SIUE FIELD SCHOOL INVESTIGATIONS AT THE A. E. HARMON SITE (11MS136)

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The 2002 Southern Illinois University Edwardsville field school was conducted at the A.E. Harmon site (11MS136), located on the bluff above the American Bottom in Edwardsville, Illinois. Artifacts recovered from the plowzone indicate that the site was occupied from the Archaic through Mississippian periods and include a relatively large number of projectile points. Excavations revealed a prehistoric house and six pit features. The style of the house and artifacts recovered from the house and associated pits indicate occupation during the Late Woodland and Emergent Mississippian periods. Activities that took place on site include ceramic manufacture and completion and maintenance of lithic artifacts. Lithic raw materials were mostly locally obtained Burlington chert and glacial till, but "exotic" cherts from southern Illinois and the Illinois Valley were common in the plowzone sample. Subsistence remains indicate consumption of native cultigens, maize, nuts, wild plants, fish, and venison. Results of this excavation and analysis shed light on Late Woodland and Emergent Mississippian lifestyles on the northern periphery of the American Bottom, particularly during the Sponemann phase.

The A.E. Harmon Site (11MS136) is a multi-component site in Edwardsville, Illinois. The Department of Anthropology at Southern Illinois University Edwardsville (SIUE) conducted an archaeology field school at the site between May 13 and June 24 of 2002. The field school excavation took place on a small portion of the site, uncovering ca. 45 square meters, or approximately 0.2% of the total site area. The portion of the site excavated is owned by Madison County Transit, which gave permission for the field school. Julie Holt acted as director of the excavation and as instructor of record for the field school.

The primary goal of the SIUE field school is to teach students standard methods of archaeological excavation; in fact, an archaeological or an ethnographic field school is required for a BS in anthropology from SIUE. A secondary goal of this excavation was to generate research opportunities for SIUE faculty and also anthropology students, who are strongly encouraged to conduct original research for their senior projects. A third goal was to record a piece of Edwardsville's archaeological record, which is rapidly disappearing due to development.

The excavation was successful in achieving these goals. Seven full-time and two part-time students completed the course; most have since graduated and have been employed in cultural resource management firms or have continued their education in graduate school. The excavation also generated abundant data for both student and faculty research; to date, four senior projects have stemmed from this excavation. Finally, the data generated provide significant new information about the occupation at A.E. Harmon and more broadly information about the Late Woodland and Emergent Mississippian occupation of the northern American Bottom.

This report summarizes results of the SIUE field school at A.E. Harmon. The excavation revealed a house structure, three storage pits, three earth ovens, four small posts outside the house structure, and several other soil anomalies. The artifacts recovered indicate occupation of the site during the Late Woodland, Emergent Mississippian, and Mississippian periods. This report will begin with a description of the site setting and a summary of previous research at the site. SIUE field methods will be described, along with a description of the features encountered and a description of the materials recovered from each. Lab methods and results of ceramic, lithic, floral, and faunal analysis will be presented. Discussion will consider the importance and implications of the Late Woodland-Emergent Mississippian occupation at A.E. Harmon, the nomenclature used for this period, and the importance of screening both plowzone and feature sediments

SETTING

The A.E. Harmon Site is situated on the bluff edge overlooking the northern portion of the American Bottom (Figure 1). Today the St. Louis skyline, ca. 30 km away, is clearly visible from the site. Prehistorically, it was a long day's walk from A.E. Harmon to reach Mississippian centers at Cahokia (ca.15 km) or East St. Louis (ca. 25 km). It was only a short walk (about one km) to Kane Village (Munson and Anderson 1973), which was inhabited during the Emergent Mississippian period. Kelly (n.d.) reports that Emergent Mississippian settlements were also present right next to the A.E. Harmon site at the Sampson Monument site (11MS1305) and the Harmon site (11MS1307). Several different groups could have occupied these sites, or a single group could have moved from one site to the next as its gardens exhausted the forest soils. Also nearby were the Mississippian Kane Mounds (Melbye 1963), and the Emergent Mississippian Loyd site lies on the floodplain at the base of the bluff, just a few kilometers south of A.E. Harmon (Hall and Vogel 1963).

The bluff slope below the site today is gentle, but it may have been steeper prehistorically, before historic coal mining activities, road construction, and soil borrowing in the area (Figure 2). In any case, inhabitants of A.E. Harmon would have had easy access to both floodplain and upland resources (see White et al. 1984). Nineteenth century GLO maps show that Cahokia Creek meandered across the floodplain, coming close to A.E. Harmon near the base of the bluff (Illinois Secretary of State 2005; see Figure 3). These maps also show the site covered in forest; moreover, the soil at the site is a Fayette silt loam, further indicating that the site was originally covered by deciduous forest (Goddard and Sabata 1986). A.E. Harmon therefore was most likely forested when it was settled by Late Woodland people, who probably would have deforested the area by using slash and burn agriculture. The site was probably reforested when resettled by later Emergent Mississippian and Mississippian groups, who would have again cleared the forest as they farmed. According to nineteenth century GLO maps, bottomland prairie could be reached within a kilometer and upland prairie lay about 4 km from A.E. Harmon.

In short, the environment of the A.E. Harmon site was well suited to the economy of Late Woodland, Emergent Mississippian, and Mississippian peoples, who were horticulturalists, hunter-gatherers, and fishermen. It was also well suited to their spiritual and social interests, being in close proximity to religious centers (at least during the Mississippian period) and to neighbors who were probably relatives as well.

PREVIOUS RESEARCH

The A.E. Harmon site was reported to the Illinois Archaeological Survey in 1967 when soil was borrowed from the face of the bluff for highway construction, hitting human remains. Kelly (n.d.) reports that soil borrowing destroyed the southwestern portion of the site, but minimal damage was done to the majority of the site lying away from the bluff edge.

Avocational archaeologist Bob Williams collected artifacts from the site when it was under cultivation prior to ca. 1970. An interview with Williams by ITARP (Illinois Transportation Archaeological Research Program) personnel in 1998 indicated that he had collected lithic and ceramic artifacts from the site dating to the Archaic, Woodland, Emergent Mississippian, and Mississippian periods (Koldehoff 2000).

The SIUE Contract Archaeology Program (CAP) shovel-tested the site around 1990 (Kelly n.d.). SIUE CAP recovered materials dating to the Late Archaic and Emergent Mississippian periods. Kelly suggests that the site was a large nucleated village during the Emergent Mississippian period. He also notes that small arrow points were found distributed in a linear fashion along the north edge of the site, suggesting that the village may have been fortified. Kelly (personal communication, June 7, 2002, and July 25, 2005) also states that a keyhole structure ca. 100 meters east of the current project area was partially excavated. When it was realized that the house would not be impacted by construction, the excavation was stopped.

In 2000, ITARP archaeologists, contracted by IDOT, excavated a small portion of the site where Illinois Route157 was to be widened. At the time of the ITARP investigations, the site was covered in grass and had not been plowed in approximately 30 years. ITARP personnel used a backhoe to remove large blocks of plow zone within the right-of-way. One of these blocks (EB 1) exposed prehistoric pits, structures, and an isolated burial. Preliminary analysis suggested occupation during the Late Woodland and Emergent Mississippian periods (Koldehoff 2000); further analysis indicates that pit features contained materials from the Patrick, Sponemann, Loyd, and Merrell phases (Brad Koldehoff, personal communication, August 9, 2005). The ITARP excavation also revealed one or two post structures and a Mississippian wall trench structure (Don Booth, personal communication, May 2002; Brad Koldehoff, personal communication, August 2005).

SIUE FIELD METHODS AND RESULTS

In April of 2002, Henry and Julie Holt relocated ITARP and IDOT survey markers at the A.E. Harmon site. Using these markers they established a grid based on the UTM system. The survey instrument used in this and subsequent SIUE fieldwork was a Realist-David White 4.5 inch transit, model TR300.

On April 19 and 20, 2002, Michael Hargrave of Engineer Research and Development Center/Construction Engineering Research Laboratory (ERDC/CERL) conducted a geophysical survey at the site at the request of Julie Holt. The goal of the survey was to identify possible prehistoric features that would be investigated by the SIUE field school. A magnetic gradient survey and an electrical resistance survey were conducted in five 20 by 20 m squares. Two of these squares were placed so that their southern edges slightly overlapped ITARP excavation block EB 1, which had exposed intact prehistoric features. Two other squares were placed directly north of the first two squares, and the fifth square was placed east of the two northern squares (Hargrave 2002).

Results of the survey suggested heavy disturbance to the upper stratum of soil, making it difficult to identify prehistoric features. The survey clearly showed the limits of the ITARP excavation (Figure 4). Another anomaly was identified as probably historic; this was a linear feature, up to 5 m wide, that ran through all three northern blocks, roughly northeast-southwest. Hargrave suggested that this feature was the result of heavy vehicle traffic, possibly related to the borrowing of soil from the southwest portion of the site (Hargrave 2002). During the SIUE field school, the grass was shorter than it was during Hargrave's survey, and this linear anomaly was clearly visible at ground surface as a depression just north of the SIUE excavation. As Hargrave suggested, it appeared to be a roadbed.

Hargrave's survey also suggested a number of possible prehistoric features. Most of these looked like pit features, but several larger anomalies possibly indicated prehistoric structures. The best candidates for prehistoric features were found to be in the two southern blocks. Hargrave suggested that similar anomalies in the northern blocks might be associated with the wide linear feature running through the northern blocks rather than prehistoric features (Hargrave 2002).

The SIUE field school excavation began May 13 and was completed June 24, 2002. Excavation conditions during this period were generally optimal. Rain days were spent in the lab at SIUE washing and sorting artifacts.

Initially, eight 2 x 2 m units (Units A-H) were laid in (see Table 1, Figures 5 and 6). These units were located to investigate possible features identified during Hargrave's geophysical survey. Large metal spikes were driven in at unit corners. All unit corners that fell along 4294862mN (abbreviated N862) were set in using the transit; other corners were determined by triangulation. Units A and B were adjacent to one another and created a 2 x 4 m excavation block (Figure 5); units C-H were connected and created a 4 x 6 m excavation block (Figure 6). All excavation was done by hand using shovels and trowels; all sediments excavated from these units were screened through quarter-inch mesh and the volume of sediments screened was measured using 20 l buckets. All units were taken down at roughly the same rate and no baulks were left between units. Spikes at corners of units in the interior of the excavation blocks were removed as the excavation proceeded. Elevations were measured using line levels drawn from four datum stakes (see Table 2).

The plow zone was removed as Stratum A Level 1. The plow zone was a 10YR3/2 very dark grayish brown silt loam (A_p horizon) and generally artifact rich. It was typically about 25 cm deep. The base of the plow zone was defined as more yellow, compact soils appeared. Plow scars were noted at the base of the plow zone in Unit C running southwest-northeast; plow scars were also noted in the north wall profile of Units G and H and the south wall profile of Unit B. No east or west wall profiles were drawn, so no attempts were made to look for plow scars in east or west profiles.

The sediment immediately below the plow zone was removed as Stratum A/B Level 2, which was an arbitrary 5 cm level. This level consisted of subsoil mottled with plow zone soil, the result of approximately 30 years of worm action and root growth since the site was last plowed. Stratum A/B Level 2 was defined as a 10YR4/4 dark yellow brown clay loam (B horizon) mottled with 10YR3/2 very dark grayish brown silt loam (A horizon). Stratum A/B Level 2 contained few artifacts, except where prehistoric features were encountered. The base of Stratum A/B Level 2 was excavated by trowel in order to define features, which contained sediments generally darker, less compact, and without structure in contrast to the subsoil, a 10YR4/4 dark yellow brown clay loam (B horizon).

Two circular features (Features 102 and 108) and one rectangular feature (Feature 103) were observed at the base of Stratum A/B Level 2 in Units A and B. Three circular features (Features 101, 104, and 105), six possible post molds, and an amorphous disturbance were observed at the base of Stratum A/B Level 2 in Units C-H. Numbers assigned to features and post molds began with 101 to ensure that they would not conflict with the numbering system previously used by ITARP. Two of the circular features, Feature 101 and Feature 102, extended into the walls of Units D and A, respectively. Small extensions to Units D and A were excavated to expose Features 101 and 102 in entirety (see Figures 5 and 6). Sediments excavated from these two unit extensions were not screened.

