pollen attains peak values in Pollen Zone 2 averaging 41 percent with values ranging between 33 and 49 percent. The largest contributors to this increase in nonarboreal pollen are upland herbs averaging 25 percent of the upland pollen sum, including grasses (17 percent), sedges (6 percent), and nettle (2 percent). In each case, these upland herbs attain peak values in this zone. Ruderals and cultigens comprise 14 percent of the upland pollen sum, including ragweed (12 percent), plantain (*Plantago*, 1 percent), sunflower (1 percent), and trace amounts of goosefoot (*Cheopodium*, ranging from 0 to 2 percent) and knotweed (*Polygnum*, ranging from 0 to 1 percent). As was the case for the upland herbs, all ruderals and cultigens attain peak values in this zone. Shrubs, represented by buttonbush (1 percent) and Virginia sweetspire (*Itea virginica*, 1 percent), comprise 2 percent of the upland pollen sum. Hazelnut, ranging from 0 to 1 percent, is also present in trace amounts. Bracken fern (*Pteridium aquilinum*) shows up for the first time in the pollen record, averaging 1 percent with maximum values up to 2 percent. The average pollen concentration for this zone is 17,615 grains/cm^3 (ranging between 3,849 and 44,880 grains/cm^3) and the pollen accumulation rate (PAR) averages 1,726 grains$\cdot cm^{-2}\cdot yr^{-1}$ (ranging between 377 and 4,398 grains$\cdot cm^{-2}\cdot yr^{-1}$).

The smallest-size class of charcoal comprises 47 to 73 percent of the total particle numbers and 25 to 53 percent CSA (Figure 05-05). The intermediate-size classes comprise 45 percent (ranging between 34 and 64 percent) of particle numbers and average 64 percent CSA (ranging between 47 and 70 percent), an increase on average of 42 percent compared to Pollen Zone 3. The largest class size ranges between 0 to 10 percent total particle numbers and achieves peak values of up to 3 percent total CSA. Total charcoal influx for cross-sectional area ranges between 0.91 and 6.61$mm^2\cdot cm^{-2}\cdot yr^{-1}$ with a mean of 3.45$mm^2\cdot cm^{-2}\cdot yr^{-1}$. The tenfold increase in CHAR-CSA relative to Pollen Zone 3, combined with the increases in larger particle class sizes and the modest increase in total CSA for the largest grid size, indicates a substantial increase in fire/burning activities in the vicinity of Mound G Pond during development of Pollen Zone 2.

Pollen Zone 1 (~A.D. 1350–Present; 0–22cm)

Pollen Zone 1 is characterized by the reestablishment of forest in the vicinity of Mound G Pond (see Figure 05-04). Arboreal pollen increases from an average of 59 percent in Pollen Zone 2 to 83 percent in this zone. Oak (36–41 percent, mean=39 percent) continues to be the dominate contributor to the upland pollen sum and hickory reaches a maximum average of 10 percent (ranging from 7–15 percent). Both pine (11–20 percent) and cedar (4–7 percent) attain peak values in this zone with average values of 16 and 6 percent, respectively. Maple rises to a high of 5 percent (4–6 percent). Minor taxa averaging between 1 and 2 percent of the upland pollen sum include willow, sweetgum, sumac, walnut, elm, and tulip poplar. Trace amounts of arboreal pollen in this zone include black gum, chestnut, ash, heath, beech, dogwood, and sycamore. Upland herbs average 6 percent of the pollen sum, including grasses (3 percent), sedges (2 percent), and nettle (1 percent). Ruderals (8 percent) include ragweed (7 percent), plantain (1 percent), and the first appearance of dock (*Rumex*, 0-2 percent) in trace amounts. Buttonbush (2 percent), sunflower (1 percent), and bracken fern (1 percent), comprise 3 percent of the upland pollen sum. Virginia sweetspire and alder are present in trace amounts. The average pollen concentration for this zone is 101,817 grains/cm^3 (ranging between 62,345 and 124,856 grains/cm^3) and the pollen accumulation rate (PAR) averages

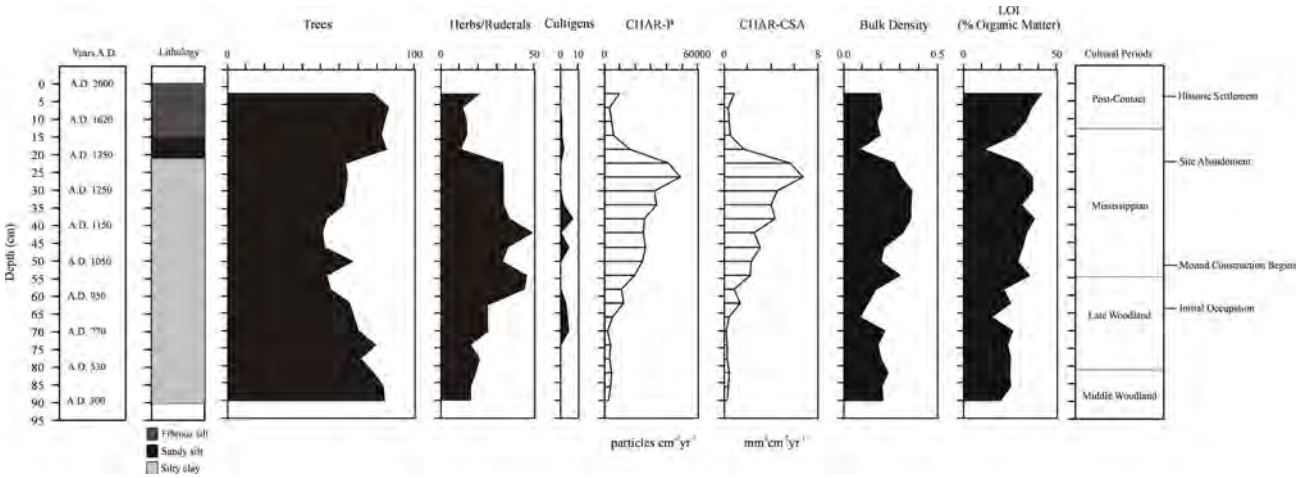


Figure 05-06. Summary diagram from Mound G Pond for percentages of trees, herbs and ruderals, and cultigens, total charcoal particle accumulation rate (CHAR-P), total charcoal influx for cross-sectional area (CHAR-CSA), sediment bulk density, and loss-on ignition (LOI) for organic matter.

3,545 grains·cm^{-2}·yr^{-1} (ranging between 2,699 and 6,109 grains·cm^{-2}·yr^{-1}).

The smallest-size class of charcoal comprises 60 to 74 percent of the total particle numbers and 37 to 45 percent CSA (see Figure 05-05). The intermediate-size classes comprise 31 percent (ranging between 26 and 38 percent) of particle numbers and average 48 percent CSA (ranging between 45 and 54 percent), a decrease on average of 33 percent compared to Pollen Zone 2. The largest class size ranges between 0 and 13 percent total particle numbers and obtains values of up to 2 percent total CSA. Total charcoal influx for cross-sectional area ranges between 0.35 and 1.73mm^2·cm^{-2}·yr^{-1} with a mean of 0.79mm^2·cm^{-2}·yr^{-1}. The four fold decrease in CHAR-CSA relative to Pollen Zone 2, combined with the decreases in larger particle class sizes, indicates a substantial reduction in fire/burning activities in the immediate area of the pond during formation of Pollen Zone 1. However, the peaks in both the largest particle class size and CHAR-CSA in the upper portion of Pollen Zone 1 occur within the last 150 years indicating historic Euro-American settlement/ disturbance in the vicinity of Mound G Pond.

Discussion

Pre-Settlement Interval (~A.D. 60-900; 66-100cm)

All analyzed samples are generally constant during the pre-settlement interval (referring to pre-Late Woodland/Mississippian settlement of the site) in the Mound G Pond core suggesting a rather stable environment around the pond (Figure 05-06). Corresponding to Pollen Zone 3, vegetation is dominated by arboreal pollen taxa, mainly oak with lesser occurrences of hickory, pine maple, willow, sweetgum, cedar, walnut, ash, beech, elm, and tulip poplar; a composition consistent with an original stand western mesophytic forest. The prevalence of arboreal taxa, combined with the low frequency of herbs and ruderals, indicates that the area surrounding Mound G Pond was largely a closed canopy forest during the pre-settlement interval. Additionally, the charcoal record for this interval indicates charcoal particles were derived largely from distant source fires with only minor occurrences of fires at the watershed level and no evidence of fires at the local (i.e., site) level. Given the stability of the parameters analyzed, the paleoecological record contained in this interval of the Mound G Pond core provides a good baseline from which to examine subsequent anthropogenic disturbance regimes and associated impacts to the structure of the local vegetation.

Site Occupation Interval (~A.D. 900–1350; 22–66cm)

Primary Native American occupation of the area surrounding Mound G Pond both by Late Woodland and Mississippian peoples coincides with Pollen Zone 2. As noted in the introduction, historical and ethnographic accounts document the intentional use of fire by Native Americans for a variety of purposes, including land clearance. If such was indeed the case in the vicinity of Mound G Pond, then an increase in human occupation at the Shiloh Mound site should be reflected by an increase in sediment charcoal resulting from these burning/clearance activities and corresponding shifts in the structure of the local vegetation—a decrease in upland forest taxa and an increase in taxa indicative of disturbance.

As Figures 05-04 through 05-06 illustrates, the stability witnessed during the pre-settlement interval in the Mound G Pond sediments changes dramatically with human occupation at the site (which occurs at the contact between Pollen Zones 2 and 3). The shifts in values for both bulk density and organic matter at the contact between this interval and the pre-settlement interval indicate a shift in sediment source—dominated by an influx of inorganic sediments comprised primarily of silicate minerals. This change in sediment source likely reflects initial clearance of the ridgetop landscape surrounding Mound G Pond during terminal Late Woodland occupation of the Shiloh Mound Complex.

Corresponding to these shifts in sediment properties, it is apparent that fire/burning activities increase and vegetation structure is altered with Native American occupation of the site. The tenfold increases in both CHAR-P and CHAR-CSA relative to pre-settlement values, combined with the increases in larger particle class sizes and the increase in total CSA for the largest grid size, indicate a substantial increase in anthropogenic fire/burning activities in the vicinity of Mound G Pond during this interval. Although the increase in charcoal is largely associated with forest clearance, it is important to also consider contributions to the charcoal record resulting from fires associated with everyday domestic activities (e.g., cooking and warmth). The increased rate in sedimentation (see Figure 05-02) during this interval suggests increased erosion and thus the charcoal record for human occupation of the site is likely inflated to some degree by run-off of charcoal into the pond. However, given the associated dramatic shifts in vegetation structure, the charcoal record indicates that both local and intense fires (inferred based on the increase in larger charcoal particles [e.g., Delcourt et al. 1998; Patterson et al. 1987; Ward and Hardy 1991]) increased in the area during the Late Woodland and Mississippian occupations at the site. The development of this local anthropogenic fire regime was largely due to initial forest clearance and continued maintenance of open space in the vicinity of the pond.

The pollen record for this interval documents a marked decrease in arboreal taxa as disturbance taxa (herbs and ruderals) increase. The increase in herbs and ruderals is largely the product of peak values for grasses, sedges, and ragweed in the Mound G Pond core, taxa favoring forest openings made by human clearance activities (combined values for these taxa are twice that compared to the preceding interval). Native cultigens (sunflower, goosefoot, and knotweed) also obtain peak values during this interval. The presence of these cultigens does not necessarily indicate human cultivation since they also occur naturally, but the fact that these cultigens are generally confined to the period of primary Native American occupation of the site, coupled with the presence of other cultivated seed crops from Mound A context (see Chapter 16), suggests the establishment of garden plots in the vicinity of the pond.

In addition to considering the cultigens that are present in the sediments, it is also important to consider a cultivated plant that is not present in the Mound G Pond core—maize (*Zea mays*). Remains of maize have been identified in the macrobotanical remains from the Shiloh Mound Complex (see Chapter 16) but no grains of maize pollen were recorded during this analysis. Although the absence of maize pollen in a pond surrounded by a Mississippian mound complex seems paradoxical given its' importance as a subsistence resource,

the absence of this pollen in the pond sediments is the product of both natural and cultural factors. Maize pollen is large (90–125µm), exhibits high sedimentation velocities and, excepting unusual circumstances, is rarely dispersed in high quantities beyond 50m from the source area (Jackson and Lyford 1999; Jones and Brooks 1950; Raynor et al. 1972). As noted earlier, Mound G Pond has a restricted catchment area and receives pollen primarily from local vegetation (~20m to 200m) growing on the surrounding ridgetop and slopes of the adjacent ravines with only minor contributions from regional sources (~200m to 1km). Thus the absence of maize pollen in the sediment record and its' presence in the macrobotanical record indicates that agricultural production of maize was not occurring in the immediate vicinity of the pond. Cultivation of maize was likely restricted to the fertile alluvial valley of the Tennessee River located east of the Shiloh Mound Complex.

Post-Abandonment Interval (~A.D. 1350-Present; 0–22cm)

Abandonment of the Shiloh Mound Complex occurs approximately A.D. 1350, corresponding to Pollen Zone 1 in the Mound G Pond core. The beginning of this interval is marked by noticeable shifts in both bulk density and LOI values occurring in the basal sediments (22cm), indicating a shift in sediment source dominated by an influx of inorganic sediments (Figure 05-06). The cause for this shift in sedimentation is unclear, but it demarcates shifts in both pollen and charcoal records from the preceding interval.

Following Native American abandonment of the site, forest regrowth, reflected by an increase of tree pollen and concomitant reduction in herbs and ruderals, occurred during a 500 year occupational hiatus prior to Euro-American settlement in the area (Figure 05-06). However, vegetation structure in the vicinity of the pond did not return completely to pre-occupation composition. Additionally, the four fold decrease in CHAR-CSA relative to the site occupation interval, combined with the decreases in larger particle class sizes, indicates a substantial reduction in fire/burning activities in the immediate area of the pond during the majority of the post-abandonment interval. Although both oak and hickory are still the dominant species, the absence of anthropogenic fire regimes allowed forest succession to occur as witnessed by peak values in pine, cedar, maple, and tulip poplar.

During the later part of the post-abandonment interval, the Mound G Pond sediments record a return to anthropogenic disturbance regimes in the area associated with Euro-American occupation beginning during the mid-nineteenth century. Subtle peaks in both the largest particle class size and CHAR-CSA indicate a return to local/intense fires in the vicinity of Mound G Pond. This historic disturbance regime is also reflected in the pollen record with an increase in herbs and ruderals, including a peak in ragweed pollen and the appearance of dock introduced from Europe.

Summary and Conclusions

Paleoecological analysis of sediments contained in the Mound G Pond core provides a ~2000 year record documenting the history of both pre- and post-settlement vegetation and disturbance regimes during the Late Holocene. The results of this study support the findings of other paleoecological research in the southern United States that suggest Native American use of fire had a profound impact on ecosystems in the region in terms of the composition of pre-Euro-American settlement vegetation (Cridlebaugh 1984; Delcourt and Delcourt 1997, 1998; Delcourt et al. 1986, 1998), illustrating the importance of applying such research to the archeological record.

Building on the assumption that the CHAR-CSA, CHAR-P, and large charcoal particles (>5.0 grid CSA and >50µm in length) values are an accurate measure of both fire intensity and location, the charcoal record suggests that fires in the vicinity of Mound G Pond prior to A.D. 900 were not very intense or localized compared to post-A.D. 900 fires. In fact, the charcoal records prior to A.D. 900 do not approach the magnitude exhibited by fires during the occupational interval (~A.D. 900–1350) at the site. The records for fires during this interval are more characteristic of natural

lightning-ignited fires (low intensity burns) and/or represent fires generally far removed from the site. Vegetation composition surrounding the pond during this pre-settlement interval is consistent with an original stand western mesophytic forest.

After A.D. 900, the charcoal records indicate both local and intense fires in the area, suggesting that the vast majority of the fires occurring during the terminal Late Woodland and Mississippian periods in the area surrounding the pond were largely the result of anthropogenic activities. Corresponding with this disturbance regime, the pollen record reflects a reduction in forest taxa and an increase in disturbed taxa resulting from forest clearance. There is also direct evidence supporting the establishment of small garden plots in the vicinity of Mound G Pond and negative evidence suggesting that agricultural pursuits associated with maize production were located some distance from the site, most likely in the lower alluvial valley to the east.

Following abandonment of the Shiloh Mound Complex around A.D. 1350, there was a regrowth of forest in the area during a 500 year occupational hiatus. However, the affects of previous Native American disturbance regimes (fire and forest clearance) still played a key role in the vegetation composition, as forest clearings were repopulated by a variety of successional species at the expense of oak and hickory. During the last 150 years, human impact associated with Euro-American settlement in the area is again recorded in the Mound G Pond core. After A.D. 1850, both local and intense fire regimes return and deforestation is evident by the increase in ragweed.[3]

3 The analysis of the Mound G Pond core was made possible by funding provided by the National Park Service. The author would like to thank David Anderson, John Cornelison and Sarah Sherwood for including this research within the context of the Shiloh Mound A investigations. Sally Horn (Co-director) and Lisa Wilkins (graduate student) of the Laboratory of Paleoenvironmental Research, Department of Geography at the University of Tennessee conducted the processing of the sediment samples. A special thanks to Hazel and Paul Delcourt for providing original data from the initial Mound G Pond core and all their support and help during my graduate career at the University of Tennessee.

CHAPTER 6

FIELDWORK INFRASTRUCTURE AND EXCAVATION PROCEDURES

JOHN E. CORNELISON, JR. AND DAVID G. ANDERSON

Introduction

During the five field seasons (1999, 2001–2004) of SEAC investigations at the Shiloh Mound Complex a variety of excavation techniques and a complicated site infrastructure were developed to facilitate excavation of the summit, north and south slopes, and the precarious eroded bluff edge of the east side of Mound A. The systems implemented during the excavations at the site evolved from the most basic of archeological field techniques—simple, single-unit excavation with adjacent dry screening of materials—to a complicated system involving the movement of massive quantities of excavated material in 55-gallon barrels by way of a 40m long rail system running from the mound summit to a raised water screening platform and spoil field at its base. Tennessee River water was supplied via electric and gas pumps through a system of storage and pressure tanks and distributed throughout the site via more than 260m of hose. Wooden boardwalks and staircases connected various areas surrounding the mound and the rail system was supported by a free standing wooden framework that ran up the south side of the mound and across its summit. By the 2002 field season the entire site was electrified, allowing power tools to be used within the excavations, and the excavation area was covered with a semi-permanent shade screen. During 2002 and 2003 field seasons excavations were regularly taking place adjacent to the dangerous eroded bluff defining the eastern side of the mound, beyond which was a 18m (60ft) drop to the rock-covered, stabilized bank of the Tennessee River. A safety system of ropes and harnesses anchored to large trees on the top of the mound, as well as a safety fence anchored on the north and south sides of the mound but able to move down with the excavations, was established to prevent accidental falls; none occurred during the excavations.

This chapter provides an account of the excavation techniques and provenience controls that were utilized during the excavation, as well as a discussion and schematic descriptions of some of the infrastructure systems that were developed to facilitate the excavation of the mound. During the five years of excavation at the site this infrastructure underwent dramatic changes as we gradually improved our efficiency (and eliminated a small number of genuinely bad ideas). These gradual modifications culminated in an effective system for excavating the mound rapidly, but with accurate scientific control, and in a difficult and somewhat dangerous work environment. It is our hope that this information may assist other researchers facing similar field obstacles and help to generate new ideas on how best to conduct large-scale salvage archeology while still preserving the integrity of data collection.

Excavation

Excavation of the mound and adjoining areas on the apron was conducted using one-meter square units, or Excavation Units (EUs), identified by their southwest corner coordinates. The coordinates were obtained from a re-established site grid initially delineated by Paul Welch in 1998 (see Chapter 7). The first excavation units opened in 2001 on the south side and slope of Mound A were established using a total station based at one of Welch's datum points, and subsequent units on and near the mound were laid out in a grid pattern by building off of existing unit squares. The total station was occasionally used to re-establish rows of excavation units when unit boundaries were lost due to adjacent excavation. Each excavation unit was also assigned a number from 1 to 331 in the order in which the units were opened. Thus the excavation program from 2001 through 2004 encompassed the examination of a 331m^2 area, mostly on the sides and summit of

Mound A (See Chapter 9). An additional 31m^2 were opened in the 1999 testing program, in the apron west of the mound, into the dike feature, and in the plaza (Welch 2006; see Chapter 3).

Excavation within the 1m units were by both arbitrary and stratigraphic levels. In 2001, all of the evacuation was limited to 10cm arbitrary vertical levels within a single row of test units running from the base of the apron on the south side of the mound, over the summit and down the north slope to the northern base of the mound. On the mound slopes in 2001, deposits were removed in a wedge or step directly into the mound for a distance of one meter from the lowest corner point of the unit, which was invariably on the south side of the 1m units opened of the south side of the mound, and on the north side of units opened on the north side of the mound. This step was removed as a single provenience, creating a level surface below which arbitrary 10cm layers were then be taken into the mound. In most of these units on the north and south sides of the mound the step consisted exclusively of fill from the Stage I mound (See Chapter 9). The 2001 1m units were excavated arbitrarily in order expose a cross-section profile of the mound which was then used to guide stratigraphic level excavations in 2002 and 2003. Some arbitrary level excavation was still utilized within the original trench in 2002, but most deposits were removed by strata, albeit still employing 1m square provenience control. The goal of the stratigraphic excavation was to remove occupational surfaces, filling episodes, and other construction and depositional strata in their entirety, while obtaining fine screen, flotation, soil, or other samples as necessary from each..

Before the 2002 season commenced, we planned to use both arbitrary level designations (labeled numerically) and defined zones (alphabetically labeled) with the idea that zone designations would apply to discrete strata, surfaces, filling episodes, etc. regardless of the unit or level in which it was encountered and, if necessary, arbitrary levels could be removed within them. However, early in the season it became apparent that the mound stratigraphy was far more complicated than we originally predicted and unless units were excavated immediately adjacent to each other it was impossible to conclusively match one stratum to another at greater distances within the mound. The rapid pace of excavation and the size of the crew necessitated opening non-adjacent units. Because of this, the definition of a Zone was changed to apply only to noticeable stratigraphic changes within an individual test unit, which were recorded and the fill collected separately. In most situations a change in zone designation was associated with a change in level, but this was not always the case in reverse. For example, the fictional EU 500 has a provenience of Level 7, Zone B, indicating that seven levels have been removed but within these seven levels only two recognizable strata were encountered. Also, Zone B in this unit does not necessarily correspond to a Zone B in another unit, only that it was different from the other designated zones within EU 500. Whenever it was possible to identify strata across multiple units (as fortunately proved the case with each of the major filling episodes and most of the intact occupation/stage surfaces), notes to that effect were recorded on the project excavation forms that accompanied each provenience excavated. Consecutive lettering was used to identify consecutive strata, from the surface down. The letter S, followed by a numeric designation was used to identify prepared stage surfaces or structure floors with the numbering implying the first, second, third, etc. surface encountered in an individual unit. These surfaces were most often thin, hard packed or fired red sandy clay, many of which appear to have been structure floors or possible ceremonial (i.e., initial or termination) surfaces or veneers.

Beginning in 2003, a backhoe was used to remove portions of mound stage fill in 1m segments. This effort focused on the fill of Stage III, on the south side and center of the mound, where it was some 2m thick (see Chapter 3). Prior to removal of fill, a profile was cleaned, drawn, and then photographed, and samples from specific filling episodes were removed for water screening or flotation. The backhoe then removed the remaining fill up to nearly 1m into the mound, where a new profile was created and documented, and the

process repeated. In this way the project team was able to quickly remove large portions of mound fill while documenting construction episodes and fills in profiles and samples taken at 1m intervals. This level of documentation proved critical to documenting the activities associated with the construction of the mound (see Chapters 9 and 10).

A series of preprinted forms, logs and recording sheets, and tags were used during the excavations to record information about levels, features, special sample areas, photography, and so on. Electronic copies of all of these forms are included in the electronic appendices, and can be adopted for other projects with minor editing, Excavation notes from each 1m square and level, including any features or strata within them, as well as areas where special samples were taken, were recorded on pre-printed forms upon the completion of each level. On the form crewmembers documented the elevation of the four corners and the center of the unit before and after excavation of the level as well as soil type and Munsell color, comments on materials recovered, and their interpretation of information revealed during the excavation. Soil smears, small samples of wet soil collected and applied with a finger, were taken and added to these sheets from each distinct soil recognized in the level or provenience. This offered a check on impressionistic determinations of soil texture and color. Each provenience excavated was given its own Field Specimen (FS) number that was then recorded on the level form and in a Master FS Logbook. The FS number was also recorded on artifact bags and on barrels of fill (as was specific provenience information such as EU number, coordinates and level) so that artifacts collected could be re-associated with their provenience in the mound. Many special samples and flotation samples were also collected, and each of these samples was given its own FS number even if it was within another excavated provenience. For example, radiocarbon or soil samples were commonly collected from levels in which the rest of the fill was water screened. The field specimen recording system was done in order to facilitate laboratory processing and assist in the tracking of various samples distributed to researchers outside of SEAC.

Vertical control was maintained through the use of a stadia rod and fixed optical levels over datums on the north and south sides of the mound, and on the unexcavated summit (Figure 06-01). The locations and elevations of each of these "Transit Stations" were tied to the main site datum using the total station. Multiple stations were necessary in order to maintain a line of site between a level and excavation units in various places on the mound. The elevations recorded for each level were eventually standardized to the site datum based upon the relative height of the transit station used.

All soils excavated from the mound were collected in total as flotation or special samples, screened through a ¼-in mesh hardware cloth, or discarded without collection. In practice, this last procedure was followed only with fills from within stage surfaces removed by hand or using the backhoe, and rarely included fills where artifacts were present. Flotation samples were processed at the field lab and in the laboratory at SEAC with a Flote-Tech Flotation System (Figure 06-02). Flotation allowed a near 100 percent recovery of materials that would regularly fall through a ¼-in mesh hardware cloth and was used to process all of the fill from features, column samples from each of the arbitrary levels opened in each 1m unit, most of the occupation floors or other prepared surfaces found within the mound, and, in some cases the fill immediately above a prepared surface



Figure 06-01. Crew members Rachel Horlings and Chene Williams use a Sokkia Auto Level to record the basal elevations of an excavation unit in the south trench of Mound A (facing WNW), July 25, 2001.



Figure 06-02. Project paleoethnobotanist Monte Abbott testing out the new flotation machine at the field lab, August 14, 2001.



Figure 06-03. Building the water screening area on the north side of the mound, May 11, 2002. The screening operation worked well, but fill accumulated so rapidly that the platform had to be raised in 2003.

(see Chapter 9). When possible, five-liter column samples were collected from the northeast corners of each of the arbitrary levels. On average these samples measured approximately 20x20cm and were 10cm high, the entire span of an arbitrary 10cm level, which when combined formed columns through the deposits. The column samples were collected in order to supply a microartifact record encompassing paleosubsistence, lithic, ceramic, and other remains, from the top of the mound to the lowest level of excavation. Prepared surfaces and the fill from immediately above them were floated in hopes of recovering very small artifacts or botanicals associated with use of these surfaces.

All excavated materials that were not saved as a sample or processed through flotation, other than materials that were discarded, was passed through a ¼-in mesh hardware cloth and the artifacts were collected. In 1999 and 2001, and again in 2004, this was accomplished by dry screening and the collection of artifacts on site. Multiple small backdirt piles were created and then either leveled or used at the end of the season to fill sandbags that secured tarps and plastic sheeting protecting the deposits during the winter shutdown. In 2002 and 2003, water screening was employed, with processing areas located on the north and south sides of the mound (Figure 06-03). No materials retained in the screen were discarded in the field. Instead, everything that did not pass through the ¼-in mesh hardware cloth was collected and transported to the field lab and eventually back to SEAC for final sorting. There was a strong volunteer program in effect during the fieldwork in 2002 and 2003, and many levels of experience were represented, so it was unrealistic to expect everyone to know what was an artifact and what wasn't.. In the field lab or at SEAC sorting was conducted by professional archeologists, or by volunteers and students under the direct supervision of archeologists.

In 2003, we continued to waterscreen and return everything collected to SEAC, but not all of the excavated material was screened that season (see Chapter 3). The 2003 research design called for screening a partial sample of the excavated materials to be screened because of (1) the need to move quickly through the mound, (2) because many of the strata were large, and (3) because evidence obtained from the previous year's excavations suggested there was little to be learned about stage filling episodes (many of which were devoid of cultural materials) that could not be gleaned from a partial sample. As noted above, all occupation surfaces, unusual fills, and veneers were either screened or floated, only the large filling episodes making up mound stage fill were subjected to sampling rather than complete collection.

Excavation Aids

In 1999 and 2001 all excavated soil was screened near where it was excavated. Given the sun baked

and compact nature of the upper mound fill it was clear that that dry screening would not be effective when large-scale excavations began in 2002 and after. Accordingly, a major investment in infrastructure occurred in 2002 and again in 2003 to support the mitigation program. Much of this was devoted to the water screening process, specifically getting water to the site, followed by the collection and movement of fill to areas where it could be screened. Processing dozens of 55-gallon barrels of fill per day required a great deal of water, a method for moving the fill off of the mound for screening, and a suitable work area to conduct the screening. Also, federal law prohibited discharging silt into the Tennessee River, so a large retaining area with appropriate silt screening had to be developed.

There was an abundance of water within the Tennessee River 30m below the mound summit, useful for water screening, cleaning equipment, and wetting dried deposits, if a method could be found to access it. Two Honda water pumps were purchased to move water from the river to the screening area (Figure 06-04). However it soon became clear that the pumps were unable to move the necessary volume of water up the steep bluff face. A well pump was purchased and placed in the river with a silt screen attached over the intake. Unlike the trash pump, the well pump required electricity to work. A Honda generator was purchased and a water-proof cord was extended to the pump. The well pump moved water uphill through a 7.62cm (3in) hose. A 2000-gallon water storage tank was acquired and the output from the well pump was used to fill the tank (Figure 06-05). The well pump could usually fill the tank in 2–3 hours. The trash pumps were then used to pump water from the holding tank to a reducer and then to garden hoses. Each hose had a sprayer so water could flow on demand if the trash pump was running. In this way water was routed to the screening areas, and hoses were available atop the mound to provide water as needed for other tasks.

One further modification to the pumping system of note was made. In 2002 the electrical generator had been placed on the edge of the apron area, close to the excavation area. The noise this created interfered with the excavations. In 2003, a spool of electrical cable was purchased and the generator was moved several hundred feet to the south, behind Mound D. This reduced the noise level at the site, but required frequent checking to prevent the generator from running out of gas. This same season electrical extension cords were run to the mound summit, allowing the regular



Figure 06-04. Steven Kidd. Addison Carter, and Chris Lydick setting up the water intake hose in an attempt to pump water from the Tennessee River to the site area, May 11, 2002.



Figure 06-05. Rachel Horlings, Charles Lawson, and Josh Wells setting up the 2500 gallon water holding tank, May 30, 2002. Water from the Tennessee River was pumped daily up to this tank, and then distributed via hoses to the water screening areas around Mound A.

use of power tools. Hand saws were replaced with reciprocating saws, and the power allowed for lights, fans, and the charging of electronic devices, such as calculators, cameras, and phones. The ready availability of powered saws greatly increased the speed of excavations, since roots could be cleared in seconds instead of minutes. The excavation area by the bluff edge had several large trees that were removed, but their stumps and root networks still had to be removed as the excavations proceeded down into the mound.

Moving the fill from the excavations on the mound was accomplished using 55 gallon barrels gravity pulled down a 40m long rail system made up of 0.9cm to 1.5m (3 to 5ft) sections of straight and curved iron tracks holding free-rotating drums. The same kind of system is commonly employed for unloading boxes from tractor-trailer trucks, and was commercially available at a reasonable cost. The track segments were bolted together and secured to a wooden frame installed across the top and down the north side of the mound in a northwest direction where it ended at the screening deck, which was placed approximately 10m out from the northwest corner of the mound. The idea for this earth moving system came from Boyce Driscoll's work at the Dust Cave site in northern Alabama, where a similar roller system was used to move buckets of fill from the interior of the cave to a water screening area just outside the entrance. At Dust Cave most of the movement was horizontal. At Mound A, in contrast, the 7.5m difference in elevation from the top of the mound to the water screening areas made moving fill much more challenging, mandating the development of tracks with guide/safety walls (Figure 06-06). The wooden frame for the track went through a number of modifications during the 2002 and 2003 field seasons, with the most dramatic change occurring at the beginning of the 2003 season when the screening platform had to be raised to 1.5m off the ground (see Figure 03-49). This was done because of the vast amount of material that accumulated around and eventually over the much lower platform built in 2002, which had been only ca. 0.5m high.



Figure 06-06. Lauren Qualls (left) and Zach Gibbs (right) assembling track sections for the rail system used to remove fill from Mound A down to the water screening platform, June 30, 2003.

a series of vertical 10x10cm (4x4in) posts that were reinforced with rubber and nails. When barrels hit the upright posts at the end of their run, vibrations could be felt throughout the screening station.

The rail system initially started on the top of the mound to the west of the excavation area, outside of the direct impact zone, but as the excavations progressed and the mound summit was lowered, the tracks were placed directly within the impact area. Crew members would take their excavated fill in a 5-gallon bucket to the appropriately labeled barrel on the rail system. The barrels were marked with duct tape labels on the outside and paper tags inserted in plastic bags placed in with the soil. This was done to prevent cross contamination of proveniences and to provide a double check at the screening area.

Having a number of barrels on the line that were being filled at differential rates presented a problem that is common on a train line. Since the barrel in front was not always the first one filled a method had to be established to allow the order to be shifted. Another section of track was added that was perpendicular to the cross mound track, creating a switching area. This allowed crew members to slide barrels out of the way so the full ones could be sent down to the screening area. A wood chock was placed in the rollers in the rail right before the drop, to ensure that barrels were not inadvertently sent down the hill. A portable wooden

crossing platform was built over the track on the summit so crew would not be injured stepping on the rollers if they needed to exit the excavations. Such movement into and out of the excavations occurred frequently, because an administration area was established on the unexcavated portion of the summit just past the walkway, on a wooden platform, and covered with a large tent. The tent provided shade and protection from rain, and the platform was the primary location where project record keeping took place each day, notably the collection of field forms and provenience records.

Provenience Control

The first archeological grid for the Shiloh Mound Complex was established by Frank H.H. Roberts in 1933–1934 (see Chapter 7). However, the records that would allow the reestablishment of that grid have not been located, and an enduring problem at the site is that we have little information about where these New Deal era excavations occurred. In 1976, Gerald Smith also conducted excavations at the mounds, but relocating his datums has also proven problematic. The remote-sensing survey conducted in 2001 provided the information necessary to reconstruct the Roberts grid, although not where all his excavations occurred (See Chapters 3, 7, and 8). This information came too late for use in the 1999 and 2001 excavations, and those excavations, and the subsequent mitigation fieldwork conducted from 2002 through 2004, made use of the grid established by Welch in 1999. Welch placed two iron rods on the extreme western part of the site, behind Mound G. These datums were easily located, something greatly assisted by the fact that Welch was able to take us directly to them..

One problem that became apparent during the initial excavations into the mound in 2001 was that provenience control was extremely difficult to maintain. The mound was a three dimensional solid with fills and stages sloping in two or more directions, facts that had to be recognized and recorded. Keeping wall profiles straight over progressively longer distances and greater heights was also challenging. Strings were lined along the edge of the units from corner pin to corner pin. Other strings were hung from these two main lines and the ends weighted with lead washers. The excavators were then able to cut back the wall of the unit until the washer hung free (Figures 06-07 and 06-08; see also Figures 03-21, 03-22). In this manner the trenches could be kept straight with no bowing or undercutting of the walls. While these techniques seemed revolutionary, by the main entrance of the SEAC offices in Tallahassee a large painting based on a WPA photograph hangs that clearly depicts a similar method (see Figure 03-36). We since found out that this approach, and indeed many of the procedures we developed, were commonly employed by New Deal era archeologists.

All units were excavated and designated using the grid coordinates of their southwest corner. Unit floor and corner elevation was controlled using one of three Sokkia auto levels positioned around the excavations. Several transit stations were used throughout the project and all readings were recorded using the format “xx cm below datum x”. The elevations of all the datums employed during the excavations were recorded so depth below the mound summit could be determined for all proveniences examined in and near the mound.

Photography

Photographic documentation was important from the earliest stages of the fieldwork. Digital and 35mm film cameras, 8mm video cameras, and larger format cameras were employed. As in most



Figure 06-07. Steven Kidd mapping the E179 profile on the west side of the excavation area in the early morning sunlight, October 3, 2003.



Figure 06-08. Steve Kidd and Charles Lawson using 1m gridded strings to map the profile of the trench opened on the southeast side of Mound A. View to northwest October 29, 2003.

excavations, gaining enough elevation to take plan photographs was problematic. For this reason, a large stepladder was kept on the summit. This allowed the camera operator to get high enough to photograph several units at a time. For larger area shots, two deer stands were used. One of these was mounted about 7.62m (25ft) off the ground on the south side of the mound and apron, with the access ladder and stand cabled to a large tree. The other deer stand, which was tripodal in shape, was free standing, and was left on the mound summit. The stepladder and these stands gave the ability to take overhead shots of the ongoing excavations. Almost all of the shots monitoring the overall progress of the excavations looking to the north were taken from the southern deer stand, which remained in place for the 2002 and 2003 field seasons.

While color slide film was used in 1999 and 2001, color digital images were also taken of each shot. After the 2001 field season, it was decided that all photography would be done digitally. From 1999 to 2004 over 11,000 images were taken of the fieldwork at Shiloh by the SEAC team. These images have been catalogued and all are included in the electronic appendices.

During the project, filmmaker Cindy Tomlinson Brummer produced a 47 minute color video about the project entitled *In Vivid Color: Voices from Shiloh's Mound*, which is available in the project electronic appendices. At the time of this writing a shorter 22 minute version of this video can be viewed online at http://www.archaeologychannel.org/?option=com_content&view=article&id=259:in-vivid-color-voices-from-shilohs-mound&catid=78&Itemid=527 on the Archaeology Channel.

Shutdowns – Nightly and Longer

Like in most of the Deep South, violent thunderstorms are common, especially in the summer months, which is when most of the excavations at Mound A took place, at least during 1999, 2001, and 2002. For this reason a method for quickly covering and protecting the excavation area was needed, since floors and profiles could be quickly ruined by rainfall and flooding. In the early years of the project, pieces of 1.27cm (½-in) plywood framed with 5x10cm (2x4) beams were laid over the open units, and they were then covered with black plastic. Unfortunately, this method took time, and there were sometimes seams or gaps in the covering where water could enter and damage the excavations.

In 2002, it became clear that the varying depths and increasingly larger scale of the excavations made covering the excavation with plywood frames impractical and increasingly ineffective. After much debate, it was decided that a framed structure extending from the western walkway would be the most efficient way to quickly shut down the site. Joist hangers were attached to the edge of the walkway at a regular interval (Figure 06-09). Using this technique, 5x10cm (2x4) beams could quickly be placed east/west over the excavations and then a large tarp or series of tarps could be placed over the ribs. Like the first year's covering system, however, this system occasionally left large holes where workers could potentially fall and water could pool. Also both systems required the workers to pull the covering tarps near the bluff margin, a dangerous situation. Neither the system used in 2001 nor the one used in 2002, furthermore, could be quickly put in place, something critical to protecting the excavations as well as for crew safety, since storms often came up quickly. Not only did the units have to be covered rapidly to avoid rain damage, but during thunder and lightning storms



Figure 06-09. SEAC archeologists Tammy Cooper and Emily Moss pulling black plastic over the timber joist work built to cover the excavation units after hours in 2002. The system worked well, but took 10-15 minutes to set up each day, which was far too slow when bad weather came up suddenly. View to southwest, July 19, 2002.



Figure 06-10. Large blue tarps were used in 2003 to quickly cover the excavation area during inclement weather, and at the end of the day. The image also shows the administrative work station and tent atop the mound as well as the final shade system in place covering the entire excavation area.

the crew had to be able to quickly relocate to lower ground, typically to the vehicles or equipment trailers that were maintained on the apron. The mound summit was one of the highest places on the landscape, and hence would have been among the first locations to be struck by lightning. Thanks to regular monitoring of the weather by both the park headquarters staff and our crew chiefs atop the mound, we usually had ample warning of impending bad weather, although there were some scary moments when storms came up quickly. By the end of the 2002 season we realized we had to find a faster and better way of covering the units.

The solution to this problem proved quite simple, and it was surprising to all of us that it took so long to figure out. In 2003, large, one-piece tarps were purchased, that measured 15x30m (50x100ft) in size. Plywood framing was still used to cover deep excavations, with 5x10cm (2x4) beams used to make the sheeting sturdy. However, with the one piece tarps, three of which were sufficient to cover the entire excavations, the workers could quickly cover the excavations pulling the tarps up the mound slope on the south side, over the top, and down the north side (Figure 06-10; see also Figure 03-48). This avoided the bluff edge, and the units could be covered using only a few people. Each morning when the site was opened the tarp was peeled back from the north to the south. This dragged all the water and other debris that had accumulated on the tarps overnight away from the excavation units. Occasionally, the tarp would snag or tear which would necessitate its repair, usually with duct tape, although if the tear was severe the tarp would be replaced. Occasionally tarps placed over deep trenches would have appreciable quantities of water in them, which was removed by bailing or more typically, using one of the water distribution pumps. In all, three tarps were used during the 2003 field season, and the project team got to the point where the units could be covered in five minutes or so, including the time needed to place sandbags at intervals around the tarp edge to serve as weights and hold it down. When the tarps were removed, care had to be taken to look out for snakes, some venomous, as well as other creatures that sometimes had gotten under them in the night. Every effort was made to safely remove these park creatures from the mound area to less frequented areas in the park (Figure 06-11).

Seasonal shutdowns were a little more challenging. Since each time we left the mound we were not sure how long it would be until we returned, we had to cover all of the excavations in a manner that would minimize damage from water, snow, or wind. Generally this was accomplished by lining the excavations with thick black plastic. Then plywood sheets, reinforced with 2x4s into



Figure 06-11. Project Co-Principal Investigator David Anderson using a shovel to remove a small copperhead found under the tarp August 13, 2003. The snake was moved down slope. A much larger corn snake had been found on the same stump under the tarp two weeks earlier.



Figure 06-12. Visitors to the site were protected by the fence along the boardwalk, which was important given the daily tours of the excavations conducted by the park, as shown here on October 31, 2003.

solid frames capable of supporting the weight of crew members, were placed over the excavations. Another piece of plastic was then placed over the wooden frames and then all of the edges were sandbagged (see Figure 03-32). Over the course of the project several thousand sandbags were used, initially filled using screened mound fill in 2001, and thereafter using sand that was brought in dump truck loads for that purpose. This setup worked exceptionally well, with no major damage to the units experienced the three winters these coverings were in place, in 2001/2002, 2002/2003, and 2003/2004.

Safety

A major concern was to ensure the safety of all crew members and site visitors. Danger is inherent when a project is conducted at the edge of a sheer bluff face with boulders below. However there was an added element of danger as the slope was actively calving off, and there was always the possibility, albeit remote, of a catastrophic collapse while the work was underway. With these issues in mind, in 2001 the park built a set of wooden stairs up the north and south side of the mound connected with a boardwalk across the top of the mound. The boardwalk had a wooden fence on the east side to prevent visitors from approaching the excavations and mound edge (Figure 06-12). Additionally, at the same time a sturdy 1.2m (4ft) high wooden fence was built on the east edge of the mound to prevent excavators from inadvertently stepping off the edge of the mound. This wooden fence replaced earlier wire mesh fences that the park had placed along the edge of the mound to protect visitors (see Figure 03-15). Earlier collapses, the most recent about a decade earlier (see Chapter 3), had meant that this fence line had been periodically moved westward toward the center of the mound.

In 2001, all excavations took place between the two wooden fences. Therefore no roping system was required for the excavators. However, in 2002 as the excavations extended downward and to the east, removal of the eastern wooden fence, and the consideration of new safety procedures proved necessary. Special training sessions were held under the direction of Mr. Scott Wells of Law Engineering and Environmental Services, in which the crew learned how to use safety lines and harnesses, as well as general site safety. At the start of the 2002 fieldwork all of the crew members were given Red Cross training courses in basic first aid and CPR. Five point safety harnesses were purchased and their use was required for any individual working near the eastern edge of the mound. After consultation with a climbing expert, it was determined that it was safe to anchor the climbing ropes to large trees that were growing on the top of the mound, outside of the excavation area away from the edge. The ropes were attached to the

trees and tied to with bowline knots to both the tree and the harness. Tying to the trees worked fine as long as the excavator was moving in an east/west direction. However when their movements required them to move north/south the ropes commonly became tangled and often had more slack than necessary to provide proper fall protection. The system was revised at the beginning of the 2003 season to alleviate these problems. A series of 1.9cm (¾-in) wire loops were created and anchored to the same trees that had been used to tie off the ropes. The excavators were then able to use carabineers to clip their rope onto the loop closest to their work location. This resulted in easier transitions to new locations and shorter/safer rope lines.

While safety lines were critical when working near the edge, the necessity of removing the wooden fence in 2002 mandated the development of additional methods of crew protection along the eastern edge of the mound. The fixed eastern wood and wire fences were replaced with more flexible post-and-cable fencing as excavations reached the contact point (Figure 06-13; see also Figures 01-07, 03-48, 03-51, 03-77, 03-78). A fence system was designed that used 0.635cm (¼-in) wire threaded through holes drilled into pressure treated 3.6m long 10x10cm wide (12ftx4x4in) posts. A hole for the posts was dug with posthole diggers and the soil was screened and any artifacts found were assigned proveniences associated with that location and depth. The wires were pulled down the mound on the north and south sides and attached to fortuitously located trees using sets of turnbuckles. This system was easily adjustable, and allowed the fence to conform to the shape of the mound. The wires were closely spaced, precluding the possibility of large gaps a person could slide through. The fence was stiffened by placing clamps on the wire where it passed through posts. The fence was loosened and moved eastward and downward several times over the course of the 2003 excavation season.



Figure 06-13. Establishing the east post-and-cable fence that kept the crew safely away from the drop early in the 2002 field season.

Following training in rappelling techniques at the Tallahassee Rock Gym two members of the crew used the harness system with a locking clamp to rappel off the mound edge down the bluff face. They were able to lock their ropes and use hand tools to clean soil profiles on the eroding eastern side of the mound in the bluff face. The same procedures were also used to clear brush and at least one case to cut down a tree with a chainsaw on the eastern face (Figure 06-14; see also Figures 03-55 and 03-56).

Another major component of safety was shade for the crew (see Figure 06-10, see also Figures 03-48, 03-50, 03-51). The use of student labor mandated that most of the excavations



Figure 06-14. Charles Lawson and Chris Lydick rappelling over the east side of the mound to clean a profile, July 23, 2003.

took place during the summer months, from May through August. While there was generally a breeze blowing along the river temperatures routinely exceeded 90 degrees each day. It was decided early in the project that a shading system would not only protect the crew but would also increase productivity. A misting system was briefly considered but it was deemed impractical to use with untreated river water, and because its impact on the exposed mound deposits was uncertain. The first shading system, established in 2001, consisted of pop-up tent canopies and mobile carports. The major issue with the pop-ups was that they were extremely fragile, susceptible to wind damage, and had to be moved frequently during the day to keep the shade in place. The temporary carports worked far better, since they were larger and sturdier. However, with both forms of cover using stadia rods or getting clear lines of sights for the transits and levels often proved troublesome, because of the low height of the cover (typically 2.1–3m [7–10ft]), and the multiple legs (see Figures 03-15, 03-37). Additionally, since the mound surfaces sloped to the north, south, and east, if the excavations were occurring close to stage margins, extensions for the legs had to be created and regularly adjusted.

In 2002, we began using 3m (10ft) square nylon weave tarps for shade (see Figures 03-38, 06-09). This was possible because the security fence on the east provided anchor parts on one side and trees and the visitors fence on the west side provided places where vertical extensions could be mounted and the shades could be attached. This type of shading system had many drawbacks, however. The first problem with using these tarps was that they were solid and impermeable, and hence did not allow air to flow through them, with the result that they actually increased the working temperature in shaded areas. They were often very hot to the touch. Most critically, since the tarps came in a variety of colors they tended to shade the excavations with various tints of green, blue, or whatever color was being employed. The colored shading made photography quite difficult as it often appeared as if the excavations were taking place in an undersea environment, mandating that the tarps be taken down whenever photography took place.

In 2003, two 15x30m (50x100ft) shade clothes were purchased that offered a near-ideal solution to shading nearly the entire excavation area (see Figures 03-54, 06-12). The mesh netting reduced sunlight by 30 percent, but was porous and allowed air to flow through it. The difference in working conditions under the shade and out of direct sunlight were pronounced. The shade was suspended by 0.635cm (¼-in) steel wire in the trees and placed well (ca. 6m) above the work area. Stringing the wire cable high enough so stadia rods could be used under it proved to be a challenging task. For the cables supporting the shade on the eastern side of the mound, at the bluff edge, trees that were off of the mound had to be used. Given these were at the base of the mound, crew members had to climb trees approximately 12m (40ft) into the air before attaching the cables (Figure 06-15). On the south side of the mound we extended the cable down through a pulley and mounted a locking crank onto the tree. The north end of the shade was securely anchored to trees on the north side of the mound. This gave us the ability to raise, lower, and tighten the screening as needed (Figure 06-16). To ensure the safety of the tree climber we attached a 12m (40ft) ladder to the tree with a series of cables and clamps as he moved up the ladder. Once at the top of ladder the climber would attach himself to the ladder with a cable and clamp attached to a climbing harness. This gave the climber the ability to work



Figure 06-15. Teddy Wells uses a harness to take pressure of the cable.



Figure 06-16. Co-Principal Investigator John Cornelison and Crew Chief Charles Lawson tighten one of the cables with a come-along.

hands free while maintaining safety. One screen was placed over the mound summit, while the second sun screen was laced to the eastern edge of the first screen (see Figure 06-13). This second screen was draped and attached to the safety fence, providing protection from the morning sun, which given the absence of trees on the eroding eastern face, shown directly into the excavation area. The only problem encountered using the sun shade occurred in the fall, when leaves began to accumulate in the cloth. These created issues with light modeling in photography, which was otherwise unaffected by the reduction in direct sunlight. Fortunately, it proved an easy matter to use a fully extended stadia rod to push the shade up and shake the leaves and other debris out.

Putting It All Back

When the mitigation program stopped in August 2004, the task of reconstructing the mound fell to the same people who had developed most of the excavation infrastructure (Figures 06-17 to 06-20; see also Figures 03-80 and 03-81). The first step in reconstructing the mound was to build a barrier that could easily be identified as the end of our excavations. Since we were not sure when and if we would return to excavate, use of non-porous barriers such as plastic lining was rejected. Having such a large area of impermeable plastic could change the water flow within the mound and potentially have the effect of causing additional erosion. It was therefore decided to use commercially available filter cloth. This is the same type of material that is placed in flower beds to prevent the growth of weeds. While the material was relatively cheap and easily obtainable, its downside is that it will deteriorate over time, within one to a few decades. Filter cloth was placed and staked over all of the areas that had been excavated.

A contract was set with a local gravel company to provide trucks and the required fill. The first 19 dump truck loads, each containing 7.5m^2 (9 yards^2) of fill, were of a compact local clay (Figure 06-17). The park borrowed a small bulldozer from the Natchez Trace Parkway and provided an operator. As the clay was dumped the bulldozer operator began to reshape the mound, taking care to deeply cover underlying archeological deposits before driving on them (Figure 06-18). The last 10 loads of fill were topsoil so that when grass was planted it would be able to take root. Since the lowest excavations in the mound were opened on their east side a small retaining wall had to be constructed so the fill would not simply run down the slope (Figure 06-19). A total of 29 dump truck loads of clay and top soil, or about 260m^3 of fill, were used to cover the excavations, about one half to one third the volume removed during the excavations. The reconstructed surface was sloped toward the bluff edge rather than built up to its former height, in an effort to achieve a more stable angle of repose for the deposits (see Figure 03-81).



Figure 06-17. Approximately 39 dump truck loads of soil were brought in to recontour the mound. August 23, 2004.



Figure 06-18. Park staff used heavy equipment to backfill and cover the 2001-2004 excavations and reshape the mound. August 23, 2004.



Figure 06-19. A retaining wall had to be built before the southeast side of the mound could be backfilled. August 22, 2004.

With the mound approximately halfway reconstructed, the SEAC crew left the park to work on other projects. In November 2005, a three person SEAC team returned to the mound to begin the seeding process. Park management directed us to purchase a specially prepared seed mix at the local farmers co-op, known locally as "Confederate mix," and similar to the grass mix in other parts of the park, creating a similar look. The crew spread the mix by hand and attempted to obtain as even as possible distribution over the slope. In order to protect the seeds from birds and being blown away, a base of straw was applied above the seeds and jute cloth was added and staked (Figure 06-20).

With this stabilization work the mound project ended. Crews from SEAC have visited the mound three times since 2005, in 2006, 2007, and 2012 to determine if the recontouring was holding. In each case it was found to be doing very well and signs of active erosion were minimal.



Figure 06-20. The mound was seeded, juted, and staked in November 2005.

CHAPTER 7

MAPPING PROCEDURES

PAUL D. WELCH, NICHOLAS P. HERMANN, AND JOHN E. CORNELISON, JR.

Mapping

Mapping the Shiloh Mound Complex has a long and complex history. The first known map of the site was produced by C. B. Moore. Moore's 1915 schematic indicates the locations of the seven main mounds in relation to the Tennessee River bluff edge (see Figure 02-02). Why Moore left so many of the smaller mounds at the site unmapped remains a mystery. Following Moore, the next map of the mounds was produced by Frank H. H. Roberts. The Roberts' map, from the 1933–1934 investigations at the site, also failed to capture its full extent (Roberts 1935). In 1975, Gerald Smith's excavations and mapping added more information. Beginning in 1999, Welch (2006) compiled mapping data from Roberts' investigations and later work at the site into a composite map that clearly and accurately represented the core of the mound complex (Figure 07-01, see Figure 01-03). Problems with this map lay in the periphery of the site, specifically with the topography on the south and north sides of the mound complex, where the gullies and bluffs had never been mapped in much detail.

As part of the 1999 to 2004 SEAC investigations, it was considered critical to reassess the overall mapping work previously done at the site and, as needed, develop a more accurate grid and topographic base map for use in the current as well as future investigations. SEAC began this endeavor focusing on the detailed topographic mapping of the immediate area of Mound A in 1999, 2001, and 2002 (Figure 07-02). These data were used in the investigations conducted on and near the mound, but more extensive data collection was deemed necessary to fully document the site, as well as explore questions such as where potential borrow or mound fill mining areas might have been located. As part of the specialized analyses that were contracted with the Archeological Research Laboratory (ARL) at the University of Tennessee, a detailed map was produced in 2005 under the direction of Nicholas P. Hermann (Figure 07-03). The goals of this mapping project included (1) the collection of sufficient elevation data to construct a detailed topographic map encompassing the site, including major features (e.g. the large mounds, smaller house mounds, ponds, and historic features), and (2) developing a base map useful in future investigations at the site.

Welch/SEAC 1999

To facilitate research and planning at the site in conjunction with the Mound A mitigation program, a digital map of its topography, prehistoric features, and excavation units was prepared by Paul Welch in 1999 (see Figure 01-02). It was clear early in the process of planning the Mound A mitigation that a new, comprehensive map of the site was needed, that ideally included the location of the many excavation units opened during earlier work. The excavation programs conducted at the mound group, at least those after Moore's visit that involved detailed mapping, used differing grid systems for recording artifact and excavation unit locations. Roberts measured his locations in feet on a grid oriented to magnetic north at the time. Smith created a new, metric grid, also oriented to magnetic north as it was in 1975. Given the rapid movement of the north magnetic pole over the past century—a pattern of movement, or secular variation that has continued at a rapid rate up to the present (National Atlas 2011; Olsen and Mandea 2008) —grid systems laid out oriented to magnetic north established more than a few years apart will not be precisely aligned, with the deviation increasing the more time that has passed.

In 1998, Welch could not relocate Smith's grid monuments, and was forced to create a third grid on the site, also oriented to (another) magnetic north. All of these grid systems are local, as opposed to larger coordinate systems such as

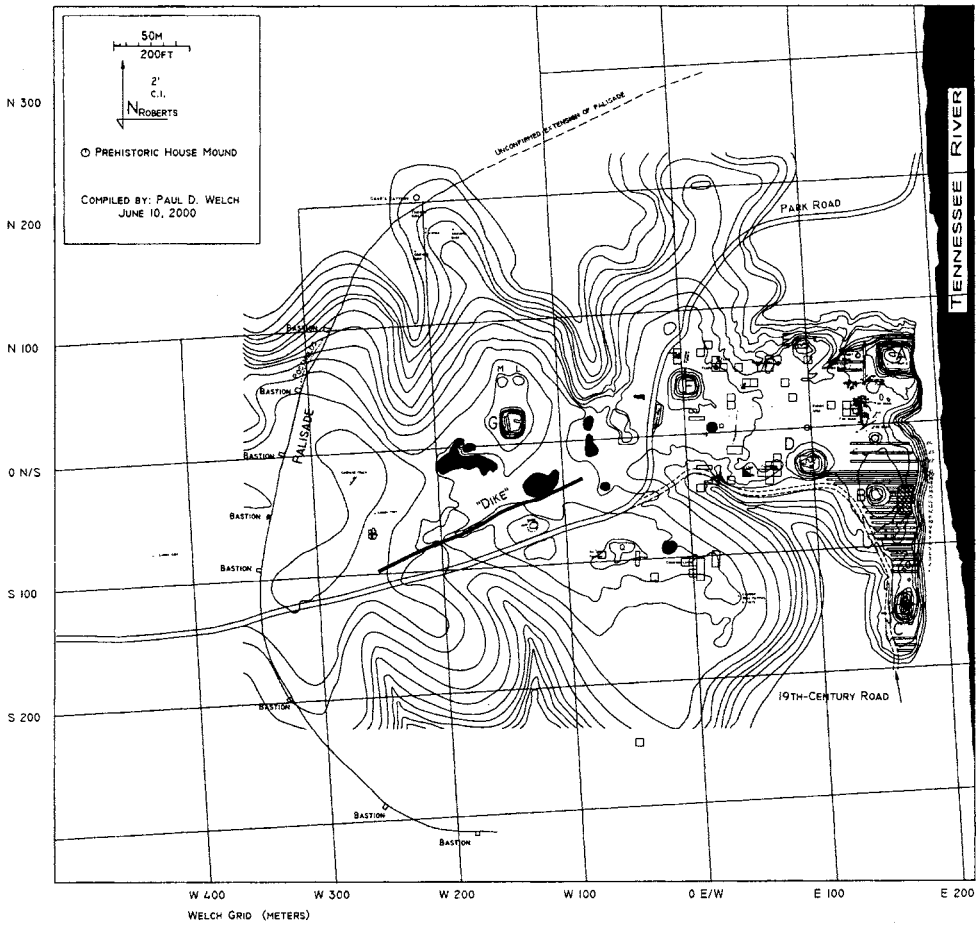


Figure 07-01. Map of the Shiloh Mound Complex and inferred locations of earlier excavation units, produced by Paul Welch in 1999.

Universal Transverse Mercator (UTM) or state plane coordinates. Converting between one set of excavation grid coordinates and another would be difficult even if the relationships between the several grids were known. Precise conversion between two grid systems is possible only if two on-the-ground points have specific recorded coordinates in both grid systems. Even then, inaccuracies in the layout of these grid systems—archeologists not being professional surveyors—can create uncertainties in the conversion. At Shiloh, the three different grid systems created in 1933–1934, 1975, and 1998 did not have known, fixed points in common, and this, together with both human errors and the limits of instrumental accuracy, created uncertainties in the grid conversions.

Capping this already frustrating situation is the problem posed by the 1933–1934 fieldwork: there is no surviving record of where the excavations were located, as Welch (2006) has documented. If a map of the excavation units was ever produced, it has since been lost, and our only means of determining where these excavations occurred are from the limited surviving field notes and artifact catalogs or, as we demonstrated with some success in 1999 and 2001, using remote sensing and test excavation. In the surviving field records, some of the excavation units have coordinates recorded for all four corners, some have only two corners recorded (i.e., we know how long but not how wide the excavation unit was), and some of the units have only one recorded corner. In the latter instance, we are not even certain which corner was used as

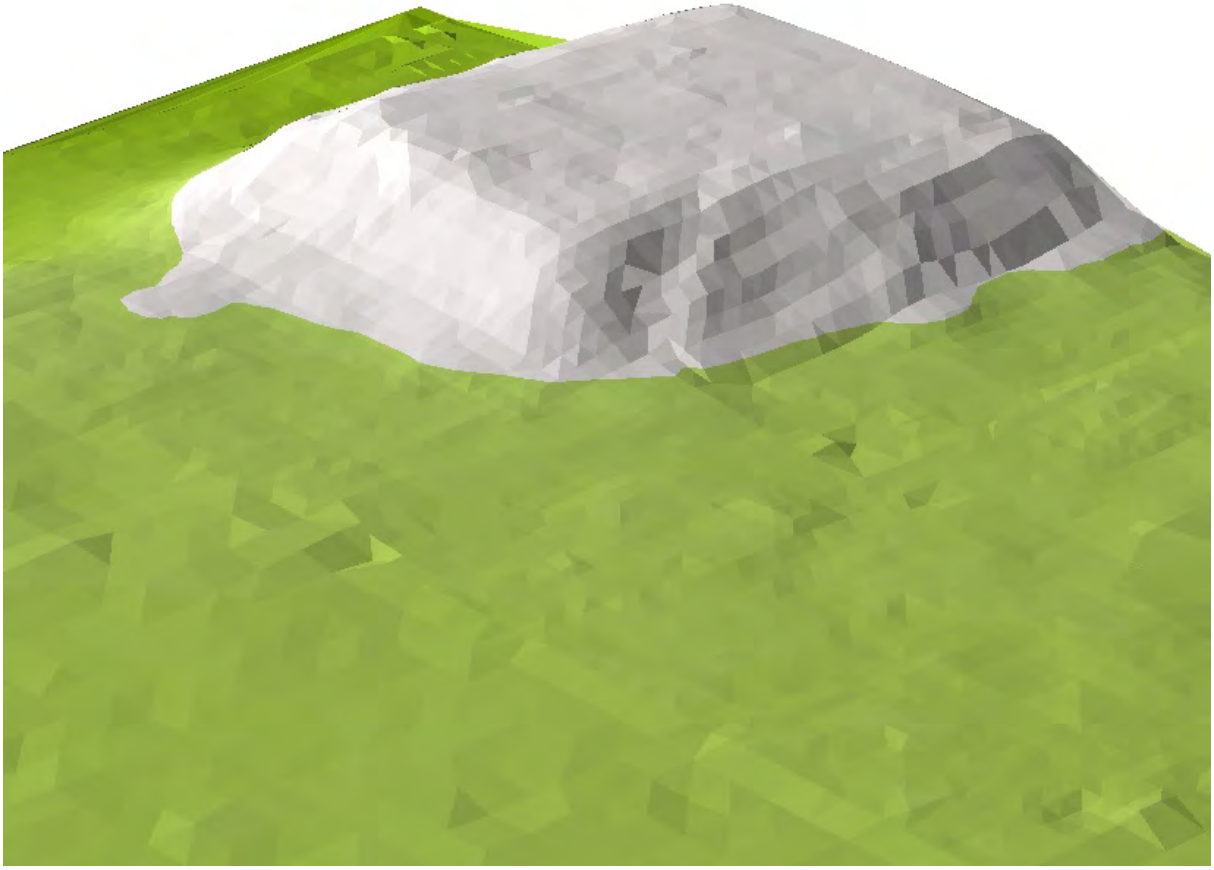


Figure 07-02. Close up map of Mound A, Shiloh Mound Complex, produced during the 2001 testing program. Data points were collected using a 1m grid over the mound area. The data are extrapolated into triangles that can be seen in the images. The next step in the process would be smoothing.

the designator corner, let alone how large the unit was. We can tell from field photographs, and from excavations and remote sensing conducted in 1999 and 2001 to locate older units, that many of the 1933–1934 excavation units were never mentioned in the field notes (see Chapters 2 and 3). This is confirmed by the FS (field specimen) catalog from the fieldwork, which lists proveniences for many artifacts that are outside the boundaries of any excavation unit mentioned in the field notes. In short, figuring out where Roberts dug in the 1930s is a major problem, independent of the difficulty of relating the 1930s grid system to more recent ones.

To help resolve the mapping difficulties, employees of SEAC brought a high-precision GPS receiver to the site in 1999. This unit recorded UTM coordinates for specific on-the-ground points in Welch's 1998–1999 grid. In this way, the 1998–1999 excavation grid system has been tied into UTM coordinates so that it can, if desired, be replicated in the future. The SEAC crew also brought a GPR unit and a skilled operator to relocate 1933–1934 excavation units (see Chapter 8). Once the locations of old excavations were identified (or potentially identified) by the GPR, the SEAC crew checked several of the identifications using small test excavation units (Welch et al. 2006; see Chapter 3). It was hoped that this process would yield on-the-ground points for which we know both the 1933–1934 grid coordinates, and the 1998–1999 grid coordinates. Unfortunately, one of the principal findings of the GPR survey was that the 1933–1934 excavations were far more widespread than indicated by the field notes. There is thus some ambiguity about whether the excavation units actually detected are the same ones specifically

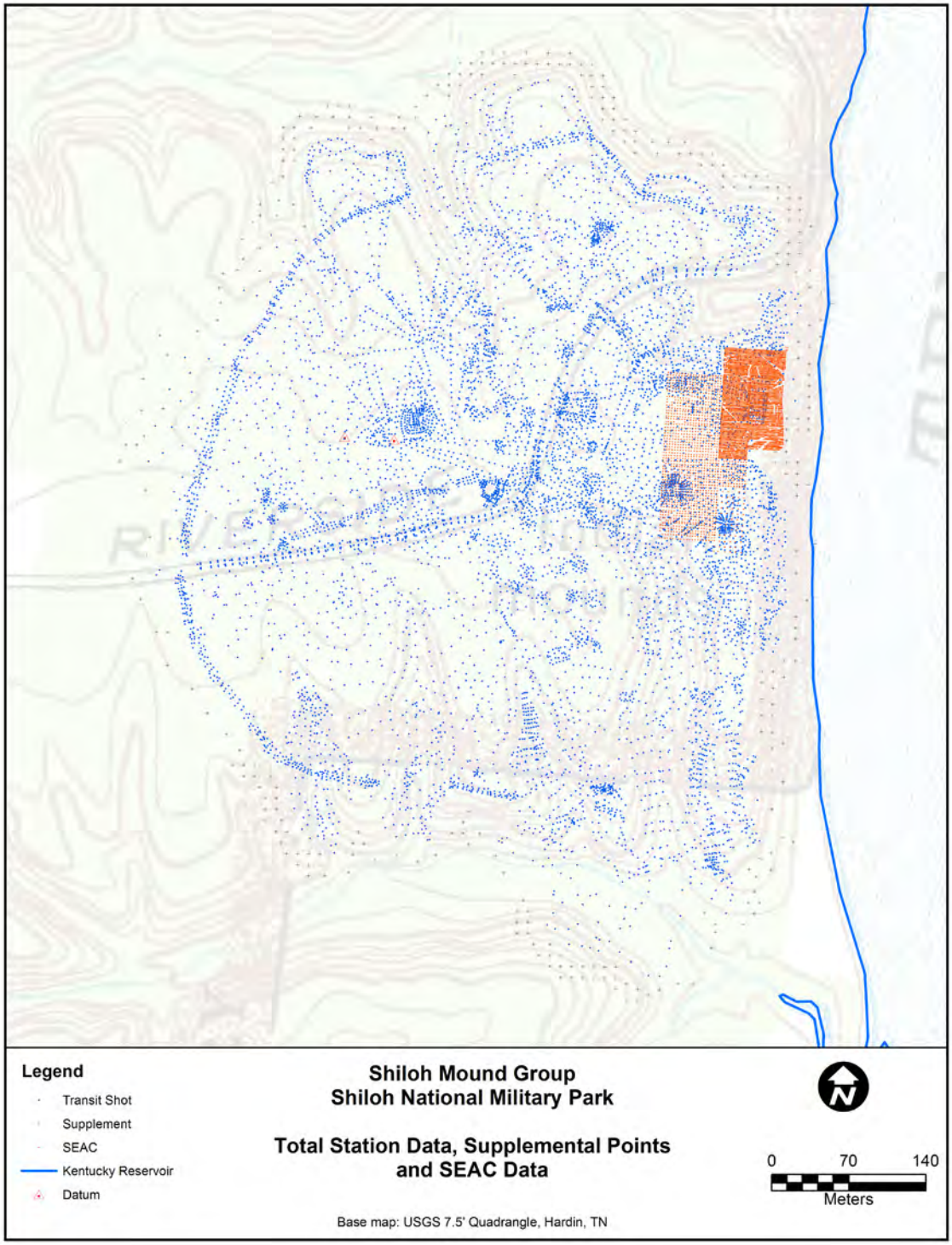


Figure 07-03. Shiloh 2005 mapping data set including total station points collected by UT ARL staff, SEAC staff, and Paul Welch, together with points taken from the USGS DEM. The shaded area in the vicinity of Mound A was sampled at 1m intervals by SEAC personnel for a fine-grained map.

mentioned in the field notes. Nevertheless, the work of the SEAC crew in 1999 (Welch et al. 2006; see Chapter 3), and the follow up remote sensing work conducted in 2001 (see Chapter 8) substantially improved the match between the 1933–1934 grid system and the 1998–1999 grid system. It also revealed previously undetected inaccuracies in the 1933–1934 map of the site, including an error of ca. 6.1m (20ft) in the location of some site features.

The GPS receiver was also used in 1999 to map the palisade. A topographic map of the site prepared in 1933–1934 displays a part of the palisade, but does not show the locations of bastions. The line of the palisade can still be followed on foot, and extends beyond the limits mapped in 1933–1934, in both directions. The full, visually apparent extent of the palisade, and all visible bastions, were mapped with the GPS receiver and added to the site map.

The topographic map from 1933–1934 also underrepresented the number of house mounds at the site. As part of the process of taking soil cores from house mounds in order to locate burned houses for excavation in 1998 and 1999, Welch recorded the locations of several dozen house mounds not shown on the 1933–1934 map.

Originally, it was planned to have a new, photogrammetric map of the site's topography prepared for this report. Gerald Smith's investigation in 1975 revealed that outside the central part of the site, the 1933–1934 topographic map has substantial inaccuracies. Apparently, only the area containing the large mounds was instrumentally mapped, with the topography elsewhere on the map drawn largely by eye. However, funding for a new topographic base map was reallocated to remote sensing work. Consequently, the site map developed by Welch, and used during the 2001 to 2004 fieldwork, was based on the 1933–1934 topographic map, with some adjustments in several areas to make the map conform better with more recent surveying data.

Structure of the Digital Map

The task of compiling all the mapping information and interrelating the different grid systems was best addressed by use of a digital map that records different kinds of information in different "layers" that can be turned on or off, analogous to clear plastic overlays for paper maps. The digital map can also contain multiple coordinate systems, so that inter-conversion between the several excavation grid systems can be achieved simply by switching between coordinate systems. Technical drawing programs and geographic information system (GIS) programs both have these capabilities. In the development of the 1999 site map, Welch chose to use a technical drawing program, AutoCAD (specifically, AutoCAD LT release 3), as the least complex software that had all the requisite capabilities, could accept input from the digitizing tablet available at Queens College (a CalComp Estimat Digitizer), and was compatible with the software and large-format plotter available at SEAC.

The site's topography was traced from the surviving 1933–1934 contour map. Use of the tracing, rather than the original map itself, introduced several identifiable problems. Obviously, any deviations between the traced lines and their originals will introduce inaccuracies into the digital map. This problem, however, is minor in comparison with the inherent inaccuracy of the original map. The 1933–1934 map, which had 2-ft (0.61m) contours, was itself compiled from at least twelve separate, largescale, plane-table maps that made use of 1-ft (0.3m) contour lines. In the process of reducing the large-scale sections to the smaller scale of the site map, topographic lines were shifted in some areas by as much as several meters. More significantly, the two large-scale sections containing Mound G and area to its south were misplaced on the smaller scale map by 6m (20ft). These two sections have northern edges offset from the other sections by 6m (20ft), a detail apparently overlooked during the preparation of the whole-site map. Aside from correcting the placement of Mound G, Welch did not modify the two foot contours on the whole-site plane table map.

Another limitation of the 1933–1934 topographic map was that it did not include the whole site. On both the north and south sides of the site, the topographic lines terminate well short of the actual distribution of house mounds and

the palisade line. The 1999 site map developed by Welch extended the palisade line, and plotted the location of house mounds, in areas outside the old topographic map. Welch did not try to extend topographic lines/contour intervals into these areas, for the simple reason that the topographic lines near the edges of the old map are known to be highly inaccurate (Smith 1977:4). Rather than extend inaccuracies, it was thought better to await the eventual production of a more accurate topographic base map, which was indeed done during the mitigation program by archeologists from SEAC and from UT's ARL, as described below.

After digitizing the base map using the 1933–1934 coordinate system, the next task was to superimpose Smith's 1977 and Welch's 1998 grid systems. All three (Roberts, Smith, Welch) of these grid systems are stored electronically as named UCS (universal coordinate systems) alternatives, with the grid system from the 1933–1934 map also serving as the map's WCS (world coordinate system). A fourth UCS was added, the UTM coordinate system, so that the site map and the excavation grids are tied into a non-local, metric coordinate system of global scope.

Data in the map are stored in 24 data layers. Each layer can be turned on or off, thereby displaying or hiding the information recorded in that layer.

Compiling the Map

Compiling the 1999 map required dealing with a number of difficulties, some of which have already been mentioned. Because the accuracy of the map depended on the way these problems were solved, it is necessary to describe the problems and the way Welch dealt with them.

In addition to the topography of the site (see Figure 07-01), prehistoric features such as the palisade and numerous post molds were copied from Roberts' original plane-table map. The "original" plane table map appears, in turn, to have been prepared by manually transferring and reducing the scale of data from similar-sized plane table maps of sections of the site. Only 12 of these sectional maps exist in the National Anthropological Archives; it is unclear whether other sections existed. The sectional maps in some instances contain details that were not transferred to the whole-site maps. Among such details are the locations of many house mounds, and large numbers of post molds in what was apparently a large-area excavation near the bluff edge between Mound A and the house mound Roberts called Mound J (Welch 2006, see Chapter 8). All these features are plotted in the "Prehistoric_features" layer of the map. Roberts' original map used two foot (61cm) contour intervals, which are reproduced on this map. Obviously an interval of 61cm is awkward. It would be very time-consuming to produce interpolated 50cm contours, and in any case we know from Smith's (1976) work as well as Welch's own investigations that much of Roberts' topographic detail beyond the central portion of the site is inaccurate. In the long run, it was clear that a metric contour map of the site was needed. While total station mapping was used to produce the current site map (Figure 07-04), it should ultimately be complemented using photogrammetry or LiDAR (Light Detection And Ranging) imagery.

Roberts oriented his grid system on magnetic north. Smith (1977:2) reports that his metric grid for the site was oriented to magnetic north, which for this part of Tennessee in 1976 was, he says, about 2.5 degrees west of the magnetic north of 1934. Thus, Welch expected Smith's grid to be skewed 2.5 degrees off the orientation of Roberts' grid. However, the grid in Smith's 1977 map has an orientation indistinguishable (<1 degree) from Roberts' grid. Consequently, Welch left the orientation of the grid in the "Smith_grid" layer identical to that in the "Roberts_grid" layer (see Figure 07-05).

To superimpose Smith's grid on the 1933–1934 grid, Welch created a grid of lines at 50m intervals and moved the grid until the lines matched topography as shown in Smith's published map. Since Smith's map used the same 1933–1934 topographic lines as the digital map, matching Smith's grid lines with the digital topographic lines was straightforward and easy. Yet, once the grid was thus positioned, two discrepancies were apparent. Smith's field notes mention that his N250 grid line crosses the asphalt Park road between E595 and E600.3. But with the grid lines matched to the



Figure 07-04. SEAC archeologists Donna Jean Rausch, Jessica McNeil, and SEAC crew chief Tammy Cooper establishing a grid for topographically mapping Mound A, July 2002.

digital topography, the N250 grid line crosses the asphalt road about 8m west of the coordinates stated in Smith's notes. The second discrepancy was that Smith's excavation of a bastion along the palisade plotted about 8m west of the line of the palisade on Roberts' map. Shifting Smith's grid 8m east of where his own map shows the grid eliminated both discrepancies. Welch therefore concluded that the surveyed coordinates of the palisade and the road provide a reliable way to match Roberts' map and Smith's grid, even though this implies that Smith misplaced his grid by about 8m on his own map.

Unable to locate Smith's grid monuments, Welch reluctantly established a third grid on the site in 1998. This datum stake was arbitrarily designated N0, E20 and the ground surface at this stake was arbitrarily assigned a grid elevation of 50m. In reality it is around 140m above sea level, but to make clear that our elevations were strictly arbitrary and were not tied to absolute elevations we used 50m as an arbitrary datum plane. The 1998 grid was oriented to magnetic north at the time, as assessed with a Brunton compass.

In the digital version of the map Welch produced, the orientation of the grid in the "Welch_grid" Data Layer is 3.176 degrees west of Roberts' grid north. The precision of this measurement is somewhat spurious, Welch (2006, herein) admits, with the actual difference in orientations best described as about 3.1 or 3.2 degrees. The location and orientation of Welch's grid system in the digital map was established simply by visually matching several landmarks for which we had 1998–1999 grid coordinates to the topography in the 1933–1934 map. Information from the GPS and laser-transit surveying by the SEAC crew in 1999 allowed further refinement of the location and orientation of Welch's 1999 grid relative to the topography.

The fourth grid system in the map is the UTM metric grid. To fit the UTM system on the digital map Welch assigned the N0, E20 datum stake the UTM coordinates N3889406.37 E379614.86 (obtained from SEAC's high-precision, differentially corrected GPS receiver), and rotated the UTM grid until achieving the best visual fit of the two Civil War monuments for which Welch had both 1998–1999 grid coordinates and UTM coordinates (obtained from a lower precision, ±1.5m, GPS survey). The Welch and UTM grids are displayed in Figure 07-06.

Because all the matching of grid systems was done by eye rather than least-squares techniques, it is not possible to provide a probabilistic measure of the precision with which the grid systems can be translated. Based on the observable mismatches and the known sources of imprecision, Welch estimates that at any point on the site, the digital

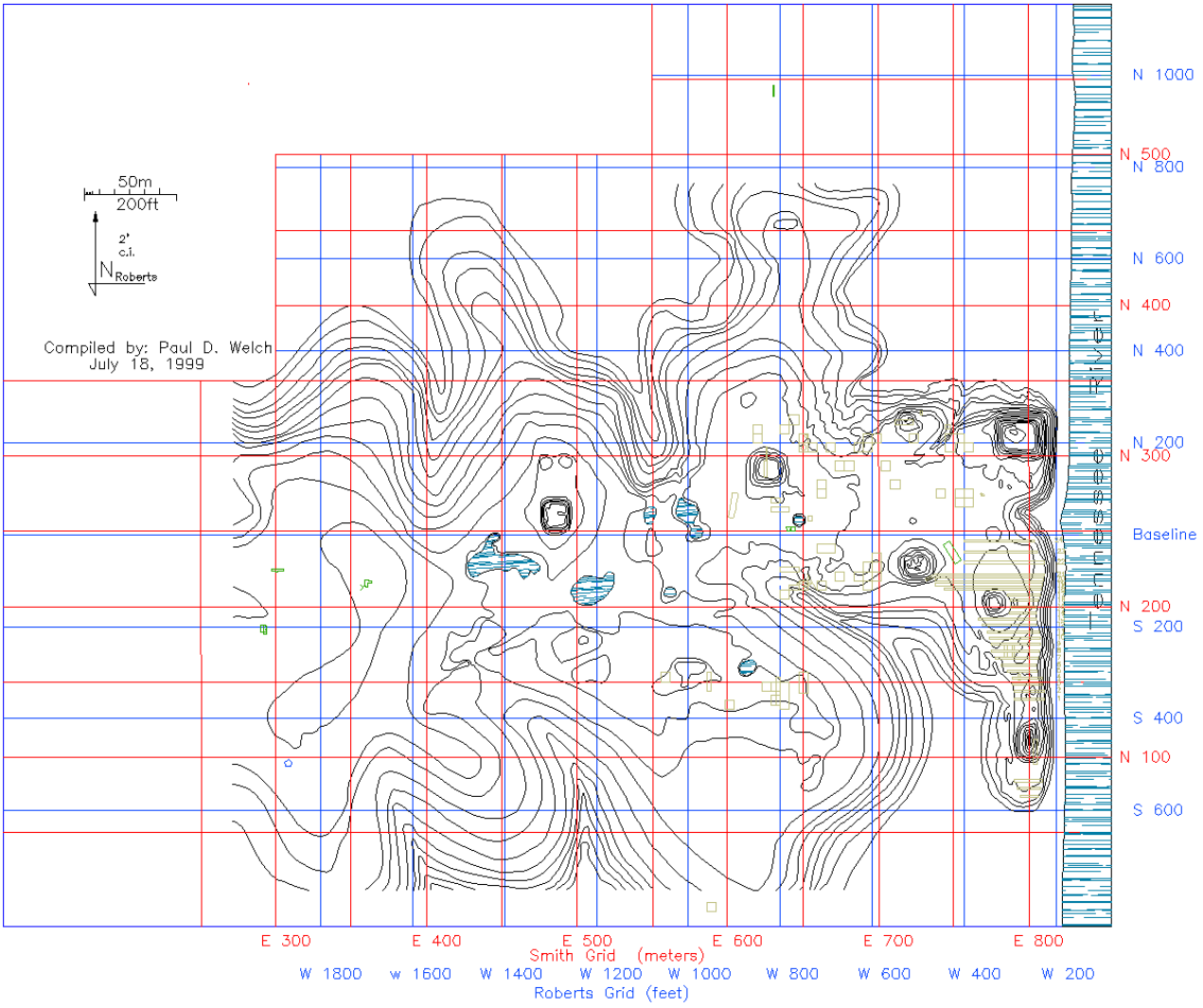


Figure 07-05. Roberts' 1933-1934 and Smith's 1975 grid systems. Both employ the same grid north even though the movement of magnetic north was ca. 2.5 degrees between when the two systems were created. The grids are offset because they used different arbitrary starting or origin points.

map may yield grid coordinates that are as much as 1m but probably less than 2m out of true. That is, a point on the ground that has a known UTM location will have, according to the digital map, 1933–1934 coordinates or 1998–1999 coordinates that are within 1-2m of what the 1933–1934 and 1998–1999 surveyors would have obtained.

The house mounds shown in the "Prehistoric_ features" Layer mostly are digitized from Roberts' 1933–1934 map of the whole site, plus additional house mounds shown on his more detailed maps of several sections of the site (Figure 07-07). As Welch's crew augered house mounds in 1998, they found that the grid coordinates for some of these mounds differed by several meters from the locations on Roberts' maps. The auger locations shown in the "Auger_tests" layer are those recorded in 1998; Welch has not adjusted them to match the house-mound locations shown on Roberts map. In some cases, it is clear that Welch and his team augered house-mounds that were not on any of the 1933–1934 maps, and in those cases Welch has added house-mound symbols to the "Prehistoric_features" layer at the locations so recorded. Though the AutoCAD map layer (see Figure 07-07) shows far more house mounds than in any previous map, it still does not

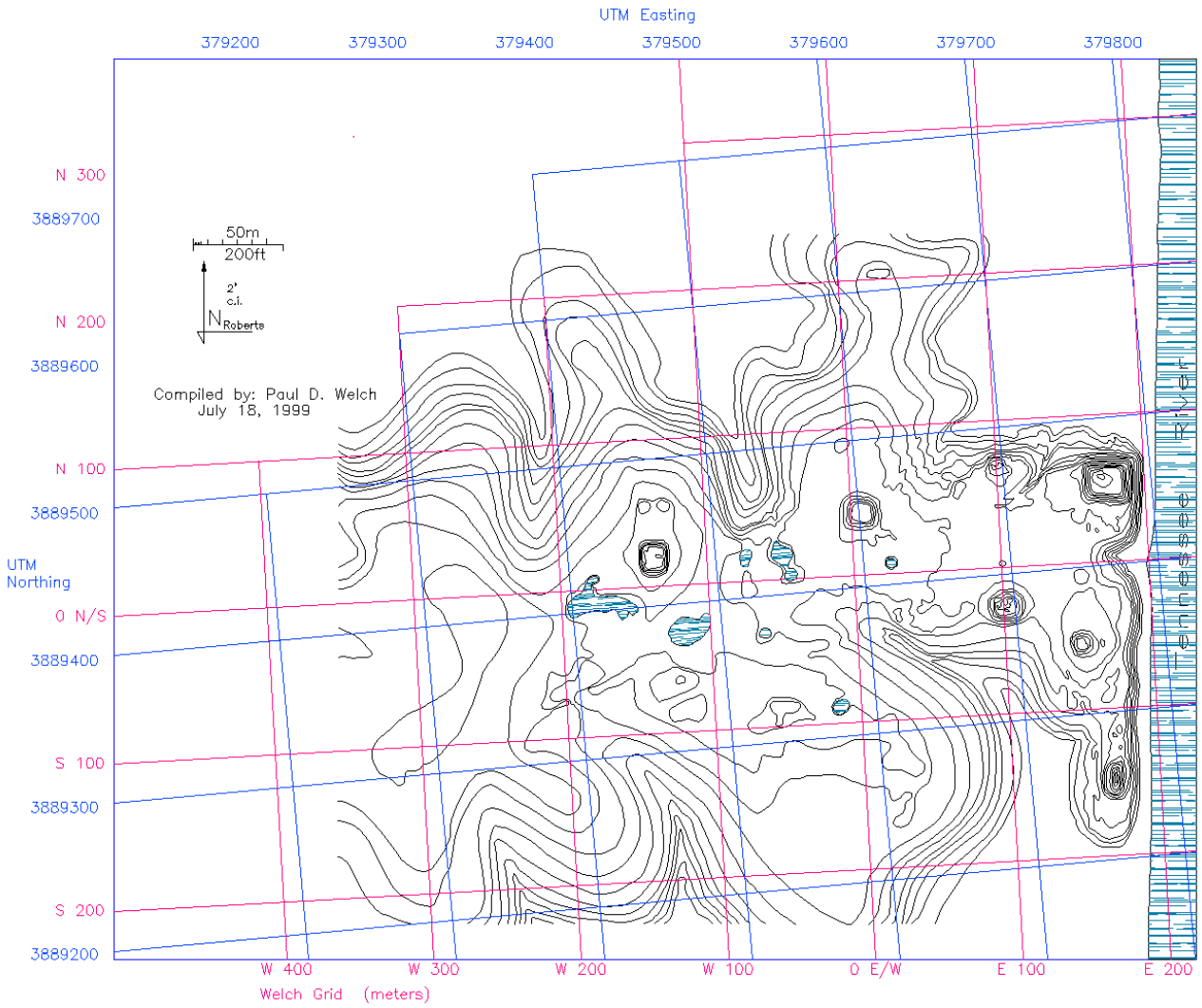


Figure 07-06. Welch's 1998 grid system, adopted by the current project, and the UTM grid systems. Conversion between the two grids, or indeed any of the grid systems used at the site is straightforward in the electronic mapping files.

include all the house mounds known from the site. In the areas that he auger tested Welch found more mounds than shown on Roberts' maps, and casual inspection of the areas that were not examined, principally the southeast quadrant of the site, shows that the pattern holds true in those areas as well.

Except for the postmolds and other features from Roberts' excavations, which were digitized directly, most of the data in the 1999 map is plotted according to coordinates in one of the grid systems. The layers dealing with Smith's excavations used his grid system; the FS, excavations, and profiles from the 1933–1934 excavations use that grid system; and the layers encompassing Welch's excavations and augering use Welch's 1998 grid system. The SEAC 1978 excavations on Mound A were supposedly tied to Smith's grid, but neither the report nor the field notes provide grid coordinates for the excavation units opened into Mound A (see Chapter 2). A depression from one of the units opened atop the mound is still visible, however, and was tied to the Welch 1998–1999 grid during fieldwork in 1999. The SEAC 1999 excavations and GPR transects were also recorded in Welch's grid system. For anyone who examines the original SEAC field records Welch notes that at the beginning of the July 1999 fieldwork the laser transit was set on Welch's N0, E20 datum stake but

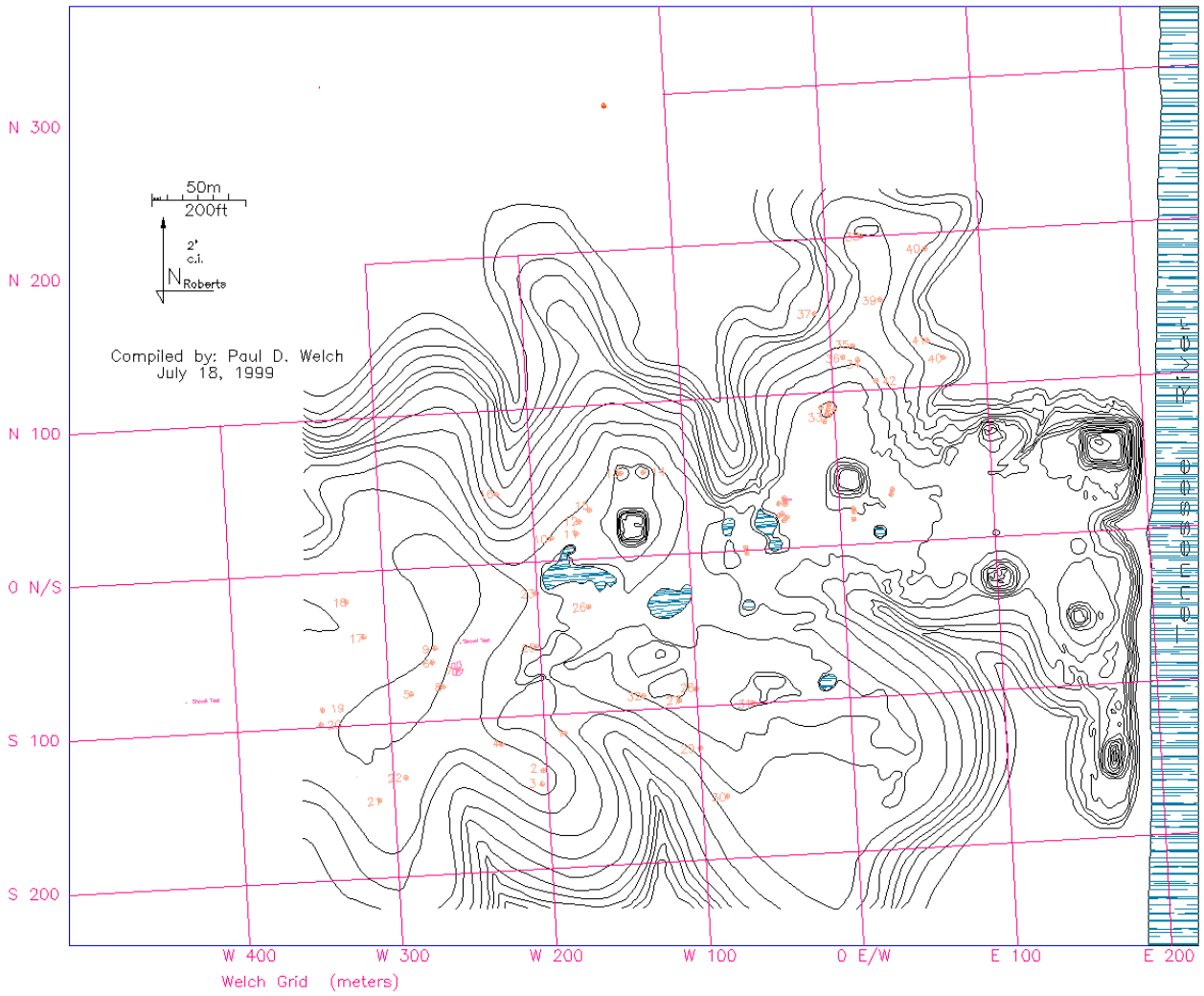


Figure 07-07. House mounds and 1998-99 auger tests. The grid is that developed by Welch in 1998 and subsequently used by SEAC during the 2001 to 2004 fieldwork.

because of miscommunication the location was incorrectly given the coordinates N20 E0; the error was corrected later in the day but some of the original digital surveying records still contain the error.

Two of the sets of mapped data had their locations assigned by visual best fit. The palisade line shown on the digital map was obtained by placing an image of the SEAC 1999 GPS survey of the palisade and mounds onto the digital map, then adjusting the scale and orientation of the image to match the location of the mounds. With that done, the palisade line on the GPS image closely matched the portion of the palisade shown on the 1933–1934 map. Inconsistencies between the palisade as mapped in 1933–1934 and in 1999 were resolved in favor of the 1999 GPS survey. The other fit-byeye layer shows the locations of the Beditz/Ehrenhard excavations in Mound A.

Finally, some discussion of the difficulties in mapping the 1933–1934 excavations are appropriate. Detailed comments about the accuracy of the locations of these excavation units are covered in detail in Welch (2006), but readers should be warned in advance that the data layer of these excavations is incomplete and in many instances unreliable. Lacking a map of the 1933–1934 excavations, as noted, Welch had to rely on the field journals and artifact catalog (which

sometimes specify corners of excavation units). As noted above, these sources often refer to excavation units by the coordinates of only one corner, without specifying the size of the unit. Occasionally, two corners are listed, with no further information. In the rare instances where all four corners are given, the units are usually 6.1x6.1m (20x20ft), but both 3x6.1m (10x20ft) and 3x3m (10x10ft) units also occur. The excavation photos show that much of the excavation consisted of trenches about 1.5m (5ft) wide, though irregular areas also appear in the photos. Thus, the size of most of the 1933–1934 excavation units shown on the 1999 map are guesses. Furthermore, when only one corner is listed it is not entirely clear which corner that was. After some experimentation, it appears most likely that Roberts used the corner nearest his N0 E0 grid origin. Since the E-W baseline runs through the middle of the site and the grid origin is east of the site, units north of the baseline are referenced to their southeast corner, and units south of the baseline are referenced to their northeast corner. It is most puzzling and frustrating that no map of the 1933–1934 excavations survives(or at least has been found to date), and while we have no evidence to indicate one was ever prepared, that one would not have been is unthinkable, given how fundamental such activity is to archeological inquiry. Should such a map appear, it would prove invaluable for future research and management at the Shiloh Mound Complex.

The 2005 Digital Topographic Map

During the 1999–2004 excavations SEAC personnel under the direction of Cornelison produced a detailed map of Mound A (see Figure 07-02). Approximately 5,000 points were collected on and around Mound A using a Sokkia Set5A electronic total station. The points were collected at a 1m interval on the mound and slopes. As the collecting moved south and west the interval was increased. The points collected were exported to a text file and uploaded into ArcMap, a GIS program used for modeling. The collected data was processed into a triangular irregular networks (TIN). In a TIN the points are used to produce triangles that represent the surface. The tin was used in 3D Analysis module of ArcMap to produce a render surface. These surfaces were used to produce flyovers for management meetings where the fate of the mound was considered. The points collected by the SEAC archeologists were later provided to the UT ARL mapping team, led by Nicholas Hermann, as a starting point for their 2004 and 2005 mapping effort.

As part of the latter phases of the Shiloh Mound A mitigation project, an effort was made to produce an updated topographic map of the site complex that included Mound A. By mapping the site using the latest field survey technology and a GIS relational database in real world coordinates, all future work could be based on one system. Beginning in March of 2004 a full scale site mapping effort was initiated by the UT ARL team with the assistance of Paul Welch (SIUC). Three sessions were conducted in the winter months (for a total of 17 work days) when the visibility was highest and the ground vegetation at its lowest. The field team found that surface features were best expressed following extended winter rains when leaves and other surface material were matted down, revealing fine scale topographic variation obscured at other times of the year. Data collection at the site was completed in January of 2005.

General boundaries of the mapping area extended from the Tennessee River marking the eastern boundary, Dill Branch to the north, Cloud Field to the west, and an incised unnamed drainage above Brown's Landing to the south. The data collection procedures followed general mapping protocol with priority given to the peripheral areas of the site. All mounds and ponds evident in the central part of the site were also remapped.

All data were collected with a Nikon DTM-420 or Topcon GTS-226 total stations and managed on data collectors running versions of Tripod Data System's Survey Pro software. To facilitate rapid data collection, multiple prism poles set to an identical height were used (see Figure 07-08). Data were downloaded daily, visualized in ESRI ArcMap, and examined for errors and data holes. Over 9600 topographic points were logged for the

development of the Shiloh base map (Figures 07-09 and 07-10). SEAC had collected approximately 5000 points prior to this mapping effort, but these were specific to the Mound A and the apron area, and were not utilized to create contours. Welch had also collected 770 points during his work which were also provided to the ARL team. The data collected by SEAC and Welch are, however, included in the ArcGIS geodatabase. The total station data and the SEAC data were then translated to a Tennessee State Plane North American Datum 1983 (NAD83) meter projection based on a series of control points shot by personnel from the Federal Highway Administration (FHWA) along Riverside Drive, a park road bisecting the Shiloh mound group (Leo R. Dario: personal communication 2005). FHWA personnel placed these points on the road during a survey for a new bridge construction project to span Dill Branch, replacing the existing rapidly eroding causeway. An additional 309 points were added to the dataset to provide a uniform boundary surrounding the total station points. The supplemental points were extracted from a 10m buffer surrounding the transit data, with locations and elevations derived from USGS digital elevation model (DEM) cell centroid coordinates and values from the 10m USGS DEM for the Pittsburg Landing quadrangle.

A DEM from the combined transit and supplemental points was calculated with the natural neighbors method in ArcGIS 9. Quarter-meter contours were then extracted from the elevation model and contour elevations were selectively visualized to highlight specific aspects of the site area. Finally, Paul Welch's AutoCAD map were transformed to the Tennessee State Plane projection based solely on two rebar control points west of Mound G (see Welch 2006 for information on these mapping stations).

Project Map

The 2005 contour map of the site provides an accurate representation of the mound group and site periphery (see Figures 07-09, 07-10). All seven of the major mounds exhibit a similar morphology to those in Roberts' 1933–1934 map as compiled by Welch. Small house mounds are evident as localized elevation differences and these topographic rises do correlate with most of the locations identified by Roberts. The horizontal positions of some mounds are slightly different. In addition, the palisade and "dike" are topographically evident in the fine grained contour data (Figure 07-10). The site palisade extends in a large semicircle from the western periphery beyond the eastern boundary of Cloud Field, to Dill Branch just north of Mound H (a large house mound) to the north, and to the south across the highly dissected ridges in this part of the site. Points were collected where bastions were evident; for more on these architectural elements of the palisade see Welch (2006). Sections of the northern palisade have been disturbed by quarrying activities and erosion along the upper terrace edge overlooking Dill Branch. The total area encompassed by the site, based on the extent of the palisade and mounds, is approximately 24.6ha (60.9ac). It appears that the palisade traversed the ravines, so the area encompassed by these landforms is included in the total.

The primary differences between Roberts' topographic map (as presented in Welch 2006) and the new contour map presented here, lie in the



Figure 07-08. Mapping activities at Shiloh in the winter of 2004 /2005 by UT ARL team members showing the use of multiple prisms.

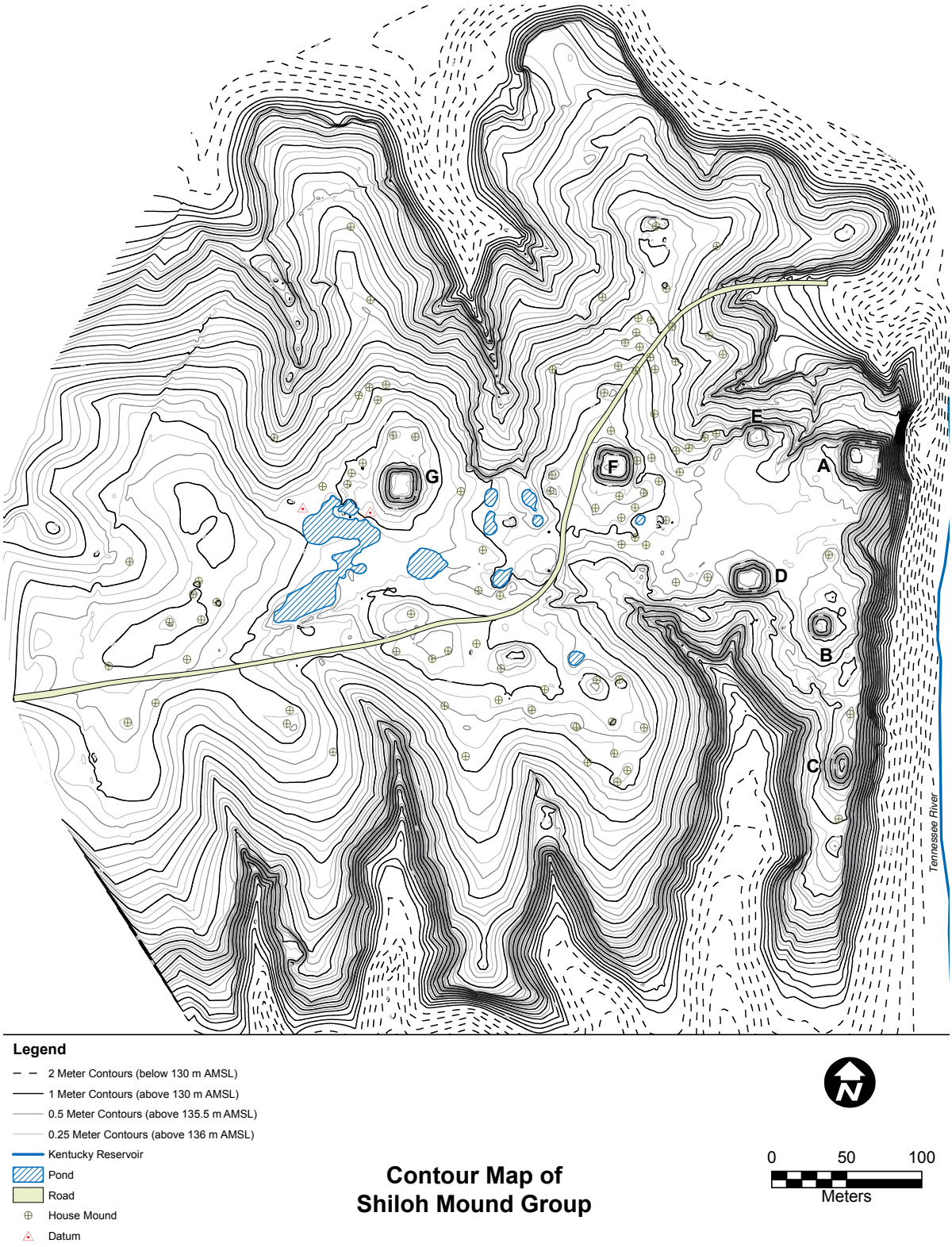


Figure 07-09. The 2005 site map produced with data collected during the Mound A mitigation program.

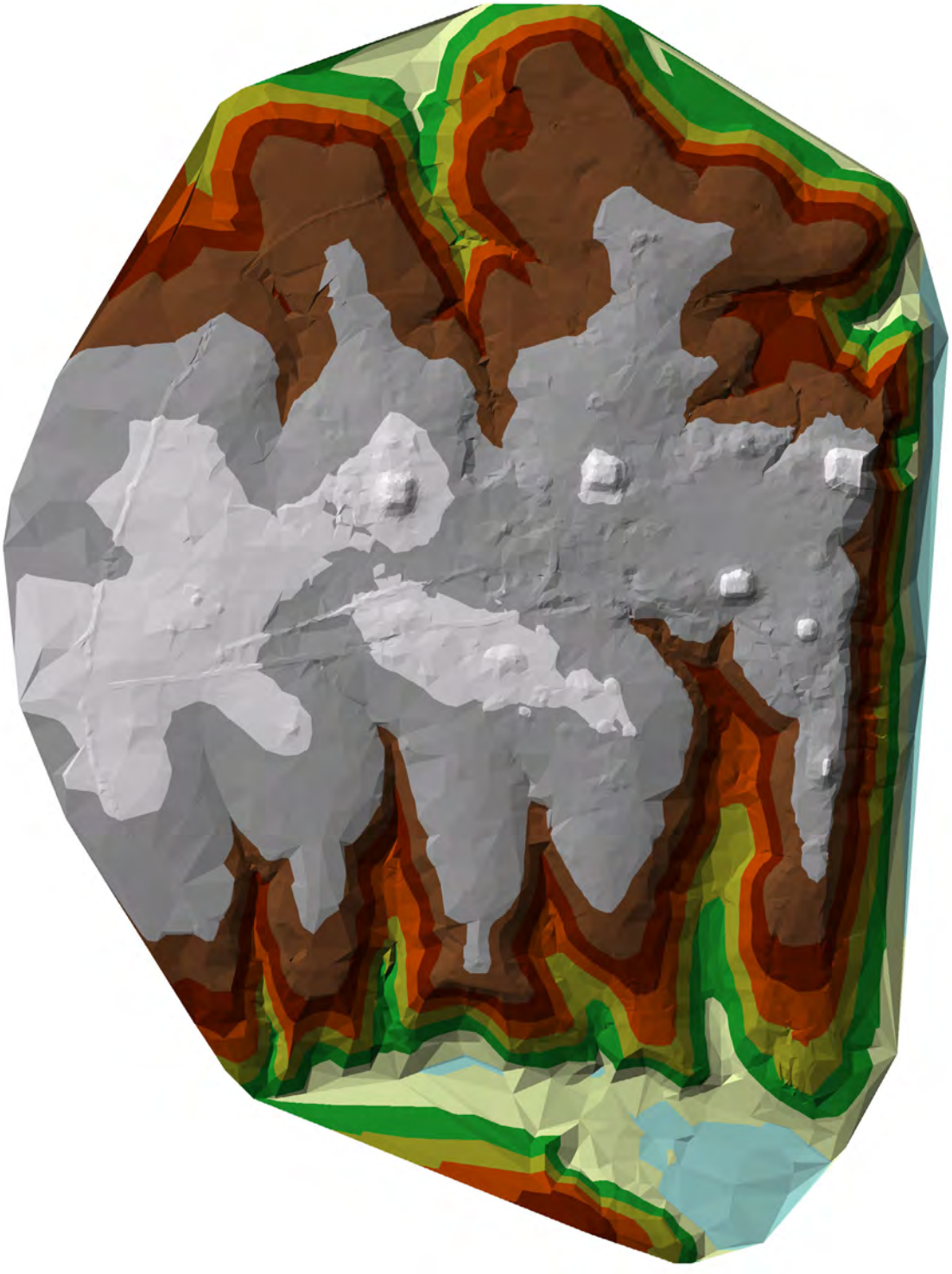


Figure 07-10. Enhanced 2005 site map produced with data collected during the Mound A mitigation program.

definition of the northern and southern site boundaries and in the greater amount of micro-topographic detail. To the south, five ridges extend from the upper terrace representing the site core. Roberts' map only depicts four ridges extending to the south and topographic detail of these ridges is limited. Though not labeled as such, the new topographic map also provides detail that indicates probable prehistoric landscape modifications. Several possible mound fill mining areas, or "borrow pits" as they are sometimes called, for example, were noted and mapped along the bluff above the Tennessee River and its deep tributaries (see Chapter 10).

Conclusions

The goal of the mapping project at Shiloh conducted in conjunction with the mitigation program was to provide park managers and researchers with an up to date and accurate map of the site. The updated map clearly details the periphery of the site and tracks sections of palisade on various ridges extending from the core of the site. In addition, features not originally noted by Roberts, Welch or other investigators were mapped as part of this project. The presence of possible soil and sediment mining locations are of note. The intensive mapping project provides a GIS base map of the Shiloh Mound Complex that researchers can use to manage and explore excavation, geophysical, paleoenvironmental, geoarcheological, and historical data from past as well as future investigations. Future work at the site should make use of the grid and datums established by the mitigation program. Finally, the use of LiDAR imagery should be pursued as a further means of examining microtopographic variation in the site area.

CHAPTER 8

INTEGRATED REMOTE SENSING SURVEYS

CHRISTOPHER M. LYDICK, DAVID G. ANDERSON, AND JOHN E. CORNELISON, JR.

Introduction

The remote sensing surveys that took place at Shiloh Mound Complex were conducted over two field seasons. In 1999, a GPR survey was conducted by a consultant, David Bean, which focused on elements of the entire mound complex. Two years later in 2001, five additional remote sensing surveys took place, conducted by Berle Clay, Geoffrey Jones, and Robert Nickel. These surveys examined various parts of the site, with an emphasis on areas west and south of Mound A. While the 1999 GPR survey relied on customized grids laid out for each area surveyed, each of the 2001 remote sensing surveys utilized the same series of 20x20m squares tied into the site grid. The 2001 survey squares were located immediately adjacent to Mound A on the western and southern sides, and encompassed the plaza area between Mound A and Mound B. Approximately 75 percent of the 2001 survey area had been previously examined during the 1999 GPR survey by Bean. A comparison of the figures throughout this chapter illustrate the extent to which the individual remote sensing survey areas overlapped. These survey-areas were also extensive enough to provide differential coverage over many parts of the site. The differing areas of sensor coverage are here cross-referenced to create multi-platform data, demonstrating the important information that can be obtained through the fusion of multiple sources of remote sensing data in lieu of single sensor surveys. This chapter is based on an earlier conference poster and MA thesis prepared on the remote sensing work (Lydick 2008; Lydick et al. 2005), as extensively revised and edited by Chris Lydick and volume editors Anderson and Cornelison.

1999 GPR Survey (Bean)

A GPR survey was conducted from July 13–19, 1999 by David Bean, during the initial testing at the Mound A area by SEAC archeologists. The GPR survey had as a primary goal determining whether internal features or stages were present in Mound A, and had as additional goals identifying archeological features in the other mounds and plazas making up the site (Chapters 1 and 3). The identification of former 1933–1934 CWA excavation trenches opened by Frank Roberts and his assistant Moreau Chambers at the site was also a major objective, to assist Welch (2001, 2006, Welch et al. 2006; see also Chapters 2 and 7) in the preparation of a site map and a synthesis of past excavation activity. Information gleaned from this remote sensing survey was used by SEAC archeologists to accurately place test units and trenches, in combinations of 1x1m units, across the margins of former 1933–1934 excavation trenches detected by the GPR instrument. The survey also revealed that the placement and recording of excavation trenches during the 1933–1934 expedition was less precise and more complex than previously thought (see Chapter 2, Welch 2006). Portions of the results of David Bean's 1999 GPR survey were reported in Welch's (2006; Welch et al. 2006) synthesis of Shiloh archeology, where he made primary use of the data in his efforts to reconstruct where past excavation has occurred at the site. Given the number of false-positives and false-negatives, sometimes reported as high as 66–83 percent, the location of earlier excavation trenches at the site proved challenging. Even given these results, however, a number of 1933–1934 trenches were quickly located using from one to three contiguous 1x1m units taken a few cm in depth below the modern surface, at which point excavation margins and fills, if present, were readily apparent below the humus zone. The identification of possible structures and architectural features using GPR investigation was also shown to be easily accomplished. Because much of the remote sensing data was examined by Welch in his efforts

to reconstruct the locations of past excavation units, his work is referenced extensively in this chapter. While all of Bean's data have been curated, including color and black and white images of each transect that was run, no final technical report was produced on the 1999 GPR survey work at Shiloh. As such, this chapter represents the first detailed discussion of the results and their archeological context.

Methodology

The 1999 survey employed a Subsurface Interface Radar II (SIR II) GPR system manufactured by Geophysical Survey System Inc., which was operated by technician David Bean, who at the time was a GPR specialist employed on the Savannah River Site in South Carolina, where he had previously met Anderson. The SIR II GPR unit consists of a control unit, a control cable, and an antenna. Power for the GPR system was supplied by a direct current circuit from an automobile battery supplied by a long cable (Figure 08-01). The survey consisted of 102 transects laid out across the seven major mounds at the site (A–G) and their surrounding aprons (Figure 08-02). These aprons included the eastern and southern aprons of Mound F, the western apron of Mound D, the northern apron of Mound B, and the western and southern aprons of Mound A. In all, some 3,532m of transects were investigated and recorded during this GPR survey (Welch 2001:259), which was more extensive in scope than subsequent remote sensing surveys conducted in 2001. While the 1999 survey was conducted across the whole of the mound complex and across the seven major mounds, the other studies summarized in this chapter, from the 2001 SEAC field season, were more localized, focusing primarily on Mounds A, B, and G, the area south and west of Mound A, and the area between Mounds A and B.

During the 1999 GPR survey, grids were established and laid out with metallic pin flags at the end of each transect, with white biodegradable spray-painted dots made on the ground every 2m along these transects. The operator pulled the GPR unit along each transect, adding an electronic event



Figure 08-01. Subsurface Interface Radar II (SIR II) ground penetrating radar system.

mark to the recording as the unit passed over each dot. These event marks appeared as vertical dashed lines on the screen displays and paper printouts for each transect (see Figure 08-06 for an example). Following the completion of each transect, the operator and his assistant made a record of all visual terrain, vegetation, and possible intrusive features along the recorded lines. In areas of the site where subsequent test excavations were planned, Bean spray-painted color-coded marks onto the ground which corresponded to possible anomalies observed in the field-interpreted GPR data. These painted marks guided subsequent SEAC ground-truthing of possible CWA excavation trench locations in 1999 and 2001. Nearly all of the areas identified in the field as possible trenches subsequently tested by SEAC archeologists, proved, in fact, to be the locations of old excavations.

David Bean presented SEAC with original data-files of each GPR transect, which were examined by Chris Lydick with RadPrint® imaging software and analyzed for anomalous readings.

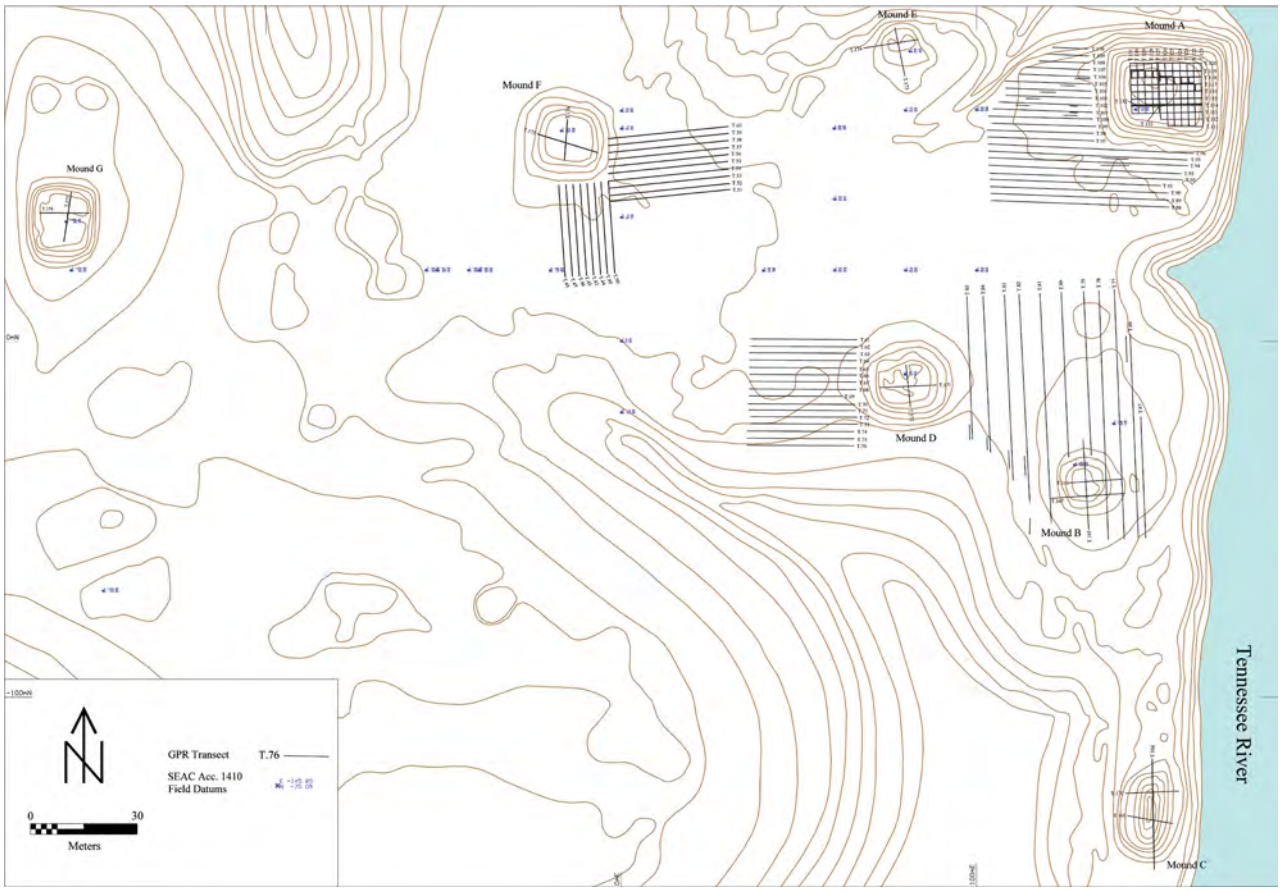


Figure 08-02. Map of Shiloh Mound Complex showing the location of GPR transects from the 1999 GPR (Bean) survey.

All possible disturbances were plotted onto a large format map of the Shiloh Mound Complex. These disturbances and anomalies were compared to known feature types from other remote sensing projects for possible typing and identification. These ground disturbances and possible identifications were then digitized into an AutoCAD layer and placed over the 1999 Shiloh base-map produced by Paul Welch, using AutoCAD 1997/2002 platform (see Chapter 7). Overlaying the GPR results over this map presented a better opportunity to study the remote sensing results spatially across the landscape of the Shiloh Mound Complex.

Data

When Paul Welch described the results of the 1999 remote sensing fieldwork at Shiloh, he spoke more to the issue of identifying possible historic features like 1933–1934 CWA excavation trenches than prehistoric features like mound stages or structure floors. To this end, he described the plaza and mound deposits at Shiloh as irregular, and problematically full of so-called 'false positive' and 'false-negative' anomalous GPR readings (Welch 2001, Welch et al. 2006). Recent historic features aside, however, the archeological visibility of much older (i.e., New Deal era) historic and prehistoric features was much clearer. These features, which were typically larger and better preserved or longer-lived upon the landscape, were less irregularly represented in the GPR data. The clarity of the data in this regard was not limited to near surface anomalies (e.g. possible unidentified surface structures), but also was true for deeper archeological deposits, such as buried mound stages in Mound A. Unlike many of the irregular and ephemeral anomalies Welch noted during his analysis of excavation trench locations, some of the prehistoric features observed

span multiple adjoining GPR transects. The effect of these multiple side-by-side 'strikes' produces a plottable shadow of the buried feature. Other archeological features were also observed in the reanalysis of this data. Besides non-descript near-surface depressions and disturbances, evidence of shallow sloped surfaces (e.g. house mounds), possible prepared surfaces (structure floors), historic and modern road surfaces, possible features (e.g. activity areas, isolated architectural elements, etc.), and limited evidence for the 1933–1934 archeological excavation trenches were all visible in the GPR data.

Mound G

The 1999 GPR investigation of Mound G consisted of two transects (T-177 and T-178) which intersected on the north-central portion of the summit (Figure 08-03). Mound G is the westernmost of the primary mounds at the site. Lying some 300m west of the Tennessee River bluff, this mound was known to have been disturbed when U.S. burial details interred several members of the 28th Illinois Infantry in it following the Battle of Shiloh, April 6 and 7, 1862. In 1866, these soldiers were exhumed and relocated to the newly created Pittsburg Landing U.S. Military Cemetery, later renamed the Shiloh National Cemetery in 1889. The trenching associated with the use of this mound for military burials appears to have been the only significant disturbance to Mound G. There is no evidence to suggest that later archeological investigations further disturbed the composition of Mound G (Welch 2001, 2006). The 1999 GPR transects produced evidence of possible disturbances and stratigraphic anomalies near the center and along the western margin of the summit of Mound G.

The central anomaly is located at the approximate junction of the two transects (see Figure 08-03). This apparent near-surface anomaly extends from the northern and eastern slope edges toward the center of Mound G. This shallow and thin signal reflection is possibly a portion of a prepared surface/cap overlying the most recent construction episode of Mound G. Along the western portion of transect T-178 which crossed Mound G west-to-east, a clearly visible disturbance is present, measuring approximately 3–4m across. This reflected signal may represent a diagonal 'slice' across the inhumation/exhumation trench associated with the military burials formerly located within this mound. Nickel (2001) noted that there are no surviving plans or maps showing the location of these *ad hoc* burials. Confirmation of the exact size, shape, or location of this trench was not possible from this single GPR transect. Further remote sensing at the mound by Robert Nickel (2001a) clarified the extent of these disturbances, although ultimately only test excavations can confirm what these anomalies represent, and whether all of the soldiers and their equipment were removed.

Mound F

The 1999 GPR survey of Mound F consisted of two transects oriented at near right angles to each other across the summit (T-175 and T-176), and two separate transect grid surveys located on the eastern and southern margins of the mound

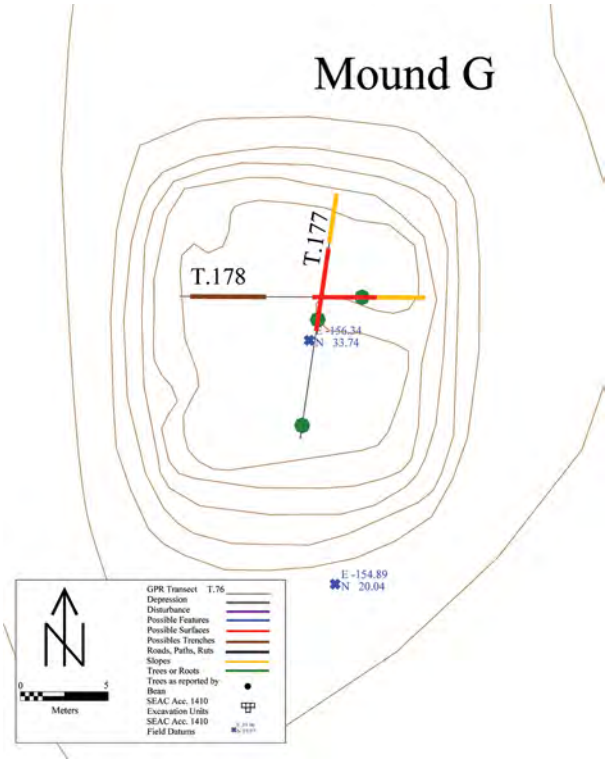


Figure 08-03. Map of Mound G and vicinity showing the location of GPR transects from the 1999 GPR (Bean) survey.

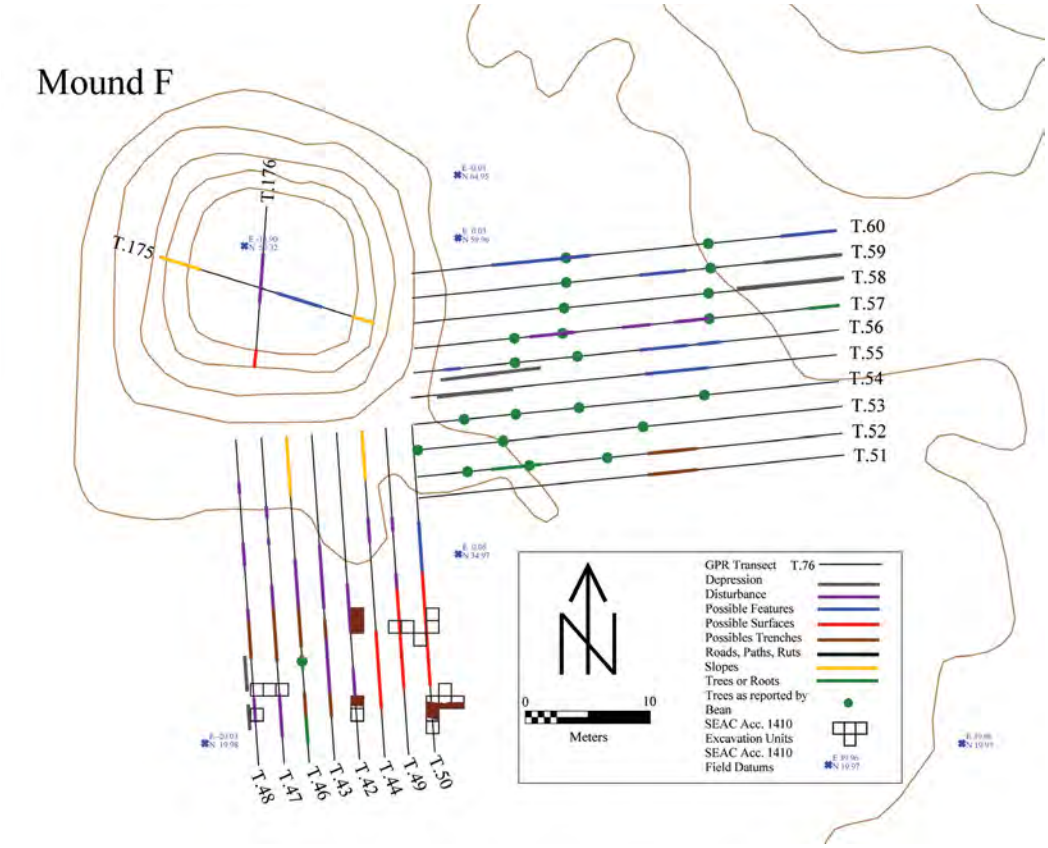


Figure 08-04. Map of Mound F and vicinity showing locations of mound and apron GPR transects from 1999 (Bean) GPR survey.

(Figure 08-04). On the eastern apron, ten transects (T-51 through T-60) were run, while the southern grid consisted of eight transects (T-42 through T-50, see Figure 08-04). The original purpose of these two mound summit transects and the two transect grids was to determine the location of 1933–1934 excavation trenches known to be in the area from analyses of the original CWA field notes and photography. Welch (2001:22,181–185; 2006) noted that Mound F had been extensively trenched during the 1933–1934 excavations, with a 2.43m (8ft) wide trench oriented north-to-south placed across the summit of the mound. This trench was narrowed with depth, to 1.21m (4ft) wide once the trench extended 1.52m (5ft) below the summit of the mound. A smaller trench, measuring about 0.6m (2ft) wide was excavated through the northern slope of the mound in order to facilitate removal of excavation fill from the primary trench by wheelbarrow. Mound F was found to contain at least three separate construction episodes, indicating that the original mound was first expanded laterally, and then expanded vertically during the final construction episode. There was evidence of a structure (or perhaps structures) and a thick prepared clay surface present at the interface between the lower laterally expanded mound and the upper final construction episode (Figure 08-05). The remains of this structure consisted of a hardened clay surface surrounded by postholes, much like the structures found atop Stage III in Mound A in 2003 (see Chapter 9). The 1933–1934 excavations also revealed that a similar structure was present below the first or lowest mound stage, indicating that the mound was constructed atop the former location of a structure.

Of the two GPR transects which crossed the summit of Mound F, it appears that T-175 (oriented

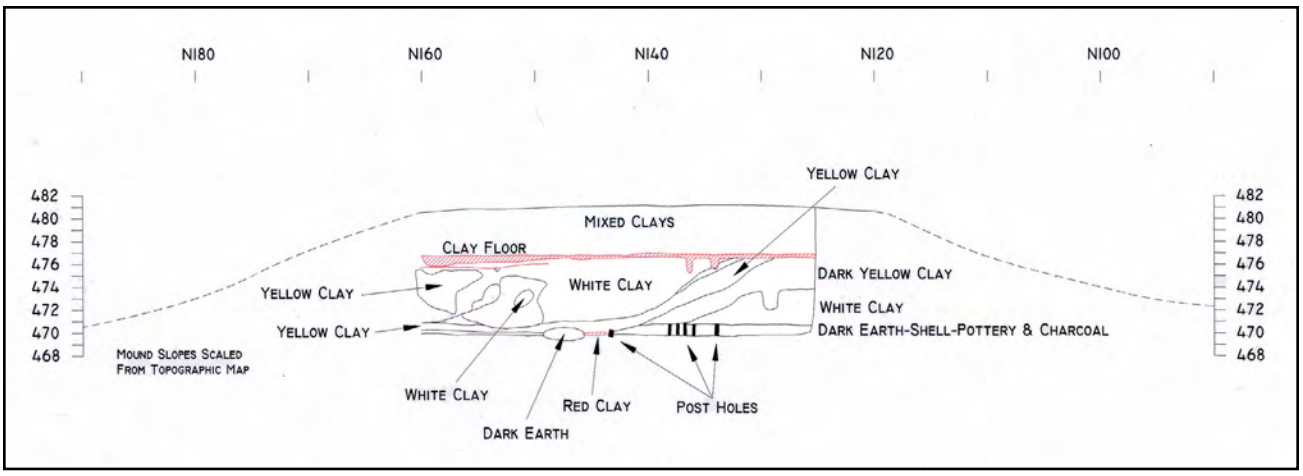


Figure 08-05. Eastern profile wall of 1933-1934 CWA excavations of Shiloh Mound F (reproduced from Welch 2001:184).

west-to-east) may have registered a possible reflected signal from Roberts' 1933–1934 excavation trench across the mound (Figure 08-06). This disturbance registers as a moderate amplitude sub-surface anomaly located near the center of the mound summit. This anomaly measures approximately 2 to 2.5m across and is located just east of Welch's historically reconstructed location of Roberts' Mound F trench (Welch 2001:182). Welch noted that the excavation trench was approximately 1.8 to 2.4m (6 to 8ft) wide at the surface. This correlates well with the GPR reflection. GPR transect T-176 was run north-to-south along Welch's historically reconstructed location for the Mound F excavation trench. Unfortunately, this transect did not reveal any definitive evidence for the trench. However, T-176 did reveal an anomaly on the center of the summit which may either be a feature, a portion of a prepared surface atop the mound, or may be ground-disturbance associated with the backfilling of the Mound F excavation trench. Like the GPR data, the topographic relief of the northern slope of Mound F suggests that the excavation trench was located more easterly than Welch postulated.

Mound F Aprons

The results of David Bean's GPR investigation of the southern and eastern aprons of Mound F are less easy to interpret than the Mound F summit transects. This is due in part to the large amounts of disturbance which took place when the area was extensively trenched during Roberts' 1933–1934 CWA excavations. Welch noted that the high rate of so-called 'false-positive' and 'false-negative' results from Bean's GPR survey were due to the large amount of excavation and backfilling in those areas. Though there were minimal definitive results from these transect grids, a few patterns were encountered which could be significant.

First, a series of subsurface anomalies were present, aligned near the center of transects T-51 and T-52 (see Figure 08-04). The deeply reflected disturbances were quite visible against the background reflections and likely represent one of the many 1933–1934 CWA trenches located in this area. The GPR operator noted that evidence for a possible road or path was present on the surface leading from this area toward Mound A. The possible path does not however account for the reflected signal in these transects.

Areas of high amplitude reflections occurred along the south-central portions of transects T-44, T-49, and T-50. These disturbances may represent either a buried surface or a possible house mound. Welch's 1999 map of the Shiloh Mound Complex (Welch 2001:46) shows four small house mounds located immediately south of Mound F. Overlaying these three patterned disturbances onto that map indicates that the disturbance may, in fact, represent a hardened clay surface between these four mounds. The excavation of shallow exploratory test units over this disturbance in 1999 was unsuccessful at

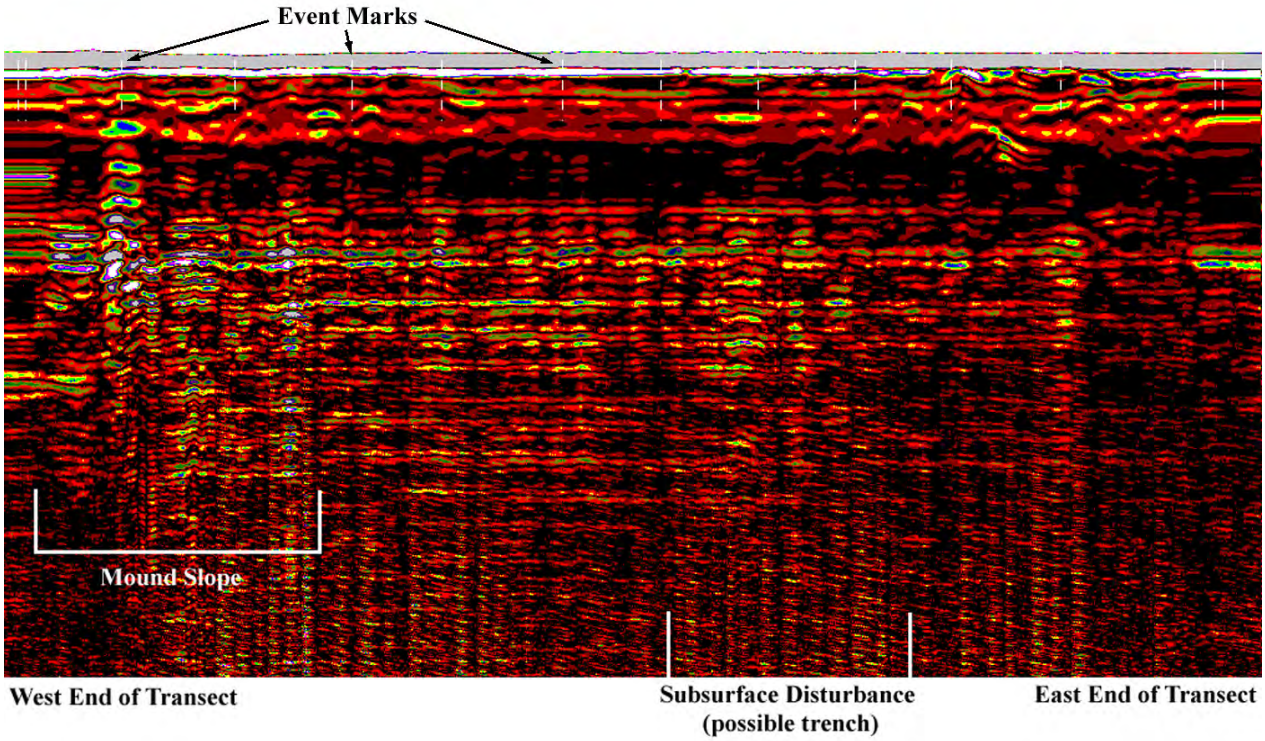


Figure 08-06. Radprint® display of GPR transect T-175 showing possible excavation trench in summit of Shiloh Mound F.

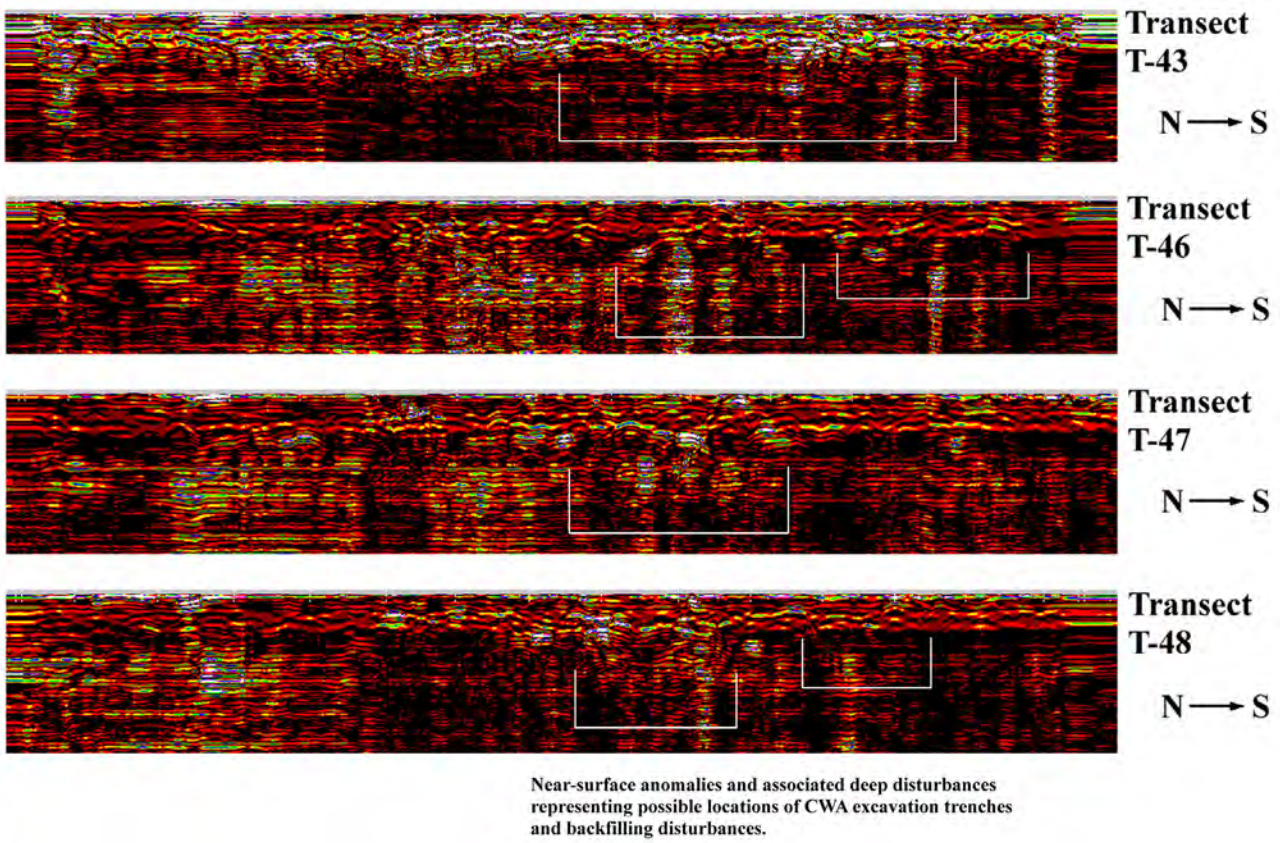


Figure 08-07. Radprint® displays of GPR transects T-43 and T-46 through T-48 showing possible excavation trenches on south apron of Shiloh Mound F.

revealing any evidence of a near-surface anomaly (e.g. CWA excavation trench, or historic feature) at the location of this disturbance. This indicates that the signal may represent a more deeply buried prehistoric feature, surface, or additional house mound. Based on the fact that the disturbance does not have a shallow (i.e., recent) genesis, and that the location of the signal reflection is circumscribed by four small house mounds, this anomaly may represent a small plaza. Such small house mound and plaza arrangements located at the bases of larger mounds are common spatial themes within large Mississippian centers such as Cahokia during the Stirling phase (Mehrer and Collins 1995:46). Shallow test excavations placed approximately 4m west, south, and southwest of this possible feature did, however, reveal the presence of near-surface east-west CWA excavation trenches (see Figure 08-04)(Welch et al. 2006:236–238).

The final area of potential significance in the Mound F apron transect grid is a series of pronounced disturbances in the southern and central portions of transects T-48, T-47, T-46, and T-43. Comprising the four westernmost transects of the southern apron grid, these transects exhibit reflected signals of near-surface anomalies which appear to extend rather far below the surface. The fact that these disturbances appear to orient themselves west-to-east across the GPR transects indicates they may represent possible evidence of past archeological trenching. Two such parallel series of disturbances can be discerned from the GPR readouts (Figure 08-07). The spacing of these possible trench signatures is in keeping with Welch's estimate that excavation trenches were separated by 0.9m (3ft) balks in some areas (2001:260). SEAC test excavations along transect T-42 confirmed the location and identity of the southern of these two anomalies was indeed a former 1930s CWA excavation trench (Welch et al. 2006:238) (Figure 08-08). These 1999 test excavations also indicated the possibility that the northern disturbance of the two might represent an excavation trench, although the evidence was less conclusive.

Although the area surrounding Mound F was apparently extensively trenched on all sides in 1933–1934 (Welch 2001:152–154), little documentation and almost no field photography of these operations exists. Aside from the three areas of significance described above, the remaining portions of the GPR transect grids produced signal reflections of non-patterned undifferentiated disturbances. These disturbances are likely the product of a high amount of ground disturbing activity from prehistoric and historic sources, as well as natural factors such as tree growth and bioturbation.

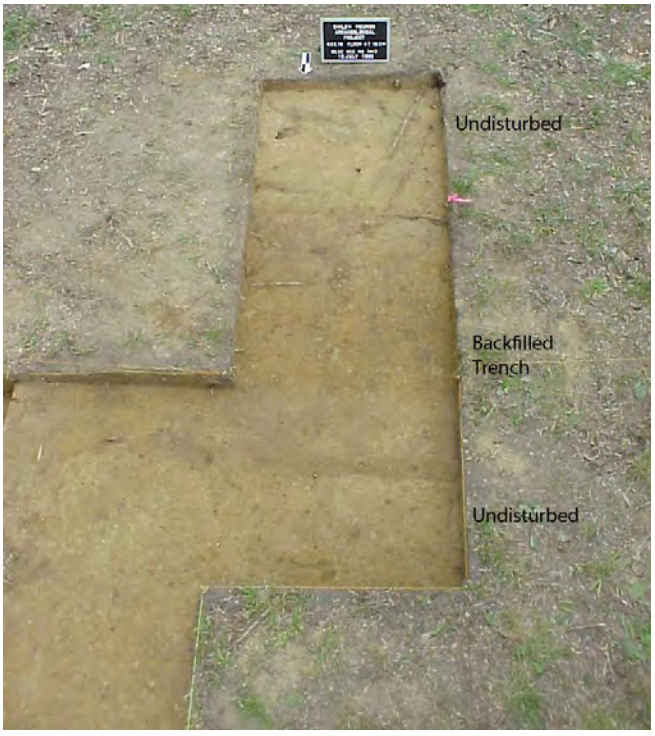


Figure 08-08. Excavation trench located south of Mound F during the 1999 SEAC GPR and testing program (see also Welch et al. 2006:238).

Mound E

Two GPR transects (T-173 and T-174) were placed across the summit of Mound E during the 1999 investigations (Figure 08-09). Unlike at Mound F, there was no corresponding remote sensing survey of the apron areas of this mound. Like Mound F, Mound E was trenched by the CWA field crews during the 1933–1934 excavations, but due to the incomplete field records, exactly what was done at Mound E is unknown. In his synthesis of Shiloh archeology, Welch (2001:22, 175; cf., Welch 2006:149–154) states that two east-west trenches

and one north-south trench were apparently excavated across the summit of Mound E and that these excavations may have later been expanded into larger block excavations. The original field documentation was of little use in reconstructing the locations of any of these trenches. Welch (2006:149) notes that: "None of the profile drawings is on an edge of an excavation unit mentioned in the notes. The field photographs show multiple, closely spaced parallel trenches rather than large block excavations implied by the grid corners mentioned in the notes. It is possible that the baulks between some or all of these trenches were later removed, creating the larger blocks implied by the notes."

Of the three profiles which Welch references, two were drawn from long trenches (~33.5m each) presumably excavated near the southern base of Mound E, and the third is from a shorter excavation unit (~10.5m) which apparently crossed the summit of the mound (Figure 08-10). These three profiles indicate that Mound E was constructed in at least two separate episodes, and that the mound was constructed over an extant surface and/or structure. The stages of Mound E were capped with a prepared red clay surface which was intruded by posthole features. This indicates the presence of at least one structure atop the internal mound stage of Mound E (see Figure 08-10).

GPR transect T-173, running south-to-north across the summit and slopes of Mound E, documents the presence of at least one well defined excavation trench crossing the center of the mound summit (see Figure 08-09). This disturbance roughly corresponds with Welch's reconstructed location of the CWA excavation trench atop the mound summit. A second anomaly was also recorded by the GPR near the southern margin of the south slope of Mound E. This disturbance may correspond with one of two 33.5m (110ft) long trenches excavated east-west across the southern flank of Mound E in 1933–1934 (Welch 2001:175–179; 2006:152–153). Also of interest was a series of high amplitude reflected signals recorded by the GPR south of the possible excavation trench at the mound summit (see Figure 08-09). This signature may be evidence for a prepared surface or structural remnant atop the mound. Transect T-174, running west-to-east, intersected T-173 at the center of the summit of Mound E. T-174 recorded a large disturbance across the mound summit which intersects the possible trench signal encountered on the T-173 transect. This disturbance likely represents the east-west long-axis of the excavation trench dug into the summit of Mound E during the 1933–1934 expedition. A less clearly visible anomaly borders the eastern margin of this trench feature. This anomaly may be associated with backfilling activity or the remnants of a prepared surface and/or structural remnants atop Mound E.

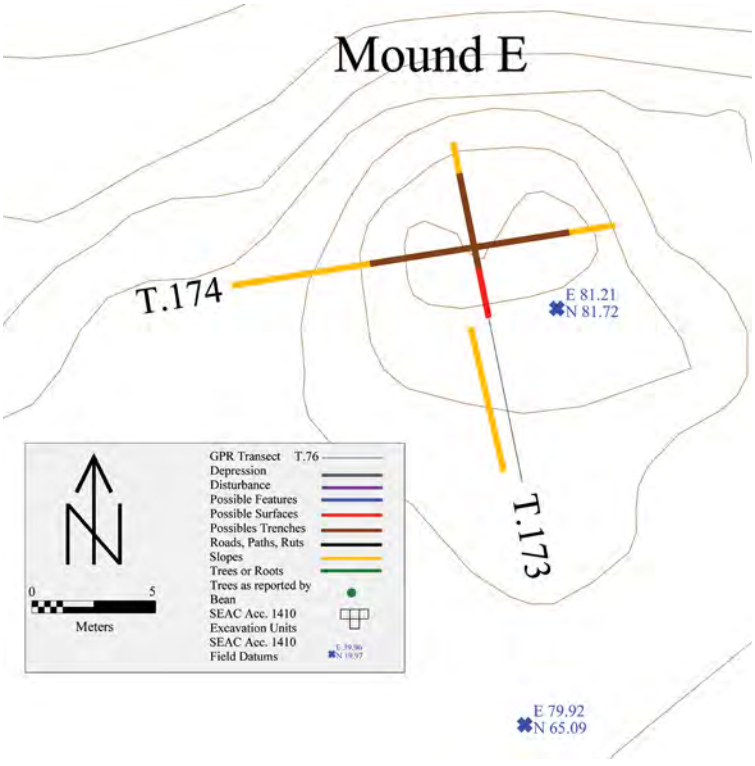


Figure 08-09. Map of Mound E and vicinity showing locations of GPR transects from the 1999 GPR survey.

Mound D

The 1999 GPR survey of the Shiloh Mound Complex included a two transect pass across the summit of Mound D (T-171 and T-172), as well as a transect grid survey of the western apron of Mound D. On the western apron, the transect grid consisted of sixteen east-to-west

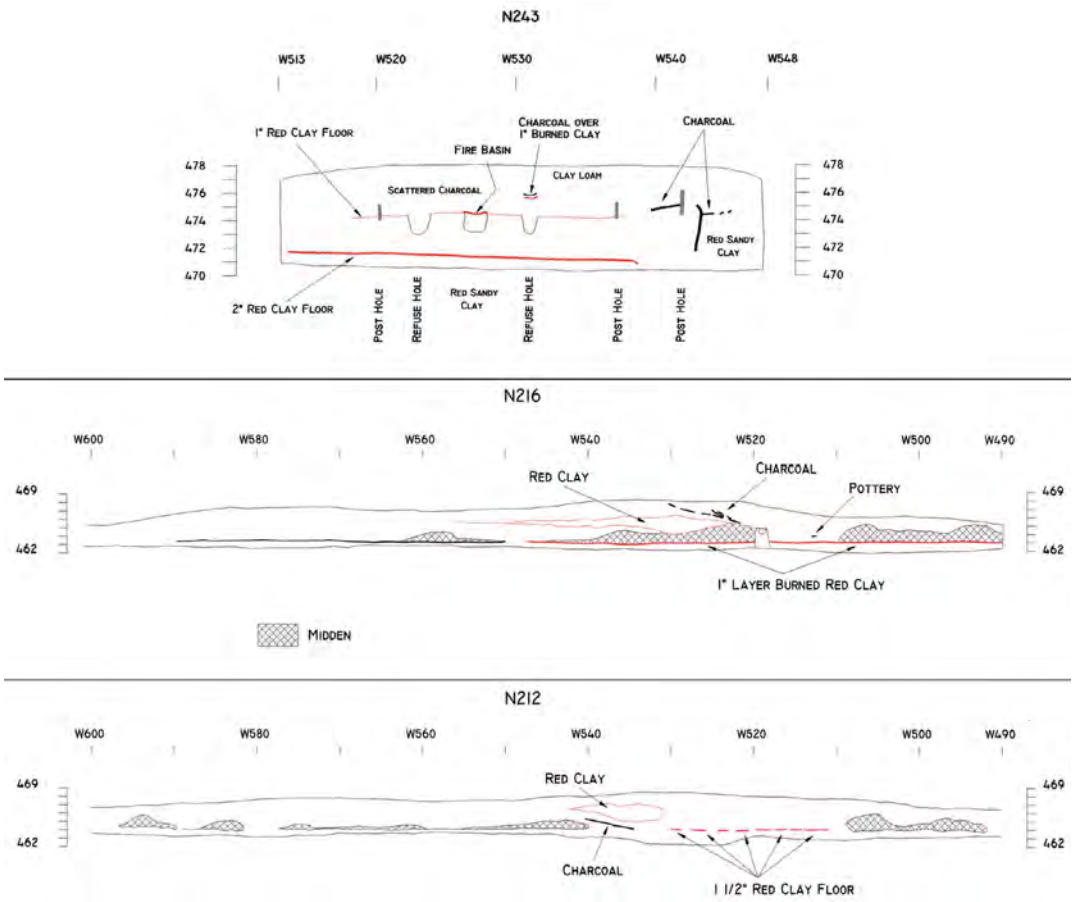


Figure 08-10. (top) Southern profile wall of 1933–34 CWA excavations of N243 line across the summit of Shiloh Mound E showing possible internal mound stages. (center) Northern profile wall of 1933–1934 CWA excavations of N216 line south of the summit of Shiloh Mound E showing possible internal mound stages and possible apron deposits. (bottom) Northern profile wall of 1933–1934 CWA excavations of N212 line across south apron of Shiloh Mound E showing possible apron deposits (reproduced from Welch 2001:184; 2006:152–153).

transects (T-61 through T-76) (Figure 08-11). The area surrounding Mound D was extensively trenched during the 1933–1934 CWA excavations at Shiloh (Figure 08-12). Welch (2001) describes excavations taking place along the eastern, northern, and western margins of Mound D; unfortunately he was unable to adequately reconstruct the former locations of these trenches due to the scant amount of surviving field documentation. Photographs of Roberts' fieldwork do however show concentrated ground disturbing activity in this area (see Figure 08-12). There is no documentation to indicate whether or not Mound D was excavated during the CWA field season at Shiloh, nor does there appear to be any record of artifactual material recovered from the mound itself. Therefore, though the apron of the mound has been significantly disturbed, Mound D may be relatively intact and undisturbed.

GPR transect T-171 extended west-to-east across the summit of Mound D. This transect confirmed the suspicion that undisturbed deposits occur within the mound. Other than the slope disturbance recorded at the summit edges, the only notable anomaly is a continuous high amplitude disturbance which is likely indicative of stacked stages and surfaces, similar to those seen during the excavations in Mound A in 2001–2004. Near the center of this reflection, the GPR recorded an additional near-surface anomaly which may be linked to a feature or structure atop the uppermost stage of the mound, at the center of the

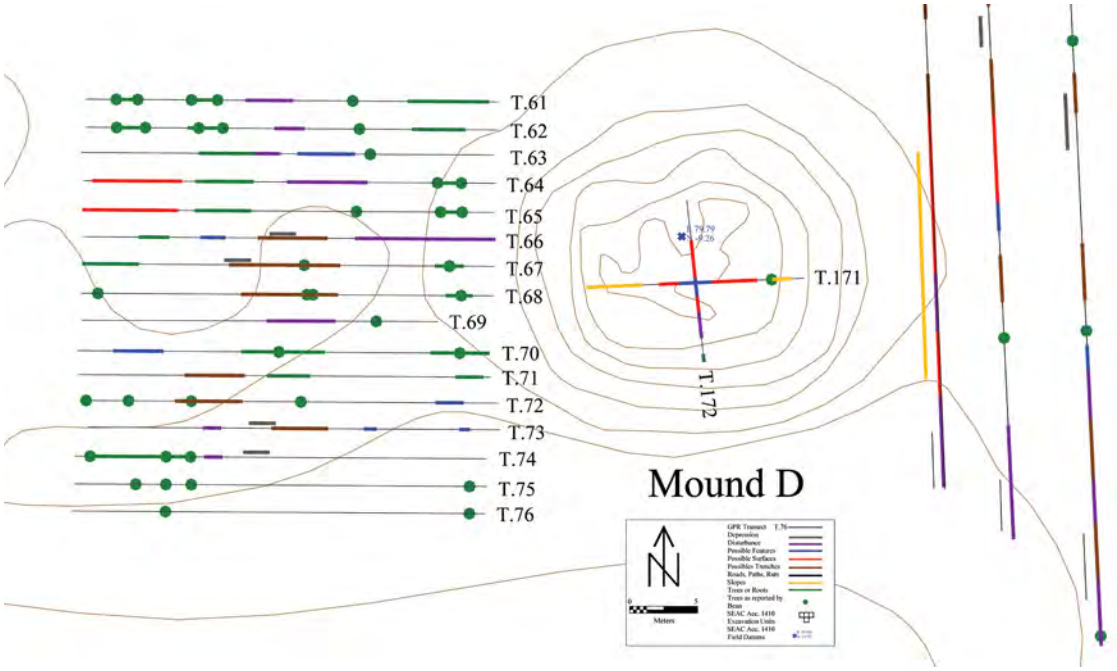


Figure 08-11. Map of Mound D and vicinity showing locations of mound and apron GPR transects from 1999 (Bean) GPR survey.

summit. Transect T-172, pulled north-to-south across the summit of Mound D, also recorded this possible surface and the apparent centralized feature or structure. No subsequent remote sensing surveys or test excavations were conducted on Mound D following the 1999.

Mound D Apron

Of the sixteen GPR transects which comprise the transect grid on the western side of Mound D, fifteen are 30m in length, and one (T-69) measured 26m. In addition to the fact that this area was extensively trenched during the CWA excavations, roots, stumps and standing trees were also common on the western apron transect grid of Mound D. These factors have left the area surrounding the mound rather disturbed and thus difficult to interpret using remote sensing. Four areas of possible significance are present in the GPR data (see Figure 08-11). The first of these is a series of disturbances on Transect lines T-61 through T-64. These undifferentiated disturbances (in purple) appear to flank a possible feature (in blue) at the center of the disturbances. The possible feature appears to plunge deeply east-to-west. It is unclear whether this possible feature is a prehistoric structure or feature, an historic earthwork or excavation trench, or naturally occurring. It is possible that the area of disturbance and the associated plunging feature may represent an up-rooted tree.

The second area of possible significance is a series of high amplitude anomalies present on the western portion of GPR transects T-64 and T-65. While not as strong as the high amplitude anomalies atop Mound D, these reflected signals indicate a possible dissimilarity in soil texture. The localized nature of the difference suggests that this may be the remains of another house mound near the base of Mound D. Welch (2001:154–157; 2006:133) noted that several such house mounds (many intentionally burned) were encountered in this area during the Roberts excavations.

The third area of note is located near the center of the GPR transect grid along transects T-66, T-67, and T-68. Here, a series of six possible trench boundaries were encountered near the end of a small surface-ridge (see Figures 08-11 and 08-13). This small ridge is known to have been excavated by Roberts' workmen during the 1933–1934 field season at Shiloh. Though the exact boundaries,



Figure 08-12. CWA field photograph showing excavations north and east of Shiloh Mound D, note Mound A in background (reproduced from Welch 2001:116).

size, and shape of the excavation trench or block cannot be determined from the GPR data, it appears that the feature is roughly rectangular and measures approximately 6.1 to 7.6m (20 to 25ft) on its east-west axis. This possible excavation trench or block is associated with two small surface depressions (in gray) noted by Bean in the field during the GPR survey (see Figure 08-11). Also linked with this possible trench is a near-surface disturbance in T-69 just south of the trench signature. This near-surface disturbance is likely related to backfilling activity associated with the excavations.

The final area of note in the transect grid west of Mound D is a possible trench or possibly a pair of trenches which appears near the southwest corner of the survey area. Unlike the trenches present near the center of the survey area, the locations of these signal reflections do not produce any clearly recognizable trench outline. Instead, there appears to be either two smaller excavation units connected at their corners, or one larger

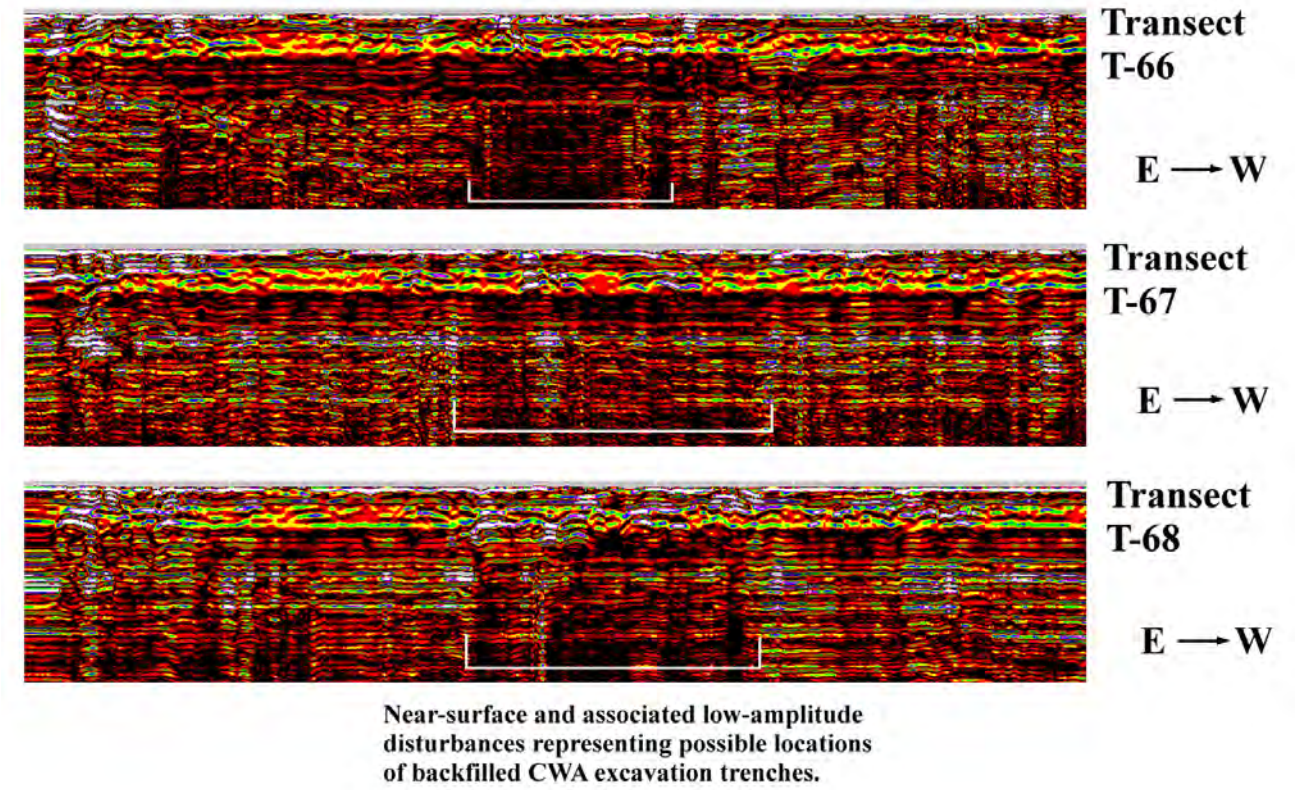


Figure 08-13. Radprint® displays of GPR transects T-66 through T-68 showing possible excavation trenches on south apron of Shiloh Mound F.

excavation unit oriented northwest-southeast. Tree and root activity in this area has likely affected the ability of the GPR to correctly identify the locations of former trench margins whose walls have likely been degraded. Therefore, little more can be said about this possible excavation trench other than its general location. Evidence for a small road or path was visible on the surface by the GPR operator in the southeast corner of the transect grid. Portions of this path were also visible in some of the GPR transects for this area, notably T-72 through T-76. At present, the age and purpose of the road are unknown.

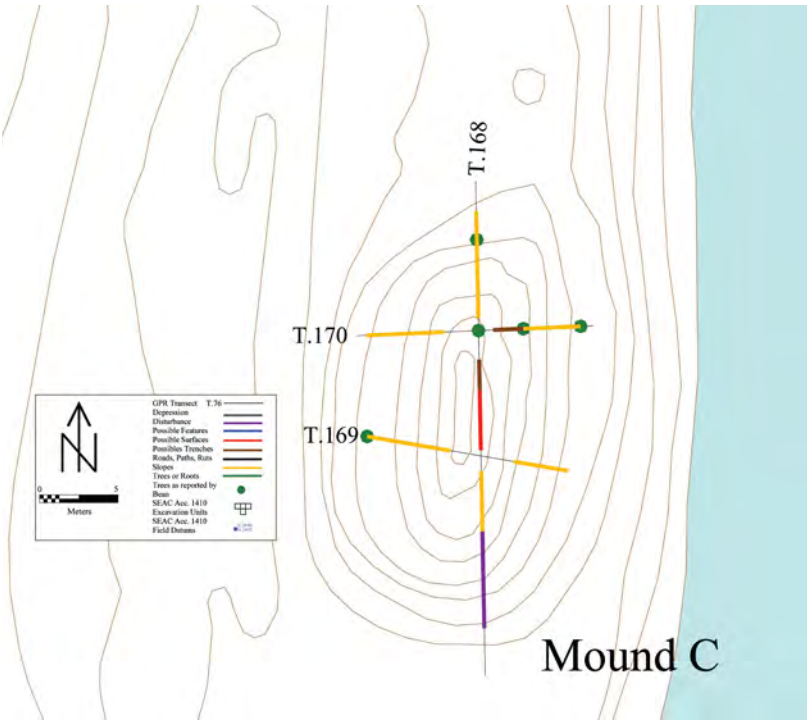


Figure 08-14. Map of Mound C and vicinity showing locations of GPR transects from the 1999 GPR (Bean) survey.

Mound C

The 1999 GPR survey of Shiloh mounds consisted of three transects (T-168, T-169, and T-170) across the sides and summit of Mound C (Figure 08-14). Like Mound E, the GPR survey of Mound C did not include accompanying apron surveys. Investigated in 1899 and again in 1933–1934, Mound C was the first mound excavated at Shiloh. In June of 1899, then Superintendent Cornelius Cadle led a group of local archeological enthusiasts in the excavation of this round-topped ovular shaped mound, during which they encountered the now famous Shiloh effigy pipe. Cadle's records are extremely sparse, although it has been possible to reconstruct some of what he did, particularly since the 1933–1934 excavations into the mound located the original trench (Cadle 1903; Welch 2001:8; 2006:10–15). Cadle excavated a 1.37m (4½ft) wide trench from the north side of the mound through to the center, a total length of about 12.1m (40ft). A log-covered tomb was found at the base of the mound at the center which yielded three burials and the effigy pipe. Mound C was excavated again during the 1933–1934 CWA field season, and enough field documentation and photography exists to provide a detailed description of the excavation. According to Welch (2001:189; 2006:161–170), Roberts removed the southeast corner of the mound exposing an eastern-facing profile wall. The CWA workers also removed a wide block across the center of the mound west to east, terminating at the exposed profile wall on the eastern side of the mound. Thus, if the reconstructions of the earlier fieldwork are accurate, the only undisturbed mound-fill remaining in Mound C is likely to be found on the southwestern flank (south of Roberts' east-west cross-cut and west of his southeastern profiling), and on either side of Cadle's original trenching on the northern side of the mound.

Transect T-168 was run north-to-south across the sides and summit of Mound C (see Figure 08-14). Considerable disturbance was visible across the southern portion of the transect. This, no doubt, was due to the profiling of Mound C's southeast slope during the 1933–1934 fieldwork. Near the center of this transect, there appeared to be a relatively clear low amplitude disturbance. The sharp contrast of this disturbance against the rest of the Mound C stratigraphy indicates that this may be a possible excavation trench. It is not certain whether this possible trench signature is from Cadle's 1899

trench, or the one opened by Roberts in 1933–1934. Due to the fact that this is the only reflected anomaly which could be tentatively called a trench, it probably represents the excavation trench which Roberts dug west-to-east across the center of the mound.

Two east-west GPR transects were also laid out across the top of Mound C. T-169, the southern of the two, recorded partially disturbed deposits across the southern end of the mound's lateral edges. It is already known that the southeast portion of the mound was removed in 1933–1934 to provide a north-south profile wall. This likely accounts for the eastern disturbance in the transect. Since the transect was offset approximately 5 to 10 degrees from the true perpendicular angle of the mound (see Figure 08-14), the western disturbance may be related to either excavation or backfilling activities associated with the trench Roberts dug across the center of Mound C. GPR transect T-170 revealed two areas of possible disturbance. The westernmost of these two anomalies appears to be a good candidate for Cadle's 1899 trench into Mound C due to its size and placement along the center of the mound's northern slope. The disturbance on the far eastern end of T-170 is likely either related to the 1933–1934 excavation and/or backfilling of the southeastern profile wall of Mound C, or is a disturbance related to the stumps and roots noted by Bean in this area during the GPR survey. The 1999 GPR work indicated that some parts of the mound may be present in relatively undisturbed condition, and that the locations of some of the earlier excavations may have been tentatively located.

Mound B

Three transects (T-165, T-166, and T-167) were run across the sides and summit of Mound B during the 1999 GPR investigations (Figure 08-15). Two adjoining GPR transects from the Mound B apron survey, T-77 and T-78, also crossed the eastern slope of the mound, but never crossed the summit. Though there is no de-finitive evidence one way or the other, Welch (2001:13–14; 2006:16–19) has argued that Mound B may have also been excavated in either 1899 or ca. 1903 by Shiloh Superintendent Cadle during or following the excavations into Mound C. Welch (2006:16) quotes from a letter dated August 28, 1903 by Cadle in which he states "I opened a mound—the one near the road just west of the pipe mound and found *nothing* (emphasis in original)" which might be Mound B. Welch notes that a woodcut illustrating excavations into 'Shiloh

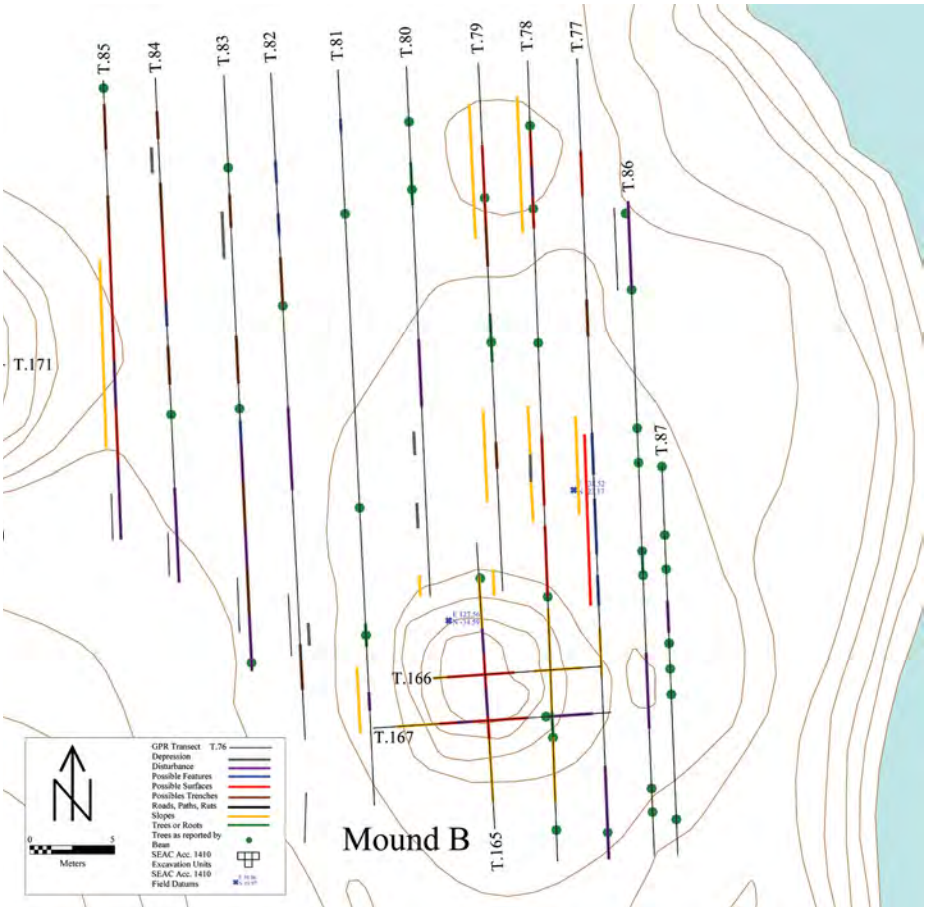


Figure 08-15. Map of Mound B and vicinity showing locations of mound and apron GPR transects from 1999 GPR (Bean) survey.

Mound–2' that he found in the park files illustrates a mound about the size of Mound B (Welch 2006:17; Figure 08-16). This illustration depicts a bisected multi-stage mound. Since it is known with certainty that Mound C was trenched in 1899, this lead Welch to the conclusion that at least one additional mound may have been excavated during Cadle's investigations, or soon thereafter. Though the documentary evidence is often contradictory, misleading, and unreliable, Welch (2006:16) believes that it is possible that Mound B may have been the supposed "Shiloh Mound 2" pictured in the illustration. It does not appear that Mound B was excavated during the 1933–1934 excavations, though the area surrounding the mound was extensively trenched (Welch 2006:113–115).

Transect T-165 was laid out north-to-south across the slopes and summit of Mound B (see Figure 08-15). There appears to be evidence of intact mound deposits across the majority of the summit, though the mound deposits do not appear to indicate multiple internal stages. The deposits appear to be mostly homogenous, except for two small areas where the GPR recorded reflected near-surface disturbances. The identity of these disturbances could not be determined from the GPR readings. Transects T-166 west) and T-167, running east to west across the summit, recorded similar results to those in T-165. An area of generalized high amplitude reflected signals was observed across a majority of the mound summit surveyed by these three transects. If these signatures do not represent intact mound deposits, another possible explanation for these readings might be that if Mound B and Cadle's 'Shiloh Mound 2' are the same mound, then perhaps the entire mound was excavated after the initial bisection depicted in the aforementioned wood-cut illustration (see Figure 08-16). Following its complete excavation, if the mound was reconstructed and re-contoured, then perhaps this would explain the homogeneity of the mound deposits indicated by the GPR signals. It is unknown whether Mound B was ever re-contoured, although this practice is known to have taken place at Shiloh during the 1933–1934 field season. A portion of the fourteen minute CWA film documenting Roberts' Shiloh excavations shows workmen re-contouring a small mound, possibly a house mound, with backdirt following its excavation. This film is in the electronic appendices. Likewise, Mound C appears to have been reconstructed and re-contoured after these same excavations.

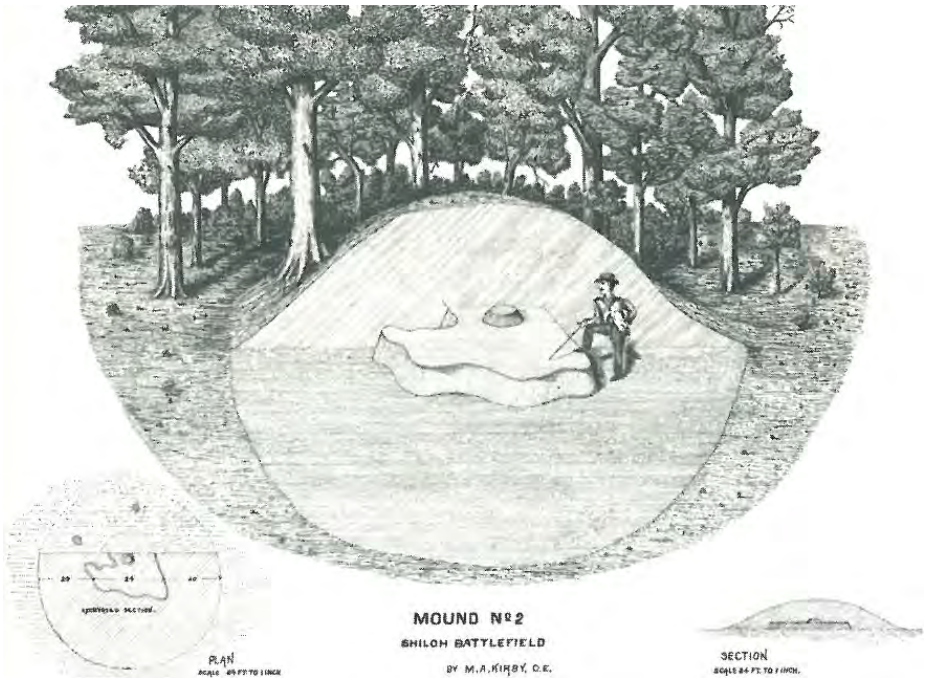


Figure 08-16. Woodcut illustrating excavations in 'Mound No. 2, Shiloh Battlefield' (from Welch 2006:17; courtesy Shiloh National Military Park).

Mound B Apron

The Mound B apron GPR transect grid consists of eleven north-south transects (T-77 through T-87) ranging in length from 70m (T-77 and T-78) to 34m (T-87). The survey area consists of the area immediately surrounding the four slopes of Mound B, as well as the area north of Mound B and east of Mound D. The northeast corner of this survey area includes the small house mound, Mound J, located halfway between

Mounds A and B (see Figure 08-17). This survey area also comprises the southern extent of the 2001 GPR (Nickel 2001a), electrical conductivity (Clay 2001), electrical resistivity (Jones 2001), and magnetic field gradient (Clay 2001, Jones 2001) survey areas. All subsequent remote sensing surveys discussed in this report will focus, at least in part, on this area of the Shiloh Mound Complex.

Unlike other GPR apron transect grids run in 1999, which consisted of 2m transect intervals, the Mound B apron was surveyed by transects spaced 5m apart. This is due in part to the large survey area and the fact that this was known to have been among the most intensively examined portions of the Shiloh Mound Complex during the 1933–1934 CWA excavations. Based on field documentation from the CWA fieldwork, Welch (2001:131; 2008:108–116) has identified and reconstructed the approximate locations of 12 east-west excavation trenches, Trenches 13 through 24, within the confines of this survey area (see Figure 08-17). Due to the overall high degree of disturbance of this area from the 1933–1934 excavations, it was quite difficult to define disturbances in the GPR data. Much of the data collected during the investigation of this survey area was composed of undifferentiated series of anomalous disturbances. In three areas of this transect grid, however, evidence for specific anomalies were detected against the background disturbances.

The first area of particular note is located immediately north of Mound B. Here the GPR recorded high amplitude reflected anomalies which indicate a possible prepared formal mound-apron bordering the northern margin of Mound B. The data from transects T-77 and T-78 suggest that this anomaly is very similar in composition to data collected from the summits of mounds and/or other formal mound-aprons (see Mound A discussion). Another possible explanation for this reflected high amplitude anomaly is that it may represent the remains of a house mound at the base of Mound B. During the GPR survey, Bean noted that the ground displayed a slight visible rise just north of Mound B (see Figure 08-15).

Located between Mounds A and B, Mound J is the second area of interest noted in the 1999 GPR survey area. This mound is one of only five house mounds known to have been excavated by Roberts during the 1933–1934 field season. Of these five—Mounds J, P, R, S, and W—only Mounds J and P were mapped in any great detail (Welch 2001:162,167; 2006:141–142, 145). Of these two mounds, only Mound J was photographed during and after its excavation. Thus, Mound J represents the best-documented of the CWA excavated house mounds at Shiloh. The high amplitude disturbances on transects T-77 through T-79 represent the remaining surfaces and/or features underlying Mound J. As with the possible apron/house mound located immediately north of Mound B, David Bean also noted in the field that there was a slight rise of the ground surface associated with this house mound. Since it is known for certain that this anomaly represents the remains of a house mound, it strengthens the argument that the anomaly just north of Mound B is also one due to the similarity in their reflected signal characteristics. There was little evidence in the data from near Mound J or north of Mound B to suggest possible locations of former CWA trenches. This is likely due to the extensive nature of excavations and backfilling in these areas, which have apparently reduced the visibility of excavation features to the GPR.

The final area of interest in the GPR transect grid north of Mound B was found on the far western side of the Mound B apron survey area. Here, the four western-most transects (T-82, T-83, T-84, and T-85) displayed regularly sized and spaced reflected anomalies. While some of these anomalies are only identified across a single GPR transect, other anomalies appear similarly spaced across multiple transects. These correlated anomalies (outlined in black) represent the best candidates for the possible 1933–1934 CWA excavation trenches in this transect grid. Welch (2001:131; 2006:109) indicates that the east-west trenches placed north of Mound B terminated almost 12m east of the western margin of Mound D and extended across the northern apron of Mound B, terminating on their eastern end at the bluff of the Tennessee River

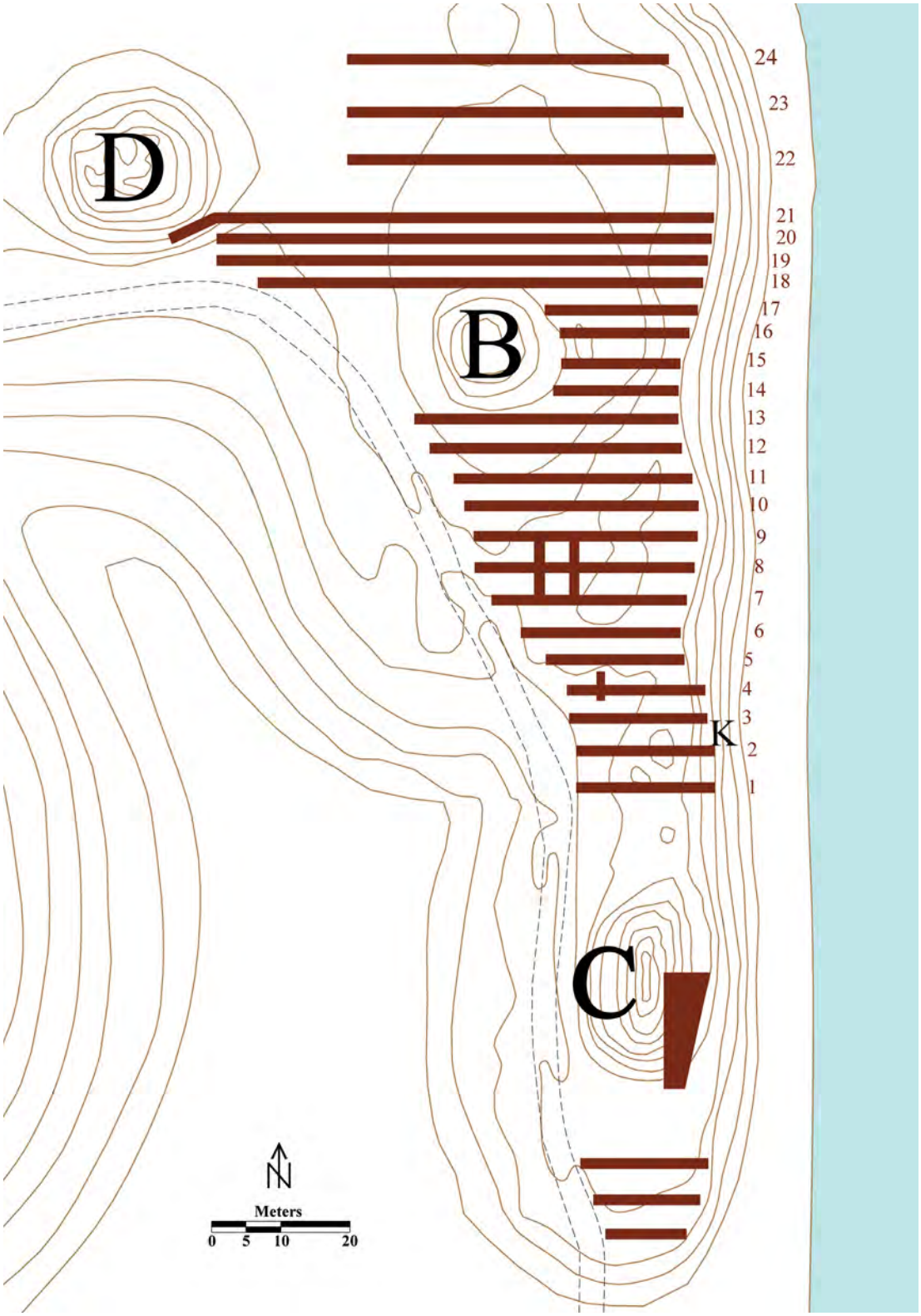


Figure 08-17. Reconstructed Locations of 1933–34 Excavation Trenches in relation to Mounds B, C, D, and House Mound J produced by Paul Welch (from Welch 2006:109).

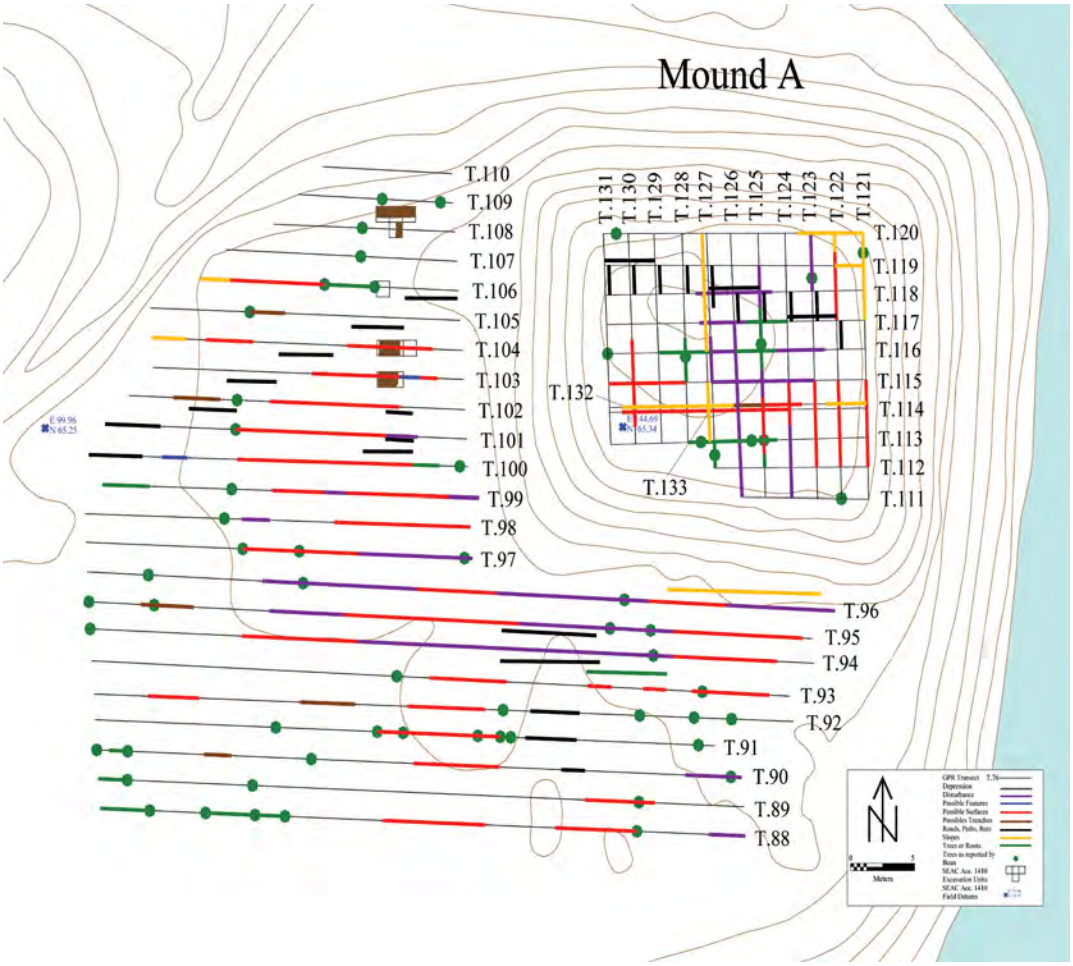


Figure 08-18. Map of Mound A and vicinity showing locations of mound and apron GPR transects from 1999 GPR (Bean) survey.

(see Figure 08-17). Between the western terminal points of these trenches and the eastern margin of Mound D, Welch has reconstructed a single excavation trench oriented 45 degrees west-of-north on its long axis. This trench is attributed to Gerald Smith's 1976 field season. Smith (1977:7) noted that his excavation trench crossed at least two of Roberts' trenches, and that their boundaries were clearly observable in the floor of his own excavation trench. The Smith trench was very shallow (less than 50cm deep), thus it would not be unusual for the reflected signal of this trench to be overshadowed by the reflected signals of the deeper CWA trenches which underlie it. While the anomalies observed in the GPR data, and outlined in black on Figure 08-15, may be excavation trenches (which is a hypothesis supported by Smith's fieldwork), the high degree of disturbance north of Mound B makes it impossible to accurately trace these anomalies eastward across the survey area. Based on Welch's (2006:109–116) description of the past excavations in this part of the Shiloh Mound Complex, it is likely much of the evidence for these trenches was disturbed during the backfilling and re-contouring of the area following the 1933–1934 excavations.

Mound A

The 1999 GPR survey of the summit of Mound A consisted of a transect grid of 12 north-south transects (T-121 through T-131, and T-133) and 11 east-west transects (T-111 through T-120, and T-132) (Figure 08-18). Excavations into Mound A in 2001–2004 documented many distinct construction episodes (see Chapters 9, 10, and

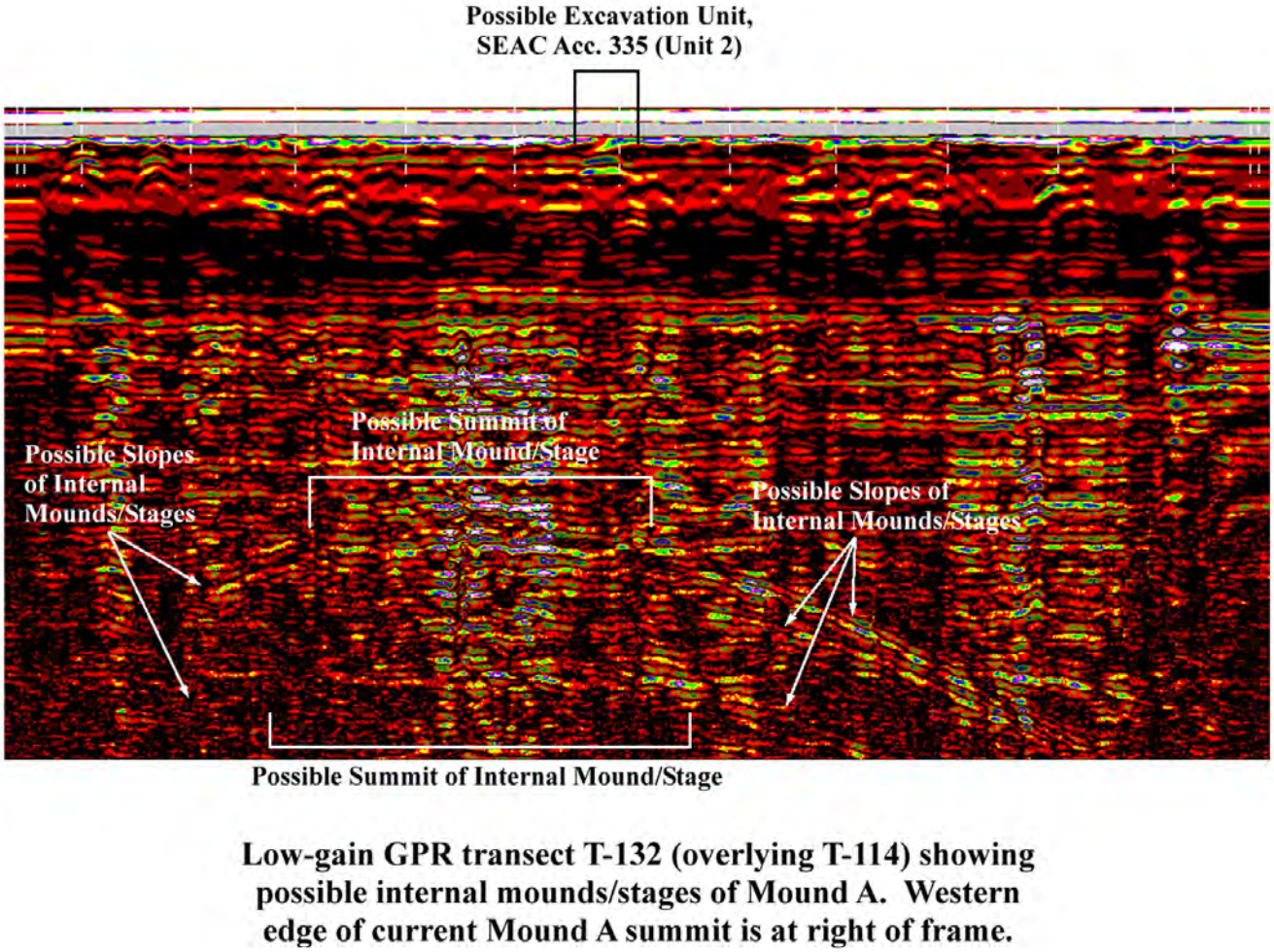


Figure 08-19. Radprint® displays of GPR transect T-132 showing possible internal mound stages and/or construction episodes of Shiloh Mound A.

21). Therefore, it is not surprising that the data collected across the summit of Mound A is highly varied and shows little obvious patterning. It is also known that between 1914 and 1929 a structure was present atop Mound A, a summer house for Shiloh Superintendent Delong Rice (Moore 1915; Welch 2001:283; 2006:21). The presence of modern disturbances related to this structure may be partially responsible for the generally low level of cohesive patterned data from the GPR survey atop Mound A. Also, the extensive erosion and slumping of the eastern edge of Mound A may have caused the surviving archeological deposits, especially those near the bluff edge, to have differentially settled and/or shifted, thus causing anomalous readings in the GPR data. The erosion of the mound's eastern face, and the growth of the mound over time as it was built, would also mean that stages, features, or structures may differ in locations within the mound. Despite these hindrances, three areas on the Mound A summit appear to provide reliable data regarding the subterranean composition of the mound (see Figure 08-18).

Transects T-121, T-122, and T-123 recorded disturbances and possible prepared clay surfaces near the northeast corner of the extant Mound A summit. The reflected radar signals indicated that a possible prepared surface, mound stage, or structure was located in this area. Excavation of the northeastern corner of Mound A in 2003 revealed a fired clay surface atop the Stage IIb mound, and a prepared clay surface and a series of postholes

from a building, designated Structure 4, atop the Stage III mound (see Chapter 9). It appears that the 1999 GPR data correctly indicated the presence of at least one of these surfaces, probably the one on the Stage IIb mound, since the prepared Stage III surface extended over the entire summit, yet the anomaly is present over only a portion of it. Structure 4 continued east toward the portion of the mound already been lost to erosion, making it impossible to determine its original dimensions or shape either through remote sensing or excavation.

The other two areas of interest atop Mound A are located along the southern and central portions of the summit as it exists today. These areas appear to join with each other just south of the current center of the summit of Mound A. These two areas, like Structure 4, appeared as high amplitude disturbances indicative of prepared surfaces, mound stages, or structures. The eastern of the two was found along the southeastern portion of the extant summit of Mound A. The western disturbance appears just southwest of the current center of the mound. Excavations on the southeast corner of the Mound A summit indicated that portions of the southeastern anomaly likely represent signals from at least two prehistoric buildings (Structures 2a and 2b) as well as other features and partial structures found in this area on the summit of the Stage III mound (see Chapter 9). These structures were constructed on well-defined thick (>1cm) prepared silt clay surfaces. The extent of these surfaces appears to generally correlate with the reflected GPR signature along the southeastern portion of the extant mound summit. The reflected anomalies found southwest of the center of the current mound summit thus likely indicate the presence of a similar prepared clay surface associated with structures or structural fragments. The GPR evidence, combined with data collected during 2001–2003 excavations, suggests that the summit of Mound A was topped with series of structures, and that these structures were clustered in different areas.

Of the 23 GPR transects run on the summit of Mound A, two (T-132 and T-133) were run over previous transects (T-114 and T-127, respectively) while the GPR antenna was set to record deeper, low-gain radar-reflecting surfaces. These two transects produced the clearest images of the internal composition of Mound A to date. GPR transect T-132, which overlies east-west transect T-114, produced signal reflections that revealed as many as three separate construction episodes within Mound A (Figure 08-19). The readings originated from depths of up to 3.5m below the surface based on estimates by Welch (2001:271; Welch et al. 2006:235–236) and GPR operator Bean. Data from T-132 indicates the apparent presence of an internal mound, complete with summit and east and west side slopes, approximately half-way across the current summit of Mound A. Another possible mound summit occurs below this one, although the slopes are less well defined. These internal features represent earlier manifestations of Mound A, or alternatively may represent major filling episodes within one or more interior stages, like the two smaller mounds (IIa and IIb) placed on the Stage III summit and later covered over in the creation of the Stage II mound (see Chapter 9). Based on the GPR data, the top of the upper surface or summit was estimated to be approximately 2.6m beneath the current surface of Mound A. Since the summits of the Stage II, III, and IV mounds were located approximately 0.6m, 1.6m, and 4m below the surface of the present summit I in the area examined in 2001–2004, the GPR may alternatively have been picking up major filling episodes within the Stage III mound (see Chapter 9) Some of the upper, horizontal reflections running across much or all of the transect, if this interpretation is correct, may be from the summits of the Stage II and III mounds, which did cover essentially the same area of the present summit in the areas excavated. The eastern portion of T-132 shows that the upper internal feature begins sloping down approximately three to 4m west of the eastern edge of the current summit (see Figure 08-19). Hypothetically, if subsequent mound stages were constructed concentrically over earlier smaller stages, then the GPR reflections, if not from filling episodes in the Stage III mound, may be from earlier, much smaller and deeper mounds.

The deepest apparent surface revealed in the GPR data, at the bottom of Transect T-132, had

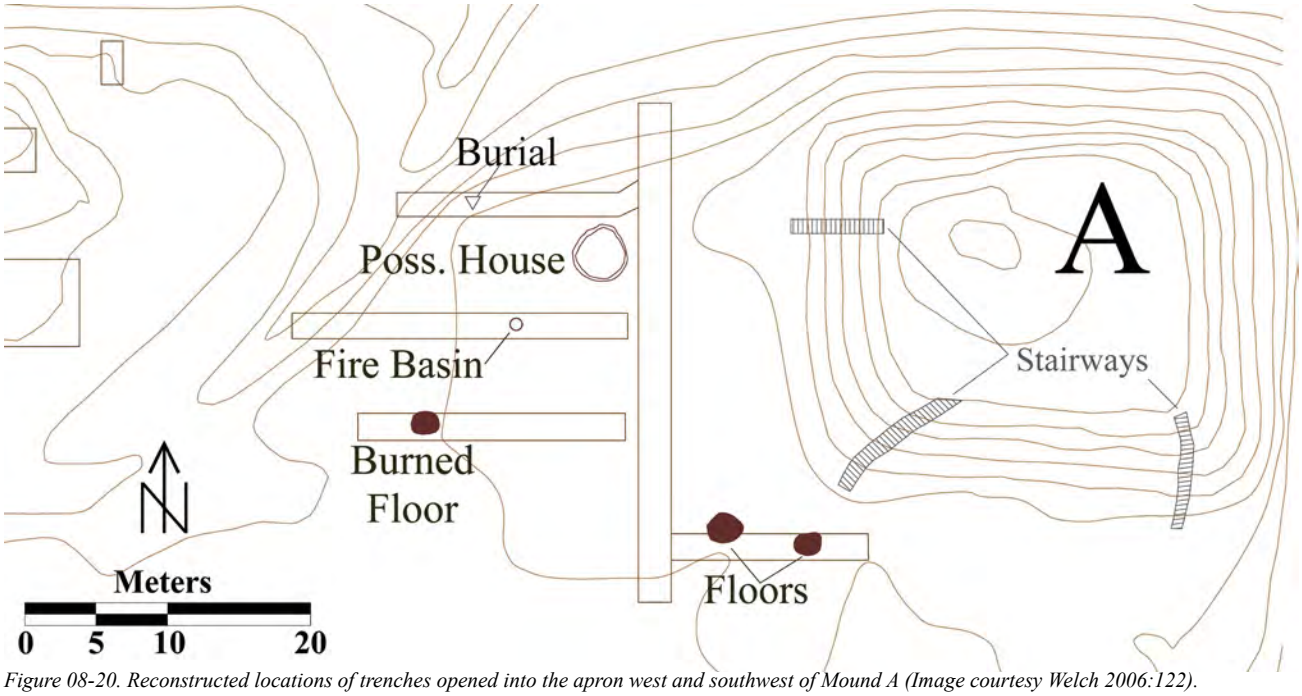


Figure 08-20. Reconstructed locations of trenches opened into the apron west and southwest of Mound A (Image courtesy Welch 2006:122).

roughly the same extent as the surface above it (see Figure 08-19). If a mound, it had much larger summit area than the subsequent possible mound stage constructed over it. Little else can be said about this lower surface without further remote sensing investigations and continued excavation, beyond was conducted from 2001 to 2004. It may be one of the deeper construction episodes—Stage IV or possible V, VI, or VII—that appear to have been horizontal deposits intended to level and build up the area prior to the construction of the Stage III mound upon it (see Chapter 9). Another interesting feature in GPR transect 132 is the possible location of the 1979 SEAC deep test excavation unit placed near the south-center of Mound A. The unit was taken to a depth of almost 7m before it was abandoned, and appears to have cut through several of the surfaces indicated on T-132 (see also Chapter 2; Beditz 1980b, Beditz and



Figure 08-21. Field photograph from SEAC Acc. 1410 showing the relocation of CWA excavation trenches across western apron of Mound A (from Welch 2006:124/Figure 2–6).

Bellamo 1980). Finally, the highly irregular upper portion of this transect may represent disturbances related to the historic use of the mound summit, or natural features, such as tree disturbances.

The other low-gain transect recorded across Mound A, T-133, did not record data about internal features deep within the mound as that were as interesting or varied as the results obtained from T-132. No obvious stages, features, well defined surfaces or structures were visible in the T-133 data. Unfortunately, the low-gain recording method used to produce these deep transects does so at the expense of the finer resolution necessary to see such features.

Until excavation of Mound A commenced in 2001, it was unknown exactly what these GPR transects indicated, although it appeared clear from them that Mound A was composite in construction and possessed a series of internal mounds, stages, and/or filling episodes. Once excavations began the complexity of Mound A's stratigraphy became evident. Instead of the two or three mound stages inferred from the remote sensing data, seven major construction episodes were identified (Chapters 9, 10). The nature of mound features and stratigraphy away from the 2001–2004 excavation area remains unknown, however, although more deep low-gain GPR work directed to documenting deeper deposits might prove useful. Unfortunately 21 of the 23 GPR transects run across the Mound A summit in 1999 were directed to resolving shallower features, and interpretation of them was limited by historic disturbances and extensive tree and root activity. These transects did suggest the presence of near-surface stages, surfaces, and structures was likely along the southern and northeastern portions of the mound, in the impact area.

Mound A Apron

The Mound A apron GPR transect grid consisted of 23 east-west transects (T-88 through T-110) ranging in length from 10m (T-110) to 56m (T-94, T-95, T-96) (see Figure 08-18). The survey area included the western apron of Mound A between the western slope of the mound and the topographic low area that lies between Mounds A and E, as well as the area immediately south of the southern slope of Mound A up to the woodline where another topographic low area occurred. During the 1933–1934 CWA field work, extensive excavations took place on the western and southern portions of the apron around Mound A. Paul Welch (2001:142; 2006:121–131) reconstructed the locations for five excavation trenches which lie within the limits of this GPR transect grid, some of which are clearly visible in a photograph from the period (Figures 08-20 and 08-21). Of these trenches, four were oriented east-west and were joined by the fifth trench oriented north-south. It does not appear that these five trenches represent the entire CWA excavations around Mound A, however. At least two large excavation blocks were also dug southwest of Mound A. Virtually no field documentation exists for these excavations, consequently Welch (2006:124–126) was not able to adequately reconstruct their former locations.



Figure 08-22. A ca. five foot wide trench (lighter fill) discovered during the 1999 SEAC testing program in the apron west of Mound A.

The excavation trenches opened to the west and southwest of Mound A in 1933–1934 documented the presence of prepared deposits up to 2m deep. Designated an apron for Mound A, these deposits were shown to be composed of separate filling and capping episodes, and produced evidence for the presence of multiple structures around the base of Mound A. One such structure was referred to by Roberts in his field notes as a 'temple' measuring almost 4m wide and about 19m long (Welch 2006:116–121). Here the word 'temple' should not be taken literally, although it was a structure unlike any of the others encountered by Roberts' team. Unfortunately Roberts' discovery of the apron around Mound A was only recorded in his field notes and never published, and its existence and depth were only determined by Welch (2001, 2006) in his examination of Roberts' field notes. Welch noted that its presence might have been inferred following the 1979 test excavation in the summit of Mound A (SEAC Acc. 355), when the 1x1m unit opened deep into the mound, Unit 2, encountered 1.8m of cultural material beneath the apparent ground level surface then present on the south and west sides of the mound (see Chapter 2, Beditz and Bellomo 1980; Welch 2006:29). The absence of an apron on the north side of the mound is the reason the mound appears much higher on that side.