Rectangular Feature 103 extended into the east walls of Units A and B. Four new units (Units I-L) were opened to expose Feature 103, which was predicted to be a prehistoric house structure based on its large size and rectangular shape. Units I and J were 2 x 2 m, while Units K and L were 1 x 2 m (Table 1). There was already a large metal spike at the northeast corner of Unit K (4294862mN 760270mE; abbreviated N862 E270) because the transit had been stationed there when Units A-H were laid in. A tape was pulled between this spike and the spike at the northwest corner of Unit A (N862 E265), which had also been set in using the transit, to set in the spike at the northeast corner of Unit I/northwest corner of Unit K (N362 E269). All other corner spikes for Units I-L were set in by triangulation. A baulk was left at the northeast corner of Unit K (N862 E270) to ensure that this spike stayed securely in the ground, since it was a control point. A new datum stake was set in for measuring elevations in Units I-L, since the original stake used to measure Units A and B was in the way of new Units I and J. The new datum stake was set in at the same elevation as the stake previously used for Units A and B (see Table 2). Units I-L were excavated using the same methods described for Units A-H above, and the same strata were encountered. At the base of Stratum A/B Level 2, Feature 103 was found to extend through Units I and J, terminating just inside Units K and L. In addition, two more circular features (Features 106 and 107) and five possible post molds (later determined to be four post molds; PM 128-131) were encountered.

Further description of the features, including excavation methods, is found in the next section. After the features were excavated, lack of time prevented further excavation of the subsoil. Archaeologists working in the region commonly assume that upland subsoil is devoid of cultural materials because the loess that covers the bluffs above the American Bottom developed around 12,000 years ago (Neely and Heister 1987:20); however, we would have tested this assumption had time permitted.

Because the senior author wished to show field school students a "natural" upland soil profile, Henry Holt excavated one small shovel test into the subsoil and gave the students a lecture on sediments and soil development. This shovel test was excavated adjacent to the north wall of Units G and H; this spot was chosen because no features were identified in this area. The shovel test was approximately 55 x 55 cm at its opening and extended approximately 80 cm below the base of the plow zone; sediments removed during the shovel test were not screened. The profile of the north wall (N 866) between E 254 and E 256 was later drawn (see Figure 7).

FEATURES

After features were defined with a trowel, they were photographed (using both color slide and black and white print film) and drawn in plan view on 20 lb. metric grid vellum at a scale of 1:10 cm. The excavation block formed by Units A-B and I-L and all features therein (Features

102, 103, 106, 107, and 108) were drawn on one map (Figure 5), while the excavation block consisting of Units C-H and all features therein (Features 101, 104, and 105) were drawn on a second map (Figure 6). Measurements were made by fixing metric tapes along the east and west walls at the base of the excavation blocks; a third metric tape was moved from south to north, with one student at each end reading the north coordinates and a third student in the middle reading the east coordinates. A fourth student drew the map. Bisection lines were also drawn on the maps at this time.

All features were bisected, and generally the first half was removed in one level using a trowel and all feature sediments were screened using quarter-inch mesh. (The exception was Feature 106, the first half of which was removed in two levels because the student excavator noticed a soil change part way through the feature.) After the first half of a feature was excavated, another 5-10 cm was excavated around the profile edges so that the feature boundaries would be clearly visible against subsoil when the profile was drawn. The feature profiles were photographed (again making color slides and black and white prints) and then drawn on 20 lb. metric grid vellum at a scale of 1:10 cm. Line levels were set up between two tent spikes and measured from the nearest datum stake (see Table 2); one student would then take elevations while a second drew the profile.

Flotation samples were taken from the second half of each feature. In shallow features (Features 104, 105, and 107) where only one stratum was defined, a flotation sample was taken from the top of the feature. In deeper features where more than one stratum was defined (Features 101, 102, 103, 106), flotation samples were taken from each stratum; in deep pits (Features 101, 102, and 106), flotation samples were always taken from the top of the pit and also the very base of the pit. For Feature 108, a flotation sample was taken from the base of the first half excavated, since the second half was not excavated (see below). Flotation samples were usually 10 l; smaller samples were taken when there was not enough sediment for a 10 l sample.

The second half of each feature was excavated using a trowel, separately removing strata defined during profiling. (An exception was Feature 102; the students forgot to start a new bag when they reached the second stratum.) The second half of Feature 108 was not excavated (see below). All sediments from the second half not saved for flotation were screened using quarter-inch mesh; the volume of sediments screened was measured using a 20 l bucket.[1]

Structure and Associated Post Molds

Feature 103 was initially identified as a "keyhole structure;" that is, a square structure with an "entry ramp" oriented toward the south (Binford 1970). The structure was small (ca. 2.75 x 2.07 m without the entry ramp) with a shallow basin (see Table 3). Such structures were large enough for sleeping and presumably little else. The "entry ramp" was 90 cm long and 56 cm wide, but it may have been longer originally, given that it was truncated by plowing. A concentration of pottery was found at the top of the house basin, with at least six vessels and an almost complete piece of stumpware recovered in the same general area near the center of the house. FCR, debitage, and burnt clay were also recovered. The "entry ramp" contained large amounts of limestone and FCR and small amounts of pottery, debitage, and burnt clay.

Two strata were visible in the profile of the house basin, but the boundary between these was gradual and indistinct (Figure 8). The upper stratum was a 10YR3.5/3 dark brown loam with charcoal, while the lower stratum was a 10YR4/3 clay loam. One stratum was described in the entry ramp; like the upper stratum of the house basin, this was a 10YR3.5/3 dark brown-

brown loam, but contained more charcoal than was found in the house basin. Flotation samples were taken from both strata of the house basin and another sample was taken from the entry ramp.

Excavation of the second half (the east half) of the house confirmed that the lower stratum of the house basin contained few artifacts, producing only two small pieces of FCR, two sherds, and one piece of debitage. Because this lower stratum contained more clay and was light in color, it appeared similar to subsoil. However, the house's structural posts were not visible until the base of the lower stratum, indicating that it was feature fill. The lower stratum is therefore interpreted as relatively sterile fill that washed into the house after the site and house were abandoned. The upper stratum is interpreted as fill deposited in the house after later people reoccupied the site. These later occupants discarded trash into the depression that remained where the house had once stood.

This hypothesis regarding episodes of deposition within the house is tested by further analysis of the artifacts. Keyhole structures are common on Late Woodland sites in and around the American Bottom; those in the northern American Bottom include both Patrick phase sites and Sponemann phase sites. Keyhole structures in the greater American Bottom typically contain few artifacts (e.g., Holt 1996a:68). In this respect, the structure at A.E. Harmon seems unusual for a keyhole structure; however, the artifacts were concentrated at the top of the feature (just below the base of the plow zone), not on the house floor. The ceramics recovered from the house basin date to the Edelhardt phase of the Emergent Mississippian period, not to the Late Woodland period. However, ceramics from the "entry ramp" (and adjacent pit features) date to the Sponemann phase of the Late Woodland period. It will be argued below that the house was built and occupied during the Sponemann phase, but was later filled with trash by Edelhardt phase occupants.

Thirty-three possible posts were identified on the floor of Feature 103. These were mapped by fixing three metric tapes across the house floor between north and south unit corner spikes; a fourth metric tape was moved from south to north, with one student at each end reading the north and east coordinates. A third student drew the map. All possible posts were bisected, and those that looked like posts and not rodent holes were then drawn in profile. Six possible posts examined in the center of the house were determined to be rodent holes. This is not surprising, given that center posts would be obtrusive in such a small house. PM127, the one confirmed post located toward the center of the house, was different from posts that formed the house walls in that it was wider than it was deep (see Table 4).

Twenty-five posts (PM102-PM126) were identified along the perimeter of the house; these would have formed the house walls. The profiles of these posts indicate that they were small, ranging between 4 and 12 cm in diameter (average = 7 cm) and extending between 7 and 20 cm (average = 13 cm) below the floor of the house (Table 4). All were vertical in orientation. Most were faint (colors included 10YR3/4, 10YR4/3, 10YR3.5/3, 10YR 3/3, 10YR4/2.5, and 10YR4/2), usually only a shade away from the subsoil (10YR4/4). The profiles of two posts (PM102 and PM103) could not be discerned at all, but it is assumed that they were posts because they were evenly spaced with the other posts and contained sediment less compact than the subsoil. Two posts (PM124 and PM126) contained charcoal and burnt (reddened) earth. They were unusually small and were located outside of the wall that would have been formed by the other posts. Their proximity to PM123 and PM125 suggests that they may have replaced or supplemented those posts.

Another probable post (PM101) was found at the south end of the Feature 103 entry ramp. This post would seem to have obstructed entry into the entry ramp, so it may have postdated the structure. It is also possible that the stain was actually the result of rodent or root disturbance. Five possible posts were investigated outside the east wall of the house. One of these was definitely the result of bioturbation, either rodent or root disturbance. The other four (PM128-PM131) had almost identical profiles that suggest that they were shallow posts, extending 6-8 cm into the subsoil below the plow zone (Table 4). These could have formed some type of small structure (e.g., a drying rack) associated with the structure.

Keyhole structures often have pits located at the end of their entry ramps (see Holt 1996a). Unfortunately, the SIUE field school did not have time to excavate the area south of Feature 103 to see if there might be an associated "entry pit." There is no indication of a pit in this area on Hargrave's geophysical survey map, but this is not necessarily meaningful given that the structure itself was not detected by the geophysical survey (see below). Further comparison between Feature 103 and other Late Woodland/Emergent Mississippian period structures will be made below.

Deep Pits

Features 101, 102, and 106 were relatively deep pits, ranging between 46 and 75 cm deep below the plow zone (see Table 3). All were circular in plan view and more or less vertical in profile. All are interpreted, based upon their depth, to have been used originally for storage: they are unnecessarily deep for cooking structures and were probably used for the storage of plant foods. All three contained relatively large numbers of artifacts, and so were apparently used as trash receptacles when they were no longer useful for storage.

Feature 101 contained FCR, burnt clay, pottery, limestone, and debitage, most of which was found in the top of the feature. Ceramics are Late Woodland in style, probably dating to the Sponemann phase. Evidence of burning included charcoal throughout, burnt clay in the top of the feature, and large patches of burnt earth and clay at the base of the feature. Despite this suggestion of stratification, distinct strata were difficult to discern in profile (Figure 9). Two strata were drawn, both of which were a 10YR3/3 dark brown loam. The boundary between these two strata was gradual and somewhat arbitrarily drawn. The primary difference between the two strata was a difference in inclusions: small burnt clay bits and charcoal were present in the top of the feature while small bits of sediment similar to subsoil (10YR4/4) were present in the lower part of the feature. Lenses in the top stratum which looked like ash deposits (10YR4/2.5 dark grayish brown-brown loam) could have also been rodent runs or tree roots. A large patch of burnt earth and clay (10YR2/1 black silt loam and 5YR3/4 dark reddish brown clayey loam) was also visible at the base of the feature. Flotation samples were taken from the top and bottom of the feature. A separate flotation sample and a sediment sample were taken from the burnt earth at the bottom of the pit.

Feature 102 was the deepest pit excavated by the SIUE field school (see Table 3); it was located immediately west of Feature 103 and is believed to have been associated with that structure. Feature 102 contained FCR, pottery, burnt clay, limestone, debitage, bone, and an arrowhead. The style of ceramics recovered from Feature 102 indicates they date to the Sponemann phase. Evidence of burning was found throughout the pit in the form of charcoal and burnt earth. Distinct strata were difficult to discern in profile (Figure 10). Two strata were drawn, but the boundary between these two strata was gradual and somewhat arbitrarily drawn. Both were described as a 10YR3.5/2 very dark grayish brown-dark grayish brown loam with charcoal flecking and flecks of burnt clay. However, the lower stratum seemed to have more charcoal and burnt clay, and also contained more limestone. A possible ash lens (10YR4/2.5 dark grayish brown-brown loam) was visible in the profile, but based upon the somewhat vertical orientation of this "lens," it was more likely a rodent burrow. Flotation samples were taken from the top and bottom of the feature.

Feature 106 was located immediately east of Feature 103 and may also have been associated with that structure. The first half (the north half) of Feature 106 was excavated in two levels because the student excavating it noted a change in the color and texture of the sediment about half way through the pit. Subsequently, four strata were visible in the pit's profile (Figure 10). The uppermost stratum, Stratum A, was a 10YR3/2 very dark grayish brown loam. The student excavator noted that Stratum A contained large amounts of pottery, which appeared to be stacked sherd upon sherd. Some of these sherds are visible in the profile. Stratum A also contained FCR, burnt clay, limestone, debitage, and bone. Stratum B was 10YR4/2 dark grayish brown loam, possibly an ash lens. It was removed entirely as a flotation sample. Stratum C was a 10YR3/2 very dark grayish brown sandy loam. It was distinct from Stratum A by being gritty in texture and containing notable amounts of limestone and burnt earth. It also contained burnt clay, pottery, debitage, and FCR. A concentration of limestone was found at the base of Stratum C, which as a result also contained a relatively large amount of preserved bone. Stratum D was a 10YR3/2 very dark grayish brown loam mottled with patches of subsoil. Stratum D contained limestone, burnt clay, FCR, pottery, debitage, and bone. Charcoal was found throughout the pit, but in highest concentrations in Stratum C. Flotation samples were taken from all four strata described in the profile. The style of ceramics from Feature 106 indicates it also dates to the Sponemann phase.

Shallow Pits

Features 104 and 105 were essentially identical and were located only 1.5 m from one another. Both were shallow pits (10 cm deep), circular in plan view and basin-shaped in profile (Table 3; Figure 9). Both contained sediment that was very pale (10YR4/2.5 for Feature 104 and 10YR3.5/2 for Feature 105) so that boundaries with the subsoil were difficult to define. Both also contained very few artifacts, mostly FCR. The few body sherds recovered from these pits were cordmarked, probably Late Woodland or Emergent Mississippian, but these sherds were small and possibly intrusive. Features 104 and 105 are interpreted as food processing pits, possibly earth ovens. Earth ovens and hearths are common on late prehistoric sites in the American Bottom; the difference between them is that hearths were used for open-air cooking while earth ovens were used for closed-air cooking. Earth ovens are deeper than hearths and should show evidence of burning in a reduced (oxygen-poor) environment rather than an oxidizing (oxygen-rich) environment. Given the near absence of diagnostic artifacts from Features 104 and 105, and considering how subtle they were in comparison to pit Features 101, 102, and 106, it is possible that Features 104 and 105 date to an earlier time period. They could, for example, represent Archaic nut processing facilities.

Feature 108 was similar to Features 104 and 105 in that it was relatively shallow, its boundaries with the subsoil were difficult to define, and it contained only FCR and cobble tools. At 30 cm, it was slightly deeper than Features 104 and 105 (Table 3), and its profile suggested two strata, although these were poorly defined (Figure 10). The upper stratum was a 10YR4/3 brown loam and the lower stratum was a 10YR4/2 dark grayish brown loam; both contained charcoal flecks. Feature 108 was only partially excavated because it extended into the south wall of Unit B. It was verified as a prehistoric feature at the very end of the field school, too late to remove the plow zone to expose the rest of the feature. Based on what was excavated, it appeared to be circular in plan view, and the profile in the south wall of Unit B suggested that it had inslanting sides with a flat floor. A flotation sample was taken from the lower part of the first "half" excavated (the north side), since the second half was not excavated.

Feature 108 may have been used for food processing before it was finally used to store the cobble tools. Based on its proximity to Feature 103, Feature 108 might represent an earth oven associated with the house structure. However, based on the similarity between the feature fill and subsoil, the paucity of charcoal, the complete absence of preserved faunal remains, and the absence of ceramics in this pit, it seems more likely that Feature 108 dates to the Archaic occupation of A.E. Harmon. An Archaic spear point base was recovered from the plowzone southeast of Feature 103.

Other Anomalies

Feature 107 was visible below the plow zone (Stratum A/B Level 2) as a small circular stain, ca. 40 cm across (Table 3). However, upon excavation the stain turned out to be only a few cm thick. The profile of Feature 107 shows that a smaller, post-shaped stain emanated from the base of the feature. It is possible that this was an unusual prehistoric feature, a small post emanating from a much larger post pit; however, it seems more likely that this was a shovel test with a rodent tunnel coming out of the bottom. (The A.E. Harmon site was shovel tested around 1990 by SIUE CAP; see above.) The "feature" produced no artifacts, but it did contain some charcoal flecks. A flotation sample was taken from the second half excavated (the south half), but it was only 5 l due to the small size of the "feature".

A possible feature was investigated in the southeast corner of Unit G. The sediment extending from Unit G into Unit E seemed disturbed at the base of the plow zone, but the disturbance was amorphous in plan view and it was difficult to define a boundary between the disturbance and the subsoil. Nevertheless, the excavation director wanted to be certain it was not a feature because it was near an anomaly identified by the geophysical survey. Thus, an arbitrary 5 cm was removed from the disturbed area within Unit G (but not within Unit E). The sediment was screened but produced no artifacts and was essentially similar to the subsoil. Also, there was no evidence of a feature outline in the profile of Unit G's east wall or its south wall (which had been created by excavating the arbitary 5 cm). Therefore, it was determined that this was not a prehistoric feature. No feature number was assigned, and no profile was drawn. The disturbed area within Unit E was not excavated.

Six possible posts were investigated in Units E, F, G and H. These were bisected as posts, but their profiles showed that they were all the result of rodent or root disturbance. No post mold numbers were assigned, and their profiles were not drawn.

<u>Ground Truthing the Geophysical Survey</u>

Correlation between excavation results and results of Hargrave's geophysical survey (Hargrave 2002) was imperfect. Two anomalies were outlined for investigation in the area exposed by the western excavation block (Units C-H). One of these clearly correlated with Feature 101. The second was roughly in the vicinity of Feature 105, although possibly somewhat north of it. A dark spot is visible on the geophysical map north of Feature 104, but this anomaly was not outlined for investigation because of its proximity to the linear disturbance running through the north end of MCT property.

One anomaly was outlined for investigation in the eastern excavation block (Units A-B). This anomaly clearly correlated with Feature 102. A dark spot is visible on geophysical map that appears to correlate with Feature 106, but that anomaly was not outlined for investigation. The house structure (Feature 103) does not appear to have been detected by the geophysical survey at all.

Unfortunately, there was no time to investigate the two largest anomalies identified in the geophysical survey (labeled A and B in Figure 4). Hargrave (2002:6) suggests that these could be associated with structures. If so, they must be of a different nature than Feature 103, since it is not visible on the geophysical survey maps.

In sum, prehistoric features were found more or less where they were predicted by the geophysical survey. However, just as many prehistoric features were found that were not predicted by the geophysical survey. These results are somewhat ambiguous, but not surprising given the heavy historic disturbance at the A.E. Harmon site.

CERAMICS

Ceramics were analyzed by Cassandra Buskohl, Shannon Moore, and Jennifer Wilkey; their analysis was checked and recorded by Julie Holt; and identification of rim sherds was assisted by John Kelly. Inspection of sherds was macroscopic. Temper type and surface treatment were recorded whenever possible for all body and rim sherds; additional observations regarding lip treatment, profile, paste, diameter, and chronological phase or period were also made for rim sherds. A 10% sample of cordmarked body sherds recovered from features was examined to determine twist direction; all cordmarked rim sherds from features were examined to determine twist direction. The method for examining twist direction was to press white

Sculpey clay into the sherd, then the impressions in the clay were examined (after Drooker 1992).

The ceramic sample includes 4215 body sherds for which both surface treatment and temper type were identified (Table 5). The great majority of these (71%) were grit tempered and cordmarked, 13% were grit tempered with plain surfaces, and .0005% (only 2 sherds) were grit tempered with a red-slipped surface. The grit tempered, cordmarked sherds could date to either the Late Woodland or Emergent Mississippian periods, but most appear similar to Late Woodland rim sherds identified from the site. The grit tempered plain sherds are most likely from the necks of Emergent Mississippian (Bluff) jars. Sherds tempered with both grit and chert (9% of the identified body sherd sample) were almost always cordmarked and almost certainly date to the Sponemann phase (e.g. Fortier and Jackson 2000). Grit-grog sherds (4%) are also usually cordmarked and probably date to the Emergent Mississippian period, since they appear most similar to Emergent Mississippian rims identified from the site (and like the Emergent Mississippian rims, many of the grit-grog body sherds appear to be composed of Madison County shale). These were mostly recovered from Feature 103, the house structure, which also contained Emergent Mississippian rim sherds. Limestone (2%) and shell (only 5 sherds; .001% of the body sherd sample) tempered body sherds were least common; nearly two-thirds of these were red-slipped and the remainder had plain surfaces. These probably date to the Emergent Mississippian occupation; red-slipped body sherds from Feature 103 (the house structure) were identified by John Kelly as Monks Mound Red.

Of cordmarked sherds examined to determine twist direction, 44% were S-twist and 56% were Z-twist, which is typical of an assemblage dating to the Late Woodland and Emergent Mississippian periods. Late Woodland ceramics are mostly S-twisted, whereas Emergent

Mississippian ceramics are generally Z-twisted (Kelly, Ozuk, Jackson, McElrath, Finney, and Esarey 1984). The exception to this is Late Woodland Sponemann phase ceramics, which are predominantly Z-twisted (Fortier and Jackson 2000; Maher 1991).

The ceramic sample includes 95 rim sherds, 32 of which were recovered from features, and the remainder of which were recovered from the plowzone (Tables 6 and 7). All rim sherds were identified as either Late Woodland or Emergent Mississippian. Of the 95 rim sherds, only one was identified as coming from a bowl; all other rims large enough to determine vessel type were from jars. The following discussion will emphasize rim sherds recovered from features.

Rim sherds that clearly date to the Late Woodland Sponemann phase were recovered from Features 102 and 106 and from the entry ramp to Feature 103 (see Table 6 and Figure 11; the rim from the entry ramp is rim 103-2/1). Some of these rims were castellated, most were tempered with both grit and chert, notches were located on the superior or exterior surface of the lip, and most sherds (5/8) for which twist could be identified were Z-twisted. All of these characteristics are typical of Sponemann phase ceramics (Fortier and Jackson 2000; Maher 1991).

One rim from Feature 106 (rim 106-4/3) is in a Late Woodland Patrick phase style (Fortier and Jackson 2000; Kelly, Finney, McElrath, and Ozuk 1984), with s-twisted cordmarking and interior notches on the lip (Table 6 and Figure 12). It is common to find Patrick ceramics on Sponemann phase sites (Fortier and Jackson 2000; Kelly 1990; Maher 1991), but the fact that no body sherds were found in Feature 106 matching this single rim sherd might indicate that the Patrick rim was intrusive.

Like the rims from Features 102 and 106, rims from Feature 101 were all cordmarked to the lip with inslanting profiles and were clearly Late Woodland (Table 6 and Figure 13).

Exterior lip notches and some use of chert temper suggest that Feature 101 also dates to the Sponemann phase. However, only one out of five rim sherds for which twist could be determined was z-twisted, which is an unusually low ratio for Sponemann phase ceramics, and no castellated rims were observed.

The ceramics from the basin of house Feature 103 were distinctly different from those described so far, dating to the Emergent Mississippian period (Table 6 and Figure 14). All rim sherds from the house basin had plain necks, but were cordmarked below the shoulder when the shoulder was visible. All jars were made of Madison County shales, except for one miniature vessel (rim 103-1/3). Two vessels (103-1/1 and 103-1/3), including the miniature vessel, had vertical notching on an everted lip. One vessel (101-1/2) had lip lugs. A nearly complete piece of stumpware (103-1/5) was also recovered (Figure 15). John Kelly places these rim sherds in the Edlehardt phase; several he more specifically identified as early Edelhardt, including one Peter Station Cordmarked vessel (103-1/1). Consistent with this phase designation are body sherds of Monks Mound Red also recovered from the house basin.

Rim sherds from the plowzone included 22 Late Woodland rims and 38 Emergent Mississippian rims (Table 7). Most were more or less consistent with rims described thus far, but several were distinctly different and bear further description. One rim (from bag I-1), identified by John Kelly as Pulcher plain (late Emergent Mississippian), was limestone tempered, made of Madison County shale, and had a plain surface; its lip was everted with diagonal exterior notches. Another rim (from bag K-1) was identified by Kelly as Merrell Red Film (Emergent Mississippian); it was grit tempered, made of Madison County shale, and red-slipped. The third rim (from bag J-1) is noteworthy because it came from a bowl; as indicated above, all other rims for which vessel type was apparent were from jars. This rim was from a Late Woodland bowl, cordmarked with grit temper.

The Minimum Number of Vessels (MNV) was determined for each feature by looking at both rim sherds and body sherds. The ten rims from Feature 101 came from at least five vessels; in fact, rims 101-1/3, 101-1/4, 101-1/5, 101-1/6, and 101-1/7 may have all come from the same vessel. Body sherds from Feature 101 are consistent with the rim sherds and do not increase the MNV. The four rim sherds from Feature 102 may have come from just two jars. Approximately 16 body sherds from Feature 102 appeared to be made from Madison County shale, unlike the rim sherds, suggesting the presence of a third vessel. At least seven vessels were identified from the basin of house Feature 103; rim sherds indicate four jars, body sherds suggest the presence of two more vessels (including the Monks Mound Red vessel), and one nearly complete stumpware vessel was recovered. At least one jar, indicated by a castellated rim, was recovered from the entry ramp to Feature 103. At least three vessels were recovered from Feature 106. Notably, most of the pottery from Feature 106, including both rims (9 out of 11 rims) and body sherds (209 out of 266 body sherds), was bloated or overfired, as indicated by a bubbly and sometimes warped appearance (Figure 16). Such defects are usually the result of a mishap during firing, occurring "when the temperature rises to and above the point of vitrification" (Maher 1991:194). The bloated pottery in Feature 106 could have come from as few as one or two defective vessels and could have been deposited in a single episode.

Only a few body sherds were recovered from Features 104 and 105. These sherds might indicate at least one vessel for each pit; however, the sherds were small and may have been intrusive. No sherds were recovered from Features 107 and 108.