Analysis of the 1999 GPR transect data does not yield any particularly cohesive information about the locations of former excavation units in the Mound A apron, or the possibility of extant *in situ* deposits. There appears to be extensive disturbance across the majority of the survey area immediately abutting Mound A. This may be related to the CWA excavation in the area, although it is also likely that some of the high amplitude reflections are from the construction of the apron surfaces adjacent to the mound. Such intentionally deposited fills, prepared surfaces, and structure floors could produce reflected signals such as those seen in the GPR data, where little visible discrimination is evident. This suggests that either the apron deposits are generally homogenous in composition and/or deposition, or that the intensity of the reflected signals from the apron fill overshadows any possible lower amplitude reflected signals from additional features (such as historic trenches or prehistoric structure floors) which may be located in or on the Mound A apron fill.

Examination of the film footage recorded during Roberts' 1933–1934 CWA fieldwork shows that in the area southwest of Mound A large unrecorded and undocumented excavation units were dug and backfilled (see Welch 2006:116–121). It appears that these backfilling activities reduced the visibility of potential archeological deposits by the GPR. The film footage also indicates backdirt was placed around nearly every tree south and west of Mound A during the 1933–1934 excavations. Thus, many of the reflected near-surface anomalies seen in the Mound A apron GPR data could be reflected signatures these backdirt piles. Limited test excavations into the western apron of Mound A following this GPR survey in 1999, however, did expose horizontal features in three areas that are almost certainly CWA trench profiles (Figure 08-22) (Welch et al. 2006:239–247). Very little evidence of these trenches is visible in the GPR output, and their recognition and discovery during the testing program was due to the skill of the GPR operator Bean, who marked possible trench margins in the field. Nearly all of the 1999 SEAC units placed over Bean's ground-marked trench lines, in fact, yielded positive results. While Bean was successful in his field assessment of the data, these same features were often barely strong



Figure 08-23. Noggin Plus 250 MHz ground penetrating radar antenna, cart and data-logger.

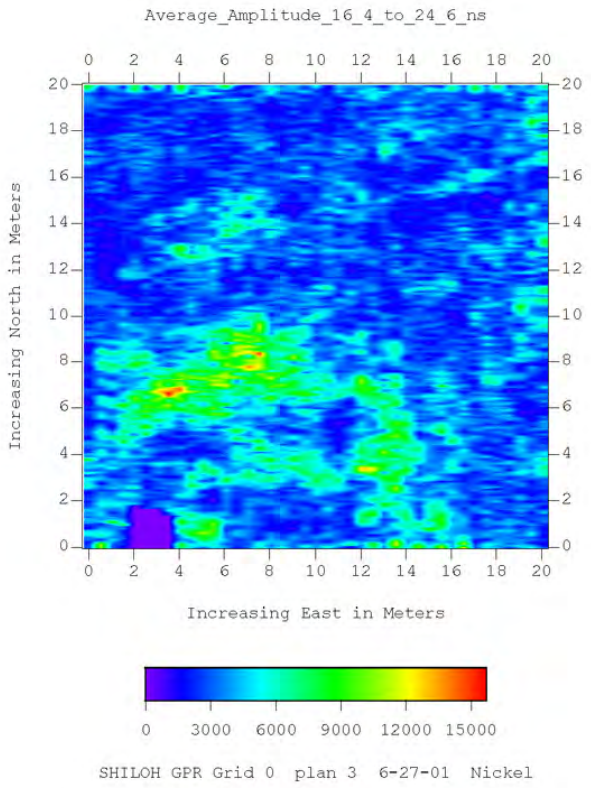


Figure 08-24. An example of interpolated plan-view GPR data from a 20x20m grid (40 combined transects), produced by Nickel during 2001 GPR survey at Shiloh, showing the area encompassing the north half and immediately adjacent portions of Mound B.

enough to be recorded by the instrument and often these weak signal reflections were further distorted by the disturbed nature of the survey area. Thus, anomalies known to be in this area, namely Roberts' trenches, were not easily detectable in the 1999 GPR data. When analyzing the Shiloh GPR data to reconstruct possible CWA trench locations, Welch (2001:262; 2006:233–235) noted that so-called 'false negatives' and 'false positives' were especially common west of Mound A. In short, though the apron of Mound A appears to display many large, anomalous GPR readings, the sources of these reflected signals cannot be confirmed without further remote sensing and/or invasive investigation (i.e., test excavations) in the area.

2001 GPR Survey (Nickel)

A follow-up GPR survey took place west and south of Shiloh Mound A during the 2001 field season, under the direction of Robert Nickel (2001a). In addition to re-documenting many inconclusive results from the 1999 survey, this survey also focused on those portions of the plaza between Mounds A and B that had not been intensively investigated during the earlier GPR work. The purpose of the 2001 survey was to provide a clearer view of possible archeological features present between Mounds A and B, and in the western apron of Mound A. Unlike the 1999 GPR survey, the results of the 2001 work were not "ground-truthed" following the survey, but instead, are here compared with the results obtained from other remote sensing procedures employed at the site in 2001, and with the earlier 1999 results.

Methodology

Using a Noggin Plus 250-megahertz GPR system (Figure 08-23), Robert Nickel surveyed eleven 20m^2 grids west and south of Shiloh Mound A. Unlike Bean's GPR, this unit was cart-mounted and had an on-board odometer to streamline the data collection. The Noggin Plus was set to record 128 sequential measurements during a 50 nanosecond (ns) recording interval. These readings were collected every 5cm along the 20m transects spaced one 0.5m apart within the 20x20m grids. This produced approximately 2 million raw data values which were then averaged (or stacked) in order to preserve image resolution. The process of data stacking expanded the total data collection from two million to eight million pieces of data. This data was first interpreted in the field by the operator, and then synthesized in a report produced for SEAC (Nickel 2001). Approximately 5,000m^2 of the Shiloh Mound Complex was examined by GPR during this survey, including smaller secondary grids on the tops of Mounds G and A.

In addition to the 11 20x20m grid units, Nickel also conducted smaller GPR surveys of the tops of Mounds A and G. The purpose of these grids was to supplement the data from the 1999 GPR survey with more detailed coverage of the summits of these mounds. Also by re-surveying the tops of these mounds, comparisons could be made between the methodologies of the two GPR operators and

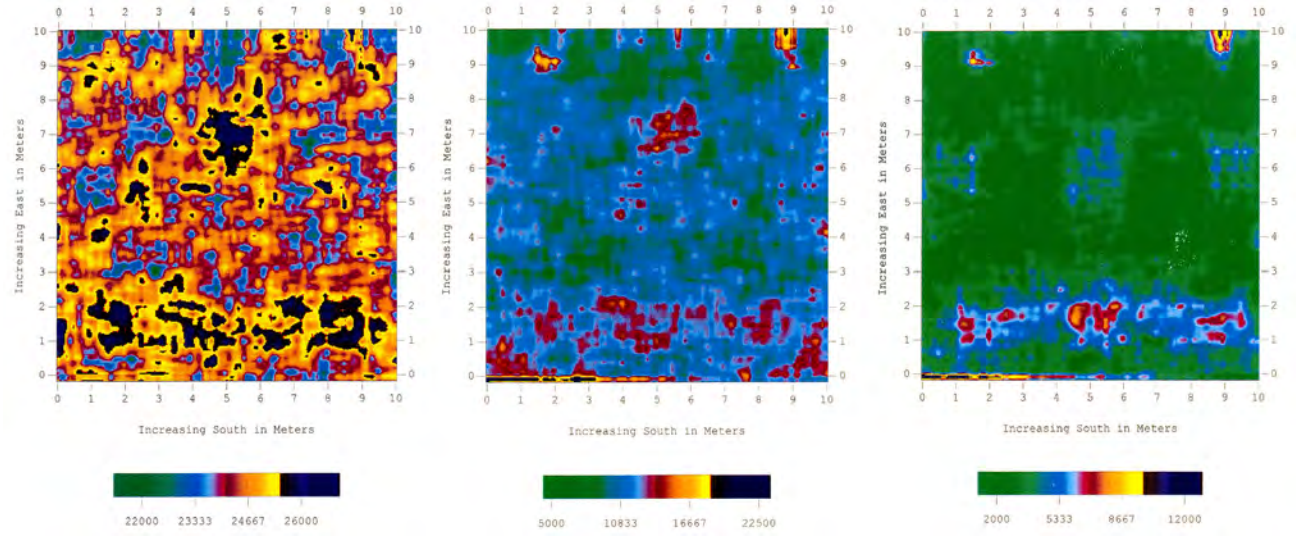


Figure 08-25. GPR plan-view maps of data collected during the 2001 GPR (Nickel) survey of the Mound G summit. Note the large feature at the bottom of each plot. This feature likely represents the burial trench for casualties from the 28th Illinois Infantry (later exhumed). Each plot represents a deeper time-slice, (L to R) 0.0–10.3 ns time-slice (~0 to 0.5 meters below surface), 10.3–20.5 ns time-slice (~0.5 to 1.0 meters below surface), and 20.5–30.8 ns time-slice (~1.0 to 1.5 meters below surface). North is at the left of each plot.

the quality of their data-recovery techniques. In nearly all cases, the data recovered by the 2001 GPR survey, which was integrated and presented horizontally instead of in single vertical transects, was easier to interpret and provided a more detailed view of the anomalies and disturbances recorded in the ground without the need for additional excavation. Nickel (2001a) interpreted his data and produced a report for SEAC on his conclusions following the 2001 GPR survey that included a series of interpolated imagery of the GPR data which, unlike the 1999 data, is displayed horizontally in space. That is, Nickel's GPR data was rendered into plan data views that displayed patterned disturbances and signal reflections as they would appear if plotted onto a map of the survey grid. This made the study of multiple vertical transect-profiles unnecessary (Figure 08-24).

The interpolated plan-view data was filtered and re-combined into separate time slices representing anomalous reflections recorded from specific depth ranges below the ground surface. These time slices of recorded data were then interpolated, amplified, smoothed, and filtered to reveal and clarify presumed archeological features in the survey area. The data from each plan-view time-slice within each survey grid was then linked to the data from adjoining survey grids. This produced composite mosaic maps of the entire 2001 GPR survey area. These composite maps each represented separate time-slices, or approximate depth below surface maps based on length of signal reflection. It was from these composite maps (particularly the 8.2–16.4ns, and 16.4–24.6ns time-slices) that many of the conclusions presented here have been drawn. Nickel's (2001a) report summarized his findings, and his original GPR profiles and interpolated plan-view maps of each survey grid were curated at SEAC.

Mound G

The 2001 GPR survey of Mound G consisted of a 10x10m survey grid placed across the summit. Due to the relatively small survey area, the GPR was operated east-west and north-south. The data was then combined. This multidirectional data-collection methodology produced much finer resolution then data produced from unidirectional GPR passes. It was hoped that the re-survey of Mound G would provide more precise information on the location of the burial trench excavated into the summit of the mound to inter members of the 28th Illinois Infantry who had been killed during the Battle of Shiloh, April 6 and 7, 1862.

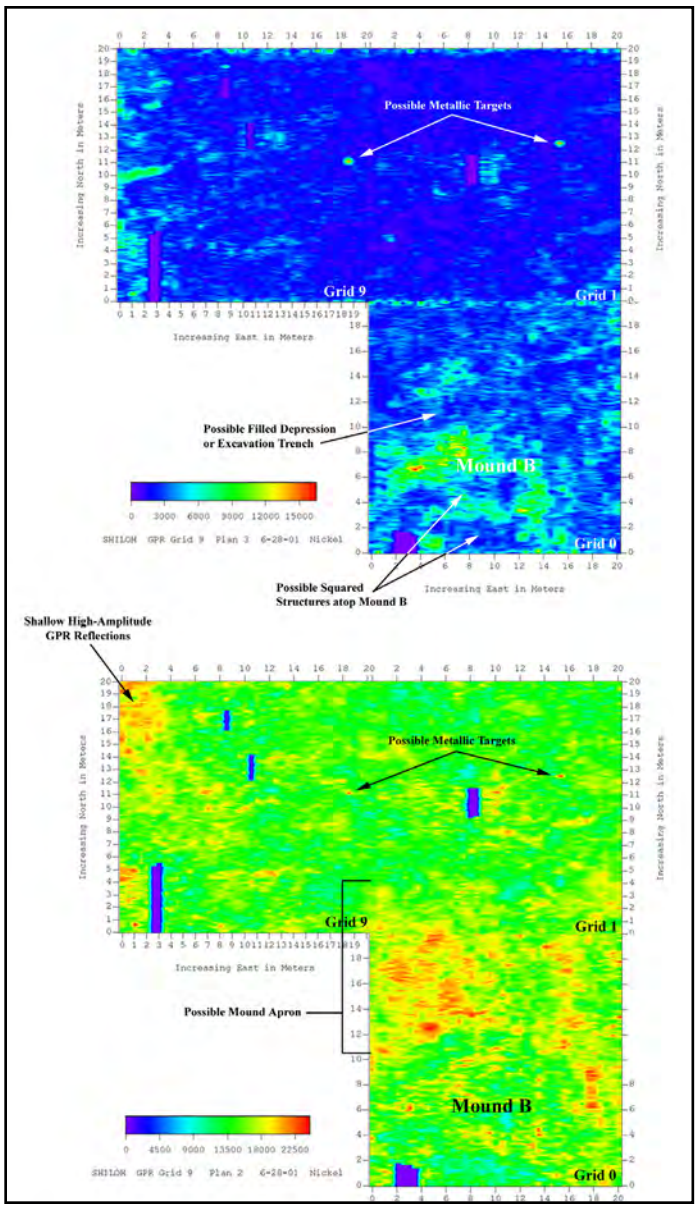


Figure 08-26. GPR plan-view maps of data collected during the 2001 GPR (Nickel) survey of the summit and northern apron area of Mound B, in Grid Units 0, 1, and 9. (top) Lower (~16 to 24ns) time-slices. (bottom) Upper (~8 to 16ns) time slices.

Examining the GPR data collected atop Mound G (Figure 08-25), it is apparent that there are two possible areas of disturbance. Both of these disturbances appear to match similar anomalous readings recorded by Bean during the 1999 GPR survey of Mound G. The larger of these two anomalies measures 2 to 3m wide by 9 to 10m long and is oriented north-south on the western side of Mound G. This feature likely represents the aforementioned burial trench. The fact that this feature appears as a strong high amplitude band across the western side of all three time-slices indicates that this disturbance extends deeply into Mound G. While it is unknown whether the burials were interred as single inhumations, in all likelihood the removal of the burials would have involved a large block excavation. This would have produced the large trench signature present in the data. During his analysis of the Mound G results, Nickel noted that it is possible that some material associated with the burials may not have been removed at the time of exhumation (Nickel 2001a:11–12); Bean made a similar comment during his examination of the summit. In particular, Nickel noted the presence of a non-linear anomalous reflection which he interpreted to be fragmentary metal. Aside from this single metallic signature, he noted that there was nothing else in the GPR data that would indicate either skeletal or other foreign materials were in the burial trench. A second smaller disturbance near the east-central part of the mound may be a second historic period disturbance, given its appearance on multiple time slices, or alternatively it may be a prehistoric feature, or possibly a tree throw.

Mound B, North Apron (Grids 1, 9, and 0)

The northern slope and apron of Shiloh Mound B, comprising 20x20m Grid Units 0, 1, and 9 of the 2001 remote sensing survey, were surveyed on 0.5m intervals (Figures 08-26 and 08-27). This produced forty transects per grid or 120 transects in total. Given that only eleven transects were recorded from the same area during the 1999 GPR survey, the 2001 data is far more extensive and comprehensive. Three possibly significant disturbances were identified during the GPR survey of Grid 0. The primary feature in Grid 0 is the northern slope of Mound B. In the GPR data, the mound's slope appears as a series of concentric low and high amplitude reflected signals on the southern half of the transect grid. The juxtaposition of these high and low amplitude reflected signals along the mound slope may indicate a complex construction history, like the multiple

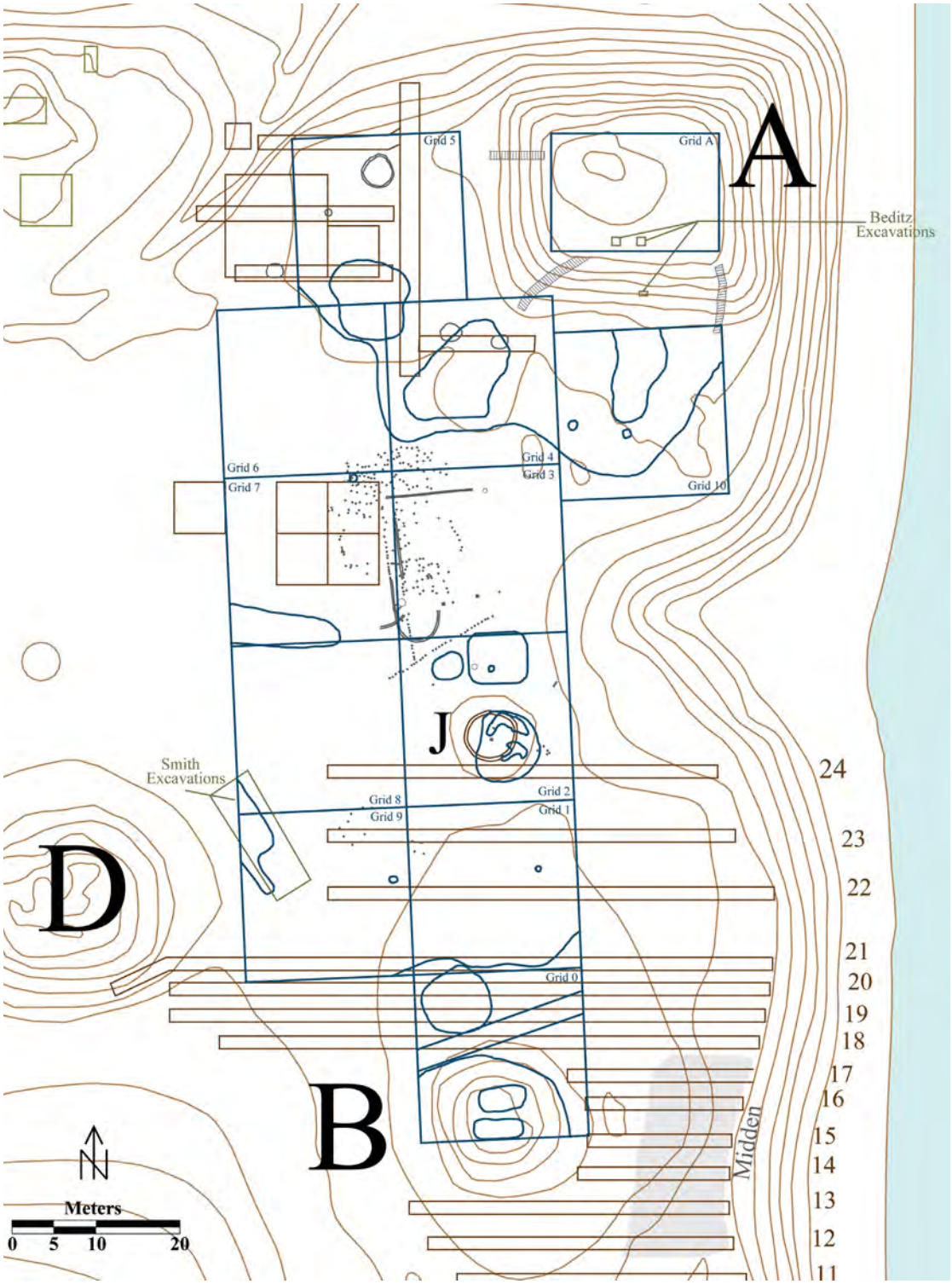


Figure 08-27. Overlay of 2001 GPR (Nickel) survey area between Mounds A and B over Welch's reconstructed locations of 1933–34 CWA excavation units, trenches, and features.

internal stages/construction episodes observed during the excavation of Mounds A, E, and F in 1933–1934 and 2001–2004. The second unique feature observed in the Grid 0 data is the possible identification of one or more squared structures at the northern edge of the Mound B summit. These anomalies appear as two low amplitude rectangular disturbances in the otherwise high amplitude mound slope and summit signature of Mound B in the 16–24ns time-slice (see Figure 08-26 top). Due to their shape, proximity, and location, Nickel interpreted these reflected anomalies as a pair of structures. A review of the 2001–2004 Mound A excavations revealed the presence of multiple structures atop the Stage III mound, that occupied almost all of the available summit area, at least in the area excavated. Therefore, it is highly probable that structures, and perhaps multiple structures, could have been present atop the summits of the other primary mounds at Shiloh. The third significant disturbance recorded by the GPR from Grid 0 is a series of focused, high amplitude reflected signals observed north of Mound B and extending north into Grids 9 and 1. These reflected signals were thought to be caused by a redeposition of reflective soils such as hard clays. This suggests either of two possible origins for the anomaly, that it is (1) a prepared apron north of Mound B, or (2) a disturbance associated with the CWA excavation trenches in the plaza. The data from the 1999 GPR survey showed similar high amplitude reflections in the area immediately north of Mound B, which at the time were interpreted as possible surfaces related to either a prepared apron or a house mound north of Mound B. No other conclusive evidence was visible in the GPR data to suggest any possible 1933–1934 CWA excavation trenches in Grid 0. Nickel does, however, note that a weak low amplitude linear disturbance appears to cross southwest to northeast across the grid. Although the non-cardinal orientation of this anomaly almost certainly precludes its identification as a possible CWA excavation trench, it may represent a topographic low that was filled when the northern apron of Mound B was constructed.

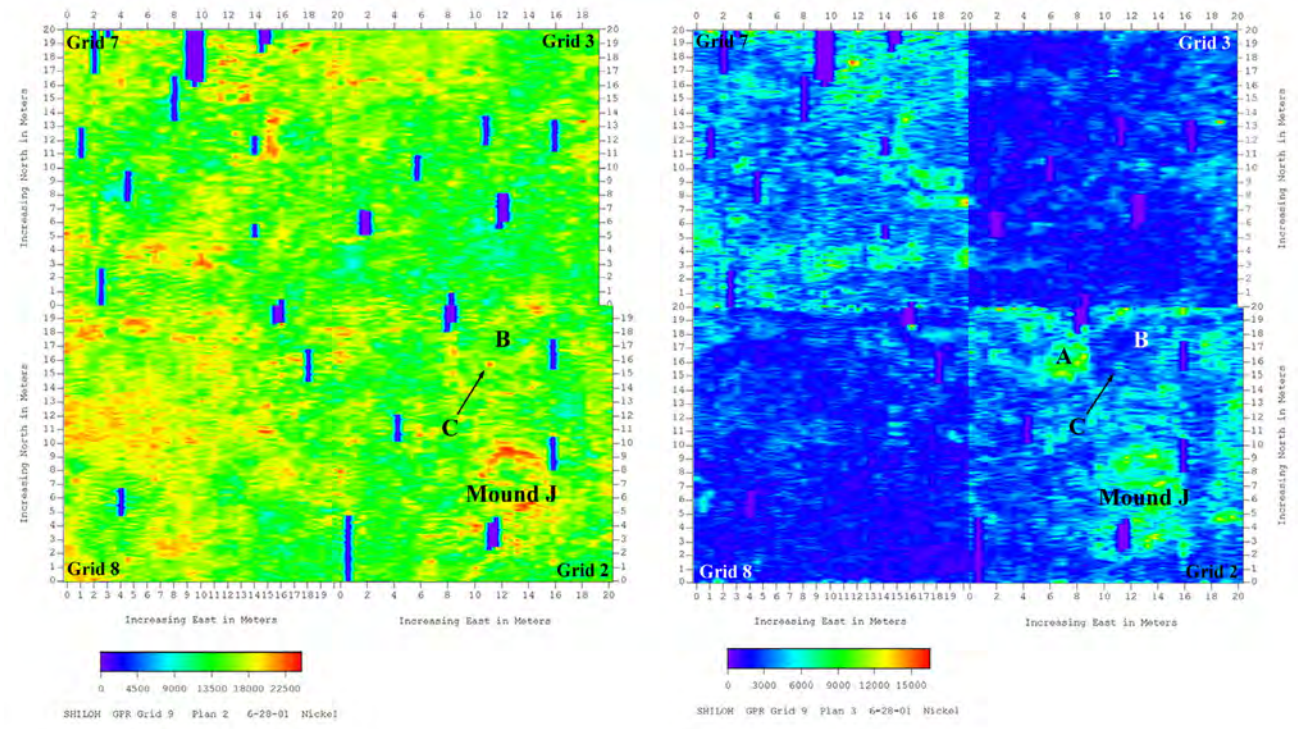


Figure 08-28. GPR plan-view maps of data collected during the 2001 GPR (Nickel) survey of the plaza between the Mound A and Mound B aprons in Grid Units 2, 3, 7, and 8. (left) Upper (~8 to 16ns) time slices. (right) Lower (~16 to 24ns) time-slices.

GPR Grids 1 and 9 were also generally devoid of any large disturbances that could be attributed to Roberts' excavations. This lack of visibility in the remote sensing data is likely related to the extensive disturbance that occurred in this area during earlier excavations. There are two exceptions, however. In the northwest corner of Grid 9, a series of shallow high amplitude reflections are present (see Figure 08-26, bottom and Figure 08-27). Though not attributable to one of Roberts' trenches, these disturbances roughly correspond to the location of one of Smith's excavation trenches (Smith 1977; Welch 2006:23–28). The fact that this disturbance does not appear on the lower time-slice of the GPR data supports the identification of this anomaly as the shallow (less than 50cm deep) Smith trench. Another anomaly present in Grid 9 is a small high amplitude disturbance located just south of the inferred Smith trench on the western margin of the transect grid. This disturbance, unlike Smith's trench, appears on both the upper and lower time-slices of the GPR data, suggesting it has some depth. This anomaly may therefore represent one of Roberts' trenches east of Mound D, possibly No. 22 or 23 (Welch 2006:109).

Between Mounds A and B (Grids 2, 3, 7, and 8)

Grids 2, 3, 7, and 8 encompass the area between Mounds A and B in what is assumed to have been the eastern part of the plaza, or at its margin (see Figures 08-27 and 08-28). The two southern grids, Grids 8 and 2, were partially examined during the 1999 Mound B apron transect survey (see Figure 08-15). The remaining half of this area, Grids 7 and 2, lie in between the 1999 Mound A and Mound B apron GPR transect grids and had not been surveyed prior to 2001. Like the other 20x20m grid units examined in 2001 by Nickel, the GPR was run across transects spaced 0.5m apart and the data was presented in plan-view plots for ease of interpretation. The primary feature in this survey area is the house mound Roberts noted as Mound J, located in the southern half of grid Unit 2. This structure was excavated during the CWA field season, exposing the prepared clay surfaces making up the floor of the structure (Welch 2001:167–169; 2006:141–142). Following the New Deal era excavations, the mound was backfilled and re-contoured.

Grid 2 is located in the southeast corner of the survey area in between the 2001 Mound A and Mound B apron survey areas (see Figure 08-27). Grid 2 is bounded by Grid 8 on the west side and Grid 3 on the north side. The upper (~8 to 16ns) and lower (~16 to 24ns) time-slices of Nickel's GPR data (see Figure 08-28 left and right, respectively) reveal at least two large prehistoric features, and three possible archeological trenches. The first possible feature is Mound J. Though excavated, this house mound still appears in the GPR data as a series of moderate amplitude reflections circumscribed by a concentric series of high amplitude reflected signals (see Figure 08-28). The second possible prehistoric feature is a high amplitude anomaly northwest of Mound J, labeled 'A' in the output. Like Mound J, this feature appears as a circular disturbance of moderate amplitude reflections which is, in turn, surrounded by a concentric high amplitude anomaly (see Figure 08-28). This disturbance is only present on the lower time-slice of the GPR data indicating that it is not of recent origin. This localized anomaly, like Mound J, may be a possible prepared surface or structure floor. There is no evidence that this possible house mound was excavated by Roberts.

Two possible CWA excavation trenches are indicated in Grid 2, one just to the north of Mound J and another just to the south. Both disturbances are very faint low amplitude linear anomalies. According to Welch's (2006:109; see Figure 08-17) reconstructed map of the CWA excavations, the southern trench may represent Roberts' Trench 24, though no trenches are known to have been excavated in the vicinity of the disturbance north of Mound J. The apparent southwest to northeast orientation of the two trenches leaves some doubt as to their identification as Roberts' trenches, since they were reported to have been excavated east-west. While it appears from Roberts' scant field documentation that Mound J and the east-west trenches were the only intensively excavated features in the survey area, Roberts' field photographs, and Welch's research, indicate that less formalized excavation of series

of postholes associated with structures on the plaza took place. Welch states that whenever such a wall trench or line or arc of postholes was encountered in an excavation trench, Roberts had the excavators follow it (Welch 2001:137; 2006). Such a practice would make it virtually impossible to reconstruct reliable locations or dimensions for these excavation units. One such trench is visible from the GPR data however. In the northwest corner of Grid 2, a southwest-northeast low amplitude reflection is visible which precisely matches a long line of postholes shown on Figure 08-27. This anomaly is visible (though faintly) on both the upper and lower time-slices of the GPR data. The excavation appears to intrude into the possible house mound northwest of Mound J (designated 'A' in Figure 08-28), reducing its GPR visibility. This apparent excavation trench also extends southwest into Grid 8.

As Nickel (2001:12) notes in his report, Grid 8 "lacks sharply defined features but does have a broad zone of moderate amplitude reflectors spread across the center of the grid." This amorphous disturbance is observable over nearly the entire grid, although the western ends of two possible excavation trenches from Grid 2 can be seen on the eastern side of Grid 8, but only in the upper (~8 to 16ns) time-slice of the GPR data (see Figure 08-28, left). Nickel notes that these reflections "give way to a nearly homogenous pattern in the lower time-slice." This can be seen in Figure 08-28. One possible explanation for the lack of disturbance in this transect grid is the lack of any substantial CWA excavations, as indicated by Welch's reconstruction of Roberts' trenches (see Figure 08-27).

North of Grids 8 and 2 are Grids 7 and 3 (respectively). These transect grids cover an area extensively excavated by Roberts during the 1933–1934 field season. According to Welch (2001:137; 2006:116–121) there were no formal excavation trenches dug in this area. Instead, Roberts instructed his excavators to 'follow' exposed postholes and wall trenches to discover possible structures. The excavations that took place do not appear to follow any particular pattern, although a large area appears to have been opened to the level at which featured appeared. It was from this area that Roberts described a possible 'temple' structure present among the various excavated postholes (Welch 2006:116–117). Though the identification of this structure as a religious facility cannot be supported, it is clear from the number of different wall trenches and lines and arcs of postholes that were found that many different structures were once present in this area (see Figure 08-27). The GPR data shows possible evidence for some of these excavations at the intersection of Grids 7 and 3, where several linear and irregular anomalies are present (see Figure 08-28). This area appears to have yielded the highest concentration of features excavated by Roberts, including wall lines from the 'temple' and other smaller structures as well as a line of posts from a possible screening wall that almost exactly straddles the boundary between the two grid units. There are no corresponding high amplitude disturbances in the GPR data, however, to suggest that any of the structures were constructed over prepared surfaces or low mounds. The GPR data shows a well-defined east-west moderate amplitude anomaly crossing the southern portion of Grid 7 which resembles the signature for other CWA excavation trenches observed in the 2001 survey area. Welch found no indication that a 1933–1934 trench was located here, nor is there evidence that Roberts found posthole features in this area.

Mound A, Southern and Western Aprons (Grids 4, 5, 6, and 10)

The remaining GPR transect grids in the primary 2001 remote sensing survey area consists of Grids 4, 5, 6, and 10 (see Figures 08-27 and 08–29). Grids 5, 4, and 10 directly abuts the margin of Mound A on the south, southwest, and western sides, respectively, while Grid 6 adjoins the western margin of Grid 4 on the southwestern portion of the apron. Grid 10 thus comprises the southern apron of Mound A and Grids 5 and 6 the western portion of the apron. Grid 10, unlike the remaining transect grids in this survey area, was surveyed east-west instead of north-south. Also, due to time constraints, Grid 10 was surveyed on 1m intervals instead of the 0.5m intervals which were applied to the other survey areas. The GPR data collected from these

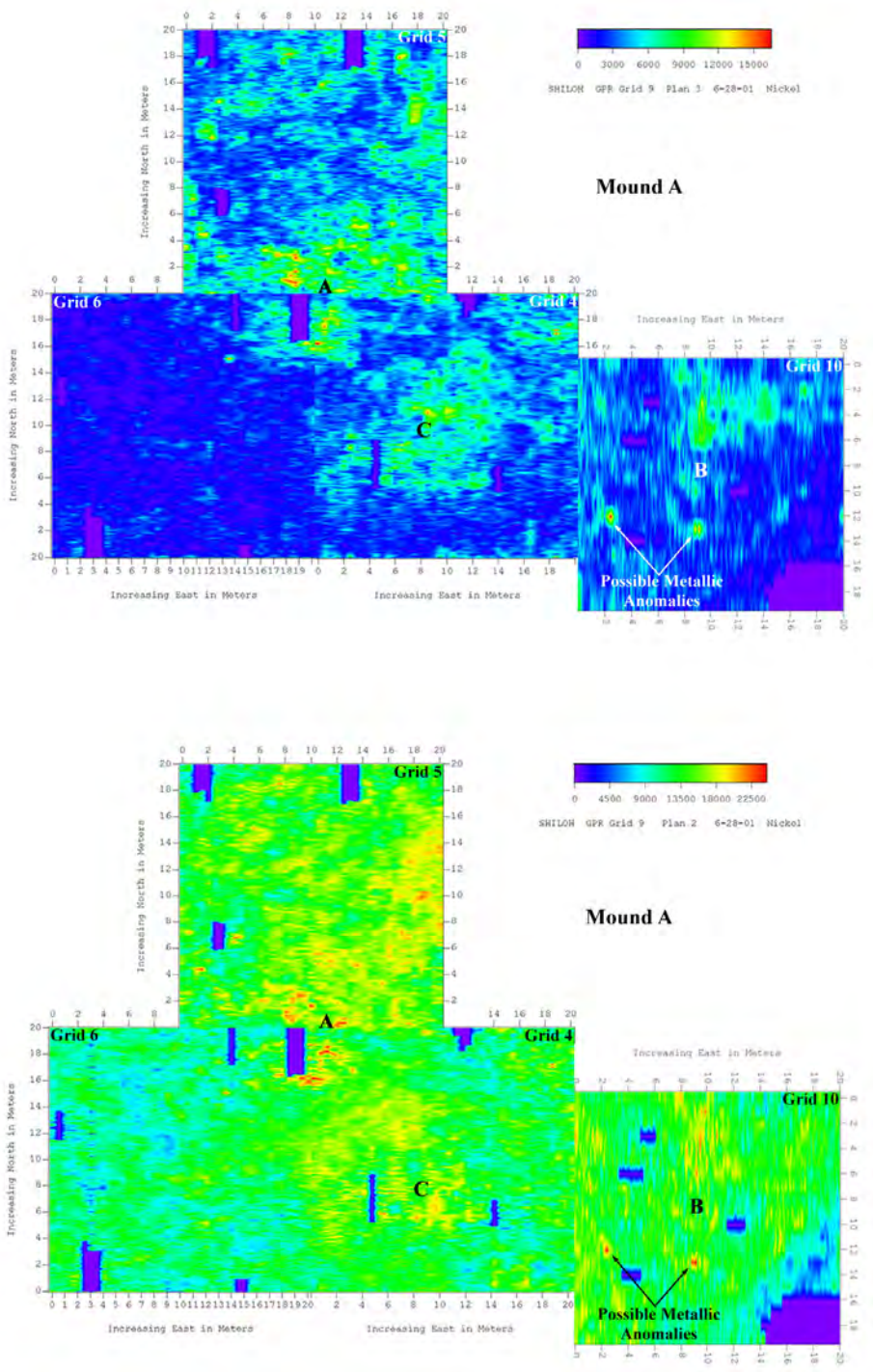


Figure 08-29. GPR plan-view maps of data collected during the 2001 GPR (Nickel) survey of the Mound A apron in Grid Units 4, 5, 6 and 10. (bottom) Upper (~8 to 16ns) time slices. (top) Lower (~16 to 24ns) time-slices.

transect grids support Roberts' finding that Mound A is surrounded by a large prepared apron or skirt. Moderate amplitude reflections, punctuated with areas of higher amplitude anomalies, were encountered over this broad area (Figure 08-29). Unfortunately, no clear evidence was found in the GPR data for any of Roberts' excavations. It is known from CWA field photography, and Welch's research, that Roberts conducted a great deal of excavation in the western and southern aprons of Mound A. Though the GPR investigations in 1999 and 2001 were unable to confidently define these excavation units, the 1999 testing conducted by SEAC archeologists, which was guided by the GPR work, found *in situ* evidence for at least two trenches west of Mound A (Welch et al. 2006:239–243). The lack of evidence for well-defined trenches in the GPR data from the apron is likely tied to the intensity of the CWA excavations around Mound A, the ground disturbance tied to the apron construction itself around Mound A, and the intensity of prehistoric site-use which likely took place in the shadow of Mound A, which was the primary mound at the site, and likely a focus of attention and activity.

The general pattern of the GPR data indicates an arc of moderate amplitude reflections flanking Mound A (see Figure 08-29). This general arc is present across the eastern three quarters of Grid 5, the northern three quarters of Grid 4, the northern half of Grid 10, and the northeast corner of Grid 6. These disturbances are observable on both the upper and lower time-slices of the GPR data indicating that the sources of these anomalies are present throughout the stratigraphy in the apron at the base of Mound A. Another indication of the strength of the deeply reflected GPR data is the fact that the excavation units dug by SEAC archeologists just two years prior to this remote sensing investigation are virtually indistinguishable against the background 'noise' produced by the prepared stages and surfaces which compose the apron deposits. This apron 'noise' likely obscured any older archeological trenches or features as well. There are, however, three areas in this survey area that do display unique indications of possible prehistoric features.

The first such feature is found near the intersection of Grids 4, 5, and 6. Here, a series of high amplitude reflections presents a circular shape which could be interpreted as a small house mound near the base of Mound A, labeled 'A' in the output (see Figure 08-29). Unfortunately, this possible feature is intruded and disturbed by a large tree (represented by square/rectangular violet signals on the GPR data). As such, it is not entirely clear whether the genesis of these disturbances was due to prehistoric human activity, or recent bioturbation. Similarities exist between this anomaly and other suspected house mounds such as Mound J, or the possible house mound between Mound J and Mound B. The reflected GPR signals from these features all consist of moderate amplitude disturbances circumscribed by higher amplitude signal reflections. Also, these features are roughly the same size, falling well within Welch's parameters for house mound size and shape. A "burned clay" area, possibly a fire basin, was reported in this general area during the 1933–1934 excavations (see Figure 08-20; Welch 2006:123–124), which may be a feature associated with the structure hinted at in the GPR data.

The second feature of interest is a series of high amplitude reflected GPR signals located immediately adjacent to the southern slope of Mound A in Grid 10, labeled 'B' in the output (see Figure 08-29). While the signature for this disturbance may at first indicate a house mound, further examination of both the upper and lower time slices of this GPR grid indicate that this feature extends almost three quarters of the way due south across Grid 10. The distal length of this feature is composed of two slightly visible arcs of higher amplitude reflections. This led Nickel and Welch (Nickel 2001a:20) to hypothesize that this rectilinear signature abutting the center of the southern slope of the mound may in fact represent remotely-sensed evidence for the base of a former ramp leading up to the summit of Mound A. Data from Clay's electrical conductivity survey of Grid 10 indicates the possibility of both a house mound and a ramp in this area (see electrical conductivity section below). There were some similar localized disturbances in the 1999

GPR data which would lead to the conclusion that a ramp to the summit of Mound A (now eroded) was present across some portions of Bean's survey area. For Bean however, this area produced only generalized areas of high amplitude reflections not positively indicative of either additional former structural remnants, or a feature such as a ramp. The excavations units opened into the apron south of Mound A from 2001 to 2004 found a number of isolated posts, short post lines, and fired areas all the way down to subsoil, supporting the probable existence of structures in this area throughout the period this area was in use (see Chapter 9),

The third potential archeological feature observed in the Mound A apron 2001 GPR transect grids is another possible house mound located south-southwest of the southwestern corner of the base of Mound A, labeled 'C' in the output (see Figure 08-29). The location of this GPR disturbance coincides with a slight topographic rise which was probably observed and investigated during the 1933–1934 excavations. This likely explains the fact that this feature does not appear as coherent or consistent in signal amplitude as other similar anomalies. Comparison of the location of this anomaly to other CWA excavation units and recovered artifact and feature locations compiled by Welch (2001:39, 142; 2006:122: see Figure 08-20) shows that the area around this possible house mound was extensively excavated, and a square and oval arrangement of posts as well as a number of plotted artifacts came from the general vicinity. It is unclear from Roberts' truncated field records whether a house mound was present and whether it was excavated. From the weakness of the GPR reflections, some form of human activity may have compromised the remote visibility of the feature in the upper time slice (see Figure 08-29, bottom). Prior excavation of the feature is a good explanation for such reduced remote-visibility. A strong piece of evidence supporting such a claim is a localized high amplitude point-anomaly present near the center of the possible house mound. Nickel describes such anomalies as indicators of metallic objects buried in the ground, such as markers placed at the corners of excavation units or used as a temporary site-datum. These are known to have been used by Roberts during the 1933–1934 excavations, and one may have been left here; two other possible magnetic anomalies, possibly from similar markers, are also apparent in the southwestern part of Grid 10, and other possible markers are suggested in the area west of Mound A. While visibility of feature 'C' is reduced on the upper time slice, possibly due to Roberts' excavations, the lower time-slice of Nickel's GPR data reveals a slightly more cohesive feature which more appropriately matches the expected signature from a house mound (see Figure 08-29, top).

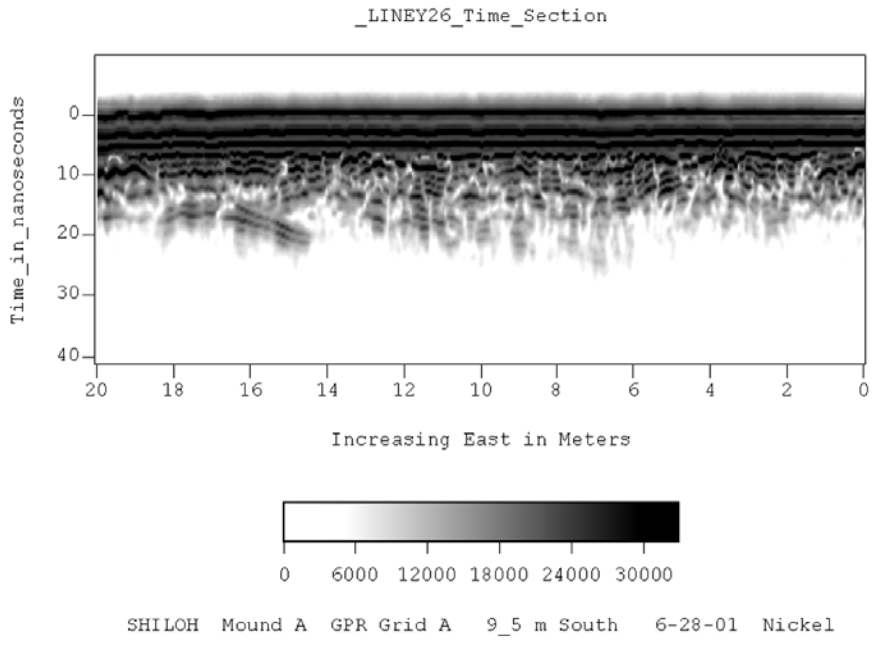


Figure 08-30. Profile view of GPR data recorded during Nickel's 2001 GPR survey of Mound A. Note the presence of internal stages or stacked surfaces similar to those observed in Figure 08-16.

Mound A

The 2001 GPR survey of the summit of Mound A consisted of a 14m north-south by 20m east-west grid that was

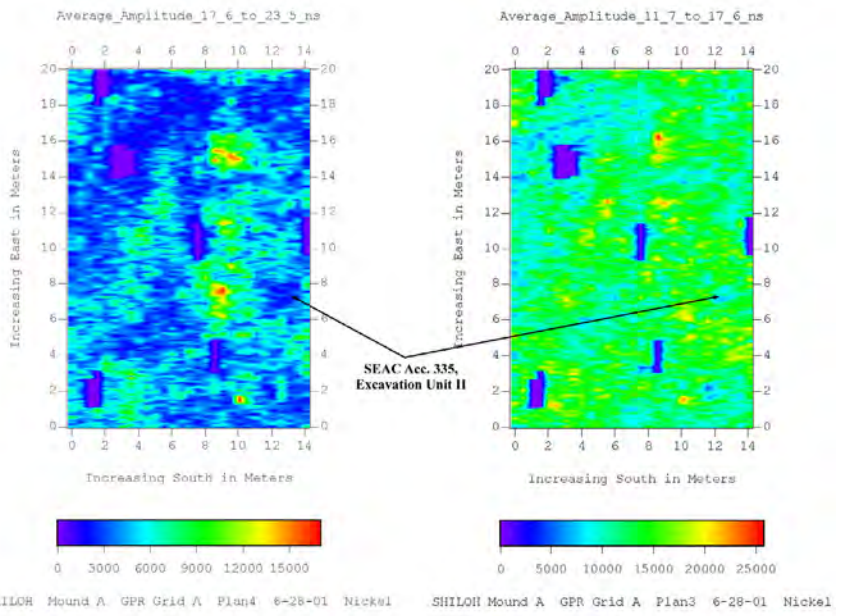


Figure 08-31. GPR plan-view maps of data collected during the 2001 GPR (Nickel) survey of the Mound A summit. (right) Upper (~8 to 16ns) time slices. (left) Lower (~16 to 24ns) time-slices.

surveyed east-west on a 0.5m interval. In his analysis of the Mound A summit GPR data, Nickel (2001a:21) noted that: "Mound A is remarkably noisy (Figure 8-30). The upper time-slice shows some root anomalies near the trees and a scatter of small moderately high amplitude reflectors, some of which appear to result from historic trash (Figure 8-31, right). There is no large scale pattern that would indicate patterned archeological variation in this shallow section. The deeper [time-slice] continues to show considerable variation but a complex of high amplitude anomalies are now visible in the south central portion of the plan (Figure 8-31, left)." The shallow disturbances Nickel noted were no doubt associated with either the early twentieth century (ca. 1914–1929) use of the summit of Mound A as the location of a cottage occupied by the park superintendent, or else with more recent use of the site for Boy Scout campsites (Welch 2001:27; Welch 2006:29). It is not clear if Mound A was also utilized during the Battle of Shiloh, although locale folklore has it that the Confederate cavalry commander Nathan Bedford Forrest rode to the top of the mound to try to spot Union reinforcements arriving at the end of the first day of the battle, and a painting depicting that scene is one display at the Tennessee River Museum in the nearby town of Savannah. A few Civil War period artifacts including ammunition, glass fragments, and a rifle cock were recovered from the mound during the SEAC excavations in 2002 and 2003 (see Chapter 13). The vertical profiles of individual GPR transect data revealed the same series of stacked stages and surfaces encountered during the 1999 David Bean GPR survey of Mound A (Figure 08-30). In plan view, the deeper time-slices of the interpolated GPR data indicate that high amplitude reflectors are present across much of the south central portion of the Mound A. This area of the mound summit correlates to the same area the 1999 GPR data indicated had possible prepared surfaces and/or structure floors. in. Just south of the largest of these high amplitude reflectors is a squared area of low amplitude signal reflection (Figure 08-31, left). This anomaly is the signature of the 1979 SEAC excavation trench dug into Mound A (Beditz 1980b; Beditz and Bellamo 1980). This test unit (the deeper of two originally dug atop Mound A) extended approximately 7m into the mound. Unfortunately, Nickel's Mound A transect grid did not extend as far to the east as Bean's 1999 transect grid did. If it had, more corroboration could have been made between the two data sets. A small area of increased amplitude reflections is visible along the far eastern side (top of print-out) of Nickels GPR data. This is likely the western side of the anomalies that Bean recorded which were later excavated and discovered to be prepared structure floors.

2001 Electrical Resistivity Survey (Jones)

Of the six remote sensing projects conducted at the Shiloh Mound Complex in 1999 and 2001, Geoffrey Jones (2001) of Archaeo-Physics LLC conducted two from July 25 to July 27, 2001: an electrical resistance survey and a magnetic field gradient survey, . These surveys focused on much

the same area that Nickel had examined during the 2001 GPR survey. Like Nickel, Jones produced his own report on the results of these two surveys and submitted the results and the primary data to SEAC. Many of the interpretations and results presented in this section, therefore, are based on Jones' interpretations of the data.

Methodology

Electrical resistance surveys, also known as resistivity studies, use a series of remote electrodes to introduce a small electrical current into the ground (Jones 2001). The ease (or difficulty) that this current encounters while transmitting between the electrodes is measured as electrical resistance. Typically this is measured in ohm meters. As the survey device, in this case a Geoscan Research RM-15 (Figure 08-32), is moved down the transect line, variations in the local electrical resistance are recorded. These observed variations within the data sets are caused by differing soil conditions and composition. A particular soil's resistance to electrical current is governed by the moisture of the soil, the chemical concentration of the soil, the soil's soluble ion content (i.e. salinity), and the physical soil type. For example: moist soils have a lower resistivity to electrical currents than drier soils. The presence of dissolved salts, electrolytes and ions in the soils being surveyed also lower the electrical resistance of the soil. In addition, fine soil types such as clays and silts are typically less resistant to electrical currents than larger grained sands and gravels (Clark 1996).

The electrical resistance survey took place a month after the GPR remote sensing survey, by which time archeological excavation units had been opened and backdirt piles placed across portions of transect grids 4, 5, and 10. Because remote sensing of these areas would not yield productive results, Grids 0, 1, 2, 3, 7, 8, and 9 were examined, together with two additional transect grids added to the western margin of the survey area. These grids, designated 11 and 12, were 20x20m squares located directly adjacent to Grids 7 and 8, respectively (Figure 08-33). This produced a primary electrical resistivity survey area of 3,600m^2, only 400m^2 less that the primary 2001 GPR survey in the area between Mound A and B. The resistance meter was combined with a PA5 twin probe array (0.5m spacing) and operated across the transect grids on a 0.5m grid-interval. This methodology produced four readings per square meter. Due to time and weather constraints, the westernmost two grids (Grids 11 and 12) were surveyed on 1m interval which only produced two readings per square meter.



Figure 08-32. Geoscan Research RM-15 electrical resistivity meter.

Data

Unlike Bean's and Nickel's GPR surveys, Jones' electrical resistance survey did not record observed data in real time and record the results on an interpretive graphical display which represented the movement of a sensor across the landscape. Instead, the data recorded during this survey represents mosaic values of individual soil resistivity measurements taken at each individual point along the transects that comprised each transect grid. Each time the meter was repositioned and electrical current was passed through the ground, a measurement of the degree of resistance was recorded for the immediate vicinity of the electrodes. Jones (2001) reported that the recorded data from the survey was generally very high quality

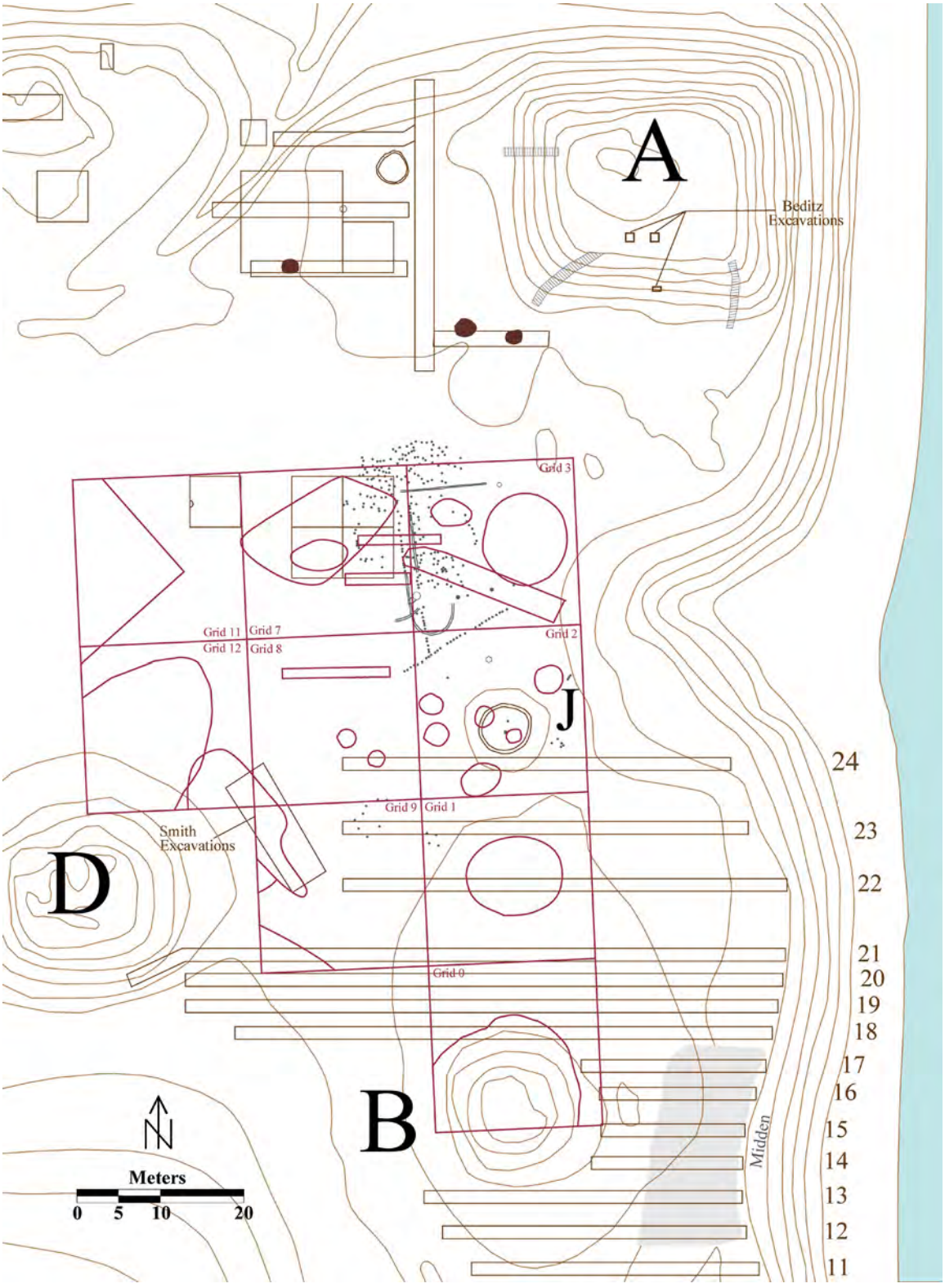


Figure 08-33. Overlay of 2001 electrical resistivity (Jones) survey area over Welch's reconstructed locations of 1933–34 CWA excavation units, trenches, and features.

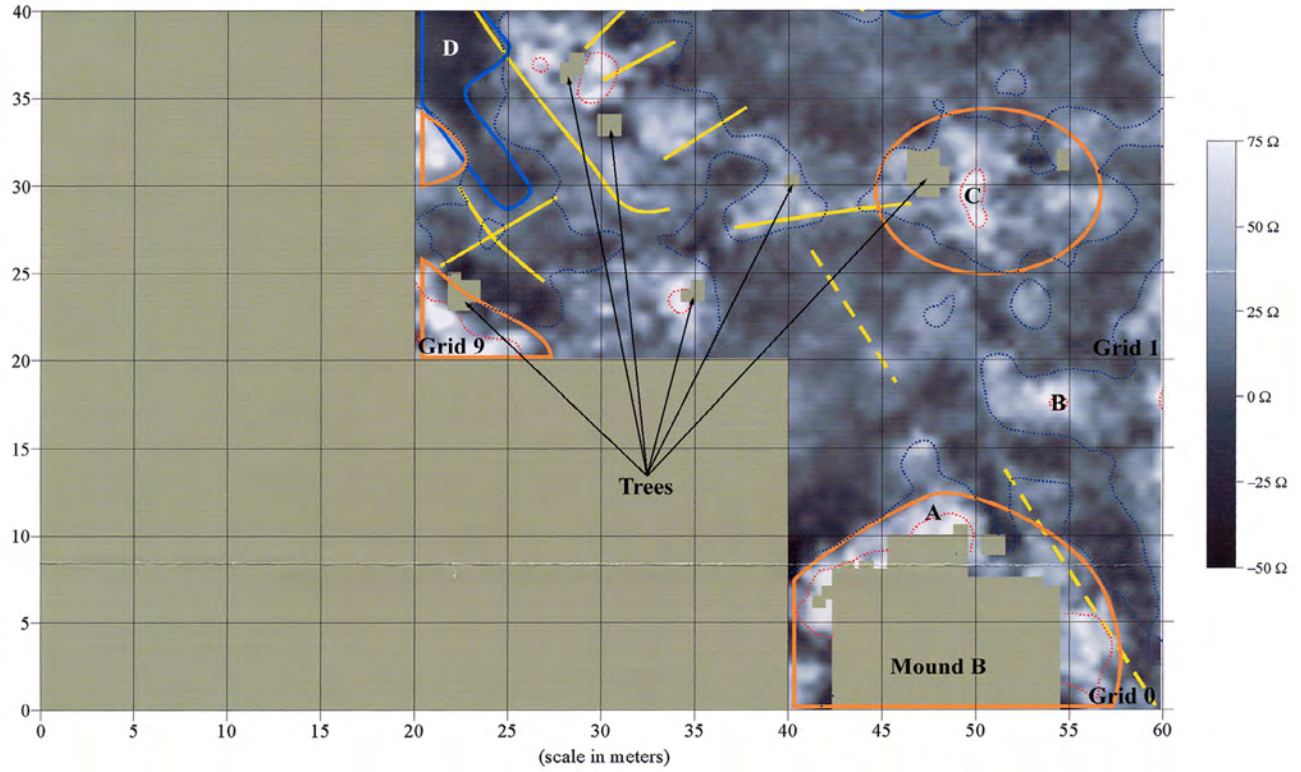


Figure 08-34. Plan-view map of data collected during the 2001 electrical resistivity (Jones) survey of the northern apron area of Mound B.

and required very little cleaning-up. To suppress the large scale geologic variation across the plaza and to further enhance smaller low-contrast anomalies (i.e. possible structure outlines), Jones applied convolutional high-pass filtering to the data sets. Another benefit of this data processing is that it renders the data into a zero-mean plan-view map of the resistance data, which registers the apparent localized value of the recorded resistance as either positive or negative in respect to the local apparent mean (in this case, derived from a 5m radius). This type of map plots the available data as a value either greater than (high resistance to electrical current) or less than (low resistance to electrical current) the localized mean electrical resistance value. Jones (2001:2) noted that, "with this insight, it is convenient to interpret positive data as features with greater-than-average resistance. For example, stone architecture or pits filled with sand or gravel might appear as high-resistance anomalies. In like manner it is convenient to interpret negative data as features with less than average resistance. Pits and trenches containing organically enriched fill, clays and/or high salinity soils might appear as low resistance anomalies."

Mound B, North Apron (Grids 1, 9, and 0)

The results of the electrical resistance survey in Grids 1, 9, and 0 show four clearly recognizable features in the area north of Mound B, labeled A, B, C, and D on the output (Figure 08-34). One of these disturbances, labeled 'D' in the output, appears to be an old archeological trench, while the remaining three are likely prehistoric in origin. The first possible prehistoric feature present in the resistivity data is the northern portion of Mound B itself. The southern half of the data from Grid 0 is composed of high resistance values which are associated with the northern slope of Mound B (see Figure 08-34, labeled 'A'). The northern half of the Grid 0 data and the southern half of the Grid 1 data shows scattered high and low resistance anomalies which may be indicative of possible structure floors north of the base of Mound B. One such anomaly, located in the northeast corner of Grid 0 (see Figure 08-34,

labeled 'B'), corresponds to similar disturbances noted during the 1999 and 2001 GPR surveys. This anomaly is associated with a slight apparent rise in the presumed north apron of Mound B. If this disturbance is not the remains of a prehistoric house mound, then it may be evidence for archeological features on or at the base of the presumed apron.

The third notable anomaly in the resistance data from this survey area is another possible house mound north of Mound B, labeled 'C' in the output (see Figure 08-34). This feature is represented by a series of strong high-resistance measurements north of Mound B, near the center on Grid 1. This anomaly is similar in signal morphology to the previously described feature, except larger by a factor of two. Unlike the previously described anomaly however, this feature has no associated topographic rise and does not appear as a recognizable anomaly in either the 1999 or 2001 GPR data. Two large trees are located near the center of Grid 1 and may be responsible for the high-resistance readings. Jones (2001:7) notes in his report that often the presence of vegetation and trees can produce high-resistance anomalies in electrical resistivity data sets. Other similar disturbances likely caused by tree activity that appear as high-resistance anomalies are located in the north center portion of Grid 9, and in the southeast and southwest corners of Grid 9.

The final significant disturbance in the electrical resistivity data from the three survey grids run near Mound B is a low-resistance anomaly located in the northwest corner of Grid 9 (see Figure 08-34, labeled 'D'). The shape, size, and data signature of this disturbance suggest that it is a filled-in archeological trench. The increased ground moisture present in depressions and topographic lows (including filled-in depressions) produces a soil composition which is less resistant to the flow of electrical current. Based upon the location and orientation of this trench, it is likely one of Smith's 1976 excavation units. The relative young age of this excavation unit compared to Roberts' excavations may explain why it is far more visible in the resistivity data than Roberts' trenches, which could not be resolved. Though Smith's trench is shallower than the CWA trenches, less time has elapsed since its backfilling. Therefore, natural factors such as root activity and animal burrowing have had less time to homogenize the trench backfill and the plaza deposits. According to Welch's (2001:131; Welch 2006:109) reconstruction of the former location of the CWA excavations, however, at least four long east-west trenches crossed these three survey grids, numbers 18 to 21 (see Figure 08-17). Unfortunately little or no evidence for the locations of any of these Depression-era trenches could be determined from the resistance data.

In his preliminary analysis of this data, Jones noted some other possible features of archeological interest that he had observed while processing the data recorded by the resistivity meter. These features, marked in yellow on Figure 08-34, represent what Jones believes to be possible linear features. It is unclear from the remote sensing data whether these signatures indicate the presence of buried structural elements such as rows of postholes or wall trenches. The general lack of strong data suggests that these features may be natural in origin (i.e. buried tree roots or animal burrows). The lack of corresponding low-resistance anomalies such as pits or hearths associated with these linear disturbances further diminishes their probability as structural features. Finally, the lack of any generalized patterning within the data, such as outlines of structures, suggests that these are likely not prehistoric archeological features.

Between Mounds A and B (Grids 2, 3, 7, 8, 11, and 12)

Little evidence for signatures of former excavation units or trenches was found in the electrical resistivity data collected between the aprons of Mound A and Mound B, in Grid Units 2, 3, 7, 8, 11, and 12 (Figure 08-35). The continuation of Smith's 1976 excavation unit can be seen in the southeast corner of Grid 12, represented by a series of low-resistance measurements (see Figure 08-35, labeled 'A'). Jones identified three weak rectangular anomalies in the resistivity data which he believed may be remnant evidence of Roberts' excavation trenches; these are outlined in black near the center of Figure 08-35, with most of these trenches in Grid

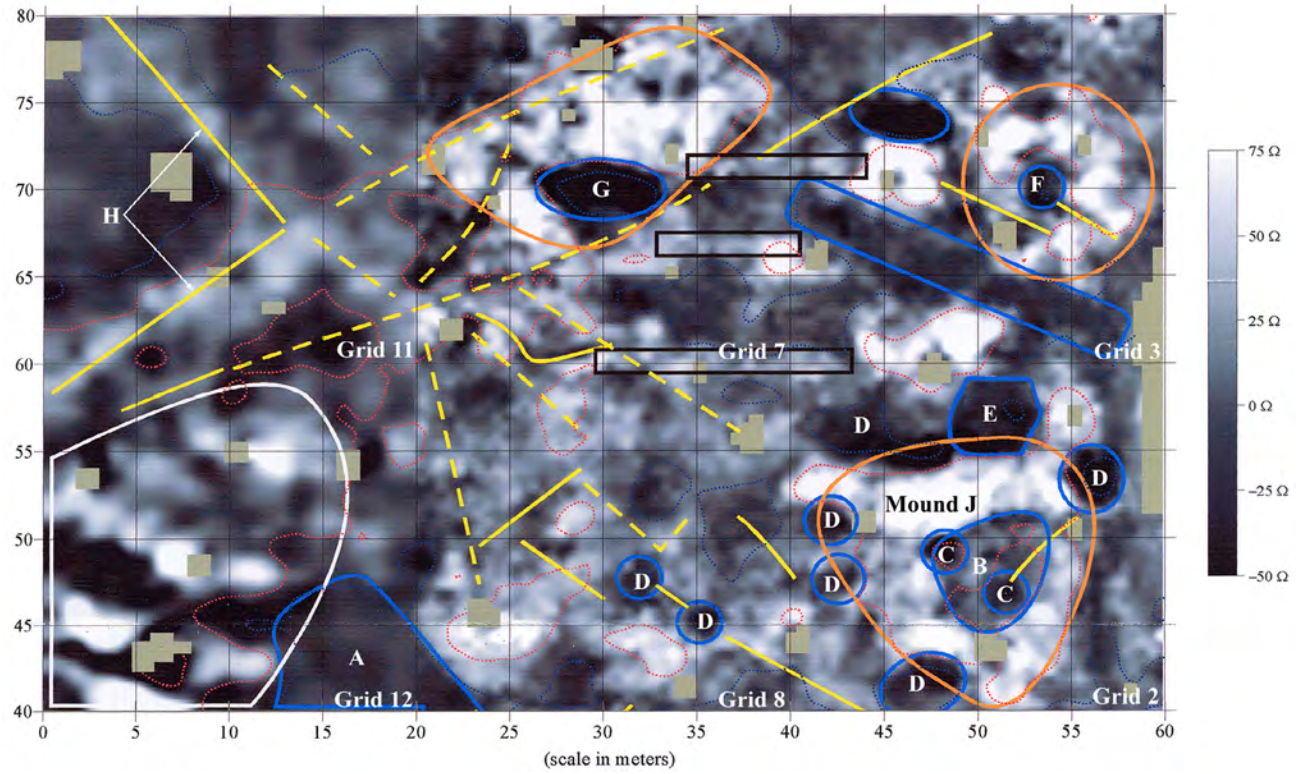


Figure 08-35. Plan-view map of data collected during the 2001 electrical resistivity (Jones) survey of the area between the aprons of Mound A and Mound B in Grid Units 2, 3, 7, 8, 11, and 12.

Unit 7. Based on Welch's reconstructions however, these faint linear signatures do not correspond with any of Roberts' numbered excavation trenches, though they do roughly correlate to areas of the mound plaza where lines of postholes were 'followed' by Roberts' workmen (see Figure 08-33). Without further excavation however, the true identification of these anomalies cannot be determined or confirmed. Jones was unable to identify any other possible evidence of previous archeology in this survey area.

While the resistivity survey did not produce additional evidence of former excavations between the aprons of Mound A and Mound B, there was ample evidence of possible prehistoric features. The most prominent feature in this survey area is Mound J, a house mound located near the center of Grid 2 known to have been extensively excavated by Roberts. Despite the previous investigation of this small mound, the resistivity meter recorded a ring of high-resistance readings, similar to those encountered along the northern slope of Mound B. Circumscribed by these high-resistance readings was a circular low-resistance anomaly, labeled 'B' in the output (see Figure 08-35). Low-resistance anomalies of this sort can be caused by small grained, iron-rich soils such as the clays used at Shiloh for the construction of structure floors and other prepared clay surfaces. Welch (2001:167–169; 2006:141–142) noted that Roberts' field notes and CWA field photography indicate that the excavation of Mound J exposed a prepared structure floor at the center of the mound. It does not appear from the field records that Mound J was excavated further after the complete exposure of this clay surface. The resistivity data appears to support this hypothesis. The resistivity data from Grids 2 and 8 also revealed several small, localized, low-resistance anomalies in and around Mound J. Two of these disturbances appear as very low-resistance spots within the possible structure floor at the center of the Mound J summit (see

Figure 08-35, labeled 'C'). These anomalies likely represent either metallic debris associated with the excavation of Mound J, or aboriginal prehistoric features (i.e. fire hearths, pits) directly associated with the structure which formerly sat atop Mound J. Seven other small, localized, disturbances (see Figure 08-35, labeled 'D') were observed in the resistivity data around the base of the house mound. These may also represent prehistoric features, although the lack of corresponding prepared floor surfaces associated with them may indicate less formalized structure-types such as hide or wood structures and/or tents. One of the high-resistance disturbances located to the north of Mound J (see Figure 08-35, labeled 'E') corresponds to anomalies identified as a possible plaza or structure floor based on data collected during Nickel's 2001 GPR survey of Grid 2 (see Figure 08-28, labeled 'B').

The next anomaly of archeological significance is located in the east-central portion of Grid 3. This anomaly, labeled 'F' on the output (see Figure 08-35) is located approximately 20m north of Mound J in the northeastern corner of Grid 3. Like Mound J, this anomaly is a low-resistance circular feature, surrounded by a ring of higher-resistance soils, similar to that noted for house mound J. There is no reference to a possible house mound at this location in Welch's (2006:116–121) reconstruction of the CWA field work, although excavations did occur in this area, given that a deep pit and a reconstructed bowl were reportedly found in this approximate location (see Figures 08-17, 8-33). This resistivity signature may be from these 1933–1934 excavations, from the pit feature, or may indicate a heretofore unrecognized house mound. There are few high-resistance anomalies surrounding this possible house mound, however, compared to the number found around Mound J. Also, this new house mound does not appear on Nickel's GPR data. Since the formational processes of house mound deposits are usually associated with the continued occupation and utilization of a location and the repeated reconstruction of sequential structures over time, either the new house mound was either less intensively utilized than the one making up Mound J, or was used for a shorter interval.

A similar anomaly appears in Grid 7, labeled 'G' on the output (see Figure 08-35). The resistivity signature for this disturbance is an oblong low-resistance area which is only partially circumscribed by high-resistance readings. These resistivity readings, furthermore, are less consolidated than those observed around Mound J. According to Welch (2001:131; 2006:116–118), this portion of Grid 7 was extensively excavated during the 1933–1934 fieldwork. Figure 08-33 shows the locations of Roberts' trenches and blocks, and excavated lines of postholes. A large block unit appears to have been opened in this area, and numerous posts lines and the so-called 'temple' structure were found immediately to the east. There is no indication that Roberts' workmen encountered a house mound during the excavation around the location of this anomaly. Though Roberts' field notes are not complete or comprehensive, all of the house mounds he encountered are likely accounted for. It is thus probable that the majority of this resistivity signature is likely related to Roberts' field operations and not to a prehistoric house mound.

Because the remaining two transect grids, Grids 11 and 12, were only surveyed on 1m intervals, the data recovered from these survey areas are of poorer resolution, as is evident looking at the output (see Figure 08-35). Despite the reduced visibility, two possible anomalous features appear in the resistivity data. The first, outlined in white in the output, is located in the southwest corner of Grid 12, immediately north of the northern slope of Mound D. Jones notes that this is "an area of very high and low-resistance anomalies adjacent to an extant mound," and that the data "appears to be culturally patterned" (Jones 2001:7). Due to the proximity of these anomalies to Mound D, they may be associated with former structures located in the shadow of the mound. The large number of trees in this area, delimited by beige squares or rectangles in the output, may also be contributing to the anomalous readings observed in this area. Further remote sensing or test excavation of Grid 12 is necessary to accurately identify these features.

The final feature of archeological interest recorded in this survey area was located in the

northwestern corner of Grid 11, where an apparent high-resistance linear anomaly is clearly visible. This anomaly, labeled 'H' in the output (see Figure 08-35), consists of two linear segments which join at a right angle near the center of Grid 11. These linear anomalies likely represent an architectural feature, possibly wall lines of a large structure. This claim is bolstered by the fact that the area outlined by these two linear features has a low-resistance signature, which could be indicative of a prepared clay surface forming the interior floor of the structure. Similar structures were encountered and excavated by Roberts, such as the 'temple' found about 30m east in Grids 7 and 3, and were also found during the 2001–2004 SEAC excavations in Mound A, although these were much smaller in size. Though the exact size and shape of the possible structure in Grid 11 cannot be determined since it extends beyond the survey area, measurement of the observed portions of it indicate that it could have been no smaller than ca. 15x17m. The location of a structure of such size, near the eastern part of the main plaza, indicates that it may have been a public building of some kind. Another possible hypothesis is that the anomaly represents remnant evidence of a palisade associated with the plaza. Based on Welch's synthesis, it does not appear that any previous archeology has taken place in this part of the plaza. More detailed remote sensing or test excavations would be necessary to adequately determine the size, shape, form, and function of this large and seemingly intact feature.

Mound A, North Apron

The 2001 electrical resistivity survey also focused on the area immediately north of Mound A, where evidence for numerous cultural features was found (Figure 08-36). Unlike the southern and western aprons of Mound A, the northern side of Mound A is much lower in elevation and does not appear as extensively built-up with prepared apron deposits. In fact, the ground surface to the north of Mound A is approximately 3m lower than the ground surface of the southern and western aprons, at almost the same vertical elevation as the subsoil strata encountered in the basal deposits of the deep backhoe trench and excavation units opened on the south side of Mound A (see Chapter 9). Why the north side of the mound was not as intensively built-up as the other sides' is unknown, but the added height gives the mound a particularly impressive appearance when viewed from downstream, which may have been the intent. The survey area consisted of a 35m (east-west) by 20m (north-south) grid laid out on the natural terrace north of mound A. The area was thickly covered with large and small trees as well as heavy ground vegetation, which was cleared prior to the resistivity survey. Based on Welch's synthesis of previous archeology at Shiloh (2001), it appears that the area had not previously been archeologically investigated or tested. Since it represented the least disturbed portion of the mound center examined using remote sensing, the data recovered from it might be expected to be the clearest and easiest to interpret.

The resistivity survey produced a series of anomalous readings, many of which were identified by Jones (2001:8) as good candidates for prehistoric archeological features. The first of these appears in the northwest corner of the survey area and consists of a ring of higher-resistance readings which surround a round low-resistance anomaly (labeled 'A' and 'B', respectively, on the output (see Figure 08-36). This pattern of resistance data is consistent with what was observed between Mounds A and B, and that was identified as known, and previously unknown, house mounds. The high-resistance surrounding signature is hypothesized to represent accreted house mound material and the low-resistance central feature is thought to represent a prepared clay surface or structure floor atop the house mound. The data bears a particular close resemblance to Mound J, and to the previously unidentified house mound north of Mound J. Like Mound J, a very low-resistance anomaly is present at the center of the possible structure floor, labeled 'C' in the output (see Figure 08-36). This localized very low-resistance signature may indicate the presence of a prepared hearth within the structure. The probable house mound appears to be intruded on its margins by four separate, smaller anomalies: three small low-resistance disturbances, labeled 'D'

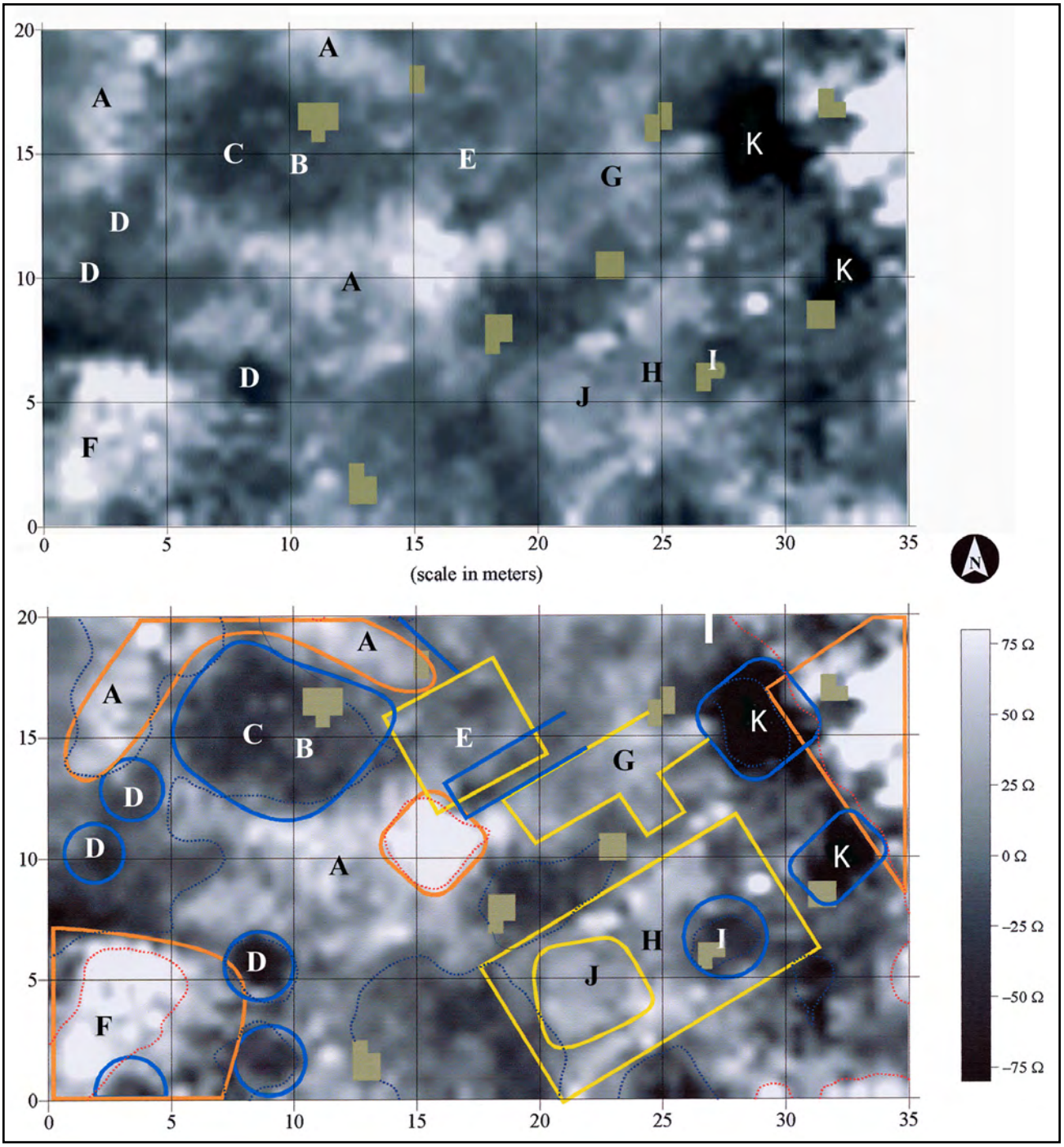


Figure 08-36. Plan-view maps of data collected during the 2001 electrical resistivity (Jones) survey of the area north of Mound A. (top) Uninterpreted data. (bottom) Interpreted structures and features in the data.

on the output, and a squared moderate-resistance anomaly labeled 'E' (see Figure 08-36). The three small low-resistance disturbances may be features or smaller structures associated with the house mound, like those seen at the base of Mound J. The squared feature may indicate the location of a later structure or small plaza/apron built following the abandonment of the house mound. Another high-

resistance area in the southwest corner of the map (see Figure 08-36, labeled 'F') represents the end of a foot-path which connects this low area to the raised apron of Mound A. This area was likely used both prehistorically as well as historically, and indeed some of this disturbance may be recent, since a truck-pulled vibracore rig was stuck for a time in this area the week prior to the resistivity survey, on July 18 and 19, 2001 (see Chapter 3).

Jones notes two additional signatures in the resistivity data which may be indicative of prehistoric structures located north of Mound A. The first of these, labeled 'G' in the output, is irregular in shape and, while it is unclear what it represents, may be from an actual structure, or perhaps an open space between adjoining structures. South of this irregular anomaly, another rectilinear anomaly is present, labeled 'H', and composed of a series of higher-resistant soils surrounded by low to moderately-resistant soils (see Figure 08-36). Like the large rectangular disturbance found in the main site plaza (see Figure 08-35, labeled 'H'), this feature also is oriented approximately 45 degrees off of north and may represent a structure, or perhaps a small palisaded area. Unlike the possible structure or palisade on the plaza, however, this feature is much smaller (~6x12m). Within its outline are two additional anomalies are present, labeled I and J (see Figure 08-36). The first of these, labeled I, is a low-resistance anomaly near the northeastern end of the structure that may be evidence of a prepared clay surface or fire-related feature. The second internal feature, labeled J, is located at the southeast end, and consists of an unidentifiable polygonal, possibly circular or square-shaped ring of soil with lower resistivity than the soils around it. Jones (2001) indicates that anomalies such as this are good indicators of wall trenches and/or posthole lines from former structures. The lack of a corresponding low-resistance anomaly within the inferred wall lines indicates that the floor of this possible structure was not capped with a prepared clay surface or similar low-resistance material. The association of these two features within a larger feature suggests two probable hypotheses. The first hypothesis is that Feature H represents a small palisaded complex which contains two large features (either two structures, or a structure, Feature J, and a prepared surface/hearth, Feature I). The second hypothesis is that Feature H represents a structure, inside of which are an inner chamber (Feature J), and a prepared floor surface/hearth (Feature I).

Two additional significant features were found north of Mound A, both very low-resistance anomalies located in the northeast corner of the survey area, labeled 'K' in the output (see Figure 08-36). The rectilinear shape, relatively large size, and proximity of these anomalies to the possible structures identified previously, G and H, suggests that they are prehistoric in origin. They likely represent prepared surfaces constructed of very low-resistance materials such as clays with very high iron content. A high-resistance anomaly is located immediately to the northeast, although its nature, and indeed the identification of all of these features, cannot be determined without more refined remote sensing survey and follow-up excavation. The water screening platform used during the 2002 and 2003 field seasons was set up in this area, and as a result much of the north apron is now under up to a 0.5m or more of screened Mound A fill. While this fill actually serves as a barrier, and thus helps protect the underlying features, its thickness will make additional remote sensing in the area challenging.

2001 Magnetic Field Gradient Survey (Jones)

Jones also conducted a magnetic field gradient survey July 25–27, 2001, in the area north of Mound A, complementing the resistivity survey undertaken in this same area.

Methodology

Magnetic field gradient surveys measure anomalous variations in the Earth's magnetic field. These disturbances are recorded by a magnetometer or gradiometer as deviations from the natural and uniform magnetic field of the Earth (Jones 2001; Clay 2001). Magnetic field gradient surveys report these disturbances as positive when the deviation is in the direction of the Earth's magnetic field, and as negative when the deviation is in the direction

opposite to the Earth's magnetic field. Magnetic deviations can be found in two different forms, remnant magnetization, and magnetic susceptibility. Remnant magnetization is a permanent magnetic effect which results from the heating of iron or iron-containing substances (such as ferrous clays) beyond the substance's Curie temperature. This is the temperature at which the magnetic particles such as iron oxide will realign themselves within the substance along polar vectors in response to the Earth's magnetic field. For many ferrous clays in the southeast, this temperature is approximately 565 to 665 degrees Centigrade (Jones 2001:2–3). Upon cooling, the particles are 're-frozen' along these vectors, causing observable distortions in the surrounding magnetic field. As Jones (2001:3) describes it, magnetic susceptibility:

> "alters the Earth's magnetic field directly in a manner analogous to the way porosity alters the flow of water through a solid. Where the magnetic susceptibility is large (high porosity), the magnetic field is increased and where the magnetic susceptibility is low (low porosity), the magnetic field is decreased. Many cultural objects and processes (thermal, chemical, biological, biochemical, physical, and mechanical) locally increase the magnetic susceptibility of the soil."

Using a Geoscan Research FM36 Fluxgate Gradiometer (Figure 08-37), Jones surveyed the same 35x20m grid north of Mound A which he surveyed earlier with the RM15 resistivity meter. The combination of a magnetic field gradient survey with either a conductivity or resistivity survey is accepted practice in the geophysical community. This is because these techniques produce complimentary results, which are more useful for the potential identification of specific anomalies, especially when these results are analyzed collectively (Clay 2001:2).

Data

During the magnetic field gradient survey of the north apron of Mound A, the gradiometer was operated on a 0.25m transect, thus producing 2,800m of surveyed transect (Figure 08-38). The instrument was set to record eight readings per meter along each transect. This produced 32 samples per square meter or 22,400 total recorded pieces of data across the 700m^2 survey area. The collected data was processed with Geoplot® software and cleaned-up in the same fashion as the resistivity data to remove outlier data readings and to negate user and equipment based errors. The data was then high-pass filtered, interpolated, and exported to the graphical software as zero-mean plan-view maps much in the same way as Jones' resistivity data. These graphical representations "can be thought of as containing features which increase the field gradient by locally adding to the Earth's field and features which decrease the field gradient by locally subtracting from the Earth's magnetic field. The zero data regions correspond to areas of uniform or undisturbed magnetic field" (Jones 2001:3). From the data values visible in the plot, positive



Figure 08-37. Geoscan Research FM-36 fluxgate gradiometer.

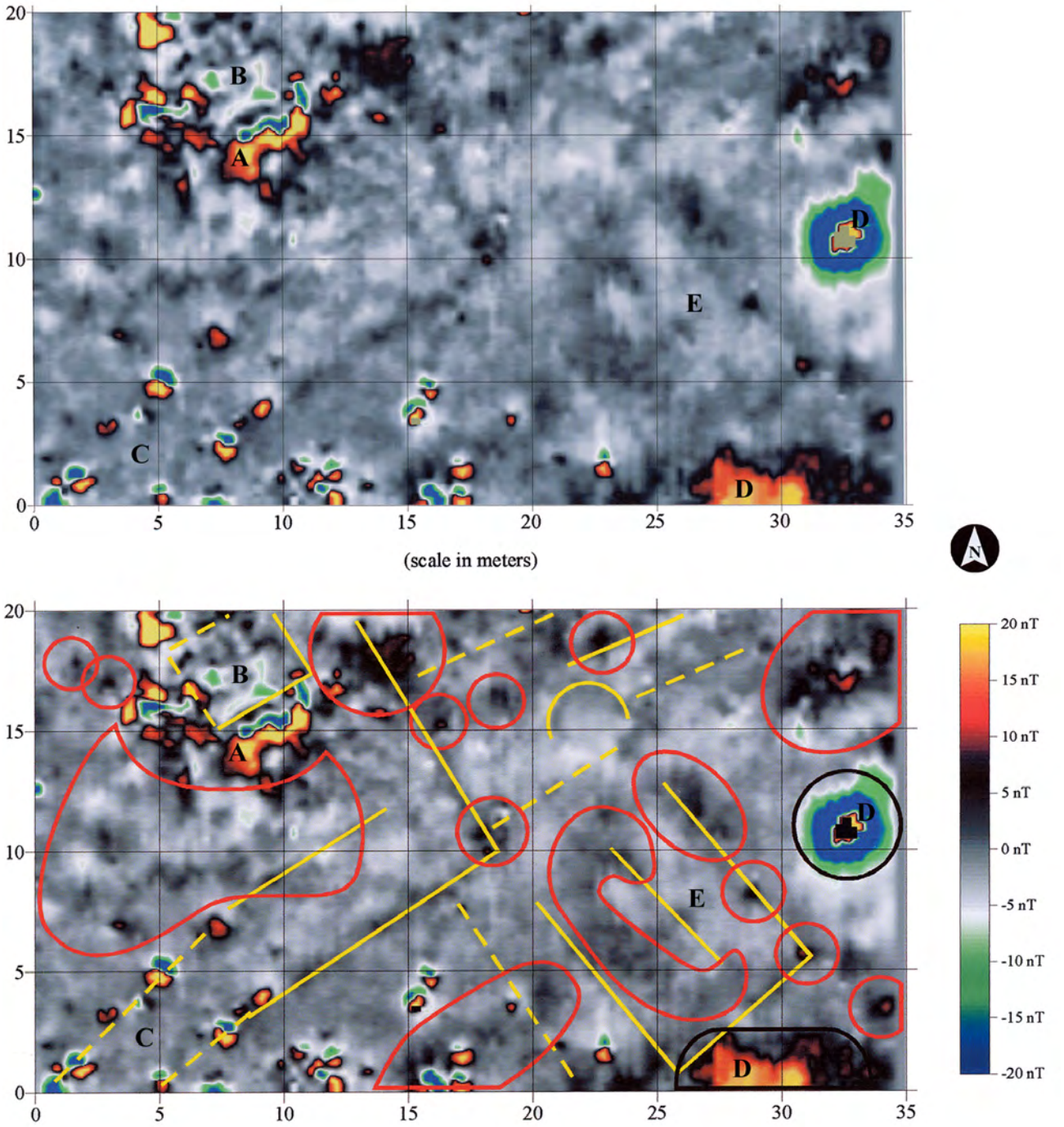


Figure 08-38. Plan-view maps of data collected during the 2001 magnetic field gradient (Jones) survey of the area north of Mound A. (top) Uninterpreted data. (bottom) Interpreted structures and features in the data.

data represents distortions in the magnetic field attributable to increased magnetic susceptibility and/or remnant magnetization oriented in the same direction as the Earth's uniform magnetic field. These types of anomalies are typically created by hearths or other fire-related features, bricks, sherds, and iron. These anomalies are typically thought of as *in-situ* relative to their last heating episode.

Conversely, negative data represents distortions in the magnetic field attributable to decreased magnetic susceptibility and/or remnant magnetization oriented opposite to the direction of the Earth's uniform magnetic field. These types of anomalies (bricks, sherds, and iron) are not typically *in-situ* relative to their last heating episode.

Mound A, North Apron

During the magnetic field gradiometry survey of the northern apron of Mound A, several areas of interest were encountered which confirmed some of the results of the resistivity survey. The most prominent distortion in the data is a large positive field distortion in the northwest corner of the survey area. This distortion, labeled 'A' on the output (see Figure 08-38) corresponds to the inferred prepared floor/surface at the center of a small house mound encountered in the resistivity data (see Figure 08-36, labeled 'B'). This pattern of positive disturbances in the Earth's magnetic field is indicative of remnant magnetization, likely associated with the heating of ferrous clays atop the house mound beyond their Curie temperatures. Whether the agent responsible for this heating was the preparation of a floor surface through intentional burning or a result of structural conflagration is not known. The fact that the magnetic anomalies are bipolar in nature with their negative poles aligned toward the north strongly supports the hypothesis that these readings were produced by *in situ* remains of heated ferrous soil compounds. Unlike the resistivity data however, no clearly visible patterning was apparent in the magnetic field gradient output to suggest the margins of a house mound itself. The only strong magnetic signatures recorded from this apparent house mound were from the inferred summit area.

No additional strong magnetic anomalies were found to correspond to the low-resistance anomalies which surrounded the southern and western flanks of the inferred house mound in the resistivity data (see Figure 08-36, labeled 'D'). Though these low-resistance anomalies may still represent prepared surfaces, it does not appear that they were formed by any method that would have utilized intense heat or burning. It is possible, of course, to prepare a clay floor without intensively heating the surface. Also, it is conceivable that if heating did take place on these smaller surfaces, that the Curie point of the constituent materials was not reached during the burning process. A final hypothesis which must be considered is that these structure floors may have been originally heated and preserved a magnetic field signature, but that this signature has since been lost. The interior of these inferred prehistoric structures may have undergone a great deal of disturbance due to human-use (i.e. digging, trampling, sweeping, etc.). The magnetic field distortions originally present within the floor surfaces of these structures therefore may have been degraded to that of the normal magnetic field gradient of the Earth.

At the center of the magnetic field disturbance atop the inferred house mound lies a squared area of moderate remnant magnetization, labeled 'B' in the output (see Figure 08-38). Jones (2001:9) interprets this as a possible prehistoric structural feature (i.e., a pit, large posthole, or perhaps a cleaned out hearth basin) on the prepared floor surface of this house mound. This is due to the shape and location of the feature. The reduced magnetic distortion of this feature against the highly distorted mound summit surface indicates a strong archeological contrast between the two soils.

Several small localized point-anomalies in the magnetic field gradient data are present in the area south and east of the northwestern house mound. These small distortions are, for the most part, bipolar in orientation, and some appear to be arranged in a linear fashion. Jones (2001:9) interprets some of these anomalies, indicated by solid yellow lines in the output, as possible architectural features (see Figure 08-38, bottom) but he also indicates that many of these point anomalies may, in fact, be metallic debris. It is unknown to what degree this area was utilized in the historic era. The existence of the Shiloh Superintendent's residence on the summit of Mound A in the 1910s and 1920s may have introduced a great deal of metallic debris into the area surrounding Mound A. Debris from the CWA excavations may have contaminated the area, and it is even possible that some historic debris may date from the Battle of Shiloh itself.

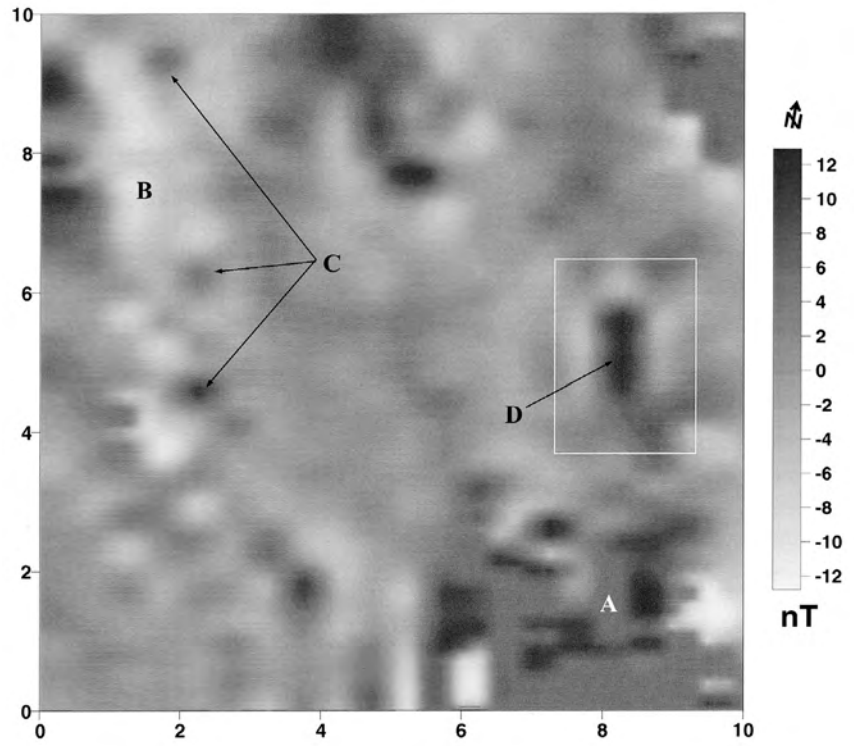


Figure 08-39. Plan-view map of data collected during the 2001 magnetic field gradient (Clay) survey of the summit of Mound G.

The linear elements in the southwest corner of the survey area, labeled 'C' in the output, correspond roughly to the end of the path leading down to the north side of Mound A from the raised western apron. Though this area was heavily vegetated prior to the remote sensing survey, it is possible that many of the anomalies encountered here may relate to previous paths or trails in this area. Jones identified two definite strong metallic signatures near the southeastern portion of the survey area. However, the identity of these magnetic distortions, labeled 'D' in the output, is unclear (see Figure 08-38), although they may reflect modern debris associated with the management of the site by the NPS, since they are at and out from the base of the stairway erected on this side of the mound in 2001, as well as below where the superintendent's cottage was likely located, if it was toward the river side of the summit to take advantage of the view.

The magnetic field gradient survey of the north apron of Mound A revealed more linear anomalies than were previously encountered during the electrical resistivity survey (cf. Figures 08-36 and 08-38). These linear anomalies do not seem to form a singular cohesive pattern, however, and if they are structure walls or similar features, it is likely they are from several different structures. It is not entirely clear how the linear features observed in the gradiometry data relate to the discrete low amplitude magnetic highs, the red circles observed in the output (see Figure 08-38). Jones notes that these may indicate the presence of prehistoric features such as hearths, pits, or postholes. The lack of coherent patterning among these possible architectural features, beyond the suggestion that several wall lines may be present, makes any interpretation difficult. The only one of these possible structures that corresponds to anomalies that were observed in the resistivity data is located in the area labeled 'E' in the output, in the southeast portion of the survey area (see Figure 08-38), just to the west of the smaller of the two large metallic signatures labeled 'D'.

2001 Magnetic Field Gradient Survey (Clay)

A second magnetic field gradient survey at the Shiloh Mound Complex took place on June 28–29, 2001. This project, which preceded Jones' survey by a month, was conducted by Berle Clay of Cultural Resource Analysts, Inc. Together with an electrical conductivity survey, Clay (2001, 2002a, 2002b) conducted two of the six remote sensing surveys which took place at Shiloh in 1999 and 2001. Like Jones, Clay investigated the apron north of Mound A for magnetic field distortions. Additionally, Clay also surveyed the summits of Mounds A and G, as well as the established survey grid units placed between Mound A and B.

Methodology

Using the same model fluxgate gradiometer (a Geoscan Research FM-36, see Figure 08-37), both Jones and Clay implemented similar methodologies for surveying their respective survey areas. There were only three notable differences: the numbering of the transect grids, the total area surveyed, and the fact that Clay confirmed his data with a conductivity meter (whereas Jones used a resistivity meter). To avoid confusion in the numbering of the grid squares, this report will continue to refer to those transect grid designations already established in other sections of this report (see Figures 08-27 and 08-33). For background on magnetic field gradient surveys, see the methodology section of the 2001 Jones survey above.

Data

During this magnetic field gradient survey, the instrument was operated along 1m transect intervals. The gradiometer recorded 8 magnetic field measurements per meter along these transects, producing 3200 pieces of data per 20m survey grid. The data was field-processed using Geoplot® software which cleaned-up the data. This process removed outlying data readings and negated user- and equipment-based errors. The data was then high-pass filtered, interpolated, and exported to the graphical software as zero-mean plan-view maps much in the same way as Jones' magnetic field gradient data. Clay (2001) used these graphical representations of the data to prepare a field report on the results of his remote sensing surveys, and it and the associated primary data were curated at SEAC.

Mound G

Clay surveyed a 10m square transect grid atop Mound G, in an attempt to identify possible artifacts related to the use of the summit as a burial plot for Civil War soldiers (Figure 08-39). Disturbances corresponding to the probable burial trench were identified by the 1999 and 2001 GPR surveys (see Figures 08-03 and 08-25). Nickel (2001a:22) indicated that point-source anomalies were present in this trench disturbance that he believed were associated with metallic targets. Clay (2001:17) found minor interference in the recorded data from Mound G which could be attributable to metallic debris at or near the surface. Clay's plan-view map of the data shows three areas of potential archeological significance on the summit. The first is a series of very high amplitude positive magnetic anomalies in the southeast corner of the survey area, labeled 'A' on the output (see Figure 08-39). Clay attributes these readings to magnetic interference from the large iron historic marker present in this area that describes the mound and its Civil War era use as a burial ground.

The second area is a large negative magnetic field distortion located along the western margin of the Mound G summit, labeled 'B' in the output (see Figure 08-39). This feature is oriented north-south, and corresponds very closely with anomalies recorded by Bean and Nickel using GPR (see Figures 08-03 and 08-25). All indications point to this feature as the burial trench for the fallen Illinois soldiers. The negative magnetic signature is a clear indicator of the disturbance of the trench fill relative to the local apparent magnetic field produced by the *in-situ* deposits atop Mound G. Also present within this probable burial trench were at least three point-anomalies from possible metallic objects, labeled 'C' on the output (see Figure 08-39). Nickel (2001a) also suggested metallic objects were present in the mound in his analysis of GPR data from Mound G. Whether these anomalies are related to artifacts associated with the burial and/or exhumation of the Illinois soldiers cannot be determined from the remote sensing data alone. Further excavation would be required to determine the identity of these point-anomalies as well as the full nature of the disturbance to the mound caused by the burial and later exhumation of the Union soldiers, when they were relocated to the nearby National Cemetery.