Comparison of total numbers of sherds found in the plowzone with total numbers of sherds found in the features below shows that the two data sets correlate ($r = .7150$ at $p = .05$).[2] Also, the presence of bloated pottery in Feature 106 gives us the opportunity to track the disbursement of that distinctive pottery within the plowzone. The highest concentrations of bloated pottery within the plowzone were found in Unit K, immediately above Feature 106; 30% of the sherds (45 out of 150 sherds) within Unit K were bloated. Outside of Unit K, the highest concentrations of bloated sherds were found within Units A and B; 6% of the sherds (18/327) in Unit A were bloated and 5% of the sherds (11/224) of the sherds in Unit B were bloated. Between 1% and 3% of sherds in Units I, J, and L were bloated (in sum for all three units, 14 bloated sherds out of 616 total sherds). No bloated sherds were recovered from the western excavation block (Units C, D, E, F, G, and H). These data suggest that artifacts plowed out of features tend to stay within close proximity to the feature, although they might be spread several meters or more.

CHERT ARTIFACTS

Chert debitage and tools were analyzed by Shannon Moore and Cassandra Buskohl, with Brad Koldehoff verifying their identifications. Visual inspection of chert artifacts was macroscopic. All chert artifacts were identified to raw material when possible, examined for use wear, and finally counted and weighed.

Of all the chert types identified at A.E. Harmon, glacial till is the most readily available; glacial cobbles are exposed by streams across the American Bottom. Burlington is also considered a local chert in the American Bottom; it is available from the northern and southern

American Bottom and from across the Mississippi River in St. Louis, Jefferson, and St. Charles counties, Missouri. Not surprisingly, glacial till and Burlington were by far the most commonly used cherts at A.E. Harmon (Table 8).

Exotic cherts were also used, but in small quantities (Table 9; also see Table 10). The closest source of Ste. Genevieve and Salem cherts is the southern American Bottom, ca. 35 km from A.E. Harmon (Koldehoff 2002; Williams 1991). The primary source of Chouteau chert is the lower Illinois River valley, some 65 km from A.E. Harmon (Meyers 1970). The most "exotic" cherts used at A.E. Harmon come from southern Illinois and include Mill Creek, Cobden/Dongola, Bailey, and Kaolin cherts (Koldehoff 2002; Williams 1991). Very few pieces of exotic chert were found within features; most was found within the plowzone. One Mill Creek flake was found in each of Features 101, 102, and 103; the Mill Creek flake in Feature 103 was a hoe flake reused as a tool. Feature 103 also contained one Bailey flake and one Salem flake tool. Mill Creek chert and St. Genevieve chert were the most abundant of the exotic chert types.

Substantial quantities of debitage were recovered, some of which showed use wear (Tables 8 - 9). Most of those showing wear were expedient flake tools, two were drills, and some were flakes from larger tools such as hoes or adzes. Hoe flakes show a high silicate gloss from working the soil; adze flakes show a duller gloss from working wood. All hoe flakes recovered were of Mill Creek chert.

Lithic artifacts recovered also include a limited number of projectile points (Table 10; Figure 17). Nine complete or nearly complete (i.e., with intact bases) projectile points were recovered from the plow zone. Seven of these are arrowheads (Late Woodland or Emergent Mississippian), one is the base of a Cahokia tri-notched point (Mississippian), and one is the base of a Godar spear point (Middle Archaic). Only one projectile point was recovered from a feature; a Late Woodland-Emergent Mississippian arrowhead was found in Feature 102. One Late Woodland-Emergent Mississippian arrowhead found in the plow zone right above the feature probably also came from Feature 102. Ten non-diagnostic point tips and other fragments of points were also recovered (Tables 8 - 9).

Statistical analysis shows differences between lithic materials found in the plowzone compared to lithic materials found in features. It was notable even during excavation that most projectile points were found within the plowzone; in fact, of 19 complete or partial points, only one was found within a feature. Comparison of numbers of points and point fragments found in the plowzone with numbers of points and point fragments found in the features below shows that the two data sets do not correlate (r = -0.1500).[3] This suggests that projectile points were not deliberately discarded with trash into pit features; instead, points were lost on the living surface.

Exotic raw materials are also more common in the plowzone than in features; only four of 96 exotic chert flakes were recovered from features. Comparison of numbers of exotic chert flakes found in the plowzone with numbers of exotic chert flakes found in the features below shows that the two data sets do not correlate (r = .1404). This might suggest that exotic raw materials were not deliberately discarded with trash into pit features; like the projectile points, they may have been lost on the living surface. Perhaps this was because exotic materials were harder to obtain or less common; if exotics were brought to the site as finished or nearly finished tools, only small amounts of exotic debitage would be produced as tools were finished or maintained.

It might also indicate that the exotic raw materials from the plowzone mostly date to a different time period than the features excavated. Only two Mill Creek flakes were recovered from two Late Woodland features (101 and 102); three exotic (Bailey, Salem, and Mill Creek) flakes were recovered with Edelhardt phase ceramics in Feature 103. Most exotic materials were found in the plowzone of Units C-H; Emergent Mississippian or Mississippian occupants may have used this area to maintain lithic tools. (The Mississippian point, which was made of exotic Kaolin chert, was also recovered from Unit F.) The abundance of Mill Creek chert, including hoe flakes, in plowzone Units F, G, and H, might also indicate that this particular area was part of a garden or agricultural field.

COBBLE TOOLS

Cobble tools were identified and recorded by Shannon Moore under the supervision of Brad Koldehoff. These cobbles were expedient tools in the sense that there was minimal if any evidence of modification to the natural shape of the raw material other than that caused by actual use.

One cobble tool was collected from the surface of the site; it was bipitted and also used as a hammerstone before it was finally fractured by fire (Table 11). A cobble collected from the plowzone in association with Feature 108 showed minimal use as a hammerstone. Finally, five cobble tools were deposited in Feature 108, including two additional hammerstones and a heat-fractured mano. One cobble from Feature 108 had been used as a mano, an anvil, and a hammerstone; another cobble from Feature 108 was used as a mano and an anvil. The age of Feature 108 is uncertain, but it is suggested above that it may date to the Archaic period.

OTHER ARTIFACTS

Large quantities of FCR, or fire-cracked rock, were recovered (Table 12). FCR was the most ubiquitous artifact type at A.E. Harmon, occurring in all features. This is typical of prehistoric sites in the American Bottom. The feature with the greatest amount of FCR (in terms of weight) was Feature 106.

Limestone was found in several features. Limestone was imported to the site; it was useful in leaching the acid from acorns, and it could have also been used to "lime" prehistoric agricultural fields. Limestone also neutralizes the acidity in the soils of prehistoric features in which it occurs. This is a benefit to the archaeologist because it improves bone preservation. At A.E. Harmon, bones were found only in those features that contained limestone. Feature 106 also contained the greatest amount of limestone in terms of weight. The entry ramp to Feature 103 also contained a large amount of limestone relative to its volume. Little limestone was recovered from the plowzone, presumably because it erodes quickly in this context.

Great quantities of burnt clay were also recovered. This is typical of sites in the American Bottom. It is unclear whether these are bits of clay left over from the manufacture of pots and jars, bits of daub left over from wattle and daub construction, or simply bits of clay played with by children. Burnt clay was found in every feature except for Feature 108, with the highest number of burnt clay fragments occurring in Feature 101.

Small quantities of ochre (or a similar red material) were found in Features 101 and 102 and in most plowzone units. Two small pieces of mica and four small pieces of limonite were also recovered from the plowzone.

PLANT REMAINS

by Toshia Evans

An analysis was conducted of plant remains from three 10 l flotation samples taken from the keyhole feature at the A.E. Harmon site. Diagnostic ceramics date fill from the entry ramp of this feature to the Sponemann phase and fill from the upper stratum of the house basin to the Edelhardt phase. It is believed that the lower stratum of the house basin also dates to the Sponemann phase (see discussion below), though the flotation sample from this stratum was nearly sterile. The cultigens goosefoot (*Chenopodium* sp.), maygrass (*Phalaris caroliniana*), and erect knotweed (*Polygonum erectum*) were identified in both the Sponemann and Edelhardt phase fill. Maize (*Zea mays*) was identified in the Edelhardt phase fill. These findings are typical for features dating to the Sponemann and Edelhardt phases in the American Bottom.

<u>Methods</u>

Flotation samples taken from each feature (see field methods section above) were processed at SIUE's Anthropology Lab. The volume of each sample was measured and recorded before processing. The samples were then separated into light and heavy size fractions using the Flote Tech water flotation machine.

The light fraction for the keyhole feature 103 and the associated pit features 102 and 106 were separated using 2 mm, 1 mm, and .5 mm geologic sieves. For these samples the > 1 mm, > .5mm and < .5mm size fraction were carefully scanned for seeds and remains such as cucurbit rinds, bark, modern seeds, and wild beans at 10-30x magnification. Maize, beans, and squash were present only in sample 103-3, taken from the center of the upper stratum of the keyhole feature. Therefore, further analysis was limited to the three flotation samples from feature 103.

Feature 103 samples >2 mm light fraction was separated into the categories of wood and nutshell under low magnification (10-30X). Both categories were weighed and counted. Nutshell was identified to the lowest possible taxonomic level. Wood charcoal was counted and weighed, but not identified.

All identifications were made by Toshia Evans with guidance from Marge Schroeder of the Illinois State Museum and Maria Bruno of Washington University in St. Louis, using comparative collections at these institutions. Martin and Barkley (1961), Montgomery (1977), and Steyermark (1963) were used as reference manuals.

Results

A total of 7.07 g of light fraction charcoal was examined from the three 10 l samples taken within the keyhole structure feature 103. Sample 103-3 was taken from the center of the upper stratum of the house basin containing Edelhardt phase fill, and 103-7 was taken from the lower stratum of the house basin, probably containing Sponemann phase fill. Sample 103-4 was taken from the entry ramp and is from Sponemann phase fill. Table 13 lists all data for examined charcoal.

Wood. Samples taken from feature 103 contained 334 fragments of wood charcoal, weighing 2.57g, and comprising 54% of all >2mm charcoal (the remaining 46% is nutshell). The wood-to-nut ratio for all samples is .84:1. Sample 103-4 (entry ramp) contained a greater abundance of wood charcoal fragments. In all, 305 wood charcoal fragments and 55 nutshell fragments were counted (N=430). Sample 103-3 (upper stratum, basin) contained a greater abundance of nutshell. Twenty seven wood charcoal fragments and 225 nutshell fragments were counted (N=378). A total of two bark fragments and five grass stems were also identified. Sample 103-7 (lower stratum, basin) was nearly sterile and contained only two wood charcoal fragments and one nutshell fragment (N=4). Wood was not identified; it was counted and weighed solely for the purpose of calculating charcoal density for comparison with other sites.

Nutshell. The hickory-walnut family (Juglandaceae) makes up 91% of all nutshell and weighs a total of 3.8g for all samples. The sample taken from the upper stratum of the house basin (103-3) contained 48 fragments of thick-shelled hickory (*Carya* spp.) (.76g) and four unknown nutshell fragments (.06g). The sample taken from the entry ramp (103-4) contained 16 fragments of thick-shelled hickory (.38g) and four black walnut fragments (.23g). The sample taken from the lower stratum of the house basin contained only one nutshell fragment from the hickory-walnut family.

Seeds. Table 14 demonstrates the high frequency of cultigens identified from feature 103 samples at the A.E. Harmon site. Of the 180 seeds total, more than 60% were starchy seed cultigens. The large quantities of goosefoot, maygrass, and erect knotweed compared to other seeds suggest these were important crops. Maize was identified, though the level of its use is unclear.

Seventy-one goosefoot seeds were identified (39.5%). Of these seeds, 94% are from fill that dates to the Edelhardt phase. *C. berlandieri* is native to the floodplains of the American Bottom. Though wild seeds are present in samples from the A.E. Harmon site, most chenopodium seeds appear to be domesticated. Wild seeds have thicker, smoother seed coats whereas domesticated chenopodium seeds have relatively thinner, less dense seed coats.

Twenty-six maygrass seeds (*Phalaris caroliniana*) were identified (14.4%), making it the second most abundant seed type. Twenty-three of these maygrass seeds are from fill that dates to the Sponemann phase. Though maygrass lacks any morphological changes to indicate domestication, the A.E. Harmon site lies outside its natural geographic range, suggesting cultivation (Cowan 1994:269).

Ten of the eleven knotweed/smartweed seeds (6.1%) were identified as erect knotweed (*P. erectum*) and are from Sponemann phase feature fill. There is currently no direct evidence for the domestication of knotweeds. However, harvesting experiments conducted by Asch and Asch (1985) suggest that wild stands are not abundant enough for regular harvest. Therefore, the abundance of knotweeds in the archaeological record is likely due to cultivation (see Parker 1991: 411).

The seven curcubit (Cucurbiticeae, *Lagenaria*) rind fragments identified were from Edelhardt phase fill. Most parts of squashes are consumed and do not preserve well. Therefore, its abundance may not be an accurate representation of its level of use.

Other seeds identified were one member of the bean family (Fabaceae) and two wild beans (*Strophostyles* sp.). The one sunflower/sumpweed (*Helianthus*/*Iva annua*) present was the only representative of the oily seeds common for this time period. Also present were modern, uncharred *Ambrosia* and *Euphorbia* sp. seeds.

Panic grass (*Panicum* spp.), grasses (Poaceae), purslane (*Portulaca oleraceae*), blackberry/raspberry (*Rubus* sp.), rush (*Scirpus* sp.), prickly mallow (*Sida spinosa*), and black nightshade (*Solanum ptycanthum*) were present in the >.5mm fraction. Small grasses *Bouteloua* spp. (cf. *gracilis*) were in abundant in the <.5 mm fraction.

One *Zea mays* (maize) embryo and nine kernel fragments were identified within Edelhardt phase fill sample 103-3. Maize is third in abundance in the samples examined along with erect knotweed.

Summary and Conclusion

Three samples from structure feature 103 and its entry ramp were analyzed. Wood charcoal was not analyzed, though hickory is the predominant taxon found at most American Bottom sites. All nutshell identified is from the hickory-walnut family, including four black walnut shell fragments.

Starchy seed cultigens make up 60% of seeds identified. Goosefoot makes up 39.5%, maygrass makes up 14.4%, and knotweed makes up 6.1% of all seeds identified. Maize was present in small quantities in the Edelhardt feature fill. All other seeds were low in frequency

Plant remains at the A.E. Harmon site are typical for Late Woodland and Emergent Mississippian sites within the American Bottom. Extensive research has demonstrated that at the time of occupation of the A.E. Harmon site, a multi-crop, native horticultural complex had been in use for at least 750 years (Parker 1991:378). Cultigens could be stored to complement a hunter-gatherer lifestyle, providing a well-balanced diet that was also very reliable. An abundance of cultigens and the presence of three large storage pits at A.E Harmon suggest that they were cultivating and storing these crops while living in semi-sedentary seasonal villages.

It is also noteworthy and possibly significant that maize was observed in the Edelhardt sample while it was not observed in any of the Sponemann or other Late Woodland samples (including those from other features which were scanned by Evans). Maize is common in Emergent Mississippian features in the American Bottom, but rare in Late Woodland features. While maize has been observed on some Sponemann phase sites, it does not seem to have been a major component of the Late Woodland diet (see discussion below). The absence of maize from Late Woodland features at A.E. Harmon supports this.

ANIMAL REMAINS

Animal remains were recovered from A.E. Harmon by screening and by flotation sampling. Julie Holt identified the animal remains using comparative collections at SIUE's Anthropology Lab and at the Illinois State Museum in Springfield. The remains were identified to taxon as precisely as possible. Additional observations recorded for each specimen include provenience and whenever possible age, sex, weathering, cultural modification (e.g., butchery marks or burning), pathologies, and fish size. (Fish elements identified minimally to family level were assigned to 8 cm size classes, i.e., fish with a standard length of ≤8 cm, >8≤16 cm, >16≤24 cm and so on, by comparing archaeological elements with elements from fish of known size.) Measures of taxonomic abundance include the number of identified specimens (NISP) and minimum number of individuals (MNI) (Grayson 1984). Fragments of undetermined taxon in the flotation samples were not counted but their presence was noted.

Few animal remains were recovered during the SIUE excavations, presumably due to poor preservation conditions (Tables 15 - 16). Features 102 and 106 contained the most bones; these two features also contained the largest amounts of limestone. Limestone neutralizes soil acidity, lending to the preservation of bone in these two pits. Half of the bones in the screened sample were burnt or calcined, which also aids preservation by removing organic materials. Only ten out of 86 identified bones in the flotation samples were calcined, but most of the unidentified bone from the flotation samples was burnt or calcined. The bone that was recovered from A.E. Harmon showed little evidence of weathering; rodent-gnawing was observed on only one bone from the screened sample and none of the bone from the flotation samples. Large mammal bones tended to be highly fragmented, whereas remains of small mammals, birds, and fish tended to be more complete. No butchery marks were noted on any bones.

Mammal remains are most common in the screened sample, but the mammalian NISP is inflated by white-tailed deer (*Odocoileus virginianus*) tooth fragments. Other mammals identified in the screened sample were squirrel (*Sciurus* sp.), a mustelid (Mustelidae), and a canid (Canidae). Mammals identified in the flotation samples were a mouse-sized rodent (Muridae), muskrat (*Ondatra zibethicus*), pocket gopher (*Geomys bursarius*), eastern cottontail rabbit (*Sylvilagus floridanus*), a mustelid (*Mustela* sp.), a canid, and white-tailed deer. Deer teeth were observed in Features 101 and 106; a deer femur fragment was also observed in Feature 106. An MNI of two is calculated for deer since these remains were recovered from two features; however, they could have come from a single animal. An MNI of two is also calculated for the mouse-sized rodents since their remains came from two features. All six of the canid bones recovered from Feature 106 could have come from a single individual. All of the canid remains were calcined bones of the hind feet. These bones were generally small for a coyote and large for a fox, which might suggest that they were from a domestic dog. However, bones can shrink when they are calcined, so the size of these bones may be underestimated.

Fish remains are most common in the flotation samples and are also common in the screened sample. Catfish (Ictaluridae) are most abundant; all catfish identified to genus were bullheads (*Ameiurus* sp.), including black bullhead (*A. melas*) and brown bullhead (*A. nebulosus*). Bowfin (*Amia calva*) are also abundant. Other fish identified were sunfish (Centrarchidae), suckers (Catostomidae), and pike (*Esox* sp.). Most of the fish recovered were quite small; half of those recovered through screening and half of those recovered through flotation sampling were less than 16 cm in length. The largest fish recovered were bowfin (32-40 cm long), sucker (24-32 cm long), and pike (24-32 cm long).

Bird remains were uncommon at A.E. Harmon. Duck remains (*Anas* sp. and Anatidae) were recovered in two features. Other birds identified were greater prairie chicken (*Tympanachus cupido*) and a member of the Charadriiformes, perhaps a killdeer.

Reptiles were also uncommon. Most turtle remains were shell fragments, mostly unidentified. Two genera that were identified are mud turtle (*Kinosternon* sp.) and softshell turtle (*Trionyx* sp.).

Mussel shell was observed in just one feature. A trace amount of mussel shell was recovered in the flotation sample from Feature 106. The shell was highly fragmented and unidentifiable to species.

Unfortunately, the faunal samples from A.E. Harmon are too small to permit robust quantitative comparisons with samples from other sites. However, some conclusions are possible. It seems reasonable to suggest that venison and fish were staples of the diet here as elsewhere during the Late Woodland and Emergent Mississippian periods. The faunal samples from A.E. Harmon are insufficient, however, to see if a decline in venison consumption occurs at this site, as it does at other Emergent Mississippian sites (Holt 1996b). The presence of only one postcranial white-tailed deer element also makes it impossible to discuss patterns of venison consumption at A.E. Harmon.

We can see from the species present that the inhabitants of A.E. Harmon exploited a diversity of environments, all of which might have been found within a few kilometers of the site. These environments included forest (deer, squirrel), edge (rabbit), prairie (prairie chicken, pocket gopher), and wetlands (fish, mussel, turtles, duck, muskrat). The small bullheads and other fish caught at A.E. Harmon were probably caught in nearby Cahokia Creek. Some of these fish could have also been caught in backwater lakes or in the Mississippi River. A large backwater lake was present ca. 6 km from A.E. Harmon in the 19th century (Illinois Secretary of State 2005); today it is mostly drained but still exists in the form of Long Lake.

HUMAN REMAINS

A single human bone, a right femur shaft, was recovered from Feature 102. The identification of this bone as human was confirmed by Dawn Cobb of the Illinois State Museum. The bone was located in the bottom half of the north half of the feature. Given that this was an isolated element found in a pit full of refuse, Feature 102 should not be considered a burial. Although the human bone was found in the vicinity of other animal remains, neither should it be considered dietary refuse. Unlike the other large animal remains, the human bone was nearly complete. No signs of modification (burning, butchery, gnawing, etc.) were noted on the bone. No assessment of age, sex, or stature could be made since the bone was missing both epiphyses.

DISCUSSION

Determining chronology is the first step in any archaeological investigation. In the American Bottom, features are typically dated by their contents, usually ceramics for the Late Woodland-Emergent Mississippian periods. A conventional interpretation of the features excavated at A.E. Harmon would therefore argue that house Feature 103 dates to the Edelhardt phase of the Emergent Mississippian period, since it contains ceramics from that phase.

Adjacent Features 102 and 106, and the entry ramp to Feature 103, would be dated to the Sponemann phase of the Late Woodland period, since they contain Sponemann phase ceramics. Feature 101 also contains Late Woodland (probably Sponemann) ceramics, and so would be dated to that period, while the remaining features might remain undated since they contained no diagnostic artifacts.

The problem with this interpretation is that the assignment of house Feature 103 to the Edelhardt phase is implausible. It implies that Edelhardt phase people arrived at the site several hundred years after Sponemann phase people, placing Feature 103 exactly between, but not overlapping or superimposing in any way, Sponemann pit Features 102 and 106. The entry ramp to Feature 103 should contain Edelhardt phase ceramics according to this interpretation, but it does not. Also problematic is the fact that Edelhardt phase structures don't have entry ramps. One therefore might argue that the "entry ramp" is actually a shallow, elongated feature previously constructed by Sponemann phase people. This strangely shaped feature just happens to be located right in the middle of the wall of this Edelhardt phase house, where there just happens to also be a gap in the wall posts suggesting a doorway. The fact that the fill in the entry ramp was indistinguishable from the fill in the doorway argues against this interpretation.

An alternative, more plausible interpretation, and that which is preferred here, is that this is a Sponemann phase keyhole structure with associated pit Features 102 and 106. Sponemann phase people built the structure and the pits, living in the house and using the pits for storage and finally for trash before they abandoned the site. The stratigraphy of the structure supports this interpretation. Within the entry ramp, an outer zone was noted, and within the house basin, two strata were encountered (see Figure 8). The outer zone of the ramp contained more charcoal than the interior fill. The lower stratum of the basin contained very few artifacts, which is typical of keyhole structures (e.g. Fortier 1993). The upper stratum of the basin contained a quantity of Edelhardt phase artifacts, mostly located toward the center of the house.

Experimental work by Mat Terry (personal communication, November 1, 2005) explains why there is an "outer" zone in the entry ramp of Feature 103. Terry (2004) built a keyhole structure based on the plan of Feature 103 for the purpose of an experiment (see below). When his initial experiment was completed, Terry abandoned his reconstructed keyhole structure. He found that the entry ramp, which he had built without a roof, began to fill with sediment first, starting at the external end of the pit which lay beyond the drip line of the main roof. Terry's observation suggests that when Sponemann phase people abandoned Feature 103, the main roof was still intact, and the outer zone noted in the entry ramp is the portion of the entry ramp which filled first because it lay beyond the drip line of the main roof.

Once the main roof collapsed, which might have happened months or even years later, the basin itself would have begun to fill in, beginning at the perimeter of the house. With no one living at the site during this time, that fill would have been sterile, as the lower stratum within the basin was. When later Edelhardt phase people moved into the site, there was still a depression in the center of the Sponemann phase house. This depression became a convenient receptacle for Edelhardt phase trash, as is indicated by the upper stratum of the basin, in which artifacts were concentrated toward the center.

The architectural style of house Feature 103 also supports the interpretation that it dates to the Sponemann phase. The location of the shallow feature in the middle of the south wall of the structure, and the lack of wall posts there, indicates that this is an entry ramp. The presence of an entry ramp is what distinguishes keyhole structures from other small rectilinear basin structures of the Late Woodland and Emergent Mississippian periods. Keyhole structures are usually found on Patrick and Sponemann phase sites in the American Bottom (e.g. Fortier 1993); however, several keyhole structures at the Range site were dated to the Dohack phase (Kelly et al. 1990).

Comparison with data from other keyhole structures in the American Bottom shows that the structure at A.E. Harmon is unusual in some ways, but within the range of variation for all variables considered. The most striking aspect of Feature 103 is that its entry ramp is unusually short at 0.9 m (Table 17). However, the entry ramp on a keyhole structure excavated at AG Church (measured as the distance between the house and the entry pit) was 0.9 m (Holt 1996a), and the entry ramp on Feature 773 at the Sponemann site was even shorter at 0.62 m (Fortier et al. 1991). Moreover, it is possible that the entry ramp to the keyhole structure at A.E. Harmon was originally longer, but was truncated by plowing.

The entry ramp to Feature 103 at A.E. Harmon was located on the south side of the structure. This is typical: entry ramps to American Bottom keyhole structures are most commonly oriented to the southeast, southwest, or south. East is also a common orientation. Entry ramps facing north are uncommon; only two keyhole structures at the Range site were oriented with their entry ramps pointing to the northeast (Kelly et al. 1987).