The final disturbance observable in Clay's magnetic field gradient data consists of a large positive magnetic field distortion present on the eastern side of the mound summit, labeled 'D' in the output (see Figure 08-39). Clay (2001:17) noted that this "suspiciously large and rectangular magnetic-high suggests a significant below-surface

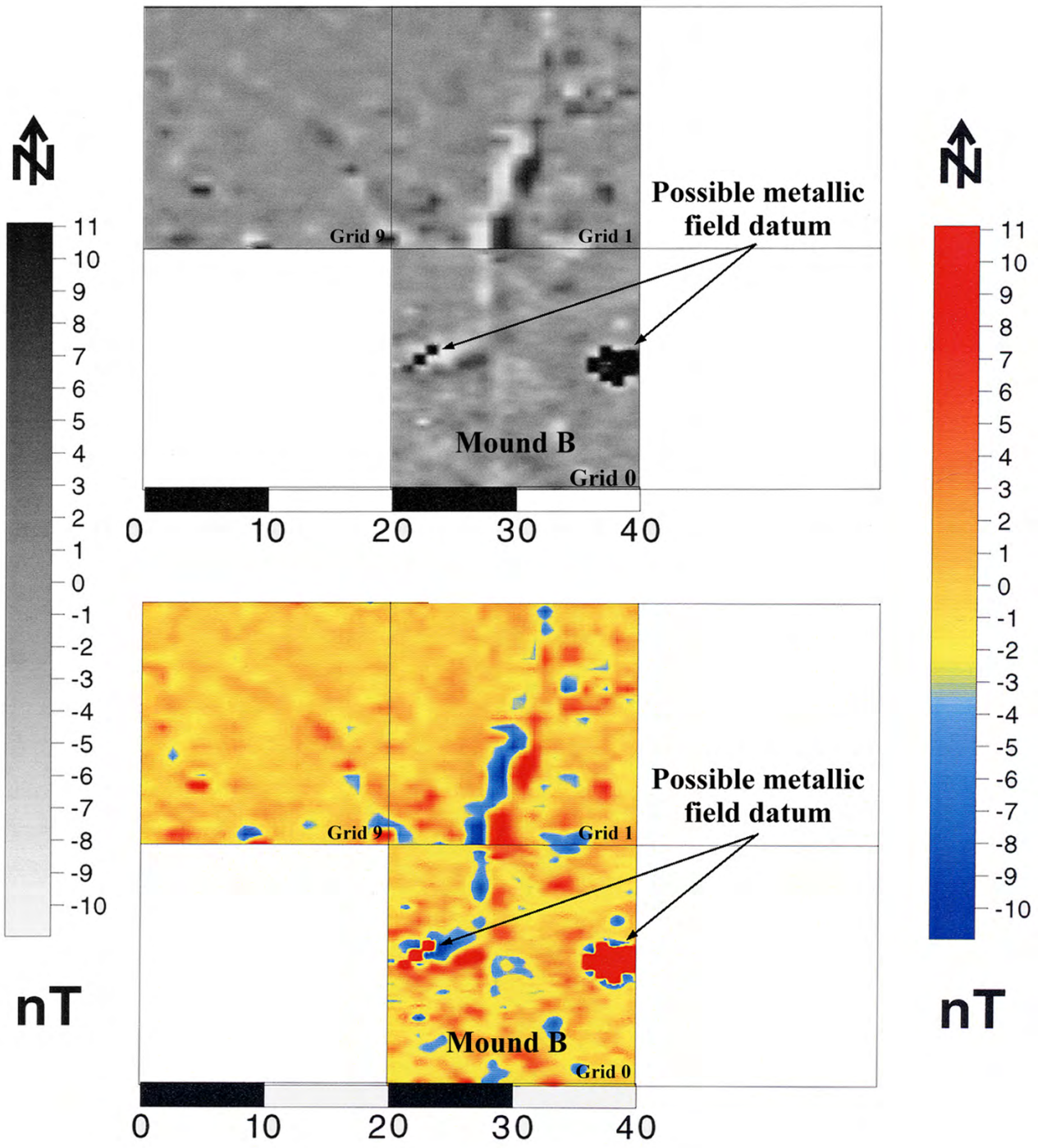


Figure 08-40. Plan-view maps of data collected during the 2001 magnetic field gradient (Clay) survey of the northern apron of Mound B.

artifact. It just might be an iron casket but, if so, is probably not connected with the burial of dead during the Civil War" (Clay 2001:17). It is likely that the identification of this feature as a casket was pure conjecture on the part of the operator due to the expectation of encountering burials atop the mound. In order to determine the actual identity of this

feature, additional remote sensing or more probably limited test excavations are required at Mound G.

Mound B, North Apron (Grids 1, 9, and 0)

The magnetic field gradient survey of the apron of Mounds A and B, and the area between them conducted by Clay in 2001 made use of the same 20m survey grids employed in Jones' and Nickel's remote sensing surveys. As such, the data produced can be cross-compared and analyzed. On the north apron of Mound B, the survey area consists of Grid 1, 9, and 0 (Figure 08-40). As observed from ground level, the most prominent feature of Grid 0 is the northern slope of Mound B. This feature was also easily discernible in the GPR and resistivity data. Mound B was not, however, recognized as an anomaly in the data from Clay's magnetic field gradient survey. This is likely because the slopes of the mound would not have likely been prepared in the same way as a structure floor or mound summit. The 2001–2004 Mound A excavations demonstrated that only level summit surfaces may have been intensively prepared or heated, while the mound margins and slopes appeared to only have been capped with clay or other sediments (see Chapters 9 and 10). The fact that the slopes of the mound would not have likely been heated beyond the Curie point of their constituent clays could explain the lack of remnant magnetization in the data. The only two recognizable features present in the magnetic field gradient data in Grid 0 are a pair of highly positive localized point-anomalies. Clay interprets these anomalies as iron targets, likely some type of datum or excavation marker tied to the grid of one of the previous archeological expeditions. He suggested that these iron anomalies might be the remains of two of Smith's 1976 field datums (Clay 2001:13). Review of Smith's (1977:3) field reports, however, indicate that no such datums were placed in the vicinity of Mound B. Instead, based on Welch's reconstruction of former CWA excavation trenches (Welch 2001:131; 2006:109; see Figures 08-17, 08-33, and 08-42 below), it appears that these metallic targets roughly line up with Roberts' Trench 18, placed east-west immediately north of the slope of Mound B. The two anomalies (see Figure 08-40) are aligned almost due east-west of each other, which supports this identification. The lack of any corresponding evidence for this trench in the GPR, resistivity, or other magnetic field gradient data sets likely illustrates the extensive degree to which this area of the site has been disturbed. Clay also noted that there was a general scattering of small, isolated, ferrous materials strewn throughout the area, that were likely tied to either the historic period use of the site, or to the previous archeological investigations.

The magnetic field gradient data for Grids 1 and 9 are generally quiet and devoid of large distortions in the Earth's magnetic field (see Figure 08-40). Two bipolar remnant magnetization anomalies are present in the south central portion of Grid 1. Positive, bipolar remnant magnetization anomalies such as these can be associated with *in-situ* remains of prepared (burned) features and/or surfaces. However, the identity of these two features could not be clearly ascertained, although Clay (2001:13) suggested that they are likely non-metallic in origin, but that they "should be checked" (Clay 2001:13). Jones' resistivity data suggests that the northern of these two disturbances falls within an area where he recorded a high resistance anomaly (see Figure 08-34, 'C'). However, Jones attributed this anomaly to the presence of two large trees in the immediate area. The possible association of the anomaly with similar data from a separate remote sensing technology bolsters the argument that it may be the location of an archeological feature.

Between Mounds A and B (Grids 2, 3, 7, and 8)

Like the northern apron of Mound B, the area between the aprons of Mound A and Mound B was found by Clay to contain a broad scattering of metallic debris which produced the dotted appearance of the plan-view data set of this survey area (Figure 08-41). Two of these possible metallic targets, identified in the output in the northern parts of Grids 3 and 7, may represent excavation boundary datums from Roberts' CWA fieldwork. If this identification is correct, the eastern disturbance in Grid 3 corresponds to the end of an excavated row of postholes and/or an excavated fire-basin, and the western metallic signature corresponds with the

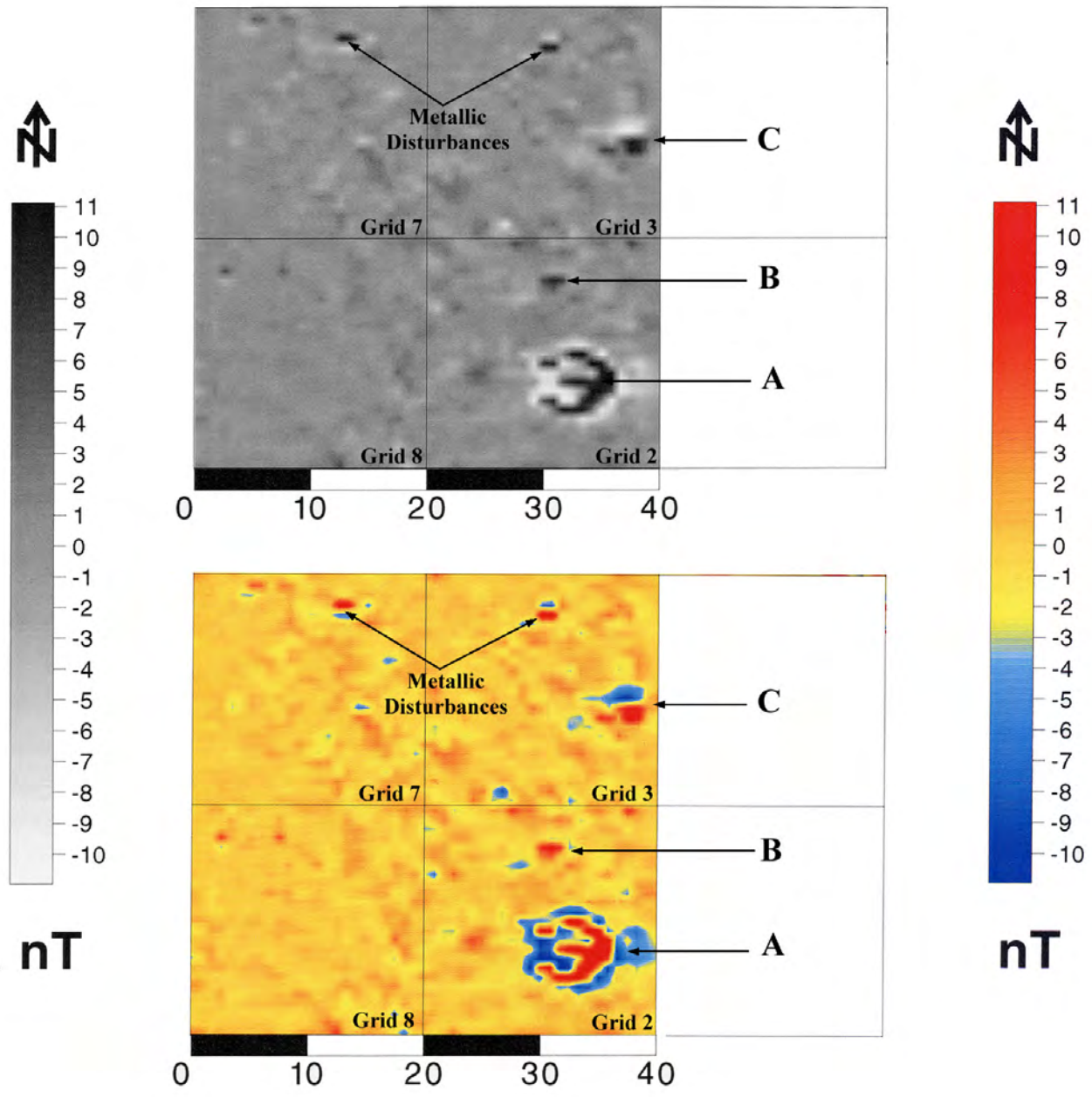


Figure 08-41. Plan-view maps of data collected during the 2001 magnetic field gradient (Clay) survey of the area between the aprons of Mounds A and B.

northern edge of a block excavation located in the northern portion of Grid 7 (see Figures 08-27 and 08-42).

Besides the scattered metallic finds, the magnetic field gradient survey of Grids 2, 3, 7, and 8 revealed three other areas of potential archeological interest. All three of these field distortions can be linked to features encountered during other remote sensing surveys in the area. The first of these, labeled 'A' on the output, is the prominent field

distortion previously determined to be Mound J, a small house mound extensively excavated by Roberts during the 1933–1934 field season (see Figure 08-41). This feature appears as a very large bipolar magnetic field variation in the southeast quadrant of Grid 2. Unlike other surveys of this feature, the fluxgate gradiometer was able to record not only the outline of the feature, but also appears to have recorded variation in the internal magnetic signature of the feature. Like the GPR and the resistivity data, this survey identified differences in the composition of the soils comprising the house mound and the prepared structure atop the mound. Unlike those surveys however, the gradiometer also recorded a series of highly positive magnetic field distortions across the feature that Clay (2001:7) thought were iron excavation markers associated with the archeological excavation of Mound J. The remarkable contrast in the gradiometer data is thought to be due to the way Mound J was excavated. Based on Welch's (2006:141–145) research, it appears that Mound J—the best documented house mound excavated at Shiloh during the CWA fieldwork—was excavated deep enough to expose the floor of the most recent structure to occupy the mound. Following this, the entire floor was exposed, cleaned, documented, and then the excavations were backfilled and the mound was re-contoured. Therefore, it is quite possible that iron excavation markers could have been left in the ground when the house mound was backfilled.

North of Mound J lies the second significant magnetic field anomaly found in this area, a single positive point-anomaly near the north central margin of Grid 2 (see Figure 08-41, labeled 'B'). Unlike other features encountered during the survey, this magnetic field distortion registered as a unipolar disturbance. That is, unlike other disturbances (e.g., Mound J); this feature is not comprised of a paired positive and negative field disturbance. Instead, feature 'B' appears as a positive spike in the magnetic field data north of Mound J. This type of positive spike in the surrounding magnetic field is described by Jones (2001:3) as evidence for possible fire-altered soils or a prepared hearth. This feature corresponds with high amplitude disturbances recorded on both the higher and lower time-slices of the GPR data (see Figure 08-28, labeled 'C'). This high amplitude disturbance was centered within a rectilinear moderate amplitude anomaly in the GPR data (see Figure 08-28, labeled 'B'). Analysis of the GPR data indicates that this feature likely represents a possible fire-feature located in the center of a structure or plaza surface north of Mound J. Similarly, the resistivity data also indicated a small, low-resistance, rectilinear feature at this location (see Figure 08-35, labeled 'E'). As mentioned earlier in the GPR section, during the 1933–1934 excavations, Roberts identified a small fire basin in this general location (Welch 2001:137; 2006:117–118). It is not known to what extent this feature was excavated or whether it was merely exposed, cleaned and identified, and backfilled, as was the case for Mound J.

The third significant distortion recorded in the magnetic field gradient survey of this area was encountered along the east central portion of Grid 3 (see Figure 08-41, labeled 'C'). This bipolar magnetic disturbance as appears to be a product of remnant magnetization tied to a thermal feature, and its comparatively small size suggests it may be a hearth or a fire-pit, instead of a larger feature such as a burned structure floor or prepared surface. This feature corresponds to a small possible house mound observed in the resistivity data (see Figure 08-35, 'F'), although the GPR data showed no sign of this disturbance (see Figure 08-28). The differential visibility of this feature in the various remote sensing datasets may be tied to its relatively small size, or may suggest a relatively short period of use or low intensity of activity for the feature. There is no evidence from Welch's synthesis of previous archeology at Shiloh to suggest that this possible feature has been previously identified or investigated.

Mound A, Southern and Western Aprons (Grids 4, 5, 6, and 10)

The apron to the south and west of Mound A, like the other areas Clay examined, was found to contain multiple instances of ferrous material/debris which produced anomalous signatures in the magnetic field gradient survey data (Figure 08-43). With

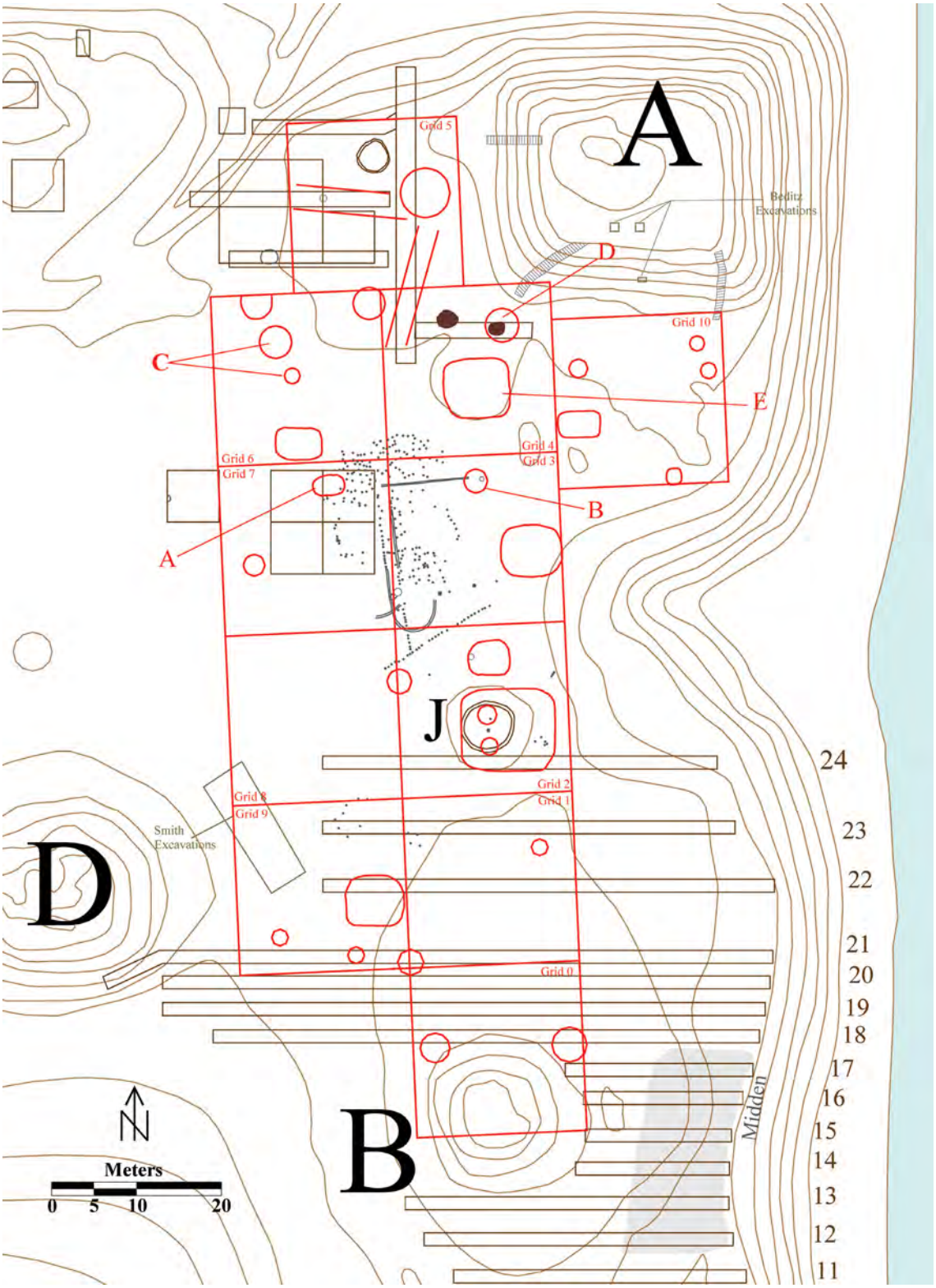


Figure 08-42. Overlay of 2001 magnetic field gradient (Clay) survey area over Welch's reconstructed locations of 1933-1934 CWA excavation units, trenches, and features.

regard to the ferrous material, Clay (2001:9) commented that, "this metal is probably mostly recent historic, dating from the management of the park since the 1930s although one or more shall (sic) fragments dating from the Civil War engagement around the site may also register." Civil war artifacts aside, the large quantity of metallic debris around the base of Mound A is not at all unexpected given its use as a historic residence. This area was also extensively excavated during Roberts' fieldwork, and again in 1999 and with the activities associated with the start of the excavations in 2001, likely further contributing to the metallic contamination of the site. The resulting magnetic disturbances make analysis of this area difficult. This is particularly true for Grids 5 and 10, where numerous metallic signatures pepper the data recovered by the fluxgate gradiometer. Grids 4 and 6 along the south and southwest base of Mound A, however, are 'quieter' and therefore easier to interpret. Two of the anomalies from the northwest portion of Grid 6, labeled 'A' in the output (see Figure 08-43), are near an area where numerous postholes were excavated by Roberts, based on Welch's (2006:121–131) reconstruction of the CWA excavations. Figure 08-42 shows these magnetic anomalies, labeled 'C', and their proximity to the postholes excavated by Roberts'.

Three additional high-strength bipolar distortions in the surrounding magnetic field gradient were encountered, oriented in a linear pattern across the northern edges of Grids 4 and 6, and labeled 'B' in the output (see Figure 08-43). These three point-anomalies are approximately the same size and are equally spaced along an east-west linear orientation. Clay notes that the easternmost of these three anomalies is associated with an iron fragment protruding from concrete which was visible at the surface. This concrete and iron object may either be an excavation benchmark, a fence post/footer, or some other historic feature. The distance between the three individual anomalies, approximately 15m, rules out their identification as fence posts, unless additional posts were present but not detected by the fluxgate gradiometer. It is possible that additional fence posts were present, but that only some had concrete and iron footers. A cement marker located on Welch's base-map of previous Shiloh archeology is located between the eastern and central metallic signatures (see Figure 08-42). Also of some note, is the fact that the easternmost of these three similar features corresponds to a small prepared floor surface encountered by Roberts, and as reconstructed by Welch (see Figure 08-42, labeled 'D'). Also, the location of the central of the three anomalies can be associated with a series of large high amplitude signal reflections recorded during Nickel's 2001 GPR survey (see Figure 08-29, labeled 'A'). This signal reflection was interpreted as a possible prepared floor surface or small house mound. Therefore, the possibility exists that this variation in the magnetic field gradient may be caused by remnant magnetization from the thermal-preparation of a floor surface. Though the shape, size, and linear spacing of these features suggested possible relatedness, this cannot be unequivocally confirmed. Specific identification for these three features will require archeological or further remote sensing investigation.

From the gradiometry data collected in this survey area, Clay identified evidence for two faint bipolar distortions in the surrounding magnetic field gradient, possibly caused by thermal features. The faintness of these disturbances, labeled C in the output (see Figure 08-43), suggests only slight remnant magnetization. Remnant magnetization effects are typically caused by the heating of ferrous materials beyond their Curie point, followed by their subsequent cooling, such that the magnetic properties of those materials contributes to the surrounding magnetic field gradient. Archeologically, the firing of clay floor surfaces and the burning of materials in hearths are the greatest contributors of this form of *in situ* remnant magnetization. The faintness of these two recorded anomalies may be linked either to non-intensive preparation of the floor surfaces (i.e. low firing temperature/incomplete firing), or that they may be small hearths instead of larger prepared floor surfaces. Little more can be said about the western thermal feature, located along the south edge of Grid 6, since no evidence for it was recorded by the other remote sensing surveys.

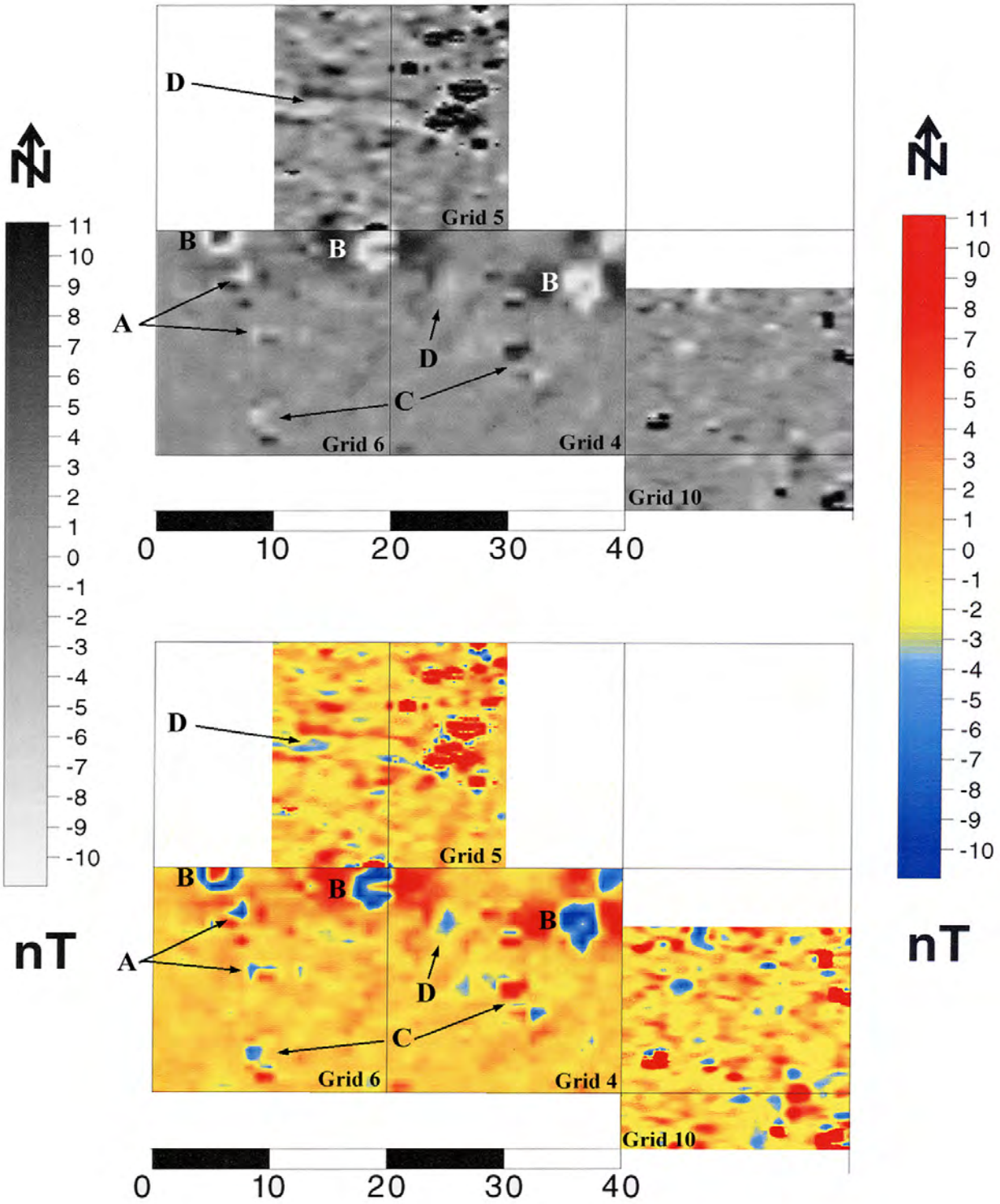


Figure 08-43. Plan-view maps of data collected during the 2001 magnetic field gradient (Clay) survey of the area around the southern and western aprons of Mound A.

The eastern thermal feature, located near the center of Grid 4, corresponds to similar disturbances in both the 1999 and 2001 GPR data, as well as to a localized rise in the surface topography (see Figure 08-18; Figure 08-29, 'C'; Figure 08-42, 'E'). Both GPR surveys identified large moderate- and high amplitude reflected anomalies in the area of this magnetic distortion (see Figures 08-18 and 08-29). These reflected signals were interpreted to be caused by the presence of radar reflective soils such as clays used in the preparation of structure floors or accreted house mound material. The fact that the GPR surveys identified large anomalies while the magnetic field gradient survey identified a small localized anomaly suggests that this feature consists of an unburned floor surface/house mound with a small burned area or prepared hearth near the center. Clay (2001:13) supports this idea, claiming that the small areas of increased magnetization, "reflect the mass of the burned feature registering in the magnetic data. This is no doubt a prepared and fired clay-lined hearth, perhaps rebuilt over several episodes. If this is a structure…it would appear to be one that was not burned." Most of the other floor surfaces and house mounds found and excavated at Shiloh exhibit signs of fire preparation in their construction and/or burning of the structure upon disuse/abandonment. This feature, if indeed it is a structure/house mound, appears to be an exception. The fact that the only sign of thermal soil alteration apparent in the magnetic field gradient data comes from a possible central hearth indicates that additional archeology is needed to accurately evaluate this feature.

Though there is considerable evidence of metallic (particularly ferrous) debris recorded by the fluxgate gradiometer in Grid 5, Clay identified two possible trench lines through the metallic disturbances (see Figure 08-43, labeled 'D'). These two linear features roughly correspond to Welch's reconstruction of the locations of Roberts' trenches in the western apron of Mound A (see Figure 08-42). In addition to the fact that these two linear features are located in the right area to be Roberts' trenches, they also meet at a roughly 90 degree angle and at this intersection a great deal of metallic debris is present, possibly associated with the excavation of these inferred trenches. These were the only features that Clay (2001:14) considered definitive "geophysical evidence of excavated 1930s period trenches."

Mound A

Clay attempted to conduct a magnetic field gradient survey of the summit of Mound A in 2001, but unfortunately, the results were inconclusive (Figure 08-44). A 20x20m square grid was established atop Mound A, but this had to be truncated due to the inability of the fluxgate gradiometer to produce interpretable data from areas near the eastern margin, where excavations were underway, and due to interference produced by steel fencing materials which circumscribed portions of the summit. Because of this, between 2 and 4m of the margins of the surveyed area were compromised

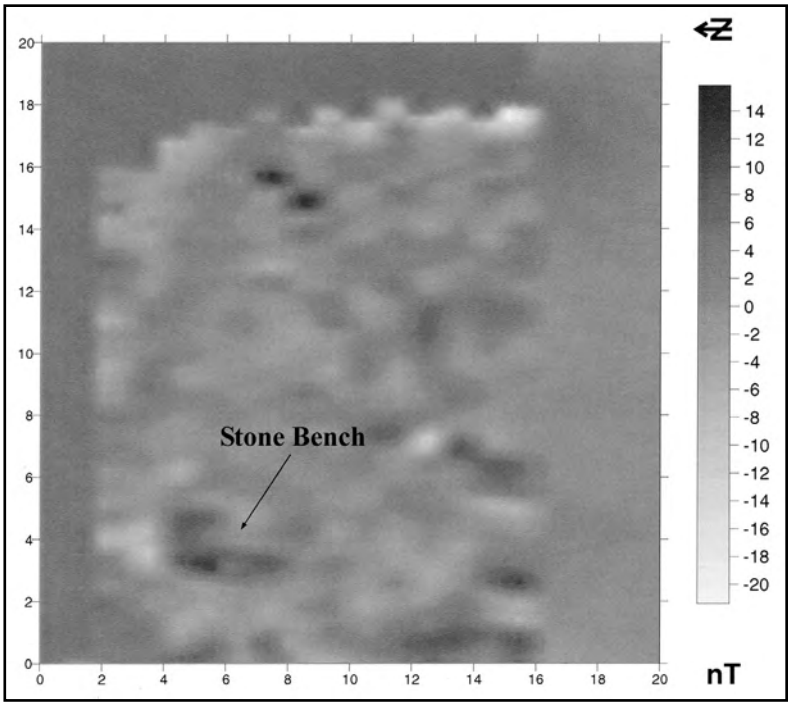


Figure 08-44. Plan-view map of data collected during 2001 magnetic field gradient (Clay) survey of the summit of Mound A. Note the absence of data (2 to 4 meters) at the perimeter of the survey area.

and could not be accurately interpreted (Clay 2001:14). The presence of several large trees and a stone bench also produced anomalous readings in the data, which further compromised the results of the survey. Because of these problems, Clay did not believe meaningful interpretation of the results of the survey could be accomplished and, consequently decided that conducting a conductivity study of the summit would be counterproductive.

Mound A, North Apron

Clay's magnetic field gradient survey north of Mound A utilized the western half of the same grid area where Jones conducted his magnetic field gradient survey. As expected, the results are remarkably similar, though Jones' data, taken at finer transect intervals (0.5 as opposed to 1m), provides greater resolution (cf. Figure 08-38, Figure 08-45). The letter designations on Jones' data (Figure 08-45, top) are the same ones used to discuss these features previously, and for continuity and ease of interpretation these same letter designations are used for Clay's data as well. The most prominent feature in Clay's gradiometry data is the presumed house mound located in the northern portion of the survey area, labeled 'A' on the output (see Figure 08-45). This feature appears as a large series of positive field distortions which are located at the center of a low topographic rise. Based on this data from Clay and Jones it appears that this anomaly represents the *in situ* remains of a prepared (fired) structure floor at the center of a presumed house mound. As with the results of Jones' surveys, Clay's data produced no magnetic distortions associated with the house mound itself, only distortions associated with the presumed structure at the center of it. Within this possible structure floor, an area of reduced remnant magnetization is visibly present, in contrast to the rest of the structure floor. It is likely that this disturbance, labeled 'B' on the output, represents an *in-situ* internal feature (see Figure 08-45). The fact that this feature appears as a diminished magnetic anomaly suggests that it did not contribute to the surrounding remnant magnetization of the structure floor. Therefore this feature is likely not fire-related, and more likely could be evidence of a pit, a large posthole, or a disturbed area within the structure.

South of this presumed house mound, the data from Clay's magnetic field gradient survey indicates the presence of several bipolar magnetic field disturbances which Clay and Jones interpreted as possibly linear in orientation. These disturbances are present around the area labeled 'C' in Figure 08-45, near the base of Mound A. It is unclear if they are related to metallic debris from a possible former historic fence that may have once been present. This area also corresponds with the end of the trail from the raised western apron of Mound A down to the lower terrain on the north side of the mound. Some of these magnetic anomalies may represent metallic debris associated with historic period or visitor use of the site. Further archeological investigation or remote sensing would be needed to produce more definitive identification of these anomalies. Since the north apron was used as a screening area during the 2002–2003 excavations into Mound A, screened silt and clay backdirt would likely have to be removed before the area could be further investigated.

2001 Electrical Conductivity Survey (Clay)

The sixth and final remote sensing survey undertaken was an electrical conductivity survey conducted by Clay (2001, 2002a, 2002b) from June 28–29, 2001, in conjunction with his magnetic field gradient survey. It is a generally accepted practice to combine magnetic field gradient surveys with either an electrical resistivity or an electrical conductivity survey. Since these three technologies each measure different geophysical characteristics of the soil, their results increase what Clay (2001:2) describes as the "dimensions of understanding" as they relate to remotely sensed phenomena. Difficulties encountered by Clay during the magnetic field gradient surveys of the Mound A and Mound G summits, as well as the north apron of Mound A, led him to omit these survey areas from the conductivity study. Instead, Clay concentrated his electrical conductivity survey on the eleven 20x20m square survey grids between Mounds A and B that were the focus of all of the 2001 remote sensing surveys.

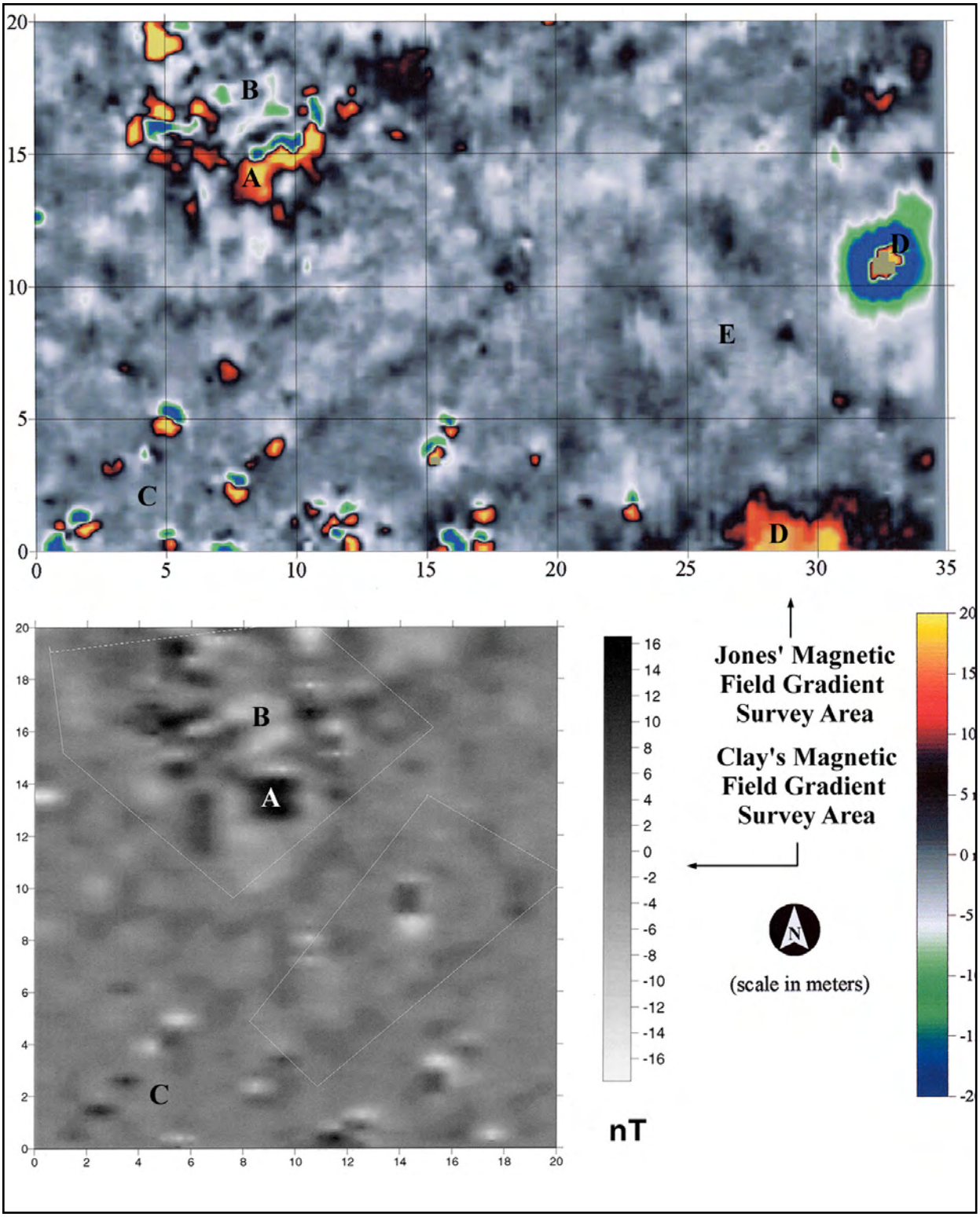


Figure 08-45. Side by side comparisons of the plan-view maps of the 2001 magnetic field gradient surveys (Clay and Jones) conducted north of Mound A.

Methodology

For this survey, Clay used an Geonics EM-38 ground conductivity unit, also referred to as an earth conductivity meter or simply EM-38 (Figure 08-46). This device works by inducing an electromagnetic signal into the ground and measures how well it is conducted by the soil. Unlike resistivity meters like the RM-15 used by Jones, the conductivity meter used by Clay has no direct electrical connection between the survey instrument and the ground (cf., Jones 2001, Clay 2001). Instead of using metal probes inserted in the ground and wired to the resistivity meter, the conductivity meter instead relies on a self-contained transmission coil within the device to broadcast a high-frequency electromagnetic signal. This signal is then received by another coil in the opposite end of the conductivity meter. The transmission of the signal also causes conductive materials beneath the instrument to generate their own faint signals, which in turn are recorded by the receiving coil. The spacing between the transmission and the receiving coils governs the general depth to which the meter can effectively measure the conductivity of the underlying soils. Clay (2002a) notes that while the instrument is not designed to be a metal detector, highly-conductive metals also can generate a strong signal in response to the transmitted conductivity signals.

Like resistivity meters, a conductivity meter does not record specific phenomena such as archeological features, structures, or geologic formations. Instead, the conductivity meter records shifts in the degree to which the soils in the immediate vicinity of the device react to the introduction of an electromagnetic field. As the conductivity meter is moved along the transects of a survey area; differences in soil texture, moisture, grain size, and electromagnetic susceptibility effect the manner that the induced electromagnetic field is conducted by the ground. The results of this transmission as well as additionally generated signals are recorded by the conductivity meter in milisiemens per meter (mS/m). While comparing the results of the conductivity survey to other remote sensing methods such as resistivity and magnetometry, it is important to note that though all surveys have the ability to record the presence of ferrous metals in the soil, electrical conductivity surveys are not able to record the remnant magnetization associated with fired clays. Though the increased magnetic field associated with these features does not affect the conductivity of the surrounding soils, Clay (2001:2, 9) notes that the changes in soil density associated with masses of packed or fired soils and clays can be recorded as areas of reduced conductivity.

Data

Clay used the EM-38 to examine the eleven transect grids which composed the primary 2001 remote sensing survey area (Figure 08-47). Each 20x 20m grid unit was surveyed using a 1m transect interval, producing approximately 28,800 recordings of mS/m the 4,400m^2 total survey area. This raw data was interpolated to produce a doubled data set of 57,600 readings. This, in effect, reduced the transect grids from 1m to 0.5m intervals. The information was then processed with Geoplot® 300 software to "de-spike" the data (Clay 2001:4). This process reduced the interference caused by highly-conductive metallic materials in the interpolated data sets. Such metallic debris was likely deposited on the site during previous archeological investigations, particularly during Roberts' testing. Clay theorizes that some of these metallic signatures may also be from the Civil War period use of the site. Following the reduction of these signal spikes, the data was high pass filtered



Figure 08-46. Geonics EM-38 ground conductivity unit.

to produce averaged data values for the recorded anomalies based on localized mean field gradients. This produced data sets based on an averaged value of 0, whereby any anomalies encountered are presented in terms of their value above (positive) or below (negative) the surrounding mean (0) values. The processed, high-pass filtered, and de-spiked conductivity data was then examined with Surfer graphical software to produce plan-view representations (Figures 08-48 and 08-49). These depictions of the differential conductivity around the survey area were preliminarily analyzed by Clay and the results of that were presented in his report to SEAC (Clay 2001), together with the results from his magnetic field gradient survey and all of the primary data from his work. The results of the conductivity survey, and their relation to Clay's earlier magnetic field gradient survey, are presented below.

Mound B, North Apron (Grids 1, 9, and 0)

The results from the electrical conductivity survey of Grids 1, 9, and 0 show at least four clearly recognizable features in the area around Mound B (see Figure 08-48). The first of these is Mound B itself, in the southern two thirds of survey Grid 0. The conductivity data shows the summit of Mound B to be a lowly conductive anomaly surrounded by more highly-conductive slope soils. The reduced conductivity of the soils of the mound summit indicate that either it was composed of a lowly conductive material such as sand or gravel, or that the summit was constructed with conductive materials which were then made less conductive through some process such as high-firing or compression. There is no evidence to suggest that the summit of the mound is composed of non-conductive materials, so the latter explanation may be likely. The recorded conductivity data also indicates a lack of homogeneity to the Mound B summit deposits. The data shows the presence of soils with generalized low conductivity, interspersed with punctuated areas of higher conductivity readings. These patches of higher soil conductivity may represent features within the less conductive summit. Similar heterogeneities were encountered in the summit matrix of Mound B during Nickel's 2001 GPR survey, which he interpreted to be the possible locations of two squared structures (see Figures 08-24 and 08-26). Though the conductivity data cannot corroborate the existence of these possible structures, the presence of structures atop Mound B would likely leave evidence of soil compaction and/or firing which could explain the reduced soil conductivity atop the mound. Within the low-density anomaly atop Mound B, one dense highly-conductive anomaly near the presumed center of the mound summit (see Figure 08-48, labeled 'A') stands out above the rest. This high conductivity spike in the data from the mound summit may represent a large feature or disturbance in the compacted or fired surface/structure(s) on the mound.

A series of high conductivity soils, labeled 'B' in the output (see Figure 08-48), extended north-northwest from the northern slope of Mound B. These disturbances correspond to an area found by both Bean and Nickel to contain high amplitude subsurface disturbances during the GPR survey of the apron north of Mound B (see Figures 08-15, 08-24, and 08-26). Clay's magnetic field gradient survey was not able to identify anything other than polarized signatures from metallic debris in the area (see Figure 08-40). The origin of the GPR and conductivity anomalies is not known for certain. The conductivity meter recorded a linear non-polarized highly-conductive anomaly extending north from the center of the base of Mound B. Such anomalies can be the result of the moving of soils associated with the construction of earthworks or the excavation of archeological sites (Clay 2001:2). No clear conclusions can be drawn from the conductivity data alone, however. The GPR data indicated the presence of disturbed archeological deposits possibly related to the construction of a formal apron or perhaps a ramp at the northern foot of Mound B, or a structure/house mound at the base of the mound. The purpose of this apron could have been to make a formally prepared surface or access way between the mound summit and the plaza, or it could have merely served to fill topographically low areas north of the mound. Since this anomaly

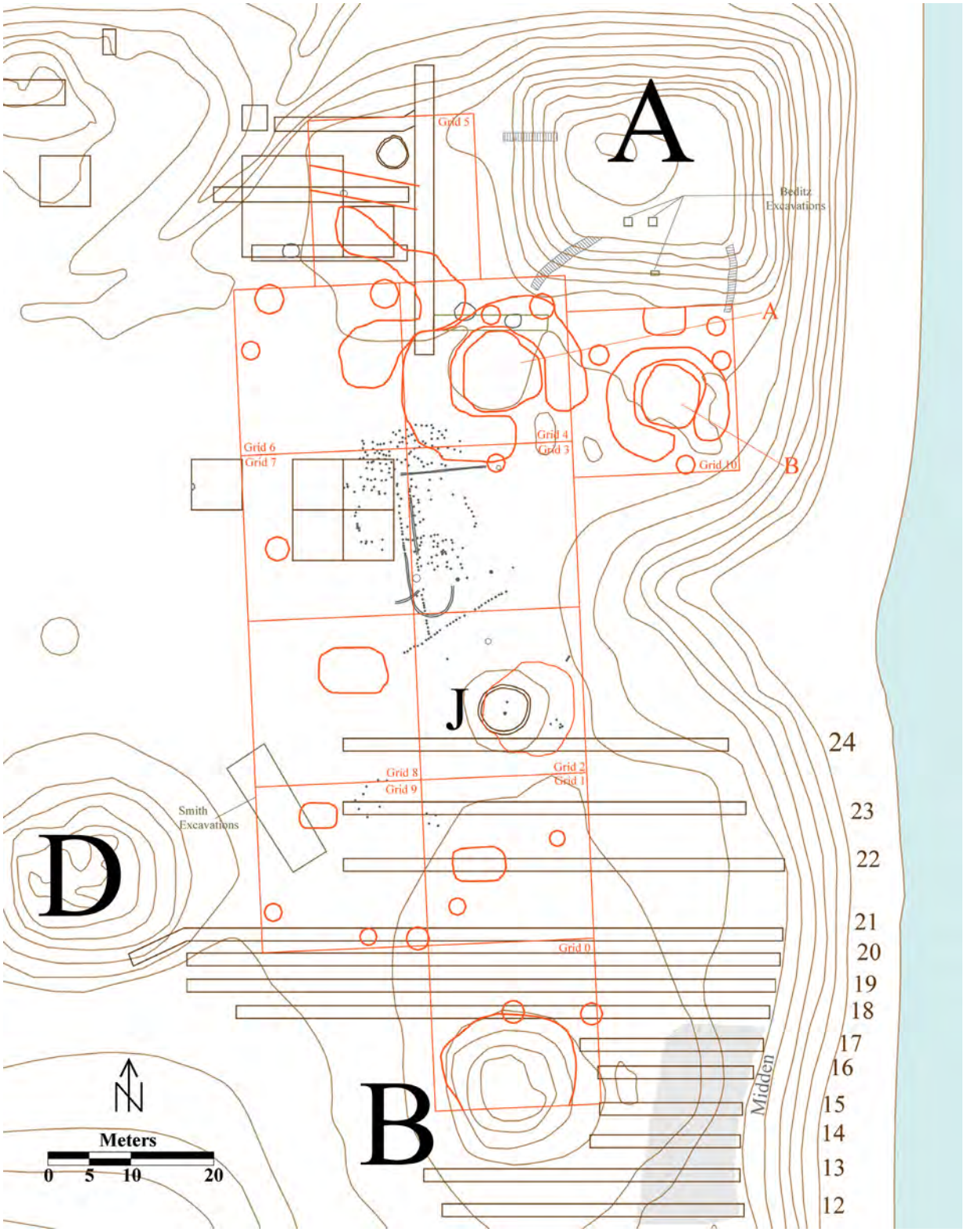


Figure 08-47. Overlay of 2001 electrical conductivity (Clay) survey area over Welch's reconstructed locations of 1933-1934 CWA excavation units, trenches, and features.

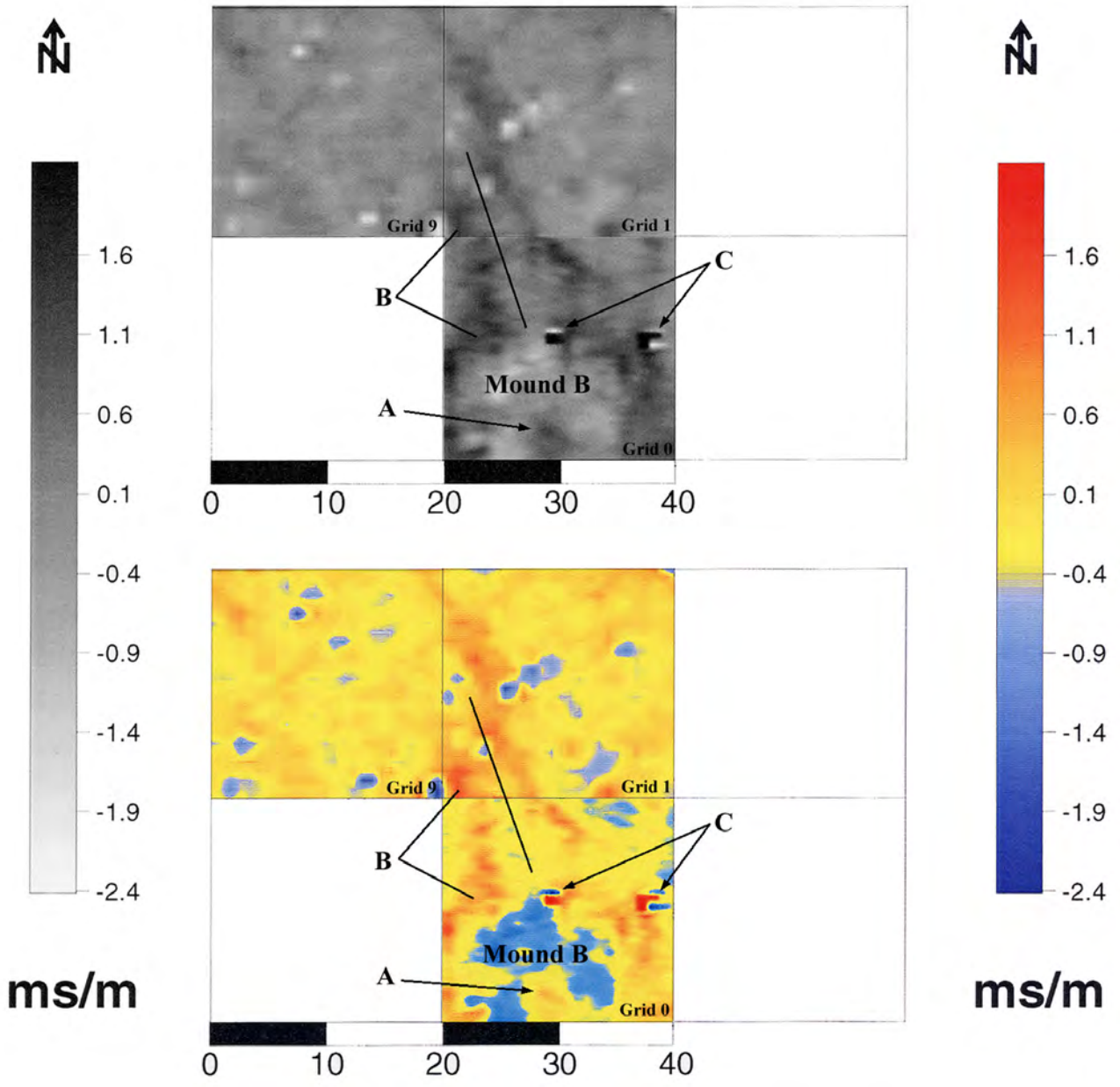


Figure 08-48. Plan-view maps of data collected during the 2001 electrical conductivity (Clay) survey of the area north of Mound B.

coincides with a break in the highly-conductive readings recorded for the slope of Mound B, it may represent an eroded or previously excavated ramp leading up the northern slope of Mound B. Without further excavation or remote sensing in the area, this hypothesis is little more than conjecture however.

Within the northern slope of Mound B, Clay observed two bipolar anomalies, labeled 'C' in the output (see Figure 08-48). Two anomalies were also encountered by Clay in the magnetic field gradient data from the northern slope of Mound B that he thought might be old datums, although only the easternmost anomaly is in the same position in each

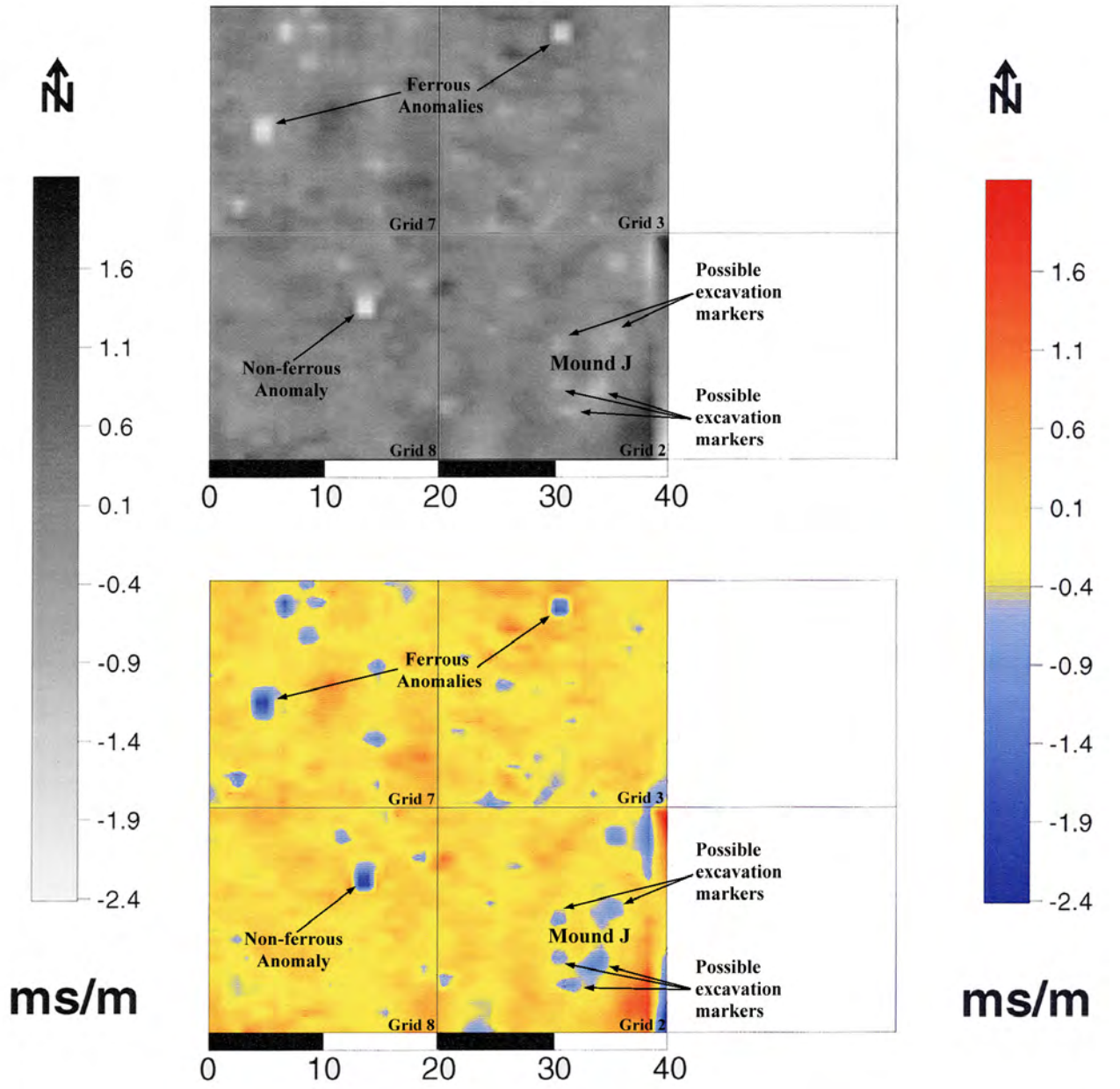


Figure 08-49. Plan-view maps of data collected during the 2001 electrical conductivity (Clay) survey of the area between the aprons of Mounds A and B.

data set (see Figure 08-40). The western anomalies appear to be discrete. Clay identifies all of these anomalies as metallic (specifically ferrous) in origin, and further argued that the eastern anomaly was a field datum for Smith's 1976 excavations (Clay 2001:7, 13). However, as previously noted, Smith's (1977) field report indicates that no such datums were placed in the vicinity of Mound B. Based on Welch's (2001:131, 2006:109) reconstruction of the locations of CWA excavation trenches, these metallic signatures appear to line up almost perfectly with Roberts' Trench #18, which was placed east-west immediately north of the Mound B slope (see Figures 08-17 and 08-47). These two ferrous

anomalies, and the third from the magnetic field gradient data (see Figure 08-40), all appear to be linearly oriented east-west along what Welch posits as the southern profile wall of CWA Trench #18. It is likely that these conductivity spikes represent some form of temporary excavation trench field datum or boundary marker, although to accurately determine this archeological testing will need to be undertaken, perhaps in conjunction with metal detecting.

The remainder of the electrical conductivity survey area immediately north of Mound B in Grids 0, 1, and 9 is dominated by small low conductivity point-anomalies indicative of small metallic signatures. Clay makes no attempt to further identify these anomalies in his report, noting only that many such anomalies are to be expected at a site like this, where they might derive from public use, previous excavations, or other past historic activities, including those associated with the 1862 battle.

Between Mounds A and B (Grids 2, 3, 7, and 8)

The conductivity meter recorded little disturbance in the portion of the remote sensing survey grid located between the aprons of Mounds A and B (Figure 08-49). This is in contradiction to other remote sensing surveys (Nickel's GPR survey, Jones' resistivity survey, and Clay's magnetic field gradient survey) which identified several anomalous readings that were interpreted as possible features and/or structures. With the exception of Mound J, which is highly visible near the center of Grid 2, the only observable anomalies recorded by the conductivity meter from this survey area appear to be metallic in origin. Grid 3, Grid 7, and Grid 8 each have one of these metallic signatures. Clay (2001) identified the first two of these, in Grids 3 and 7, as likely ferrous in composition since they were both individually localized point-anomalies in the magnetic field gradient and electrical conductivity data. The third of the metallic anomalies, located in Grid 8, was thought to likely be non-ferrous, due to the highly localized nature of the signal, and the fact that it registers as a point-distortion in the conductivity field yet has no associated magnetic properties which could be recorded as distortions in the surrounding magnetic field gradient during the fluxgate gradiometer survey.

Mound J, as noted earlier, is the most prominent feature revealed by the electrical conductivity meter in this survey area. Though Mound J was completely excavated and subsequently re-contoured during the 1933–1934 excavations, portions of the underlying matrix of Mound J were visible in all six remote sensing surveys conducted during 1999 and 2001. Based on Roberts' field records, Welch (2001:167, 2006:141–145) determined that Mound J was fully excavated to expose a fired clay prepared floor. This surface presumably was associated with the structure that produced this small house mound. Following exposure, documentation, and photography the house mound was backfilled and re-contoured. Only a very slight shift was observed in the soil conductivity around this feature. What is unique about the way in which this feature was identified from the conductivity data, is that four or possibly five point anomalies were clearly visible. These disturbances, arranged in roughly a squared shape, appear as weak low conductivity readings at the center of Mound J (see Figure 08-49). Based on the fact that these disturbances appear in both the conductivity and the magnetic field gradient (Clay 2001; see Figure 08-41) data, it appears that these anomalous readings are caused by ferrous metallic targets. Clay proposes that the general weakness of the signals and their appearance as unipolar low conductivity strikes (instead of strong bipolar strikes) is likely tied to the depth of these metallic objects below the re-contoured Mound J. Welch and Clay seem to agree that the cause of these anomalies is a series of iron datum rods which were used to demarcate the feature during the excavation, and which are clearly evident in a contemporary photograph (Figure 08-50). It would appear that at least some portion of those iron rods remained in the ground following the excavation, backfilling, and contouring of the house mound.

Mound A, Southern and Western Aprons (Grids 4, 5, 6, and 10)

The electrical conductivity survey of the western and southern aprons of Mound A yielded more

evidence for possible prehistoric features than either of the other survey areas examined during this particular remote sensing survey (Figure 08-51). These transect grids also exhibited a high degree of disturbance indicative of metallic debris. This was likely related, as noted, to visitor use of the site, past excavation activity, the use of Mound A as a park residence, or activities related to the Battle of Shiloh in 1862. Despite the reduced clarity due to the metallic 'noise', it is clear that at least three large archeological features and one possible excavation trench are visible in the remote sensing data from this survey area. Most of these features can be correlated to other similarly sized, shaped, and placed features recorded by some or all of the other remote sensing techniques.

The most prominent feature, a possible house mound, is a circular area of low conductivity deposits surrounded by a band of higher conductivity, labeled 'A' and 'B' in the output, respectively, located at the center of Grid 4 (see Figure 08-51). The central lowly conductive soils likely represent some form of prepared floor surface or a similar mass of compacted and/or fired material. Like other possible structure floors seen in the electrical conductivity data, the matrix of this floor appears to be heterogeneous in composition, possibly indicating interference in the soil conductivity as the result of intrusive features such as hearths, pits, postholes, etc. The outer high conductivity anomaly appears to represent the sides of this possible house mound, which likely accreted through the erosion of previous structures at the same location, or direct deposition (cf., Welch 2006:181–182). Clay (2001:7) observed that this "halo of somewhat higher conductivity" surrounds the prepared surface on all sides with the exception of a small break on the southern side which likely was the location of the entrance to the structure. Clay (2001:7) also notes that "hypothetically this [anomaly] would represent earth/daub once banked closely around the wall of the structure, or in the case of daub, plastered on the walls of the structure." Based on the magnetic field gradient data however, it is unlikely that this material represents fired clay, due to the lack of evidence for broadly distributed strong remnant magnetization of the soils. Clay's earlier magnetic field gradient survey of Grid 4 did reveal, however, the presence of a faint positive point-anomaly near the center of this possible house mound (see Figure 08-43, labeled 'C'). Based on the size, depth, and strength of the signal, Clay interpreted this feature to be some form of prehistoric thermal feature which left localized evidence of remnant magnetization in the soil, possibly a central hearth within the inferred structure.

Evidence of this house mound was also encountered by other remote sensing surveys of the area surrounding Mound A. Bean's 1999 GPR survey and Nickel's 2001 GPR survey of the southern apron of Mound A, for example, revealed a series of broad high amplitude signal reflections around the area of this feature, further supporting its identification as a previously undocumented house mound (see Figures 08-18 and 08-29). In addition, all of the remote sensing surveys that recorded this feature located it in association with a slight topographic rise visible near the southwest corner of Mound A (see Figure 08-47, 'A'). Due to the paucity of detailed field notes from Roberts' excavations, it is not known to what extent this feature was excavated in the past. Based on Welch's reconstruction of former CWA trenches south of Mound A, and surviving CWA field photography (Welch 2001:142, 145; 2006:122; see Figures 08-20 and 08-21), it appears that Roberts' trenches passed just north of this house mound and that it may be relatively undisturbed.

Though not as clearly visible from the conductivity data, Clay identified an identical feature in Grid 10, located approximately 5m east of the aforementioned house mound. This second possible-house mound, labeled 'C' and 'D' in the output (see Figure 08-51) is situated due south of the center of Mound A's southern margin. There are many degrees of similarity between this feature in Grid 10 and the house mound previously identified in Grid 4. Like the previous house mound, the floor of the structure is also composed of a circular mass of lowly conductive soils. This prepared surface, as before, is circumscribed by a "slightly higher [conductive]

'halo,' again hypothetically representing earth from the walls" (Clay 2001:7). Also, similar to the previously identified presumed house mound, the high conductivity soils completely surround the inner anomaly except for a small break on the south side of the feature, interpreted as the entrance to the inferred structure. The presumed entrances for both of the structures immediately south of Mound A are oriented just east of south, facing away from both Mound A and the main plaza. This house mound was also recorded during Bean's 1999 GPR survey as an area of high amplitude signal reflection indicative of compacted and/or fired floor surfaces (see Figure 08-18). There is some discrepancy, however, between the data from Clay's conductivity survey and Nickel's GPR survey (cf. Figures 08-29 and 08-51). Nickel's survey indicated a series of high amplitude signal reflections which he believed were more attributable to a possible ramp (now eroded) leading up the southern slope of Mound A (see Figure 08-29). Some evidence of a ramp is visible within the conductivity data (see Figure 08-51, labeled 'E'), but Clay clearly distinguishes between the possible ramp and this house mound. Perhaps the fact that Nickel was forced to reduce his survey interval from 0.5m to 1m spacing contributed to the differences in opinions between the two remote sensing operators. There appears to be stronger evidence for the presence of two distinct features (a ramp and a house mound) in Clay's conductivity data, whereas Nickel's GPR data supported the existence of a single long ramp. With regard to Clay's magnetic field gradient survey, the lack of corresponding broadly distributed distortions within the magnetic field surrounding this feature (see Figure 08-43) leads to the conclusion that if this feature was fired, the firing was not intensive enough to surpass the Curie point of the constituent clays, which would have produced evidence of remnant magnetization of the surfaces. Unlike the house mound inferred in Grid 4, no remote sensing data supports the presence of a fired thermal feature at the center of this house mound/feature in Grid 10.

Like the magnetic field gradient survey, the electrical conductivity survey of the southern and western aprons of Mound A revealed several instances of metallic debris in the soils surrounding Mound A. These metallic signatures are identified by small white circles in the upper plan-view map in Figure 08-51. Three of the larger metallic strikes in the conductivity data, labeled 'F' in the output, directly correlate to three similar disturbances observed in the magnetic field gradient data (cf. Figures 08-43, 'B', and 08-51, 'F'). The linear orientation, the strength of the signals, and their equidistant spacing leads to the conclusion that these bipolar metallic anomalies are likely associated as part of a larger feature/ structure. The nature and age of these features is unknown, and will likely remain so until archeological investigation can resolve what they are; Clay (2001:9) posits that they may be related to a historic period fence.



Figure 08-50. CWA field photograph showing prepared floor surface beneath Mound J following excavation. Note the presence of at least three iron rods clearly visible in frame (arrows).

In Grid 5, the data from the electrical conductivity survey presents the only linear disturbance which can be confidently associated with a

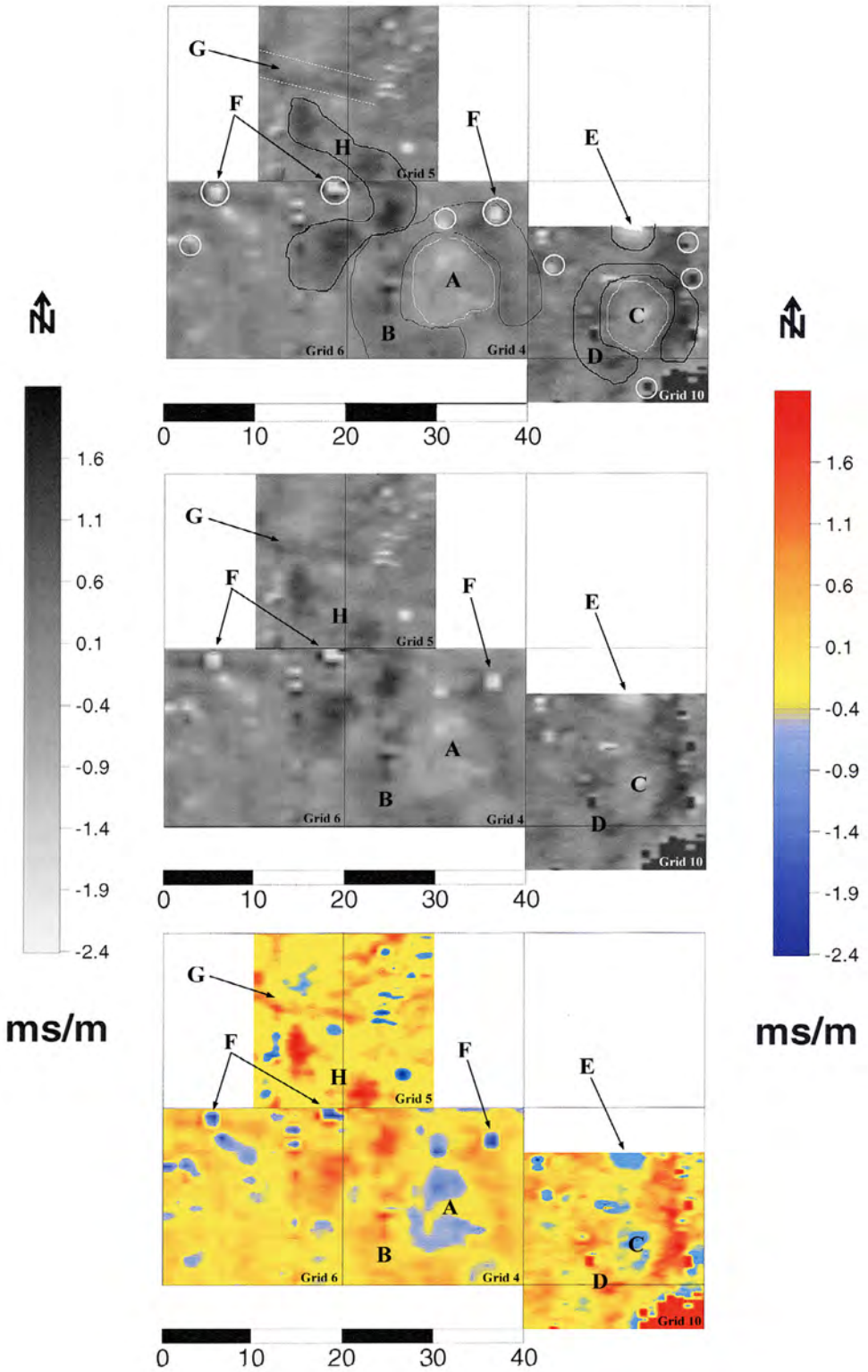


Figure 08-51. Plan-view maps of data collected during 2001 electrical conductivity (Clay) survey of southern and western aprons of Mound A. The upper image shows Clay's interpretations of possible features as large outlines, and metallic signatures are represented by small white circles.

CWA excavation trench. This highly-conductive disturbance, labeled 'G' in the output (see Figure 08-51) roughly corresponds to the central east-west trench placed west of Mound A based on the reconstructions of Roberts' trench locations by Welch (2001:142, 2006:122; see Figures 08-20, 08-21, and 08-47). Extensive trenching and backfilling in this area of the Mound A apron may explain the lack of visibility of other, similar trenches in Grid 5. Another series of highly reflective soil matrices recorded by the electrical conductivity meter in this vicinity, labeled 'H' in the output (see Figure 08-51), may be evidence of this ground disturbing activity. Alternatively, this may represent another possible house mound location based on its size and location, although further remote sensing or more likely excavation would be necessary to know for certain.

Remote Sensing Results

Each of the six remote sensing surveys conducted at the Shiloh Mound Complex contributed to a better understanding of the site's history of occupation and use. In what follows, the possible archeological features postulated from each individual survey are combined to produce a more consolidated theoretical model. This synthesis reflects the fusion of multiple remote sensing platforms and data, an approach which yields more reliable results and implications than could be gleaned through the analysis of any single procedure. This section also discusses how this remotely sensed data compares with established, excavation-based models of the architectural grammar of Mississippian mound centers. The area around Mounds A and B, which were the most intensively investigated, is examined first.

Eastern Section of Shiloh Mound Complex

The eastern portion of the Shiloh Mound Complex is located in the immediate vicinity of Mounds A, B, and D and abuts the Tennessee River bluff line (see Figures 08-27 and 08-47). This area is naturally bounded from the rest of the mound complex by a small ravine to the north (between Mounds A and E), and Mound D, which lies less than 60m south of the ravine. This is the only part of the Shiloh Mound Complex which was investigated by all six remote sensing surveys. Overlaying all of the anomalies recorded during each remote sensing survey over a base-map of the eastern portion of the Shiloh Mound Complex produces a very busy, noisy, and difficult to interpret map (Figure 08-52). Despite the apparent confusion in the data, definite patterns are present based on the size, shape, location, and type of each anomaly. In order to produce an easier-to-interpret rendering of the possible prehistoric components within this data, three steps were taken. First, the total data set was reduced by dismissing those features known to have modern origins based on their apparent shape or signature, such as archeological trenches or metallic debris. This initial step greatly improved the clarity of the data. Secondly, by accentuating those features which were recorded by multiple remote sensing platforms, patterning in the data was made clearer. Finally, by overlaying the remaining data over a map of Welch's reconstructed locations of Roberts' CWA excavations, additional remotely sensed disturbances could be identified and dismissed as either modern disturbance, or anomalies that are inconclusive as to their identification due to extensive disturbance of the immediate vicinity. Theoretically, the remaining data can be interpreted as part of the prehistoric cultural landscape of the Shiloh Mound Complex. Figure 08-53 presents a re-rendered view of what the possible landscape of the eastern portion of this site may have looked like based on the remote sensing data.

Each structure or feature postulated in this model was reconstructed based on data from overlapping anomalous readings recorded by at least two remote sensing platforms. In some cases, as many as five remote sensing platforms recorded similar anomalous readings at the same location, giving a very high degree of confidence in the reconstruction of those features (such as Mound J). The remote sensing signatures for each likely structure or feature were smoothed into stylized shapes based on their tentative identifications and their size and shape as encountered by each successive remote sensing survey. Reconstructions of specific characteristics for many of the recorded

anomalies (i.e. entrances, or features within features) were derived from only one or two remote sensing platforms, and also from surrounding topographic features of the landscape. Those features only recorded by a single remote sensing platform or which were inconclusive in terms of shape, size, or type are rendered using dotted lines. Coincidentally, many of these inconclusive features were observed in areas known to have been extensively excavated during the 1933–1934 field season.

For the most part, the features and structures recorded and reconstructed in the eastern portion of the Shiloh Mound Complex appear to cluster around the larger archeological features such as Mounds A, B, D, and J, while the open areas between them appear relatively devoid of previously unidentified features. The lack of features detectible through remote sensing in these open areas may, however, also be attributable to the extensive disturbance known from these areas, likely reducing the visibility of any *in situ* remains. These remotely sensed features and structures are discussed by subarea in the pages that follow.

Prehistoric Structures and Features Associated with Mound B (Grids 0, 1, and 9)

Mound B is located on the southeast corner of the primary plaza at Shiloh , at the southern end of the 2001 remote sensing survey area,. The slope and summit of Mound B (Figure 08-54, 'A' and 'B') were visible to the naked eye as well as to all of the remote sensing platforms which examined the area. Bean's 1999 GPR survey and Nickel's 2001 GPR survey both revealed high amplitude reflected signals from the summit of Mound B which appear to indicate series of stacked prepared mound surfaces (see Figure 08-54, 'B'). Nickel's GPR data, which was typically much clearer than Bean's, further indicated the possible presence of rectilinear features that he postulated as the possible outlines of one (or perhaps two) structures atop the northern portion of the mound summit (Nickel 2001:8–9, 24). Because similar disturbances were not readily apparent in the data from the resistivity, magnetometry, or conductivity surveys, these possible structures probably do not consist of large quantities of high fired ferrous clays, but may represent areas of greater soil compaction associated with prepared mound surfaces or non-fired structure floors.

Immediately north of Mound B, were the next series of features visible to multiple remote sensing platforms. At the apparent base of the mound a series of three strong point-anomalies were recorded during Clay's electrical conductivity and magnetic field gradient surveys. Two of these anomalies were encountered by each survey, with the easternmost disturbance recorded by both instruments. Based on the strength and bipolar nature of these anomalies, Clay indicates that all three of these localized disturbances (see Figure 08-54, 'C') likely represent ferrous metallic targets at the base of Mound B. Typically ferrous objects are recorded as strong localized point-anomalies on both electrical conductivity and magnetic field gradient data. As mentioned earlier, Clay originally thought that the easternmost of these three disturbances was the remains of a field datum placed during Smith's 1976 field season. Smith's field report, however, clearly shows that of the three field datums which he placed at the site, the closest was nearly 100m north-northwest of Mound B. The linear orientation of these three ferrous targets suggests that they are related, and they are thought to be excavation markers on the north or south profile wall of Roberts' 1933–1934 Trench #18 at the northern foot of Mound B (see Figure 08-47). This argument is further supported by data from Nickel's GPR survey, which shows a linear series of reduced-amplitude readings approximately 2m wide extending east-northeast across the northern foot of Mound B (see Figures 08-24 and 08-26). It was unclear whether the data indicated a filled archeological trench or a prehistorically-filled topographic depression. Based on the data from these three instruments however, it appears likely that these three metallic objects are related to each other, and to a 1933–1934 excavation trench crossing the northern apron of Mound B. Other similar metallic targets which were also observed by multiple remote sensing instruments are labeled 'D' on

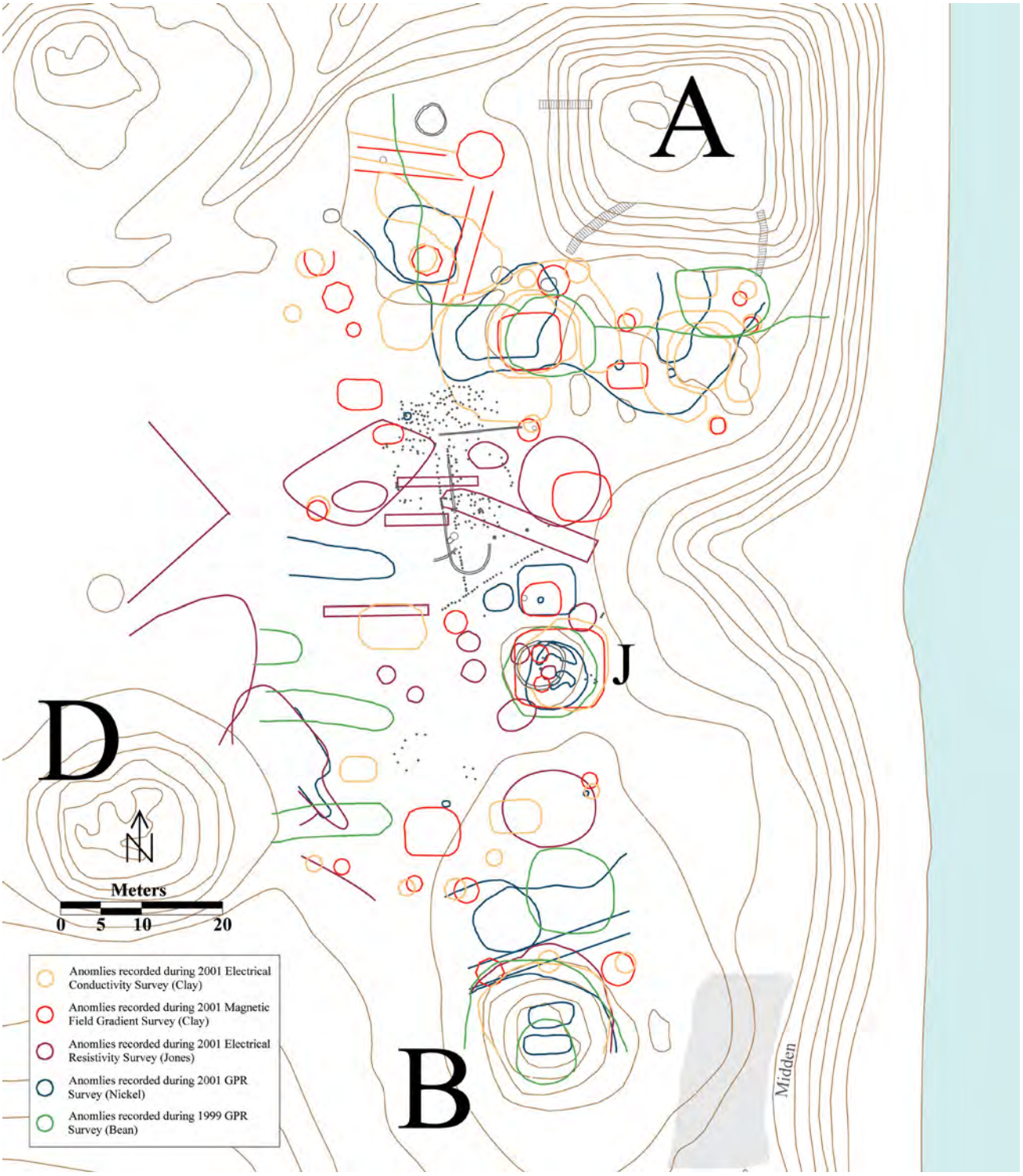


Figure 08-52. Depiction of the eastern portion of the Shiloh mound complex showing all data from possible features and structures recorded during each of the remote-sensing surveys undertaken there.

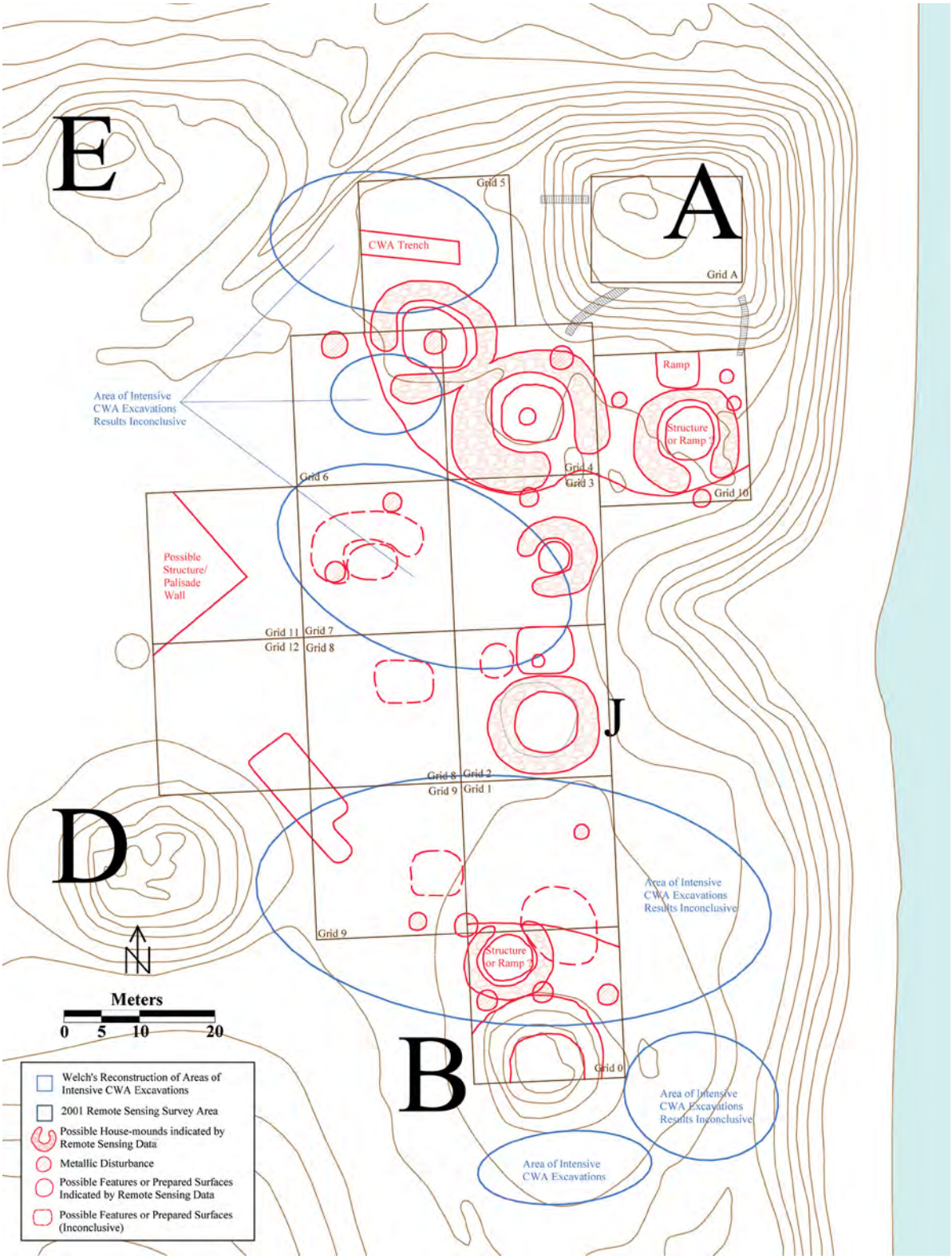


Figure 08-53. Presents a re-rendered view of what the possible landscape of the eastern portion of this site may have looked like based on the remote-sensing data.

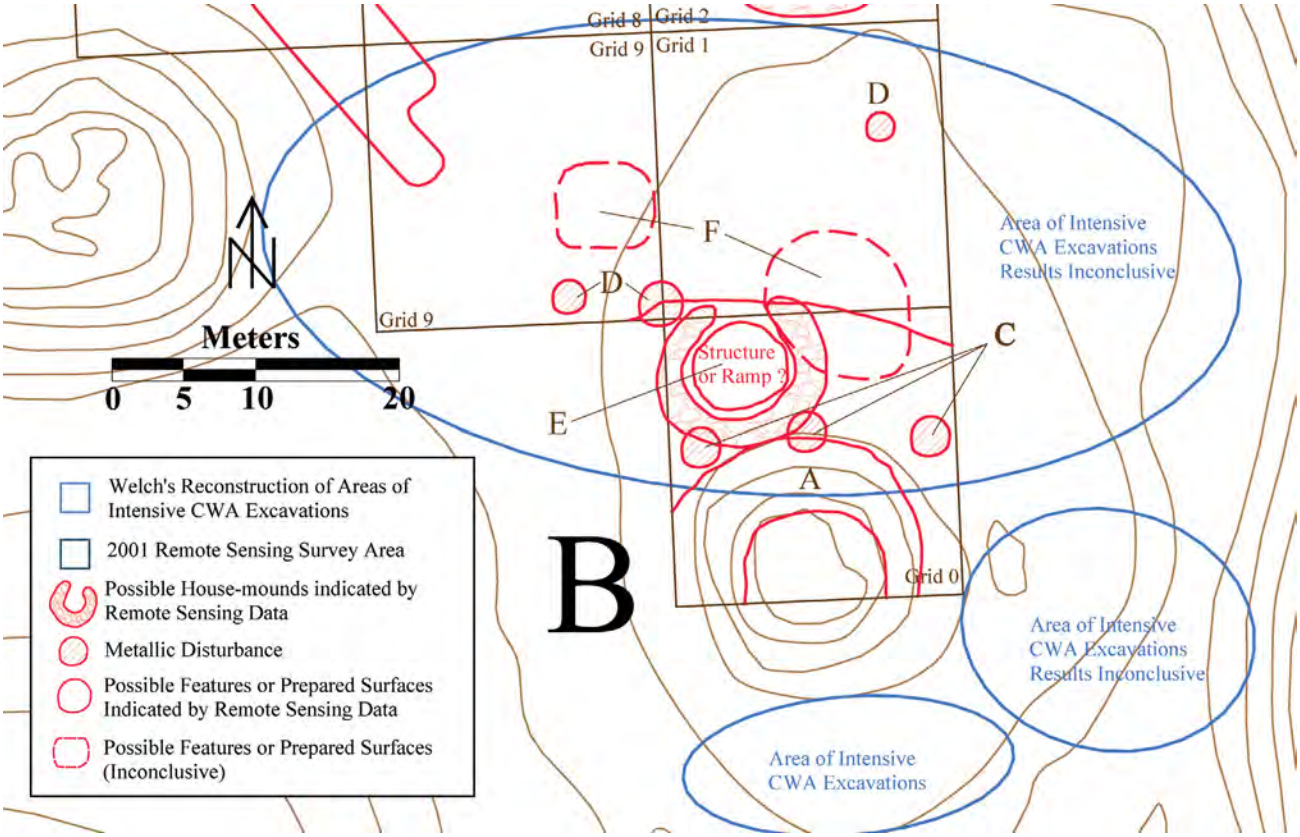


Figure 08-54. Close-up view of the southern extent of the 1999 and 2001 remote-sensing survey area between Mounds A and B showing presumed archeological features.

Figure 08-54. These additional metallic targets do not appear to be spatially patterned, however.

The area immediately north of Mound B was identified by both Bean's 1999 and Nickel's 2001 GPR surveys as an area of moderate to high amplitude signal reflections indicative of possible apron filling. It is unclear whether the GPR data indicates a formal prepared apron or the remnants of individual prepared surfaces and/or structures placed adjacent to the base of the mound (see Figure 08-54, 'E'). Near the northwest corner of Grid 0, Nickel's 2001 GPR data indicated a roughly circular area of high amplitude readings within the observed apron area of Mound B. This anomaly (see Figure 08-26) is likely caused by the presence of a high concentration of radar-reflective clays, indicating some form of prepared surface. The lack of any evidence of this feature in the electrical resistivity or magnetic field gradient data indicates that this anomaly was not extensively burned or fired and is likely the result of an accretion and/or compaction of clay-based soils. The repeated construction of a structure at the same location (thus producing a house mound) may also explain this anomaly. The information is far from conclusive however. For example, Clay's 2001 electrical conductivity survey revealed that at the location of this apparent structure, highly-conductive soils were found to extend out from the base of the mound north-northwest in a more linear pattern (see Figure 08-48). Clay's data, like Nickel's data, seems to indicate a structure or prepared surface composed of earth and clay in this area. Both sets of data also support the notion that the surface was not high-fired during its preparation. The only real difference in the data appears to be in the shape, size and orientation of the feature. While Nickel's data indicates a circular feature (likely a structure floor or house mound), Clay's data shows a more linear feature which extends north-northwest approximately 10m

further from the base of Mound B than Nickel's feature. Based on the plan-view map of Clay's data, an alternative hypothesis for the identification of this feature is that it may represent a ramp servicing the northern side of Mound B. Unfortunately, the lack of corresponding signatures on the other remote sensing data sets makes further refinement of the possible identification for this feature difficult without additional excavations. However, the fact that the GPR data suggesting a structure is greater in strength and clarity than the conductivity data suggesting a ramp, leads to the tentative identification of these signal anomalies as indicative of a structure (cf. Figures 08-28 and 08-48).

Two additional possible structures or surfaces may also be present adjacent to the northeast and northwest sides of this structure. These features (see Figure 08-54, 'F') were each present in only a single set of remote sensing data. The first of these, along the boundary of Grids 0 and 1, appeared as a series of high amplitude signal reflections in Bean's 1999 GPR data which corresponded to a slight topographic rise in the surrounding ground surface north of Mound B (see Figure 08-15). Curiously, no evidence of this structure appeared on Nickel's 2001 GPR data, or on any other remote sensing platform data for that matter. The corresponding rise in the topography of the ground at the location of this possible feature may, therefore, be more closely related to backfilling operations associated with the CWA excavations north of Mound B than to prehistoric alteration of the landscape. The second anomaly, near the east-central portion of Grid 9, was thought by Clay to be a possible thermally-altered soil deposit. He based this on slight differences in the remnant magnetization observed in the magnetic field gradient data. Such evidence of remnant magnetization is often evidence of intentional burning of ferrous soils, typically in association with the preparation of floor surfaces for structures. The evidence for positive identification of either of these two anomalies is very slight, however, due to their lack of visibility in the data from the other remote sensing surveys. The extensive CWA excavations in the general area has likely reduced the visibility of any features, which is why they are considered inconclusive (see Figure 08-54).

The final feature of archeological interest recorded from the vicinity of Mound B is the apparent signature of a rectilinear archeological trench that has been tentatively attributed to Smith's 1976 excavations (see Figure 08-54, 'G'). Remotely-sensed evidence of this trench was present on the plan-view data from Nickel's 2001 GPR survey and Jones' 2001 electrical resistivity data (cf. Figures 08–26 and 08–34). In both cases, the general outline of the feature was very similar. Also of some interest is the fact that Smith (1977:7) noted the presence of definitive evidence of CWA trenches in the floor of his excavation trench. Further evidence of these CWA trenches encountered during Smith's excavations may be indicated from GPR data collected during Bean's 1999 survey (see Figures 08-15 and 08-53). Evidence for this 1976 excavation trench continues northwestward into Grids 8 and 12.

Prehistoric Structures and Features Associated with the Area around Mound J (Grids 2, 3, 7, and 8)

North of the Mound B area lies a relatively flat open area south of the southern and western aprons of Mound A (see Figure 08-55). The primary visible archeological feature in this area is Mound J, which is known to have been completely excavated down to a large fired clay surface by work crews during the CWA fieldwork at Shiloh. Subsequently, Mound J appears to have been backfilled and re-contoured after the exposure of this *in situ* surface. Mound J was the most visible prehistoric feature observed during the remote sensing surveys. This structure was observed in the data from Bean's 1999 and Nickel's 2001 GPR surveys, Jones' 2001 electrical resistivity survey, Clay's 2001 electrical conductivity survey, and Clay's 2001 magnetic field gradient survey. In all cases, Mound J appears as a circular feature with a moderate to high degree of heterogeneity to its internal deposits. The anomalous nature of the data recorded within the limits of this feature was noted by Nickel (2001:13) in his description of the Mound J surface as

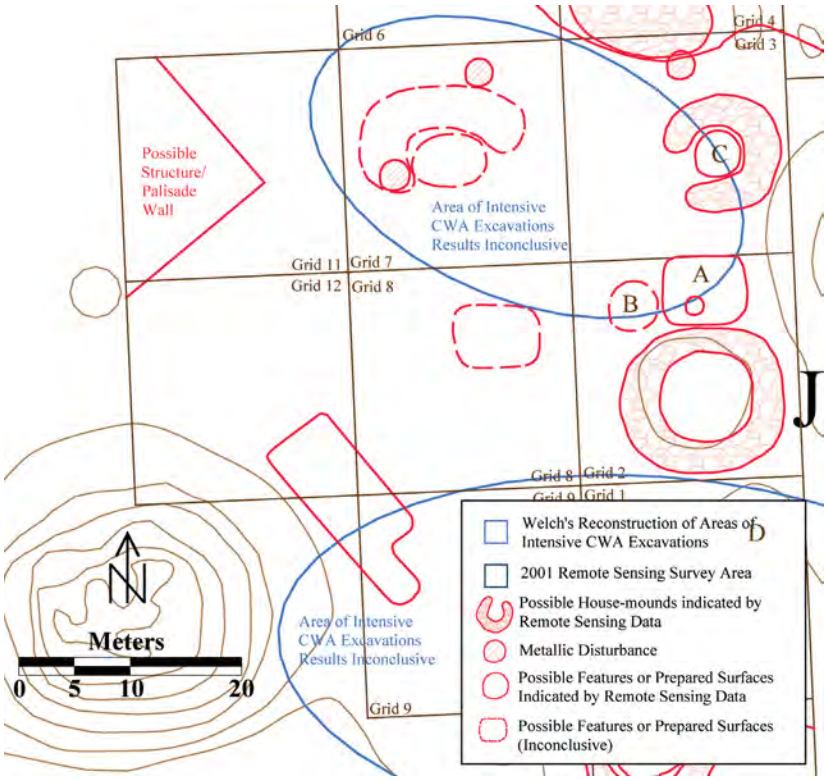


Figure 08-55. Close-up view of the central extent of the 1999 and 2001 remote-sensing survey area between Mounds A and B showing presumed archeological features.

relatively uneven and deeply buried beneath the re-contoured mound. It is known from surviving CWA field photography (see Figure 08-50) that the floor of the structure in this house mound had a highly uneven surface. This alone does not fully explain the pronounced heterogeneity of the data recorded at the center of the structure in some of the surveys. In particular, Jones' electrical resistivity survey (see Figure 08-35), Clay's magnetic field gradient survey (see Figure 08-41), and Clay's electrical conductivity survey (see Figure 08-49) recorded highly varied magnetic and electrical data within the presumed prepared floor surface at the center of the house mound. One explanation that Clay, Jones, and Welch all seem to agree on is that this internal variability is due, in part, to the presence of metallic objects, likely ferrous in composition. Clay (2001:7, 9) posits that these metallic targets likely represent the remains of iron rods used to delimit units within the Mound J excavations. This hypothesis is supported in part by Welch (2001:169) based on his compilation of original CWA field records and photography.

Unlike other house mounds encountered during the remote sensing surveys at Shiloh, the extensive excavation of Mound J has made it virtually impossible to reconstruct which direction the structure's entrance faced. Typically house mounds appear as a pair of features in remote sensing data. The first feature is the central structure floor which is usually composed of some form of prepared surface. This is, in turn, surrounded by the second feature, a ring of dense house mound material which is the product of the erosion/destruction of previous structures, and increased use of and disposal of material in the immediate area in and around the structure. Based on the evidence from other house mounds encountered at the site as well as the experience of the remote sensing operators, this ring of accreted house mound matrix surrounding the presumed floor surface is commonly broken on one side and that this break is presumed to be associated with the entrance to the structure (Clay 2001:6–7; Jones 2001:7). No such entrance signature could be definitively recorded by any of the remote-sensing procedures used to examine Mound J, although highly equivocal evidence for an entrance break to Mound J may be present in Jones' 2001 electrical resistivity output (see Figure 08-35). This data shows a general decrease in the overall electrical resistivity of the soils composing the western side of the ring of highly resistive soils which surround Mound J. This break, just west of the prepared structure floor, would have faced out toward the center of the main plaza. The inference that Mound J's entrance may have faced the center of the plaza corresponds with the placement of presumed entrances in some of the other house mounds encountered during the remote sensing surveys, that

appear to face away from the major mounds they are associated with, and toward more open areas.

Surrounding Mound J, individual remote sensing procedures recorded several possible features. However, only three of these features were recorded by multiple instruments. The first of these is a rectangular feature encountered immediately due north of Mound J (see Figure 08-55, 'A'). This feature was observed during Nickel's 2001 GPR survey as an area of low amplitude signal reflections ringed by a very thin band of high amplitude anomalies. This anomaly does not bear any particular resemblance to other house mounds recorded by Nickel's GPR. There is no large series of high amplitude signal reflections indicative of stacked surfaces or house mounding. This feature may represent a possible structure floor surrounded by a series of small disturbances, perhaps from a rectangular wooden building characterized by wall lines of set posts or wall trenches (see Figure 08-28, 'B'). Near the center of this possible structure lies a localized spike of higher-amplitude signal reflections which may be a central hearth. In Jones' electrical resistivity data, this possible structure appears to be composed of very lowly-resistant soils indicating a possible composition of ferrous clays (see Figure 08-35: 'E'). Jones' data does not clearly show an additional feature at the center of this structure however. The opposite is true for Clay's magnetic field gradient data. Clay's fluxgate gradiometer recorded highly localized remnant magnetization near the area of the central hearth of this structure but recorded no corresponding field distortion associated with the floor or possible wall-lines of the structure (see Figure 08-41, 'B'). The differential recording of this possible structure leads to some inferences about its characteristics. It was likely rectangular in shape, measuring approximately 6m E-W by 5m N-S, with postholes surrounding a lowly resistant prepared floor surface. This floor surface, though ferrous in composition, does not appear to have been significantly heated or burned to create a remnant magnetic field, nor does it appear to be composed of multiple stacked surfaces. It may represent a structure which was only briefly used. A hearth or other fired feature is located near the center of the structure floor, which was heated beyond the Curie point of its constituent ferrous soil material, thus producing a remnant magnetization. However, the location of this structure immediately adjacent to Mound J does not rule out the possibility that the floor surface observed in the remote sensing data represents a small plaza, perhaps with an enclosing fence or screening wall and an interior open hearth. As is the case with most of the remotely-sensed features at Shiloh, further investigation and/or test excavation will be essential to conclusively identify what is represented.

Adjacent to the western side of this possible structure, and lying off of the northwest edge of Mound J, Nickel's 2001 GPR survey and Jones' 2001 electrical resistivity survey produced inconclusive evidence of an additional small feature. This anomaly (see Figure 08-55, 'B') appeared as a round high amplitude disturbance on the lower time-slice of Nickel's GPR data (see Figure 08-28, 'A'). In Nickel's data, this feature appears as a slightly smaller version of the prepared surface at the center of Mound J. This anomaly may represent a prepared surface from a small round structure. Unlike Mound J though, this prepared floor surface does not appear to be in association with a house mound. The lack of a high amplitude signal indicative of a series of stacked prepared surfaces indicates either short period or relatively non-intensive use of the structure.