No entry pit was excavated at A.E. Harmon, but an entry pit could lie in the unexcavated area to the south of the structure. The geophysical survey at A.E. Harmon showed no indication of a pit there, but the structure itself was undetected by the geophysical survey. Keyhole structures without entry ramps have been excavated at the Range site (Kelly et al. 1987) and the John H. Faust #1 site (Holley, Parker, Scott, Watters, Harper, Skele, Brown, Booth, Williams, and Ringberg 2001).

Keyhole structures tend to be square, while later houses in the American Bottom tend to be more rectangular. The ratio of width to length for the keyhole structure at A.E. Harmon is .75. This is more rectangular than the average keyhole structure, but it is again with the range of variation for keyhole structures. The basin of the keyhole structure at A.E. Harmon is comparatively shallow, but again falls within the range of variation for keyhole structures (Table 17). Other attributes of the keyhole structure at A.E. Harmon are fairly typical (see Table 17).

Fortier (1993) presents statistics on keyhole and small rectilinear structures without entry ramps from Patrick phase components at Fish Lake and Range, showing that their floors average about 5 m^2. Fortier also presents comparable statistics for the Sponemann phase occupation of the Sponemann site. Keyhole and small rectilinear structures without entry ramps there show a much wider range of variation, but still floors average about 5 m^2. More recently published data for keyhole structures excavated at AG Church (Holt 1996a), the Technique site (Holley, Parker, Scott, Watters, Skele, and Williams 2001), and the John H. Faust #1 site (Holley, Parker, Scott, Watters, Harper, Skele, Brown, Booth, Williams, and Ringberg 2001) show that keyhole structures can be much larger. Perhaps the largest published keyhole structure excavated in the American Bottom was a house at John H. Faust #1 measuring 10.7 m^2. The structure at A.E. Harmon is closer in size to the smaller keyhole structures, with an area of 5.7 m^2.

Houses of the early Emergent Mississippian period tend to be small, even smaller on average than Late Woodland Patrick and Sponemann phase houses. Houses increase in size during the late Emergent Mississippian period; however, houses show great variation in size during this period. While the house at A.E. Harmon is much smaller than the average house during the late Emergent Mississippian period (Table 17), late Emergent Mississippian houses as small as the A.E. Harmon house have been excavated. For example, of 16 Edelhardt phase house structures excavated at the BBB Motor site, the average area is 10.5 m^2 (Emerson and Jackson 1984). However, three of those 16 structures are similar in size or smaller than the structure at A.E. Harmon, ranging between 4.91 m^2 and 6.13 m^2. In fact, these three structures are so much smaller than other structures at BBB Motor that Emerson and Jackson considered the possibility that they might date to an earlier occupation. Some ceramic differences were also noted for one of the three structures. However, Emerson and Jackson concluded:

> The location of the small structures within a settlement area defined by the larger structures and following the same orientations as the larger structures, suggests that they were all part of a single community. These smaller structures may not necessarily have served as dwellings per se but could have functioned as storehouses, granaries, etc. (1984:166).

Thus, the structure at A.E. Harmon is unusually small for the late Emergent Mississippian period, but it does fall within the range of variation. However, the presence of an entry ramp on Feature 103 is strong evidence that this structure does not date to the Edelhardt phase.

In sum, the architectural style of house Feature 103 at A.E. Harmon suggests that it dates to the Late Woodland period. This is consistent with ceramic dating of the entry ramp and associated pit features, which date to the Sponemann phase; it is also consistent with the stratigraphic deposition observed within the house basin. Finally, common sense argues against the alternative interpretation, that later Edelhardt phase people came to the site, carefully positioning their small house between three Sponemann phase features. It is implausible that they would do this without superimposing either Feature 102 or 106, and that a third Sponemann phase feature (strangely shaped and with fill indistinguishable from the house fill) would happen to lie exactly where the Edelhardt occupants decided to place their door.

Life at A.E. Harmon during the Late Woodland and Emergent Mississippian Periods

Although only a small portion of the A.E. Harmon site was excavated, we can make some statements about the activities that took place there during the Late Woodland and Emergent Mississippian periods. Both Sponemann and Edelhardt phase occupants subsisted on wild plant foods like hickory nuts and on cultivated native plants like chenopodium. Forests would have surrounded the site, providing nuts and berries. Cultivation presumably relied on slash and burn techniques, and gardens or fields were shifted as forest soils declined in productivity. There is no evidence that Sponemann phase occupants grew or consumed maize. By the Edelhardt phase, maize was planted, or perhaps it was simply imported to the settlement. Although the Edelhardt paleoethnobotanical sample is small, it suggests that maize was no more important in the diet than native cultigens at this time.

The forests surrounding the site also were home to animals, most importantly deer. Deer would have provided venison to eat, hides for clothing and covering, and bones and antlers for tools and toys. Fish were also an important source of meat. Most of the small fish consumed at A.E. Harmon were probably caught in Cahokia Creek, which meandered across the floodplain below A.E. Harmon. Prairies near the site were also hunted, providing game such a prairie chickens.

The canid foot bones found in a Sponemann phase pit may be those of a domestic dog. That these bones were apparently thrown out with the trash does not indicate that dogs were not valued at A.E. Harmon, just as the presence of an isolated human bone in another Sponemann phase trash deposit does not indicate that people were not valued. However, the calcined condition of the canid bone, similar to the condition of other dietary remains, might indicate that the dog was eaten. In contrast, the human bone was nearly complete, with no evidence of burning or cut marks or anything else to suggest this human thigh was anyone's dinner.

The presence of bloated and overfired pottery indicates that Sponemann phase occupants made pottery at the A.E. Harmon site; a less likely explanation is that the pottery was damaged in a house fire (Maher 1991). Similarly misfired pottery was also observed at the Sponemann site (Maher 1991), and Maher explains that bloating will occur at different temperatures depending upon "the types of clays, inclusions, and fluxes in a vessel's paste" (1991:194). The misfired ceramics at the Sponemann site and at A.E. Harmon were both gray in color (10YR 5/1 and proximate colors) and chert tempered. The Sponemann site is only ca. 13 km from A.E. Harmon; it is possible that inhabitants of these sites were sharing a clay source. Like most Late Woodland sites, much of the chert used at A.E. Harmon and the Sponemann site (Williams 1991) was Burlington, a local chert. While the chert temper used at these sites has not been sourced, the chert temper at A.E. Harmon was white and might also be Burlington. Whether the clay or chert temper was responsible for the firing failures at A.E. Harmon and Sponemann is not clear, but it seems likely that one or both of these materials may have contributed to the situation.

As was stated above, all misfired sherds at A.E. Harmon could have come from one or two vessels. These vessels were surely manufactured at A.E. Harmon, but it is not clear where on site they were fired. Feature 106, which contained the misfired ceramics, and Feature 101 are similar in size to features at the Sponemann site identified as possible firing pits (Maher 1991). As would be expected of firing pits, Features 106 and 101 both contain evidence of burning, but then so does Feature 102, which is deeper than possible firing pits identified at the Sponemann site. While it is possible that any or all of these pits could have been used for firing, it is maintained here that Features 102 and 106 were contemporaneous with house Feature 103. They were too close to the walls of this structure to fire vessels safely; therefore, they were more likely storage pits. Feature 101 is located safely away from house Feature 103 and might seem more likely to have been used as a firing pit. However, it is unknown if structures might lie close to it in unexcavated areas south and west of Feature 101.

Lithic remains at A.E. Harmon indicate that some chert came from as far as the lower Illinois Valley or southern Illinois, but most was acquired locally. Glacial cobbles picked up nearby were reduced on site, but other chert was brought to the site in the form of cores or even finished tools. The presence of numerous arrow points suggests bow hunting was an important Late Woodland activity, and numerous hoe flakes are further evidence of horticultural or agricultural activities, probably during the Emergent Mississippian or Mississippian period. Other flake tools indicate activities such as hide scraping or woodworking. The age of the manos and hammerstones is unclear, but food processing and stone tool manufacture would have been important during all time periods.

Feature 103 at A.E. Harmon, which is interpreted as a Sponemann phase keyhole structure, might indicate seasonality at the site. Fortier et al. (1984) suggests that keyhole structures were winter houses. Experimental research by Terry (2004) confirms that keyhole structures would have been comfortable during cold weather. Terry built a keyhole structure based on the plan of Feature 103 and recorded internal and external temperatures between January 18 and March 30, 2004. Terry found that temperature readings taken inside the reconstructed keyhole structure were typically one or two degrees Fahrenheit *lower* than outside temperatures; however, the interior temperature felt much warmer since the wind was blocked by the structure's walls. In addition, the house warmed up quickly when Terry introduced a source of heat to the house. The source of heat used by Terry in his experiment (live coals contained within a ceramic vessel) is consistent with the archaeological record: interior features are rare in keyhole structures. Terry points out that body heat would also raise the temperature inside the house.

Fortier et al. (1984) and Kelly et al. (1987) suggest that the entry ramp served a function in warming up keyhole structures. Fortier et al. suggest that a fire was kept in the end pit, and the heat was drawn into the house through the ramp, while Kelly et al. suggest ramps facing the south or southeast would be naturally warmed by the sun. As Terry (2004) notes, however, there is no archaeological evidence of burning in end pits, and Terry's experiment indicates that sunlight alone does not effectively warm a keyhole structure. Thus, there is no evidence that the ramp itself necessarily indicates winter occupation. Live coals in a pot and body heat would presumably be useful in heating small rectilinear structures without entry ramps as well.

Finally, Terry (2004) points out that while keyhole structures would have been comfortable during the winter, they also would have been comfortable during warmer months. On one 80 degree day, Terry took the temperature inside the reconstructed keyhole structure and found that the interior temperature was in the low 60s – as much as 20 degrees cooler than outside.

Another interesting suggestion by Terry (personal communication, November 1, 2005) regards the construction of the roof of Feature 103. Terry used grass over poles for the roof in his reconstruction. He suggests that as the roof collapses, or even as the roof ages, grass seeds should be abundant on the floor of the structure; however, no grass seeds were recovered in flotation sample taken from the lower stratum of the house basin, and only two grass seeds were recovered from the upper stratum of the house basin. There are several possible explanations for this. First, the "shingles" of the roof may have been made from bark or hides or some other material other than grasses. Second, perhaps grasses were used, but the grasses were not at seed when they were harvested. Third, perhaps grasses were used, but the seeds (and other parts) simply did not preserve because they were not charred.

Structures like the one excavated at A.E. Harmon also provide clues to both community and family structure. Such structures were too small to permit much activity beyond sleeping; the scarcity of artifacts on house floors and the rarity of features within these houses support this interpretation. This suggests that most other activities took place in communal settings, whether in the open or within larger, communal structures (e.g., see Holt 1996a; Fortier 1993). The small size of these structures also suggests small nuclear families, or perhaps older children within larger families shared sleeping quarters with grandparents or childless relatives.

The close proximity of two storage pits to the keyhole structure at A.E. Harmon suggests that these were storage spaces for the family that lived there. The association of storage pits with the house gives us an opportunity to consider how much storage was required by a single family. The volumes of storage pit Features 102 and 106 are calculated at 739 dm^3 and 312 dm^3 respectively, but these calculations are made of the features after they were truncated by plowing. To estimate the volume of features at A.E. Harmon before plowing, we can add the depth of the plowzone to the depth of the features. The recalculated volumes for Features 102 and 106 are 1025 dm^3 and 557 dm^3 respectively. The combined volume of these two pits (nearly 1582 dm^3, or ca. 6700 cups) might represent the annual storage requirements of a single family at the end of the Late Woodland period. This would allow for the storage of 18 cups of grain per day, which is a generous amount of food for a family of six. These calculations are crude and meant as “food for thought.” However, the estimated storage capacity for the pits at A.E. Harmon is nearly identical to the volume of storage pit Feature 15 at A.G. Church. The volume of this pit was 1574 dm^3 (Holt 1986a); this feature was not truncated by plowing, so this is its aboriginal volume. This storage pit was actually located within a keyhole structure, which is unusual, but a clear indicator that this was storage for the family that lived there. Pit liners would have reduced the storage volumes of these pits to an unknown extent.

Although it is unusual to find pits in such clear association with a particular house, it is also unusual to find evidence of communal food storage or processing during the Patrick and Sponemann phases. While most activities beyond sleeping may have taken place in communal settings at the end of the Late Woodland period, "ownership" of food was apparently at the family level. Communal food processing areas are not observed until the Emergent Mississippian period at the Range site (e.g., Kelly et al. 1987; Kelly et al. 1990) and at A.G. Church (Holt 1996a). Holt (1996a, 1996b) suggests that the introduction of maize in the Emergent Mississippian period may be related to this shift: wild plants and native cultigens may have been tended and harvested by the family, while the entire community may have been involved in planting, tending, and harvesting maize. Kelly (1992) suggests that increasing degrees of communal organization during the Emergent Mississippian period were due not only to changes in subsistence, but also to increases in population.