Jones' electrical resistivity data shows that, like the previously described structure immediately north of Mound J, the soils which compose this inferred small structure are very lowly resistant to electrical currents (see Figure 08-35, 'D'). Therefore, the floor of this structure was likely constructed of some form of ferrous clay. The lack of a corresponding feature in the magnetic field gradient data (see Figure 08-41), however, indicates that this clay surface was not extensively fired or burned, given the lack of any evidence for remnant magnetization of the soils. Like Mound J, there appears to be heterogeneity in the reflected GPR signals from this possible floor surface (e.g., see Figure 08-28, 'A'), thus indicating the possibility of internal features within the structure. If there

are internal features within this possible structure however, none of them produced fields of remnant magnetization which could be detected by the fluxgate gradiometer. Therefore it does not appear that there is evidence for a fire-feature within this structure. The general lack of clarity in the representation of this possible structure in the remote sensing data leads to equivocal determinations of its size, shape, and possible identity, which is why is presented as 'Inconclusive' in nature on the extrapolated view of the landscape of the eastern portion of the Shiloh Mound Complex (see Figures 08-53 and 08-55).

The association of these three prehistoric features, Mound J, and anomalies A and B, provides interesting data on special patterning within this portion of the mound complex. Similar to the more equivocal anomalies encountered at the base of Mound B, the presence of these features indicates that less intensively utilized structures may have occurred at the base of the more formal mounds and mound-structure complexes at the site, something also evident on the north, south, and west sides of Mound A, both in the remote sensing data, and from the results of the excavations conducted in this area from 1999 to 2004. Evidence from archeological excavations at the King site in Floyd County, Georgia indicates that the close clustering of structures and house mounds was not uncommon at larger Mississippian centers (Hally and Kelly 1998; Hally 2008:50–120; see Figure 08-58 below). Hally and Kelly (1998:57) describe such associated constructions as 'multi-structure households.' Additional evidence of the close association of structures with mounds is presented by Polhemus (1987) in his field report of excavations at the Toqua site, a late Mississippian mound center in Monroe County Tennessee.

The final anomaly from this portion of the survey area which can likely be attributed to a prehistoric structure or feature appears approximately 20m north of Mound J (see Figure 08-55, 'C'). This anomaly was observed in the data from Jones's 2001 electrical resistivity survey, and Clay's 2001 magnetic field gradient survey. In Jones's data (see Figure 08-35, 'F'), this feature bears great similarity in composition and shape to Mound J. Like Mound J, this disturbance consists of a ring of higher resistance soils surrounding a series of lower resistance soils. A break in the strength of the highly resistive soil signature is present in the southwest portion of the anomaly, possibly indicating the presence of a doorway that opened out toward the plaza area. However, the lack of much evidence for this feature in Nickel's 2001 GPR data (see Figure 08-28) suggests it was not a series of stacked floor surfaces that would produce differential radar reflective characteristics in the area. This leads to the possible conclusion of a less intensively utilized structure, a non-mounded structure, or a structure which lasted for a shorter duration than Mound J. Further evidence supporting this anomaly's identification as a possible lightly-utilized structure, and not a product of past excavation (likely the source of the anomaly 20m to the west), comes from Clay's magnetic field gradient survey (see Figure 08-41, 'C'). Clay identified a bipolar magnetic disturbance near the center of the possible structure 20m north of Mound J that appears to be the result of a localized, thermally-derived, magnetic field distortion. According to Clay, such distortions are likely isolated fire features, such as hearths or areas of localized burning, rather than fired floor surfaces. The absence of evidence for significant thermal alteration to the rest of the inferred structure floor suggests it never burned, and saw only a low level of utilization. Although Welch (2001, 2006) indicates that extensive CWA excavation took place in this area, there is no evidence indicating that any structures were found. Resolution of this feature's identity will require new excavations.

Prehistoric Structures and Features Associated with the Area around Mound A (Grids 4, 5, 6, and 10).

Flanking the western and southern faces of Mound A are five remotely sensed anomalies which appear to be indicative of prehistoric features (Figure 08-56). Three of these features likely represent aboriginal structures at the base of Mound A. The fourth anomaly recorded during the 1999 and 2001 remote sensing surveys may represent the remains

of an earthen ramp adjoining the southern face of Mound A. The fifth anomaly is the prepared apron which surrounds Mound A. All of these anomalies were recorded by multiple remote sensing platforms and, perhaps more than any other area of the Shiloh Mound Complex, provide clear evidence for size and shape of these specific respective features.

The first of these anomalies (see Figure 08-56, 'A') is centered approximately 15m west of the southwestern foot of Mound A, and is a possible house mound. Measuring just under 15m in diameter, it was observed in the data from Clay's 2001 electrical conductivity survey, Clay's 2001 magnetic field gradient survey, and Nickel's 2001 GPR survey. Each of these three sensors recorded data about different aspects of this feature that, taken together, provide a detailed view of the composition and layout of this structure. During Clay's 2001 electrical conductivity survey, data was collected indicating a semicircular ring of highly-conductive soil matrices surrounding a circular area of neutrally conductive soils (see Figure 08-51, 'H'). Such signatures usually indicate the remains of eroded earth, plaster, or daub at the base of a standing structure. The lack of decreased conductivity of the soils within this ring of more highly-conductive soils suggests that, if this is indeed a structure, the floor surface was most likely not prepared through firing or compaction. Instead it would appear from Clay's data that the floor exhibited the same characteristics as the underlying apron of Mound A. Clay did however observe a bipolar anomaly at the center of this feature during his 2001 magnetic field gradient survey (see Figure 08-43, 'B'). It is not entirely clear however if this point-anomaly represents a thermally altered feature such as a small hearth, ferrous excavation debris, or a possible fencepost crossing the site. Because of this, it must be said that, of the three possible structures identified at the base of Mound A, this feature appears the most equivocal. Additionally, the proximity of this feature to several CWA excavation trenches known to have been placed in this general area, provides for the possibility that this feature may, in fact, represent remotely-sensed evidence for backdirt piles or other excavation disturbance near the base of Mound A. However, one piece of evidence which strongly reinforces the identification of this anomaly as an aboriginal structure comes from the presence of this feature on both the upper and lower time-slices of Nickel's GPR data (see Figure 08-29, 'A'). High amplitude signal reflections in this area clearly show a rounded anomaly which persisted relatively deep within the apron of Mound A. The depth of this anomaly would likely preclude its identification as a backdirt pile, since that kind of feature would likely be resting on the surface. Based on the evidence, if this anomaly is indeed a prehistoric structure, it would appear that the opening of this structure faced just south of west, toward the main plaza, an orientation previously seen for structures located near Mounds B and J.

Evidence for another possible structure was found adjoining the southeastern edge of Structure 'A'. This second structure, designated 'B' in Figure 08-56, appears to be centered approximately 10m southwest of the southwestern corner of Mound A, primarily in Grid Unit 4. Unlike Structure 'A', however, this anomaly was recorded in each remote sensing survey conducted in this area. Additionally, evidence for fired surfaces, presumably from house floors, were found in this area during the 1933–1934 excavations (Welch 2001, 2006:122). The presence of a circular anomaly of lowly conductive soils, circumscribed by a "halo of somewhat higher conductivity" (Clay 2001:7) (see Figure 08-51, 'A' and 'B'), which also produces high amplitude GPR signal reflections in both the upper and lower time-slices (see Figure 08-29, 'C'), is very strong evidence for identification of this feature as a house mound. Faint positive point-anomalies within the presumed floor area of the structure also indicate the possible locations of fire-related features within the larger structure. Of all the anomalies identified as likely structural remnants recorded around the base of Mound A, this series of remotely sensed anomalies represents the clearest and most unequivocal evidence for a possible house mound, particularly of the composition proposed by Welch (2001, 2006:181). Based on the evidence recorded during Clay's 2001 electrical conductivity survey, and Nickel's 2001 GPR survey, it would appear that the

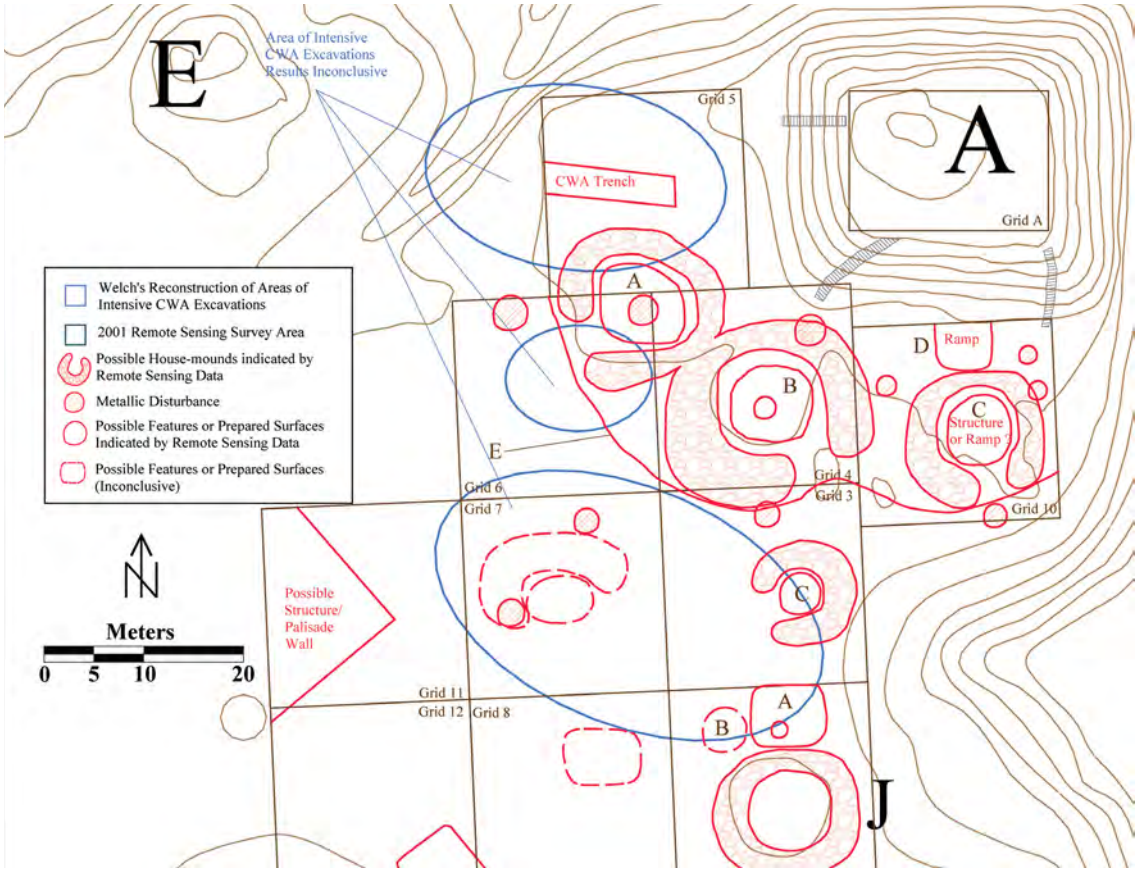


Figure 08-56. Close-up view of the northern extent of the 1999 and 2001 remote-sensing survey area between Mounds A and B showing presumed archeological features.

opening of this structure faced just east of south. This direction of entry/exit is in line with the inferred entranceway in the third possible house mound located immediately south of Mound A, designated 'C' in Figure 08-56. Prior to SEAC excavations at the site in 2001, and associated screening activity which took place on both the north and south sides of Mound A, a slight topographic rise was observed at the location of this inferred Structure 'B', further supporting the idea that these signal anomalies represent a prehistoric house mound.

In Grid 10 to the south of Mound A, two series of anomalies are particularly evident in the data collected during the 1999 and 2001 remote sensing survey work. The first of these (see Figure 08-56, 'C') appears to be another possible house mound flanking the base of Mound A. Like the feature labeled A in Figure 08-56, this anomaly was not recorded by all four of the remote sensors utilized in this area of the Shiloh Mound Complex. Instead, anomaly 'C' was, like anomaly 'A', only weakly recorded by Nickel's 2001 GPR survey (see Figure 08-29, 'B') and yielded more detailed evidence during Clay's 2001 electrical conductivity survey (see Figure 08-51, 'C' and 'D'). Clay's survey, again, produced evidence for a semicircular ring of highly-conductive soil matrices surrounding more neutral and lowly conductive soils, the expected electrical conductivity signature for a prepared floor surface surrounded by eroded non-fired wall remnants (Clay 2001). Though not as strongly recorded as presumed Structures 'A' and 'B', Structure 'C' did produce some upper and lower time-slice high amplitude reflections in Nickel's GPR data (see Figure 08-29, 'B'). Unfortunately, this area of the 2001 survey grid was situated at the western end of the area where GPR survey work took place in 1999, and the transects that were

run, while showing evidence for disturbance, only partially covered the extent of the inferred structure (see Figure 08-18, Transects 88 to 91). If anomaly 'C' does represent a third house mound at the base of Mound A, its period of use or intensity of occupation may have not been as extensive as that for Structures 'A' and 'B'. Also of note, there were no additional point-anomalies recorded during Clay's 2001 magnetic field gradient survey which, if present, would suggest internal fire-related features within this possible structure (see Figure 08-43). Strong magnetic field disturbances were recorded at four separate locations north and south of anomaly C however. These disturbances, also present in the electrical conductivity data (see Figure 08-51), indicate the presence of buried metallic objects. The reason for the reduced visibility of this inferred third structure 'C' at the base of Mound A may be related to CWA period excavations in the area immediately south of Mound A. While Welch's (2001, 2006) reconstruction of Roberts' 1933–1934 fieldwork does not indicate trenching took place in this area (see Figures 8-17 and 08-20), Roberts' workmen were known to have excavated large blocks outside of the areas of known or inferred trenches. Such areas are clearly apparent on the southwest and western portions of the apron for Mound A, where numerous features are recorded (see Figures 08-20, 08-27, 08-33, 08-42, and 08-47); If similar activity was undertaken on the southern apron of Mound A (as the presence of this metallic debris suggests, if they represent remains of datum stakes), the field documentation does not appear to have survived.

Just to the north of this anomaly (Structure 'C'), immediately abutting the southern slope of Mound A, lay remotely-sensed evidence for a different type of feature altogether, a possible ramp (Clay 2001:20; see Figure 08-56, 'D'). This feature was recorded by both Bean's 1999 GPR survey and Nickel's 2001 GPR survey (see Figures 08-18 and 08-29), as well as Clay's 2001 electrical conductivity survey (see Figure 08-51, 'E'). Of the two GPR data sets, Nickel's more clearly shows the elongated rectilinear shape most commonly associated with such a feature. These high amplitude signal reflections were recorded in both the upper and lower time-slices of the 2001 GPR data, indicating that the feature originates from a depth of at least a meter or more. If the identification of this feature is correct, then the implication is that this anomaly represents a ramp associated with an earlier construction phase and/or episode of Mound A. Additionally, due to the depth of the signal reflections, this inferred ramp likely predated the placement of the deposits which now comprise the apron currently adjoining the southern flank of Mound A. The strength of the 2001 GPR signal reflections indicates highly compacted soils in the area of this anomaly. This is also true of the evidence for this feature recorded during Clay's 2001 electrical conductivity survey (see Figure 08-51, 'E'). In Clay's data, this feature appears as an area of very lowly conductive soils. Clay (2001:9) describes such lowly conductive events as possible evidence of highly compacted soils. The lack of any obvious corresponding data associated with this feature recorded during the magnetic field gradient survey (see Figure 08-43) indicates that this feature, if indeed made of highly compacted soils, does not show any signs of firing in its preparation, further supporting its identification as a possible ramp. Bean's 1999 GPR survey, like Nickel's 2001 GPR survey, recorded a broad series of high amplitude signal reflections associated with this feature (cf. see Figure 08-18, Transects 93 to 96; see Figure 08-29). However, due to the broader survey interval and less precise instrumentation employed in Bean's survey, it cannot be determined from it to what degree this possible ramp may be associated with the apron deposits which surround Mound A.

The final feature to be discussed in respect to the remotely-sensed anomalies surrounding the southern and western flanks of Mound A, is the apron itself (see Figure 08-56, 'E'). This feature was recorded during both Bean's 1999 and Nickel's 2001 GPS surveys (see Figures 08-18 and 08-29), and was additionally examined archeologically (i.e., ground-truthed) during both the 1933–1934 CWA, and 1999–2004 SEAC field work at Shiloh. The evidence from both the remote sensing and excavation-based investigations produced similar results as far as the composition of the apron is

concerned. The broad, generalized, areas of high amplitude signal reflections recorded during both GPR surveys indicate compacted soils surround the western and southern flanks of Mound A. The data from Nickel's 2001 GPR survey was more precise in that it recorded not only evidence of the apron, but also provided contrast between the apron and features within it, like the possible house mounds and floors. In this respect, Bean's 1999 GPR data was somewhat lacking in that only a few large features like one of the possible house mounds and the inferred ramp were visible in the apron (see Figure 08-56, 'B', 'D'). The composition of these soils could further be interpreted to have been generally non-ferrous or fired at great heat given the absence of signatures in Clay's 2001 magnetic field gradient surveys (see Figure 08-43). Clay's 2001 magnetic field gradient survey did however produce possible evidence of some of the CWA trenching which took place along the western side of Mound A, as did Clay's 2001 electrical resistivity survey (see Figures 08-43 'D' and 08-51 'G'). These two surveys, while not revealing the apron itself, did record evidence of linear anomalies which correspond well to Welch's reconstruction of the locations of some of Roberts' 1933–1934 excavation trenches (see Figures 08-20 and 08-21). During the excavation of these trenches, Roberts noted that Mound A was not originally constructed on the same ground surface now present at the site, but that instead the area appeared to have been built up 2–3m. The 1999 and 2001 GPR surveys thus provide some evidence about the extent to which the apron of Mound A extended out into the plaza, apparently leveling the area where Mound A was ultimately placed, and perhaps filling a shallow depression that may have been in this area, given that the base of the mound appears to be well below the level of the plaza (See Chapter 9).

Western Section of the Shiloh Mound Complex

Due to the fact that the six remote sensing surveys focused primarily on the eastern portion of the Shiloh Mound Complex, little more can be said with regard to work conducted in the western portion, beyond what has been covered in earlier sections of this chapter. However, one area that was examined by multiple remote sensing platforms was Mound G, the westernmost primary mound at the center.

Prehistoric Structures and Features Associated with the Area around Mound G.

The summit area of Mound G was investigated during three of the six remote sensing surveys, with GPR by Bean in 1999 and Nickel in 2001, and a magnetic field gradient survey conducted by Clay in 2001 (cf. Figures 08-03, 08-25, and 08-39). Each of these surveys provided evidence of possible disturbances within the mound summit which can be attributable to the use of Mound G as a burial site for soldiers. These soldiers were later exhumed and reburied in 1866. Though each remote sensing survey produced unique results and data sets, the fusion of the data from these individual surveys shows patterning in the location of specific significant anomalies within Mound G. Most notable among these anomalies is a broad rectilinear feature running north-south along the western margin of the summit of Mound G. Portions of this disturbance were recorded by all three remote sensing platforms used at Mound G. The size, shape, and depth of this disturbance is best illustrated by the data collected during Nickel's 2001 GPR survey (see Figure 08-25). It is apparent from the collected data that a series of large and deep disturbances to the local soil matrices are present. Additionally, the approximate size of the disturbance, 2–3m wide and 9–10m long, fits well with the expected size and shape of a burial and/or exhumation trench. Based on evidence from Nickel and Clay, it also appears that specific point-anomalies within the broader disturbance are present that may be metallic objects or debris formerly associated with these burials but not recovered at the time of exhumation (i.e. weapons, uniform equipage, or other debris). It is also of some note that Clay identified a large distortion in the local magnetic field along the eastern summit edge which he tentatively identified as a possible iron object of considerable size (see Figure 08-39, 'D'). He further suggested that the object may have been an iron casket, although this is considered

unlikely. Given the expediency with which soldiers were buried after the battle, if this is indeed a casket, it is highly unlikely that it was related to the Civil War use of Mound G for military interments. Data from Bean's 1999 GPR survey also indicated the possibility of intact structure floors near the center of the Mound G summit (see Figure 08-03). This is an equivocal finding at best, however, due to the fact that during his survey, only two perpendicular transects were run across the summit, and the fact that no firm evidence of compacted and/or fired clay prepared surfaces was found during the other two remote sensing surveys.

Prehistoric Structures and Features Associated with the Area around Mounds C, D, E, and F.

Unfortunately, none of the areas of the Shiloh Mound Complex in the vicinity of Mounds C, D, E, or F were examined by multiple remote sensing platforms. These areas were surveyed during Bean's 1999 GPR work, but since most subsequent remote sensing work was directed to the vicinity of Mounds A, B, G, and J, no additional data sets have been collected to compare against Bean's findings. In addition to the analysis of Bean's data presented here, and in the MA thesis this chapter is based upon (Lydick 2008), Paul Welch also prepared an analysis of the 1999 GPR work (Welch 2001; Welch et al. 2006), which was directed primarily to using remote sensing to determine the locations of earlier archeological investigations at the site, particularly Roberts' 1933–1934 excavation trenches.

Inter-Site Comparisons

To this point this chapter has focused on the specific anomalies, features, and groups of features during the six individual remote sensing surveys conducted at Shiloh Mound Complex. This section will focus on comparing this remotely-sensed evidence of the prehistoric landscape at Shiloh to other Mississippian mound centers in the Southeast. The goal of this comparison is to highlight some common design themes, construction patterns, and development trends shared by these settlements. These site characteristics are defined by Lewis and Stout (1998:2) as an architectural grammar that Mississippian societies in the region employed in the layout and maintenance of their communities and ritual precincts. They define this concept as being separate from architectural style in that architectural grammar is a product of ritual prescription and, unlike style alone, denotes a manifestation of socio-political and cosmological concepts through the defining and limiting of space on the prehistoric landscape. Traditionally, the generic architectural grammar for Mississippian mound centers has been conceptualized as a series of mounds associated with elite religious, political, or administrative activities (Figure 08-57; Lewis and Stout 1998; Lewis et al. 1998:7; see also Anderson 2012). These mounds typically border and/or delimit an open area, clear of other structures or obstructions, called a plaza. Plazas in Mississippian societies are viewed as large public spaces for the populace. Beyond the mound and plaza portion of the site were the various 'neighborhoods' or residential and commercial districts that housed the populace and produced the goods for the mound center. Finally, palisades served to both protect the settlement from outside aggressors, and within community, to segregate portions of the community or population along social boundaries; palisades or internal screening walls also served to separate some mound groups or households from the rest of the center (Lewis et al. 1998). The similarities and differences in the different types of features observed at Shiloh and at other similarly sized and dated Mississippian centers will be examined to see how they contribute to furthering our understanding of the role spatial patterning and architectural grammar may have played at Shiloh.

During Moore's 1914 Tennessee River expeditions, fifteen sites (Shiloh included) were visited in Hardin County along the Tennessee River. Ten of these sites were either partially or fully excavated by Moore (1915:220–232). Beyond the immediate vicinity of Shiloh however, Moore encountered few sites. In his synthesis of Shiloh archeology, Welch (2006:252–258) describes the clustering of Mississippian sites near Shiloh as an independent cultural phase, which he designated the Shiloh phase. The tight geographic clustering

of Mississippian mound centers extends roughly 44km upriver to the Swan Pond/McKelvey site, and 24km downriver to Swallow Bluff Island (Welch 2006:252). Outside of this ca. 68-kilometer stretch of the river, there is no evidence for significant Mississippian settlements or centers for another nearly 50km both upstream and downstream. Based on artifact morphology, settlement architecture, and geographical positioning, Welch (2006:253–255) notes that, "the Mississippian mound sites from Swallow Bluff Island to Swan Pond/McKelvey constitute a clearly bounded cluster… of communities, probably correspond[ing] to our notion of a distinct society." Furthermore, based on artifactual studies of domestic artifacts recovered at Shiloh, and the lack of immediate neighboring polities or phases for some distance upriver or downriver, Welch hypothesizes that the Shiloh phase was rather isolated from, and to some extent characterized by a "lack of visible involvement in regional political relations" (Welch 2006:263). The towns and centers that comprised the Shiloh phase, he argues, were more concerned with domestic matters than with extra-local relations. Based on artifactual studies of imported goods found at Shiloh however, Welch posits that Shiloh, even as a relatively independent phase, did have associations with other Mississippian phases and sites through the practice of trade (Welch 2006:259–263). Artifacts recovered during the 1933–1934 CWA excavations as well as those conducted from 1999 to 2004 link Shiloh to the Stirling phase at Cahokia in the American Bottom, and to other early and middle Mississippian period sites such as Link Farm, Etowah, Jonathon Creek, Kincaid, Wickliffe, the Moundville chiefdoms, and the Koger's Island phase. The Koger's Island phase, located in the central Tennessee River Valley of northern Alabama and dating to the fourteenth and fifteenth centuries, may be where the peoples of the Shiloh phase relocated following the abandonment of the Shiloh and Savannah mound centers around 1400–1450 A.D. (Welch 2006:262–263).

It would make logical sense to begin a discussion about inter-site comparisons of the Shiloh prehistoric architectural landscape by looking at other sites within the Shiloh phase itself. Unfortunately, the archeological record at many of these sites has either been minimally investigated, or has been compromised by agricultural activities, land development, looting, and natural processes such as riverbank erosion. Many of the archeological sites Welch (206:253–254) attributes to the Shiloh phase, with the exception of Shiloh itself, have been largely obliterated. For this reason, it is not be possible to discuss similarities and differences in the spatial organization, landscape architecture, and architectural grammar of Shiloh and its closest neighbors. Instead, this discussion will focus on more distant polities and centers. For the sake of argument then, it will have to be assumed that the architectural grammar of Shiloh Mound Complex represents the typical and the standard in Shiloh phase architecture, spatial organization, and site construction.

The Shiloh Mound Complex is a unique in site in American archeology in that, due to the battle of Shiloh in April of 1862, and the setting aside of the battlefield as hallowed ground, the center was saved from future destructive site-use (i.e. agriculture or development) through its inclusion within SHIL. In addition to the mounds themselves, the plaza and surrounding areas comprising the rest of the site have been largely spared from ground-disturbing activity, such as plowing. Unfortunately this has not been the case at many of the other Mississippian mound centers discussed below. Likewise, whereas at Shiloh, remote sensing surveys of the eastern portion of the mound and plaza complex revealed evidence of between seven and thirteen possible buried features and/or structures, nearly all of the sites used for comparative purposes have only been investigated through manual or mechanical excavation, although this is rapidly changing as the utility of remote sensing is coming to be increasingly recognized. Because of the differences in methodologies utilized throughout the history of Southeastern archeology (particularly the Depression years), there has been a major bias toward the excavation of mounds themselves, residential communities away from primary mounds, funerary complexes, and palisade lines.

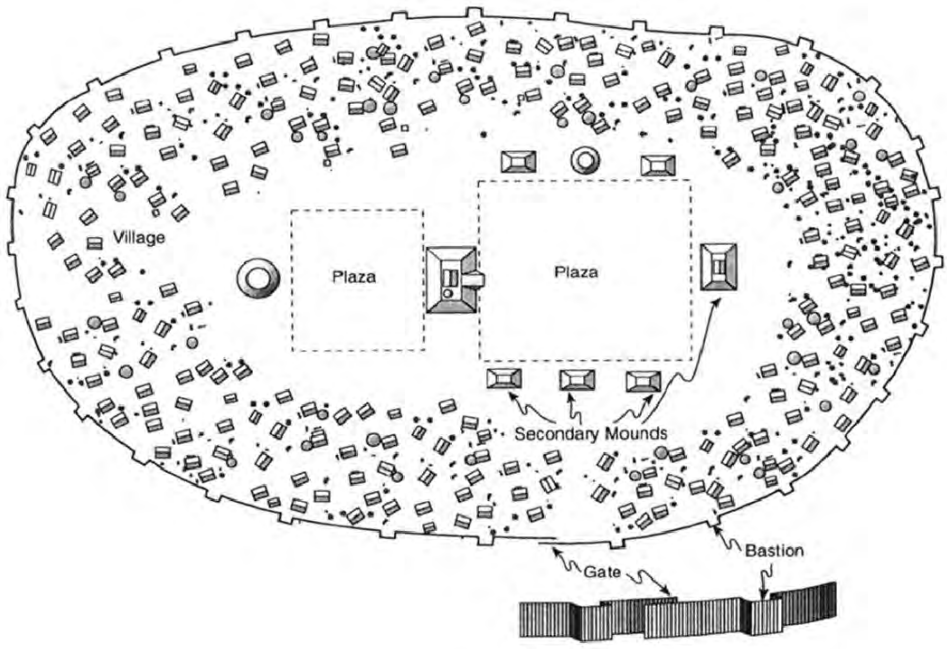


Figure 08-57. Generic architectural grammar of a Mississippian mound center as proposed by Lewis, Stout, and Wesson (1998:7).

Less attention has been paid to those areas directly adjacent to larger mounds within mound centers. This may be due in part to the (perhaps erroneous) traditionally reconstructed views of Mississippian centers as consisting of 'neighborhoods' of clustered structures and associated lesser mounds, which were segregated from the primary mounds of the elites. From those archeological investigations at Mississippian mound centers that do provide detailed information from areas immediately adjacent to primary mounds and between mounds and plazas, comparisons can be drawn showing whether the remotely-sensed architectural grammar of the Shiloh Mound Complex is unique or not. This analysis focuses on individual units of architectural grammar that appear to be present at Shiloh, which are compared to excavation-based examples of those same elements from other Mississippian centers in the Southeast.

Mound Plazas and Possible Internal Palisades

While the study of Mississippian architecture has been typically directed towards mounds and structures, until recently the role of plazas and the amount of work that went into their creation and maintenance has been underemphasized. Plazas are typically characterized as those public spaces around and between the more important and more visible elements of the architectural grammar of Mississippian sites. Lewis, Stout, and Wesson (1998: 11) however, insist that it is "unproductive to view plazas merely as residual spaces around which structures are raised… plazas themselves are, the world over, places of the people." The commonly held view presented in popular reconstructions of Mississippian centers generally depict plazas as large open spaces that saw little intensive use, and devoid of features such as structures, although large posts are acknowledged as likely to have been present, with ball games or other activities sometimes occurring around them. Even the material descriptions of plazas, such as those at Moundville, as spaces that were ritually swept clean (Knight 1989) gives the appearance of a static landscape. Archeological evidence from the American Bottom suggests, however, that plazas were the progenitors to the mounds which often grew to define the limits of these same plazas (Lewis and Stout 1998:159;

Holley et al. 1993; Kidder 2001, 2004a; Pauketat 2007:93–96; Pauketat et al. 2002). Lewis and Stout (1998) identify the development of the 'traditional' Mississippian center by noting that in many cases, both archeologically and ethnographically, the founding of a Mississippian village proceeded with the erection of a large pole (also known ethnographically from Choctaw and Chickasaw studies as a *fabussa*) in a central location. This pole and the surrounding area was the focus around which the town and later the mound center developed. They stress the importance of the plaza's role within early Mississippian communities, noting that well defined plazas are present at many Middle and Late Woodland sites, only some of which had associated platform mounds. As early as the Patrick phase of the Late Woodland period, for example, plaza centered communities were commonplace occurrences in the American Bottom (Mehrer and Collins 1995:37). Indeed, plazas date well back into the Archaic period in parts of the Southeast, where they are common features at centers (Anderson 2012; Kidder 2004a; Sassaman 2010). In addition to the notion that plaza construction predated and anchored the development of mound construction at some Mississippian centers (Pauketat 2007:93), it is also apparent that, following the decline of some of the larger Mississippian mound centers in the thirteenth and fourteenth centuries, at many late prehistoric sites even though people were not erecting mounds, they were still orienting themselves around prominent plaza areas.

At the King site, a late Mississippian/early Contact period town on the Coosa River in northern Georgia, there is no evidence to suggest the presence of mounded structures (Hally 2008) (Figure 08-58). However, very clear evidence of a plaza and central pole were encountered. This plaza was centrally located within the site and was circumscribed by what the authors refer to as a "domestic habitation zone" (Hally and Kelly 1998:51). Additionally, during the florescence of Mississippian culture in the Southeast, those small towns and villages identified as agricultural non-mound satellite communities of larger mound centers also possessed plaza spaces. Though understated in importance in most discussions of Mississippian architecture and site layout, plazas appear to both predate, accompany, and postdate periods of major mound construction. It is safe to say therefore that in those communities where mound and plaza architecture dominate the archeological landscape, it was in all likelihood the plaza which was first laid out. This area served the populace in ritual, economic, and social capacities and only later were they typically bounded by subsequent structures, mounds and other features.

Returning to the example of the King site (Hally and Kelly 1998), however, it is important to realize that the plaza area of a Mississippian center, large or small, was not static. At the King site, two structures (Structures 16 and 17) were situated within the limits of the plaza, independent of the domestic habitation zone. Based on the size, shape, burials, and artifact assemblage from these structures, the investigators indicate that while one appeared to be a dwelling, the other served as a public meeting house or council house where high status individuals met and were later buried. These two structures represent the only two intrusions in the plaza at the King site besides the central pole, but their presence indicates that Mississippian plazas were not vacant arenas. Another example of a Mississippian center where the defined spaces of plazas had structures or other features present include Ledford Island, a plaza-based Terminal Mississippian town-center in eastern Tennessee (L. Sullivan 1995). Here, large mortuary complexes yielding 25 percent of the site's burials were found within the site's plaza. Furthermore, the composition of these burials indicate a bias toward adult male individuals interred with elaborate funerary goods, more than found in presumed 'commoner' burials encountered from off-plaza contexts.

This is of particular interest given the results of the remote sensing program at Shiloh. In the eastern portion of the Shiloh plaza, in the area circumscribed by Mounds A, B, D, and E, a series of structures were encountered by both the CWA field crews and 1999 and 2001 SEAC remote sensing surveys crews. Though many of these structures, such as Mound J and its surrounding structures, as discussed below, appear to cluster at

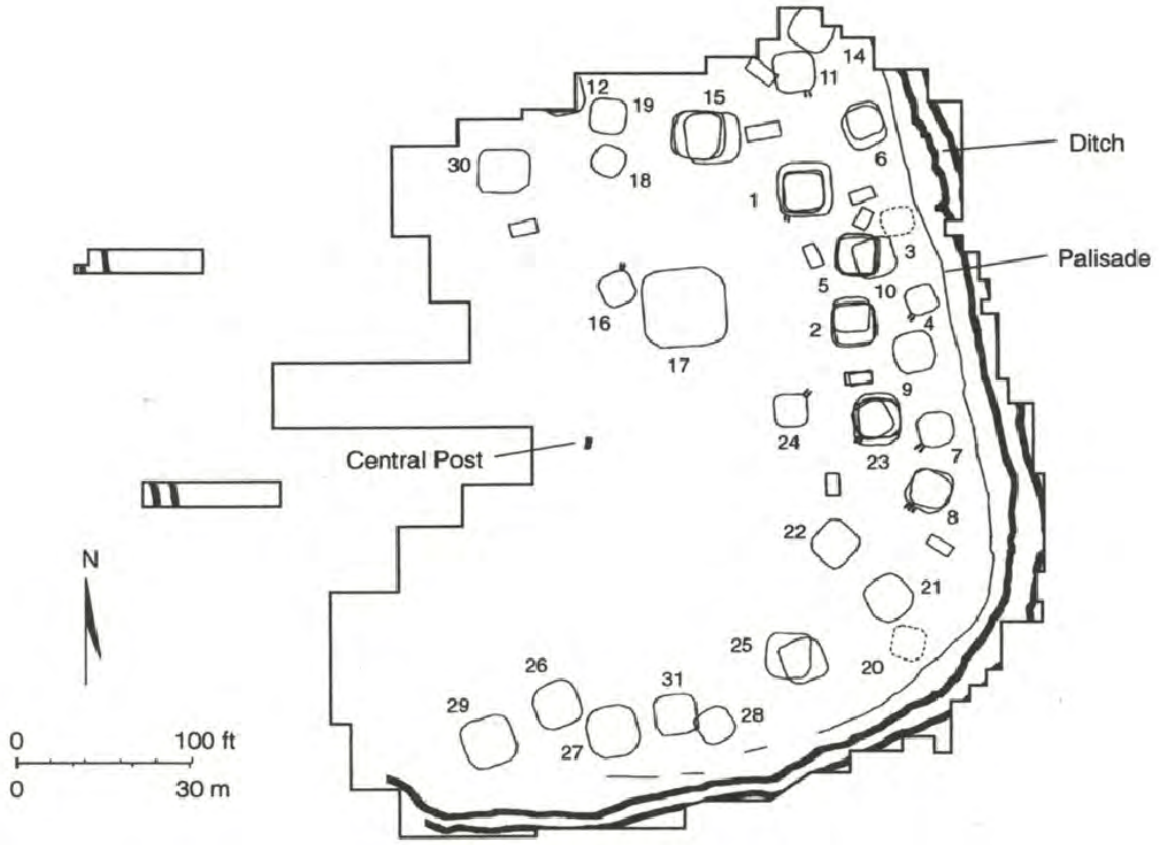


Figure 08-58. Site plan of the King Site showing the central plaza, central post, plaza-based structures (Structures 16 and 17), and the "domestic habitation zone" which circumscribed the plaza (taken from Hally and Kelly 1998).

the plaza margin in a manner similar to the King site's "domestic habitation zone," one structure in particular, the so-called 'temple', appears to occur within or at least extend out into the main plaza (see Figure 08-27). Almost equidistant between the bases of Mound A and Mound D, this structure was dubbed a temple by Roberts during the CWA field season, based more on the unique size and shape of the structure than on the artifactual material it yielded. This long round-ended structure measured nearly 18m in length and 5m in width, and was oriented roughly north-south on the plaza. Although the posts making up the structure's outline were fully exposed by Roberts' crew, as with Mound J it does not appear that the floor itself was fully excavated. Welch (2006:118–119) also inferred from the overlapping pattern of postmolds, hearths, and floors encountered that more than one structure may have been present in the area, and/or that the large structure was reconstructed more than once. Given its location on the margin or just within the plaza, it is likely that this structure did serve a more prominent role than a typical dwelling, but there is no evidence to definitively support Roberts' claim of the structure's use in religious activities. The remote sensing data from this portion of the Shiloh plaza, particularly Jones' electrical resistivity survey (see Figure 08-35), indicates disturbances at the location of this structure which are likely associated with its excavation. Additionally, data from Clay's magnetic field gradient and electrical conductivity surveys indicates the possible presence of fired clay features within this area of disturbance (see Figures 08-41 and 08-49).

One final feature of note encountered in the Shiloh plaza is the squared anomaly observed

equidistant between Mounds E and D. Encountered during Jones's electrical resistivity survey, this feature appears to represent the corner of either a wall trench or palisade associated with the central portion of the plaza itself (see Figure 08-35, 'H'). Unfortunately this portion of the plaza was only subjected to remote sensing during this single survey, so further identification (without additional survey or excavation) is not possible. If this anomaly represents a structural foundation such as a wall trench then it may be a building similar to that of the Shiloh 'temple' or Structures 16 and 17 at the King site, a non-residential structure of some ritual or social significance. If this anomaly represents the corner of a palisade line, it is far more unusual, since it would partition part of the plaza. Based on the size of the anomaly—at least 17 by 15m based on the available corner—its identification as a structure is somewhat doubtful. This is because virtually no Mississippian squared structures thus far excavated in the Southeast have possessed such large floor areas, in this case, a minimum of 255m^2 (Rogers and Smith 1995; Steere 2011). Therefore, the possible identification of this mid-plaza feature as a fence or palisade, that might have segmented internal and external plaza space, must be considered.

Palisades are a common feature of Mississippian mound and non-mound centers. Typically these palisades are constructed as earthen or wooden barriers which bound the center and separate it from the hinterlands. Examples of these structures can be seen at sites such as Toqua, Moundville, Cahokia, and indeed, they appear to be present at many of the large Mississippian sites in the Southeast (Holley 1999; Milner 1999; Pauketat 2007). Shiloh itself was circumscribed by a large earthen and wooden palisade line complete with squared structures interpreted as defensive bastions by Roberts in 1933–1934, Smith in 1976, and again by Welch in 1999. At some of the larger Mississippian sites in the Southeast, such as Cahokia, as well as at smaller ones like Irene near Savannah, Georgia (Caldwell and McCann 1941), additional palisades were erected within mound and plaza complexes. Theoretically these internal palisades are inferred to have served as a material barrier between specifically defined areas of ritual-prescription, a screening wall to demarcate and restrict access to sacred and elite spaces (Demel and Hall 1998, Lewis et al. 1998). The presence of a palisade located wholly within a plaza context is anomalous within Southeastern archeology, unless it was from an earlier or later episode of building, as the community expanded or contracted. Lewis, Stout, and Wesson (1998:19) argue that no evidence has been discovered to indicate access might have been restricted to or within plaza areas. Therefore, if the identification of this feature as a possible internal palisade is correct, it may represent a heretofore unrecognized feature-type. The lack of multi-sensor data for this feature however, means additional excavation and/or remote sensing survey will be needed to better document what it is.

Mound Ramps

Controlling space by defining and limiting access to it is a common aspect of Mississippian architectural grammar. This is true both on the large scale (i.e. the bounding of plaza space through mound erection), and on the smaller scale, such as by the placement of earthen ramps or access-ways connecting the summits of mounds with their plazas and aprons below. Lewis, Stout, and Wesson (1998) stress the importance of ramps, since they specifically prescribe designated access-points to mound summits. Structurally, no major Mississippian mound possesses such an acute angle of repose as to necessitate the addition of ramps to permit access to the summit. In theory, "such ramped stairways were not essential to the design. Given the relatively gentle slopes of Mississippian platform mounds, which were more dictated by the characteristics of dirt when it is stacked in tall piles, than by Mississippian considerations of aesthetics and symbolism, it would have been possible to walk up any mound from any quarter" (Lewis et al. 1998:19). Therefore, the argument can be made that where ramps are present, they indicate a specific attempt by Mississippian architects to define and limit both the interpretation of the mound spatially, and to design specific avenues of access to the mound summit itself.

Archeologically, ramps associated with mounds appears to be a relatively early developmental trend, dating back to the Woodland if not before, into the Archaic. In his analysis of mound groups of the Lower Mississippi Valley, T. R. Kidder (1998:134, 137) identifies a chronological and architectural shift in architectural grammar in the Late Woodland period. Troyville/Baytown phase mounds (dating to ca. A.D. 500–700) lacked ramps, whereas subsequent Coles Creek and later 'classic' Mississippian platform mounds (post A.D. 700) commonly possessed ramped structures used to control access to the summit. Kidder proposed that this shift in mound design was linked to the increasing trends of isolation of the elite portions of these societies. He describes this restriction of "participation in what had formerly been communal ceremonies, rituals, and practices," as the increasing *Mississippianization* of Mississippian society (Kidder 1998:137).

In Kidder's analysis, nearly all of the examples of ramps associated with Mississippian platform mounds involve ramp or stair structures that face directly onto primary plazas at their respective mound centers. This also appears to be true of some of the ramps observable at other major mound centers in the region such as at Moundville, Cahokia, Pinson, and Etowah. The only discernible evidence of a ramped structure at Shiloh comes in the form of a remotely-sensed anomaly identified at the base of Mound A on the south side (see Figure 08-53). Though no longer an extant or visible ramp structure, this anomaly was recorded as a near sub-surface compacted series of non-fired clay soils by both the 1999 and 2001 GPR surveys, and Clay's 2001 electrical conductivity survey. The absence of remains of a ramp in this area may mean this feature is actually something else, or if a ramp, that it was either removed or re-contoured prior to subsequent mound-construction episodes; any ramp leading to

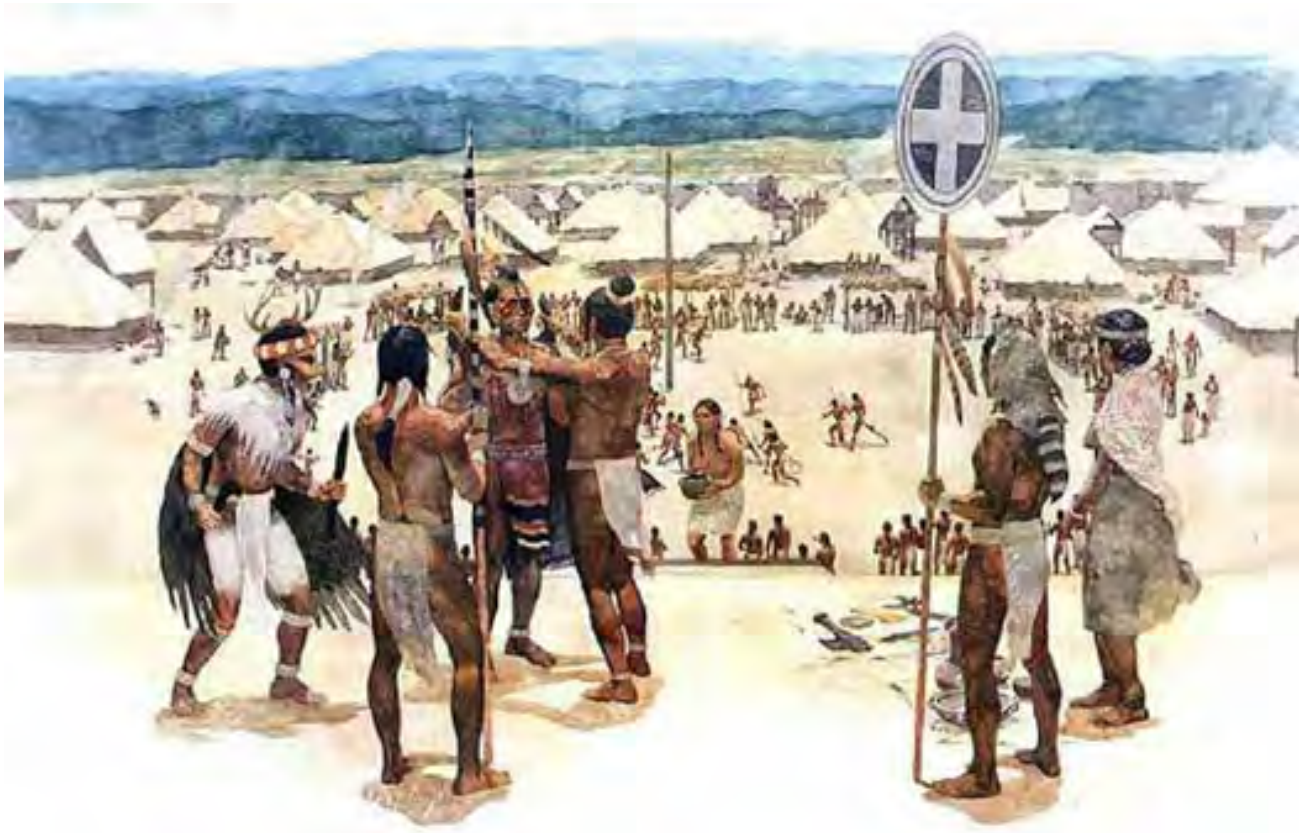


Figure 08-59. Activities atop Mound A at the Toqua Site in eastern Tennessee ca. A.D. 1450, showing the plaza and village in the background. Painting by Greg Harlin, used courtesy of the McClung Museum, University of Tennessee, Knoxville.

the summit may have also been lost to erosion or historic period use of the mound. The presence of a weak series of remotely sensed disturbances just south of the ramp also indicates that a house or house mound structure, or perhaps a formal entranceway, may have sat at the very foot of this feature. Since this possible structure was only observed by a single remote sensing procedure, the implication is that it was less intensively utilized than the other presumed two domestic structures observed at the base of Mound A. That, together with the possibility that a ramp might have been presence earlier in the mound's history, but was removed prior to later construction episodes, indicates how remote sensing might assist in documenting such events.

As mentioned earlier however, the ramps associated with major mounds at Mississippian centers also tend to facilitate access to and from a primary plaza. A southward facing ramp for Mound A would open into an area of relatively intensive use around the mound, and some distance to the east of the plaza margin itself, based on remote sensing as well as archeological investigations (see Chapter 9). The area due south of Mound A, does not appear to be a primary plaza, indeed, this portion of the center appears to contain no large or discernible undisturbed plaza area. Instead, evidence of at least seven (possibly as many as eleven) features/ structures of various type can be found in the remote sensing data collected between Mounds A and B (see Figure 08-53). Accepting Kidder's hypothesis that Mississippian mound ramps generally face large plazas, the evidence for a former ramp at the southern foot of Mound A might indicate that perhaps the space between Mounds A and B was at one time, perhaps early in the center's history, a formal plaza area. The evidence for the removal of this inferred ramp feature, followed by subsequent structure construction at the base of the mound, may indicate a broad-scale shift in the architectural layout of the center, whereby the focal point of Mound A shifted from the southern slope (facing a smaller plaza) to the eastern slope (facing a larger plaza). If this admittedly speculative argument is correct, then perhaps many of the structures south of Mound A were erected only after the removal of the southern ramp of Mound A, following the ritual and/or social 'de-emphasis' of this portion of the mound complex. In this manner the presence of a large number of structures between Mounds A and B may have been a later development at the site, similar to the "domestic habitation zone" noted at the King site (Hally and Kelly 1998). This newly constructed zone would have flanked the eastern border of the larger plaza area between Mounds A, D, and E in much the same way as the "domestic habitation zone" at the King site flanked the primary plaza of that site. Complicating this argument is the fact that a steep gully leading down to the Tennessee River is located just south of the apron on the south side of Mound A,. This might have been a point of access to and from the river, although the much larger and more gently sloped gully created by Dill Branch to the north would have been a more logical choice both for access and maintaining watercraft. Unfortunately, these suppositions are purely speculative, and additional excavations, directed to interpreting the function of and precisely dating each of the features involved, would be required to evaluate them. The possibility of using remotely-sensed evidence in the documentation of chronological trends at the center illustrates the potential of these techniques.

Individual Houses/House Mounds

Remotely-sensed evidence for a number of house mounds was collected at Shiloh in 1999 and 2001, including for three possible individual structures along the southern base of Mound A. Additionally, at least one (and possibly two) individual structures were observed adjoining the northern foot of Mound B (see Figure 08-53). Though these structures appear to cluster closely in space, it does not seem that they represent 'true' house/ house mound *clusters* such as the one inferred to have been associated with Mound J, as discussed below. While locationally in close proximity to one another, most appear to be relatively independent domestic structures, assuming the interpretation of their function is correct. It is important to make the distinction between Mississippian houses and house mounds; *houses* here are strictly

referred to as possessing direct evidence for a structure, regardless of the factors which shaped the immediate locality surrounding that specific structure. In contrast, *house mounds* refer to the accumulation of soils, building materials, and other depositional matter, which accrete at the location of a specific structure (whether by human or natural agency), and contributes to an apparent disparity in the local topographic or sub-surface relief at the site of a *house*. Thus, the presence of a house and a house mound are not necessarily intrinsically linked. A house alone *does not* necessarily lead to the development of a house mound, but the presence of a house mound *does* indicate the likely presence of a house. Factors such as the continued occupation of a single spot by successive structures, the deposition or erosion of soils at the bases of standing structures, the preparation of floor surfaces within houses, and the intentional construction of small mounded environments for the erection of specific structures, can all lead to the formation of what is here referred to as a house mound.

Each of the apparently independent structures present in the remote sensing data from the eastern portion of the Shiloh Mound Complex appears to cluster at the base of a primary mound. Additionally, during Roberts' CWA field season, and during Bean's 1999 GPR survey, possible evidence of additional houses and house mounds were encountered from the western portion of the Shiloh Mound Complex, near Mound F (Welch 2006:132), and Welch himself excavated two such mounds in this area and tested several more in 1998 and 1999. House mounds in the western portion of the site do not appear to be close to the locations of specific mounds, unlike the pattern indicated in the eastern portion of the site. This may be because the architectural grammar of the eastern portion of the site was more ritualistically or socially prescribed in its execution, based on number, location, size, and tighter spatial arrangement of the mounds closer to the river. Conversely, due to the increased space between primary mounds, distance from the site's paramount mound (Mound A), and lower mound frequency, the western portion of the site may have represented an area of less strictly structured architectural grammar. To reduce this argument to its simplest form, tighter spatial control of structures (i.e., form, location, and function) may have been maintained on the eastern portion of the Shiloh Mound Complex.

The house/house mound structures recorded at the bases of Mounds A and B appear to be a strongly similar to one another. All of the houses and house mounds appear to have been roughly circular in design and to have been roughly the same size, ca. 7–10m in diameter. Three patterns can be observed in the remotely-sensed signatures of the five houses/house mounds documented. All appeared as areas of higher-amplitude signal reflections in the GPR data, with the exception of the house/house mound due south of the apparent ramp on the south side of Mound A. This would indicate that these areas were characterized by increased soil density, likely tied to the compaction and/or other preparation of their respective floor surfaces, such as firing. None of these features appear prominently in the electrical resistivity data sets. That is to say that there was not likely any attempt to use extralocal soil sources for the preparation of the floors or the daubing of the wall surfaces. In all likelihood these materials were acquired from the nearby environment and did not produce a radically different resistivity signature than that obtained from the surrounding soils (see also Chapter 10). Finally, each of the individual house/house mound features display a similar signature in the electrical conductivity data sets, a circular area of soils with a lower threshold of electrical conductivity. This circular feature is in turn circumscribed by a series of more highly-conductive soils. Since increased or decreased conductivity of soils can be linked to compaction ratios, water content, and the presence of air voids, Clay (2001) has inferred that this pattern may be indicative of a compact prepared floor surface at the center of the lowly conductive anomaly, which is flanked by soils associated with the remains of the daubed walls of the structure, which were not prepared or compacted in the same manner and thus produce a different, highly conductive signature. In this manner, the remotely sensed evidence for the house and the house mound can be viewed separately.

The location of these structures immediately at the foot of two of the primary mounds at the site, Mounds A and B, is a pattern that has not been seen in many reconstructions of Mississippian sites. Even the stylized conceptual drawing Lewis, Stout, and Wesson use in their discussion of Mississippian architectural grammar (1998:7; see Figure 08-57), clearly shows a separation of the primary and secondary mounds from the more domestic areas of the site. This is not to say that evidence for structures at the base of mounds is not unheard of in Mississippian archeology. At the Toqua site in eastern Tennessee, squared structures were encountered at the base of Mound A (Polhemus 1987; Schroedl 1998; L. Sullivan 1995). An artistic reconstruction of the site uses this evidence and depicts presumed domestic structures directly abutting the site's two primary mounds (Chapman 2009) (Figure 08-59). This pattern can also be seen at the Annis site in west central Kentucky (Stout and Lewis 1998b). At Annis, two (possibly three) squared structures were found at the base of the primary mound at the site.

The role that these structures play within the overall architectural grammar at Shiloh is not entirely clear. Without excavation-based investigations of these remotely-sensed structures little more can be said about their inferred function then what can be deduced by their positioning. In the classic view of Mississippian spatial patterning, residential districts are typically separated from the socio-political 'core' structures at a mound center, such as the primary mound and plaza areas. Drawing on the earlier discussion of a possible former ramp at the southern base of Mound A, and possible shifts in the ritual and socio-political use of the area between Mound A and B, it is possible that a re-alignment of site spatial patterning took place during the occupation of Shiloh. If this indeed happened, such an event was likely decided and acted upon by leading authorities at the site, probably members of the ruling elite. Such a shift would likely have been made to accommodate various growing social, political, or religious needs within the community. That is to say, it is not likely that a ramp was phased out to make room for a residential structure. Also, it seems likely that structures so closely associated with the primary mounds at the site would likely be occupied or used by the same (or closely related) elites who used the mounds. The 2001–2004 SEAC excavations of the eastern quarter of the Mound A summit revealed that a series of different types of structures occupied much of the available space on top of the mound, at least on the Stage III summit, and possibly other summits as well (Chapter 9). These structures have been interpreted as parts of sacred or elite districts or chiefly compounds raised above the rest of the community (e.g., Williams 1995). This is something of a shift from earlier views of Mississippian mound architecture where summit surfaces were as assumed to represent locations where single or perhaps at most paired structures occurred. The Mound A excavations revealed evidence for several coeval structures in a small area, representing no more than roughly a quarter of the StageIII mound summit. With increasing complexity in the social, political, economic, and religious systems of Mississippian culture through time, perhaps these sacred districts became too clustered and confined to suit the growing needs of the ruling class of the mound center. The three structures at the base of Mound A and the two possible structures at the northern base of Mound B are all apparently situated on raised mound aprons. These structures may, accordingly, represent evidence for an expansion of elite structures off the mound summits themselves, yet not totally disconnected from the power and authority associated with the mounds themselves. The positioning of these structures at the base of Mound A also places them very close to the location of the Shiloh 'temple' encountered by Roberts' workmen at the eastern edge of the primary plaza. The close association of these structures with both a primary mound, and a structure thought possibly to have served ritual purpose, furthers the argument that the structures at the bases of Mounds A and B were associated with members of the society's elite.

House/House Mound Clusters

One area of particular interest encountered during the remote sensing surveys was located equidistant between the southern apron of Mound A and

the northern apron of Mound B. At this location, Roberts' workmen excavated a house mound, Mound J, and exposed a series of stacked prepared floor surfaces associated with the structure that occupied the center of the house mound. The excavations apparently proceeded no further than the exposure of this series of floors, after which the house mound was documented, backfilled, and re-contoured (Welch 2001, 2006). The remote sensing surveys of the area around Mound J clearly showed unexcavated portions of the house mound remain below the surface. Mound J was, in fact, the most visible archeological feature observed in all six of the remote sensing surveys. This likely indicates that Mound J and its associated structure was intensively utilized and likely rebuilt or improved on several occasions. The occupants of this house mound, given its apparent longevity, may have had a higher level of socio-political status than the occupants of many of the other house/house mounds in the western portion of the site. What makes Mound J unique, however, was the collection of remote sensing data from the immediate vicinity that indicates Mound J was part of a larger cluster of features, here described as a *house/house mound cluster*.

Remotely-sensed evidence for at least three discrete subsurface anomalies was encountered bordering Mound J to the north (see Figure 08-55). Two of these anomalies may represent possible structures while the third may represent a small inter-structure plaza or open work area between Mound J and the other two structures. The small possible plaza area was identified in the 2001 GPR, magnetic field gradient, and electrical resistivity surveys of this portion of the Shiloh Mound Complex. The visibility of this feature within the magnetic field gradient and electrical resistivity data sets indicates a prepared floor surface of some sort, though the GPR data presents this feature as a zone of lower amplitude signal reflections within a more disturbed context. Therefore, this floor surface does not correlate to any other observed house/house mound feature observed at the site. That data, together with the fact that this anomaly was recorded as a relatively shallow disturbance during the GPR survey, indicates that this is something other than a 'typical' floor surface. For this reason it is interpreted as possibly evidence of a prepared exterior floor surface. These features, rather than being separate domestic residences, appear to represent much less intensively utilized features of a possible household cluster. Based on their smaller size and less visible remote sensing signatures, they may represent ancillary support structures for the structure which occupied Mound J, perhaps storage sheds, corn cribs, or single resident dwellings.

The exact association of these features to one another is unclear, but due to their proximity and their individually unique characteristics they may be related features. Related groups of structures situated around a small open space, is a relatively common theme in Mississippian spatial patterning. Meher and Collins (1995) describe evidence of multi-structure household clusters as an important characteristic of domestic architecture from all three primary phases (Lohmann, Stirling, and Moorehead) of the Mississippian occupation at Cahokia. In their descriptions of these households, they identify groups of structures associated with residential, storage, and production activities situated around small open courtyard work areas. Additionally, these groups of household clusters themselves tend to cluster around larger plazas near the bases of secondary mounds at the site. Similar associations of related structural units can be seen in the excavations at Toqua (Polhemus 1987; L. Sullivan 1995) where pairs of domestic structures (inferred as summer and winter residences), with associated ancillary structures, comprise the basic domestic habitation cluster that predominates over the majority of the site. Additionally, many of the structures which lie close to the base of Annis Mound at the Annis site appear to show evidence of clustering (Stout and Lewis 1998b:157), although the nature of the associations between these buildings is not clear. Even at smaller late Mississippian centers which do not have evidence for mound construction, such as at the King site in northwest Georgia, Hally and Kelly (1998) propose the idea that many of the individual structures within the domestic habitation zone are

actually constituents of larger structural aggregates which they refer to as multi-structure households.

Patterns such as these, however, are in direct opposition to those observed at Mississippian sites such as Snodgrass in southeastern Missouri. At Snodgrass, a Powers phase Mississippian village lacking evidence for mound construction, a different form of architectural patterning is present. At Snodgrass, the structures comprising the site seem to be very tightly arranged into a spatial pattern vaguely similar to an orthogonal grid. Within these tightly spaced series of structures three small common plazas are present, though not all structures had direct access to the borders of one or more of these plazas. Additionally, within the settlement there was evidence for a fence or internal palisade which appears to have separated several structures and one of the common plazas from the rest of the site (O'Brien 2001: 144, 174). Of some note is the fact that statistically there is a higher occurrence of structures with wall trench construction within the fenced area, as opposed to simple post-mold construction which predominates outside this palisade. Additionally, higher concentrations of inferred high status goods such as ear spools, ear plugs, and notched ceramic rims were recovered from within this internally divided area compared to over the rest of the site.

Conclusions

From the review of the findings, individually and collectively, of the remote sensing surveys that occurred in 1999 and 2001, it is definitely clear that Shiloh offers a unique opportunity to refine arguments about Mississippian site patterning and layout, and about the development of integrated remote sensing methodologies for the study of these patterns. When analyzed individually, the results of each of these remote sensing surveys provide a view based on the specific criteria each sensor-platform is equipped to observe. When these individual data sets are taken together and integrated under the rubric of sensor fusion, a more detailed picture of the nature of these subsurface features and structures emerges. In addition to the ability to refine identification of specific anomalies based on their presence or absence within the data sets of various sensor platforms, this form of remote sensing survey also more easily permits the analyst to discern which anomalies may represent actual features and which anomalies represent readings produced by former ground disturbance or sensor interference.

A central finding of this study is that the archeological visibility of subsurface features and anomalies at sites like Shiloh is increased through the utilization of a wide spectrum of differing remote sensing platforms, and that there are specific advantages to the employment of individual sensors platforms. The employment of multiple remote sensing platforms at a single site is somewhat uncommon in professional archeology today, due to constraints on time, money, and experienced personnel. From the analysis of the approaches employed at the Shiloh Mound Complex it would appear that the greatest degree of subsurface visibility from an individual sensor was likely achieved by the GPR units, particularly the cart-mounted Noggin 250MHz GPR array. This device, appears to provide the best base set of data against which additional remote sensing data could be compared. Additionally, the processes used to filter, process, and present the GPR data graphically provided the most intelligible format for presenting and analyzing the recorded data. Due to the relatively undisturbed nature of the site, and the desire to extrapolate information regarding intra-site spatial patterning, it would also appear that the combination of GPR technology with magnetic field gradient survey equipment was very successful. The combination of these two technologies provided a two-fold approach to the location of anomalies which could be argued were *in situ* remains of structures at the site. First, the ability of the GPR to identify differences in ground density and composition provided locational evidence of possible structures and house mounds. Secondly, the ability of the magnetic field gradient equipment to observe slight variations in the local apparent magnetic field of these locations, allowed for the confirmation of the identity of these anomalies as prehistoric structural remnants

when remnant magnetic disturbances associated with the firing of clay floor surfaces were observed.

Caution should be taken, however, in the execution of integrated remote sensing surveys such as this. The Shiloh Mound Complex is an exception and not the rule regarding the integrity of the subsurface deposits at the site. The level of *in situ* preservation afforded to this site due to its inclusion within the boundary of SHIL is the single greatest factor which made this analysis as successful as it appears to have been. Few other large Mississippian centers possess the degree of integrity the archeological deposits have at Shiloh. Agricultural activities, borrowing and grading, previous archeological investigations, and historic period occupations have led to diminished states of preservation of near-surface features at nearly all major mound centers in the Southeast. Indeed, at Shiloh, arguably the worse damage the site has sustained was caused by the 1933–1934 excavations, and that was because they were so poorly documented at the time. Remote sensing technology is a tool archeologist can use to develop models of possible subsurface features based on their visibility to the technology. Remote sensing can complement, but cannot replace careful excavation-based investigations. While remotely-sensed data provides opportunities to study subsurface phenomena without impacting the resource, it is far less accurate in its ability to definitively identify features. Only through ground-truthing can the data collected through remote sensing be corroborated. The augmentation of remote sensing surveys with excavation-based investigations provides the best chance to further refine the analytical techniques necessary to increase the overall reliability of these types of remote sensing applications.

Current trends in Southeastern archeology are shifting away from large broad-scale destructive excavations at large Mississippian mound complexes, save in those cases, as at Mound A, where these cultural resources are threatened. Because of this trend, much of what will be learned about these centers in the coming years will either be based on small-scale specialized excavations, cultural resource management mitigation excavations, or remote sensing surveys. This study demonstrates the value of large-scale integrated multi-sensor remote sensing survey as a tool to efficiently define areas of interest within prehistoric sites. The approach allows for more focused investigations of specific features without the need to expose large excavation tracts in order to search them out. From a preservation and economic sense, the employment of these remote sensing surveys conserves both the integrity of archeological deposits at large archeological sites, and enables the best use of the limited funds available to conduct archeological research at such sites, both of which are very finite resources.

Based on evidence recorded and presented in this study of remotely-sensed features from the Shiloh Mound Complex, it can be argued that commonly held ideas about Mississippian site planning and architectural grammar, based on limited excavations, may not adequately address the true complexity of the approaches Mississippian peoples used to define and limit space through public and common architecture. This fusion of remote sensing data has provided glimpses of possible structures, features, and phenomena which, in some cases, contrast with what has long been assumed to be basic concepts about the organization of architectural features within Mississippian sites. A clear example of this can be seen through a comparison of Mississippian 'norms' portrayed in many generic site models and reconstructions with the reconstructed view of portions of the Shiloh Mound Complex based on observed remotely-sensed features (cf. Figures 08-53 and 08-57). This shift in our understanding is perhaps the greatest contribution the work at Shiloh has made to the field of Southeastern archeology.

CHAPTER 9

MOUND STAGES, STRUCTURES, AND FEATURES

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Introduction

The excavations conducted at Mound A at the Shiloh Mound Complex from 1999 to 2004 recovered information from the top to the bottom of the mound on the east side overlooking the river, a vertical span over 6m in height on the south end and over 8m on the north side. In this chapter evidence for the construction and use of Mound A found during the excavations is recounted stage by stage, encompassing the occupation surfaces, structures, individual features, artifacts, and major construction and filling episodes recognized within each stage. Detailed geoarcheologically-based interpretations of the mound's construction and use are given in Chapter 10, and in the remainder of the report, in Chapters 11 through 20, the material remains and specialized analyses that were conducted with the excavation assemblage are documented in greater detail.

Seven major construction stages and over 600 features were found in the portion of Mound A examined during the fieldwork from 1999 through 2004 (Figure 09-01; see Table 01-01). The major mound stages were labeled I through VII, from highest to lowest within the deposits, in the order in which they occurred stratigraphically, and were encountered during the excavations. Stages I through III, clear examples of mound construction, were the most extensively examined during the fieldwork. Much smaller samples were obtained from Stages IV through VII, which were more or less level filling episodes around and below the base of the Stage I–III mounds and, save where they occurred away from the mound on the south and west sides, much deeper in the deposits. While smaller, older mounds may exist deeper in the deposits, within the area covered by the Stages I–III mounds, this possibility has not been confirmed by the excavations and remote sensing undertaken to date. Apron fills, shown to be up to 2m deep on the south and west sides of the mound by both the 1933–1934 and 1999–2004 fieldwork, are absent on the north side, and whether they existed on the former east side is unknown, given the erosion that has occurred. It is likely such fills were present, however, given that our primary evidence about Stages IV–VII comes from units opened on the southeast side of the Stages I–III mounds, by the modern bluff edge.

The emphasis in this chapter is on what the features associated with each major stage tell us about how the mound was used at that point in its history. The discussion also examines how each stage was built, in general terms, with detailed geoarcheological evidence and engineering interpretations presented in the next chapter. In the pages that follow emphasis is placed on the unusual features that were encountered, such as hearths, pits, and large posts, unusual filling episodes, house wall lines, floors, and associated features and artifacts. Less detail is provided for more mundane features such as the numerous posts making up specific structure wall lines or, as often happened, that occurred in apparent isolation or in small groups. Information about these features is presented in summary form and in tables. Primary data collected or analyzed from every feature or sample of fill is given in the electronic appendices, however, which include copies of the original field notes, recording forms, and photographs, as well as databases containing the results of the technical analyses undertaken with materials recovered from these proveniences, such as the kinds of lithic, ceramic, and paleosubsistence artifacts found in each feature.

We now know that Mound A was built in a number of discrete episodes over a period of about three centuries, from sometime around or shortly after A.D. 1000 to about A.D. 1300. Much of the construction, at least as measured by volume of fill moved and the AMS dates obtained from the 2001 to 2004 excavations, occurred during the latter half of this interval, after A.D. 1150–1200 (see Chapter

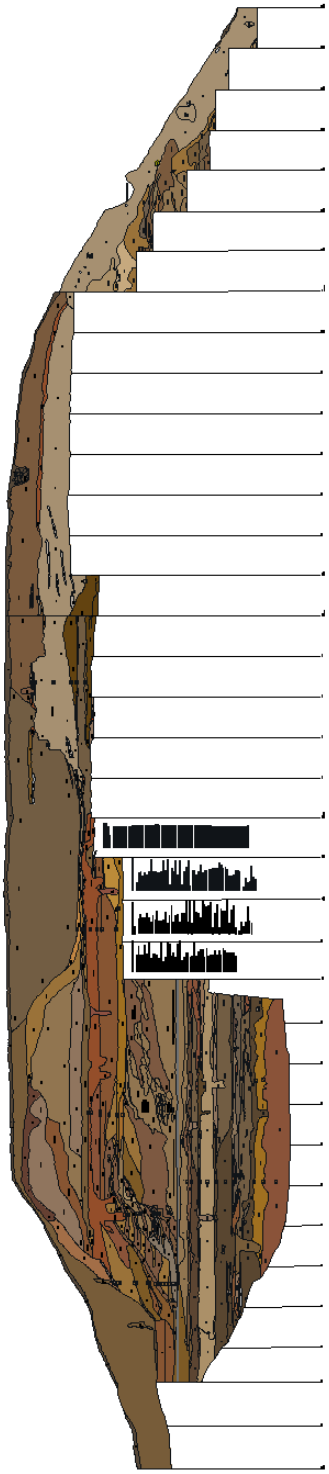


Figure 09-01. East wall profile, showing the area examined in Mound A from 2001 to 2004, and depicting the seven mound stages. A large scale version of this map, and of all the drawn mound profiles and plan maps, is in the electronic appendices and a foldout is located in the back of Volume 1.

21, Table 21-03, Figure 21-03). Chapter 10 details the materials and procedures used to construct the mound stage by stage, detailing whether sod blocks, soil blocks, loaded fills, zoned fills or veneers were employed, and the composition of the material in each. In some cases similar material was used throughout a stage, such as in the final mound, Stage I, whose fill appears to have been midden from surrounding site areas. A number of differing materials and construction procedures were employed in other stages, however, such as in Stages II and III, deeper in the mound. Basket loading, or the use of individual soil blocks (Van Nest et al. 2001; see Chapter 10), a construction procedure commonly associated with mound building, was only observed in a few places in Mound A. Sod blocks were themselves used infrequently, and typically as borders to temporarily enclose and stabilize construction episodes, sometimes apparently to demarcate areas where fill was to be placed, as well as to prevent the loss of sandy or silty fills that might quickly wash away in the event of rains. The fills used in most of the mound stages, however, were placed in distinct thematic compositional loads, some quite homogeneous and consistent in appearance over large areas, making them easy to follow. Some fills had little or no associated cultural material; typically these were the colored thematic loads found most commonly in the Stage III mound. Other fills contained much greater amounts of artifactual debris, including paleosubsistence remains like shell, bone, and charcoal, and were presumably obtained from midden areas (Table 09-01). Preservation of perishable paleosubsistence remains was better deeper in the mound, in Stages IV–VII, and particularly in Stages V and VI (see Chapters 16 through 19).

The most intensive use of the portion of Mound A that was examined, based on the artifacts and radiocarbon dates obtained from features and occupation stages deposited when it was in use, was during the Late Woodland and the Early and Middle Mississippian periods, from ca. A.D. 950 to 1300. A small number of earlier Woodland period ceramics and Woodland, Archaic, and Paleoindian projectile points were found in the mound deposits, most in the fills employed in its construction (see Chapters 13 and 14). A Paleoindian Clovis point, for example, was found in the Stage IIc fill, while an Early Archaic Big Sandy side notched point was found in the Stage I fill on the north side of the mound; one later Archaic Ledbetter Stemmed and six Late Archaic to earlier Woodland Jack's Reef Corner Notched points were also found in the mound fills (see Chapter 13). A similar low incidence of diagnostic earlier Woodland ceramics was also recorded (see Chapter 14), indicating only light and intermittent use of the site area, or at least the area where these fills came from, prior to the period when the mound was being built. Similar findings were made by Welch (2006:41–94) in his reanalysis of materials collected from across the site in earlier fieldwork. These conclusions were also supported by Scott Meek's palynological analyses (see Chapter 5), which found no indication for human use of the immediate site area prior to the Late Woodland and Mississippian occupations intensive enough to produce recognizable increases in charcoal particulates from burning or changes in vegetation due to forest clearing or other anthropogenic disturbance. Indeed, the pollen evidence also demonstrated that there was little subsequent use of the site area following Mississippian abandonment until the nineteenth century, something also indicated by the artifactual and feature record from the site as a whole (Welch 2006) and from the 1999–2004 excavations at Mound A.

The way the mound was excavated determined the nature and quantity of feature and fill samples available for analysis from each stage. As recounted in Chapter 3, 1m wide trenches were initially placed on the north and south sides of the mound and across the top, that were first opened in arbitrary levels and then by strata once these were recognized. The area examined was then expanded to encompass the entire direct impact zone, or area of presumed loss to erosion, which was between 7–9m wide, going from the top down while simultaneously moving into the mound from the south side. A total of 282 contiguous 1m units were opened in the direct impact area on the slopes and summit of Mound A, together with 40 additional 1m units

Table 09-01. Incidence of artifacts recovered by construction stage and category during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex.

	Prehistoric Ceramics		Lithics		Bone		Shell		Historic Artifacts		All Other Artifacts		Totals	
Stage	Count	Weight (g)	Count	Weight (g)	Count	Weight (g)	Count	Weight (g)	Count	Weight (g)	Count	Weight (g)	Count	Weight (g)
South Side Apron	768	1,892.25	1,897	5,967.89	2	0.71	27	3.32	83	19,586.54	51	179,952.94	2,828	207,403.65
West Side Apron	472	1,298.99	820	3,717.49	-	-	9	16.00	37	176.98	9	5,006.17	1,347	10,215.63
North Side Apron	491	1,108.44	444	2,109.11	1	0.30	2	0.57	-	-	16	9,769.62	954	12,988.04
North Side Apron/Stage I Mound Base	121	530.68	113	581.59	-	-	-	-	1	1.25	-	3,198.42	235	4,311.94
Stage I Mound, North Side	3,475	5,820.23	7,317	17,309.84	35	11.51	106	13.45	126	310.05	82	118,066.74	11,141	141,531.82
Stage I Mound, South Side	10,174	17,259.82	12,902	32,879.51	98	38.58	127	103.43	128	4,289.78	147	374,316.79	23,576	428,887.91
Stage I Mound, Summit	12,468	17,198.65	22,908	56,527.43	118	44.95	112	16.55	1,420	3,463.09	228	657,241.74	37,254	734,492.41
Stage II Mound, South Side	2,400	4,064.67	4,436	11,328.51	21	6.61	28	35.22	-	-	30	118,687.32	6,915	134,122.33
Stage II Mound, Summit	6	9.13	1	34.15	-	-	-	-	1	0.5	-	37.85	8	81.63
Stage IIa Mound, Summit	2,009	3,888.35	3,153	8,382.26	62	7.29	42	57.18	2	2.96	26	335,006.31	5,291	347,344.35
Stage IIb Mound, Summit	5,069	10,158.61	5,391	16,456.51	83	42.59	178	232.83	7	3.06	70	397,557.74	10,787	424,451.34
Stage IIc Mound, Summit	7,189	17,852.18	10,363	28,721.78	330	79.10	90	195.33	23	36.81	71	445,542.43	10,855	492,427.63
Stage IIa/IIc Mound, Summit	1,206	2,248.55	1,622	5,418.01	12	3.82	11	13.66	-	-	8	57,819.87	2,856	65,503.91
Stage III Mound	9,141	15,510.47	8,495	23,705.03	436	1,194.41	640	1,312.64	3	1.26	137	1,400,965.79	18,852	1,442,689.60
Stage IV Mound	191	400.68	153	272.15	156	87.66	100	263.57	-	-	10	20,847.10	610	21,871.16
Stage V Mound	1,128	2,399.49	494	2,190.92	1,406	654.78	1,626	6,442.54	-	-	7	36,215.48	4,661	47,903.21
Stage VI Mound	1,553	3,385.79	326	1,782.15	2,284	695.63	2,668	10,348.84	-	-	8	36,882.04	6,839	53,094.45
Stage VII Mound	164	325.59	18	142.87	247	104.14	401	2,429.94	-	-	2	5,890.58	832	8,893.12
Stages I/II/III Mounds	219	294.66	288	880.40	6	2.66	1	0.33	1	0.03	1	17,028.85	516	18,206.93
Subsoil	-	-	4	13.60	-	-	-	-	-	-	-	119.63	4	133.23
Unknown Proveniences	6,712	12,688.50	8,213	21,997.93	483	392.39	1,098	4,707.53	51	19,913.45	89	534,147.82	16,646	593,847.62
Totals	64,956	118,335.74	89,358	240,419.13	5,780	3,367.13	7,266	26,192.93	1,883	47,785.76	992	4,754,301.23	170,235	5,190,401.92

opened away from the mound a short distance to the south, west, and north (Figure 09-02). When distinct filling episodes, stage surfaces, or features were encountered, these were typically examined individually. The units initially opened on the south and north slopes of the mound formed 'step' trenches, so described because that was their appearance once a few levels were taken out (see Chapter 3, Figure 03-14). These trenches extended up the side of the mound to the crest. As the work on them progressed deeper into the mound, the sloping surfaces of successive mound filling episodes were discovered and examined. The lower flanks of the Stage I, II, and III mounds were found in the south trench in 2001, and these deposits, and the summits for these three stages, were examined in 2002 and 2003. The summits of the Stages I and II mounds in the direct impact zone were completed examined in 2002 and 2003, while the summit of the Stage III mound had been only partially examined when major fieldwork on it ceased in November 2003. The Stage III summit had numerous floor surfaces, structures, and structure fragments on it, indicating extensive use and rebuilding, and only the uppermost of these were removed in entirety. Five nearly complete structures were found atop this summit, as well as fragments from several more buildings. The amount of rebuilding that occurred was extensive and this, and the AMS radiocarbon dating results, indicates the Stage III mound was occupied for some time, at least two or more decades, in the mid-thirteenth century (Chapter 21).

The apron to the south and west of Mound A was also sampled, as well as the deposits away from the mound on the north side, although only a small fraction of these areas were examined. On the south side of the mound, the apron deposits were about 2m thick below the Stages II and III mounds, and consisted of level fills that included construction Stages IV through VII, as described below and in Chapter 10. At the base of the Stage I mound on the south side these deposits were about 1m thick above the Stage IV surface, and were a continuation of the Stage I fill, which continued out into the apron area around the mound. No distinction was found between the upper apron fill and the fill comprising the lower part of the Stage I mound slope, suggesting the construction of the final mound may have also included an appreciable addition to, and increase in height of the apron, at least on the south side. The units opened in the apron to the west of Mound A in 1999 and 2001 were too shallow to delimit the stratigraphy in that area, although Welch's (2006:123) examination of the 1933–1934 excavation notes and profile drawings indicated the apron was about 2m thick in this area, with an upper construction episode consisting of nearly 0.9m of fill present in some areas, comparable to the filling observed on the south side of the mound in the 2001–2004 fieldwork. Two vibracore samples taken in 2001 to the west of Mound A, beside and in a 1933–1934 excavation trench that had been located by the remote sensing and testing conducted in this area, confirmed that the apron deposits were indeed about 2m thick, comparable to the depth observed on the southeastern side of the mound. Evidence for prehistoric features, including structures, was found on both the north and south sides of the mound by the remote sensing and during the excavations, as discussed in Chapter 8 and below.

Stage I Features and Construction Details

The uppermost part of the mound, the Stage I construction episode, was the last built but perhaps the largest both in extent and in overall volume. The fill of this final mound stage was ca. 30 to 60cm deep (ca. 190–220cmbd) across the summit in the area examined, with the thickness varying depending on what was below on the Stage II summit. Immediately below the crest on both the north and south sides of the mound the Stage I fill thinned significantly for about 1m or so downslope, to about ca. 20 to 30cm on the upper part of the mound face, and then rapidly increased in thickness to well over 1m as the base of the mound was reached. The Stage I surface on the south side extended out into and comprised the upper part of the apron, with no clear break. On the north side of the mound the Stage I fill extended outward for a short distance, but then ended fairly abruptly, with little evidence for slumping or outwashing onto the

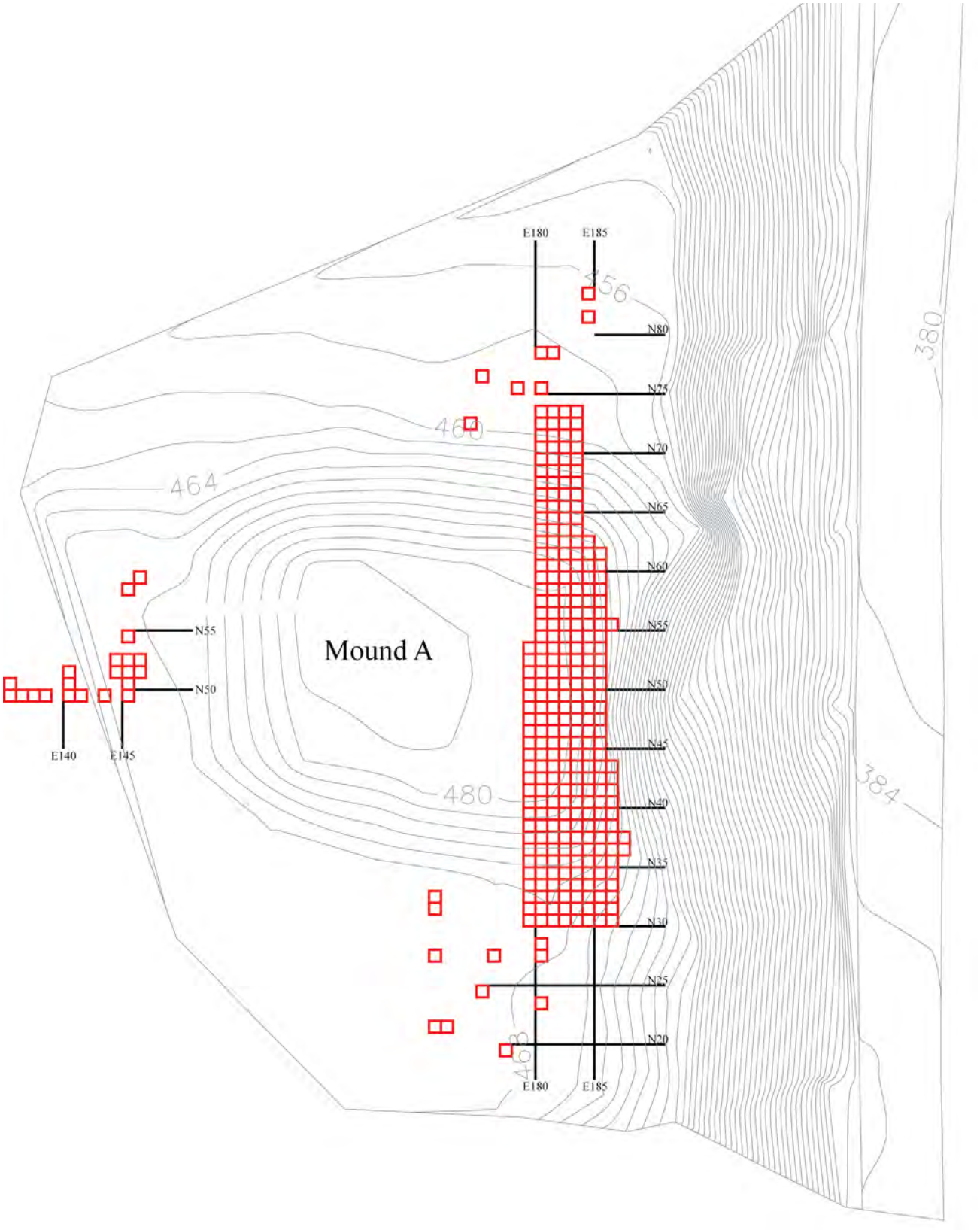


Figure 09-02. All 1m excavation units opened on and near Mound A from 1999-2004 by the NPS SEAC team at the Shiloh Mound Complex.

surrounding surface, at least in the 1m units opened in this area.

The outer slope of the Stage I mound on the south side was fairly gradual, on the order of 30 to 40 degrees near the base, increasing to nearly 50 degrees the last meter before below the summit. In this regard the south face of the final mound had a gentler slope than those for the Stages II and III mounds, which ranged from between 50 and 70 degrees from top to bottom. The Stage I mound on the south side was also somewhat undulating in appearance, which may reflect erosion or historic disturbance, or it may have been intentionally shaped this way for to facilitate access, reduce erosion, or for appearances sake. The exterior slope of the north face, in contrast, was more uniform, consistently at about 40 to 45 degrees save for near the top and bottom, where it lessened appreciably, with the inflection points 1 or 2m before the level terrain at the summit and base. The vast majority of the fill that comprised Stage I, accordingly, was placed onto the lower slopes of the mound and, at least on the south and possibly the west sides, out into the area known as the apron.

Stage I was excavated by first removing the A horizon, and then excavating downward using arbitrary levels or by natural stratigraphy until the top and sides of the Stage II mound were reached, which on the summit was typically characterized by a well to patchily defined reddish orange surface (see Figure 03-45). A Depression-era stairway was located on the southeastern slope near the bluff edge, and was removed, and some of the stones were found to be resting on a thin layer of pea gravel (see Figure 03-44). The fill of Stage I was a dark yellowish brown silt loam, and the first 10cm or so was hard and compacted, probably because of trampling by park visitors, and from activities associated with the superintendent's cottage (see Chapter 10).

Only a few (n=21) scattered features, mostly postmolds, were found on or in the Stage I fill, all on the summit (apron features are discussed separately in a later section), and at least some of these were historic or at least post-Mississippian in age (Table 09-02). As discussed in Chapter 10, the seven centuries of plant growth and soil formation that have occurred on the mound since it was abandoned have heavily disturbed the Stage I deposits, making it difficult to determine how they were laid down. Indeed, Sherwood (See Chapter 10) has suggested that the gentler slope of the Stage I mound may be a result of natural erosion and historic modification. The fill of Stage I contained appreciable quantities of prehistoric lithic and ceramic artifacts, suggesting it came from nearby midden areas (Tables 09-01 and 09-03). Historic artifacts were also found in some incidence in the Stage I fill and included Civil War ordnance, spent rounds from the Battle of Shiloh, as well as more recent remains left by park visitors and maintenance personnel, and perhaps from the superintendent's cottage (see Chapter 13).

No conclusive evidence for prehistoric structures was found on the Stage I summit, which would have been the last area used prior to site abandonment, and thus would have likely had major structures atop it, if it had been completed and used for a time. In a few units at the north end of the mound, above the Stage IIb mound, traces of a fragmentary red surface were found ca. 10–20cm below the surface (e.g., in N52–55, E179–182), but what this represented was unknown, and it was certainly not as extensive or as well defined as the prepared floors found atop the Stage II and III mounds. If the Shiloh site had been abandoned prior to the completion of the Stage I mound, however, then buildings dating to the Mississippian period might not have been built. Historic features were present on the Stage I summit, but as with the prehistoric feature assemblage, no unequivocal evidence for structures was found, even though a park superintendent is known to have had a cabin atop the mound in the early part of the twentieth century (Moore 1915; Welch 2006:21; see Chapter 2). Some of the appreciable historic debris found in the Stage I fill, including window glass and nails, could have come from this structure, but many of the artifacts quite clearly derive from more recent visitation or else from earlier Civil War activity (Table 09-03; see Chapter 13).

Remote sensing was likewise unsuccessful in documenting structures atop Mound A, in contrast to the success these procedures had in resolving

Table 09-02. Features identified on and in Mound Stage I during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex: Type, Measurement, and Provenience Data.

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Mound	Comments
5	Unknown/ diffuse	45	20		N51	E181	190 TS	I	May be an unusual lens of fill, or perhaps posts/wall trench fragments
6	Posthole	10	14	19	N54	E181	200	I	Faint, poorly defined, but continues through the Stage II cap; squared at base.
7	Carbonized wood	45	17	3.5	N46	E181	181	I	Burned beam? May be from the former superintendent's cottage.
39	Posthole	18	16	10	N51	E182	196	I	Well defined circular but probably modern; glass in fill
40	Posthole	24	24	39.5	N50	E182	190.5	I	Well defined circular but probably modern; plastic and pull tab in fill
41	Posthole	50	35	2	N51	E179	163.5	I	Possible historic squared post base; iron in fill
42	Posthole	43	34	3	N48	E179	180.5 TS1	I	Possible historic squared post base; nail in fill
44	Burned wood	56	125	3	N46	E179	179.5	I	Burned beam? May be from the former superintendent's cottage.
45	Posthole	28	18	10	N53	E180	182	I	Fairly distinct; lump of FCR in fill
46	Posthole	16	12	35	N53	E182	188	I	Well defined w/mottled fill
47	Posthole?	30	100	15	N46	E179	197	I	Heavily disturbed by roots; may be noncultural
50	Limestone rock concentration	50	20	30	N57	E80	177	I	Possible stone structure or post foundation; limestone rock
51	Posthole/ burned lens?	17	30	15	N46	E179	205.5	I	Amorphous charcoal stain; possible post intruded by roots? Above IIc-1 surface
53	Posthole	25	25	16.5	N47	E179	202.5	I	Diffuse, faint w/charcoal flecks in fill
54	Posthole	23	18	32	N54	E182	188.5	I	Fairly well defined. The post was pulled and the hole filled in with lighter material.
55	Posthole?	22	17	9	N45	E179	202.5	I	Not well defined
56	Not a feature	15	15	1	N45	E179	206.5	I	Not a feature/shallow and irregular
57	Not a feature	11	10	1	N45	E179	206	I	Not a feature/shallow and irregular
58	Posthole	17	14	7	N51	E179	188	I	Fairly well defined. The post was pulled and the hole filled in with lighter material.
67	Linear charcoal deposit	384	14	9	N49-52	E183	234.5	I/IIb?	Linear burned lens… possible log, placed by edge of summit for erosion control?
77	Posthole	17	13	n/a	N55	E183	247	I	Posthole for metal fence w/barbed wire (recent).

Table 09-03. Artifacts recovered on and in Mound Stage I during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex.

Object	Count	Quantity	Weight (g)
Stage I Mound, North Side			
Historic			
Asphalt Fragment --Shingle	3		0.76
Bolt	1		4.74
Brick		5 bags	9.54
Button	1		0.38
Cap, Bottle	4		11.84
Cap, Percussion	3		0.30
Cinder	6		2.34
Cloth Fragment	1		0.02
Foil	1		0.05
Gravel		4 bags	18.24
Hardware	2		41.56
Metal Fragment		15 bags	16.72
Nail	9		20.50
Paper	1		0.19
Plastic Fragment	10		2.49
Shingle	2		0.23
Slag		1 bag	0.42
Tack	2		1.16
Tar Fragment	2		1.59
Vessel Fragment	61		88.27
Windowpane	3		1.13
Wire	11		64.29
Wire, Barbed	1		22.46
Wrapper	2		0.83
Prehistoric			
Core	40		1,163.60
Daub		19 bags	189.39
Flake	2645		3,498.40
Hammerstone	2		73.39
Pipe, Tobacco	1		10.70
Point, Projectile	10		17.71
Sample, Charcoal		1 bag	0.09
Scraper	1		0.58
Shatter	3393		7,548.16
Stone, Fire Cracked	1161		4,488.47
Stone, Worked	6		126.44
Tool, Core	1		21.59

Object	Count	Quantity	Weight (g)
Tool, Flake	58		371.50
Vessel Fragment	3474		5,809.53
Classifiable Native American Pottery			
Baldwin Plain, *var. Chalk Bluff*	2		
Baldwin Plain, *var. Miller Slough*	1		
Barton Incised, *var. unspecified*	4		
Baytown Plain, *var. McKelvey*	92		
Baytown Plain, *var. The Fork*	12		
Baytown Plain, *var. Tishomingo*	1		
Baytown Plain, *var. unspecified*	8		
Bell Plain, *var. unspecified*	12		
Etowah Plain	2		
Etowah Stamped	3		
Kimmswick Fabric Impressed, *var. Langston*	7		
Kimmswick Fabric Impressed, *var. unspecified*	1		
Mississippi Plain, *var. Shiloh*	367		
Mississippi Plain, *var. unspecified*	17		
Moundville Incised, *var. Moundville*	4		
Moundville Incised, *var. unspecified*	1		
Mulberry Creek Cord Marked, *var. Coffee Landing*	25		
Mulberry Creek Cord Marked, *var. Mulberry Creek*	163		
Mulberry Creek Cord Marked, *var. Obion*	33		
Mulberry Creek Cord Marked, *var. unspecified*	3		
Obion Plain, *var. Obion*	15		
Turkey Paw Plain, *var. unspecified*	2		
Classifiable Projectile Points			
Hamilton	1		1.59
Late Woodland / Mississippian Triangular Cluster	3		6.21
Madison	3		4.17
Unknown			
Charcoal		69 bags	60.35
Clay, Fired		124 bags	2,363.79
Concretion		113 bags	7,504.48
Food, Bone	21		6.93
Fossil	41		47.93
Nonfood, Bone	14		4.58
Nonfood, Plant		31 bags	19.81
Nonfood, Shell	106		13.45
Nut	11		1.13
Sample, Flotation		171 bags	20,242.90
Sample, Soil **		2 bags	

Object	Count	Quantity	Weight (g)
Stone, Manuport		6 bags	13.30
Stone, Pebble	30		336.96
Stone, Unmodified		129 bags	87,252.16
Wood Fragment		31 bags	34.45
Stage I Mound, South Side			
Historic			
Asphalt Fragment	1		0.09
Band, Rubber	1		0.10
Brick		5 bags	4.17
Cap, Bottle	3		3.01
Case, Cartridge	1		0.55
Cinder	2		0.56
Coal Fragment		1 bag	0.14
Coin	2		7.20
Comb	1		0.92
Foil	4		0.82
Glass Fragment	1		0.95
Gravel		12 bags	4,115.36
Holder, Neckerchief	1		6.45
Metal Fragment		10 bags	7.20
Mortar		1 bag	7.75
Nail	5		20.18
Pencil	1		0.03
Plastic Fragment	9		2.10
Rivet	1		0.08
Screw	1		3.20
Shoelace	1		0.38
Shot	1		0.44
Stone, Building	1		0.22
Tack	1		0.76
Vessel Fragment	83		90.51
Windowpane	1		0.08
Wire	2		9.87
Wire, Barbed	4		6.66
Prehistoric			
Bead	1		1.06
Biface	4		21.45
Blade	3		2.46
Core	69		2,545.44
Daub		14 bags	140.80
Debitage *		1 bag	1.42

Object	Count	Quantity	Weight (g)
Flake	6747		8,570.25
Food, Plant		1 bag	0.13
Hammerstone	4		684.92
Point, Projectile	20		20.72
Preform	1		3.60
Sample, Charcoal		4 bags	5.06
Scraper	1		2.12
Shatter	4321		12,317.79
Stone, Fire Cracked	1612		7,657.23
Stone, Worked	12		298.81
Tool, Core	3		36.61
Tool, Flake	103		714.84
Uniface	1		0.79
Vessel Fragment	10174		17,259.82
Classifiable Native American Pottery			
Alligator Incised, *var. unspecified*	1		
Baldwin Plain, *var. Chalk Bluff*	11		
Baldwin Plain, var. Lubbub	1		
Baldwin Plain, *var. Miller Slough*	1		
Baldwin Plain, *var. unspecified*	2		
Barton Incised, *var. unspecified*	4		
Baytown Plain, *var. McKelvey*	462		
Baytown Plain, *var. The Fork*	24		
Baytown Plain, *var. Tishomingo*	2		
Baytown Plain, *var. unspecified*	13		
Bell Plain, *var. unspecified*	34		
Benson Punctated	1		
Etowah Plain	14		
Etowah Stamped	7		
Furrs Cord Marked, *var. Furrs*	1		
Furrs Cord Marked, *var. unspecified*	1		
Kimmswick Fabric Impressed, *var. Langston*	10		
Mississippi Plain, *var. Shiloh*	858		
Mississippi Plain, *var. unspecified*	20		
Moundville Incised, *var. Moundville*	1		
Moundville Incised, *var. unspecified*	1		
Mulberry Creek Cord Marked, *var. Coffee Landing*	31		
Mulberry Creek Cord Marked, *var. Mulberry Creek*	705		
Mulberry Creek Cord Marked, *var. Obion*	210		
Mulberry Creek Cord Marked, *var. unspecified*	4		
Obion Plain, *var. Obion*	122		

Object	Count	Quantity	Weight (g)
Salomon Brushed, *var. unspecified*	1		
Classifiable Projectile Points			
Fort Ancient	2		2.72
Hamilton	2		1.17
Late Woodland / Mississippian Triangular Cluster	4		4.90
Madison	8		9.32
Unknown			
Charcoal		75 bags	212.02
Clay, Fired		128 bags	5,711.09
Concretion		110 bags	5,683.49
Food, Bone	30		25.42
Fossil	95		109.06
Nonfood, Bone	68		13.16
Nonfood, Plant		12 bags	4.48
Nonfood, Shell	127		103.43
Nut	19		1.94
Plant		1 bag	0.14
Sample, Flotation		144 bags	20,452.70
Sample, Soil		1 bag	0.02
Stone, Manuport		9 bags	60.02
Stone, Pebble	33		263.00
Stone, Unmodified		153 bags	341,667.79
Wood Fragment		11 bags	5.05
Stage I Mound, Summit			
Historic			
Asphalt Fragment	23		18.45
Asphalt Fragment --Shingle	17		5.87
Ball, Musket	2		51.69
Bottle	3		33.43
Brick		46 bags	254.15
Buckle	1		10.57
Bulb, Flash	2		1.91
Bullet	6		30.33
Bullet, Minie	2		58.03
Button	3		3.17
Cap, Bottle	9		22.18
Cap, Percussion	11		2.26
Case, Cartridge	3		3.90
Cinder	5		1.64
Cloth Fragment	1		0.34
Coal Fragment		11 bags	23.48

	Object	Count	Quantity	Weight (g)
	Coin	6		24.27
	Fastener	6		13.88
	Foil	13		1.68
	Glass Fragment	14		5.80
	Gravel		6 bags	38.68
	Gum, Chewing	2		0.27
	Hardware	5		130.14
	Label	2		0.05
	Metal Fragment		115 bags	375.63
	Mirror	2		0.84
	Mortar		3 bags	3.85
	Nail	214		485.99
	Paper	1		0.30
	Pencil	4		0.76
	Pick, Guitar	1		0.32
	Pipe, Tobacco	1		0.10
	Plastic Fragment	46		7.54
	Pull Top	15		6.05
	Rifle/musket	1		174.10
	Rivet	3		2.20
	Rubber Fragment	2		0.76
	Scabbard	1		16.29
	Screw	1		1.38
	Shell, Shotgun	2		7.08
	Shingle	13		2.19
	Shot	1		3.01
	Slag		6 bags	6.37
	Spike	1		240.40
	Staple	9		27.69
	Staple, Fence	2		7.50
	Stone, Building	1		3.20
	Tack	119		166.16
	Twister, Wire	2		0.34
	Unidentified		3 bags	2.31
	Vessel Fragment	752		924.05
	Windowpane	4		3.80
	Wire	62		234.17
	Wire, Barbed	5		9.63
	Wrapper	19		12.91
Prehistoric				
	Abrader	3		195.50

Object	Count	Quantity	Weight (g)
Bead	5		1.29
Biface	6		32.11
Blade	1		0.70
Core	133		4,592.63
Daub		25 bags	1,810.32
Debitage *		11 bags	337.74
Discoidal	1		1.41
Drill	3		3.25
Flake	9344		9,135.47
Hammerstone	6		645.71
Microblade	1		0.25
Point, Projectile	29		41.15
Preform	4		16.80
Sample, Charcoal		5 bags	55.32
Sample, Fired Clay	24	1 bag	860.70
Saw	1		58.17
Scraper	1		3.85
Shatter	9752		23,663.62
Stone, Fire Cracked	3417	15 bags	15,730.01
Stone, Worked	18		828.53
Tool	1		1.58
Tool, Core	7		269.80
Tool, Flake	176		969.27
Vessel Fragment	12467		17,197.24
Classifiable Native American Pottery			
Baldwin Plain, *var. Chalk Bluff*	8		
Baldwin Plain, *var. Miller Slough*	10		
Baldwin Plain, *var. unspecified*	1		
Barton Incised, *var. unspecified*	2		
Baytown Plain, *var. McKelvey*	336		
Baytown Plain, *var. The Fork*	37		
Baytown Plain, *var. Tishomingo*	1		
Baytown Plain, *var. unspecified*	17		
Bell Plain, *var. unspecified*	23		
Etowah Plain	7		
Etowah Stamped	6		
Kimmswick Fabric Impressed, *var. Langston*	20		
Kimmswick Fabric Impressed, *var. unspecified*	1		
Mississippi Plain, *var. Shiloh*	1166		
Mississippi Plain, *var. unspecified*	23		
Moundville Engraved, *var. unspecified*	3		

Object	Count	Quantity	Weight (g)
Moundville Incised, *var. Moundville*	13		
Mulberry Creek Cord Marked, *var. Coffee Landing*	34		
Mulberry Creek Cord Marked, *var. Mulberry Creek*	397		
Mulberry Creek Cord Marked, *var. Obion*	124		
Mulberry Creek Cord Marked, *var. unspecified*	5		
Mulberry Creek Plain, *var. unspecified*	1		
Obion Plain, *var. Obion*	111		
Salomon Brushed, *var. Fairfield*	1		
Turkey Paw Plain, *var. unspecified*	2		
Classifiable Projectile Points			
Big Sandy	1		3.00
Clovis	1		1.28
Fort Ancient	3		6.00
Hamilton	3		2.61
Late Woodland / Mississippian Triangular Cluster	4		3.02
Ledbetter Stemmed	1		7.81
Madison	16		17.43
Unknown			
Charcoal		107 bags	124.85
Clay, Fired		301 bags	13,240.72
Concretion		216 bags	9,220.79
Food, Bone	37		13.39
Fossil	148		2,175.89
Nonfood, Bone	81		31.56
Nonfood, Plant		18 bags	6.08
Nonfood, Shell	112		16.55
Nut	48		6.96
Plant		1 bag	0.10
Sample, Flotation		244 bags	27,242.60
Sample, Soil		6 bags	5,766.70
Seed	1		0.20
Stone, Manuport		18 bags	111.78
Stone, Pebble	7		167.35
Stone, Unmodified		341 bags	596,339.15
Wood Fragment		15 bags	112.23

* Unsorted lithics from flotation samples

** No weight recorded

Note: Bag refers to materials from specific proveniences that were typically weighed but not counted. Most of these are materials not suitable for counting.

structures at the base of the mound and in and near the plaza (see Chapter 8). The GPR work conducted in 1999 and 2001, which encompassed much of the summit area prior to the start of the 2001 excavations, found evidence for a number of shallow disturbances in the upper part of Mound A. These were of unknown origin, and some were thought to derive from tree throws, or perhaps features associated with the superintendent's cabin that was in place on the summit in the early twentieth century. No conclusive evidence for buildings or other prehistoric or historic features was found by the remote sensing, however, suggesting the entire area may have been fairly heavily disturbed by bioturbation or park activities following abandonment or, as suggested above, was never built upon by the site's final Mississippian residents. Signatures of the two 1x1m test units opened on the south central part of the summit in 1979 were detected, as well as for flat and sloping surfaces deeper within the mound, which were likely fills associated with the construction of the Stage II and III and perhaps deeper mounds. The GPR work also found evidence for a possible ramp on the south side of the mound but since it was outside the direct impact zone no excavations were placed here. An attempt to examine the summit of Mound A with a fluxgate gradiometer in 2001 proved unsuccessful due to the apparent presence of large quantities of metal artifacts from historic construction and visitation (Clay 2001; see Chapter 8). No attempts were made to conduct electrical resistance and magnetic field gradient survey work atop the mound for this reason, and because by the time these forms of remote sensing were being conducted on the apron and plaza, the eastern half of the mound was covered with boardwalks, screening areas, and by the excavations themselves (Jones 2001; see Chapter 8).

Features on and in the Stage I Mound

A total of 21 features were found in the Stage I mound (Figure 09-03; see Table 09-02). All but four appear to be where posts were once present, and several appear to be fairly recent due to a squared shape (Features 6, 41, and 42), or the presence of nails or other historic artifacts in the fill (Features 39–42). These may have been remains of fence lines near the mound edge and perhaps from cottage build atop the mound by an early superintendent, although no obvious wall lines were noted. This structure may have been on the northeastern side of the summit, given the number of features of probable historic age in N46–N57 area. Some of the inferred posts were well defined and terminated abruptly, suggesting they were indeed postholes, while others well less well defined. A few of the possible postholes were heavily disturbed by roots, and may reflect natural rather than human agency, although given the compact nature of the upper soil layer, roots and small burrowing animals may have followed presumably softer feature soils, rendering identifications problematic in some cases. Unusual features from the Stage I mound are described in more detail below; additional information on all features encountered during the excavations can be found in the appendices.

Feature 7. This feature was an apparent burned log or beam fragment found in N46, E181 ca. 3cm below the surface (Figure 09-04). It was rectangular in shape and fairly thin, suggesting it was part of a cut board or beam. Its shallow depth and comparatively good preservation suggest it is fairly recent, perhaps from the superintendent's cabin.

Feature 44. This was an thin, irregular mass of charred fragments thought to be debris from a burned log or beam located at a depth of about 10cm below the surface in N46, E179 (Figure 09-05). It was located about 2m west of Feature 7, which it resembled, albeit it was more fragmentary, and a little deeper in the deposits. Ethnobotanical analyses conducted with the fill, which was floated, detected the presence of a range of species, including 3 maize cupules and 1 kernel, 5 hickory and 1 acorn nutshell fragments, 1 persimmon seed, 4 monocot stems, and a number of tiny pieces (0.81g) of pitch (see Chapter 16, Table 16-02). A sample of charcoal from Feature 44 was identified as oak, and was submitted for AMS dating. The resulting determination was 215±15 B.P. (A.D. 1661–1668 [20.3 percent] and A.D. 1783–1797 [47.9 percent] calibrated 1-sigma ranges; at two standard deviations there is a low probability that

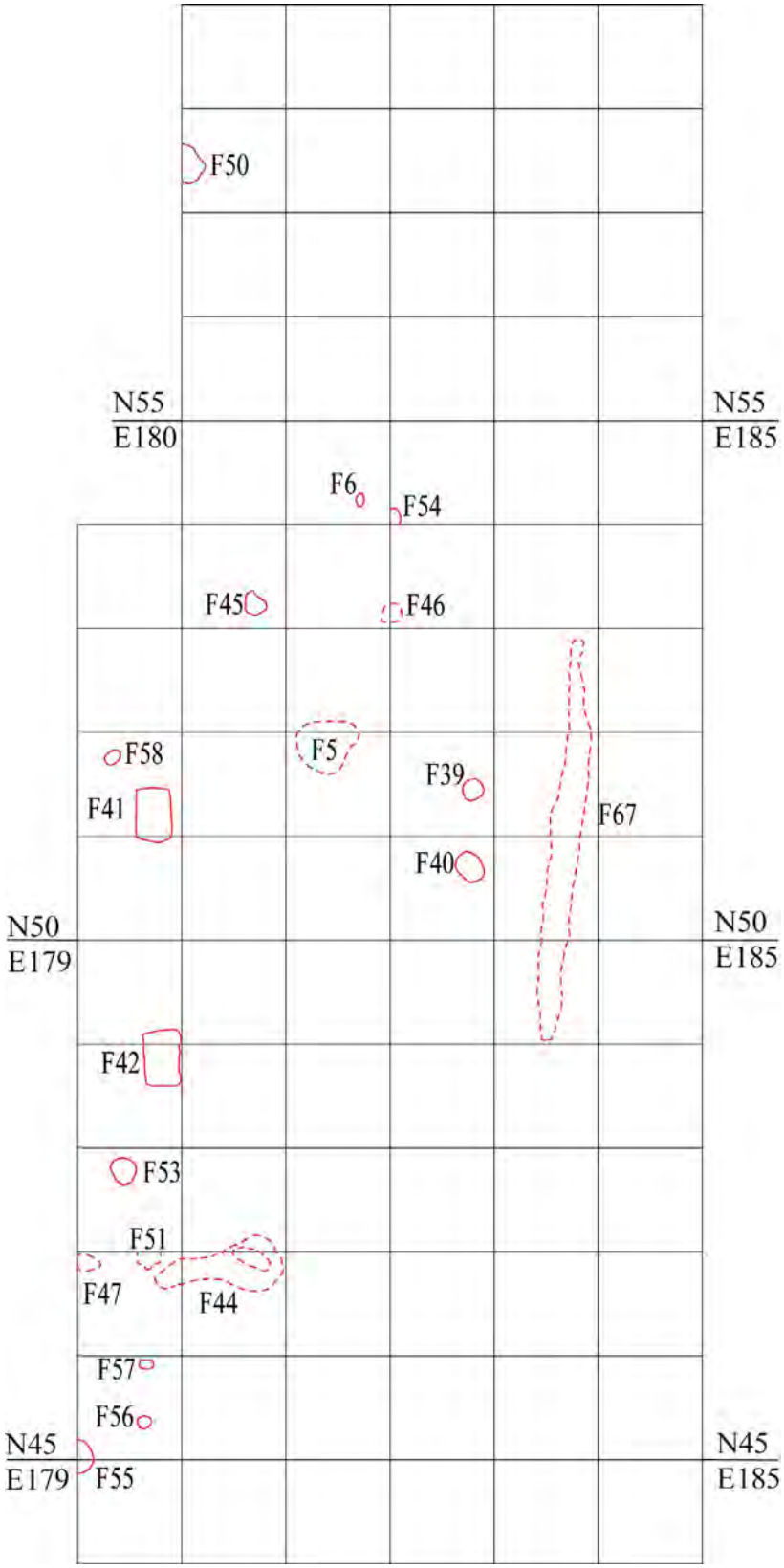


Figure 09-03. Features identified on and in the Stage I mound during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex. Features defined with dotted lines have diffuse or poorly defined boundaries.



Figure 09-04. Feature 7, a charred log or beam fragment found immediately below the surface in N46, E181, on the Mound Stage I summit.



Figure 09-05. Feature 44, a mass of fragmentary debris from a possible charred oak beam found 10cm below the surface in N46 E179, on the Mound Stage I summit. A radiocarbon date of 215 +/- 15 B.P. was obtained from the feature.

the date is more recent, A.D. 1941–1955 [14.1 percent], see Chapter 12). The radiocarbon age indicates that the charred wood was deposited two to three centuries after the main Mississippian occupation at the site had ceased. If not a historic feature, such as a burned beam from the former superintendent's cottage, Feature 44 may have been created by natural rather than human causes, such as a burned tree fall caused by a lightning strike. The presence of paleosubsistence remains may be because the flotation sample they were found in was drawn from the Stage I summit fill including and surrounding the charred fragments; this stage fill had a high incidence of debris in it, including over 12,000 prehistoric potsherds and 1400 historic artifacts (see Table 09-01).

Feature 50. This feature was a shallow concentration of limestone rocks near the north end of the summit in N57, E180 (Figure 09-06). Located immediately below the surface, Feature 50 may be a pit lined with rocks to hold a post. The feature extended into the west wall profile and only the portion in the direct impact zone was removed. Somewhat darker fill was evident immediately above the center of the rocks that may be from a former post. Feature 50 may be one of the piers or supports for the former superintendent's cabin atop the mound; alternatively, it may be a prehistoric feature, although more excavations to the west on the summit will likely be needed to resolve this matter.

Feature 67. At the eroded eastern edge of the Stage I summit a faint linear charcoal stain almost 4m in length was found, the apparent cast of a burned or charred log that was designed Feature 67 (Figure 09-07). If a cultural feature, it may been placed near the mound edge to serve as a border or as an erosion control device. The age of the feature is somewhat uncertain given its placement at the sloping mound edge; while identified in the Mound Stage I fill a few cm below the surface, it may have been resting on the underlying Stage IIb mound. A metal support post for a recent wire mesh safety fence, which was not assigned a feature number, intruded into Feature 67, indicating it was upwards of 40 years old, since these safety fences have been in place at least that long, according to park personnel. No other comparable burned log features were observed anywhere in the mound, suggesting it is likely a historic feature, perhaps associated with NPS use of the summit, or possibly a natural burned tree fall. Ethnobotanical analyses conducted with samples of the fill, which was floated, detected the presence of a range of species, including 3 maize kernels, 8 hickory nutshell fragments, and 18 unidentifiable seeds (see Chapter 16, Table 16-02).



Figure 09-06. Feature 50, a concentration of limestone rocks and darker soil found immediately below the surface in N57 E180, on the Mound Stage I summit. The feature may be part of a historic building foundation, possibly a pier for the former superintendent's cottage atop the mound.



Figure 09-07. Feature 67, a linear stain from a possible log cast in N49-52 E183, at the eastern edge of the Mound Stage I summit near where it dropped off at the bluff edge. The feature may have been placed at the edge of the mound as a barrier of some kind. A sample of wood, identified as oak, yielded a radiocarbon date of 380 +/- 20 B.P., suggesting it may be a natural feature or, if a log intentionally placed here more recently, may have involved the use of old wood.

The presence of a diverse array paleosubsistence remains may be because the flotation sample they were identified in came from summit fill including and surrounding the charred fragments. A sample of wood charcoal identified as oak from Feature 67 yielded a radiocarbon date of 380±20 B.P. (A.D. 1452–1495 [53.7 percent] and A.D. 1602–1615 [14.5 percent] calibrated 1-sigma ranges; at two standard deviations similar ranges were obtained; see Chapter 12). The radiocarbon date is from one to two centuries after the main Mississippian occupation, suggesting the feature is the result of natural rather than human causes. Alternatively, it may reflect the placement of a burned log from an old tree along the edge of the mound at some point in the late prehistoric or historic period.

Stage II Features and Construction Details

The Stage II mound occurred at depths from roughly 30–60 to 160–180cm below the existing summit surface (ca. 190–220 to 320–360cmbd), and was a much more complicated construction than the final mound stage. It consisted of two small platforms on the southern (IIa) and northern (IIb) ends of the summit, with a large depression between them that had subsequently been filled (IIc), with a thin well to patchily defined reddish orange silt/clay layer covering these three features across the entire summit (see Figure 09-01; see Chapter 10). The southern IIa mound was built in a number of discrete fills, and although these were often followed, the existence of a discrete mound was not recognized until a deep profile, on the order of about 1.5m, had been exposed along the western side of the excavations. The northern IIb mound was identified much more quickly, since it was composed primarily of a single fill, a gray silt loam, and the south side had been covered with a thin veneer of red sandy clay (see Figure 03-47). In final form, after the summits of the small platforms had been cleared and the area between them filled in, and a final surface placed over the entire area, the Stage II summit measured approximately 20m N/S and 7m E/W in the area examined, from ca. N40 to N60. While an eastern slope was evident on the small platforms, one was not associated with the final surface, indicating it had been lost to erosion.

A total of 91 features were associated with the Stage II construction episodes, and were identified on and in the smaller IIa and IIb mounds and the filled IIc depression between them (Figures 09-10, 09-17, and 09-27). Details on specific features and summary artifact data by these major construction episodes are provided in Tables 09-04 to 09-09. The most features came from Stage IIb (n=41), followed by Stage IIc (n=35), with the fewest associated with Stage IIa (n=15). These features included individual postmolds, hearths, eroded clay benches or ledges, masses of debris, and fragments of wall trenches and prepared floors. Most of the features were associated with the summit areas, in the upper 20cm or so of the stage fill, although a few were found deeper, particularly in the IIc fill, and were typically unusual lenses of debris, or natural disturbances probably caused by bioturbation. Four well defined hearths were found on the Stage II summit, Features 59, 75, 83, and 85, all basins from 30–60cm in diameter at the base, with ca. 3–4cm thick heavily fired clay linings. All had been extensively disturbed by root action and in the case of Feature 83 by an intrusive post, rendering them unacceptable for archeomagnetic dating. All had charcoal-rich fill, indicating their probable function. A partial basin, Feature 62, was found atop the IIc fill and may be a fifth hearth fragment, although no carbonized material was found associated with it, and it may have been relocated to this area in summit clearing. Other unusual features included a small pit filled with debitage (Feature 71), clay filled posts or small pits (Features 28, 101, 110), a number of clay ridges or benches atop the IIb mound (Features 111–118), and several poorly defined possible wall trench fragments (Features 73, 133, 143, 265, 266). The remaining features were postholes, possible postholes, masses of debris, or poorly defined stains. Unusual features from the Stage II mound are described below; additional details on all features can be found in the appendices.

Most of the well-defined posts on the Stage II summit came from the tops of the IIa and IIb platforms, suggesting they had been in use for some

Table 09-04. Features identified on and in Mound Stage IIa during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex: Type, Measurement, and Provenience Data.

Feature #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Mound	Comments
52	Posthole?	23	18	76	N44	E182	221	IIa	Probable rodent burrow or tap root; may follow old post?
59	Hearth	41	36	10	N41	E180-181	250	IIa	Well defined hearth with fired clay base and sides
66	Posthole?	28	32	9	N42	E179-180	223	IIa	Somewhat diffuse stain w/charcoal flecks
71	Small pit filled with debitage	n/a	n/a	7	N41	E180	212	IIa	Concentration of small flakes/May be in Stage I fill
75	Hearth	40/38	33/31	1.5	N41	E179	233	IIa	Burned area/fill of hearth basin
92	Posthole?	10	12	17	N39	E182	252	IIa	Posthole (?)
93	Posthole?	12	15	26	N42	E182	236.5	IIa	Posthole (?)
97	Posthole?	11	12	5	N40	E182	277.5	IIa	Possible Post
101	Clay filled posthole	16	18	39	N44	E179	237.5	IIa	Well defined posthole filled with reddish orange silty clay
106	Linear edge of IIa platform	20	100	13	N44	E179	255	IIa	Mottled fill defining northern side of IIa platform
116	Posthole	22	24	25.5	N40	E184	341.5	IIa	Posthole near base of IIa
117	Posthole	14	39	32	N40	E184	342	IIa	Posthole near base of IIa
120	Root disturbance	26	27	n/a	N42	E184	348.5	IIa	Not a feature/tree root
126	Shaped (?) deposit	35	20	8	N42	E179	318	IIa	Red crescent/mass of sand/silt, appears intentionally shaped
130	Posthole?	35	35	n/a	N40	E182	343.5	IIa?	Irregular circular stain/possible post

time, and longer than the surface atop the IIc fill, which was apparently only used after the IIa and IIb mounds had been abandoned and a uniform surface placed over the summit. Some of the posts were well defined and fairly deep, extending 10cm or more below where they were encountered, while others were shallow or ill defined. No recognizable structure outlines were found anywhere on or in Stage II, however, although given the presence of isolated posts and several hearths it appears almost certain they were once present, particularly atop the IIa and IIb platforms. The upper surface of Stage II and the features on it were eroded and disturbed to varying degrees, reflecting the subsequent placement of the Stage I summit over it—which undoubtedly occurred following clearing, cleaning, and perhaps ritual termination episodes—as well as the close proximity of the ground surface, and the seven centuries of pedogenesis and bioturbation that had occurred since the mound itself had been abandoned (see Chapter 10). It was not until the Stage III mound was reached, much deeper in the mound, that clearly recognizable structures were found (see below).

The distinctive Stage II upper surface was first identified at a depth of about 50–60cm in the northern part of the summit in 2001, over the summit of the IIb mound (see Chapter 3). Originally designated Feature 26, it soon became clear that this reddish orange silty clay surface extended over much of the Stage II summit, varying from patchy or absent in some areas to well defined in others (see Figures 03-24 and 03-45). Virtually no artifacts were found anywhere on the Stage II summit, suggesting it was thoroughly cleaned prior to the placement of the Stage I fill. The surface was a centimeter or so thick in places and so hard and compact that, given its coloring, it was initially thought to be fired, although the texture may be due

Table 09-05. Artifacts recovered on and in Mound Stage IIa during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex.

Object	Count	Quantity	Weight (g)
Stage II Mound, South Side			
IIa Mound			
Prehistoric			
Core	8		767.13
Daub		14 bags	422.01
Debitage *		1 bag	0.42
Drill	2		5.56
Flake	1,014		1,090.14
Pipe, Tobacco	1		5.85
Point, Projectile	8		12.37
Preform	4		19.70
Shatter	2,439		5,914.21
Stone, Fire Cracked	935	1 bag	3,048.61
Stone, Worked	2		354.20
Tool, Flake	24		116.17
Vessel Fragment	2400		4,058.82
Classifiable Native American Pottery			
Baldwin Plain, *var. Miller Slough*	2		
Baytown Plain, *var. McKelvey*	100		
Baytown Plain, *var. The Fork*	7		
Bell Plain, *var. unspecified*	6		
Etowah Plain	3		
Etowah Stamped	1		
Kimmswick Fabric Impressed, *var. Langston*	2		
Mississippi Plain, *var. Shiloh*	289		
Mississippi Plain, *var. unspecified*	3		
Mound Place Incised, *var. unspecified*	1		
Mulberry Creek Cord Marked, *var. Coffee Landing*	10		
Mulberry Creek Cord Marked, *var. Mulberry Creek*	120		
Mulberry Creek Cord Marked, *var. Obion*	31		
Mulberry Creek Cord Marked, *var. unspecified*	1		
Obion Plain, *var. Obion*	16		
Classifiable Projectile Points			
Hamilton	1		1.10
Late Woodland / Mississippian Triangular Cluster	2		1.94
Madison	4		4.52
Unknown			
Charcoal		18 bags	33.13
Clay, Fired		39 bags	2,556.62
Concretion		15 bags	956.66
Food, Bone	1		1.24

Object	Count	Quantity	Weight (g)
Fossil	13		7.07
Nonfood, Bone	20		5.37
Nonfood, Shell	28		35.22
Nut	12		0.90
Plant		1 bag	0.11
Sample, Flotation		62 bags	10,980.92
Sample, Soil		3 bags	177.20
Stone, Manuport		3 bags	630.98
Stone, Pebble	5		7.68
Stone, Unmodified		41 bags	102,913.79
Wood Fragment		1 bag	0.25
Stage II Mound, Summit			
IIa Mound			
Historic			
Nail	1		2.76
Vessel Fragment	1		0.20
Prehistoric			
Biface	3		117.38
Core	10		381.95
Daub		13 bags	345.28
Debitage *		4 bags	20.90
Drill	1		1.35
Fabric **		1 bag	-
Flake	876		985.39
Hearth	1		200,000.00
Point, Projectile	9		34.55
Scraper	1		41.63
Shatter	1708		4,414.95
Stone, Fire Cracked	520	9 bags	2,163.01
Stone, Worked	1		126.10
Tool, Flake	24		95.05
Vessel Fragment	2009		3,888.35
Classifiable Native American Pottery			
Baldwin Plain, *var. Chalk Bluff*	2		
Baldwin Plain, *var. Miller Slough*	1		
Baytown Plain, *var. McKelvey*	87		
Baytown Plain, *var. The Fork*	1		
Baytown Plain, *var. unspecified*	1		
Bell Plain, *var. unspecified*	3		
Etowah Plain	1		
Etowah Stamped	2		
Kimmswick Fabric Impressed, *var. Langston*	2		

Object	Count	Quantity	Weight (g)
Mississippi Plain, *var. Shiloh*	265		
Mississippi Plain, *var. unspecified*	2		
Moundville Incised, *var. Moundville*	4		
Mulberry Creek Cord Marked, *var. Coffee Landing*	2		
Mulberry Creek Cord Marked, *var. Mulberry Creek*	143		
Mulberry Creek Cord Marked, *var. Obion*	19		
Obion Plain, *var. Obion*	18		
Turkey Paw Cord Marked, *var. unspecified*	1		
Turkey Paw Plain, *var. unspecified*	1		
Classifiable Projectile Points			
Jack's Reef Corner Notched	1		3.84
Late Woodland / Mississippian Triangular Cluster	1		1.15
Madison	5		8.09
Unknown			
Charcoal		16 bags	19.07
Clay, Fired		67 bags	2,178.08
Concretion		8 bags	184.60
Food, Shell	1		11.70
Fossil	20		45.81
Nonfood, Bone	62		7.29
Nonfood, Shell	41		45.48
Nut	5		0.62
Plant		2 bags	0.70
Sample, Flotation		106 bags	18,932.83
Sample, Soil		8 bags	1,393.80
Stone, Manuport		1 bag	16.13
Stone, Pebble	1		22.61
Stone, Unmodified		75 bags	111,866.47
Wood Fragment		1 bag	0.31
IIa/IIc Mounds			
Prehistoric			
Biface	1		3.96
Core	10		207.06
Daub		4 bags	31.15
Denticulate	1		3.99
Discoidal	1		26.60
Flake	479		668.89
Hammerstone	1		534.20
Point, Projectile	6		8.89
Shatter	720		2,210.00
Stone, Fire Cracked	382		1,599.96
Stone, Worked	1		83.46

Object	Count	Quantity	Weight (g)
Tool, Flake	21		97.60
Vessel Fragment	1206		2,221.95
Classifiable Native American Pottery			
Barton Incised, *var. unspecified*	3		
Baytown Plain, *var. McKelvey*	40		
Baytown Plain, *var. The Fork*	2		
Baytown Plain, *var. unspecified*	1		
Bell Plain, *var. unspecified*	2		
Carthage Incised, *var. unspecified*	1		
Etowah Plain	1		
Etowah Stamped	1		
Kimmswick Fabric Impressed, *var. Langston*	2		
Mississippi Plain, *var. Shiloh*	184		
Mississippi Plain, *var. unspecified*	2		
Moundville Incised, *var. Moundville*	1		
Moundville Incised, *var. unspecified*	1		
Mulberry Creek Cord Marked, *var. Coffee Landing*	1		
Mulberry Creek Cord Marked, *var. Mulberry Creek*	58		
Mulberry Creek Cord Marked, *var. Obion*	16		
Obion Plain, *var. Obion*	4		
Ramey Incised, *var. unspecified*	1		
Salt Creek Cane Impressed, *var. unspecified*	1		
Classifiable Projectile Points			
Hamilton	2		3.06
Madison	4		5.83
Unknown			
Charcoal		10 bags	36.44
Clay, Fired		25 bags	346.59
Concretion		4 bags	231.11
Fossil	4		4.14
Nonfood, Bone	12		3.82
Nonfood, Plant		1 bag	0.11
Nonfood, Shell	11		13.66
Nut	3		0.47
Sample, Flotation		24 bags	2,583.30
Sample, Soil		3 bags	1,867.10
Stone, Pebble	1		169.80
Stone, Unmodified		25 bags	52,549.66

* Unsorted lithics from flotation samples

** No weight recorded

Note: Bag refers to materials from specific proveniences that were typically weighed but not counted. Most of these are materials not suitable for counting.

Table 09-06. Features identified on and in Mound Stage IIb during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex: Type, Measurement, and Provenience Data.

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Mound	Comments
26	Prepared/fired surface	200	100	3?	N52-53	E181	230	IIb	Prepared surface over much of the Stage II summit
28	Clay filled post/floor design?	28	13	6?	N54	E181	230	IIb	Irregular/bird like shape at top, squared once upper 1-2 cm removed
67	Linear charcoal deposit	384	14	9	N49-52	E183	234.5	I/IIb?	Linear burned lens… possible log. Stage I feature?
74	Posthole	14	16	22	N57	E181	225	IIb	Diffuse irregular circular stain, possible post
77	Posthole (historic)	17	13	n/a	N55	E183	247	IIb	Posthole for metal fence w/barbed wire. Stage I feature?
85a	Hearth	95	100	n/a	N57	E181	250	IIb	One of three overlapping hearths
85b	Hearth	95	100	n/a	N57	E181	250	IIb	One of three overlapping hearths
85c	Hearth	95	100	n/a	N57	E181	250	IIb	One of three overlapping hearths
86	Red silt mass/part of floor?	48	75	12	N56	E181	237	IIb	Red silt clay/possibly associated with floor.
96	Posthole?	10	9	4.5	N58	E182	258.5	IIb	Diffuse circular stain, possible post
108	Raised clay ridge/bench fragment	60	14	16	N52	E180	212.5	IIb	Silt/clay ridge; possible bench
109	Posthole	9	13	23	N57	E183	274	IIb	Posthole?
110	Filling episode/posthole?	n/a	n/a	n/a	N57	E183	317	IIb	Possible clay-filled posthole or patch of debris, unexcavated
111	Raised clay ridge/bench fragment	60	18	13.5	N53	E182	215	IIb	Silt/clay ridge; possible bench?
112	Raised clay ridge/bench fragment	37	18	22	N53	E182	214	IIb	Silt/clay ridge; possible bench?
113	Raised clay ridge/bench fragment	64	18	8	N54	E182	232	IIb	Silt/clay ridge; possible bench?
114	Raised clay ridge/bench fragment	10	15	11	N54	E182	231	IIb	Silt/clay ridge; possible bench?
115	Raised clay ridge/bench fragment	53	23	16	N54	E182	223	IIb	Silt/clay ridge; possible bench?
118	Raised clay ridge/bench fragment	51	21	n/a	N52	E182	229	IIb	Silt/clay ridge; possible bench? Very fragmentary.
119	Debris layer	90	30	22	N52-54	E184	?	IIb	Debris layer on east side slope of gray platform
128	Debris in fill	26	28	6	N50	E180	290	IIb	Debris in fill
133	Wall trench, poorly defined	18	71	n/a	N52	E180	239	IIb	Wall trench, not well defined

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Mound	Comments
134	Posthole	16	18	19	N52	E180	249	IIb	Well defined circular stain, probable post
135	Posthole	17	17	8	N52	E180	251	IIb	Well defined circular stain, probable post
136	Posthole	14	13	8	N52	E180	272	IIb	Well defined circular stain, probable post
137	Posthole	10	12	8	N52	E180	272	IIb	Well defined circular stain, probable post
143	Wall trench, poorly defined	100	20	25	N52	E179	250	IIb	Faint linear stain, not well defined.
145/262	Posthole	18	20	15	N52	E179	248	IIb	Well defined circular stain, probable post
146	Posthole?	25	18	13	N53	E182	280	IIb	Irregular stain, probable midden fill
194	Posthole	25	19	60	N54	E183	284	IIb	Well defined circular stain, probable post
195	Posthole?	10	10	17	N54	E183	284	IIb	Questionable feature
196	Posthole?	13	7	14	N54	E183	284	IIb	Questionable feature
247	Burned Area	44	69	2	N54	E180	260	IIb	Burned area, possible hearth
263	Posthole	n/a	15	16	N51	E179	236	IIb	Probable posthole
264	Posthole	20	20	n/a	N51	E179	236	IIb	Possible posthole
265	Wall trench fragment?	22	15	29.5	N51	E179	239.5	IIb	Possible wall trench
266	Wall trench fragment?	ca. 200	20-45	3	N51	E179-180	239.5	IIb	Possible wall trench
268	Posthole	20	20	n/a	N51	E179	240	IIb	Possible post at corner of two wall trenches
272	Posthole	9	20	36	N50	E183	248	IIb	Probable posthole
273	Posthole?	8	9	14	N51	E180	240	IIb	Questionable feature
274	Posthole?	10	9	n/a	N51	E180	240	IIb	Determined to not be a feature

to extensive foot traffic on the surface when it was in use. At least two and sometimes more surfaces or layers were in fact actually present in places, separated from one another by a few centimeters of fill, which were typically collected as separate stratigraphic proveniences (Figure 09-08). These multiple layers, possible floors or termination episodes, were most common atop the IIa and IIb platform mounds, suggesting their surfaces had been repaired or replenished on occasion. The highest surface extended horizontally across the entire summit, over the tops of the two small mounds designated IIa and IIb, and over the filled depression between them (IIc). While this surface was patchy over the IIc basin, and was not mapped in the E179 west wall profile (e.g., Figure 09-01), it was easily tracked during the excavations, including in units opened directly over the depression (Figure 09-09; see also Figure 03-45). Over the northern half of the summit, above what was designated in the field the 'gray platform' (IIb) mound, this surface was more or less continuous and well defined, while to the south, over the southern half of the IIc depression and over the IIa mound, while still present, it was somewhat patchier.

Table 09-07. Artifacts recovered on and in Mound Stage IIb during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex.

Object	Count	Quantity	Weight (g)
Historic			
Gum, Chewing	3		0.31
Nail	1		1.53
Slag		1 bag	0.62
Tape, Paper	1		0.05
Vessel Fragment	2		0.55
Prehistoric			
Biface	2		3.77
Core	33		1,585.01
Daub		8 bags	615.10
Debitage *		21 bags	160.12
Flake	1,670		2,355.14
Hammerstone	1		137.94
Metal Fragment		1 bag	2.98
Point, Projectile	8		10.60
Sample, Charcoal		1 bag	20.80
Sample, Fired Clay	24		788.70
Shatter	2,715		7,543.71
Stone, Chunkey	1		443.00
Stone, Fire Cracked	924	10 bags	3,777.27
Stone, Worked	1		112.10
Tool	1		10.32
Tool, Core	3		115.53
Tool, Flake	32		202.00
Vessel Fragment	5,069		10,158.61
Classifiable Native American Pottery			
Baldwin Plain, *var. Miller Slough*	10		
Barton Incised, *var. unspecified*	3		
Baytown Plain, *var. McKelvey*	228		
Baytown Plain, *var. The Fork*	11		
Baytown Plain, *var. unspecified*	5		
Bell Plain, *var. unspecified*	8		
Etowah Plain	2		
Etowah Stamped	1		
Kimmswick Fabric Impressed, *var. Langston*	6		
Mississippi Plain, *var. Shiloh*	613		
Mississippi Plain, *var. unspecified*	4		
Mound Place Incised, *var. unspecified*	1		
Moundville Engraved, *var. unspecified*	1		
Moundville Incised, *var. Moundville*	1		

Object	Count	Quantity	Weight (g)
Mulberry Creek Cord Marked, *var. Coffee Landing*	8		
Mulberry Creek Cord Marked, *var. Mulberry Creek*	447		
Mulberry Creek Cord Marked, *var. Obion*	49		
Mulberry Creek Plain, *var. unspecified*	1		
Obion Plain, *var. Obion*	26		
Turkey Paw Plain, *var. unspecified*	1		
Wheeler Plain, *var. Wheeler*	1		
Classifiable Projectile Points			
Fort Ancient	2		3.82
Hamilton	1		0.83
Late Woodland / Mississippian Triangular Cluster	1		0.98
Madison	3		2.95
Unknown			
Charcoal		55 bags	89.60
Clay, Fired		143 bags	5,442.52
Concretion		43 bags	3,473.68
Food, Bone	9		22.43
Food, Shell	1		13.29
Fossil	24		27.15
Nonfood, Bone	74		20.16
Nonfood, Plant		3 bags	0.49
Nonfood, Shell	177		219.44
Nut	17		2.46
Plant		4 bags	5.12
Sample, Flotation		324 bags	64,281.24
Sample, Soil		140 bags	38,205.17
Seed	1		0.13
Shell		1 bag	0.10
Stone, Manuport		6 bags	251.31
Stone, Pebble	3		31.50
Stone, Unmodified		186 bags	284,318.89
Wood Fragment		3 bags	0.90

* Unsorted lithics from flotation samples

** No weight recorded

Note: Bag refers to materials from specific proveniences that were typically weighed but not counted. Most of these are materials not suitable for counting.

The particularly well defined nature of the Stage II summit surface at the northern end of Mound A was probably because the IIb platform here was larger and may have been more highly regarded symbolically than the IIa platform to the south. Much of the IIb mound was composed of one uniform, carefully selected gray silt loam fill nearly devoid of artifacts, and upon abandonment this platform had been covered with thin veneers of red sandy clay prior to the filling of the Stage

Table 09-08. Features identified on and in Mound Stage IIc during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex: Type, Measurement, and Provenience Data.

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Mound	Comments
23	Posthole?	17	15	2	N50	E181	242	IIc	Well defined circular stain but very shallow
37	Posthole	12	12	3	N49	E181	260	IIc	Well defined circular stain but very shallow
43	Posthole?	32	29	61	N44	E180	228	IIc	Poorly defined circular stain; may not be a cultural feature
48	Posthole?	16	15	1.5	N45	E182	224.5	IIc	Indistinct, may not be a post
49	Posthole?	12	10	3.5	N45	E182	222.5	IIc	Indistinct, may not be a post
62	Hearth fragment	15	13	2	N48	E180-181	212.5	IIc	Probable hearth fragment on the Stage II surface over the IIc-1 depression
70	Post?	8	8	30	N49	E181	260	IIc	Irregular charcoal stain, possible post.
72a	Posthole	25	24	6	N47	E180-181	213	IIc	Posthole for 72b/Intrudes F83 hearth.
72b	Posthole	14	12	22	N47	E180-181	213	IIc	Postmold inside posthole 72a/ Intrudes F83 hearth.
73	Wall trench fragment?	65	63	12.5	N49	E182	216	IIc	Wall trench/corner where two linear stains intersect.
78	Posthole?	15	15	7	N48	E181	289	IIc	Posthole?
79	Posthole?	20	9	2	N48	E181	292	IIc	Posthole or debris; some decomposed organic material
83a	Hearth	35	39	2.5	N47	E180-181	227	IIc	Hearth fill (83a); dark fill in basin
83b	Hearth	37	43	2.5	N47	E180-181	232	IIc	Hearth basin (83b)/fired clay basin
87	Red silt layer/floor debris in IIc fill	26	36	10	N47	E181	281	IIc	Red silt clay/probable floor fragment/debris in fill above floor
88	Red silt layer/floor debris in IIc fill	37	46	6.5	N48	E181	287.5	IIc	Fired clay surface, Red silt clay/probable floor fragment/ debris in fill above floor.
89	Red silt layer/floor debris in IIc fill	30	6	2.5	N48	E181	287.5	IIc	Red silt clay/probable floor fragment/debris in fill above floor
94	Linear dark stain	200	42	13.5	N46	E182	222.5	IIc	Dripline, wall trench, or root
95	Posthole?	11	11	n/a	N49	E180	223	IIc	Posthole , may be a root
98	Posthole?	15	10	2.5	N45	E180	265	IIc	Posthole (?) Poorly defined circular feature
99	Posthole?	23	12	4.5	N45	E180	260	IIc	Posthole(?) Poorly defined circular feature

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Mound	Comments
100	Debris in fill	12	14	5.5	N46	E182	265.5	IIc	Red silt clay/probable floor fragment/debris in fill above floor
102	Posthole?	14	13	n/a	N49	E179	260	IIc	Faint stain/determined to not be a feature
103	Posthole?	10	10	n/a	N49	E179	265.5	IIc	Determined to not be a feature
104	Debris/linear mass in IIc fill	43	33	n/a	N45	E183	287	IIc	Determined to not be a feature
105	Debris in IIc fill	60	22	n/a	N45	E183	288	IIc	Determined to not be a feature
125	Rock filled shallow pit or filling lens	78	60	3.5	N46	E183	301	IIc?	Irregular shallow pit or filling episode
127	Debris in IIc fill	15	15	n/a	N49	E184	331	IIc	Debris in fill/Possible post?
129	Posthole	78	60	3.5	N46	E184	314	IIc	Irregular circular stain/possible post
132	Fill at base of IIc basin	2.27	16	9.5	N44	E181	313.5-321.5	IIc	Artifact rich base of IIc fill. Questionable feature.
138	Debris in IIc fill	11	10	n/a	N46	E181	330.5	IIc	Irregular stain, probable midden fill
139	Debris in IIc fill	37	17	n/a	N46	E181	328.5	IIc	Irregular stain, probable midden fill
140	Debris in IIc fill	18	24	n/a	N46	E180	330.5	IIc	Irregular stain, probable midden fill
141	Debris in IIc fill	16	23	n/a	N46	E180	328	IIc	Irregular stain, probable midden fill
142	Debris in IIc fill	17	20	1.5	N47	E181	322.5	IIc	Irregular stain, probable midden fill

IIc depression and the construction of the final summit surface over the Stage II mound (see below, Chapters 3 and 10). Additionally, the upper surface of the IIb platform had apparently been extensively rebuilt, given the presence of multiple floors and prepared hearths on it (see below). The southern IIa mound, in contrast, was smaller, with fewer features and more varied, artifact laden fills. A series of three thin filling episodes of red, yellow, and black sediments, however, were present at the base of the IIa mound—designated the 'multicolored basin fill' or MCBF in the field and the project geoarcheologist later designated Zone IIIk (see Chapter 10)—that may reflect a termination episode for the underlying Stage III mound and Structures 2a and 2b that had been on it before being removed. The MCBF may be evidence for ceremony associated with the start of the entire Stage II or specifically the Stage IIa mound construction.

The area over the IIc depression also appears to have been utilized, given the presence of two hearths (Features 62, 83a, 83b, see below) and several possible posts (see Table 09-08). Many of the IIc features were equivocal in nature, however, some little more than unusual pockets of fill or debris in the basin that were collected separately

Table 09-09. Artifacts recovered on and in Mound Stage IIc during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex.

Object	Count	Quantity	Weight (g)
Historic			
Brick		1 bag	0.32
Glass Fragment	1		0.33
Metal Fragment		2 bags	1.47
Nail	3		19.15
Rubber Fragment	1		1.54
Screw	1		0.42
Shingle	1		0.11
Tack	1		1.91
Vessel Fragment	15		11.56
Prehistoric			
Bead	1		0.41
Biface	4		43.66
Blade	2		1.87
Core	37		1,578.51
Daub		11 bags	145.97
Debitage *		15 bags	220.49
Discoidal	1		3.80
Drill	1		3.45
Flake	2,387		2,817.80
Hammerstone	3		275.39
Knife	1		21.50
Pan	1		23.10
Plate	2		13.68
Point, Projectile	6		16.20
Sample, Charcoal		2 bags	23.46
Sample, Fired Clay	12		404.90
Shatter	5,534		14,494.33
Stone, Fire Cracked	2,317	12 bags	8,369.18
Stone, Worked	4		236.39
Tool, Core	4		142.23
Tool, Flake	61		403.97
Uniface	1		96.40
Vessel Fragment	7,188		17,848.38
Classifiable Native American Pottery			
Avoyelles Punctated, *var. unspecified*	2		
Baldwin Plain, *var. Chalk Bluff*	2		
Baldwin Plain, *var. Miller Slough*	6		
Baldwin Plain, *var. unspecified*	3		

Object	Count	Quantity	Weight (g)
Baytown Plain, *var. McKelvey*	207		
Baytown Plain, *var. The Fork*	9		
Baytown Plain, *var. unspecified*	4		
Bell Plain, *var. unspecified*	19		
Etowah Plain	4		
Kimmswick Fabric Impressed, *var. Langston*	13		
Kirby Incised	1		
Mississippi Plain, *var. Shiloh*	1,100		
Mississippi Plain, *var. unspecified*	6		
Moundville Incised, *var. Moundville*	2		
Mulberry Creek Cord Marked, *var. Coffee Landing*	4		
Mulberry Creek Cord Marked, *var. Mulberry Creek*	397		
Mulberry Creek Cord Marked, *var. Obion*	49		
Mulberry Creek Cord Marked, *var. unspecified*	2		
Obion Plain, *var. Obion*	34		
Salt Creek Cane Impressed, *var. unspecified*	6		
Turkey Paw Plain, *var. unspecified*	2		
Classifiable Projectile Points			
Jack's Reef Corner Notched	1		3.25
Madison	2		5.45
Unknown			
Charcoal		55 bags	274.17
Clay, Fired		141 bags	5,481.02
Concretion		20 bags	1,083.88
Food, Bone	173		47.09
Fossil	45		27.08
Nonfood, Bone	157		32.01
Nonfood, Plant		1 bag	0.09
Nonfood, Shell	90		144.98
Nut	14		2.34
Plant		7 bags	1.68
Sample, Flotation		267 bags	58,154.59
Sample, Soil		23 bags	15,915.20
Shell		3 bags	50.35
Stone, Manuport		3 bags	225.34
Stone, Unmodified		162 bags	363,802.51
Wood Fragment		1 bag	0.20

* Unsorted lithics from flotation samples

** No weight recorded

Note: Bag refers to materials from specific proveniences that were typically weighed but not counted. Most of these are materials not suitable for counting.

in the field, suggesting this part of the summit was not used anywhere near as extensively as the IIa and IIb areas once the depression was filled in.

The final summit surface for the Stage II mound, encompassing the tops of the Stages IIa, IIb, and IIc mounds/fills, may be what Sherwood (see Chapter 10) calls a 'consistent surface', possibly laid down prior to or perhaps as a part of the construction of the Stage I mound. It might have been a termination episode for the Stage II platforms, with the area covered and leveled, used briefly, and then the Stage I mantle placed over it. Additional work at Mound A, in the undisturbed portion to the west, will be essential to delimiting how long the presumed IIc surface may have been used, and the full size and extent of the Stage IIa and IIb mounds and the IIc fill between them.

Efforts to recover samples for archeomagnetic dating from the Stage II summit in 2002 proved unsuccessful, reinforcing the likelihood that the reddish-orange coloring of the upper Stage II surface did not derive from direct burning, something thought initially, or else was more disturbed than it appeared. The archeomagnetic dating specialist, Stacy Lengyel, who was present during the sample collection effort, thought these soils might have been brought in from elsewhere and possibly been fired beforehand to bring out the pronounced colors (Lengyel 2003; see Chapters 3 and 10, and the electronic appendices). One radiocarbon sample was collected from the upper Stage II surface in N48, E181 in 2001, over the central depression (see Figure 03-25), yielding an AMS date of 510±40 B.P. (A.D. 1403-1441 [68.2 percent], calibrated 1-sigma range; Beta 161309; see Chapter 21 and the electronic appendices).This is a late date for the Stage II mound, which is thought to have been built somewhat earlier in time, probably during the late thirteenth century—something supported by an analysis of all the AMS dates recovered during the 2001 to 2004 fieldwork (see Chapter 21)—although at the 2-sigma range there is a low probability that the age is closer to what was expected (A.D. 1318–1353 [14.6.0 percent], A.D. 1390–1450 [80.8 percent]).



Figure 09-08. Up to several bright orange surfaces, with little or no separation between them, were found on the top of the IIb mound, as shown here in N54 E181, that probably represented occupation surfaces or termination episodes.



Figure 09-09. The reddish orange surface atop the Stage II mound as encountered in 2002 in N45-48 E179-181, directly over the Stage IIc basin. The surface in this area was highly uneven and patchy in places, suggesting it had been eroded somewhat. The circular hole to the left of center is post Feature 72a/72b, intruding into the upper part of the Feature 83a/83b, a hearth basin.

Stage II Mound IIa

A small platform mound about 4.5m in width at the summit and 8m at the base in N/S dimensions, of undetermined E/W extent, and about 1.4m in height, was built on the south side of the mound atop the Stage III mound (see Figures 09-01 and 09-10; Tables 09-04 and 09-05). While the IIb platform to the north was recognized early on, it was not until a much longer and deeper profile was

visible that we realized a second small platform, the IIa mound, had also been built on top of the Stage III mound (Figure 09-11). The IIa mound was built in a series of massive fills of differing color and constituency, as described in detail in Chapter 10, in contrast to the single massive fill of gray silt loam that comprised much of the IIb mound at the north end of the summit. The southern face of the IIa mound was quite steep, on the order of 50–70 degrees, and was comprised of two distinct filling episodes designated IIa-5 and IIa-6 that rested atop the lower slope of the Stage III mound (see Figure 09-01; see Chapter 10). Few artifacts were found on the slope or at the base of the Stage IIa mound, nor on the face of the underlying Stage III mound, suggesting this area was carefully maintained and not a location where debris was discarded (e.g., Smith and Williams 1994). The remote sensing had indicated a possible entrance ramp was located further to the west near the center of the mound's southern face (see Chapter 8). If this presumed ramp provided access to the summit, the area around it may have been kept clean, and the exterior faces of the mound stages well maintained. Indeed, unusual colored fills as well as evidence for patching episodes were noted in the south side of the mound, suggesting it was indeed a focus for public activity and ceremony (see Chapters 3 and 10, Figure 03-44).

A total of 15 features were found in or atop the Stage IIa platform, including two hearth-like features on the IIa summit, Features 59 and 75, together with a number of possible posts and a small pit filled with debitage, Feature 71 (Table 09-04; Figure 09-10). No structure outlines or wall lines were recognized. A large number of artifacts were found in the fill of the IIa mound (Table 09-05), comparable to that in the IIb mound, although far fewer were found in the IIc depression fill (see Tables 09-07 and 09-09). The Stage II summit surface was present but disturbed atop the IIa platform, probably because the overlying Stage I mantle was comparatively thin at this end of the mound, on the order of 30–50cm, which would have meant a greater likelihood of bioturbation. The north side of the IIa mound at its base in N36–37 appears to include a portion of the exterior face of the underlying Stage III mound, which was unchanged except for a possible minor addition or more likely an erosional/washing episode at its base (e.g., Zone IIIg-7a, see Chapter 10). At the base of the IIa mound was Zone IIIk, the multi-colored basin fill' or MCBF noted previously, three thin fills of red, black, and yellow sediment (see below and Chapter 10). The very last surface atop the Stage III mound (or the first at the base of Mound IIa), it likely represents some aspect of the termination rituals associated with the closing of the Stage III mound (and perhaps for the buildings immediately under it, Structures 2a and 2b) as well as an initiation ritual for the start of construction for the Stage IIa mound.

Feature 59. This feature was a small circular shallow basin shaped hearth ca. 40cm in diameter and 10cm deep that was heavily intruded by roots, located about 1.5m north of the south end of the Stage IIa platform mound (Figure 09-12). The feature intruded the reddish orange prepared surface(s) making up the summit, indicating it was associated with them and contemporary or only slightly later in age. Like most of the hearths encountered on Mound A, it was identified by the presence of a ring of fired clay from the outer part of the basin as the unit was opened from above (Figure 09-13). Unlike some of the hearths found on Mound A, Feature 59 only had a small amount of charcoal in the fill over the pronounced fired clay sides and bottom, indicating it had been used extensively, but had also been largely cleaned out when this surface was abandoned. An irregularly fired area about the same size as the basin but only about a cm thick was located immediately to the northwest that appears to have been associated, but did not have any prepared shape or obvious fill, and hence was not designated a separate feature. It may be the where the summit surface was fired in the vicinity of the hearth. Ethnobotanical analyses conducted with the fill from the basin, which was floated in its entirety, found little material, only two unidentifiable seeds (see Chapter 16, Table 16-02). A sample of hickory nutshell charcoal from Feature 59 yielded a radiocarbon date of 890±15 B.P. (A.D. 1054–1078 [25.3 percent] and A.D. 1153–1185

42.9 percent] calibrated 1-sigma ranges; see Chapter 12).This is a somewhat early date for the Stage II mound, which is thought to be somewhat later in time, although at the 2-sigma range the most likely intercept is closer (A.D. 1150–1213 [58.0 percent]; see Table 12-02). The evidence from the Feature 59 area suggests that when the Stage II mound summit was closed out, the termination behavior may have included burning a fire, and/or the cleaning out of existing hearths.

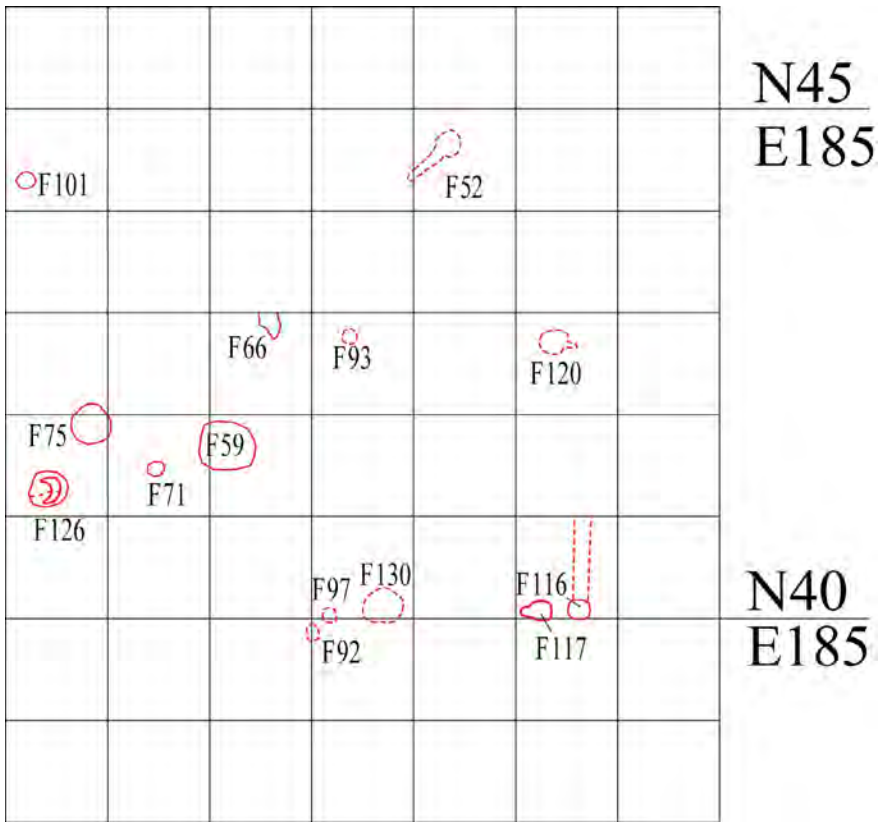


Figure 09-10. Features identified on and in the Stage IIa mound during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex. Features defined with dotted lines have diffuse or poorly defined boundaries.

Feature 71. A dense concentration of chert flakes and flake fragments and several shell tempered pottery sherds was found during the removal of a tree stump on the south end of the Mound A summit, under the center of the stump (Figure 09-14; see Chapter 13, Figure 13-01). The feature is either in the Stage I fill or atop the Stage IIa mound. Designated Feature 71, the concentration may represent caching behavior (i.e., materials in a small bag that has since vanished) or possibly the casual pitching of knapping and other debris down a hole of some kind. The chert flakes were small and some appear to derive from the production of a serrated biface, possibly a knife of some kind. The fill was removed in entirety for flotation, and a detailed discussion of the lithic assemblage is provided by Jessica McNeil in Chapter 13.

Feature 75. An unusual fired clay basin with two small internal depressions on the south side was found near the south end of the IIa summit (Figure 09-15). The depressions were first noted when the feature fill was being removed for flotation. They were themselves fired, and were clearly a part of the feature and not intrusive posts, since the fired clay extended around them and across their bottom. Brian Butler, upon seeing the feature during his visit to the site in August 2002, suggested that it might be an incense burner of some kind. Because of its unusual nature, the feature was removed in its entirety, carefully wrapped in plaster and gauze, and placed in curation as a special block sample (see Chapter 3, Figure 03-70). Ethnobotanical analyses conducted with the fill, which was floated, detected no identifiable subsistence remains (see Chapter 16, Table 16-02). A sample of oak wood charcoal from Feature 75 yielded a radiocarbon date of 810±15 B.P. (A.D. 1220–1251 calibrated 1-sigma range; see Chapter 12). The date for this unusual hearth or possible incense burner-like feature is in agreement when the Stage II mound was in use. The flotation sample did not yield any unusual materials in the fill, beyond oak wood charcoal (see Chapter 16).

Feature 101. This was one of a number of postholes found in the Stage II and III mounds that had been filled with an unusual colored material, presumably upon removal of the post that was once present (Figure 09-16). In this case



Figure 09-11. One of the several filling episodes (IIa-3, shown here partially exposed and excavated) in the Stage IIa Mound.

a reddish orange (2.5YR4/8) silty clay was used. The filling of these posts with clay may represent an attempt to ensure the holes were thoroughly filled, although the use of colored soil may also be associated with a ceremony of some kind, perhaps tied to the abandonment of the structure or the platform mound the post was placed upon.

Stage II Mound IIb

A second small platform mound was located at the north end of the Stage III mound that we called the 'gray platform' in the field because of the color of its constituent fill, and that the project geoarcheologist designated IIb (see Figures 09-01 and 09-17, see Chapter 10). The maximum E/W extent of this platform is unknown because it continued into the unexcavated portion of the mound, but an area about 5.0m (E/W) by 11m (N/S) was exposed, of which ca. 4m (E/W) and 9m (N/S) were the dimensions of the level summit with another 1m each the extent of the sloping south, east and north sides. Slightly lower in height than the IIa mound, at about 1m, the IIb mound was more deeply buried, at from 50–60cm below the ground surface in most places. The southernmost 2m of the IIb mound summit were the highest part, by as much as 30 to 40cm, with a distinct step, or drop in overall height occurring 2m to the north, at N53 that continued across the remainder of the summit to the north. The sloping south face of the IIb mound was also stepped in places, possibly to facilitate access or reduce erosion. No evidence for a ramp was observed on those portions of the south or east slopes examined, or for apparent trampling and compaction of the fills, which might have been a sign of repeated access. Like the IIa mound, structures appear to have once been present on the IIb summit, given the presence of hearths, isolated posts, fragmentary wall lines, and masses of orange clay that appear to be the eroded remains of walls or possibly internal benches (Figure 09-17; Tables 09-06 and 09-07). As with the IIa mound, however, no distinctive structure outlines were found on the IIb summit, something attributed to the close proximity of the ground surface, and the impact bioturbation had on the upper deposits following site abandonment.

The IIb mound was immediately recognized as distinctive when it was first encountered in the 1m trench opened across the summit in 2001, because of its relatively homogeneous fill, a gray silt (designated IIb-1), and because thin veneers of red sandy clay (designated IIb-1b) were observed covering the southern face and extending out from it at the base for several meters, the uppermost of which was exposed in its entirety (Figures 09-18 and 09-19; see also Figures 03-26 and 03-72; see Chapter 10). Two additional veneers were observed below the uppermost one, suggesting this covering was applied two or three times when the platform



Figure 09-12. Feature 59, a small basin shaped hearth in N41 E180-181 on the Stage IIa mound summit, shown upon removal of the fill. A second more irregular burned area is located immediately to the northwest by the photo board that does not appear to have been in a prepared basin.



Figure 09-13. Feature 59, a small basin shaped hearth on the Stage IIa mound summit upon initial discovery in N41 E181 and prior to excavation. The hearth was identified by a bright reddish orange ring of fired clay from the outer and upper part of the basin. The feature extended to the north into N41 E180, as shown in Figure 9-12).

was in use, and that the sides of the platform itself had been either repaired or enlarged slightly (Figure 09-19). As documented in Chapter 10, these veneers were a red sandy clay that had been carefully mixed into a slurry and applied damp. The fill in the area between platforms IIa and IIb, in the IIc depression, was placed directly on top of this veneer, with a sharp and well defined contact, suggesting the veneer may reflect a termination episode of some kind, possibly for the Stage IIb mound. In addition to the veneer, laminated washing episodes were found at the base of the IIb mound on the south side, designated IIb-2c, IIb-5a, IIb-5b, and IIb-5c. The project geoarcheological research demonstrated that the fill of these episodes included gray silt and red sandy clay from the IIb mound and its veneers, as well as microartifacts, suggesting they most likely derived from occupations atop the IIb mound to the north and northwest (see Chapter 10).

Much of the fill of the IIb mound was a gray silt mantle designated IIb-1, clearly intentionally prepared and deposited as a thematic structure, conveying meaning to its builders (Figure 09-20; see Chapter 10). Other fills were present above and below it in places in the IIb mound, however, and inspection of the profiles, taken every meter as the fill was removed, indicate the IIb-1 mantle itself was not uniformly placed or homogeneous in appearance. Individual dumping episodes or 'basket loads' were visible in a number of places within the IIb-1 fill, although these were not true sod or soil blocks with constituent A- and B-horizons. Basket loading was, in fact, fairly rare in the portion of Mound A that was examined, with its greatest occurrence in Stage III.

Embankments of somewhat more resistant materials were indicated on the northeastern and eastern margins of the IIb-1 gray silt fill which, given its characteristics, could have washed away fairly quickly had a heavy rain occurred while the platform was being built. The 2001 GPR work found a linear feature several meters in extent on the east side of the mound near the bluff edge that appears to be associated with the edge of the Stage IIb platform, and may correspond to such an embankment (Nickel 2001a). Placing more resistant



Figure 09-14. Feature 71, a dense concentration of lithic debitage found under a large stump in N41 E180. Removing the feature proved logistically challenging, but the content yielded evidence for biface manufacture atop the mound (see Chapter 13).

fill on the margins of the Stage III surface, by the eastern portions of Structures 3 and 4 following their abandonment and removal, may have been the way the Stage IIb platform construction was initiated.

A total of 41 features were found in the IIb platform (see Figure 09-17, Table 09-06). Structures appear to have been present atop the IIb mound, but as with the IIa platform and the Stage I summit, no outlines were detected. Stacked reddish orange surfaces were found, typically two and sometimes more, although their occurrence was patchy, probably due to bioturbation and post-abandonment summit cleaning. In places these layers were up to 5cm thick, but were typically much thinner; these may represent rebuilt floors (see Figure 09-08). While the uppermost surface may have been associated with a termination episode, most or all of the surfaces atop the IIb mound were thought to be structure floors for several reasons. First, well defined hearths, Features 85a, 85b, and 85c, were present on the uppermost surface, and had not been covered by it. Unequivocal post features also originated on this surface as well as a several poorly defined wall trench fragments, as well as a linear gap that may be a second wall trench or perhaps where a partition had been placed, given it was shallow, essentially the thickness of the uppermost



Figure 09-15. Feature 75, an unusual hearth or incense burner located atop the IIa platform, upon discovery (left), partial excavation (center), and after the interior carbonized fill had been removed (right). The depressions on the southern part of the feature are not intrusive posts, but were fired across their sides and bottom.



Figure 09-16. Feature 101, a posthole atop the IIa mound filled with red silty clay, presumably added after the post had been removed.

surface itself, and no posts were associated with it (Figure 09-21). Finally and perhaps most telling, eroded ledges or benches of reddish-orange silt clay were found on the surfaces atop the IIb mound. As noted in Chapter 3, these resembled features found in the earthlodge/council house at the Macon Plateau site, and may be the remains of benches, partitions, or wall lines (see Figures 03-45 and 03-46). The weathered appearances of these features suggest they had been exposed for a time prior to being covered with the Stage I mantle.

A fairly substantial amount of the IIb mound fill was water screened, particularly of the IIb-1 mantle, yielding a surprising number of artifacts, including both shell and grog tempered pottery fragments (Table 09-07). Three sherds from the upper part of the Stage II mound were submitted for thermoluminescence dating and two dates were obtained (see Chapter 14, Table 14-04). These dates were A.D. 978 ± 186, UW1219, on a sherd of Baytown Plain, var. *McKelvey*, and A.D. 874 ± 64, UW1220, on a sherd of Mulberry Creek Cord Marked, var. *Mulberry Creek*. These dates reflect when the sherds were last fired, and not the age of the mound stage itself, which the radiocarbon dates from the mound indicate was probably in the late thirteenth or very early fourteenth centuries (see Chapters 12, 21). A small piece of worked copper was found at the base of the IIb-1 fill in N51, E179, at the southern end of the platform, that may have been left on the Stage III summit, or represent an accidental inclusion in the IIb-1 fill (see Chapter 13; Figure 13-10).

Feature 28. A small irregular mass of gray clay was found on the IIb summit on the uppermost surface that may have been a filled pit or post (Figure 09-22). When first detected it was irregular in shape, that appeared to reflect an intentional design, possibly a bird. Upon removal of the upper 2cm, the feature had a squared shape, suggesting it was a filled in post or patch of some kind, to fill in a hole in the stage surface. A hint of a posthole was evident immediately around the squared clay fill, but the fill terminated quickly, within a few centimeters, suggesting it was either not a post, or one that was very shallow. The squared shape suggests a possible filled in historic post-pit, but this is considered unlikely because the feature was only first observed immediately above the IIb summit floor.

Features 85a, 85b, 85c. Three highly disturbed and somewhat overlapping fired clay basins from presumed hearths were found on the IIb mound surface in an area about 1m in extent, primarily in N57, E181–182 (see Figures 09-17, 09-21, and Figure 09-23). All three were heavily intruded by the roots of a large tree that had been located directly over this area, and the surfaces of each basin were fragmented, making collection of samples for archeomagnetic dating infeasible. While three apparent basins were recognized, only Feature 85a, which was the least disturbed, was well defined. Firing was present between and for a short distance around the basins, suggesting the area had served as a location for hearths for some time, and certainly where a lot of burning occurred. A small part of the northwestern portion of Feature 85a had been noted in the 2001 test trench, in N58, E181, most of the apparent feature was to the south, in an area unexcavated at the time due

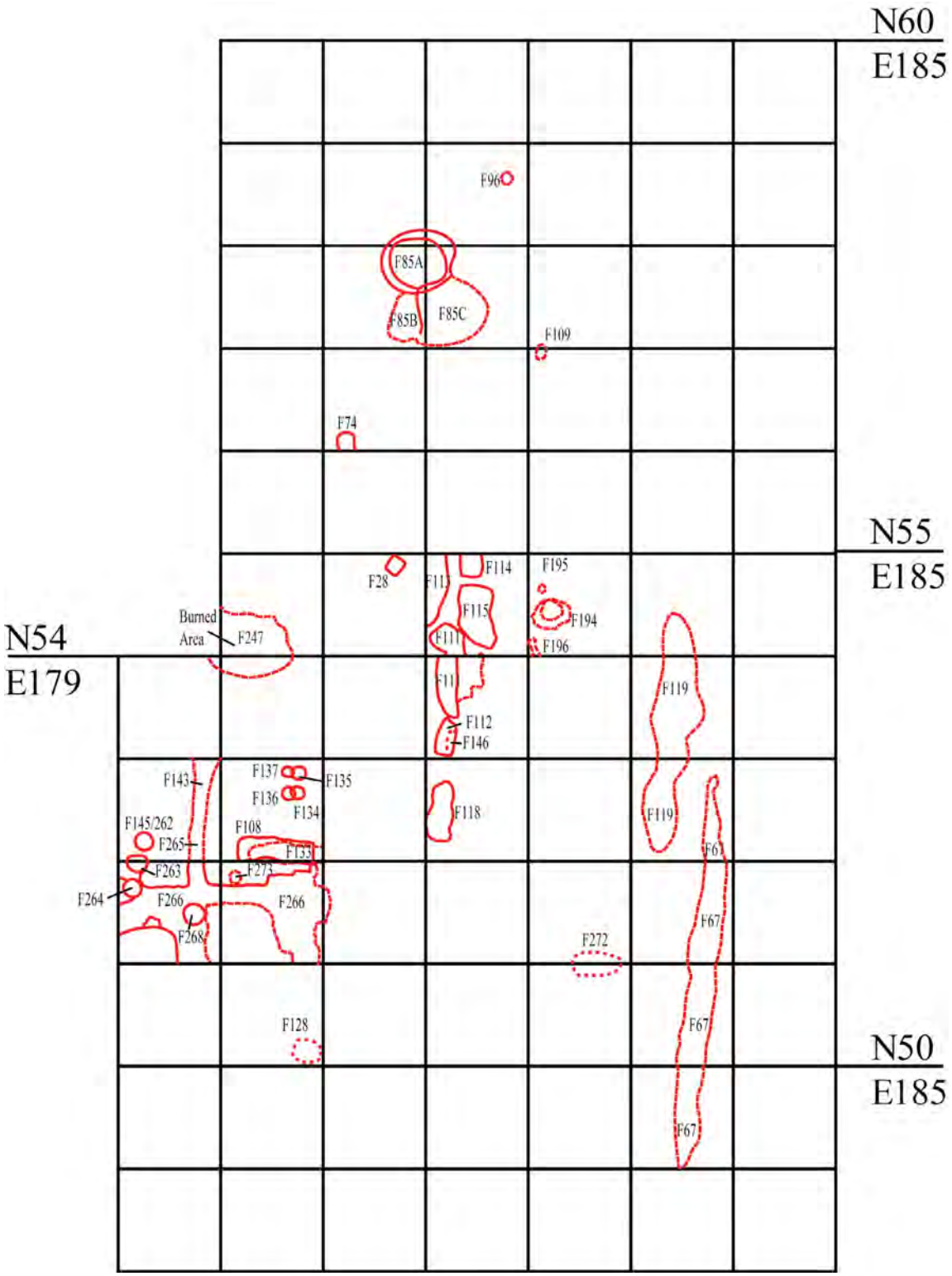


Figure 09-17. Features identified on and in the Stage IIb mound during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex. Features defined with dotted lines have diffuse or poorly defined boundaries.



Figure 09-18. The thin red sandy clay veneer (IIb-1b) covering the sides of the Stage IIb or 'gray platform' mound detected in the 2001 testing. At least two additional thin red layers or veneers can be observed extending out from the platform (shown in the profile above the north arrow), suggesting this covering may have been modified or resurfaced two or three times.

to the presence of a large tree (later removed); that the fired area and charcoal represented a probable hearth was not clear until the 2002 fieldwork. The fill from the three basins was floated, and that from the fill and basin surface of Feature 85a, which was analyzed, yielded chenopod, cucurbit, grape, and Poaceae seeds, hickory nutshell, maize cupules and kernel fragments, and a number of unidentified seeds, indicating food preparation and consumption may have taken place in the area (see Chapter 16, Table 16-02). A sample of hickory nutshell charcoal from Feature 85a yielded a radiocarbon date of 785±20 B.P. (A.D. 1225–1264 calibrated 1-sigma range; see Chapter 12). The date is in close agreement with the period when the Stage II mound summit is thought to have been in use.



Figure 09-19. The south side and slope of the IIb gray platform, so named because of the color of its interior fill. The south and east slopes had a thin veneer of red sandy clay over the entire surface, that was extended to the south of the platform for several meters, until it was truncated by slopewash coming off the north side of the IIa platform.

Features 108, 111–115, 118. Several irregular eroded linear clay ridges ca. 10–20cm in width and 10–20cm in height were found at the south end of the IIb platform, most (Features 111-115 and 118) in a roughly north-south line in units N52–54, E182 along the eastern margin of the platform, right before it sloped downward to the Stage III surface (Figure 09-24). These features likely mark the edge of either the IIb mound, or a structure wall line on it. Another possible linear clay ridge, Feature 108, was found in N52, E180, but was less well defined, and is not at the mound IIb margin. Interpreted as possible benches, ledges, or wall lines, like those found on the floor of the earthlodge at Macon Plateau, these features may have had a similar function, as architectural features supporting benches or wall lines (see Chapter 3, Figures 03-45 and 03-46). There were only a few such features atop the IIb summit, however, and all were rounded. If several of them once made up a continuous feature, it has since broken or eroded into the segments that remain. Their condition suggests the IIb surface had been left exposed for a time prior to covering by the Stage I mantle. In the area immediately to the west of these ridges the summit surface was irregular and undulating a few centimeters in relief in places, suggesting other such bench-like features may have been once present, although only one was noted in this area, Feature 108, a poorly defined fragment.

Features 133, 143, 265, 266. Several possible wall trenches were observed on the IIb summit, extending into the underlying gray silt, although all were short and poorly defined (Figure 09-25). Some 19 possible posts were also observed in the IIb mound, about half well defined, but none were in the possible wall trench segments.

Feature 145. A squared posthole was found in N52, E179 that resembled Feature 28, differing in that it was filled with red as opposed to gray clay, and in possessing a stain from a probable former

post at the top (Figure 09-26). The squared shape suggests a possible filled in historic post-pit, but this is considered unlikely because the feature was first detected a few cm below the IIb summit floor, and because of the red clay in the fill, which was not observed in other historic posts. If it originated higher, at the summit surface, as the field records indicate, the upper fill was not packed with red clay, something also suggested by the profile. The bases of some postholes, like Feature 145 if that was its function, may have been lined with clay prior to placing the posts in them.

Stage II Fill IIc

A large U-shaped basin roughly 7m across and up to 1.5m deep was present between the IIa and IIb platforms that appears to derive from a single massive filling episode (see Figure 09-01; Tables 09-08, 09-09). The IIc fill was mottled in appearance and characterized by appreciable quantities of artifacts, daub, and charcoal, and may represent debris from the clearing of structures atop the IIa and IIb mounds, as well as midden from the surrounding site area. Although pockets in the deposit had greater quantities of architectural debris like daub or presumed floor fragments, no evidence for layering was evident, which is why the basin is assumed to have been filled fairly quickly. A total of 35 features were identified on and in the IIc construction episode, although the numbers are deceiving, since many of these 'features' were ambiguous in nature, some simply distinctive pockets of debris in the fill (Figure 09-27, Table 09-08). The IIc fill resembled the Stage I mantle in having numerous artifacts and debris present, suggesting the fill came from a nearby midden area, or perhaps was debris from the summits of the nearby Stage IIa and IIb mounds when they were abandoned (Tables 09-03, 09-09). The IIc fill clearly differed from the near culturally sterile deposits making up portions of the IIb mound, indicating fill selection practices had changed when the basin was filled. That is, greater care in the selection and processing of fill appears to have gone into the construction of the earlier IIa and IIb mounds and, as we shall see below, the Stage III mound slopes and surfaces that underlay them (see also Chapter 10). While there is uncertainty about how long the reddish orange surface placed atop the IIc depression was used, it was well defined (see Figure 09-09). The area of the IIc basin had thus been covered with a distinctive surface and, like the tops of the Stage IIa and IIb mound summits, apparently been used and left open for a time before the Stage I mantle was laid over it. The presence of hearths and the occasional post on the prepared IIc upper surface supports this inference.

Feature 62. A well-defined fired clay basin fragment was found just below the reddish orange Stage II summit surface covering the IIc-1 depression in N48, E180–181 (Figure 09-28). The center was blackened, suggesting fires had been burned within it. The fact that the hearth was fragmentary, essentially half to two thirds of a basin, and the fact that it was found immediately under the prepared summit surface, suggests that it may have only been used for a short time, possibly during mound termination rituals. It appeared to have been in place, but given its fragmentary condition, it is also possible that it was relocated here during the filling of the IIc basin.

Features 72, 83a, 83b. A well-defined hearth basin, Feature 83, that had been intruded by a post, Feature 72, was found on the Stage II summit surface in N47, E180–181 (Figure 09-29; see Figure 09-09). The post included an exterior ring, designated Feature 72a, that was presumably the hole, and a darker inner fill presumably from the post itself, designated Feature 72b; the two fills were removed and floated separately. Two summit surfaces were present in this area, and the hearth and post intruded both, suggesting they were in use when these surfaces were laid down; the post may thus have originated higher, from the Stage I summit, although it was not recognized there (see Figure 09-03). The hearth fill was designated Feature 83a and the fired clay basin Feature 83b; the fill from each was floated separately. The fill from Feature 83a yielded 4 chenopod, 1 glume, 1 grass family, and 22 unidentifiable seeds as well as 5 maize cupules and 17 hickory nutshell fragments. The surface of Feature 83b yielded 1 maize cupule



Figure 09-20. Views of the Stage IIb-1 fill below the summit and east slopes, showing the north wall profile in N53 E182-184. Individual dumping episodes/basket-loads making up the thematic structure of the fill are evident. The IIb-1 fill rests on the red surface overlying Structure 3 on the Stage III mound (Zone IIb-2b). (top) View to the northeast; (bottom) View to north.

and 1 maize kernel, 8 hickory nutshell fragments, and eight unidentifiable seeds; the samples indicate food preparation likely took place in the immediate area (see Chapter 16, Table 16-02). A sample of hickory nutshell charcoal from Feature 83a yielded a radiocarbon date of 955±20 B.P. (A.D. 1029–1047 [21.9 percent], A.D. 1090–1121 [36.3 percent), A.D. 1140–1149 [10.0 percent] calibrated 1-sigma ranges; see Chapter 12). The date for the hearth is somewhat earlier than when the Stage II mound is thought to have been in use, although at 2-sigmas the age is in closer agreement (A.D. 1022–1069 [29.6 percent], A.D. 1067–1155 [65.8 percent]; see Table 12-02).



Figure 09-21. The surface of the IIb platform at the north end of the summit, in N54-58 E179-183. The 1m excavation units in the foreground are from the 2001 test trench, which was not excavated between them because of the presence of a large tree, whose roots are shown in the center of the image. Features 85a, 85b, and 85c, a series of hearths, is shown just east of the main tap root in the center. A break in the fired clay surface about 30-40cm wide is apparent in the southern or right half of the image that may be where a partition was removed, although no posts were observed in it.

Stage III Features and Construction Details

The Stage III mound was located from ca. 1.6–1.8 and 4.5–4.6m below the current summit of Mound A (ca. 320–340 to 610–620cmbd), and about 1.3m below the Stage II summit surfaces (see Figure 09-01). The Stage III summit stood about 2.5–2.6m above the Stage IV construction episode, a level surface on the south side that appears to have been created to place this mound, and possibly earlier inner mounds if any were present, upon it. Numerous structures had been built on the upper part of the Stage III summit when it was in use, which appears to have been over a period of two or more decades in the second quarter of the thirteenth century, based on the AMS radiocarbon dates obtained from features on its surfaces (Figure 09-30; see Chapters 12, 21). The Stage III mound summit measured approximately 23m N/S, from N39 to N62, was 7m wide in the area examined, and was level east to the existing bluff edge. No evidence for an eastern slope was found, indicating it had been lost to erosion. The Stage III mound extended roughly 2.5m further out from its summit on the south side, at least to the base



Figure 09-22. Feature 28, in N54 E181, a gray clay filled post or decoration found on the Stage IIb uppermost surface. Irregular or bird (?) shaped on first detection (left), it proved to be square upon removal of the upper 2cm (right).



Figure 09-23. Multiple overlapping hearths 85a, 85b, and 85c atop the IIb platform. Feature 85b has a large double tree tap root growing through it in the center. Feature 85a is just to the north, with a lighter central fill surrounded by fired edges. Feature 85c is the fired area to the east (see also Figure 09-21).



Figure 09-24. Features 111-115 and 118, clay ridges atop the IIb platform in N52-54 E182 (see also Figures 03-45, 09-17). Feature 108, a narrow linear fragment, is in the foreground to the lower right in N52 E180, and may have been a comparable feature, although it is less well defined.

of the steep exterior face that fronted on the apron/Stage IV surface at ca. N36.5. How far the Stage III base extended to the north is unknown, because the lower part of the mound saw only limited examination on this side. The 1m test trench opened on the north slope in 2001 detected what appear to be inner stages out as far as ca. N69.5, however, so if these were not part of the Stages IV–VII fills used to level the area, the Stage III mound may have extended to this point or slightly further. Given how much lower the ground surface was on the north side, this would not be altogether unexpected, since the Stage III north face would have been 2–3m higher than the south face. The Stage III mound in final form was thus roughly half the volume of the final Stage I mound, and the upper meter of the apron, apparently added during the construction of the final mound, would have been absent on the south and west sides.

The complex construction history of the Stage III mound is documented in superb detail in Chapter 10. In the pages that follow, the emphasis is on the structures and features that were found on the Stage III summit, examined individually. A total of 432 features were identified in and on the Stage III mound, the vast majority posts associated with structures or structure fragments on the summit. A number of prepared clay hearth basins were found, and where wall lines were evident they were placed at or near the center of structures. Pit features were rare, and where present appear to have been either quite small, like the clay filled features noted previously, or were likely supports for large posts. A major finding of the 2001–2004 fieldwork was the number of structures that were present, particularly given the small proportion of the Stage III summit that was examined, between 1/4 and 1/3 of the ca. 23x23m mound summit apparently present (see Figure 09-30). Five well defined structures, designated 1, 2a, 2b, 3, and 4 were found atop the Stage III mound, as well as portions of several others, numbered 5 through 9. At least two and perhaps three or four



Figure 09-25. Well pronounced posts and equivocal evidence for wall lines on the upper surface of the Stage IIb mound. (left) Two posts, Features 134 and 135, on the east side of N52 E180 at 250cmbd. A faint gray stain from a possible wall trench is on the west side of the unit, as well as a narrow linear feature to the north (Feature 108). (right) Faint reddish linear deposits, Features 143, 265, and 266, from possible wall lines in N51-52 E179-180 at 240cmbd (see also Figure 09-17).



Figure 09-26. Feature 145, a squared posthole partially filled with red clay in the IIb mound. The fill at the top may be where a former post was once present.

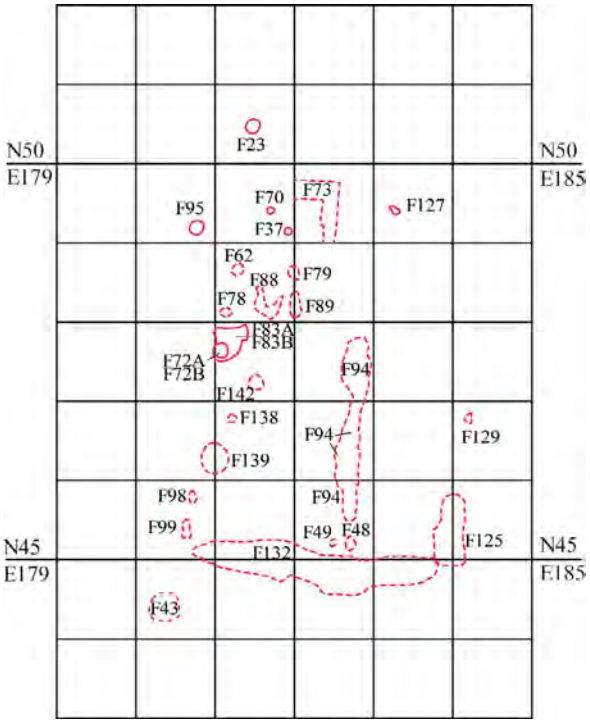


Figure 09-27. Features identified on and in the Stage IIc fill during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex: plan view. Features defined with dotted lines have diffuse or poorly defined boundaries.



Figure 09-28. Feature 62, a presumed hearth basin fragment found immediately below the prepared Stage II summit surface over the IIc basin in N48 E180-181. The basin fragment is shown after the overlying prepared surface had been removed.



Figure 09-29. Features 72 and 83, a post intruding a hearth on the Stage II summit surface in N47 E181. (left) The Feature 83 hearth with a fired clay rim as first encountered, and after the Feature 72a and 72b posthole and postmold had been excavated. (right) The hearth basin after the fill had been removed.

structures appear to have been occupied at any given time, each one about 4.5x4.5m or larger in size. Where the excavations went deep into the Stage III mound, in roughly the southern third of its extent in the direct impact area, evidence for multiple rebuilding episodes was found in the upper 60–80cm, with successive structure outlines or floors separated from one another by a few centimeters to approximately 30cm of fill. Earlier buildings sometimes occurred under later ones, sometimes only slightly offset by a few centimeters, as in the case of the structures designated 2a and 2b, although it was sometimes difficult to determine these relationships, because many of the deeper structures were poorly represented, often little more than fragments. Only the final structures atop the mound were found reasonably intact, with recognizable wall lines and floors. About a third of the features found in the Stage III mound (n=139) could not be tied to a specific structure. While faint features may have been missed, especially when filled with surrounding matrix, when suspected wall lines were found they were chased, looking for posts in intervening locations along lines or arcs, and for corners and internal features. When structures were replaced or abandoned by the sites prehistoric inhabitants, they had apparently been removed down to the floor level, with posts pulled out and wall and roofing materials cleared away and the floors themselves apparently swept clean, as appears to have been the case with the final structures found on the Stage III mound. In some cases, particularly earlier and deeper structures on these surfaces, the buildings were aggressively demolished with even floors removed. The presence of floor, daub, and even possible hearth debris in the IIc fill suggests something similar may have happened when the Stage IIa and IIb summits were cleared, if some of the fill in the IIc depression came from there. Shallower features were also apparently removed along with the structures on the earlier surfaces. Repeated cutting and clearing of architectural debris, leveling, and subsequent filling and rebuilding was common on the Stage III summit for some time, and is the reason deeper structures were more difficult to recognize.

Architectural and artifactual evidence was much better preserved on the Stage III summit than on the overlying Stages I and II summits, something due to the fact that it was covered by deep fills after occupation ceased and a new stage erected, reducing the likelihood of bioturbation and erosion. Wall lines, floors, and hearth basins, where present, were typically well defined, more and larger bone and shell fragments are present (e.g., Table 09-01), and for the first time extremely perishable materials like carbonized textiles made an appearance. While prepared surfaces or floors were present on the final structures on the summit, they were generally missing from lower structures, indicating they had been removed or, if present, were frequently disturbed by subsequent wall trenches and posts. These surfaces, which were well defined, were described by the project geoarcheologist as a possible prepared surface or veneer of a red or sooted blackened clayey sand mixture that extended over much of the final summit (see Chapter 10). These prepared surfaces were noted both inside and outside of structure wall lines, although they were intruded by them in some cases and in other appeared to lap or mold up against the posts and wall lines, suggesting the surfaces were put in place both before and in some cases after the structures were built.

The final structures on the Stage III summit were also, in some cases, built on specially deposited fills, upon which the prepared floors noted previously were placed. On the southern half of the summit, from N38 to N49, one such fill was designated IIIg-4 by the project geoarcheologist, a reddish brown sandy clay (see Chapter 10). Structures were built and rebuilt on such fills, and sometimes new fills were added. The removal of structures was sometimes followed by special termination episodes, the most unusual of which was the deposition of the MCBF/Zone 3k: thin black, yellow, and red veneers over the area where the 2a and 2b structures had been located. The red veneers placed on the slope of the IIb mound and extending out from it, as well as the apparent continuous reddish orange surface apparently placed over the entire Stage II summit

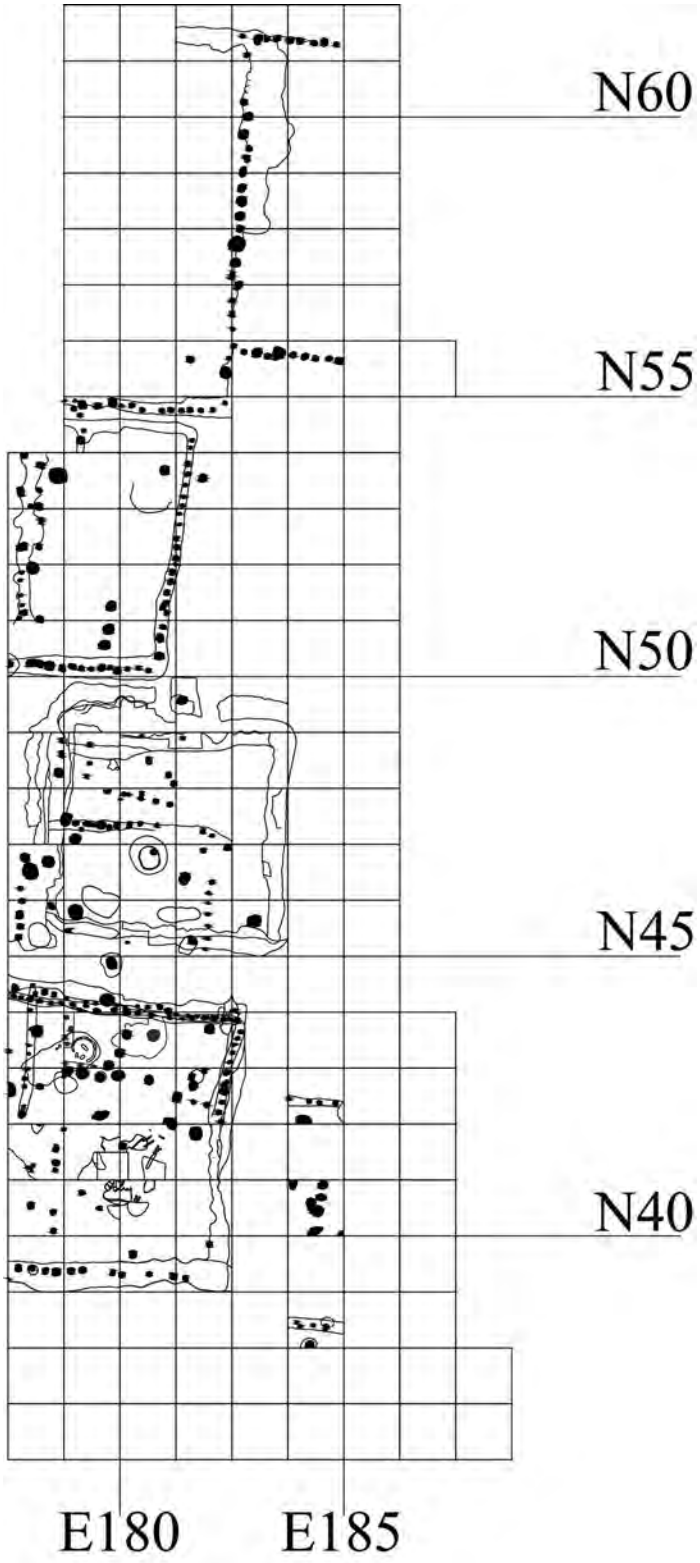


Figure 09-30. All structures and structure fragments on the Stage III Mound summit.

appear to be similar phenomena. Abandonment of entire mounds or summits, rather than individual structures, appears to have prompted such special ceremonial behavior, at least in the cases of the Stage II and III mounds, although in the process unusual fills were sometimes placed over smaller areas, or the locations of earlier structures.

Evidence for burning of summit structures was equivocal. Only one building examined, Structure 5, had large quantities of fired daub over the floor; the debris had been covered with fill rather than removed, the only such occurrence found in the excavations. The amount of carbonized debris in the IIc fill suggests the source(s) where it came from—possibly from structures atop the IIa and IIb platforms or elsewhere on the summit—might have also been burned, but whether this was why they were replaced, or was part of the process by which the debris was dealt with during removal, is unknown. Carbonized posts or postmolds with fired soil around them were rare in the deposits; most instead had been pulled unburned and filled with surrounding matrix or, in some cases, retained voids indicating they had never been carefully filled. A few posts had colored red or gray clay in the fill, but whether these were added initially or upon abandonment was unknown, although in the case of one, Feature 145 on the IIb mound described previously, a post had been placed on top of the clay.

Thus, when new structures were built on the Stage III summit, architectural features (i.e., daub, thatch, textile matting, and wooden wattle and posts) from the structures being replaced was typically removed and discarded. Posts were pulled out and the holes sometimes deliberately filled, and the floors either removed or swept clean of debris. Only the floors of the final structures were left intact, and were in fact remarkably well preserved. Underlying floors, in contrast, were often fragmentary, and in some cases had been partially or completely removed before new structures were put up. Because successive well to poorly defined floors or surfaces were present on the Stages II and III summits in many areas, separating them and linking features to them sometimes proved difficult.

Extensive rebuilding was thus evident on the Stage III summit, but whether some of this was from structures built on underlying platforms, on an earlier Stage IV mound, as was the case with the IIa and IIb platforms built on the Stage III summit, could not be determined. Approximately the southern one third of the Stage III mound in the project impact area was examined in depth, at or near the top of the level Stage IV surface. Extensive rebuilding was evident on the south end of the Stage III summit, however, which may have been because it was where the upper part of an underlying platform on the Stage IV surface may have been located. To determine this, however, the remainder of the impact zone, and particularly the area north of N45 across the remainder of the mound would need to be examined.

The sloping surface and some of the outer filling episodes of the Stage III mound indicate the care with which this mound surface was constructed, and how it might have appeared when in use (Figure 09-31; see Figures 09-01; see also Figure 03-44). At the top, where the summit and slope of this stage joined, a reddish brown sandy clay layer with a smoothed upper surface was found, designated IIIg-4, that extended down the slope from the crest for some 20 to 30cm (see Chapter 10). On the top of this surface, as noted above, an apparent prepared floor or veneer was present that extended across much of the summit to the north, and was associated with several structures, which had been built on it or on similar surfaces at that approximate level. The surface was bright red in color, or black if sooted. The geoarcheological research by Sarah Sherwood (see Chapter 10) indicates that it was prepared of materials that were likely colored this way naturally or possibly, based on the results suggested by the archeomagenetic dating, that it included soils fired elsewhere and then brought in as a covering.

At the base of the Stage III mound on the south side a number of washing and possible slumping episodes were noted, designated IIIe-5, IIIg-6a, IIIg-6b, and IIIg-7a, suggesting some erosion to the face (see Chapter 10) (see Figure 03-23). Some of these washing episodes were of reddish colored material, suggesting the exterior surface may have

been coated with colored sediments, such as the veneer over the top and sides of the IIb platform. The lower meter or so of the exterior surface of Stage III, over fills IIIg-7b and IIIg-4, in fact, had a faint reddish hue, perhaps the remains of a largely eroded veneer, suggesting the face may have been intentionally colored, if this coloring did not come from the red floor on the summit surface. Some of the reddish material appears to have eroded out onto the apron, as evidenced by thin bands of reddish colored deposits observed extending out for several meters from the base of the stage; these might also reflect erosion from the IIIg-3b fill discussed below. Above the lowest deposits a gray clay cap up to several centimeters thick extended upward another 1.5m that may have been a patch designed to stop erosion to the underlying fill or, perhaps, a decorative feature closer to the mound center or ramp, since it was only found on the west side of the trench (see Figure 09-31, see also Figure 03-44). Above this was a yellowish-orange fill (IIIg-7b) that extended to the top of the slope, where it intersected and underlay the bright red (IIIg-4) clay floor on the Stage III summit. No evidence for an A horizon was noted anywhere on the sides of the Stage II or III mounds, nor was much artifactual debris noted on them, suggesting care was taken to maintain their appearance. That the exterior of the Stage III mound was banded or colored appears likely, at least in places, although this is something that should be carefully evaluated should more work occur at Mound A.

As documented in detail in Chapter 10, the south end of the Stage III mound was also made up of a number of distinctive carefully prepared fills, and not the generalized midden fill presumed typically employed in Mississippian mound construction, and in Stages I and IV through VII within Mound A itself. We now know that great care went into mound construction at some times and places in the region, something the work at Shiloh helped bring to the attention of local researchers (e.g., Anderson 2012; Pursell 2004; Sherwood and Kidder 2011). One example of these unusual fills included IIIg-3b, a bright red sandy loam mixed with large numbers of beige/white chert pebbles that were

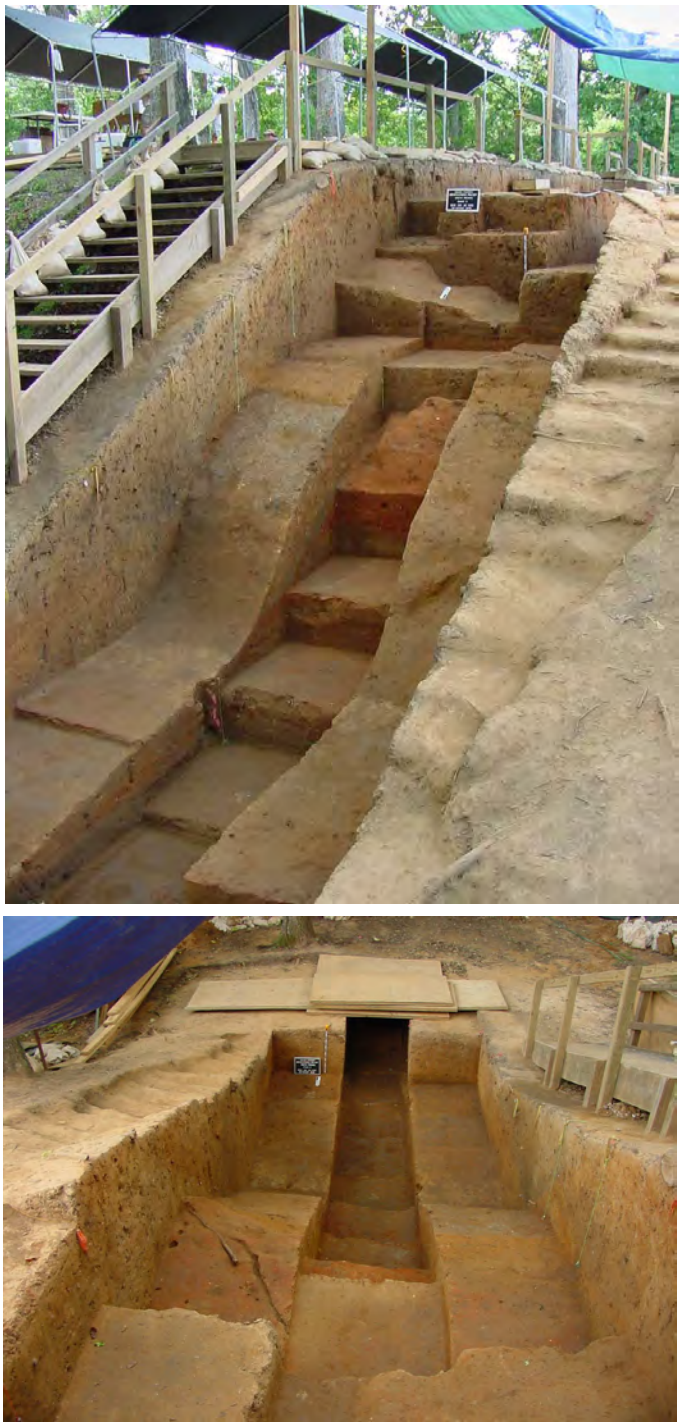


Figure 09-31. The southern face of the Stage III summit, partially exposed to either side of the 1m step trench, viewed from the bottom (top) and top (bottom) of the mound. Three bands of reddish brown, gray, and yellow orange fill lead up to the prepared red surface on the summit. The impressions where the stones of the Depression-era stone stairway were placed are on the east side of the trench.

almost pure white when split open (Figure 09-32; see Chapter 10). The colors red and white have great symbolic importance to many southeastern Indian groups, and it appears a conscious attempt was made to blend these colors together in the creation of this fill. This fill was placed on the Stage III slope and became progressively thicker from bottom to top. It was smoothed and rounded in places, and the western side shows evidence for water erosion in the form of gullying and washing, and subsequent patching. It was apparently left exposed for at least a short time, although probably not for long since heavy rains would have quickly washed it away. It was covered by a thick and comparably impermeable mottled red, gray, orange and white silty clay loam layer (IIIg-7b), which likely protected it from erosion. The eastern side of the fill has a pronounced linear break, indicating it was either cut away later in time or that it was bounded in some way when deposited, perhaps to keep it from eroding. The geoarcheological research indicates that the colored deposits found in some of the Stage III mound filling episodes came from the immediate site area, probably from the bluff face below the mound (see Chapter 10).

MCBF

At the top of the Stage III mound at the south end, a ca. 1cm thick series of successive black, yellow, and finally reddish orange fills was found, designated MCBF in the field, and Zone IIIk by the project geoarcheologist (Figures 09-33 and 09-34; see Figure 03-71, Chapter 10). The final reddish orange fill covered the southern two thirds of the area, and while the underlying yellow and black fills underlay it, they were only exposed in the northern part of the area. This may have been intentional, although the upper reddish orange layer was present in some places, and may have eroded or been removed. A low raised area of earth, only a few centimeters high, was observed on the east side of the MCBF in N41, E183 that may have been part of a surrounding embankment, to prevent the fill from washing away. In addition to the unusual colors in the fills, a red clay sinuous feature about 1.2m in length, designated Feature 126, was found on the western side in N42, E179 that looks like a snake (see Figure 09-34). Three dark fired areas were present near the center on the upper surface, suggesting use of fire was involved in the creation of this feature in some way. A small basin like feature was also found in N44, E181, Feature 132, immediately below the MCBF, that may be associated with its deposition; although it may alternatively be a filling episode, given it was fairly indistinct. The MCBF appears to reflect a termination episode for Structures 2a and 2b on the underlying Stage III mound, and/or an initiation ritual for the IIa mound raised above it. The fill of the MCBF was removed and fine screened in its entirety employing 1m units, with soil samples taken from each layer.

Soil chemistry analyses conducted with samples taken from each 1x1m area of the MCBF revealed extremely low concentrations of phosphorus and iron, suggesting little or no food preparation and/or consumption took place here, and that if any activities took place, they were of short duration (see Chapter 11, Figures 11-04, 11-07, and 11-10). A soil chemistry analysis based on the combined signatures of eight elements revealed distinct concentrations, but these may be related to the materials used in the mantle, with the black layer in particular possibly derived from organic or mineral pigments (see Chapter 11, Figure 11-10). A sample of monocot stem charcoal, identified as a piece of cane (*Arundinaria gigantea*) from the black filling layer (FS 2449) yielded a radiocarbon date of 800±15 B.P. (A.D. 1224–1256 calibrated 1-sigma range; see Chapter 12, 21). The date is in agreement with the period when the Stage III mound is thought to have been closed off and construction started on the overlying Stage II mound (see Table 12-02). One corn kernel fragment was also found in one of the flotation samples taken from the surface, but plant materials were otherwise quite rare on or in this surface (see Chapter 16, see Table 16-03).