Finally, it is not clear how large the settlement at A.E. Harmon was during either the Sponemann or the Edelhardt phases. South of the SIUE excavations, ITARP excavations revealed Late Woodland, Emergent Mississippian, and Mississippian features. SIUE CAP investigations exposed another keyhole structure ca. 100 meters east of the one excavated by the SIUE field school, suggesting that the Sponemann phase occupation extended at least that far. Kelly (n.d.) may be correct that A.E. Harmon was a large nucleated village during the Emergent Mississippian period, but the size and nature of that village remains unknown.

A Consideration of A.E. Harmon's Role in the Late Prehistoric Settlement System

To present a diachronic perspective, we point out that A.E. Harmon was occupied repeatedly, if not continuously, throughout the Late Woodland and Emergent Mississippian periods, and into the Mississippian period. Patrick phase pit features were excavated by ITARP, Sponemann phase features (including a structure and pits) were excavated by ITARP and SIUE, Loyd and Merrell (Emergent Mississippian) phase pit features were excavated by ITARP, Edelhardt phase artifacts were recovered from a Sponemann phase house by SIUE, and a Mississippian structure was excavated by ITARP. Emergent Mississippian settlements were also present right next to the A.E. Harmon site at the Sampson Monument site and the Harmon site (Kelly n.d.). Nearby, Kane Village was also occupied during the Emergent Mississippian period (Munson and Anderson 1973). As was suggested above, several different groups could have occupied these sites, or a single group could have moved from one site to the next as its gardens exhausted the forest soils. If more than one group occupied these sites, they were probably related and clearly had strong social ties. In either case, it is clear that this locale, located at the bluff's edge with access to upland and floodplain resources; forest and prairie resources; and creeks, bottomland lakes, and more distantly the Mississippi River, was a perfect place to live for the prehistoric horticulturalist-hunter-gatherer-fisherman.

The SIUE excavation at A.E. Harmon, although limited in scope, sheds more light on the Sponemann phase in particular. A.E. Harmon is one of a handful of known Sponemann phase sites (see Kelly 1990), and the most extensive excavation of a Sponemann phase site took place at the Sponemann site itself (Fortier et al. 1991). Previous researchers (e.g., Kelly 1990) have noted that Sponemann sites occur in the northern portion of the American Bottom; however, more recent excavations near Scott Air Force Base provide evidence of a Sponemann incursion into the uplands east of the central American Bottom (Holley, Parker, Scott, Watters, Harper, Skele, Brown, Booth, Williams, and Ringberg 2001; Holley, Parker, Scott, Watters, Skele, and Williams 2001). The consensus among researchers (e.g., Fortier and Jackson 2000; Kelly 1990) is that the Sponemann phase represents a migration of people into the American Bottom from the north. These immigrants coexisted with later Patrick phase groups, and Sponemann and Patrick phase materials are often found on the same site.

Fortier and Jackson (2000:132) argue that "…Sponemann phase populations… do not seem to have had a lasting affect on other local populations." However, they point out two exceptions, the use of maize and Z-twist cordage. Before the excavation of the Sponemann site, both of these practices were considered traits associated with (or beginning in, in the case of maize use) the Emergent Mississippian period. Indeed, because maize and Z-twist cordage were common at the Sponemann site, the Sponemann phase was initially identified as Emergent Mississippian rather than Late Woodland in the Sponemann site report (Fortier et al. 1991).

The switch to from S-twist to Z-twist cordage seems unimportant to the non-ceramicist. If indeed Sponemann immigrants brought this new cordage manufacturing style, the new style in and of itself would seem to have little impact on American Bottom lifestyles. However, the significance of maize in later developments in the American Bottom is undeniable. If Sponemann immigrants brought maize with them, their contribution to American Bottom prehistory cannot be overestimated.

We might therefore take another look at the evidence for maize use among Sponemann people. Maize was found in approximately one-third of the Sponemann phase features at the Sponemann site (Parker 1991)); only a few of the features, however, contained more than a dozen or so fragments, which probably indicates that maize there was only a small component of the diet. Parker reports that maize was found in ca. 24% of Sponemann phase features at the Samson site (1991, citing personal communication with S. Dunavan). Maize was found in small amounts in approximately 5% of the features at two Late Woodland sites near Scott Air Force Base; all but one of those features contained Sponemann phase ceramics (Holley, Parker, Scott, Watters, Harper, Skele, Brown, Booth, Williams, and Ringberg 2001). The small amount of maize present at the two sites near Scott Air Force Base is taken as evidence of "incipient maize cultivation" (Holley, Parker, Scott, Watters, Harper, Skele, Brown, Booth, Williams, and Ringberg 2001:460). Maize is not found at all Sponemann phase sites, however, including the Sponemann phase features at A.E. Harmon (also see Jackson 1995). In sum, maize seems to be a minor component of the Sponemann subsistence system. However, when maize is found on Late Woodland sites in the American Bottom, it is found in association with Sponemann groups. This association suggests that maize was introduced by Sponemann immigrants.

Finally, it is worth pointing out that Sponemann "immigrants" occupied the American Bottom for several centuries. Compared to the history of the United States, for example, several centuries is a long time, and some argue that the Sponemann phase represents "a potentially long-lived tradition" (Holley, Parker, Scott, Watters, Harper, Skele, Brown, Booth, Williams, and Ringberg 2001:457). Fortier and Jackson (2000) suggest that Sponemann phase people might have remained in the American Bottom into the early Emergent Mississipian period (as evidenced at the Samson site). Fortier and Jackson hypothesize that Sponemann people retained their cultural identity, at least in terms of their ceramic styles. However, the fact that Sponemann and Patrick phase materials are found on the same sites might indicate intermarriage between these groups. The adoption of Z-twisted cordage and maize by other groups in the American

Bottom also suggests a possible “blending” of cultural identities, or perhaps “emulation” of Sponemann immigrants (see McElrath et al. 2000:20-21).

In any case, while Sponemann people may have migrated into the American Bottom around cal. A.D. 750, we are not persuaded by the interpretation that they moved out several centuries later with little lasting impact on the American Bottom. They appear to have brought maize with them, and they appear to have intermarried with Patrick people. New groups may have continued to have migrated into the American Bottom in subsequent periods, but Patrick-Sponemann descendents surely continued to live among them.

A Consideration of Late Woodland and Emergent Mississippian Nomenclature

As was mentioned above, the Sponemann phase was referred to as Emergent Mississippian in the Sponemann site report because of the presence of maize and Z-twisted cordage (Fortier et al. 1991). Kelly (1990:124) argued instead that Sponemann should be considered Late Woodland, like the Patrick phase, because it is “clearly Late Woodland in terms of its ceramic assemblage and settlement patterns.” Subsequently, Fortier and Jackson (2000) and other authors (e.g., Holley, Parker, Scott, Watters, Harper, Skele, Brown, Booth, Williams, and Ringberg 2001:457) have followed Kelly in referring to the Sponemann phase as Late Woodland, recognizing that the Sponemann and Patrick phases overlap in time; indeed, Sponemann and Patrick ceramics often co-occur on a single site. As Fortier and Jackson (2000:132) put it, the two groups co-occupied sites, and furthermore, “their material assemblages are so intermingled that a specific Patrick or Sponemann identity is completely obscured.”

More recently Fortier and McElrath (2002) have argued for yet another change in nomenclature. Having converted from a “processual stance” to a “postprocessual perspective,” they reject the term Emergent Mississippian primarily because of its evolutionary implications and because it is teleological, implying that inhabitants of the American Bottom were "predestined" to become Mississippian. They concur with Pauketat (1998, 2001) that Cahokia's rise occurred with a "Big Bang," resulting from historical processes and the actions of individuals rather than gradual evolutionary forces like population pressure or subsistence change. For these and other reasons, Fortier and McElrath argue that Patrick, Sponemann, and all phases formerly known as Emergent Mississippian should now be known as Terminal Late Woodland. They suggest that this new nomenclature will more sharply distinguish the Mississippian period from what came before it, concluding that the rise of Cahokia was "revolutionary, not evolutionary."

While Fortier and McElrath (2002) offer some compelling points, the new nomenclature they propose is not necessarily more satisfying than the nomenclature already in use. First, there are theoretical problems with Fortier and McElrath's arguments, in that they seem to misunderstand evolution. They portray evolution as necessarily gradual, when in reality evolution can be either gradual or sudden. Indeed, the "Big Bang" at Cahokia can be seen in an evolutionary framework as an instance of punctuated equilibrium. Fortier and McElrath argue that nucleated communities, population increase, increased maize use, and extraregional trade did not "predestine" inhabitants of the American Bottom to become Mississippian. We would counter that predestination is not a concept within an evolutionary framework; however, preadaptation is. Within an evolutionary framework, one can easily argue that nucleated communities, population increase, increased maize use, and extraregional trade preadapted people of the American Bottom for Mississippianization; these things did not cause the Big Bang, and they may have evolved for entirely different reasons, but they made the Big Bang possible. One ambitious individual (or one ambitious family) may have ignited the Big Bang that resulted in Cahokia's rise, but the Big Bang would not have been possible during an earlier period of scattered groups, low populations, domestic-scale subsistence, and self-sufficiency. We would also point out that the term "historical processualism" implies that history and process go hand in hand; one does not exist without the other. Historical events impact evolutionary process. Likewise, evolution is 9/10 of revolution.

Second, there are problems with Fortier and McElrath's (2002) argument that might be termed historical or perhaps just semantic. Fortier and McElrath rightly point out that several centuries before the Big Bang there was a "Little Bang," referring to the dramatic cultural changes that begin in the Patrick and Sponemann phases and continue throughout the Emergent Mississippian period (cf. Fortier and Jackson 2000). They include among these changes technological and subsistence changes that occurred across the Midwest (i.e., the adoption of the bow and arrow and later maize). They also cite changes unique to the American Bottom, namely population increase, territorial expansion, intensified resource exploitation and cultivation, technological diversity and innovation, broadening exchange relations, changing community ritual behavior, settlement concentration, and community nucleation. As Fortier and Jackson (2000:123) put it, "In each of these areas there is a clear departure from previous patterns of Late Woodland behavior." Given these clear departures from Late Woodland behavior, we would argue that it does not make sense to refer to this period in time as Terminal Late Woodland. It sounds more like Emergent Mississippian to us. This emergence is not gradual; rather, it is punctuated by a series of fits and starts. But combined together, these changes preadapt the American Bottom for the Big Bang and the individuals who ignited it.

Theoretical paradigms in all disciplines have a tendency to sway back and forth like a pendulum. Archaeology in particular tends to follow the swaying theoretical trends put forth by cultural anthropologists and other social theorists, although sometimes decades behind. It seems ironic that processual archaeologists who have lately adopted postprocessual perspectives are now engaged in attempts to reconcile these theoretical concepts with preprocessual constructs like periods and phases. We are persuaded by Fortier and McElrath's argument that the Patrick and Sponemann phases see the beginning of fundamental changes (evolution) within the American Bottom. We are persuaded by Fortier and Jackson's argument that the Patrick and Sponemann phases exhibit clear departures from Late Woodland behavior. For these reasons we would be content to call the period between cal. A.D. 650 and 1050 the Emergent Mississippian period. However, in this report we have chosen to use terminology that labels the Sponemann phase as Late Woodland and the Edelhardt phase as Emergent Mississippian because that is the terminology that has dominated the American Bottom literature for the last fifteen years (twenty-five years in the case of the Edelhardt phase). In the end, it doesn't really seem important what we call this period. What is important is that we understand each other. Changing our nomenclature with each swing of the theoretical pendulum does not lend to clarity in the archaeological literature.

<u>A Consideration of Excavation Strategies</u>

The SIUE field school excavations at the A.E. Harmon site revealed a small portion of a large, multicomponent site. Because the primary goal of the SIUE field school is to teach students "textbook" archaeological excavation techniques, and because the portion of the site investigated is not in immediate danger of destruction, the decision was made to excavate intensively rather than extensively, as was advocated by Taylor (1948) so long ago. In contrast to excavation techniques used in the region by CRM and other archaeologists for the last several decades (e.g., Bareis and Porter 1984), the plowzone at A.E. Harmon was removed with shovels and screened, and feature fills were also screened. The merits of the methods used are discussed below.

The disadvantage to shoveling and screening the plowzone is of course that it is labor intensive and time consuming: roughly half the SIUE field season was spent excavating the plowzone. The process could have been considerably hastened by using a turf cutter to remove the sod. Mechanical screens would be helpful in shaking the sediment, but they would not eliminate the need for manual labor. The plowzone contained clay and was held together by a significant root mat, both of which prevent sediments from easily shaking through a screen. Screening through half-inch mesh also would have been much quicker and might have yielded similar results to those obtained using quarter-inch mesh. That is, the most striking contrast between plowzone and feature remains was the number of projectile points contained in the plowzone, most of which (certainly in the case of the whole points) would have been recovered using half-inch mesh. However, much of the exotic chert recovered in the plowzone was small enough that it would have been lost using half-inch mesh.