Structure 1

Structure 1 was a small square wall trench building located near the center of the Stage III summit in N45–49, E179–184, under the IIc basin and the washing episodes and red veneers running off the

IIa and IIb mounds (Figures 09-35–09-37; see Figure 03-77; Tables 09-10 and 09-11). Measuring 4.0x4.2m (N/S and E/W), the structure had a hard compact red silt clay floor surrounded by a shallow wall trench. The prepared floor surface was partially blackened with soot, possibly from the central hearth, Feature 200, which was located just south of the center of the floor in N46–47, E181 (Figure 09-38). A second prepared floor surface immediately underlay the first one, suggesting it had been repaired or replaced at least once. A well-defined wall trench (Feature 275) ca. 25cm wide and 20–25cm deep extended around the structure, with two possible breaks roughly 1m in length located on the southern and eastern sides. Few features were present, besides the wall trench and the central hearth (Table 09-10). The absence of post impressions in the wall trench suggests the wall lines were built and removed as a unit. No corner or interior posts were observed, nor were many posts observed in the wall trench. This differentiates Structure 1 from the other buildings found at Mound A, all of which were single post construction, or wall trenches with well-defined internal posts.

The entire fill of the wall trench was floated, with provenience control maintained by each 1m grid square. A total of 22 flotation samples were collected, with at least one taken from every grid unit the trench intersected. The wall trench fill contained a number of unusual artifacts, including a deer mandible, a chunky stone, and appreciable debris had been placed or swept into this feature (Table 09-11). The floor of Structure 1 was a compact reddish sandy silt layer about 2cm thick with black sooting over much of its surface. The floor was removed in its entirety, with provenience control maintained using the 1m grid squares that fell all or partially within the structure. Most parts of sixteen 1m grid squares (N45–48, E180–183) fell within the perimeter of the wall trench, together with small portions of two other units, N45–46, E179. Three soil samples were taken from each of these 18 1m grid units, with the remaining fill removed for flotation. The soil samples collected from the two small units encompassed all of the floor present, so the flotation samples encompass the remaining sixteen units. Soil chemistry analyses were conducted on the 18 soil samples taken from the floor, revealing low concentrations of phosphorus and iron, suggesting little food preparation and/or consumption activities took place in the building or, alternatively, that the floors were routinely carefully cleaned immediately after such uses (see Chapter 11, Figures 11-03 and 11-06). A soil chemistry analysis based



Figure 09-32. Stage IIIg-3b, the red sandy loam with white pebble filling episode upon complete exposure in the excavation area in N37-38 E179-181. The western side of the deposit shows evidence for erosion in the form of rounding, gullying and washing, and subsequent patching, suggesting it was open for at least a short time prior to final covering. Note how the fill is sharply bounded on the east side, suggesting it was truncated or alternatively bounded in some way, perhaps to prevent it from washing away while being laid down. The deposit was also intruded by posts, presumably from structures on the IIIg-4 summit surface.



Figure 09-33. The MCBF (Zone IIIk) in N41-44 E179-183, with its black, yellow, and reddish-orange fills at 320cmbd. View to the east. Note the sinuous red clay feature on the western margin that may represent a snake, and the possible low embankment on the eastern edge. Three small purplish burned areas are located near the south central area, suggesting some kind of firing took place on or immediately over the final surface prior to covering.

on the combined signatures of eight elements revealed no distinct concentrations, again suggesting either minimal activities were occurring, or else careful cleaning after use (see Chapter 11, Figure 11-09).

Little artifactual debris was found on the floor of Structure 1, which appears to have been swept clean upon abandonment; most of the artifacts recovered, in fact, came from the wall trench (see Table 09-11). Interestingly, the red fill IIIg-4 underlying the prepared floors of Structures 1 and 2a and 2b sloped abruptly downward on the east side of the mound for about 1m and then leveled out, something observed most clearly in N44–45, E184, just past the wall trench from Structure 1 (Figure 09-39). The association suggests the fill was intentionally prepared to put structures upon it. How far to the east the IIIg-4 fill extended was unknown, because it ran to the edge of the eroding bluff.

Feature 163. A small mass of charred and somewhat degraded matting was found outside and on the northwest side of Structure 1 in N46, E179, between two sandy washing episodes that was designated Feature 163 (Figure 09-40). This mass was removed in its entirety in two parts, and shipped for specialized textile analyses to Dr. James Adovasio at Mercyhurst Archaeological Institute, who examined it, and suggested it represented plant fiber construction or possibly hide or leather (see Chapter 19). A sample of the material charcoal, identified as a piece of cane (*Arundinaria gigantea*) (FS2747a, see Chapter 16, Table 16-02) yielded a radiocarbon date of 815±15 B.P. (A.D. 1228–1252 calibrated 1-sigma range; see Chapter 12, Table 12-02). The date is in agreement with two determinations obtained from the central hearth (see below), and the period when the Stage III mound is thought to have been in use.

Feature 200. The central hearth for Structure 1 had a black (7.5YR2/1) charcoal rich fill in a dusky red (10R3/3) basin formed by firing (see Figure 09-38). The hearth fill exhibited some layering, with sherds and fired clay fragments underlain by a thin layer of sand and clay found from ca. 4 to 11cm below the surface, below which was more charcoal. The entire feature, including the ca. 2cm thick fired clay basin, was floated in its entirety, with four separate samples taken, from the dark central area (Feature 200a, FS 2940), from the fired basin lining (Feature 200b, FS 2939), and from discolored and fired fill immediately around and under the hearth area (Feature 200c, FS 3052). The fourth, a charcoal sample that was removed separately without flotation, was taken from the southwest corner of the central fill, about midway to the base of the feature, and immediately above the fired lining (FS 3032). The samples yielded 11 maize kernels and 4 cupules, 90 pieces of hickory nutshell, 24 unidentifiable seeds, 31 cheno-am seeds, and 17 cane fragments, suggesting food preparation took place here (see Chapter 16, Table 16-02). The numbers of *Chenopodium* seeds in the fill strongly suggest this plant was cultivated. A soil sample from the floor immediately north of the central hearth was examined for the presence of phytoliths, which were found to be abundant, with grass forms

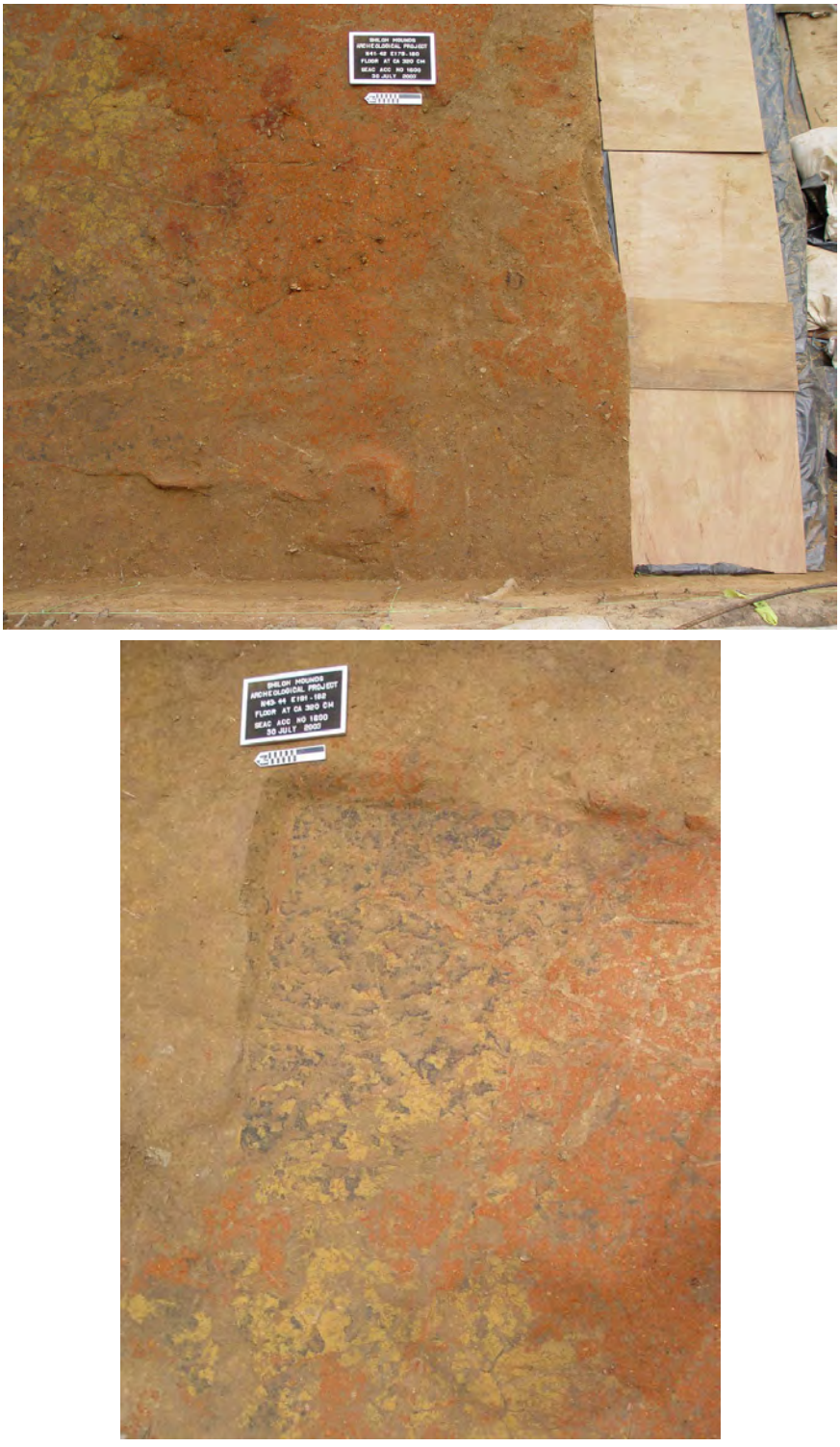


Figure 09-34. Close up views of the MCBF (Zone IIIk). (top) Western portion in N41-N42 E179-E180 with the sinuous red clay feature in the foreground, that may represent a snake, and the small fired areas in the south central portion of the feature to the east. (bottom) The northeast parts of the deposit in N43-N44 E181-E182, showing the layering of the black, yellow, and reddish-orange fills. The exposure of all three colors in this area may be intentional, although the upper layer was present in places, and may have been removed, or eroded away.

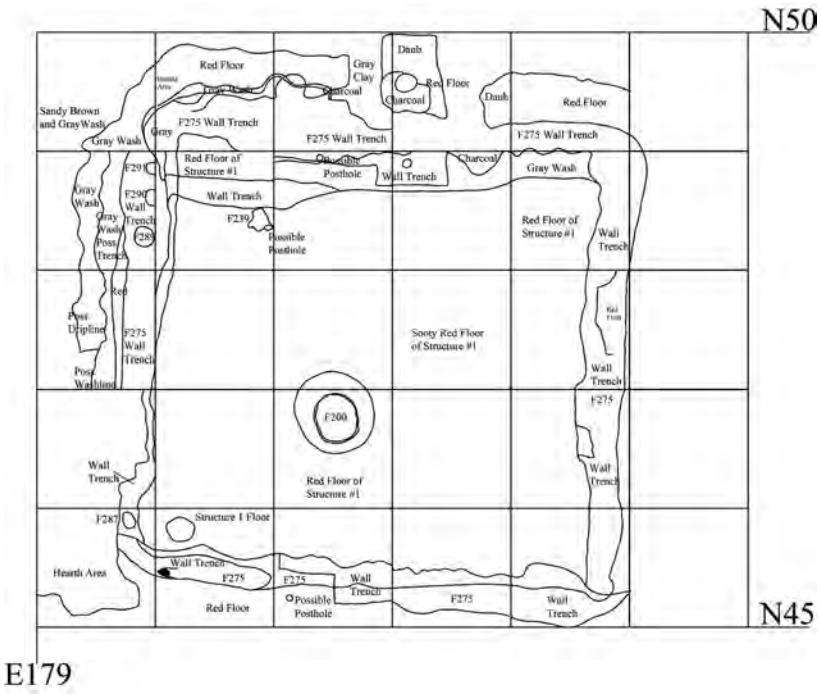


Figure 09-35. Structure 1, Stage III mound, plan view. Features defined with dotted lines have diffuse or poorly defined boundaries.



Figure 09-36. Structure 1, Stage III mound in N42-50 E179-183 (floor at 365cmbd). View to the northeast after exposure of the floor, which is a compact red silt clay with black soot in places. A wall trench, exposed but not yet removed, surrounds the prepared floor. Note the slightly offset central hearth. The partially excavated IIb Mound is located immediately to the north.

identified (see Chapter 20). A sample of *Zea mays* kernel charcoal from the central fill, Feature 200a, yielded a radiocarbon date of 805±15 B.P. (A.D. 1223–1254, calibrated 1-sigma range; see Chapter 12, Table 12-02). A sample of monocot stem charcoal, identified as a piece of cane (*Arundinaria gigantea*) from Feature 200a (FS 3032/N46, E181) yielded a second radiocarbon date of 785±15 B.P. (A.D. 1225–1264 calibrated 1-sigma range; see Chapter 12; see Table 12-02), in close agreement with the date obtained from the maize kernel from the same deposit. The dates for the central hearth for Structure 1 is in agreement with the period when the Stage III mound is thought to have been in use, and is almost identical to the determination obtained from the charred cane matting, Feature 163, found near the northeast corner of this same building.

Feature 496. A number of possible post features were found just below the floor of Structure 1, and may be the remains of interior support posts. There was no indication that any of them originated on or above the compact floor itself, however, suggesting most of these features derive from an earlier underlying structure, or else that the prepared floor was placed over them after they had been pulled up. A sharply defined basin shaped pit or zone of burned debris about 11cm thick designated Feature 496 was also found well below Structure 1, at a depth of 442cm (Figure 09-41). No evidence for a prepared or fired clay basin was observed, even though in form it resembled other hearth features from the site, such as Feature 440 in Structure 6 (see below). The fill was floated and yielded 11 pieces of hickory nutshell and 2 unidentifiable seeds



Figure 09-37. Structure 1, Stage III mound in N42–50 E179–183 (floor at 365cmbd). View to the north after exposure and removal of the exterior wall trench and the highest prepared floor. The reddish orange irregular silt clay fill over Structure 3 is located immediately to the north.



Figure 09-38. Structure 1, Feature 200, on the Stage III mound, a fired clay hearth basin, after removal of the fill and the immediately surrounding prepared floor. One 1m area of unexcavated floor is located to the northwest.

(see Chapter 16, Table 16-02). A sample of hickory nutshell charcoal from the fill yielded a radiocarbon date of 800±20 B.P. (A.D. 1224–1257, calibrated 1-sigma range; see Chapter 12). The date is essentially identical to the two dates obtained from Feature 200, the central hearth for Structure 1, even though Feature 496 was located ca. 75cm lower.

Structure 2a

Structure 2a was a large rectangular wall trench and single post construction building located at the south end of the Stage III summit in N39–N44, E179–183 (Figures 09-42 to 09-44; Tables 09-12 and 09-13). Measuring roughly 5.0x4.2m (N/S and E/W), the structure extended into the unexcavated western portion of the mound, and would have been about 5m on a side if squared. The structure had apparently been rebuilt at least once, to approximately the same size and shape, and in almost the exact location, although features clearly associated with the upper and lower buildings, designated 2a and 2b respectively, were separated by some 20–30cm of fill. Separating individual structural elements between the two buildings was thus difficult, since some, like the wall trenches, some posts, and the central hearth, appear to have been shared in common, or were rebuilt in the same place. For this reason the listing of features assigned to Structures 2a and 2b overlaps appreciably, with question marks placed by the features number

Table 09-10. Features associated with Structure 1, Stage III Mound, identified during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex: Type, Measurement, and Provenience Data.

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
163	Charred matting	77	57	3	N46	E179	355	Vegetative matting
200	Central hearth	40	43	14.75	N46	E181	367.75	Hearth
239	Post?	11	11	1.5	N48	E180	360	Posthole (?)
275	Wall trench	22	100	15	N45	E180	381	Wall trench
287	Internal post?	17	8	11	N45	E179	381	Probable post
289	Internal post?	12	16	7.5	N48	E179	380	Probable post
290	Internal post?	12	9	6.5	N48	E179	381	Probable post
291	Internal post?	8	8	13	N48	E179	381	Probable post
496?	Basin?	87	56	11	N47	E182	442	Charred debris in fill
	Average (posts):	12.25	10.25	9.50			373.34	Average depth excludes F496

Floor Units (n=18)

N45-48, E180-183, N45-46 E179



Figure 09-39. The red fill IIIg-4 underlying Structures 1 and 2a and 2b, shown sloping abruptly downward on the east side of the Stage III mound in N44-45 E184, just east of the eastern wall trench for Structure 1.

whose association was uncertain; features with question marks in one structure were in some cases more securely associated with the other structure, based on variables like size, beginning elevation, and depth (cf. Tables 09-12, 09-14). Five AMS dates were obtained from features in and near Structures 2a and 2b, from Features 147/161, 262, and 280, all in very close agreement to one another and a sixth date, from Feature 379 about 20cm lower in the deposits, was only a few decades earlier (see below, Chapter 12). The AMS dating indicates comparatively little time, on the order of a few decades at most, separated the use of the two structures, and occupations on this part of the summit in general. An analysis of all the AMS dates obtained from Mound A during the 2001 to 2004 fieldwork indicates most of the activity occurred during a roughly two decade period in the second quarter of the thirteenth century, from ca. 1225 to 1246 (see also Chapter 21; Table 21-03, Figure 21-03).

Both buildings 2a and 2b had their outer walls built using wall trenches, although these were well preserved only in the northern portion of the structures, and were more ambiguous or intermittent along the eastern and southern wall lines, particularly for the lower 2b structure. Posts were set individually into the wall trenches, and were present

Table 09-11. Artifacts associated with Structure 1, Stage III Mound, recovered during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex.

Object	Count	Quantity	Weight (g)
Prehistoric			
Daub		17 bags	376.45
Debitage *		26 bags	261.25
Flake	1		0.30
Sample		1 bag	147.50
Sample, Charcoal		1 bag	220.80
Stone, Fire Cracked		12 bags	175.88
Vessel Fragment	172	3 bags	266.12
Classifiable Native American Pottery			
Baytown Plain, *var. McKelvey*	6		
Mississippi Plain, *var. Shiloh*	26		
Mulberry Creek Cord Marked, *var. Mulberry Creek*	13		
Unknown			
Clay, Fired		18 bags	1,376.36
Food, Bone	31		883.60
Nonfood, Bone	3		1.19
Nonfood, Shell	9		8.30
Plant		4 bags	1.90
Sample, Flotation		101 bags	13,859.83
Sample, Soil		53 bags	12,420.76
Shell		7 bags	91.02
Stone, Unmodified		42 bags	11,822.19

* Unsorted lithics from flotation samples

** No weight recorded

Note: Bag refers to materials from specific proveniences that were typically weighed but not counted. Most of these are materials not suitable for counting.

in some sections and absent in others. Interior posts were common and some appear to have been used in both buildings, as was the central hearth. The larger interior posts appear to be major roof supports, while the smaller may have been parts of partitions, perhaps separating public, sleeping, and storage areas. The central hearth area appears to have been demarcated by post features, which were most common on the north and west sides of the feature.

Structure 2a, the upper building, was characterized by a wall trench ca. 25–35cm wide and 15–30cm deep that presumably originally extended around the structure. Structure 2a had a hard compact red silt clay floor that was blackened with a thin layer of soot that probably came from the well defined hearth located just south of the centerline of the building, about 2m from the eastern wall. The wall lines for Structure 2a were well defined only along the northern wall, and along a roughly 1m extent of the northern portion of the eastern wall. Distinct post impressions were found regularly spaced within the wall trench in these areas; assigning posts in the southern wall line to a specific structure was more difficult and many appear to have been shared by both structures. Information about the size and depth of these posts, including the average dimensions and depth of posts associated with the 2a structure, is summarized in



Figure 09-40. Feature 163, a mass of charred matting or possibly hide found near Structure 1 in N46 E179 on the Stage III mound. (top) Overview of the feature, which was removed in two sections due to a root disturbance in the center. (bottom) Close up of the charred material.

Table 09-12; most posts in the wall line were remarkably consistent in size. Posts associated with Structure 2a in the northern wall line (n=22) were roughly 9cm in diameter and 28cm deep; those in the eastern wall line (n=4) were roughly 8cm in diameter and much shallower, ca. 6.6cm deep; and those in the southern wall line (n=12) were slightly larger, ca. 10cm in diameter and were also fairly shallow, averaging 13.3cm in depth. In the southeastern and southern margins of the structure the wall lines and associated posts were much shallower and more poorly defined, suggesting some disturbance and removal of fill, probably associated with the removal of the structure and the expansion of the mound with the construction of Stage II. The southernmost boundaries of Structures 2a and 2b, although somewhat ill defined, are inferred to lie in this area, in part because there are posts in an intermittent line, and because the Stage III surface at the time these buildings were in use ended about a 1/2m to the south. The absence of intervening wall or post lines further to the north within the structures precluded other possibilities.

A number of possible post features originated at or just below the floor of Structure 2a, and appear to be the remains of interior supports or partitions (see Table 09-12). The size of these internal post features was much more varied than those found in the wall lines, and were on the average considerably larger. The smaller interior posts were from probable partitions while the larger posts were from probable roof supports. Some of the internal features were recognized by breaks in the compact floor, suggesting they were associated with the final use of the 2a structure. Others were observed only once the floor was removed. The features found below the floor may have been once associated with Structure 2a (and the 'floor' hence reflecting a termination episode), or derive from earlier underlying structures like 2b, for which no preserved floor was detected. Some post features were so deep that they may represent reuse of the hole, or of the post itself, in the 2a Structure after Structure 2b was abandoned.

The entire fill of the wall trench was floated, with provenience control maintained by each 1m grid square the trench was present in. The wall



Figure 09-41. Feature 496, a shallow basin or layer of debris ca. 75cm below Structure 1 in N47 E182 on the Stage III mound. (top) Upon initial recognition (bottom) After removal of the fill.

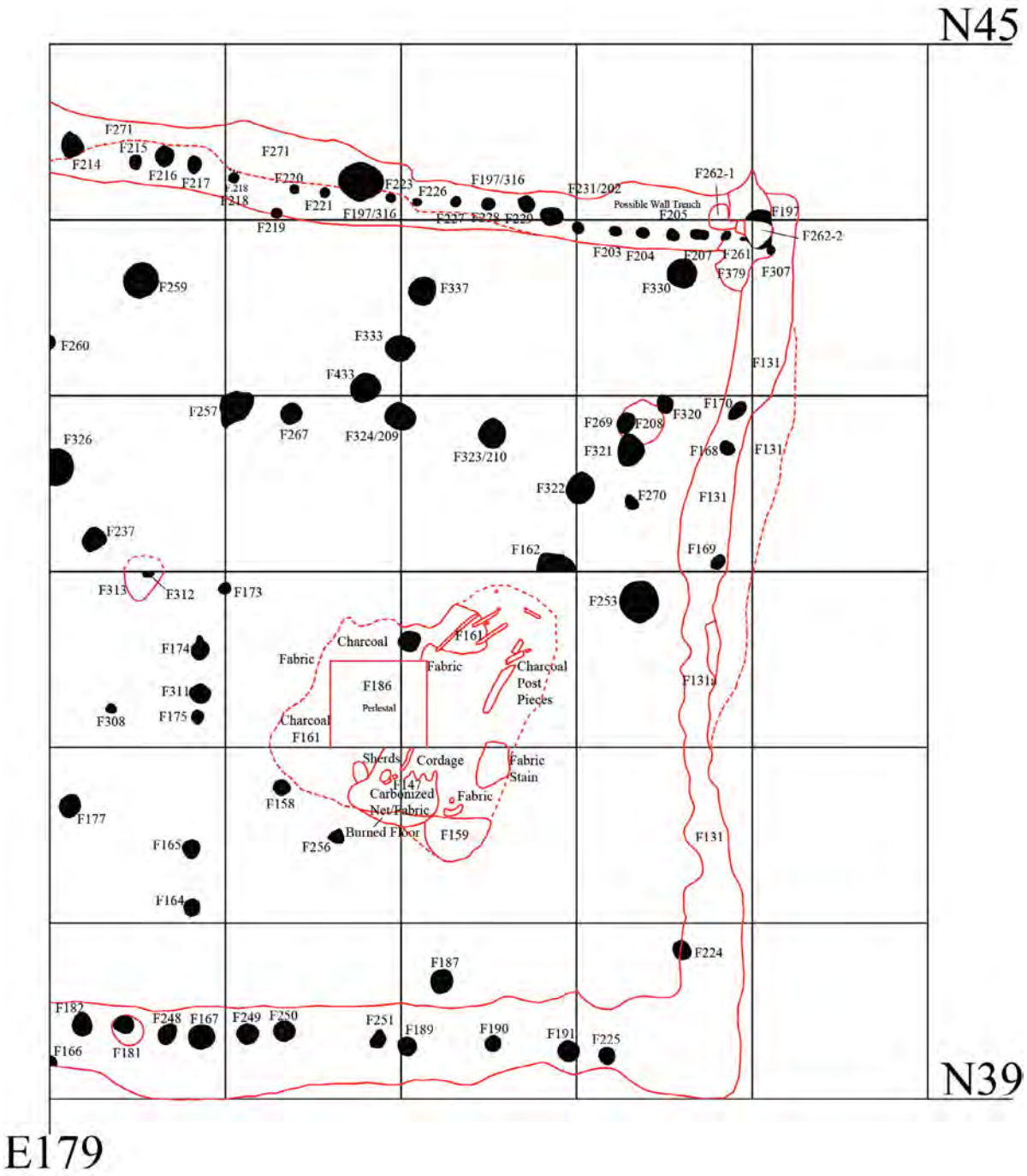


Figure 09-42. Structure 2a, Stage III mound, plan view. Features defined with dotted lines have diffuse or poorly defined boundaries.

trench fill contained a number of artifacts, indicating appreciable debris had been placed or swept into this feature, something also noted in Structure 1. The floor for Structure 2a was a compact reddish sandy silt with black sooting over part of its surface, and was about 2cm thick. The floor was removed in its entirety, with provenience control maintained using the 1m grid squares that fell all or partially within the structure, within the perimeter of the wall trench and post lines. The floor was



Figure 09-43. Structure 2a, Stage III mound, view to south. The floor on the southern half of the structure was removed to deal with the hearth with charred fabric in it (Features 147/160/161), which had been removed en bloc a few days earlier, in an effort to preserve the fabric. A wall trench surrounded the 2a floor, which was a compact red silt clay with black soot on top. The floor and wall trench for the southern margin of Structure 1 is in the foreground, separated from Structure 2a by about a meter; no prepared flooring was found between the two structures.



Figure 09-44. Structure 2a, Stage III mound, northern half of floor. Structure 1 and the partially excavated IIb platform are in the background to the north. The prepared floor for Structure 2a runs to and around the posts in the northern wall line before ceasing. Feature 375, a large circular postmold that appears that have been associated with Structure 2b and probably even earlier use of the summit, is in the northwest part of Structure 2a, just past a small burned area on the floor.

present in 22 units and included most of N39–43, E179–182, together with small portions of N44, E179–180. Three soil samples were taken from 20 of these units, with the remaining fill removed for flotation. Exceptions were in N39, E180, opened in the original excavation trench on the south side of the mound, where the floor was saved for flotation, but no separate soil samples were saved, and in N44, E180, where a narrow strip of floor by the wall trench was collected for flotation, but again no soil samples were collected. Soil chemistry analyses were conducted on the 20 soil samples taken from the Structure 2a floor, revealing low concentrations of phosphorus and iron, suggesting little food preparation and/or consumption activities took place in the building or, alternatively, that the floors were carefully cleaned immediately after such uses (see Chapter 11, see Figures 11-03 and 11-06). An analysis of the soil chemistry data based on the combined signatures of eight elements revealed no distinct concentrations, again suggesting either minimal activities were occurring, or else careful cleaning of the surfaces after use (see Chapter 11, see Figure 11-09). Exploratory phytolith analyses were undertaken with a sample of soil from one of the floor units collected, in N42, E180, northwest of the central hearth (see Chapter 20). Phytoliths were rare, although a variety of forms were noted, and the investigator believed further analyses with a greater number of floor samples would be warranted.

Feature 147/159/160/161. The primary hearth for Structure 2a

Table 09-12. Features associated with Structure 2a, Stage III Mound, identified during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex: Type, Measurement, and Provenience Data.

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
202	Post in northern wall trench	21	23	24	N43	E182	391.5	post in wall trench
203	Post in northern wall trench	10	9	53.5	N43	E182	386.5	post in wall trench
204	Post in northern wall trench	11	12	51	N43	E182	387.5	post in wall trench
205	Post in northern wall trench	4	4	35	N43	E182	389	post in wall trench
206	Post in northern wall trench	5	9	40	N43	E182	390	post in wall trench
207	Post in northern wall trench	5	6	34	N43	E182	388.5	post in wall trench
214	Post in northern wall trench	15	13	28	N44	E179	381.25	post in wall trench
215	Post in northern wall trench	11	10	33	N44	E179	380	post in wall trench
216	Post in northern wall trench	11	9	23	N44	E179	378.5	post in wall trench
217	Post in northern wall trench	n/a	n/a	11	N44	E179	378.5	post in wall trench
218	Post in northern wall trench	11	10	25	N44	E179	381	post in wall trench
219	Post in northern wall trench	10	10	18	N44	E180	383	post in wall trench
220	Post in northern wall trench	9	7	27	N44	E180	382.5	post in wall trench
221	Post in northern wall trench	12	9	36	N44	E180	382	post in wall trench
222	Post in northern wall trench	7	8	14	N44	E180	384	post in wall trench
223	Post in northern wall trench	8	7	15	N44	E180	383	post in wall trench
226	Post in northern wall trench	9	9	40	N44	E181	387	post in wall trench
227	Post in northern wall trench	7	7	22	N44	E181	388	post in wall trench
228	Post in northern wall trench	6	6	20	N44	E181	387.5	post in wall trench
229	Post in northern wall trench	5	6	41	N44	E181	387	post in wall trench
230	Post in northern wall trench	9	9	28	N44	E181	388	post in wall trench
231	Post in northern wall trench	8	7	31.5	N44	E181	390.5	post in wall trench

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
261	Post in northern wall trench	8	7	1	N43	E182	386	Probable post
262	Burned thatch	18	39	32	N44	E182	386	Charcoal lens, probable burned matting Charcoal
271	Wall trench	ca. 400	24	19-23	N44	E179	371	Possible dripline or wall trench
276	Post in northern wall trench	36	35	7.5	N44	E182	391	Possible posthole or pit, amorphous and poorly defined
201?	Post in northern wall trench	20	18	23	N42	E183	392	Irregular circular stain, possible post
307?	Post in northern wall trench	5	7	12	N43	E182	402	post in wall trench
	Average	9.18	8.95	28.30			385.25	
131	Eastern wall trench	ca. 750	20	9.5	N41	E182	400	East and south sides of structure
168	Post in eastern wall trench	8	8	5.5	N42	E182	378.5	Posthole within wall trench
169	Post in eastern wall trench	9	8	5.5	N42	E182	377	Posthole within wall trench
170	Post in eastern wall trench	8	9	6	N42	E182	378.5	Posthole within wall trench
224?	Post in eastern wall trench	8	8	9.5	N39	E182	393.5	Possible posthole
	Average	8.25	8.25	6.625			385.5	
166	Post in southern wall line	6	7	22	N39	E179	384.5	Well defined circular stain, probable post
167	Post in southern wall line	13	16	22	N39	E179	384	Well defined circular stain, probable post
181	Post in southern wall line	11	13	16	N39	E179	389	Well defined circular stain, probable post
182	Post in southern wall line	12	12	n/a	N39	E179	391.5	Well defined circular stain, probable post
189	Post in southern wall line	10	9	4.5	N39	E181	389	Well defined circular stain, probable post
190	Post in southern wall line	8	9	10.25	N39	E181	388.75	Well defined circular stain, probable post
191	Post in southern wall line	8	7	5.5	N39	E181	390	Well defined circular stain, probable post
248	Post in southern wall line	10	10	21	N39	E179	385	Probable posthole

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
188?	Post in southern wall line	10	10	6	N39	E181	390	Well defined circular stain, probable post
225?	Post in southern wall line	8	8	12	N39	E182	390	Well defined circular stain, probable post
249?	Post in southern wall line	9	10	12	N39	E180	391	Probable posthole
250?	Post in southern wall line	10	9	15	N39	E180	391	Probable posthole
251?	Post in southern wall line	n/a	n/a	n/a	N39	E180	390.25	Possible posthole/may not be a feature
	Average	9.58	10.00	13.30			388.77	
187?	Internal post	12	11	7.75	N39	E181	389.75	Well defined circular stain, probable post
147	Hearth	45	51	11.75	N40	E180-181	379.25	Hearth area w/charcoal, cordage
147/160/161	Central hearth	45	51	11.75	N40	E180-181	379.25	Hearth area w/charcoal, cordage
158	Internal post	13	16	27	N40	E180	381	Well defined post from F144 wall trench segment.
159	Internal post	24	42	3.5	N40	E181	382	Hearth area w/charcoal, cordage
160	Hearth	n/a	n/a	2.5	N40	E180	382	Hearth area w/charcoal, cordage
164	Internal post	18	17	12	N40	E179	379	Well defined circular stain, post
165	Internal post	10	12	7	N40	E179	382.5	Well defined circular stain, probable post
174	Internal post	14	10	22.5	N41	E179	385.75	Well defined circular stain, probable post
175	Internal post	10	8	22.5	N41	E179	385.5	Well defined circular stain, probable post
176	Internal post	6	5	6	N41	E179	385.5	Well defined circular stain, probable post
177	Internal post	9	10	13	N40	E179	390	Well defined circular stain, probable post
188	Internal post	10	10	6	N39	E181	390	Well defined circular stain, probable post
202	Internal post	21	23	14	N43	E182	391.5	Post in wall trench
237	Internal post	3	3	8	N42	E179	378	Posthole
257	Internal post	6	7	33	N42	E180	382.5	Probable posthole
259	Internal post	12	8	47	N43	E179	381	Probable posthole
260	Internal post	10	8	9	N43	E179	381	Probable posthole
267	Internal post	12	12	23.75	N42	E180	394.25	Probable posthole

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
326	Internal post	20	13	16	N42	E179	412	Well defined circular stain, probable post
433	Internal post	17	17	17.5	N43	E180	439.5	Posthole
161?	Central hearth	113	61	1.5	N41	E181	378	Hearth area w/charcoal, cordage
162?	Internal post	19	22	63.25	N41	E181	386.75	Well defined circular stain, probable post
186?	Internal post	14	10	16	N41	E181	389	Well defined circular stain, probable post
208?	Internal post	21	21	32	N42	E182	386	Well defined circular stain, probable post
209/324?	Internal post	18	18	14	N42	E180	414	Well defined circular stain, probable post
210/323	Internal post	16	15	30	N42	E181	383	Well defined circular stain, probable post
253?	Internal post	22.5	25.5	16.5	N41	E182	392	Probable posthole
256?	Internal post	n/a	n/a	n/a	N40	E180	N/A	Probable posthole
269?	Internal post	12	13	16	N42	E182	393.5	Probable post
270?	Internal post	14	14	3.5	N42	E182	393.5	Possible post
278?	Posthole	14	13	18	N40	E182	398	Probable Posthole associated with Structure 2b or 2a?
279?	Posthole	11	11	12	N40	E179	398	Probable Posthole associated with Structure 2b or 2a?
280?	Charred material	17	14	4	N40	E182	398	Charred material Structure 2b ?
281?	Posthole	18	n/a	23	N40	E179	401	Probable Posthole associated with Structure 2b or 2a?
285?	Posthole	6	6	7	N40	E179	404	Probable Posthole associated with Structure 2b or 2a?
286?	Posthole	21	n/a	14	N40	E179	409	Probable Posthole associated with Structure 2b or 2a?
288?	Posthole	17	12	18	N40	E182	413	Probable Posthole associated with Structure 2b or 2a?
308?	Internal post	6	6	1	N41	E179	408	Possible posthole/may not be a feature
311?	Internal post	11	15	1.5	N41	E179	408.5	Possible posthole/may not be a feature
312?	Internal post	n/a	n/a	2	N41	E179	410.5	Possible posthole/ does not appear to be a feature

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
313?	Internal post	n/a	n/a	n/a	N41	E179	410.5	Possible posthole/ does not appear to be a feature
320?	Internal post	9	8	1	N42	E182	416	Possible posthole/ does not appear to be a feature
321?	Internal post	19	15	22	N42	E182	416	Well defined circular stain, probable post
322?	Internal post	18	15	11.5	N42	E182	416	Well defined circular stain, probable post
325?	Internal post	18	15	18.5	N42	E180	413	Orange silt/clay mass, debris in fill
330?	Internal post	15	16	18	N43	E182	412	Posthole
333?	Internal post	22	22	19	N43	E180	413	Posthole
337?	Internal post	17	17	26	N43	E181	413	Well defined circular stain, probable post
379?	Mass of charcoal around post	5	15	3	N43	E183	418	Charred wall debris or matting
380?	Post	20	16	8	N43	E183	420	Post
	Average	14.37	14.56	15.71			374.76	

Floor units (n=22)

N39-43, E179-182, N44 E179-180

was roughly 75cm in diameter and 10–15cm deep, and located in N40–41, E180–181 (Figure 09-45). Several distinct proveniences were assigned to the hearth and associated masses of charcoal, because its upper surface was found to include fragments of cordage from burned fabric. The textiles were extremely fragile, and as recounted in Chapter 3, textile specialist James Adovasio at Mercyhurst College was consulted at length about the best way to protect and remove it for study. The entire hearth are was pedestalled, surrounded with a wooden frame, and removed as a block, by hammering a thick piece of sheet steel—one edge of which had been made razor sharpen with a grinder—under and through the soil mass and any associated roots. The entire mass was then encased in plastic wrap, gauze, and plaster, and carried off the mound for transport to specialists (see Figures 03-75 and 03-76). Much of the feature was taken out intact with separate samples, including a smaller block, collected from some of the upper and side materials. The feature samples were then shipped to Adovasio for specialized examination (see Chapter 19). The contents of the hearth, which was partially examined, included three stranded braided cordage objects, one similar in manufacture to an item from the Wickliffe Mound site (see Chapter 19; Drooker 1992:10, Figure H).

The samples of the hearth fill that were floated, a small percentage of the volume given most of it was shipped *en bloc* for textile extraction and analysis, yielded 1 maize cupule and 1 kernel, 12 pieces of hickory nutshell, 14 unidentifiable seeds, and 5 cane fragments, suggesting food preparation took place here (see Chapter 16, Table 16-02). Two samples of charred fabric/matting, identified as monocot stem/ pieces of cane (*Arundinaria gigantea*) from the hearth fill were submitted for dating. A sample from Feature 161 (FS 2736) yielded a radiocarbon date of 760±20 B.P. (A.D. 1252–1279 calibrated 1-sigma

Table 09-13. Artifacts associated with Structure 2a, Stage III Mound, recovered during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex.

Object	Count	Quantity	Weight (g)
Structure 2a			
Prehistoric			
Debitage *		9 bags	24.71
Fabric **		4 bags	-
Flake	3		1.66
Sample, Charcoal		1 bag	117.00
Shatter	7		21.24
Stone, Fire Cracked	4	5 bags	57.07
Vessel Fragment	60		87.74
Classifiable Native American Pottery			
Baytown Plain, *var. McKelvey*	4		
Mississippi Plain, *var. Shiloh*	10		
Mulberry Creek Cord Marked, *var. Mulberry Creek*	4		
Mulberry Creek Cord Marked, *var. Obion*	2		
Unknown			
Charcoal		1 bag	0.07
Clay, Fired		11 bags	25.13
Food, Bone	4		1.36
Plant		3 bags	2.32
Sample, Flotation		135 bags	6,389.85
Sample, Soil		10 bags	2,808.05
Shell		2 bags	3.80
Stone, Unmodified		63 bags	5,144.45
Structure 2a (?)			
Prehistoric			
Daub		1 bag	0.50
Debitage		1 bag	0.23
Sample, Charcoal		3 bags	214.60
Unknown			
Clay, Fired		1 bag	4.78
Plant		1 bag	0.42
Sample, Flotation		26 bags	252.09
Stone, Unmodified		11 bags	104.22

* Unsorted lithics from flotation samples

** No weight recorded

Note: Bag refers to materials from specific proveniences that were typically weighed but not counted. Most of these are materials not suitable for counting.

range), while a second, from Features 147/161 (FS 2739) produced a date of 785±20 B.P. (A.D. 1225–1264 calibrated 1-sigma range; see Chapter 12). The dates are in close agreement with each other and the period when the Stage III mound is thought to have been in use (see Table 12-02, Chapter 21). Given that the contents of this hearth feature are thought to have been from the last fire burned in it, when the fabrics were apparently added, these dates indicate the Stage III mound was likely abandoned in the middle to latter part of the thirteenth century.

Feature 262. A small mass of carbonized material was found at the intersection of the northern and eastern wall lines of Structure 2a, that appears to be burned wall or roofing debris (Feature 262/FS 3176). Much of the highly fragmentary material was encased into two sections and sent *en bloc* to Adovasio for textile analysis (FS 3189 and 3190). His research suggested the possible "presence of a large plaited construction" (see Chapter 19). The rest of the material was floated, with 6 pieces of cane cf. identified (see Chapter 16, see Table 16-02). Two samples of monocot stem charcoal, identified as pieces of cane (*Arundinaria gigantea*), were submitted for dating and yielded determinations of 800±15 B.P. (A.D. 1224–1256 calibrated 1-sigma range) and 820±20 B.P. (A.D. 1214–1254 calibrated 1-sigma range).

Structure 2b

Structure 2b was the lower of two buildings erected on the south end of the Stage III summit, almost directly under Structure 2a (Figure 09-46, Tables 09-14 and 09-15). Measuring roughly 5.0x4.2m (N/S and E/W), the structure extended into the unexcavated western portion of the mound, and would have been about 5m on a side if squared. On the northern and northeastern sides a well-defined wall trench ca. 20cm wide and 10–23cm deep was found that presumably originally extended around the structure. The wall lines for Structures 2a and 2b, in fact, are essentially on top of one another, with only a slight offset, although they could sometimes be differentiated, albeit with some difficulty, by the depth at which features appeared (cf. Figures 09-42, 09-46). No prepared floor was evident within the wall lines associated with Structure 2b, suggesting that, if one was present originally, it had been removed when the building was dismantled and Structure 2a was erected above it. The wall lines for Structure 2b were well defined on the northern and northeastern margins, with posts regularly spaced in a wall trench along the northern wall and a ca. 2m extent of the northern portion of the eastern wall, that could be readily distinguished from features in the overlying 2a structure (Figure 09-47). Information about the size and depth of these posts, including the average dimensions and depth of posts associated with the 2b structure, is summarized in Table 09-14. Most of the posts in the wall line for Structure 2b were remarkably consistent in size and depth. Posts in the northern wall line (n=12) were ca. 11cm in diameter and 17cm deep; those in the eastern wall line (n=11) were from 9.1–9.6cm in diameter and about the same depth as those in the northern wall line, ca. 16.5cm; and posts in the southern wall line (n=3) were about the same size, ca. 9cm in diameter and 13cm in depth. As with Structure 2a, delimiting which features belonged to Structure 2a or 2b was sometimes difficult, particularly for interior features. For this reason the listing of features assigned to Structures 2a and 2b overlaps appreciably, with question marks placed by the features number whose association was uncertain; features with question marks in one structure were in some cases more securely associated with the other structure, based on variables like size, beginning elevation, and depth (cf. Tables 09-12 and 09-14). A number of possible post features originated at or just below the level of the well-defined wall lines, for example, and may be the remains of interior support posts. Internal posts were more varied in size than those found in the wall lines, and were on the average considerably larger, averaging 21–23cm in diameter. The most unusual of these features was a large post pit (Feature 375) with a sloping insertion ramp, presumably used to slide the post into position, that was found in N42–43, E179–180 (see below). As with the overlying structure, the smaller interior posts were likely from probable partitions while the larger posts—save for Feature



Figure 09-45. Feature 147/159/160/161, the central hearth for Structure 2a and probably for the underlying Structure 2b on the Stage III mound surface in N40-41 E180-181, on the prepared floor. (top) The hearth area upon on partial exposure, with a block of overlying soil left in place when it was evident preserved textiles were present in the fill. Most of area shown was removed en bloc. (bottom) Close up of the charred fabric/cordage found in the hearth.

375, which as discussed below and in conjunction with Structure 6, was in a class by itself—were likely roof supports.

The southern half of Structure 2b was poorly defined, and its extent in this area is largely supposition, since only a few posts were at an appropriate depth, and only hints of wall trenches were detected. Few internal features were found in the southeastern quarter of the structure. Extensive disturbance and removal of fill, probably associated with the removal of the 2b structure and the construction of Structure 2a, may account for the poor preservation. A few individual posts were present along what is assumed to have been the southern wall line (e.g., Features 249, 250, 251 and 225), and faint traces of a possible wall trench were observed. The southern portion of the eastern wall trench had no visible associated posts; the same fragmentary southeastern wall trench was assigned to both Structures 2a and 2b in N40–41, E182. The fact that the few individual posts along the southern wall line likely associated with Structure 2b were approximately the same size and began at the same elevation as the posts in the northern and northeastern wall trenches suggests they were indeed part of the same structure. The absence of any wall lines to the north of this inferred southern wall line suggests the edge of the structure is properly placed here. The Stage III summit at the time this building was in use ended just to the south of this area, providing an absolute boundary for any structures built on it.

The fill of the wall trenches associated with Structure 2b was floated, with provenience control maintained by each 1m grid square. The wall trench fill contained a number of artifacts, once again indicating debris was commonly placed or swept into this feature when it was dug and then refilled (Table 09-15). No hearth was found in Structure 2b, although it is likely that the hearth removed from Structure 2a in N40–41, E180–181, Feature 147/159/160/161, may have been built over an earlier feature. Since the blocks of soil that were removed ranged from 16–29cm thick, the earlier

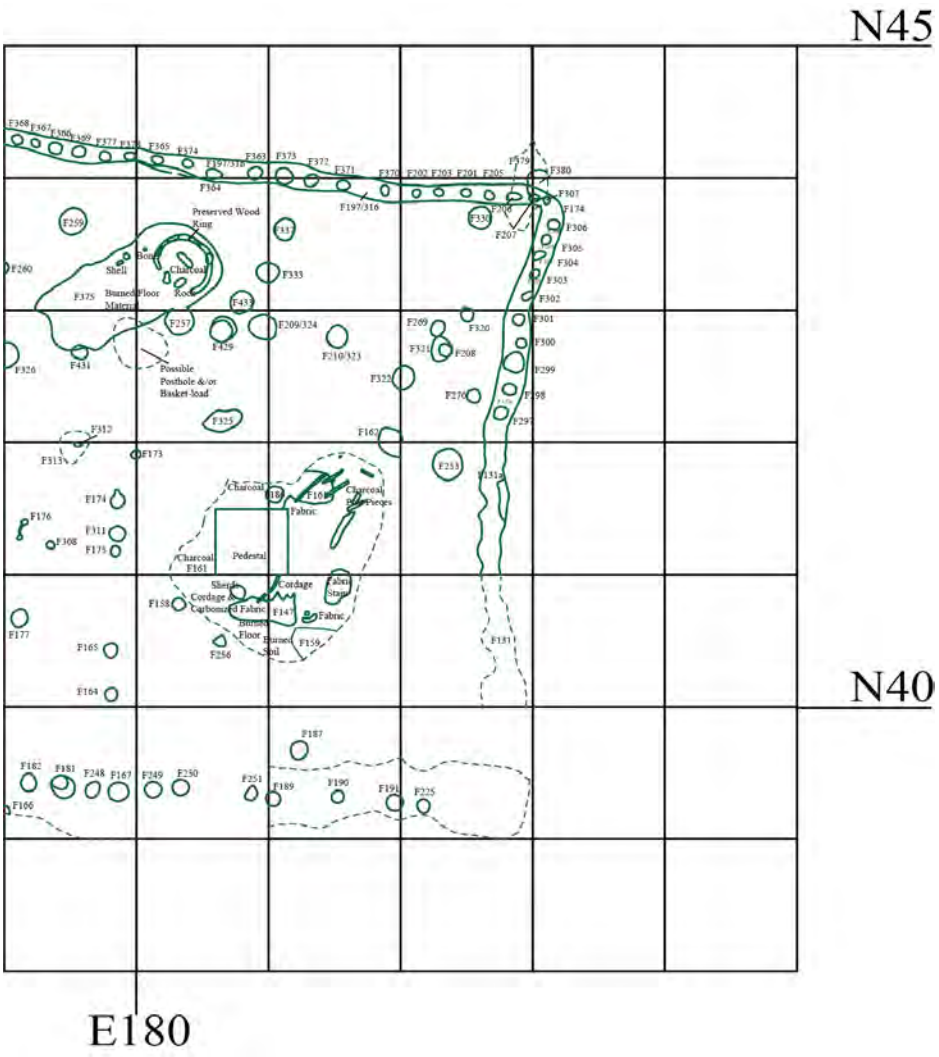


Figure 09-46. Structure 2b, Stage III mound, plan view. Features defined with dotted lines have diffuse or poorly defined boundaries.

Table 09-14. Features associated with Structure 2b, Stage III Mound, identified during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex: Type, Measurement, and Provenience Data.

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
197/316	Northern Wall Trench	400	20	23	N44	E179	411	Wall trench for Structures 2a, 2b?
363	Post in northern wall trench	11	10	16	N44	E180	407	Posthole in wall trench
364	Post in northern wall trench	n/a	n/a	n/a	N44	E180	407	Posthole in wall trench
366	Post in northern wall trench	15	16	21	N44	E179	411	Posthole in wall trench
367	Post in northern wall trench	11	12	19	N44	E179	411	Posthole in wall trench
368	Post in northern wall trench	10	10	17	N44	E179	411	Posthole in wall trench
369	Post in northern wall trench	9	10	16	N44	E179	411	Posthole in wall trench
370	Post in northern wall trench	9	9	19	N43	E181	412	Posthole in wall trench
371	Post in northern wall trench	8	8	18	N43	E181	412	Posthole in wall trench
372	Post in northern wall trench	10	10	17	N43	E181	410	Posthole in wall trench
373	Post in northern wall trench	12	12	20	N44	E181	408	Posthole in wall trench
374	Post in northern wall trench	9	9	10	N44	E180	408	Posthole in wall trench
377	Post in northern wall trench	12	11	15	N44	E179	411	Posthole in wall trench
378	Post in northern wall trench	13	12	21	N44	E179	411	Posthole in wall trench
201?	Post in northern wall trench	20	18	13	N42	E183	392	Irregular circular stain, possible post?
202?	Post in northern wall trench	21	23	14	N43	E182	391.5	Posthole in wall trench
203?	Post in northern wall trench	10	9	3.5	N43	E182	386.5	Posthole in wall trench
204?	Post in northern wall trench	11	12	51	N43	E182	387.5	Posthole in wall trench
205?	Post in northern wall trench	4	4	35	N43	E182	389	Posthole in wall trench
206?	Post in northern wall trench	5	9	40	N43	E182	390	Posthole in wall trench
207?	Post in northern wall trench	5	6	34	N43	E182	388.5	Posthole in wall trench
307?	Post in northern wall trench	5	7	12	N43	E182	401	Posthole in wall trench
	Average (posts)	10.75	10.75	17.4166			410.07	
131A	Eastern wall trench	450	20	9.5	N41	E182	400	East side of 'Structure'
296	Post in eastern wall trench	6	7	4	N42	E182	400	Postmold in wall trench
297	Post in eastern wall trench	10	9	18	N42	E182	400	Postmold in wall trench
298	Post in eastern wall trench	10	10	10	N42	E182	400	Postmold in wall trench
299	Post in eastern wall trench	11	10	22	N42	E182	400	Postmold in wall trench
300	Post in eastern wall trench	9	9	24.5	N42	E182	400.5	Postmold in wall trench
301	Post in eastern wall trench	9	8	15	N42	E182	400.5	Postmold in wall trench
302	Post in eastern wall trench	9	9	19	N43	E182	401	Postmold in wall trench
303	Post in eastern wall trench	9	8	23	N43	E182	401.5	Postmold in wall trench
304	Post in eastern wall trench	11	10	26	N43	E183	401.5	Postmold in wall trench
305	Post in eastern wall trench	12	12	15	N43	E183	401.5	Postmold in wall trench
306	Post in eastern wall trench	10	8	5	N43	E183	402	Postmold in wall trench
	Average (posts)	9.64	9.09	16.50			400.71	

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
225	Post in southern wall line	8	8	12	N39	E182	390	Well defined circular stain, probable post
249	Post in southern wall line	9	10	12	N39	E180	391	Probable posthole
250	Post in southern wall line	10	9	15	N39	E180	391	Probable posthole
251	Post in southern wall line	n/a	n/a	n/a	N39	E180	390.25	Possible posthole/may not be a feature
166?	Post in southern wall line	6	7	12	N39	E179	384.5	Well defined circular stain, probable post
167?	Post in southern wall line	13	16	22	N39	E179	384	Well defined circular stain, probable post
181?	Post in southern wall line	11	13	6	N39	E179	389	Well defined circular stain, probable post
182?	Post in southern wall line	12	12	95.7	N39	E179	391.5	Well defined circular stain, probable post
187?	Post in southern wall line	12	11	7.75	N39	E181	389.75	Well defined circular stain, probable post
188?	Post in southern wall line	10	10	6	N39	E181	390	Well defined circular stain, probable post
189?	Post in southern wall line	10	9	6.5	N39	E181	389	Well defined circular stain, probable post
190?	Post in southern wall line	8	9	9.25	N39	E181	388.75	Well defined circular stain, probable post
191?	Post in southern wall line	8	7	5.5	N39	E181	390	Well defined circular stain, probable post
248?	Post in southern wall line	10	10	21	N39	E179	385	Probable posthole
	Average (posts)	9.00	9.00	13.00			390.56	
147 /160 /161	Central hearth	45	51	11.75	N40	E180-181	379.25	Hearth area w/charcoal, cordage
161	Central hearth	61	113	1.5	N41	E180-181	378	Hearth area w/charcoal, cordage
162	Internal post	19	22	3.25	N41	E181	386.75	Well defined circular stain, probable post
186	Internal post	14	10	16	N41	E181	389	Well defined circular stain, probable post
208	Internal post	21	21	36	N42	E182	386	Well defined circular stain, probable post
209/324	Internal post	18	18	14	N42	E180	414	Well defined circular stain, probable post
210/323	Internal post	16	15	30	N42	E180	383	Well defined circular stain, probable post
253	Internal post	22.5	25.5	16.5	N41	E182	392	Probable posthole
256	Internal post	n/a	n/a	n/a	N40	E180	n/a	Probable posthole
269	Internal post	12	13	16	N42	E182	393.5	Possible Posthole
270	Internal post	14	14	3.5	N42	E182	393.5	Probable posthole

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
308	Internal post	6	6	1	N41	E179	408	Possible posthole/may not be a feature
311	Internal post	11	15	1.5	N41	E179	408.5	Possible posthole/may not be a feature
312	Internal post	n/a	n/a	2	N41	E179	410.5	Possible posthole/does not appear to be a feature
313	Internal post	n/a	n/a	n/a	N41	E179	410.5	Possible posthole/does not appear to be a feature
320	Internal post	9	8	1	N42	E182	416	Possible posthole/does not appear to be a feature
321	Internal post	19	15	22	N42	E182	416	Well defined circular stain, probable post
322	Internal post	18	15	11.5	N42	E182	416	Well defined circular stain, probable post
325	Internal post	18	15	18.5	N42	E180	413	Orange silt/clay mass, debris in fill
326	Internal post	20	13	16	N42	E179	412	Well defined circular stain, probable post
330	Internal post	15	16	18	N43	E182	412	Well defined circular stain, probable post
333	Internal post	22	22	19	N43	E180	413	Well defined circular stain, probable post
337	Internal post	17	17	26	N43	E180	413	Well defined circular stain, probable post
375/171	Post w/insertion ramp	55	48	51	N42	E180	411	Extends through the 2a and 2b structures.
429	Internal post	16	16	10	N42	E180	437	Charcoal filled pit, possible burnt post
158?	Internal post	13	16	27	N40	E180	381	Well defined post from F144 wall trench segment.
159?	Internal post	24	42	3.5	N40	E181	382	Hearth area w/charcoal, cordage
164?	Internal post	18	17	12	N40	E179	379	Well defined circular stain, post
165?	Internal post	10	12	7	N40	E179	382.5	Well defined circular stain, probable post
174?	Internal post	14	10	12.5	N41	E179	385.25	Well defined circular stain, probable post
175?	Internal post	10	8	12.5	N41	E179	385.5	Well defined circular stain, probable post
176?	Internal post	6	5	6	N41	E179	385.5	Well defined circular stain, probable post
177?	Internal post	9	10	13	N40	E179	390	Possible posthole
187?	Internal post	12	11	7.75	N39	E181	389.75	Well defined circular stain, probable post

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
188?	Internal post	10	10	6	N39	E181	390	Well defined circular stain, probable post
202?	Internal post	21	23	24	N43	E182	391.5	Well defined circular stain, probable post
237?	Internal post	3	3	8	N42	E179	378	Posthole
257?	Internal post	6	7	33	N42	E180	382.5	Probable posthole
259?	Internal post	12	8	47	N43	E179	381	Probable posthole
260?	Internal post	10	8	9	N43	E179	381	Probable posthole
267?	Internal post	12	12	23.75	N42	E180	394.25	Probable posthole
278?	Posthole	14	13	18	N40	E182	398	Probable Posthole associated with Structure 2b or 2a?
279?	Posthole	11	11	12	N40	E179	398	Probable Posthole associated with Structure 2b or 2a?
280?	Charred material	17	14	4	N40	E182	398	Charred wall debris or matting associated with Structure 2b?
281?	Posthole	18	n/a	23	N40	E179	401	Probable Posthole associated with Structure 2b or 2a?
285?	Posthole	6	6	7	N40	E179	404	Probable Posthole associated with Structure 2b or 2a?
286?	Posthole	21	n/a	14	N40	E179	409	Probable Posthole associated with Structure 2b or 2a?
288?	Posthole	17	12	18	N40	E182	413	Probable Posthole associated with Structure 2b or 2a?
379?	Mass of charcoal around post	5	15	3	N43	E183	418	Charred wall debris or matting associated with Structure 2b?
380?	Mass of charcoal around post	20	16	8	N43	E183	420	Charred post associated with Structure 2b??
433?	Internal post	17	17	17.5	N43	E180	439.5	Posthole
	Average (posts)	21.175	22.875	15.9166			387.66	

hearth was likely collected in the blocks removed in an effort to preserve the textiles observed within the upper fill (see Chapter 19). The two structures may have shared a common hearth that was long used, when the interior of the soil blocks can be completely examined this question might be resolved.

Feature 280. A small mass of charcoal, thought to be wall debris from a nearby structure, was found in N40, E182, near the eastern wall trenches for Structures 2a and 2b. The fill was floated and 1 hickory nutshell and 1 maize cupule were found in it (see Chapter 16, Table 16-02). An AMS determination of 785±15 B.P. (A.D. 1225–1264) was obtained on a sample of red oak charcoal. The depth at which the feature appeared indicates it is likely to be associated with Structure 2b (see Table 09-12).

Feature 375. A post pit, consisting of a large post about 50cm in diameter with a gently sloping insertion ramp about 1m long oriented to the southwest was found on the Stage III summit in the northern part of Structures 2a and 2b in N42–43, E179–180 (Figure 09-48). The overall feature, the largest post found during the excavations into Mound A, and the only one with an insertion trench, apparently originated at a depth of about 411cmbd, about the same level as the northernmost

Table 09-15. Artifacts associated with Structure 2b, Stage III Mound, recovered during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex.

Object	Count	Quantity	Weight (g)
Structure 2b			
Prehistoric			
Debitage *		10 bags	7.20
Sample, Charcoal		2 bags	56.40
Stone, Fire Cracked		4 bags	89.78
Vessel Fragment	29		50.95
Wood Fragment		1 bag	752.30
Classifiable Native American Pottery			
Baytown Plain, *var. McKelvey*	2		
Mississippi Plain, *var. Shiloh*	5		
Unknown			
Charcoal		1 bag	25.34
Clay, Fired		9 bags	75.62
Plant		4 bags	0.19
Sample, Flotation		118 bags	4,184.01
Shell		5 bags	24.99
Stone, Unmodified		53 bags	2,992.21
Wood Fragment		7 bags	410.01
Structure 2b (?)			
Unknown			
Sample, Flotation		2 bags	21.24
Stone, Unmodified		1 bag	12.26

* Unsorted lithics from flotation samples

** No weight recorded

Note: Bag refers to materials from specific proveniences that were typically weighed but not counted. Most of these are materials not suitable for counting.

surviving wall line and trench for Structure 2b and, interestingly, at the level of Structure 6 located immediately to the north (cf. Tables 09-14, 09-22; see the discussion in Structure 6, below). Pieces of badly deteriorated wood, the remains of the post itself, were found in the northeastern end of the post pit, in an area ca. 50cm in diameter and 50cm deep. Given the depth at which Feature 375 appeared, it was apparently originally associated with Structures 2b or 6, or both. The post itself extended through the subsequent Structure 2a floor (see Figure 09-44). Given its size and apparent longevity it may have been placed on the summit prior to the construction of these buildings, perhaps as a marker post of some kind. What was also remarkable was the presence of preserved uncarbonized albeit very poorly preserved wood in the fill. The wood was only noted toward the base of the feature, in a narrow ring of highly friable material around the margins of the pit. The material was retained and submitted for ethnobotanical analysis, and was found to be pine (see Chapter 16, see Table 16-02). Gray (10YR5/2) and red (2.5YR5/8) clays were placed around the post, indicating care and perhaps ceremony attended its placement, and may have also been an attempt to facilitate its preservation or assure its stability. The post was the largest observed anywhere in the excavations, reinforcing its unusual nature.

The post appears to have had a long use life, apparently continuing through the lives of



Figure 09-47. The northeastern portion of Structure 2b on the Stage III mound undergoing excavation in N41-43 E181-182, with posts being removed in the eastern and northern wall trenches. Some posts yet to be excavated are apparent by their slightly darker color. Floor at 400cmbd.

the 2b and 2a structures subsequently built in this area. This inference assumes that the large circular feature observed in the exact location on the prepared surface for Structure 2a some 30cm higher is from the same post, which seems likely, since the ca. 2cm thick flooring for Structure 2a was absent in this area (see Figure 09-44). What is surprising is that the 2a and 2b structures appear to have been built directly over this post, and it was likely incorporated into them some way. Given its location near the northern wall line of these structures, Feature 375 may not have served as a central roof support for them, but instead may have been a marker post of some kind, perhaps projecting above the roof line. It may have alternatively been used in or associated with an earlier building like Structure 6 or, if like the marker posts found at Mound 72 and the Woodhenge structure at Cahokia, it may have played a role in the overall layout of the site, and be tied with events like the solstices or equinoxes (e.g., Fowler 1997; Pauketat 2009).

Features 379 and 380. A small mass of charcoal, thought to be wall debris from a nearby structure and similar to the material comprising Feature 280 was found in N43, E183, at and just outside of the area of the intersection of the north and east wall trenches for Structures 2a and 2b (Figure 09-49). Designated Feature 379, it was located around a small post, Feature 380. These two features are about 10 to 20cm deeper than the depth at which the wall lines for Structures 2a and 2b appeared, suggesting that they may be from an even earlier structure on the Stage III summit, perhaps associated with Structure 6 (see Table 09-15). The material found in Feature 379 was floated, with 18 pieces of cane cf., 2 pieces of monocot stem, and 5 persimmon seeds identified (see Chapter 16, see Table 16-02). A sample of monocot stem charcoal, identified as a piece of cane (*Arundinaria gigantea*), was submitted for dating and yielded a determination of 835±20 B.P. (A.D. 1177–1225, calibrated 1-sigma range). Given the lower depth at which the feature occurred, this date, which was about four decades earlier than the average of the five dates obtained from Features 147/161, 262 and 280, appears logical, and suggests the Stage III mound was first built and occupied in the late twelfth or early thirteenth century, and appears to have had successive structures built atop it for several decades.

Structure 3

Structure 3 was a fairly well defined wall trench building with a prepared floor located directly under the southern part of the IIb gray platform in N50–54, E179–182 (Figures 09-50 to 09-55, Tables 09-16 and 09-17). Measuring roughly ca. 4.5x3.0m (N/S and E/W), the structure appears to have extended into the unexcavated western portion of



Figure 09-48. Feature 375, a large post with an insertion ramp, in N42-43 E179-180 on the Stage III summit. (top) The overall feature upon excavation, showing the insertion ramp and the deep post hole itself. The tagged posts in the northern wall trench for Structure 2b, as well as several interior posts, are also illustrated. (bottom) Close-up of preserved wood, identified as pine, in the post hole, which proved to be extremely friable. This was the only identifiable noncarbonized wood found during the excavations in Mound A.



Figure 09-49. Features 379 and 380, a small mass of charcoal found around a clay filled post, near the intersection of the northern and eastern wall trenches for Structure 2b, on the Stage III mound.

the mound, and would have been about 4.5–5.0m on a side if squared. At least two structures were found in this location, Structures 3 and 5, as well as a wall line fragment from a possible third building, Structure 9, making associating features with particular structures in this area difficult. The wall trenches for Structure 3 were well defined on the eastern and southern sides but on the northern side it was more ambiguous, with only three posts recognized (Figures 09-54 and 09-55). A wall trench and post line for Structure 3 was initially thought to have been present on the western side in N51–53, E179 in the field, based on the occurrence of a short wall line trench and post segment found in N51, E179 at a depth of ca. 345–350cmbd. If this was a western line for Structure 3, however, the building would have been quite narrow, ca. 3.0m wide by 4.5m long. No wall trench was found in the units to the north in N52 and N53, E179 on the prepared floor surface, although a trench was indicated in the overlying blanket mantle used to close out the structure (see Figure 09-51, and discussion of Structure Fragment 9, below).

As with the other largely intact structures found on the Stage III summit, most of the posts in the wall lines for Structure 3 were remarkably consistent in size and depth (Table 09-16). Posts in the northern wall line (n=3) were ca. 9cm in diameter, those in the eastern wall line (n=19) were ca. 10cm in diameter and 30cm deep, and those in the southern wall line (n=12) were about the same size, ca. 10.2–10.5cm in diameter. Interestingly, the three of the posts in the north wall trench/line, Features 563, 570, and 571, were found to be hollow upon excavation, together with one possible internal post, Feature 410. These posts were apparently pulled out but were not intentionally filled in before the area was covered. A number of possible post features originated at or just below the level of the well-defined wall lines, and may be the remains of interior supports. The internal posts were

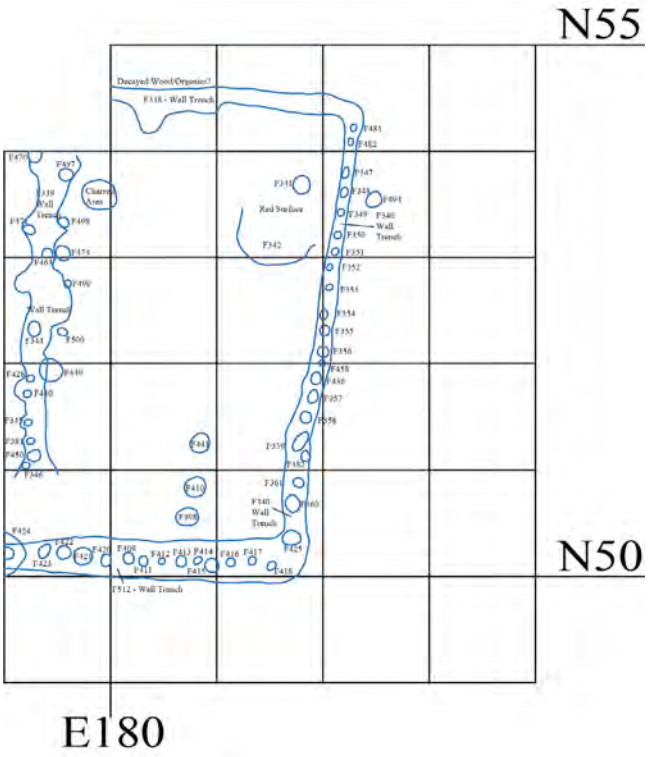


Figure 09-50. Structure 3 on the Stage III mound, plan view. The wall trench segment on the western side was originally thought to be a part of Structure 3, but some or all of it may represent a separate construction episode, and was designated Structure 9.



Figure 09-51. Structure 3, Stage III mound, in N50-N53 E179-E183 (floor at 340cmbd), view to north. Upon abandonment the Structure 3 floor was covered with a thin red silt clay mantle, designated IIb-2b, which is discolored from firing in several areas. A red clay ridge runs along the east side of the structure, with a rounded bowl-shaped depression at the south end, resembling a similar serpent like feature associated with the MCBF, Zone IIIk. This ridge closely conforms to the location of the underlying east wall line for Structure 3.

more varied in size than those found in the wall lines, and were on the average considerably larger, averaging ca. 20cm in diameter and 22.6cm deep.

Soil chemistry analyses conducted with samples from the uppermost floor of Structure 3 revealed low concentrations of phosphorus and iron in all areas save in the northern and northeast sides of the structure, suggesting little food preparation and/or consumption activities took place in the building or, alternatively, that the floors were routinely carefully cleaned immediately after such uses (see Chapter 11, Figures 11-03 and 11-06). An analysis based on the combined signatures of eight elements revealed no distinct concentrations over most of the surface, again save for on the northern side of the building, and just outside the northeast corner, where these concentrations may reflect activities occurring in Structure 4, or between Structures 3 and 4 (see Chapter 11, Figure 11-09). A phytolith sample was examined from a soil sample taken from the prepared floor for Structure 3; the sample was located ca. 50cm northwest of a possible hearth-like feature, Feature 342, in the northern portion of the structure (see Chapter 20). Phytoliths were rare in the sample, although a variety of forms were noted, and the investigator believed further analyses with a greater number of floor samples would be warranted.

When Structure III was abandoned and the IIb 'gray platform' placed over it, a formal termination episode appears to have occurred. A red silt clay mantle, designated Zone IIb-2b by the project geoarcheologist, was placed over the area defined by the underlying wall lines, immediately over a prepared silt clay floor (see Figures 09-51 and 09-52, see Chapter 10). This mantle was built up into a low rounded ridge on the east and south sides, resembling the ridges found on top of the Stage IIb



Figure 09-52. Structure 3, Stage III mound, view to south. Possible eastern and western wall trenches are indicated by breaks in the thin red silt clay mantle, designated IIb-2b, over the structure. The eastern wall trench is immediately adjacent to and under the red clay ridge, while an western wall line, probably the Structure 9 wall trench, is near the E179 profile, where the overlying IIb 'gray platform' is also evident. Structures 1 and 2a are located in the background.



Figure 09-53. Structure 3 on the Stage III mound summit, after removal of the prepared floor from most of the surface. Some postholes from the eastern wall trench are evident on the northeast side. View to northeast, floor at 350cmbd.



Figure 09-54. Area of Structures 3 and 5 in N49-54 E179-184 on the Stage III summit, floor at 390cmbd. The south and east wall lines of Structure 3 and a number of its internal features are clearly visible, although the floor was some 20cm higher and has been removed. The daub mass to the east may be the upper part of Structure 5, and/or debris from the removal of Structure 3. Extensive burning is indicated at this level by the amount of fired daub and charcoal to the east of Structure 3, and by the purplish red areas under the northeast corner of Structure 3. (top) View to the southwest (bottom) View to southeast.



Figure 09-55. Structure 3 wall lines showing the excavated posts together with burning associated with the underlying Structure 5 floor area in N50-55, E 179-182 on the Stage III summit. The overlying IIb 'gray platform' mound is to west.

Table 09-16. Features associated with Structure 3, Stage III Mound, identified during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex: Type, Measurement, and Provenience Data.

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
338	Northern wall trench?	ca. 2.4	20	n/a	N54	E181	360	North wall trench; poorly defined
563	Post in northern wall trench	10	10	n/a	N54	E181	407.5	Well defined; hollow
570	Post in northern wall trench	12	10	n/a	N54	E181	406	Well defined; hollow
571	Post in northern wall trench	6	7	n/a	N54	E181	405	Well defined; hollow
	Average (posts)	9.33	9.00				406.17	
340	Eastern wall trench	ca. 4.5	18	43.25	N52	E182	352	Wall trench
347	Post in eastern wall trench	13	12	24	N53	E182	357	Post in wall trench
348	Post in eastern wall trench	13	12	25	N53	E182	357	Post in wall trench
349	Post in eastern wall trench	9	11	21	N53	E182	367	Post in wall trench

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
350	Post in eastern wall trench	8	7	32	N53	E182	359	Post in wall trench
351	Post in eastern wall trench	9	8	23	N53	E182	359	Post in wall trench
352	Post in eastern wall trench	10	13	31	N52	E182	360	Post in wall trench
353	Post in eastern wall trench	9	12	29.5	N52	E182	362	Post in wall trench
354	Post in eastern wall trench	9	11	36.5	N52	E182	354	Post in wall trench
355	Post in eastern wall trench	10	10	37	N52	E182	353.5	Post in wall trench
356/458	Post in eastern wall trench	12	13	37	N52	E181	352.5	Post in wall trench/Same as 458
357	Post in eastern wall trench	8	8	42	N51	E181	353	Post in wall trench
358	Post in eastern wall trench	8	8	39.5	N51	E181	353.5	Post in wall trench
359/439	Post in eastern wall trench	8	8	36	N51	E181	355	Post in wall trench/Same as 439
360	Post in eastern wall trench	9	11	31.25	N50	E181	358.25	Post in wall trench
361	Post in eastern wall trench	9	8	33.25	N50	E181	358	Post in wall trench
382	Post in eastern wall trench	8	8	45	N51	E181	347	Post in wall trench
425	Posthole?	n/a	n/a	n/a	N50	E181	358	Possible posthole/poorly defined
436	Post in eastern wall trench	11	11	24.5	N51	E181	369	Post in wall trench
481	Post in eastern wall trench	10	9	12	N54	E181	371	Post in wall trench
482	Post in eastern wall trench	13	12	18	N54	E181	371	Post in wall trench
	Average (posts)	9.79	10.11	30.39			376.34	
409	Post in southern wall line	9	9	n/a	N50	E180	372	Post in wall trench
410	Post in southern wall line	n/a	n/a	n/a	N50	E180	369.5	Post in wall trench
411	Post in southern wall line	7	6	n/a	N50	E180	372	Post in wall trench
412	Post in southern wall line	8	8	n/a	N50	E180	372	Post in wall trench
413	Post in southern wall line	8	9	n/a	N50	E180	373.5	Post in wall trench
414	Post in southern wall line	6	7	n/a	N50	E180	375	Post in wall trench
415	Post in southern wall line	9	11	n/a	N50	E180	374	Post in wall trench
416	Post in southern wall line	10	11	n/a	N50	E181	376	Post in wall trench
417	Post in southern wall line	11	11	n/a	N50	E181	376	Post in wall trench
418	Post in southern wall line	9	10	n/a	N50	E181	376	Post in wall trench
420	Post in southern wall line	11	12	n/a	N50	E179	373.5	Post in wall trench
421	Post in southern wall line	19	18.5	n/a	N50	E179	373	Post in wall trench
422	Post in southern wall line	n/a	n/a	n/a	N50	E179	372.5	Post in wall trench
423	Post in southern wall line	15	13	n/a	N50	E179	371	Post in wall trench
424	Post in southern wall line	n/a	n/a	n/a	N50	E179	370.25	Post in wall trench
512	Southern wall trench	n/a	n/a	n/a	N54	E179	378.5	Wall trench
	Average (posts)	10.17	10.46				373.42	

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
341	Internal post	19.5	18	13	N54	E181	351	Well defined circular stain, probable post
342	Hearth	43	48	5.5	N54	E181	348.5	Burned clay and charcoal/ possible hearth.
343	Internal basin shaped pit	10	17	7	N51	E182	350.5	Possible shallow basin or posthole
344	Internal post	15.5	8	11.5	N52	E179	346.5	Posthole
398	Internal post	18	17	n/a	N50	E180	362.5	Posthole
410	Internal post	12	12	24	N51	E181	369.5	Posthole, hollow
441	Internal post	21	20	n/a	N51	E180	372.5	Posthole
449	Internal post	19	18	31	N52	E179	370	Posthole
450	Internal post	19	28	n/a	N51	E179	369	Posthole
470	Internal post	17	22	32	N53	E179	362	Posthole
471	Internal post	25	25	28	N53	E179	362	Posthole
473	Charred matting	25	27	n/a	N49	E182	373	Charred matting
497	Internal post	9	8	n/a	N53	E179	386.5	Posthole?
498	Internal post	7	7	n/a	N53	E179	378	Posthole, hollow
500	Internal post	8	7	19.5	N52	E179	377.5	Posthole
463?	Internal post	6	11	16	N53	E179	345.5	Posthole
474?	Internal post	n/a	n/a	n/a	N53	E179	370	Posthole
	Average (posts)	20.01	20.38	22.56			364.38	

Floor units (n=14, inside structure)

N50-53, E179-182, N54 E180-81

Table 09-17. Artifacts associated with Structure 3, Stage III Mound, recovered during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex.

Object	Count	Quantity	Weight (g)
Structure 3			
Prehistoric			
Core	1		51.60
Daub		1 bag	0.74
Debitage *		10 bags	32.52
Flake	16		9.30
Sample, Charcoal		1 bag	1,180.70
Shatter	15		35.92
Stone, Fire Cracked	7	4 bags	332.80
Vessel Fragment	110		231.86
Classifiable Native American Pottery			
Baytown Plain, *var. McKelvey*	4		
Bell Plain, *var. unspecified*	1		

Object	Count	Quantity	Weight (g)
Mississippi Plain, *var. Shiloh*	12		
Mulberry Creek Cord Marked, *var. Mulberry Creek*	18		
Unknown			
Charcoal		1 bag	0.04
Clay, Fired		28 bags	567.87
Food, Bone	3		0.80
Plant		6 bags	1.36
Sample, Flotation		173 bags	20,887.92
Sample, Soil		85 bags	19,814.45
Shell		8 bags	21.98
Stone, Unmodified		45 bags	6,724.51
Structures 3/5			
Unknown			
Sample, Flotation		14 bags	855.60
Sample, Soil		21 bags	7,265.82

* Unsorted lithics from flotation samples

** No weight recorded

Note: Bag refers to materials from specific proveniences that were typically weighed but not counted. Most of these are materials not suitable for counting.

mound above it. The linear ridge with the larger 'head' at the south end also appears to resemble a serpent, like that placed on the west side of the MCBF feature over Structures 2a and 2b. The parallels are striking, and suggest similar ceremonies occurred when these structures were abandoned, and that there might also be some continuity or memory of the earlier ceremonies over the interval the two stages were used and abandoned, which based on the radiocarbon dates occurred fairly quickly one after the other, probably sometime in the thirteenth century (see Chapters 12 and 21). Several areas discolored from burning were noted on top of this surface, most near the center of the Structure 3 area. One of these zones, in the northeast corner, had charcoal associated with it, and was removed as Feature 342 (see below).

Feature 342. An area of charcoal and burned clay initially thought to be the remains of a possible hearth was found in the northeast corner of Structure 3 and was designated Feature 342 (Figure 09-56). It appears instead to reflect a burning episode on the overlying red silt clay mantle placed over the top of Structure 3 when it was abandoned, that had discolored the underlying floor and fill beneath it. The fact that it is located near the corner of the area defined by the eastern and northern wall lines makes it unlikely a hearth would have been here when Structure 3 was occupied.

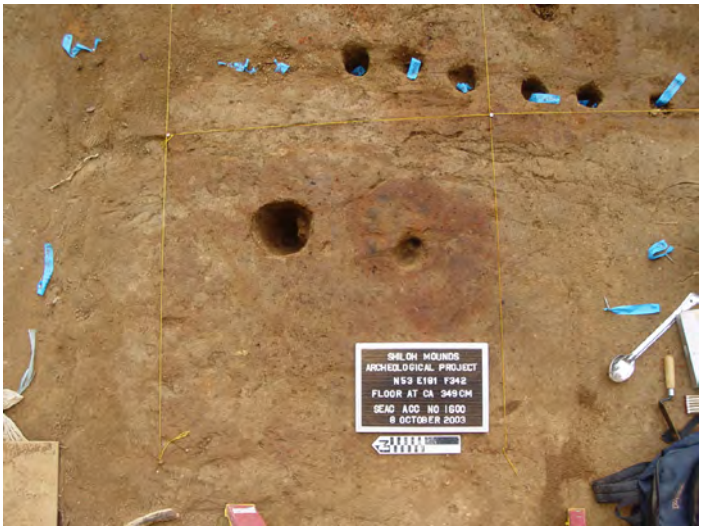


Figure 09-56. Feature 342, a burned area on the Structure 3 floor, on the Stage III summit, floor at 349cmbd. A small shallow post may have intruded the center of the feature. Feature 341, a large post, is located just to the north, while to the east are Features 447 to 354, posts in a narrow wall trench, Feature 340.

Feature 473. A small mass of charred matting, Feature 473, was located between Structures 1 and 3 in N49, E182 at a depth of 373cm, about the depth of many of the floor features associated with them (see Tables 09-10, 09-16). The matting was found amid a layer of daub and other structural debris. A sample of monocot stem charcoal, identified as a piece of cane (*Arundinaria gigantea*) yielded a radiocarbon date of 810±15 B.P. (A.D. 1220–1251 calibrated 1-sigma range; see Chapter 12, Table 12-02). The date is almost identical to that obtained from Feature 163, a small mass of matting in Structure 1 about 3m to the southwest, 815±15 B.P. (A.D. 1228–1252 calibrated 1-sigma range (see above), and in agreement with the period when the Stage III mound is thought to have been in use.

Structure 4

Structure 4 consisted of a prepared floor and four apparently related wall lines located at the northern end of the Stage III summit immediately below the IIb platform (Figures 09-57 to 09-59, Tables 09-18 and 09-19). The wall lines making up Structure 4 were in an unusual arrangement, suggesting two structures were actually present in the area, one to the east and the other, somewhat larger in size, to the west (see Figure 09-57). A central wall line ran for almost 6.5m, in N55–61 in E182–183, and was oriented only a few degrees east of north. Wall lines ran both to the east and west at the ends of this central line, with those to the east extending about 2m before reaching the narrow berm left at the edge of the bluff for safety reasons. The southwest wall line, immediately north of the northern portions of Structures 3 and 5, ran about 3m before reaching the western edge of the excavations, and was offset about 1m to the south of the line running to the east. If originally square in shape, and two separate buildings sharing a wall line in common, each would have been the largest on the Stage III summit in the area examined, with the one to the east about 5.5m and the one to the west ca. 6.5m on a side. The posts were apparently all in wall trenches, although these were faint, and only apparent in places, having been covered by the prepared floor, which ran around individual posts in these trenches, indicating it was laid down after the wall lines had been placed (see Figure 09-59). No posts were observed in the short wall line segment running to the west at the north end of the mound.

Most of the posts in the wall lines for Structure 4 were remarkably consistent in size and depth, a pattern noted in the other summit structures (Table 09-18). Posts in the northeastern wall line (n=9)

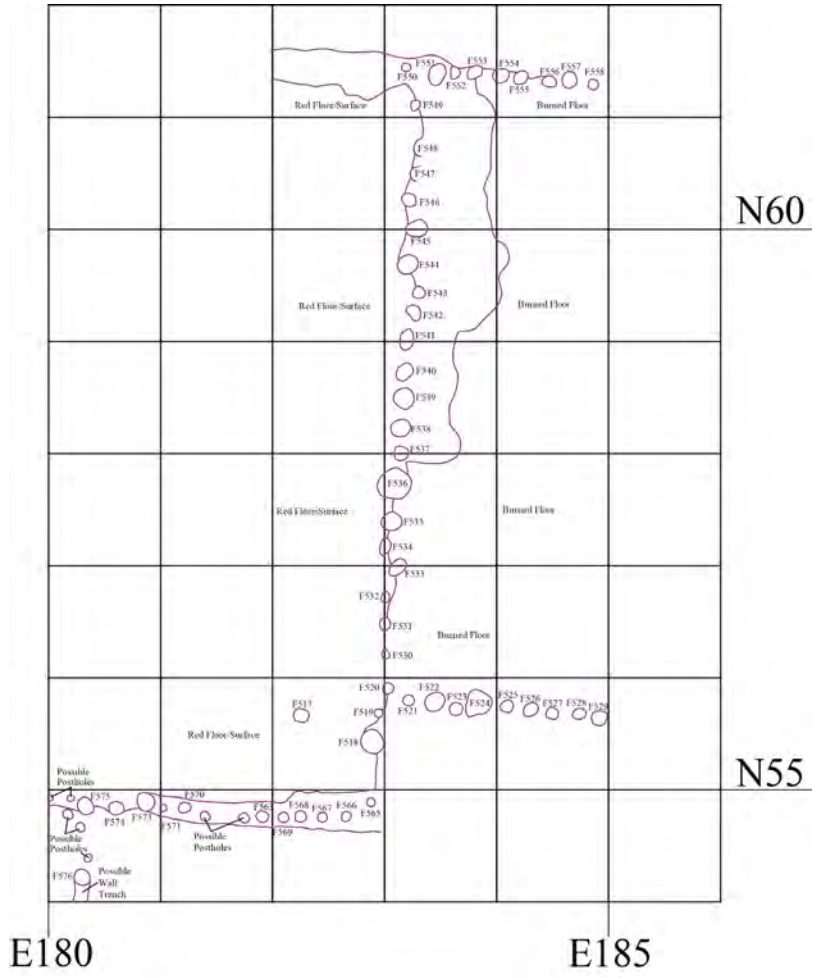


Figure 09-57. Structure 4, Stage III mound, plan view. Wall trenches associated with the lines of posts were difficult to identify, because the prepared floor surfaces covered them in places, and because this was the last areas examined, with no excavations conducted once the prepared floor was removed.



Figure 09-58. The north end of the Stage III mound summit near the end of the excavations on October 28, 2003. The post lines for Structure 3 are visible to the west in the foreground; the prepared floor for Structure 4 is to the north, running to the summit margin; and the burned floor surface and debris layers comprising the area designated Structure 5 encompass the entire southern end of the area, under Structure 3 and running east to the bluff edge. These surfaces were removed before the excavations closed down, but determining what lay more than immediately under them will require future investigations.



Figure 09-59. Structure 4 in N55-61 E1181-184 on the Stage III mound summit, floor at 420cmbd. The central and southeastern wall lines are partially exposed.

Table 09-18. Features associated with Structure 4, Stage III Mound, identified during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex: Type, Measurement, and Provenience Data.

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
550	Post in northern wall line	12	12.5	n/a	N61	E183	433	May be in central wall line
551	Post in northern wall line	15	13.5	n/a	N61	E183	433	Posthole
552	Post in northern wall line	19	16.5	n/a	N61	E183	433	Posthole
553	Post in northern wall line	13.5	14	n/a	N61	E183	433	Posthole
554	Post in northern wall line	11	11.5	n/a	N61	E184	433	Posthole
555	Post in northern wall line	12	13	n/a	N61	E184	433	Posthole
556	Post in northern wall line	12	11	n/a	N61	E184	433	Posthole
557	Post in northern wall line	13.5	12.5	n/a	N61	E184	433	Posthole
558	Post in northern wall line	11	11	n/a	N61	E184	433	Posthole
	Average (posts):	13.22	12.833				433	
518	Post in central wall line	8	9.5	10	N55	E182	413	Posthole
519	Post in central wall line	10	10.5	n/a	N55	E182	413	Posthole
520	Post in central wall line	12	14	n/a	N55	E182	413	May be in southern wall line
530	Post in central wall line	9	9	20	N56	E183	416	Posthole
531	Post in central wall line	12	14	n/a	N56	E183	416	Posthole
532	Post in central wall line	12	13	n/a	N56	E183	416	Posthole
533	Post in central wall line	12	12	n/a	N56	E183	416	Posthole
534	Post in central wall line	18	14.5	n/a	N57	E183	422.5	Posthole
535	Post in central wall line	19	20	n/a	N57	E183	422.5	Posthole
536	Post in central wall line	24	29	n/a	N57	E183	422.5	Posthole
537	Post in central wall line	16	12	n/a	N58	E183	429	Posthole
538	Post in central wall line	14	13	n/a	N58	E183	429	Posthole
539	Post in central wall line	16	16	n/a	N58	E183	429	Posthole
540	Post in central wall line	17	17	n/a	N58	E183	429	Posthole
541	Post in central wall line	20	18	n/a	N59	E183	423	Posthole
542	Post in central wall line	14	15	n/a	N59	E183	423	Posthole
543	Post in central wall line	16.5	13	n/a	N59	E183	423	Posthole
544	Post in central wall line	13.5	15.5	n/a	N59	E183	423	Posthole
545	Post in central wall line	11	14	n/a	N60	E183	433	Posthole
546	Post in central wall line	13	17	n/a	N60	E183	433	Posthole

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
550	Post in northern wall line	12	12.5	n/a	N61	E183	433	May be in central wall line
551	Post in northern wall line	15	13.5	n/a	N61	E183	433	Posthole
552	Post in northern wall line	19	16.5	n/a	N61	E183	433	Posthole
553	Post in northern wall line	13.5	14	n/a	N61	E183	433	Posthole
554	Post in northern wall line	11	11.5	n/a	N61	E184	433	Posthole
555	Post in northern wall line	12	13	n/a	N61	E184	433	Posthole
556	Post in northern wall line	12	11	n/a	N61	E184	433	Posthole
557	Post in northern wall line	13.5	12.5	n/a	N61	E184	433	Posthole
558	Post in northern wall line	11	11	n/a	N61	E184	433	Posthole
	Average (posts):	13.22	12.833				433	
518	Post in central wall line	8	9.5	10	N55	E182	413	Posthole
519	Post in central wall line	10	10.5	n/a	N55	E182	413	Posthole
520	Post in central wall line	12	14	n/a	N55	E182	413	May be in southern wall line
530	Post in central wall line	9	9	20	N56	E183	416	Posthole
531	Post in central wall line	12	14	n/a	N56	E183	416	Posthole
532	Post in central wall line	12	13	n/a	N56	E183	416	Posthole
533	Post in central wall line	12	12	n/a	N56	E183	416	Posthole
534	Post in central wall line	18	14.5	n/a	N57	E183	422.5	Posthole
535	Post in central wall line	19	20	n/a	N57	E183	422.5	Posthole
536	Post in central wall line	24	29	n/a	N57	E183	422.5	Posthole
537	Post in central wall line	16	12	n/a	N58	E183	429	Posthole
538	Post in central wall line	14	13	n/a	N58	E183	429	Posthole
539	Post in central wall line	16	16	n/a	N58	E183	429	Posthole
540	Post in central wall line	17	17	n/a	N58	E183	429	Posthole
541	Post in central wall line	20	18	n/a	N59	E183	423	Posthole
542	Post in central wall line	14	15	n/a	N59	E183	423	Posthole
543	Post in central wall line	16.5	13	n/a	N59	E183	423	Posthole
544	Post in central wall line	13.5	15.5	n/a	N59	E183	423	Posthole
545	Post in central wall line	11	14	n/a	N60	E183	433	Posthole
546	Post in central wall line	13	17	n/a	N60	E183	433	Posthole
547	Post in central wall line	12	15	n/a	N60	E183	433	Posthole
548	Post in central wall line	15	15	n/a	N60	E183	433	Posthole

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
549	Post in central wall line	10	11	n/a	N61	E183	433	Posthole
	Average (posts):	14.09	14.65				423.63	
521	Posthole in southeastern wall line	8	7	n/a	N55	E183	415	Posthole
522	Posthole in southeastern wall line	12	15	n/a	N55	E183	416	Posthole
523	Posthole in southeastern wall line	9	10	n/a	N55	E183	418	Posthole
524	Posthole in southeastern wall line	11	13.5	n/a	N55	E183	418	Posthole
525	Posthole in southeastern wall line	11	14	n/a	N55	E184	421.5	Posthole
526	Posthole in southeastern wall line	13	13	n/a	N55	E184	421.5	Posthole
527	Posthole in southeastern wall line	16	13	n/a	N55	E184	421.5	Posthole
528	Posthole in southeastern wall line	10	13	n/a	N55	E184	421.5	Posthole
529	Posthole in southeastern wall line	10	8	n/a	N55	E184	421.5	Posthole
	Average (posts):	11.11	11.83				419.39	
564	Wall trench	300	15-30	n/a	N54	E180	386	Wall trench for southwestern wall line
565	Post in southwestern wall line	8	8	n/a	N54	E182	409	Posthole
566	Post in southwestern wall line	9	8	n/a	N54	E182	408	Posthole
567	Post in southwestern wall line	12	10	n/a	N54	E182	406.5	Posthole
568	Post in southwestern wall line	10	10	n/a	N54	E182	406	Posthole
569	Post in southwestern wall line	10	9	n/a	N54	E182	406	Posthole
570	Post in southwestern wall line	12	10	n/a	N54	E181	406	Posthole
571	Post in southwestern wall line	6	7	n/a	N54	E181	405	Posthole
573	Post in southwestern wall line	16	19	n/a	N54	E180	406.75	Posthole
574	Post in southwestern wall line	17	17	n/a	N54	E180	405	Posthole
575	Post in southwestern wall line	16	17	n/a	N54	E180	404.5	Posthole

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
576	Post in southwestern wall line	18	21	n/a	N54	E180	400.5	Posthole
	Average (posts):	12.18	12.36				404.10	
517	Filling episode	3.5	5	4	N55	E182	412	Filling episode
601?	Internal post	6	6	9.5	N57	E182	419	Possible posthole near structure 4

Floor Units

East of Central Wall Line: N55-61 E183-184

West of Central Wall Line: N55-58 E181, N55-61 E182

Table 09-19. Artifacts associated with Structure 4, Stage III Mound, recovered during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex.

Object	Count	Quantity	Weight (g)
Prehistoric			
Daub		26 bags	167.19
Debitage *		14 bags	34.18
Stone, Fire Cracked		4 bags	48.64
Vessel Fragment	21		35.69
Classifiable Native American Pottery			
Mississippi Plain, *var. Shiloh*	3		
Mulberry Creek Cord Marked, *var. Mulberry Creek*	3		
Unknown			
Bone		2 bags	19.49
Clay, Fired		31 bags	83.60
Food, Bone	3		0.86
Plant		10 bags	7.51
Sample, Flotation		150 bags	5,995.95
Sample, Soil		105 bags	23,758.96
Shell		6 bags	24.33
Stone, Unmodified		75 bags	4,355.22

* Unsorted lithics from flotation samples

** No weight recorded

Note: Bag refers to materials from specific proveniences that were typically weighed but not counted. Most of these are materials not suitable for counting.

were ca. 13cm in diameter; those in the central wall line (n=23) were somewhat larger, at ca. 14.5cm in diameter; those in the southeastern wall line (n=9) were about 11–12cm in diameter; and those in the southwestern wall line (n=11) were ca. 12cm in diameter. All of the posts were partially removed, with the upper fill collected, but the excavations closed down before the units could be taken deeper, which would have ensured the fill in the lower portions of the posts was accurately collected, and the wall trenches more fully documented. Unlike the central and southern ends of the summit, this area may not have seen extensive rebuilding, although it must cautioned that only the uppermost fill in the Stage III mound was examined. Multiple adjacent or overlapping wall lines were not evident, however, like those in Structures 2a and 2b. The Structure 4 area was ca. 15–60cm in absolute elevation lower than any wall line in Structures 1, 2a, and 3 to the south, and about 10–30cm lower than the surface of Structure 5, which partially underlay Structure 3 immediately to the south (Figure 09-58). The area of Structure 4 was, in fact, at a comparable absolute elevation to the base of the area on the south end of the Stage III summit where structures were first erected, in the vicinity of Structures 2b and 6.

The floor to the east of the central wall line for Structure 4 was heavily sooted, giving it a mottled black (5YR2/1) color in many units. The floor to the west of the central wall line, in contrast, was somewhat more reddish in color (2.5YR5/8), although it too was sooted in places, particularly in the southern one third (Figure 09-59). The incidence of sooting may indicate portions of the buildings where hearths were present, although none were noted. The floor over the entire area was removed and floated using 1m units, with special soil samples taken from each unit. It was evident in places (e.g., N58, E182) that at least two prepared surfaces were present, one immediately atop the other, suggesting the floor in at least portions of the Structure 4 area had been refurbished or renewed at least once. The soil chemistry analysis conducted with samples taken from the Structure 4 surface revealed high concentrations of phosphorus and iron across much of the area examined, with unusually high concentrations in the southeastern corner, suggesting extensive food preparation and/or consumption activities (see Chapter 11, Figures 11-03, 11-06, and 11-10). These values were far higher than observed on any of the other floors examined atop the Stage III surface, in Structures 1, 2a, 3, and 5, suggesting these floors were either used for different activities, or were kept carefully cleaned (see Chapter 11). A soil chemistry analysis based on the combined signatures of eight elements revealed no distinct concentrations over most of the surface, again save for on the southern side of the building, and just outside the southeast corner; these concentrations may reflect activities occurring in Structure 4, or between Structures 3 and 4 (see Chapter 11, see Figure 11-09). Two soil samples (FS 4316, 4417) were examined for the occurrence of phytoliths from the Structure 4 floor in N58, E182 and N58, E184, just east and west of the central wall line for Structure 4. Phytoliths were found to be very abundant to moderately abundant in the two samples, and additional investigation was recommended (see Chapter 20).

A fill sloping upward and to the east was found over the eastern margin of Structure 4 that may have been an embankment of some kind. It overlays posts in the eastern wall lines associated with Structure 4, suggesting it was placed over the structure after it had been abandoned. If accurately delimited, it may have been an embankment designed to contain the overlying IIb gray platform mound fill, which given its texture could have washed away fairly easily unless bounded in some way. What was below the Structure 4 floor, and the precise nature of its relationship with Structures 3 and 5 to the south remains unknown. Fortunately, these units were carefully backfilled, which should preserve the integrity of the underlying deposits for future excavations, providing the mound does not erode away first (see Chapters 3 and 6).

Fragmentary Structures Atop the Stage III Mound

Appreciable disturbance occurred on the Mound A stage surfaces when structures were dismantled and rebuilt, or when termination episodes occurred

and a new stage was added. This is particularly evident on the Stage III mound, where the summit 'surface' was upwards of 50cm thick in the areas thoroughly examined, with evidence for numerous construction and rebuilding episodes. It was used for an appreciable length of time, probably upward of half a century, based on the AMS radiocarbon samples obtained from features, with most activity occurring in the second quarter of the twelfth century (see Chapter 21). While several fairly well defined buildings were encountered on the highest part of this stage, notably Structures 1, 2a, 2b, 3, and 4, evidence for several more was also found, in the form of isolated posts, hearths, pits, and portions of wall lines and prepared floors, or masses of architectural debris, as in the case of Structure 5 (see below). Many of the summit features were exceedingly faint, and it is likely that some were missed. Many seemingly isolated features, including fragments of wall trenches or short lines of posts, however, were quite distinct, rendering their partial nature a source of anxiety in the field, where great effort was made to determine whether other features were associated, or were missing in adjacent areas. So many complete and fragmentary floors, filling episodes, and isolated features were found on in Mound A, and particularly on the Stage III summit, that it is clear that the removal and replacement of structures sometimes involved appreciable cutting, leveling, and filling activity. The major fragments of buildings found on the Stage III summit are discussed in turn.

Structure 5

Structure 5 was characterized by a series of stacked floor surfaces overlain by burned architectural debris located under Structure 3 and the northern end of Structure 1 in N49–54, E179–184 (see Figures 09-54, 09-55, 09-58, and 09-60 to 09-63; Tables 09-20 and 09-21). The area was not completely examined before excavation ceased, but appears to represent one or more structures that had been burned. Discolored soils from firing were common amid the charcoal, fired clay/daub, and other debris and on the underlying apparent floor surfaces. Before Structure 3 was placed in the western part of the area, about 15cm of fill had been placed over the debris (see Figures 09-53, 09-61). A small number (n=16) of features, most isolated posts or possible posts, were found in the area, but could not be associated with wall lines (Table 09-20). Some may have originated higher up, on or below the Structure 3 surface. One, Feature 277, was a small mass of slag thought possibly to be a fulgurite, from a lightning strike. A small number of artifacts were associated with Structure 5, but much of the debris laden fill was collected as flotation samples, only a small portion of which were examined (Table 09-21).

The soil chemistry analysis conducted with samples taken from 1m units in the Structure 5 area revealed significant concentrations of phosphorus and iron, particularly in the south central and southeastern corners of the area examined (see Chapter 11, see Figures 11-02 and 11-05). An analysis based on the combined signatures of eight elements revealed similar concentrations, suggesting multiple activities were occurring on the floor (see Chapter 11, Figure 11-08). Given the masses of debris over these floors, the signatures may have been affected by whatever was in this material. Three soil samples from the Structure 5 area were also examined for the occurrence of phytoliths (Chapter 20). Phytoliths were found to be very abundant to moderately abundant in all three samples, and additional analyses were recommended. The first sample (FS 4071) was taken from a mass of fired daub in the southeastern portion of the Structure 5 area in N49, E183 at a depth of ca. 390cmbd. The second sample (FS 4114) came from N52, E183 from a well prepared floor found at a depth of about 390cmbd. A number of scattered posts occurred in the area, suggesting the sample came from inside a building. The third sample (FS 4139) came from a well prepared floor found in N50, E181 at a depth of about 390cmbd, from the same floor as sample FS 4114. Because a series of stacked floors and isolated posts were in this area, which had not been completely removed when the excavations ceased in 2003, it was not possible to determine the locations of



Figure 09-60. Structure 5, an area of fired daub and charred debris in N49-54 E179-184 on the Stage III mound summit, floor at 390cmbd. Note how the debris layer appears to have been cut through in two places on the south side, suggesting wall lines may have been present here.



Figure 09-61. Structure 5, close up of the fired debris layer under Structure 3, in N49-51 E179-181 on the Stage III mound summit, floor at 390cmbd. Masses of daub and charcoal from burned architectural debris was found on the Structure 5 surface.



Figure 09-62. Structure 5, close up of the area of fired daub and charred debris east of Structure 3 on the Stage III mound summit, showing how it may have been cut by possible wall lines. (top) Debris in N49-50 E181-182, floor at 390cmbd. (bottom) Debris in N50-51 E183-184, floor at 387cmbd.



Figure 09-63. Structure 5, close up of the extent of burning evident when the fired daub debris layer was removed in N53-54 E183-184 on the Stage III mound summit. (top) Fired daub and other debris prior to removal, floor at 393cmbd. (bottom) Burned and discolored floor after debris removal, floor at 400cmbd.

Table 09-20. Features associated with Structure 5, Stage III Mound, identified during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex: Type, Measurement, and Provenience Data.

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
277	Slag deposit	12.5	20	17.5	N50	E184	426	Slag deposit, possible lightening strike (fulgurite)
465	Posthole/Postmold	34	41	5	N51	E183	380	Posthole/hollow
472	Filling episode	10	10	3	N53	E179	362	Not a feature
486	Posthole	n/a	n/a	n/a	N51	E182	379	Posthole
487	Posthole	n/a	n/a	n/a	N51	E182	380	Posthole
494	Posthole	15	17	10	N53	E182	384.5	Posthole
508	Posthole?	14	14	n/a	N51	E182	378.5	Possible Posthole
509	Posthole	n/a	n/a	n/a	N51	E182	384.5	Posthole
510	Posthole	11	9	15	N52	E182-183	378	Possible post
511	Filling episode	14	23	4.5	N52	E182	379.5	Filling episode
560	Posthole	11	11	n/a	N51	E182	388	Posthole
562	Posthole	13	13	22.5	N52	E182	382	Posthole
577	Posthole	13	13	12	N51	E183	394	Posthole
578	Posthole?	n/a	n/a	n/a	N50	E183	390	Possible posthole
579	Posthole?	11	16	21	N52	E182	387	Possible posthole
580	Posthole?	13	12	18	N53	E182	390	Possible posthole
	Average	15.00	16.22	14.79			385.19	

these samples, or those from the soil chemistry analyses, in relation to structure wall lines.

Structure 6

A squared structure measuring approximately 4m wide and of undetermined length, and comprised of portions of presumed western, northern, and eastern walls was found about 40cm beneath Structure 1 on the Stage III summit (Figure 09-64, Tables 09-22 and 09-23). The relationship between these wall lines and nearby presumably associated features is uncertain, although given all occurred within about 10cm vertical elevation of one another, the association between them is strongly suggestive. The southern margin of this apparent structure had been removed, probably in clearing associated with summit renewal and perhaps the construction of Structures 2b and later 2a. A well-defined hearth, Feature 440, was found in N45, E181 (see below), slightly off center in the presumed structure, just as the hearth was in Structure 1, which overlaid it. Structure 6 would have measured about 4.0m on a side if squared. No evidence for a prepared floor was evident, even around the well preserved hearth. The wall lines are partial, and while the posts in them are regularly spaced at roughly 20–30cm intervals, some appear to be missing, particularly in the northeastern and northwestern corners. These may have been missed in the field, or lost to disturbance. A wall trench and a number of post features were, however, recognized about 10cm deeper in the deposits on the northern side of the structure that appears to be related to the wall line fragment found here, and that fills in some of the gaps, particularly on the northeastern side. These features are reported separately as the 'lower' northern wall line in Table 09-22, differentiating them from the 'upper' features found higher in the deposits, since there is a chance they belong to an earlier building (Figure 09-64).

The posts in Structure 6 are somewhat more varied in size than those in other structures on the mound summit, averaging ca. 8 to 9, 12, 13.2 to 13.6, and 14.1–14.6cm in diameter in the eastern,

Table 09-21. Artifacts associated with Structure 5, Stage III Mound, recovered during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex.

Object	Count	Quantity	Weight (g)
Historic			
Nail	1		0.52
Prehistoric			
Daub		3 bags	9.11
Debitage *		2 bags	3.89
Flake	20		18.03
Sample, Charcoal		1 bag	467.20
Shatter	42		148.73
Stone, Fire Cracked	11		15.11
Vessel Fragment	57		83.15
Classifiable Native American Pottery			
Baytown Plain, *var. McKelvey*	2		
Mississippi Plain, *var. Shiloh*	9		
Mulberry Creek Cord Marked, *var. Mulberry Creek*	1		
Mulberry Creek Cord Marked, *var. Obion*	1		
Unknown			
Charcoal		5 bags	5.14
Clay, Fired		17 bags	5,925.10
Food, Bone	2		4.12
Fulgurite		1 bag	0.56
Nonfood, Bone	13		1.60
Nonfood, Shell	9		19.91
Plant		1 bag	0.01
Sample, Flotation		153 bags	204,753.89
Sample, Soil		141 bags	41,158.07
Shell		1 bag	1.58
Stone, Unmodified		19 bags	7,732.26

* Unsorted lithics from flotation samples

** No weight recorded

Note: Bag refers to materials from specific proveniences that were typically weighed but not counted. Most of these are materials not suitable for counting.

'upper' and 'lower' northern, and western wall lines, respectively, with interior posts in the upper deposits only slightly larger, at ca. 17cm in diameter (see Table 09-22). Comparatively few artifacts were found associated with Structure 6 (Table 09-23), which may not be altogether surprising if it was one of the earliest built on the Stage III summit, as discussed below. Few artifacts would have been available on the surface to make their way into the fill of the constituent posts.

How far Structure 6 extended to the south is unknown, but at the depth it appeared it was associated with an earlier, slightly smaller summit for the Stage III mound, defined by the IIIg-1 and IIIg-2 fills, and perhaps the IIIg-5b outer surface (see Chapter 10). Structure 6 may have been the major southernmost structure on this reduced Stage III mound at the time it was occupied. Perhaps not coincidentally, at almost exactly the same elevation, 411cmbd, the insertion pit for Feature 375 was found , in N42–43, E179–180, with the post itself in N43, E180 (see Figures 09-46 and 09-48). This large post pit under Structure 2b was a major structural element or more probably marker that appears to have been in place throughout the use of the Stage III summit. The post would have been 2m to the south of the center of Structure 6, and perhaps near its southern wall line or entrance. The post, and Structure 6, may have been the earliest features on this part of the summit.

Feature 440. A well-defined fired clay hearth densely packed with charcoal was found in N45, E181, and appears to have been the slightly offset central hearth for Structure 6 (Figure 09-65). The hearth fill as well as the fired clay of the surrounding basin was floated and yielded cane, pine and oak wood charcoal, and 2 chenopod, 1 sunflower, 2 purslane, 4 sumpweed, and 7 unidentifiable seeds, suggesting food preparation took place here (see Chapter 16, see Table 16-02). A sample of oak wood charcoal from this feature yielded a radiocarbon date of 775±15 B.P. (A.D. 1223–1274 calibrated 2-sigma range; see Table 12-02). The depth of Feature 440,

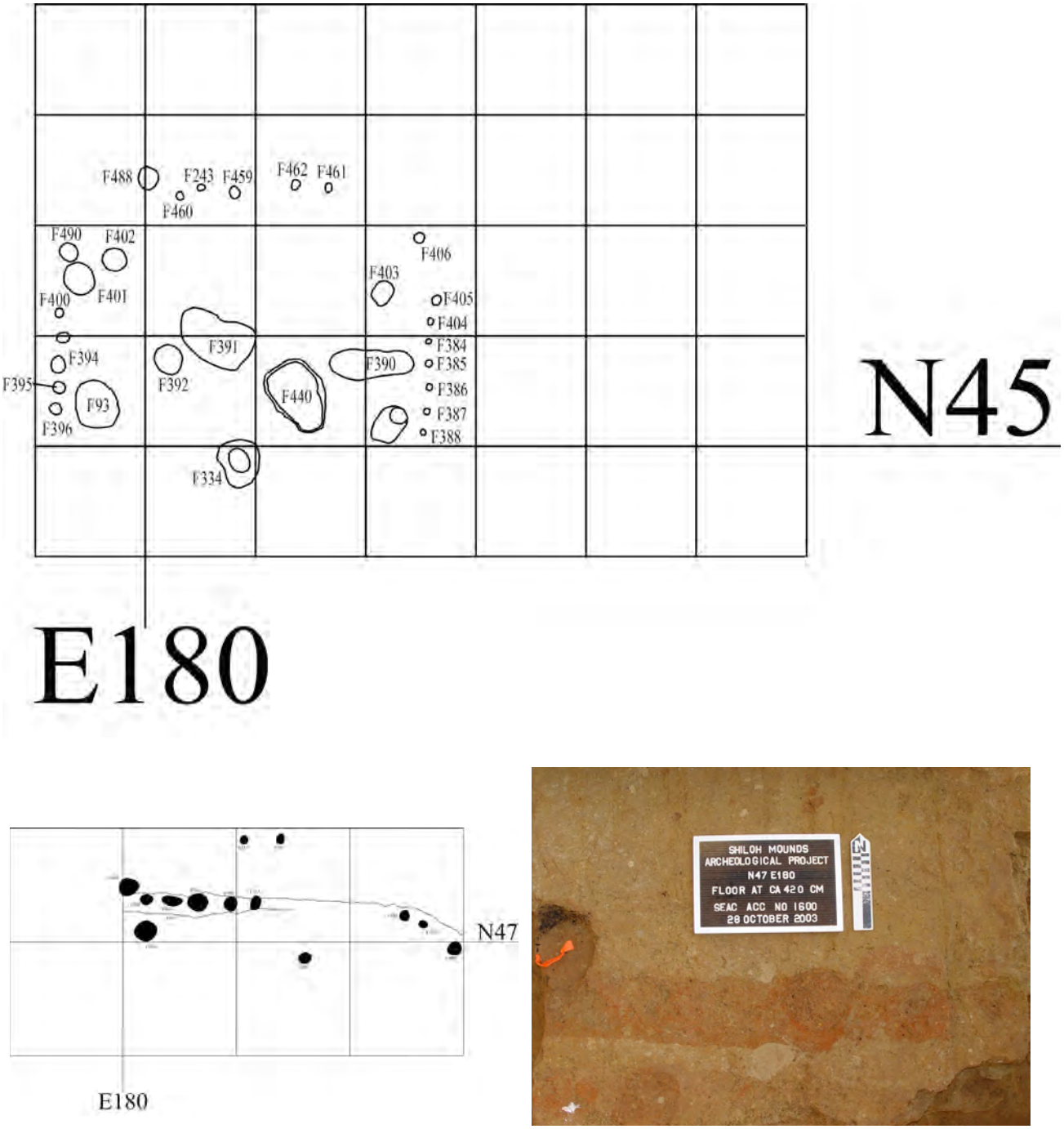


Figure 09-64. Structure 6, Stage III mound, plan view. (top) Features assumed to be all part of the same structure, appearing from ca. 400 to 410cmbd. (bottom left) Features that are probably part of the northern wall line for Structure 6 in plan view, but that were not evident until about 10cm lower in the deposits, at ca. 420cmbd.(bottom right) Portion of the Structure 6 wall trench in N47, E180, when it became much more apparent at 420cmbd.

Table 09-22. Features associated with Structure 6, Stage III Mound, identified during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex: Type, Measurement, and Provenience Data.

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
384	Post in eastern wall line	7	7	19	N45	E182	411	Posthole
385	Post in eastern wall line	7	6	18	N45	E182	411	Posthole
386	Post in eastern wall line	12	10	17	N45	E182	411	Posthole
387	Post in eastern wall line	7.5	6.5	6	N45	E182	411.25	Posthole
388	Post in eastern wall line	6	6	16	N45	E182	411	Posthole
404	Post in eastern wall line	15	14	20	N46	E182	410	Posthole
405	Post in eastern wall line	13	12	22	N46	E182	410	Posthole
406?	Post in eastern wall line	3	3	4	N46	E182	410	Posthole
	Average (posts)	8.81	8.06	15.25			410.66	
459	Post in 'upper' northern wall line	14	14	9.5	N47	E180	404.5	Posthole
460	Post in 'upper' northern wall line	11	10	10	N47	E180	405	Posthole
461	Post in 'upper' northern wall line	9	9	7	N47	E181	406	Posthole
462	Post in 'upper' northern wall line	7	8	7	N47	E181	406	Posthole
448?	Post in 'upper' northern wall line	19	18	19.5	N47	E180	396.5	Posthole
	Average (posts)	12.00	11.80	10.60			403.60	
476	Post in 'lower' northern wall line	12.00	11.00	16.00	N46	E181	424.50	Interior posthole?
480	Post in 'lower' northern wall line	8.00	20.00	40.00	N47	E182	412.00	Posthole
492	Post in 'lower' northern wall line	12.00	11.00	12.00	N47	E182	412.00	Posthole
493	Post in 'lower' northern wall line	15.00	15.00	10.00	N47	E182	412.00	Posthole
502	Post in 'lower' northern wall line	10.00	10.00	9.50	N47	E180	420.00	Post in wall trench
503	Post in 'lower' northern wall line	9.00	17.00	5.00	N47	E180	420.00	Post in wall trench
504	Post in 'lower' northern wall line	16.00	18.00	35.50	N47	E180	420.00	Post in wall trench
505	Post in 'lower' northern wall line	15.00	11.00	8.50	N47	E180	420.00	Post in wall trench
506	Post in 'lower' northern wall line	14.00	11.00	10.00	N47	E180	420.00	Interior posthole?
507	Wall trench	ca. 320	28.00	8.00	N47	E180	420.00	Wall trench

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
515	Post in 'lower' northern wall line	12.00	8.00	6.00	N47	E180	420.00	Post in wall trench
	Average (posts)	13.60	13.20	15.25			418.23	A
394	Post in possible western wall line	12	15	15	N45	E179	401	Post in probable wall line
395	Post in possible western wall line	15	15	9	N45	E179	401	Post in probable wall line
396	Post in possible western wall line	11	10	12	N45	E179	401	Post in probable wall line
399	Post in possible western wall line	12	12	23	N45	E179	401	Post in probable wall line
400	Post in possible western wall line	10	10	30	N46	E179	401	Post in probable wall line
401?	Post in possible western wall line	25	27	17	N46	E179	401	Post in probable wall line
490?	Post in possible western wall line	14	13	12.75	N46	E179	407.25	Post in probable wall line
	Average (posts)	14.14	14.57	16.96			401.89	
334	Interior post?	10	12	7	N44	E180	408	Reddish stain near F440, possible post
389	Interior post?	25	26	29	N45	E182	411	Posthole/pit
390	Shallow pit or filling episode	23	35	9	N45	E182	411	Possible pit/filling episode
391	Shallow pit or filling episode	14	34	5	N46	E180	402	Possible pit/filling episode
392	Shallow pit or filling episode	26	23	8	N45	E180	402	Possible pit/filling episode
402?	Interior post?	16	15	39	N46	E179	401	Posthole
403	Possible associated pit feature	12	10	10	N46	E182	410	Posthole/pit?
440	Hearth	66	45	16	N45	E181	410	Fired clay basin
	Average (posts)	17.00	17.67	25.00			406.88	Average all interior features

at 410cmbd, is more than 40cm lower than Feature 200, at 367.5cmbd, the central hearth for Structure 1, which dated to 805±15 B.P. (A.D. 1223–1254, calibrated 1-sigma range). The dates for these features are ca. 30 years apart but when calibrated are essentially contemporaneous, within ca. 20 years, suggesting that the Structures atop Mound A, at least in this area, were built and replaced fairly quickly.

Structure 7

An apparent oval and irregularly shaped structure measuring about 1x1.5m N/S and E/W was found about 40cm beneath Structure 1 in N47–48, E180–181 on the Stage III summit (Figure 09-66, Tables 09-24 and 09-25). The posts were fairly consistent in size, averaging between about 8 and 11cm in diameter, all appeared within a few centimeters of each other in elevation, and extended to about the same depth, roughly 14.5cm. No evidence for wall trenches was observed. This 'structure' may actually be portions of two or three distinct buildings, but this remains unresolved because the underlying deposits were not excavated before the excavations closed down; additionally, only the upper fill of the three posts in the western line was collected. What may be represented by

Table 09-23. Artifacts associated with Structure 6, Stage III Mound, recovered during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex.

Object	Count	Quantity	Weight (g)
Prehistoric			
Debitage *		1 bag	0.70
Sample, Charcoal		3 bags	359.70
Vessel Fragment	14		45.16
Classifiable Native American Pottery			
Baytown Plain, *var. McKelvey*	1		
Mississippi Plain, *var. Shiloh*	9		
Unknown			
Clay, Fired		2 bags	14.44
Plant		2 bags	0.09
Sample, Flotation		64 bags	27,785.69
Sample, Soil		1 bag	167.26
Stone, Unmodified		26 bags	484.66

* Unsorted lithics from flotation samples

** No weight recorded

Note: Bag refers to materials from specific proveniences that were typically weighed but not counted. Most of these are materials not suitable for counting.

this structure is unknown, although given its small size it may be a granary, possibly associated with Structure 6, which occurred at a slightly lower depth to the south.

Structure 8

This structure fragment was defined by a short wall trench or wall trench segment ca. 13–18cm wide and 15cm deep that extended for 2.2m from north to south in N42–44, E179 (Figures 09-67 and 09-68, Tables 09-26 and 09-27). Ten small posts roughly 9.5cm in diameter and ca. 12cm deep were found in the fill of the trench. These were removed separately and the contents floated, while the fill of the wall trench was floated separately, with provenience control maintained by each 1m grid square. What this fragment was associated with was never clear. It may be part of a structure that extended to the west, in the part of the mound that was not excavated. It was located below and just west of the MCBF filling episode, and just above the prepared floor for Structure 2a, which it did not intrude. If not a part of a structure, it may alternatively have been a partition wall placed here for some purpose, perhaps to help screen a portion of the summit, or assist in the construction, perhaps by serving as a barrier to help retain fill.

Structure 9

A short wall trench fragment with small five posts in the fill was present in N 51, E179 about 15–20cm above the Structure 3 floor on the west side of the building (Figure 09-69, Tables 09-28 and 09-29). While a western wall line to Structure 3 was initially thought to have been present in this area, the only part found when the prepared floor was uncovered and removed was the southern 1m, which had five posts present, Features 345, 346, 381, 428, 438. Another post, Feature 450, is much larger and appeared somewhat deeper in the deposits, and appears to be associated with Structure 3. This wall trench/line segment was designated Structure 9, and kept separate from the other features and floor making up Structure 3. The posts in this segment were small, between 6–7cm in diameter, and quite shallow, only averaging about 6cm deep (Table 09-28). Many of the posts in the western part of Structure 3, in contrast, were appreciably larger and ca. 15–20cm deeper in the deposits than these five posts, and most were the same level as the well-defined southern and eastern wall lines for this building (see Table 09-16). Since most of these western posts other than the five in Structure 9 were also larger than typical wall line posts found on the summit, they are more probably internal features. The short wall trench segment may be from an internal partition associated with Structure 3, or a later building that may have extended to the west that was removed, with extensive clearing of fill, prior to the construction of the IIb mound. The Structure 9 wall line, given its somewhat insubstantial nature, may have also been built to retain the thin red silt clay mantle,



Figure 09-65. Feature 440, a clay lined hearth in Structure 6, upon removal of the fill, in N45 E181, on the Stage III mound, floor at 410 cm. (top) Overhead view, (bottom) view to east.

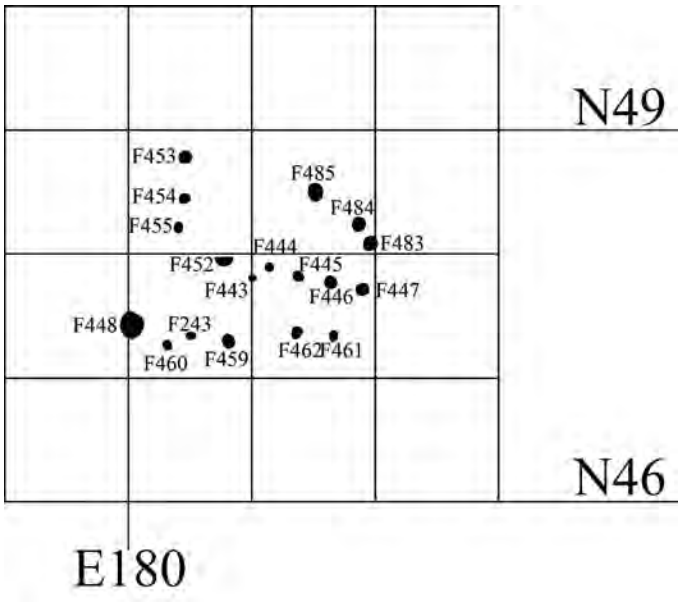


Figure 09-66. Structure 7, Stage III mound, plan view.

designated Zone IIb-2b, placed over Structure. 3 upon its abandonment (see Figure 09-52). In this regard it may have performed a similar function to Structure 8, which may have helped c=bound and retain the MCBF fill.

Stage IV Features and Construction Details

The Stage IV 'mound' and indeed the underlying Stages V through VII construction episodes were actually a series of more or less level fills across the area the Stage III mound was placed upon, perhaps in preparation for that construction (see Figure 09-01). Whether smaller mounds were present inside the bulk of Mound A, either paired smaller mounds atop the Stage III surface, or smaller single mounds was not determined by the excavations. The efforts from 2001–2003 were directed to moving into and down through the mound, primarily from the south and top. By September 2003, approximately 4.2m of fill had been removed below the summit at the south end, encompassing all but the lowest part of the Stage III mound in this area, and we were moving into the mound about 1m every week or so. However, it had become clear that funding for additional field seasons would not be forthcoming, so a decision was made to obtain excavation samples from deeper within the mound. Since structures or structure fragments were found to be nearly continuous in the upper ca. 50cm on the Stage III summit, each of which had to be carefully documented, quickly and destructively moving through these features was not an option seriously considered, since there was a chance they would survive a shutdown until investigations could be resumed at some point in the future. Accordingly, effort focused on two areas on the southern side. The first was under the portion of the summit already removed, in nine 1m units opened in N42–44, E180–182; and N43, E185–186. These were excavated in arbitrary levels, documenting the base of the Stage III mound and portions of the Stage IV and V construction episodes. The second area was along the bluff edge on the south side, beginning near the base of the Stage III mound and running north for about 10m, underlying the parts of the Stages I–III mounds already removed, and in an area that we assumed would be lost early to erosion. As documented in Chapter 3, using a backhoe a ca. 10m trench from ca. N35 to N44 and just east of the E185 gridline was opened to a depth of 2.5m below the existing surface, or about 6.5m below the summit (Figures 09-70 and 09-71; see Figure 03-80). Multiple filling episodes and features such as hearths, wall trenches, posts, and prepared floors, together with well-preserved charcoal, shell, and animal bone were visible in the profile in the Stages IV through VII mounds, most in Stages V through VII. The deposits are described by the project geoarcheologist in Chapter 10; in what follows the cultural features that were encountered and sampled are discussed.

Stage IV was located from 4.5–4.6 to 4.7–4.9m below the summit surface (ca. 610–620 to 620–640cmbd) where it was examined on the south end of the mound (see Figure 09-01, see Chapter 10). Some evidence for structures was observed on the Stage IV surface, which appears to have been laid down to level the area, and cap underlying occupations. It had clearly been occupied for a time prior to the construction of the Stage III mound

Table 09-24. Features associated with Structure 7, Stage III Mound, identified during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex: Type, Measurement, and Provenience Data.

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
443	Post in possible oval/ir-regularly shaped structure	7	7	3	N47	E181	404	Posthole in possible southern wall line
444	Post in possible oval structure	7	8	13	N47	E181	404	Posthole in possible southern wall line
445	Post in possible oval structure	8	9	16	N47	E181	404	Posthole in possible southern wall line
446	Post in possible oval structure	10	10	20	N47	E181	405	Posthole in possible southern wall line
447	Post in possible oval structure	10	9	13	N47	E181	406	Posthole in possible southern wall line
452	Post in possible oval structure	n/a	11	23	N47	E180	397	Posthole in possible southern wall line
	Average (posts)	8.40	9.00	14.67			403.33	
453	Post in possible oval structure	9	10	n/a	N48	E180	398	Posthole in possible western wall line
454	Post in possible oval structure	9	10	n/a	N48	E180	400	Posthole in possible western wall line
455	Post in possible oval structure	8	9	n/a	N48	E180	401	Posthole in possible western wall line
	Average (posts)	8.67	9.67				399.67	
483	Post in possible oval structure	10	12	11.5	N48	E181	402	Posthole in possible northeast wall line
484	Post in possible oval structure	13	13	15	N48	E181	400.5	Posthole in possible northeast wall line
485	Post in possible oval structure	9	8	17	N48	E181	399.5	Posthole in possible northeast wall line
	Average (posts)	10.67	11.00	14.50			400.67	

over it. A total of 11 features were found in Stage IV, 10 on the south side of the mound; the eleventh, Feature 69, was an isolated post on the north side of the mound in N64, E181 at a comparable depth, although its association with any stage must be considered tentative, given how little excavation occurred in this area (Table 09-30). A wall trench with four associated posts, Features 581 to 585, was found in N43, E180, and a large post and possible pit, Feature 559, was located just to the east (Figure 09-72). While their elevation indicates these features belong in Stage IV, since the unit they were found in was three meters west of the 1m units removed along the bluff edge, with no intervening excavations allowing profile evaluation, they could also be associated with Stage V, which also yielded similar post and wall line features in the units in that stage opened to the east (see below). In N38–39, E185, in the profile formed by the four contiguous 1m units opened by the bluff edge, a reddish brown fill designated Zone IVd was observed on the top of Stage IV (Figure 09-71). No evidence for a prepared floor or features were associated with it, although upon exposure it was clear burning had taken place in the area, although there does not appear to have been a prepared structure floor present (Figure

Table 09-25. Artifacts associated with Structure 7, Stage III Mound, recovered during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex.

Object	Count	Quantity	Weight (g)
Prehistoric			
Vessel Fragment	1		1.16
Unknown			
Sample, Flotation		12 bags	86.56
Sample, Soil		1 bag	220.38
Stone, Unmodified		6 bags	76.11

* Unsorted lithics from flotation samples

** No weight recorded

Note: Bag refers to materials from specific proveniences that were typically weighed but not counted. Most of these are materials not suitable for counting.

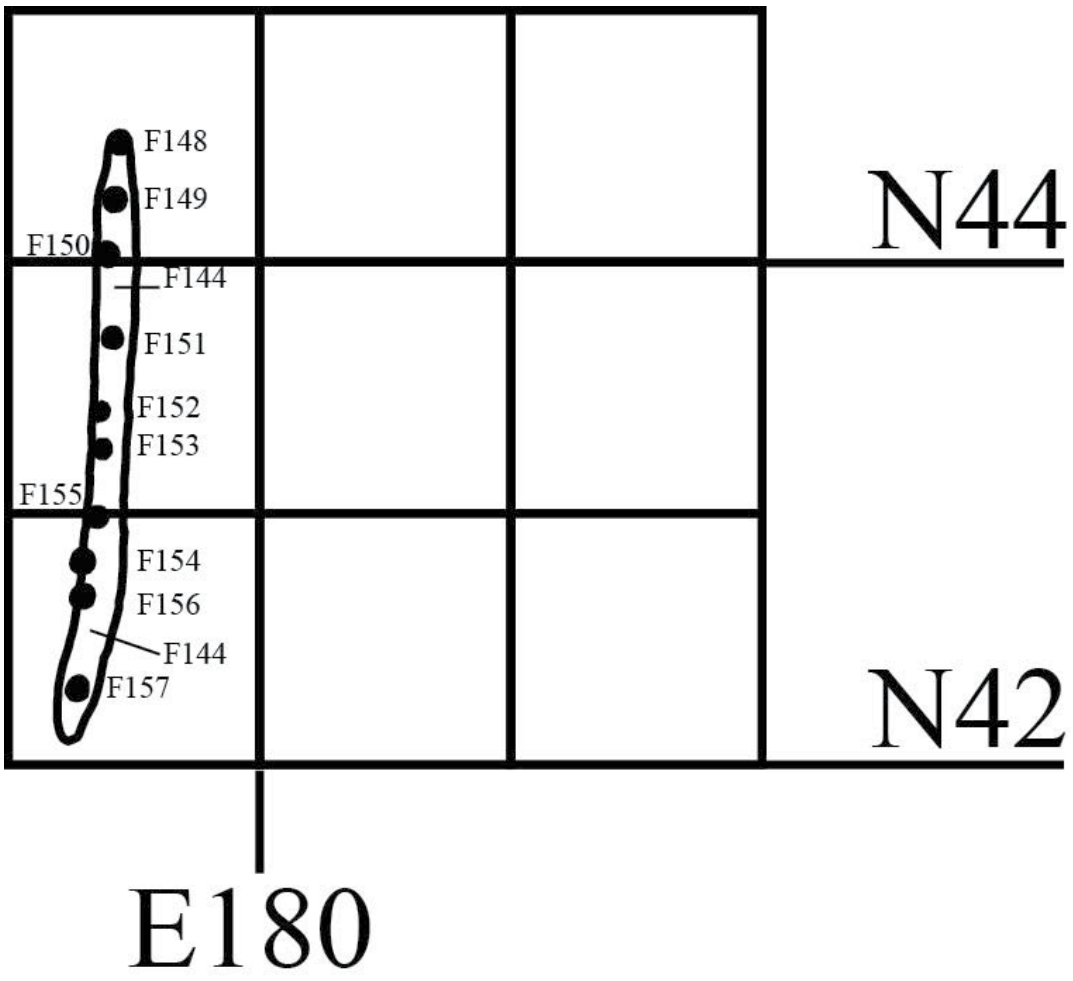


Figure 09-67. Structure 8, a wall trench segment in N41–43 E179, Stage III mound, plan view.



Figure 09-68. Structure 8, upon detection and removal, in N42-44 E179, on the Stage III mound summit. (top) The wall trench upon excavation, viewed from overhead. (bottom) The wall trench in profile, showing how the base overlay the red clay prepared surface for Structure 2a by a few centimeters.

Table 09-26. Features associated with Structure 8, Stage III Mound, identified during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex: Type, Measurement, and Provenience Data.

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
144	Wall Trench	240	18	ca. 15	N42-44	E179	351	Well defined wall trench fragment
148	Post in wall trench	10	10	16	N44	E179	346	Post in wall trench
149	Post in wall trench	10	8	12	N44	E179	346	Post in wall trench
150	Post in wall trench	8	7	12	N44	E179	346	Post in wall trench
151	Post in wall trench	10	9	17	N43	E179	346	Post in wall trench
152	Post in wall trench	10	9	14	N43	E179	346	Post in wall trench
153	Post in wall trench	10	11	5	N43	E179	346	Post in wall trench
154	Post in wall trench	10	10	6	N42	E179	362	Post in wall trench
155	Post in wall trench	8	8.5	12	N42	E179	362	Post in wall trench
156	Post in wall trench	9	10	14	N42	E179	362	Post in wall trench
157	Post in wall trench	10	9	14	N42	E179	362	Post in wall trench
	Average (posts)	9.50	9.15	12.20			352.27	Average depth for all features

Table 09-27. Artifacts associated with Structure 8, Stage III Mound, recovered during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex.

Object	Count	Quantity	Weight (g)
Prehistoric			
Debitage *		3 bags	7.17
Stone, Fire Cracked		1 bag	68.00
Vessel Fragment	12		4.32
Unknown			
Nonfood, Bone	1		2.27
Sample, Flotation		28 bags	996.20
Sample, Soil		1 bag	222.85
Stone, Unmodified		14 bags	1,150.36

* Unsorted lithics from flotation samples

** No weight recorded

Note: Bag refers to materials from specific proveniences that were typically weighed but not counted. Most of these are materials not suitable for counting.

09-73; (see Chapter 10). Taken together, the data indicate that buildings and burned areas were atop Stage IV in this part of the site, although resolution of details about their size and nature must await more fieldwork. The fill from Feature 559 was floated and yielded 1 blueberry, 1 chenopod, and 1 sedge seed, and 2 hickory nutshell fragments (see Chapter 16, see Table 16-02). The numbers of artifacts, particularly preserved paleosubsistence remains of shell and bone, picked up appreciably in this and succeeding levels, indicating preservation was better deeper in the mound, and the fills used in them included appreciable midden debris (Tables 09-01, 09-31). A fired surface that appears to be on the top of the Stage IV construction episode was found in N35, E180 below a series of washing episodes at the base of the Stage III mound (see Figure 03-23). A charcoal sample collected from this surface in 2001 yielded an AMS determination of 960+40 B.P. uncalibrated Beta 161308), which is about a century earlier than expected; an analysis of all of the AMS dates obtained from the mound during the 2001 to 2004 fieldwork indicates it is a statistical outlier (see Chapter 21).

Stage V Features and Construction Details

Stage V was located from ca. 4.7–4.9 to 5.6–5.7m below the summit surface (ca. 630–640 to 720–730cmbd) where it was examined in the southeastern portion of the mound area (see Figure 09-01, Table 09-32; see Chapter 10). Evidence for prepared floors, structures, and burning episodes was common on the upper surface of Stage V. A prepared floor and at least one probable fired hearth or surface were clearly indicated in the profile formed by the four contiguous 1m units

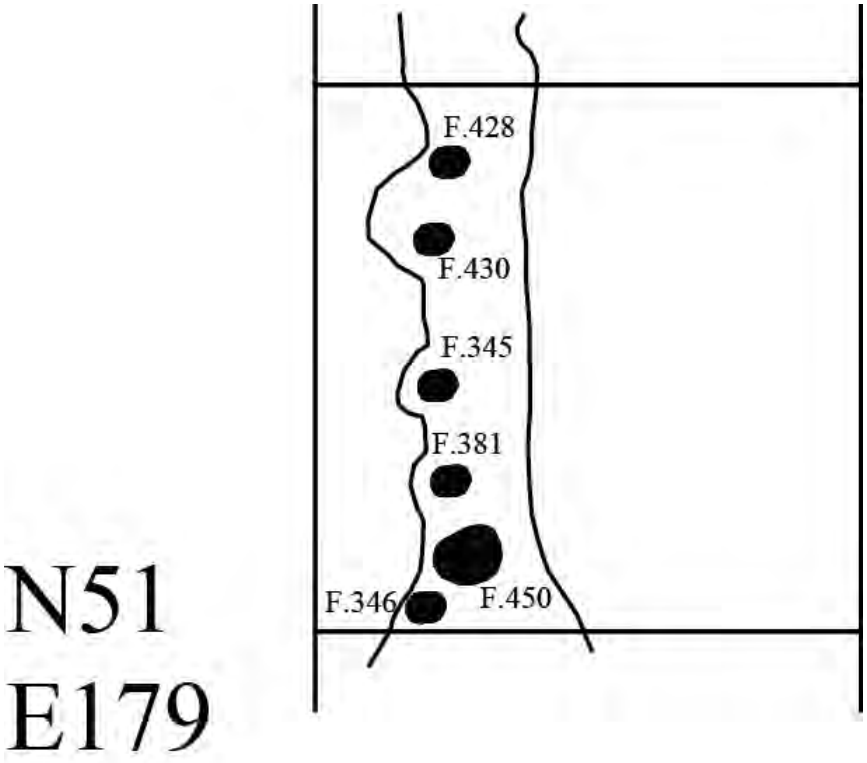


Figure 09-69. Structure 9, a wall trench segment in N51 E179, Stage III mound, plan view. Originally thought to be a part of Structure 3, this appears instead to represent a separate construction episode.

Table 09-28. Features associated with Structure 9, Stage III Mound, identified during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex: Type, Measurement, and Provenience Data.

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
345	Post	9.5	8	6	N51	E179	347	Posthole in possible wall trench
346	Post	7.5	7	9	N51	E179	346.5	Posthole in possible wall trench
381	Post	4	4	9	N51	E179	347	Posthole in possible wall trench
428	Post	n/a	n/a	3	N51	E179	347	Posthole in possible wall trench
430	Post	n/a	n/a	4	N51	E179	347	Posthole in possible wall trench
	Average	7.0	6.3	6.2			346.9	

Table 09-29. Artifacts associated with Structure 9, Stage III Mound, recovered during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex.

Object	Count	Quantity	Weight (g)
Sample, Flotation		7 bags	7.97
Sample, Soil		1 bag	243.19
Stone, Unmodified		2 bags	8.43

* Unsorted lithics from flotation samples

** No weight recorded

Note: Bag refers to materials from specific proveniences that were typically weighed but not counted. Most of these are materials not suitable for counting.



Figure 09-70. The Stages IV through VII level construction episodes in the E185 line profile in N38-44, the backhoe trench opened on the southeast side of Mound A in 2003. Note the floors and hearths in the fill, indicating structures were atop these earlier stages. Five 1m units were subsequently opened along this line, in N37-40 and N42 E184, with the first four taken to subsoil. The green strings were established using the site grid to facilitate profile drawing, photography, and subsequent excavation.



Figure 09-71. The Stages IV through VII construction episodes in the E184 line profile in N37-40 on the southeast side of Mound A, after the removal of four contiguous 1m units in 2003 and 2004, floor at ca. 790cmbd. The posts at the base of the mound in the foreground in front of the photo board extend into the underlying subsoil.

opened by the bluff edge (Figure 09-71). A total of 23 features were found in Stage V, 19 on the south side of the mound; the final four, Features 61–65, were a line of posts on the north side of the mound in N65, E181 at ca. 660cmbd, at a comparable depth to the features in Stage V on the south side (Table 09-30). Two and possibly three wall lines with internal posts appear to be associated with this stage, two in N43, E180 (Figures 09-72, 09-74), and one in N42, E184 (Figure 09-75). The two wall lines in N43, E180–181, encompassing Features 581–585 on the west side of the unit and Features 594–597 on the south side, were at right angles to one another, and may reflect the corner of a structure. The wall line on the west side, however, was about 18cm in elevation higher and may be associated with the Stage IV mound, as noted above. If related, all three may be part of a common larger structure; the two deeper wall trench segments, in N42, E184 and the southern part of N43, E180, are about 4m apart and almost exactly in line and within ca. 7.5cm in absolute elevation, a difference comparable to that observed within and between other wall lines in structures on the summit (Figures 09-73 and 09-74). A red clayey sand and sandy clay thematic mantle (IVa-1) at the base of the Stage IV construction episode visible in Figures 09-70, 09-73, and 09-74 was located immediately above these wall lines and appeared to end at them, suggesting it may have covered, and been a prepared floor or termination episode, for a structure located in this area.

A post that appeared to be in a shallow pit or filling episode, Feature 559, was found at the same level as the upper wall line in N43, E181, and may have been associated with the Stage IV construction episode as noted above (Figure 09-72). If actually related to the wall lines noted in Stage V, it may have been an interior support post for the structure inferred to have been present in this area.

Prepared surfaces, some showing appreciable signs of firing and possible heart areas were associated with the top of the highest filling episode, Ve-1, across the area examined by the bluff edge in Stage V (Figures 09-76 to 09-78). Two possible shallow hearth basins were found together with three posts at a depth of about 655cmbd in N37–39, E184. One of these possible hearths, designated Feature 617, was a shallow basin with charcoal in the fill found in

Table 09-30. Features identified on and in Mound Stage IV during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex: Type, Measurement, and Provenience Data.

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
581	Wall trench	66	17	6	N43	E180	622	Wall trench
582	Posthole	11	10	11	N43	E180	622	Posthole in wall trench
583	Posthole	10	10	10	N43	E180	622	Posthole in wall trench
584	Posthole	10	9	8	N43	E180	622	Posthole in wall trench
585	Posthole	10	8	n/a	N43	E180	622	Posthole in wall trench
	Average (posts)	10.25	9.25	9.67			622.00	Average all features
Other Stage IV Features								
69	Possible posthole	16	10	n/a	N64	E181	610	Post in base of wall trench in profile
254	Posthole	n/a	n/a	n/a	N38	E179	613.5	Probable Posthole
255	Posthole	26	28	n/a	N38	E180	613.5	Probable Posthole
516	Filling episode	n/a	n/a	n/a	N43	E180	615.75	Filling episode
559	Post in pit	20	20	54	N43	E181	618	Post in large pit or filling episode
572	Posthole and postmold	17	23	29.25	N38	E184	631	Posthole
	Average (posts)	19.75	27.00	41.63			616.96	Average all features

N37, E184 at a depth of ca. 655cmbd atop the Stage Vc-1 fill (Figure 09-76). A second possible hearth was found in N39, E184 at the same depth (Figure 09-77). It was probably part of a structure of some kind, whose presence is indicated by the prepared surface and two posts, Features 615 and 616, found at ca. 660cm in N39, E184 (Figure 09-78). The fill from the Feature 617 basin was floated and yielded 7 unidentified seeds, cane, and white oak wood charcoal (see Chapter 16, see Table 16–02). A sample of the oak wood charcoal yielded a AMS radiocarbon date of 810±20 B.P. (A.D. 1220–1253 [68.2 percent], calibrated 1-sigma range); at two standard deviations there is a low probability that the date is slightly earlier (A.D. 1187–1200 [3.0 percent], A.D. 1206–1269 [92.4 percent], see Chapter 12, 21). The date is roughly contemporaneous with structures and features atop the Stage III mound, suggesting the Stage V and possibly Stage IV construction activity occurred fairly quickly, perhaps only a short time before the main work on the Stage III mound. An analysis of the AMS dates obtained during the 2001 to 2004 fieldwork suggests these stages were erected in the early thirteenth century (see Chapter 21).

The lower part of the Stage V fill, designated Stages Va and Vb-1, as well as the underlying Stage VI and VII fills contained appreciable quantities of preserved paleosubsistence remains, first encountered at a depth of about 646cmbd in N44, E180–181 (Figure 09-79; Tables 09-01, 09-33). The well preserved subsistence remains included both shell and bone, documented in Chapters 17 and 18 in the chapters by Sichler and Parmalee.

Four sherds from the Stage V or possibly the upper part of the Stage VI mound were submitted for thermoluminescence dating from N38, E184, from ca. 714 to 753cmbs, and four dates were obtained (see Chapter 14, Table 14-04). Three dates were on sherds of Mississippi Plain, var. *Shiloh*, and were A.D. 610±164, UW1226, A.D. 1005±58, UW1231, and A.D. 1068±75, UW1230. A fourth date, A.D. 869±184, UW1225, was obtained on a sherd of Mulberry Creek Cord Marked, var. *Mulberry Creek*. As discussed in Chapter 14, the early date appears aberrant for shell tempered pottery use locally, while the latter three dates are in rough agreement with the period when both shell and grog tempered pottery may have been in use, and when the lower stages of the mound were constructed (see Chapters 12, 21).

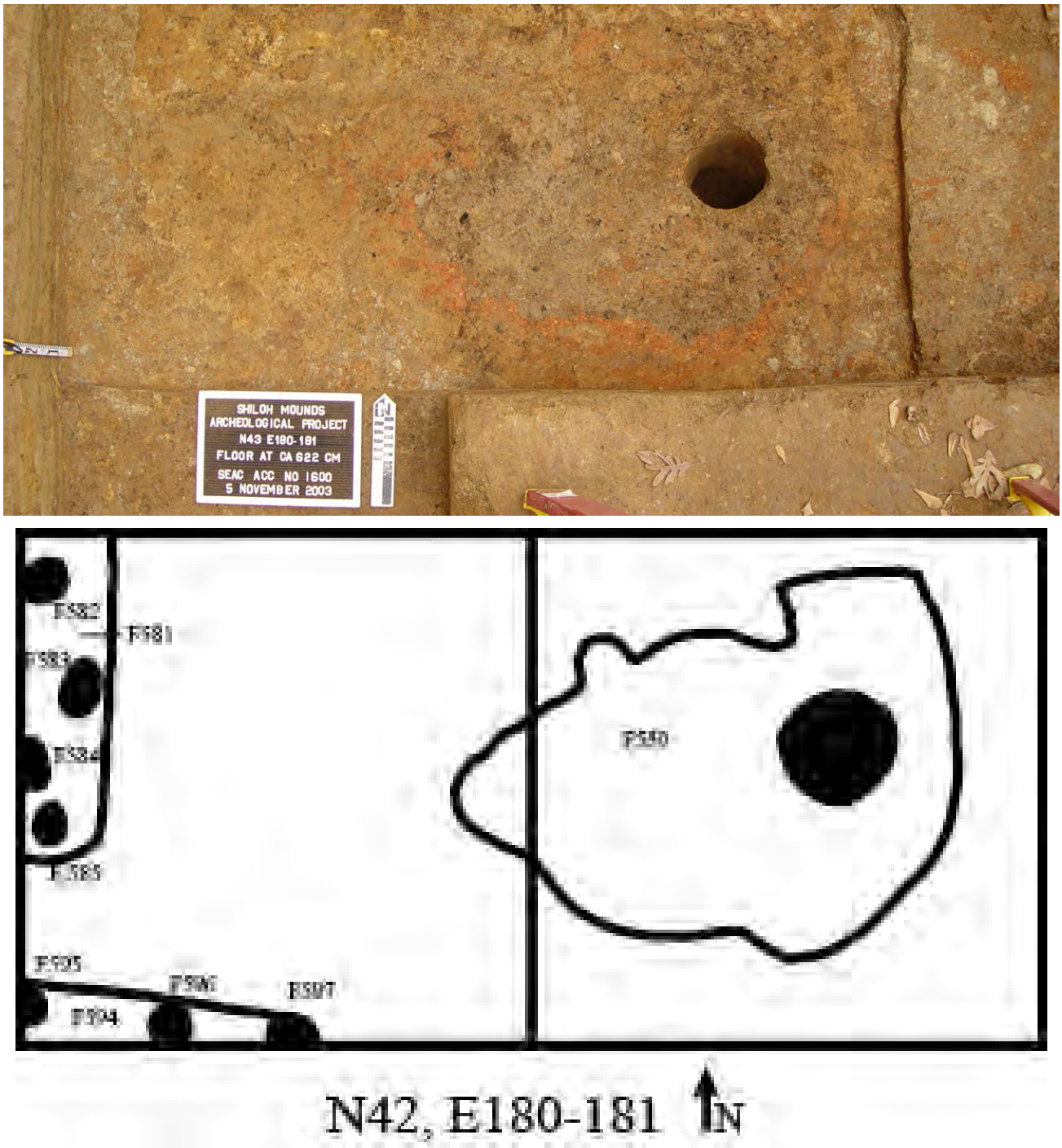


Figure 09-72. Features in the Stage IV or possibly Stage V construction episode in N43 E180-181. (top) Floor at 622cm, showing Feature 559, a large post in an apparent clay lined pit. A faint wall trench, Feature 581, is visible against the west wall profile; four posts, Features 582-585, were subsequently found in this trench. The wall trench in the southwest corner of N43 E180, which appeared 18cm deeper (see Figure 09-73), is not yet apparent. (bottom) Plan map of the features in N43 E180-181 from 622-640cmbd.



Figure 09-73. Reddish brown fill, designated Zone IVd, atop the Stage IV construction episode in N38 E184, showing signs of discoloration from firing, particularly to the northeast by the photo board; floor at ca. 640cm.

Stage VI Features and Construction Details

Stage VI was located from 5.6–5.7 to 6.2–6.3m below the summit surface (ca. 720–730 to 780–790cmbd) at the southeastern part of the mound area, although the basal depth varied somewhat over the area examined (see Figure 09-01; see Chapter 10). Comparatively few features were found associated with the stage, although two prepared surfaces and large quantities of artifacts were present in the fill, including well preserved paleosubsistence remains (Tables 09-01, 09-34 and 09-35). A burned surface that might have been a prepared floor, designated VIc-4, was found at the top of the VIc-1 fill in

Table 09-31. Artifacts recovered on and in Mound Stage IV during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex.

Object	Count	Quantity	Weight (g)
Prehistoric			
Blade	1		1.01
Core	1		6.21
Flake	100		121.61
Shatter	40		123.20
Stone, Fire Cracked	10		14.73
Tool, Flake	1		5.39
Vessel Fragment	191		400.68
Classifiable Native American Pottery			
Baytown Plain, *var. McKelvey*	7		
Bell Plain, *var. unspecified*	1		
Mississippi Plain, *var. Shiloh*	28		
Mulberry Creek Cord Marked, *var. Mulberry Creek*	13		
Mulberry Creek Cord Marked, *var. Obion*	3		
Unknown			
Fossil	3		5.71
Nonfood, Bone	126		27.65
Nonfood, Shell	98		218.90
Nut	6		0.76
Plant		1 bag	0.01
Sample, Flotation		20 bags	745.03
Seed	1		0.10
Shell		1 bag	11.47
Stone, Manuport		2 bags	4.02
Stone, Unmodified		16 bags	20,026.52

* Unsorted lithics from flotation samples

** No weight recorded

Note: Bag refers to materials from specific proveniences that were typically weighed but not counted. Most of these are materials not suitable for counting.

N39–40, E184, and a compact prepared surface that appears to be related was found 1m to the south at the same level in N38, E184 (Figures 09-01, 09-80, and 09-81; see Chapter 10). No features were observed intruding into either of these surfaces, although given the concave zone of fired soil under it apparent in the profile, the surface in N40, E184 was a location where intense burning took place (Figures 09-01, 09-80; see Chapter 10). The surface in N38, E184 did not show similar evidence for intensive burning. A sample of hickory nutshell charcoal from the dark burned surface in N39, E184, FS 4696 was collected, and yielded a radiocarbon date of 975±15 B.P. (A.D. 1021–1043 [52.3 percent], A.D. 1106–1118 [15.9 percent], calibrated 1-sigma ranges; see Chapter 12).

A second prepared surface was found in N37, E184 at a depth of about 760cmbd, and again in N40, E184 at a depth of 776cmbd, both at the top of the VIa-1 fill, which dips to the north in this area (Figures 09-82 and 09-83; see Figure 09-01). The surface was burned in the southern two thirds of N37, E184, but ended abruptly; a wall trench was located about 50cm to the north in the next unit

Table 09-32. Features identified on and in Mound Stage V during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex: Type, Measurement, and Provenience Data.

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
61	Posthole/root?	8	6	10	N65	E181	650	North slope of mound. Possible root stain.
63	Posthole	16	15	5	N65	E181	660	North slope of mound. One of three probable posts in a line.
64	Posthole	17	15	5	N65	E181	660	North slope of mound. One of three probable posts in a line.
65	Posthole	15	n/a	10	N65	E181	660	North slope of mound. One of three probable posts in a line.
	Average (posts)	16.00	15.00	6.67			657.50	Average all features
586	Posthole	9	8	36	N42	E184	645	Posthole in wall trench
587	Posthole	7	7	28	N42	E184	645	Posthole in wall trench
588	Posthole	9	10	28	N42	E184	645	Posthole in wall trench
589	Posthole	8	9	28	N42	E184	645	Posthole in wall trench
591	wall trench	n/a	n/a	n/a	N42	E184	652	Wall trench
592	Possible posthole	36	18	9	N42	E184	652	Possible Posthole
593	Posthole	16	24	3	N42	E184	652	Possible Posthole
	Average (posts)	14.17	12.67	22.00			648.00	Average all features
594	Wall Trench	n/a	n/a	n/a	N43	E180	637.5	Wall trench
595	Posthole	7	7	37	N43	E180	637.5	Posthole (hollow) in wall trench
596	Posthole	8	6	37	N43	E180	637.5	Posthole (hollow) in wall trench
597	Posthole	9	n/a	37	N43	E180	637.5	Posthole (hollow) in wall trench
	Average (posts)	8.00	6.50	37.00			637.50	Average all features
561	Posthole	23	19	34	N40	E184	646	Posthole
590	Posthole	17	20	32.5	N38	E184	651	Posthole
598	Posthole	n/a	n/a	n/a	N43	E181	662	Posthole
599	Posthole	n/a	n/a	n/a	N43	E181	662	Posthole
600	Posthole	n/a	n/a	n/a	N43	E181	662	Posthole
615	Post	5	5	4	N39	E184	ca. 660	Posthole
616	Post	10	11	8	N39	E184	ca. 661	Posthole
617	Hearth?	n/a	n/a	2	N37	E184	ca. 663	Possibly associated with Features 615-616.

(Figure 09-84). This lower surface appeared eroded in N40, E184, and may be an area outside of a structure, if the wall line and burned surface to the south in N37–38, E184, which are slightly higher, was the inside. A sample of charred monocot stem or cane (*Arundinaria gigantea*) charcoal from the thin burned surface at a depth of ca. 760cm in N37, E184, FS 4706, was collected and yielded a radiocarbon date of 835±15 B.P. (A.D. 1179–1225 [68.2 percent], calibrated 1-sigma range; A.D.



Figure 09-74. Features 594-597, a wall trench with three hollow posts that had not filled upon covering, in the Stage V construction episode in N43 E180-181; floor at 640cmbd. Evidence for washing episodes is evident on the north side of the trench.

1170–1255 (95.4%), calibrated 2-sigma range; see Chapter 12). The date suggests construction near the base of the mound began in the eleventh or early to mid-twelfth centuries A.D. something also supported by an analysis of all of the dates collected during the 2001 to 2004 fieldwork (Chapter 21).

A wall trench with four post impressions found at the base, Features 608 to 612, which extended into the underlying subsoil, was found in N38, E184, and appears to have begun at the same depth as the VIa-1 upper surface, or perhaps even higher, in the VIc-1 fill (Figure 09-84, 10-36, see Chapter 10). The wall trench is visible in the profile drawing and photographs, and from the latter appears to originate at the top of the VIc-1 fill. The post stains did not extend below the bottom of the trench, indicating they were resting on its base. The fill from these features was floated, yielding carbonized plant remains from a number of species, including 1 maize cupule and 1 kernel, 4 hickory and 1 unidentified nutshell fragments, 3 *Chenopodium* seeds, and 8 unidentified seeds (see Chapter 16, see Table 16-02). A sample of hickory nutshell charcoal from Feature 612 yielded a radiocarbon date of 970±15 B.P. (A.D. 1022–1044 [43.6 percent], A.D. 1103–1119 [20.9 percent], and A.D. 1143–1147 [3.7 percent], calibrated 1-sigma ranges; see Chapter 12). These dates indicate wall trench structures were present in the vicinity of the mound in the eleventh or early twelfth century.

Eight sherds from the Stage VI mound area were submitted for thermoluminescence dating and eight dates were obtained (see Chapter 14, see Table 14-04). Fives dates from the bottom of the stage fill (or the top of the Stage VII fill), from N40, E184, from ca. 768 to 783 cmbs, were A.D. 870 ± 159, UW1221, and A.D. 993 ± 75, UW1222, both on sherds of Mississippi Plain, var. *Shiloh*; A.D. 984 ± 89, UW1235, on Bell Plain, var. *unspecified*; and A.D. 979 ± 61, UW1223, and A.D. 882 ± 142, UW1224, on Mulberry Creek Cord Marked, var. *Mulberry Creek*. Three dates from near the top of the mound stage, in N38, E184, from ca. 751 to 784 cmbs, also in either Stage VI or VII, were A.D. 837 ± 153, UW1232 and A.D. 1000 ± 64, UW1233 on two sherds of Mississippi Plain, var. *Shiloh*, and A.D. 503 ± 118, UW1234, on a sherd of Baytown Plain, var. *McKelvey*. While the thermoluminescence dates reflect when the sherds were last fired, and not the age of the mound stages themselves, seven of the eight dates indicate the stage was likely used in the ninth and tenth centuries, roughly a century or so earlier then the range obtained from AMS radiocarbon dating at the mound (see Chapters 12, 21).

Stage VII Features and Construction Details

Stage VII was located from ca. 6.2–6.3 to 6.5–6.6m below the summit surface (ca. 780–790 to 800–820cmbd) and rested on subsoil in the area at the south end of the mound (see Figure 09-01, see Chapter 10). Comparatively fewer artifacts and paleosubsistence remains were found in the fill than in the overlying Stages V and VI fills, and it lacked the dark organic staining of these higher levels, suggesting far less midden went into, perhaps because when it was erected the site was newly occupied (Tables 09-01, 09-36, and 09-37). Nine posts were found at the base of the stage intruding into subsoil, Features 602–607 and 618–620, most in a single wall line that appears composed of individually set posts, since no evidence for a wall trench was found

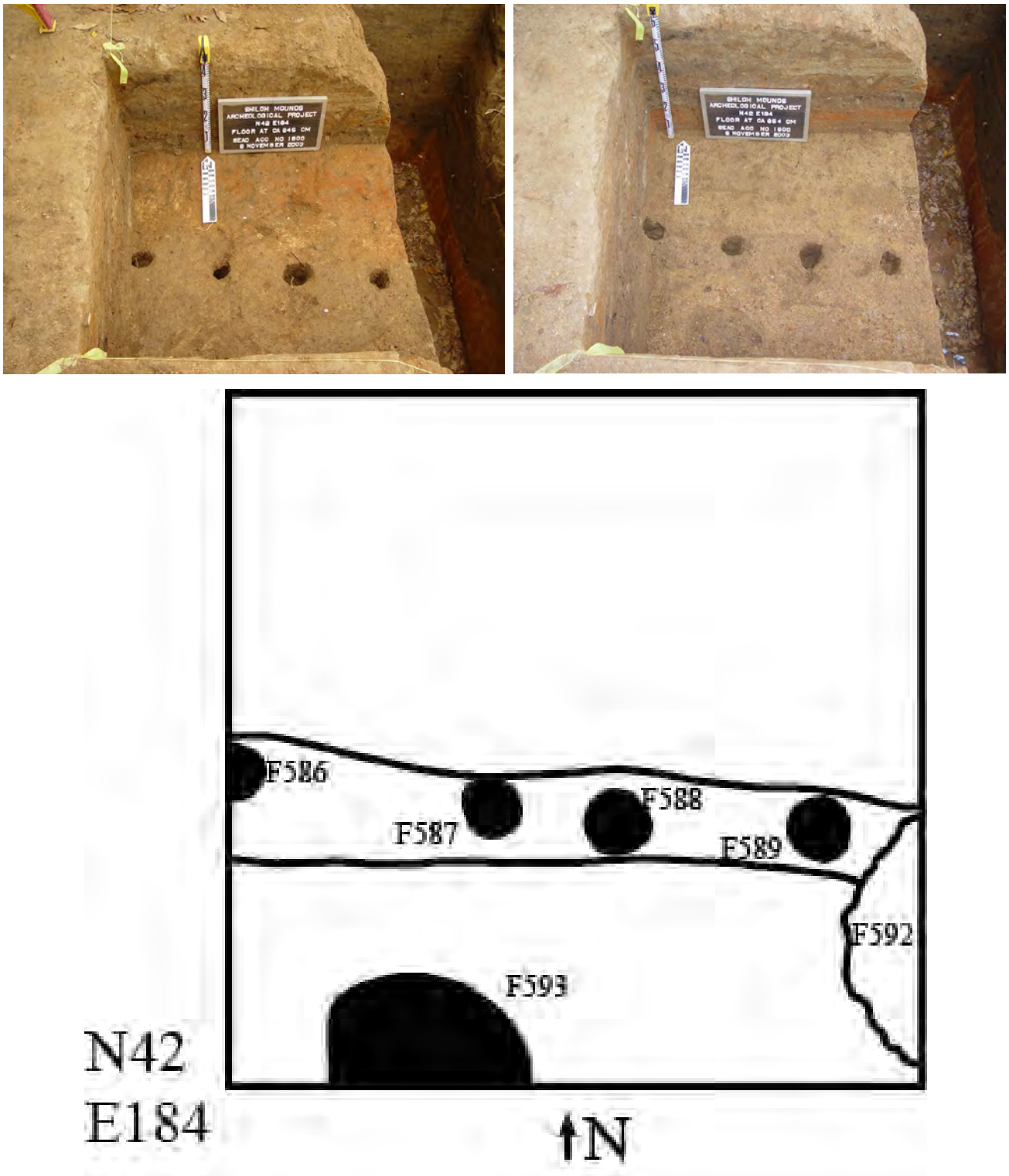


Figure 09-75. Features 586-589, 592, and 593, a wall trench with four posts, and two faint pit features, in the Stage V construction episode in N42 E184, overhead and plan views. (top left) Overhead view with floor at 645cmbd, and at 654cmbd (top right). Note the red clayey sand and sandy clay thematic mantle (IVa-1) at the base of the Stage IV mound on and above the surface yielding the features in the overhead view and deeper profile. (bottom) Pan view of the features in N42 E184.





Figure 09-76. Feature 617, a shallow basin with charcoal in the fill found in the Stage V construction episode in N37 E184; floor at ca. 655cmbd. (top) Overhead view showing the feature on and intruding a fired surface, (bottom) View to the west, showing the feature in relation to the orange-red surfaces defining the tops of the Stages IV and V summits in the profile, at ca. 40 and 55cm below the ground surface in the excavation area.



Figure 09-77. A zone of ash and intense burning, possibly a hearth area, atop the Stage Vc-1 fill in N39 E184. (top) Upon exposure at 655cmbd. (bottom) Upon removal at 657cmbd.



Figure 09-78. Prepared surfaces with signs of burning on the upper part of the Stage V construction episode. (top) At 655cmbd in N38 E184. (bottom) At 660cmbd in N39 E184, below the possible hearth illustrated in Figure 09-77. Two posts, Features 615 and 616, are at the same level and intrude the surface.



Figure 09-79. Shell debris in the lower part of the Stage V construction episode in N44 E180-181, at the base of the Vc-1 fill; floor at 646cmbd.

Table 09-33. Artifacts recovered on and in Mound Stage V during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex.

Object	Count	Quantity	Weight (g)
Prehistoric			
Bead	1		0.58
Blade	1		0.60
Core	10		330.46
Daub		7 bags	309.48
Debitage *		10 bags	124.31
Flake	317		326.34
Point, Projectile	2		1.68
Shatter	116		378.74
Stone, Fire Cracked	38	6 bags	745.01
Stone, Worked	1		50.25
Tool, Core	2		220.47
Tool, Flake	7		13.06
Vessel Fragment	1,128		2,399.49
Classifiable Native American Pottery			
Baldwin Plain, *var. Chalk Bluff*	2		
Baldwin Plain, *var. Miller Slough*	3		

Object	Count	Quantity	Weight (g)
Baytown Plain, *var. McKelvey*	48		
Bell Plain, *var. unspecified*	14		
Etowah Stamped	1		
Kimmswick Fabric Impressed, *var. Langston*	5		
Mississippi Plain, *var. Shiloh*	132		
Mulberry Creek Cord Marked, *var. Coffee Landing*	1		
Mulberry Creek Cord Marked, *var. Mulberry Creek*	119		
Mulberry Creek Cord Marked, *var. Obion*	1		
Obion Plain, *var. Obion*	2		
Classifiable Projectile Points			
Hamilton	1		0.81
Madison	1		0.87
Unknown			
Bone		1 bag	0.88
Charcoal		8 bags	32.23
Clay, Fired		13 bags	90.32
Food, Bone	340		448.23
Food, Shell	427		4,505.32
Fossil	4		18.11
Nonfood, Bone	1,066		205.67
Nonfood, Shell	1,198		1,925.49
Plant		6 bags	15.50
Sample, Flotation		40 bags	11,140.11
Sample, Soil		9 bags	2,296.90
Seed	3		0.51
Shell		3 bags	11.15
Stone, Manuport		2 bags	337.00
Stone, Unmodified		28 bags	21,975.32

* Unsorted lithics from flotation samples

** No weight recorded

Note: Bag refers to materials from specific proveniences that were typically weighed but not counted. Most of these are materials not suitable for counting.

(Figure 09-85). Most of the posts were fairly large, averaging about 19–20cm in diameter, which was appreciably larger than the posts found in the wall trench structures higher in the mound. Although they were not detected until 788cmbd, in and at the base of the Stage VII fill, given their size and shallow depth into the subsoil they might have originated higher. Alternatively, given the apparent cutting and filling associated with the preparation of the area, they may have been placed into deposits since removed (see Chapter 10). The fill from these posts was floated, yielding an impressive amount of carbonized plant remains from a number of species, including 42 maize cupules and 5 kernels, 49 hickory and 9 unidentified nutshell fragments, 1 cheno-am, 5 glume, 2 black walnut, 3 maygrass, 3 *Chenopodium* seeds, and 37 unidentified seeds (see Chapter 16, see Table 16-02). A sample of charred hickory nutshell from post Feature 619 yielded a radiocarbon date of 940±15 B.P. (A.D. 1037–1050

Table 09-34. Features identified on and in Mound Stage VI during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex: Type, Measurement, and Provenience Data.

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
608	Wall trench	28	100	44	N38	E184	751	Wall trench in Stage VI that reached to the base of mound
609	Post in wall trench	7	9	3	N38	E184	795	Post impression in bottom wall trench
610	Post in wall trench	10	8	4	N38	E184	795	Post impression in bottom wall trench
611	Post in wall trench	9	7	3	N38	E184	795	Post impression in bottom wall trench
612	Post in wall trench	10	12	2	N38	E184	795	Post impression in bottom wall trench
	Average (posts)	9	9	n/a			n/a	

Table 09-35. Artifacts recovered on and in Mound Stage VI during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex.

Object	Count	Quantity	Weight (g)
Prehistoric			
Bead	1		8.84
Core	3		101.34
Daub		5 bags	110.34
Debitage *		7 bags	436.23
Discoidal	1		8.14
Flake	203		206.46
Hoe	2		122.04
Microblade	1		0.53
Pin	1		4.91
Point, Projectile	1		1.02
Sample		7 bags	497.10
Sample, Charcoal **		2 bags	-
Shatter	87		279.74
Shell, Worked	1		6.46
Stone, Fire Cracked	28	5 bags	735.64
Tool, Flake	3		21.19
Vessel Fragment	1,553		3,377.65
Classifiable Native American Pottery			
Baldwin Plain, *var. Miller Slough*	1		
Baytown Plain, *var. McKelvey*	65		
Baytown Plain, *var. unspecified*	1		
Bell Plain, *var. unspecified*	17		
Etowah Stamped	1		
Kimmswick Fabric Impressed, *var. Langston*	1		

Object	Count	Quantity	Weight (g)
Mississippi Plain, *var. Shiloh*	165		
Mississippi Plain, *var. unspecified*	1		
Mulberry Creek Cord Marked, *var. Mulberry Creek*	199		
Mulberry Creek Cord Marked, *var. Obion*	4		
Classifiable Projectile Points			
Madison	1		1.02
Unknown			
Bone		1 bag	70.39
Charcoal		3 bags	7.44
Clay, Fired		9 bags	5,203.04
Food, Bone	279		331.00
Food, Shell	546		6,979.39
Nonfood, Bone	2,004		289.33
Nonfood, Shell	2,118		2,435.41
Nut	8		1.15
Plant		6 bags	7.73
Sample, Flotation		25 bags	17,187.90
Sample, Soil		3 bags	882.79
Shell		1 bag	796.70
Stone, Unmodified		14 bags	12,608.27
Unidentified		4 bags	376.28

* Unsorted lithics from flotation samples

** No weight recorded

Note: Bag refers to materials from specific proveniences that were typically weighed but not counted. Most of these are materials not suitable for counting.

[12.5 percent], A.D. 1083–1125 [41.2 percent], and A.D. 1137–1152 [14.5 percent], calibrated 1-sigma ranges; see Chapter 12). A second date, on a charred *Zea mays* cupule from post Feature 603, yielded a radiocarbon date of 875±20 B.P. (A.D. 1160–1209, calibrated 1-sigma range). The date is somewhat later than expected for these deposits, although an age as much as century earlier is possible given the 2-sigma ranges (see Table 12-02). The two dates, like those obtained from Stage VI, suggests construction began in the area in the eleventh or early twelfth centuries A.D., a finding in agreement with an analysis of all the AMS dates obtained from the mound during the 2001 to 2004 fieldwork (see Chapter 21; Figure 21-03; Table 21-03).

Three sherds from Feature 605, a filled in post hole about 30cm south of Feature 603 at the base of the mound in N40, E184, from ca. 788 to 811 cmbs, were submitted for thermoluminescence dating (see Chapter 14, see Table 14-04). Three dates were obtained, two on Mulberry Creek Cord Marked, var. *Mulberry Creek* sherds (A.D. 1096 ± 56, UW1228; A.D. 1260 ± 67, UW1227), and a third on a sherd of Baytown Plain, var. *McKelvey* (A.D. 462 ± 158, UW1229). These dates reflect when the sherds were last fired, and not the age of the feature itself, although the two later dates are in close agreement with the radiocarbon date obtained from charcoal from Feature 603 (A.D. 1160–1209, calibrated 1-sigma range), suggesting the structure represented by the posts may date to the eleventh or twelfth centuries (see Chapter 21).



Figure 09-80. Burned surface VIc-4 atop the Stage VI construction episode in N40 E184, floor at 730cmbd. (top) Overhead view. (bottom) View to south showing construction episodes in the profile. The VIc-4 surface appears at the same approximate level and is likely related to the burned surface in N38 E184 (see Figure 09-81).



Figure 09-81. Prepared hard, compact surface on top of Stage VI construction episode in N37 E184, floor at ca. 726cmbd. left) Overhead view. (right) View to west showing construction episodes in the profile. This surface appears at the same approximate level and is likely related to the surface in N40 E184 (see Figure 09-80).

Features and Construction Details on the South Side of the Mound, in the Apron Area

The upper part of the apron was sampled in 31 1x1m test units opened on the south and west sides of the mound in 1999 and 2001, and in three units opened in the initial 1m wide excavation trench opened on the south base and slope of the mound in 2001. Where the apron terminated on the south side of the mound was not delimited, although it does not appear to have extended more than about 10 to 15 meters out from the base of the mound (Chapters 8). A pronounced gully running down to the river began about 15m out from the base of the final mound stage, and no units were opened close enough to its margin to determine how the apron may have been bounded. A total of 34 features were found in the upper meter of apron deposits on the south side of the mound at varying depths, mostly isolated posts, possible wall trenches, unusual filling episodes, or burned areas where hearths or structures were once present (Tables 09-38 and 09-39). The features within the apron fill came from three general proveniences, (1) in the 1m units at the south end of the 10m long step trench, (2) in the ten 1m units dispersed out onto the apron in the direct impact area, and (3) in 1m units opened to much greater depth in Stages IV through VII, discussed above, including the four 1m units in N37–40, E184 opened to the base of the mound, as well in as several other units opened to lesser depths under portions of the Stage III mound. These units combined provided samples from the upper part of the apron at the edges and away from the Stages I through III mounds, as well as from the level filling episodes that comprise construction Stages IV through VII and the underlying subsoil.

The apron on the south side of the mound was between 1 and 2m deep, and most of the 1m units opened into it were only opened a shallow depth, typically under a meter, into deposits subsequently recognized as making up the lower parts of the Stages I through III mounds and the Stage IV



Figure 09-82. Burned surface in the Stage VI construction episode, at the top of the VIa-1 fill in the southern two thirds of N37 E184, floor at 760cmbd. This surface appears at the same approximate level and is likely related to the wall trench and associated post line, Features 608-612, in N38 E184 (see Figure 09-84).

and V filling episodes. Most of our knowledge of apron stratigraphy comes from the trench opened to subsoil with a backhoe near the bluff edge, and from the five 1x1m units hand excavated into the profile in this area. The ca. 2m depth of the apron deposits was also confirmed in two vibracore samples taken in 2001 a few meters to the west of the 1m exploratory trench opened on the south side of Mound A, adjacent to the stairway and a few meters out from the base of the mound (see Figure 03-10).

The 34 features found in the upper meter of the apron in 2001 included 27 posts, three possible wall trench lines, and one fired clay area (Tables 09-38 and 09-39). Away from the deep units in N37–40, E184 it was not possible to securely determine which major construction stages these features were associated with. Since most of the features in these units were posts found at depths of ca. 60 and 100cm below the surface, however, it is probable that most were from buildings on top of the Stages III, IV, or V construction episodes. When well defined post features were found in the units dispersed onto the apron at depths greater than ca. 60cm they were sometimes left unexcavated, in part because it was assumed larger areas would be opened in the future. Nine posts and two possible wall trench segments were exposed but not removed (Table 09-38). Almost all of the posts excavated were well defined, although few that were not removed may have been roots.

The upper part of the apron, at least the upper 60cm or so, may have been laid down in one episode, perhaps associated with the construction of Stage I, given the general absence of features in this part of the fill. Much of the upper fill in the apron area appears to have been added late in the site history, , since fills were placed up against the final sloping mound face. Appreciably more area would need to be opened in the apron to determine the size, shape, and function of any structures that may have been present; only limited work, however, was done in the apron area after 2001.

Several units opened in the apron on the southern side of the mound around a low rise thought to be a house mound determined that it appears to be an eroded back dirt pile from Roberts' excavations. The remote sensing did indicate structures were present in the area south of the mound (see Chapter 8), and burned surfaces and wall trench lines were found in N30–31, E180 out on the apron, indicating buildings were indeed present. The prepared floor found in N30, E180, in fact, was under a low fill that rose upward to the south that may well have been the edge of such a house mound (Figure 09-86).

While a fair number of posts were found in the south apron, and some were clearly in a line or in wall trenches and hence were likely portions of wall lines, no structure outlines were identified, primarily because the area examined was too small. Most of the postholes appear to represent posts that were pulled out or allowed to decompose in place, rather than from in structures that burned. The south apron posts (n=29) averaged about 15cm in diameter and where excavated averaged 13.6cm deep. They fell within the range of those



Figure 09-83. Prepared hard, compact surface on top of Stage VII construction episode in N40 E184, floor at ca. 776cmbd. This surface appears related to the somewhat higher surface in N38 E184, since the VIa-1 fill dips between the two areas (see Figure 09-84).



Figure 09-84. Features 608-612, a wall trench and posts in N38 E184, floor at 791cmbd. The wall line appeared appreciably higher in the deposits, at ca. 751cmbd, and may be associated with the surface found slightly deeper just to the south in N37 E184 atop the VIa-1 fill (see Figure 09-82).

Table 09-36. Features identified on and in Mound Stage VII during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex: Type, Measurement, and Provenience Data.

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
602	Post	16	13	4	N40	E184	788	Post dug into subsoil
603	Post	16	17	16	N40	E184	788	Post dug into subsoil
604	Post	11	11	15	N40	E184	788	Post dug into subsoil
605	Post	21	25	23	N40	E184	788	Post dug into subsoil
606	Post	27	13	14	N40	E184	788	Post dug into subsoil
607	Post	20	20	11	N40	E184	788	Post dug into subsoil
618	Post	20	20	13	N39	E184	790	Post dug into subsoil
619	Post	20	21	15	N39	E184	790	Post dug into subsoil
620	Post	20	38	22	N39	E184	790	Post dug into subsoil
	Average	19.00	19.78	14.78			788.67	

Table 09-37. Artifacts recovered on and in Mound Stage VII during the 1999-2004 excavations in Mound A at the Shiloh Mound Complex.

Object	Count	Quantity	Weight (g)
Prehistoric			25.18
Daub		4 bags	14.97
Debitage *	5	6 bags	9.62
Flake	13		739.30
Sample		5 bags	7.25
Shell, Worked	1		38.34
Stone, Fire Cracked		5 bags	111.03
Vessel Fragment	164		325.59
Classifiable Native American Pottery			
Baytown Plain, *var. McKelvey*	7		
Bell Plain, *var. unspecified*	3		
Mississippi Plain, *var. Shiloh*	13		
Mulberry Creek Cord Marked, *var. Mulberry Creek*	31		
Mulberry Creek Cord Marked, *var. Obion*	1		
Unknown			
Clay, Fired		2 bags	3.06
Food, Bone	48		62.70
Food, Shell	129		1,981.63
Fossil	1		0.11
Nonfood, Bone	199		41.44
Nonfood, Shell	271	2 bags	409.97
Plant		3 bags	0.91
Sample, Flotation		19 bags	1,635.15
Seed	1		1.81
Stone, Unmodified		9 bags	3,485.06

* Unsorted lithics from flotation samples

** No weight recorded

Note: Bag refers to materials from specific proveniences that were typically weighed but not counted. Most of these are materials not suitable for counting.



Figure 09-85. Postholes from a wall line for a large individually set post structure intruding into subsoil at the base of the mound, shown before and after removal of the fill; floor at 788cmbd. (top) Features 561, 602-606 in N40 E184. (bottom) Features 618-620 in N39 E184.

used in the structures found atop the Stage III mound summit, suggesting they were associated with smaller, possibly domiciliary buildings. The remote sensing indicated at least one structure was present in this part of the apron, and some of these features likely are associated with it (see Chapter 8).

Features 9–12. Three post stains and a prepared floor that appeared to have been fired or burned area, Features 9–12, were found in N33–34, E180 at a depth of about 85cm below the present surface (Figure 09-87). The floor first appeared about 10cm higher than the posts, and did not extend up to the edge of them, suggesting it may have been unrelated, or inside or outside of an associated structure. The features appear to be underneath the Stage I fill, perhaps on the Stage IV surface.

Features and Construction Details on the North Side of the Mound

Only three features were in the ten 1m units opened on the north side of the mound, including two 1m units in the trench which extended out 2m from the base (Figures 09-01 and 09-02; Tables 09-40 and 09-41). No deep fill layers were observed in this area, and the artifacts present appear to be debris associated with structures detected by the remote sensing (see Chapter 8), or eroding or dumped from Mound A to the south. As noted in Chapter 3, no evidence for colored washing episodes was found at the base of the mound on the north side, suggesting only certain portions of the mound may have been covered with colored deposits. A fired surface was found near the base of the mound in

Table 09-38. Features identified on and in the Apron South of Mound A during the 1999-2004 excavations at the Shiloh Mound Complex: Type, Measurement, and Provenience Data.

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
1	Posthole	11	9	10	N30	E180	172 TS1	Large amount of charcoal in fill
2	Posthole	10	10	3	N30	E180	180 TS1	Large amount of charcoal in fill
3	Posthole?	40	40	33	N27	E171	168 TS1	Large amount of charcoal in fill/possible tree roots
4	Posthole	8	6	7	N32	E180	187 TS1	Charcoal in fill, sloping, unusual that it is not vertical
8	Posthole	10	10	5	N34	E180	163 TS1	Well defined
9	Posthole	14	12	33.5	N33-34	E180	171.5 TS1	Well defined
10	Wall trench	74	12	5.5	N34	E180	171.5 TS1	Well defined
11	Posthole	12	12	27	N34	E180	180 TS1	Well defined
12	Posthole	14	16	27	N34	E180	180 TS1	Well defined
13	Posthole	12	12	17	N34	E180	180 TS1	Well defined
14	Posthole	8	8	15	N33	E180	180 TS1	Well defined
15	Posthole	14	12	5	N33	E180	190 TS1	Well defined
16	Fired area	11	16	1	N33	E180	210 TS1	Irregular concentration of charcoal and fired silt-clay
17A	Posthole	23	23	10	N33	E180	210 TS1	Well defined
17B	Posthole	2	4	10	N33	E180	210 TS1	Outer edge of post 17A
18	Posthole	21	24	10	N33-34	E180	210 TS1	Well defined
19	Posthole	29	22	10	N33-34	E180	210 TS1	Well defined with rocks and charcoal flecks in fill
20	Wall trench?	100	12	8	N31	E180	208 TS1	T-shaped possible wall trench; may be a disturbance
21	Posthole	17	15	7	N31	E180	208 TS1	Well defined
22	Posthole	12	15	20	N32	E180	200 TS1	Well defined
27	Posthole	28	29	10	N34	E180	190 TS1	Well defined
29	Posthole	10	11	20	N36	E180	560	May be on the Stage IIIg surface
30	Posthole	20	20	n/a	N31	E180	220 TS1	Well defined; not excavated
31	Wall trench?	35	77	n/a	N31	E180	220 TS1	Well defined; not excavated
32	Posthole	10	12	n/a	N31	E180	220 TS1	Well defined; not excavated
33	Posthole	16	12	n/a	N30	E180	220 TS1	Well defined; not excavated
34	Posthole	18	20	n/a	N30	E180	220 TS1	Well defined; not excavated
35	Posthole	18	19	30	N34	E180	190 TS1	Well defined, orange sand/clay and rock in fill
36	Posthole	20	12	n/a	N35	E180	200 TS1	Well defined; not excavated
76	Possible posthole	n/a	21	n/a	N34	E179	530	Possible posthole partially in western wall of excavations
80	Posthole	n/a	n/a	n/a	N35	E179	566.5	Posthole in floor of unit; not excavated
81	Wall Trench	10	100	n/a	N34	E179	583	Posthole in floor of unit; not excavated
82	Possible posthole	15	16	n/a	N34	E179	585	Posthole in floor of unit; not excavated
84	Possible posthole	9	9	n/a	N34	E179	588	Posthole in floor of unit; not excavated

Table 09-39. Artifacts recovered on and in the Apron South of Mound A during the 1999-2004 excavations at the Shiloh Mound Complex.

Object	Count	Quantity	Weight (g)
Historic			
Bolt	2		24.56
Brick		1 bag	0.44
Can	1		6.90
Cap, Bottle	7		3.06
Coin	1		2.46
Foil	5		0.64
Gravel		7 bags	19,368.66
Grommet	1		0.11
Metal Fragment		4 bags	31.59
Nail	2		9.95
Plastic Fragment	4		0.22
Pull Top	1		0.43
Shell, Shotgun	1		0.88
Tile	1		0.60
Vessel Fragment	56		126.18
Wire	1		9.86
Prehistoric			
Core	10		311.03
Daub		13 bags	520.72
Flake	930		1,942.12
Hammerstone	1		227.30
Scraper	2		4.96
Shatter	665		1,769.48
Stone, Fire Cracked	272		1,585.46
Stone, Worked	1		9.23
Tool, Flake	16		118.31
Vessel Fragment	771		1,892.25
Classifiable Native American Pottery			
Avoyelles Punctated, *var. unspecified*	1		
Baldwin Plain, *var. Chalk Bluff*	1		
Baldwin Plain, *var. Miller Slough*	2		
Baytown Plain, *var. McKelvey*	26		
Baytown Plain, *var. The Fork*	8		
Baytown Plain, *var. unspecified*	2		
Bell Plain, *var. unspecified*	27		
Etowah Plain	1		
Kimmswick Fabric Impressed, *var. Langston*	2		
Mississippi Plain, *var. Shiloh*	143		
Mississippi Plain, *var. unspecified*	9		

	Object	Count	Quantity	Weight (g)
	Mound Place Incised, *var. unspecified*	1		
	Moundville Incised, *var. Moundville*	2		
	Mulberry Creek Cord Marked, *var. Coffee Landing*	3		
	Mulberry Creek Cord Marked, *var. Mulberry Creek*	56		
	Mulberry Creek Cord Marked, *var. Obion*	31		
	Mulberry Creek Cord Marked, *var. unspecified*	2		
	Obion Plain, *var. Obion*	17		
Unknown				
	Charcoal		44 bags	456.95
	Clay, Fired		45 bags	2,474.09
	Concretion		57 bags	1,233.29
	Coral Fragment --fossil	1		3.30
	Food, Bone	2		0.71
	Fossil	46		49.35
	Nonfood, Plant		7 bags	1.29
	Nonfood, Shell	27		3.32
	Nut	2		0.25
	Sample, Flotation		122 bags	20,123.55
	Sample, Soil		3 bags	5,827.70
	Stone, Manuport		11 bags	86.76
	Stone, Pebble	2		25.54
	Stone, Unmodified		67 bags	149,004.11
	Unidentified		1 bag	0.60
	Wood Fragment		5 bags	145.44

* Unsorted lithics from flotation samples

** No weight recorded

Note: Bag refers to materials from specific proveniences that were typically weighed but not counted. Most of these are materials not suitable for counting.

N69–70, E181, but an attempt at archeomagnetic dating proved unsuccessful.

The absence of an apron on the north side is why Mound A appears appreciably higher when viewed from this direction than from the south or west. The ca. 2m of apron fill present on the south side—the Stages IV through VI fills, and the upper 1m of apron deposits, presumably fill from an extension of the Stage I mound—are absent in this area. Three cores were taken from the north side of Mound A in 2001 using a vibracore, all from within a few meters of the base of the mound. They reaffirmed the observations from the 1x1m units opened in this area that cultural deposits were shallow and that there appeared to be no apron, or even much evidence for preparation of the underlying landscape prior to construction of the mound. The apron proper presently survives only on the south and west sides of Mound A. It is absent to the north, and whether it ever extended to the east, to the bluff margin, in the area now eroded into the river, is unknown. Roberts' map of the site, reconstructed by Welch, is ambiguous on this point, although the mapping data collected in the 1930s, and C.B. Moore's sketch from 1914 (see Chapter 2), suggest the surface at the base of the mound on the eastern side was at the same level as on the south and west sides, suggesting it had been built up in the same way.



Figure 09-86. Evidence for structures in the apron south of Mound A. (left) Prepared surface that appears to have been fired, under a low rise sloping upward to the south, in N30 E180. (right) Possible wall trench or trenches in N31 E180.



Figure 09-87. Three postholes and a prepared floor, Features 9–12, in N33–34 E180. The posts may be from a wall line or wall trench that the floor, which appeared about 10cm higher, may have abutted.

Table 09-40. Features identified North of Mound A during the 1999-2004 excavations at the Shiloh Mound Complex: Type, Measurement, and Provenience Data.

Feat. #	Type	Length	Width	Depth	Unit N	Unit E	Top Elev.	Comments
24	Floor/trench/ wall line?	100	100	8	N81	E184	185 TS4	Mottled artifact laden fill primarily in southern half of unit
25	Posthole/pit	55	60	17.5	N72-73	E181	160 TS4	Pit with rocks and fired clay in the fill
38	Fired clay surface	30	60	1.5	N70	E182	116 TS4	Fired clay area

Table 09-41. Artifacts recovered North of Mound A during the 1999-2004 excavations at the Shiloh Mound Complex.

Object	Count	Quantity	Weight (g)
North Side Apron			
Prehistoric			
Core	3		221.62
Daub		5 bags	57.94
Drill	1		1.20
Flake	188		425.71
Point, Projectile	1		1.19
Shatter	163		926.37
Stone, Fire Cracked	85		412.48
Stone, Worked	2		71.66
Tool, Flake	1		48.88
Vessel Fragment	491		1,108.44
Classifiable Native American Pottery			
Barton Incised, *var. unspecified*	1		
Baytown Plain, *var. McKelvey*	6		
Baytown Plain, *var. The Fork*	5		
Baytown Plain, *var. unspecified*	2		
Bell Plain, *var. unspecified*	2		
Etowah Plain	1		
Mississippi Plain, *var. Shiloh*	97		
Mississippi Plain, *var. unspecified*	4		
Moundville Engraved, *var. Elliots Creek*	2		
Moundville Incised, *var. Moundville*	2		
Mulberry Creek Cord Marked, *var. Coffee Landing*	3		
Mulberry Creek Cord Marked, *var. Mulberry Creek*	14		
Mulberry Creek Cord Marked, *var. Obion*	6		
Obion Plain, *var. Obion*	3		
O'Byam Incised, *var. unspecified*	1		
Unknown			
Charcoal		16 bags	71.71
Clay, Fired		22 bags	915.44
Concretion		23 bags	636.49
Nonfood, Bone	1		0.30
Nonfood, Plant		12 bags	5.67
Nonfood, Shell	2		0.57
Sample, Flotation		42 bags	4,636.50
Stone, Pebble	16		330.06
Stone, Unmodified		24 bags	3,107.74
Wood Fragment		10 bags	8.07

Object	Count	Quantity	Weight (g)
North Side Apron/Stage I Mound base?			
Historic			
Letter	1		1.25
Prehistoric			
Biface	1		22.50
Daub		1 bag	1.30
Flake	41		144.15
Shatter	51		314.37
Stone, Fire Cracked	20		100.57
Vessel Fragment	121		530.68
Classifiable Native American Pottery			
Barton Incised, *var. unspecified*	1		
Baytown Plain, *var. McKelvey*	2		
Baytown Plain, *var. The Fork*	1		
Baytown Plain, *var. unspecified*	2		
Mississippi Plain, *var. Shiloh*	28		
Mississippi Plain, *var. unspecified*	25		
Mulberry Creek Cord Marked, *var. Mulberry Creek*	8		
Unknown			
Charcoal		5 bags	42.34
Clay, Fired		4 bags	54.91
Concretion		4 bags	240.39
Nonfood, Plant		3 bags	1.78
Sample, Flotation		10 bags	1,332.40
Stone, Unmodified		5 bags	1,524.26
Wood Fragment		2 bags	1.04

* Unsorted lithics from flotation samples

** No weight recorded

Note: Bag refers to materials from specific proveniences that were typically weighed but not counted. Most of these are materials not suitable for counting.



Figure 09-88. Feature 25, a probable post pit with rocks inserted in the fill for support, found intruding into subsoil in N72–73 E181 at the base of the mound on the north side.



Figure 09-89. Excavation units opened into the apron area west of mound A to locate Roberts' 1933-1934 excavation trenches. View to southwest. The lighter fills appear to be old trenches in the foreground, to the south and west of the narrow strip of clear plastic over the undisturbed and darker apron fill.

Table 09-42. Artifacts recovered on and in the Apron West of Mound A during the 1999-2004 excavations at the Shiloh Mound Complex.

Object	Count	Quantity	Weight (g)
Historic			
Ball, Musket	2		28.72
Brick		1 bag	36.44
Bullet, Minie	1		30.03
Gauge, Net-mesh	1		0.64
Holder, Cigar	1		1.71
Nail --tape	1		20.38
Nut	1		3.56
Rubber Fragment	2		1.67
Tape	2		0.26
Vessel Fragment	26		53.57
Prehistoric			
Biface	1		3.21
Core	2		47.23
Daub		3 bags	54.46
Flake	306		753.50
Point, Projectile	4		3.63
Scraper	1		1.64
Shatter	363		1,774.08
Stone, Fire Cracked	127		1,030.46
Stone, Worked	5		20.22
Tool	1		2.01
Tool, Flake	10		81.51
Vessel Fragment	472		1,298.99
Classifiable Native American Pottery			
Barton Incised, *var. unspecified*	1		
Baytown Plain, *var. McKelvey*	26		
Baytown Plain, *var. The Fork*	2		
Baytown Plain, *var. unspecified*	4		
Bell Plain, *var. unspecified*	7		
Etowah Plain	1		
Kimmswick Fabric Impressed, *var. Langston*	3		
Mississippi Plain, *var. Shiloh*	101		
Mississippi Plain, *var. unspecified*	3		
Mound Place Incised, *var. unspecified*	1		
Moundville Incised, *var. Moundville*	1		
Mulberry Creek Cord Marked, *var. Coffee Landing*	6		
Mulberry Creek Cord Marked, *var. Mulberry Creek*	62		
Mulberry Creek Cord Marked, *var. Obion*	23		

Object	Count	Quantity	Weight (g)
Obion Plain, *var. Obion*	5		
Classifiable Projectile Points			
Late Woodland / Mississippian Triangular Cluster	1		
Madison	2		
Unknown			
Charcoal		9 bags	99.32
Clay, Fired		16 bags	98.41
Concretion		21 bags	553.85
Fossil	5		5.66
Nonfood, Shell	9		16.00
Nut	1		0.28
Stone, Pebble	3		8.24
Stone, Unmodified		29 bags	4,177.98
Wood Fragment		7 bags	7.97

* Unsorted lithics from flotation samples

** No weight recorded

Note: Bag refers to materials from specific proveniences that were typically weighed but not counted. Most of these are materials not suitable for counting.

The electrical resistance and magnetic field gradient surveys as well as the GPR work conducted in 2001 found evidence for two and possibly several structures in the low area on the north side of Mound A (Clay 2001; Jones 2001; see Chapter 8). Some evidence that these analyses were correct was found in some of the excavation units opened away from the mound. Thin patches of reddish-orange silty clay, possibly daub or fired clay fragments, were found in a few units that may be from possible structures. No unequivocal posts were found, however, unlike the situation on the south side of the mound, where such features were fairly common. An artifact laden area was found in the southern half of N81, E184 and designated Feature 24 that may be associated with the floor or wall of a structure. No posts were noted, but the remote sensing indicated a building may have been present in this area. One well defined post or small pit, Feature 25, containing rock and fired clay in the fill was found in the level area just beyond the base of the mound that may be from a large post (Figure 09-88). The fill was floated, and one maize cupule found within it (see Chapter 16, see Table 16-02). A sample of wood charcoal from Feature 25 yielded a radiocarbon date of 800±15 B.P. (A.D. 1224–1256 calibrated 1-sigma range; see Chapter 12). The date is in agreement with the period when the Stage II and III mounds were in use.

Features and Construction Details on the West Side of Mound in the Apron Area

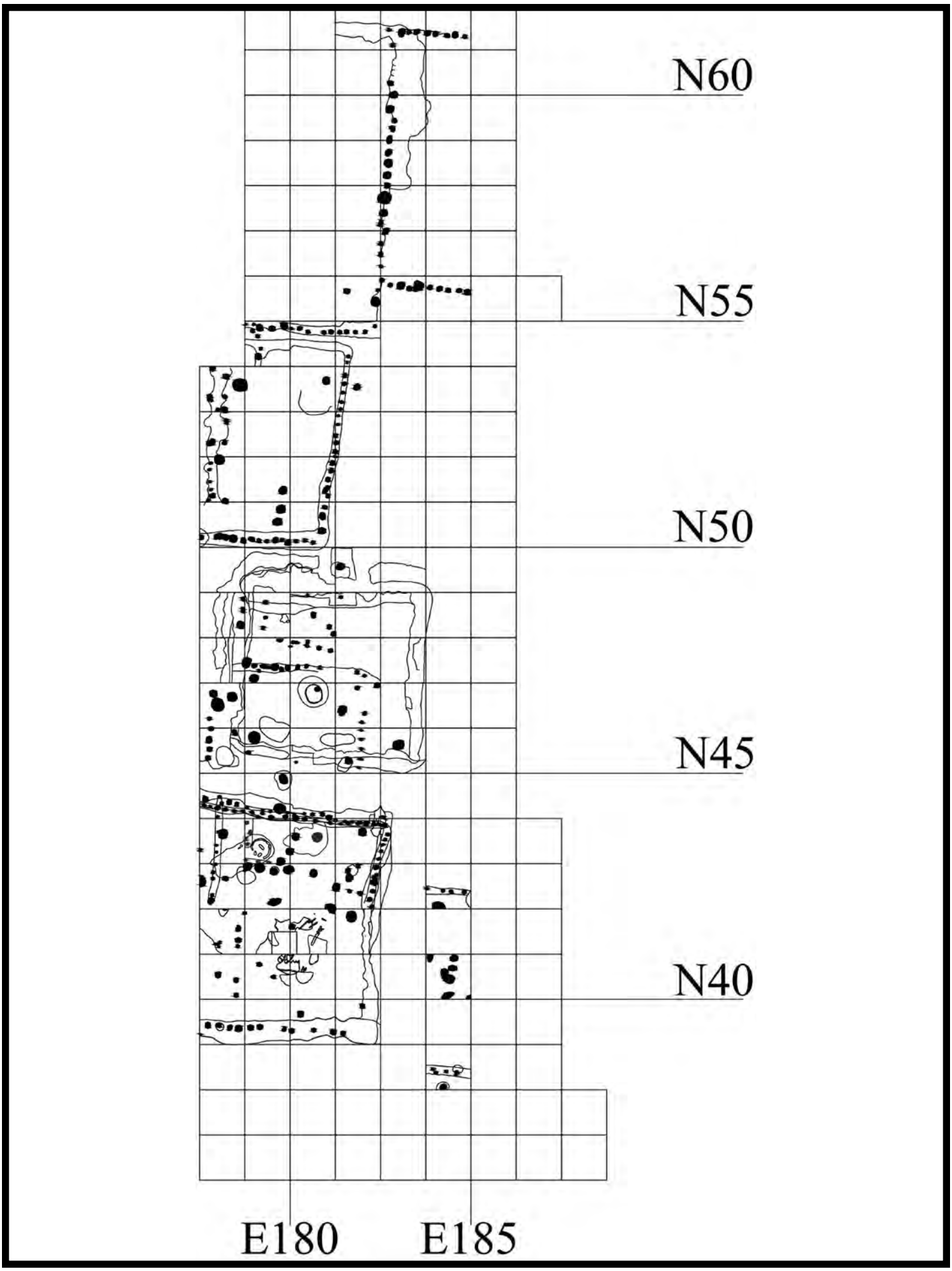
Twenty-one 1x1m units were opened in 1999 and 2001 in the apron to the west of the mound in an effort to relocate some of Roberts' 1933–1934 excavation trenches in this area, that were visible in old photographs as well as on the reconstructed map of this work prepared by Welch (see Chapters 2, 7, 8, see Figure 09-02; see also Welch 2006, Welch et al. 2006). The Depression era fieldwork had shown that anthropogenic deposits were nearly 2m thick in this area (Welch 2006:121–131). The 1m units opened by the SEAC team were shallow, only opened to sufficient depth to locate the underlying excavation trenches, which became apparent within a few centimeters (Figure 09-89). No features other than the outlines of some of Roberts' 1933-34 excavation trenches were found, and only a moderate number of prehistoric and

historic artifacts were present in the fill of these units (Table 09-42). A detailed report on the 1999 excavations into the western apron appears in Welch's 2006 synthesis (Welch et al. 2006).

In brief, the remote sensing had found evidence for several rectangular anomalies on the western apron that upon test excavation were found to be the remains of excavation trenches opened by Roberts in the winter of 1933–1934 (see Chapter 8). Determining the exact location of these trenches was intended to help verify the accuracy of the site map produced by Welch based on Roberts' data, as well as provide a place where any Native American remains found during the excavations could be reburied, as per the MOU with the Chickasaw Nation. Three trenches five feet wide and of undetermined length were found during the 1999 fieldwork, one oriented north west and the other two east west. The old excavation units were easily recognized by their size, 1.5m (5ft) wide, and uniform walls, and by their mottled fill, which was much lighter than the undisturbed apron deposits to either side (see Figure 09-89). One of the east-west trenches intersected the north south trench. None of these trenches were re-excavated during the NPS fieldwork, because no human remains were encountered during the work in Mound A (which were to be reburied in one of these trenches had any been found), and because excavation effort focused on the direct impact area. Using the vibracore Glen Doran took two cores on the apron west of Mound A, one within and one immediately adjacent to one of the old excavation trenches (see Figure 03-09). These demonstrated that the apron fill was close to 2m thick, and that Roberts' trenches had apparently been taken to the bottom of the fill, to undisturbed soil. As on the south side of Mound A, the southwestern and western boundaries of the apron were not delimited, although it abutted the main plaza that opened up to the southwest. It is possible that screening fences or low embankments were present at the edge of the apron restricting access to Mound A, although no evidence for these were found.

Other Site Proveniences

As discussed in Chapter 3, five vibracore samples were taken from the plaza area between Mounds A and B in 2001, to determine the depth of cultural deposits, and get a sense of how much cutting and filling may have occurred, to level the area, which proved to be up to about 1m in places. One core each was taken at the bottom of, and immediately adjacent to a dry presumed borrow pit near House Mound N on the west side of the plaza near Mound F, the former reaching undisturbed deposits quickly, the latter passing through about 0.5m of anthropogenic deposits before reaching undisturbed material. Another core was taken from a mounded feature in the center of a much larger borrow area nearby, and the loose nature of the fill suggested it was an old back dirt pile, probably from the 1933–1934 excavations, that had been dumped into the borrow pit (see Figure 03-11). The vibracore samples were preliminarily examined in the field to determine the likely depth of cultural deposits, and get a sense of the underlying sediments. Usually a distinct break was evident between anthropogenic strata and undisturbed materials. The coring confirmed that the apron south and west of Mound A was, as Roberts had documented, between 1 and 2m in depth, and that cutting and filling had occurred to a depth of almost 1m in the plaza area between Mounds A and B, with the depth to subsoil quite varied, depending on whether low areas were filled. The vibracore samples are curated with the remainder of the collections at SEAC in Tallahassee.


N60
N55
N50
N45
N40
E180
E185