Another obvious disadvantage to spending such a large portion of a field season excavating plowzone is that it gives us a smaller portion of the total community plan for analysis. Indeed, Bareis and Porter (1984:9) state that a primary reason the architects of the FAI-270 project decided to remove the plowzone with heavy machinery (and without screening) was to "identify entire community plans." This strategy was enormously successful: as a result, today probably more prehistoric community plans are published for the American Bottom than for any other archaeological region, as the FAI-270 and more recently ITARP reports demonstrate.

Despite the success of this strategy, machine stripping is not warranted on all sites. Because every site is unique, archaeologists should consider the best way to sample and remove the plowzone before every excavation, rather than adopting a single excavation strategy for all sites. For example, Fortier and Ghosh (2000:11) note that "use of heavy machinery on Middle Woodland sites should… be carefully considered" given that "Middle Woodland artifacts are recovered more often from middens and living surfaces rather than features in the American Bottom." Use of heavy machinery should also be carefully considered at any site where the prehistoric living surface is found at modern ground surface and is now incorporated into the plowzone, as analysis of materials from A.E. Harmon illustrates. Comparison between plowzone and feature deposits gives us information about what the living surface at A.E. Harmon was like, even though surface materials are now contained within a mixed deposit. We see, for example, that projectile points were not deliberately discarded into pits with trash, and we see evidence of activity areas for gardening and lithic tool maintenance. We can also see from the concentration of bloated ceramics in the plowzone directly above Feature 106 that most materials stay close to where they were originally deposited despite plowing.

Finally, there are also ethical considerations in the removal of plowzone, as there are in the removal of any other stratum. In the RPA (Register of Professional Archaeologists) Standards of Research Performance, it states "upper levels of a site should be scientifically excavated and recorded whenever feasible, even if the focus of the project is on underlying levels" (RPA 2005). The plowzone can contain significant information that may not available in lower levels (cf. Dunnell and Simek 1995; O'Brien and Lewarch 1981), and whenever feasible should be excavated and recorded just like any other archaeological deposit. Surface collection of the plowzone is not necessarily an adequate substitute for excavation of the plowzone. Archaeologists use the term "controlled" to refer to surface collection when it is done in squares or along transects. However, no surface collection is truly controlled, since it yields a sample uncontrolled for artifact size and appearance (some collectors "see" better than others, and some artifacts are more easily seen than others), collection conditions (e.g., how recently the site was plowed, how recently it has rained, etc.), and usually for volume of sediment represented by the sample.

Perhaps more importantly, feature fills, like any other archaeological deposit, must also be screened to yield controlled samples. Screening experiments by Payne (1972), for example, show that smaller artifacts are lost in the absence of screening, thus biasing the sample toward larger artifacts. (Appearance is also an unquantifiable factor here; for example, white or pink Burlington chert is more easily seen during excavation than darker cherts like Mill Creek or Cobden-Dongola.) Unfortunately, and much to the surprise of archaeologists who work outside the region, CRM archaeologists generally do not screen feature fill in the American Bottom. For example, the FAI-270 method was to collect artifacts and other remains if they were noticed during excavation (referred to as "hand-collected" samples) and to take flotation samples. For analytical purposes, hand-collected samples and flotation samples were lumped (e.g., Kelly and Cross 1984). While not screening features undoubtedly saves a great deal of time, it also creates a sample uncontrolled for artifact size. Flotation sampling is necessary to sample adequately the smallest, most fragile remains, but flotation sampling should be employed in addition to rather than as a substitute for screening. Moreover, combining uncontrolled hand-collected samples with controlled flotation samples creates uncontrolled samples. This makes comparison between sites problematic, and statistically valid quantitative comparison is impossible (e.g., see Holt 2005).

Fowler (in Young and Fowler 2000) explains that the practice of not screening ("the usual procedure at an archaeological site") became instituted in the American Bottom during the highway salvage program of the 1960s because there simply was no time to screen (2000:85-86). Archaeologists at that time literally worked in front of the backhoe, because no time for archaeological work had been allowed in the highway construction schedule. CRM archaeologists today are not under these same time constraints, and the validity of this excavation strategy should be carefully reconsidered on a site by site basis. It certainly is not justified on a field school, where our efforts should be geared toward teaching students scientific, controlled methods that allow for quantitative comparison between sites. It would not be justified at Cahokia, a World Heritage Site. It is therefore questionable whether *not* screening is justified on any late prehistoric site in the region, given that they are all part of the same settlement system.

CONCLUSION

The Late Woodland and Emergent Mississippian periods are of special interest to archaeologists. Understanding this time of transition is crucial in understanding the developments that lead to the Mississippian florescence. During this transition the American Bottom evolves from something of a backwater to the dynamic center of a complicated cultural system, and Cahokia itself evolves from a small village to the largest city north of Mexico. Understanding this process is of interest to social scientists interested in the development of cultural complexity in general, and it is of interest to all scholars interested in the prehistory of North America. We do not mean to suggest here that this transition was gradual; this *evolution* was most likely characterized by a series of punctuated changes, and finally ended with the Big Bang of A.D. 1050 (Pauketat 1998) that ushered in Mississippian period.

What was the role of small villages like A.E. Harmon in this process? Archaeologists are only beginning to understand the role smaller sites played, and why some sites stay small or disappear while other sites emerge as centers or even full-fledged cities, at least in the case of Cahokia. In particular, little exhaustive research on this time period has been conducted at the northern reaches of the American Bottom. As was indicated above, other sites are known in this area to date to the Late Woodland and Emergent Mississippian periods, but none have been thoroughly investigated and reported as of this date. Investigations at the Sponemann site (Fortier et al. 1991) might be seen as an exception to this statement, but in reality Sponemann is not that far from Cahokia. Thus, the SIUE investigations of A.E. Harmon, even though limited in scope, are significant. The data from A.E. Harmon demonstrate clearly that the Late Woodland and Emergent Mississippian inhabitants of this site were engaged in the social and cultural networks of the American Bottom, despite their "peripheral" location. Indeed, they probably did not think of this location as peripheral. Cahokia was not the center of their world – at least not yet.

ENDNOTES

[1] During analysis, it was found that measurements of volume varied widely because some students apparently were unable to keep track of the number of buckets of sediment they

screened. Due to the unreliable results of this method, we will not measure volume of sediments screened on future excavations.

[2] For the purposes of this statistical analysis, the following units and features were compared: Unit A with Feature 102; the sum of Units B, I, and J with Feature 103; Unit C with Feature 105; Unit D with Feature 101; Unit F with Feature 104; Unit K with Feature 106; and Units E, G, H, and L with no feature (zero sherds). The correlation was performed using online software at http://www.xycoon.com.

[3] For the purposes of this statistical analysis and other statistical analysis of lithic artifacts, the following units and features were compared: Unit A with Feature 102; the sum of Units B, I, and J with Feature 103; Unit C with Feature 105; Unit D with Feature 101; Unit F with Feature 104; Unit K with Feature 106; and Units E, G, H, and L with no feature (zero sherds). The correlation was performed using online software at http://www.xycoon.com.

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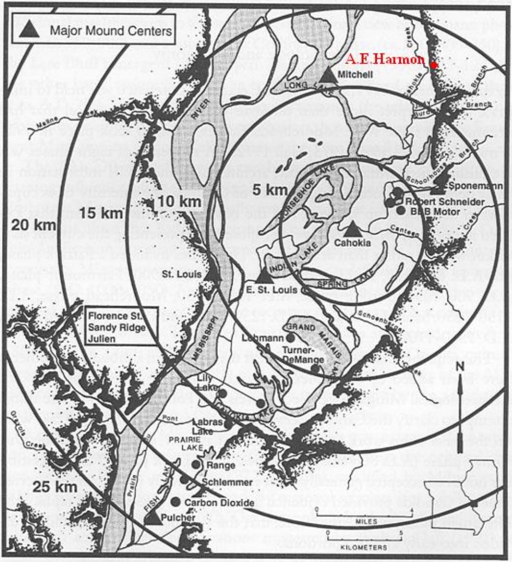


Major Mound Centers
A.E.Harmon
Mitchell
LONG
Cahokia
Canteen
Creek
Branch
Schoolhouse
RIVER
5 km
10 km
15 km
20 km
25 km
HORSESHOE LAKE
INDIAN LAKE
SPRING LAKE
Sponemann
Robert Schneider
BBB Motor
St. Louis
E. St. Louis
Florence St.
Sandy Ridge
Julien
MISSISSIPPI
GRAND
MARAIS
Lohmann
Turner-DeMange
Schoenberger
Lily Lake
Labras Lake
CAHOKIA LAKE
Creek
PRAIRIE LAKE
Range
Schlemmer
Carbon Dioxide
Pulcher
FISH LAKE
Prairie
Pont
N
MILES
KILOMETERS

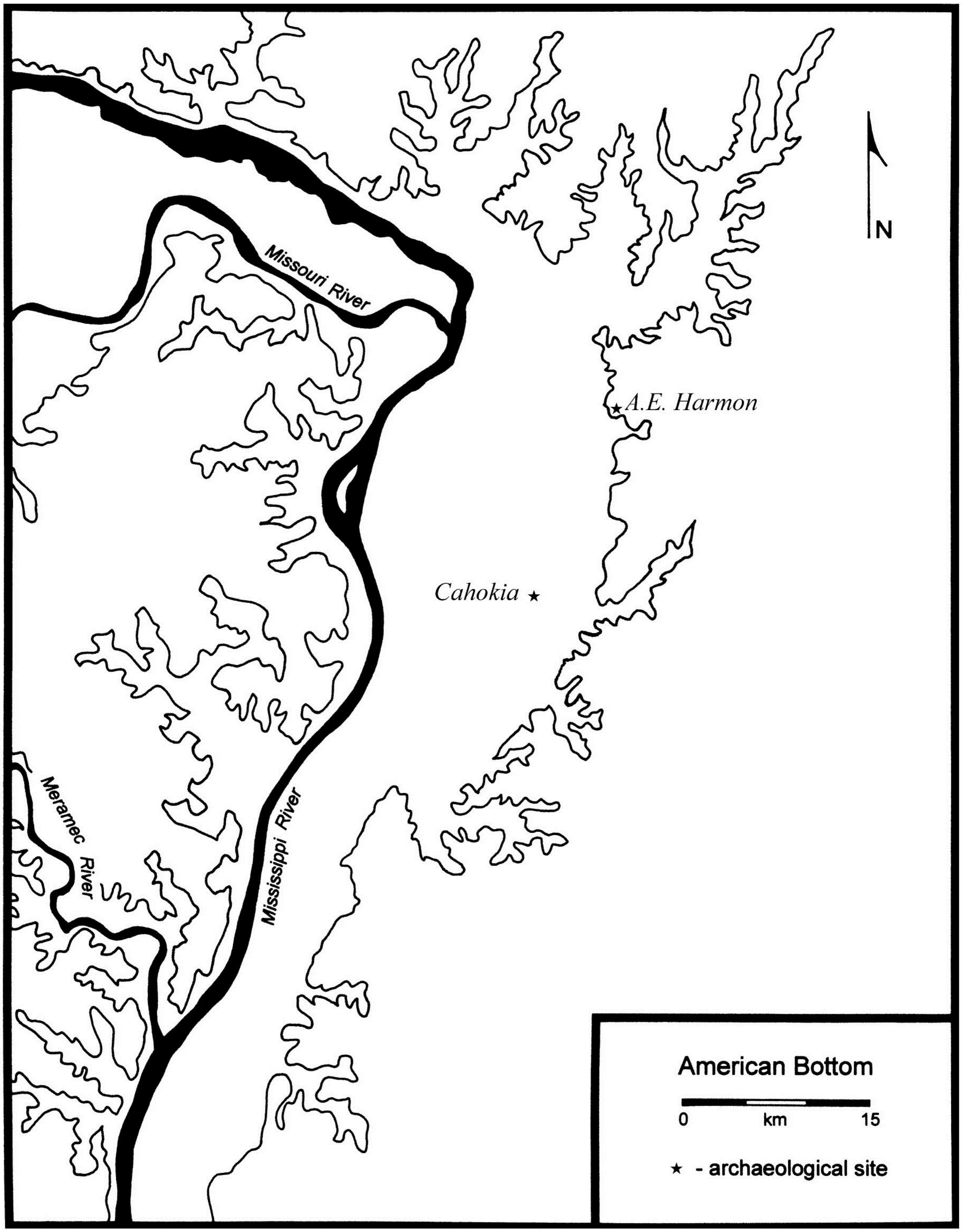


Figure 1. Map of the American Bottom showing site location.

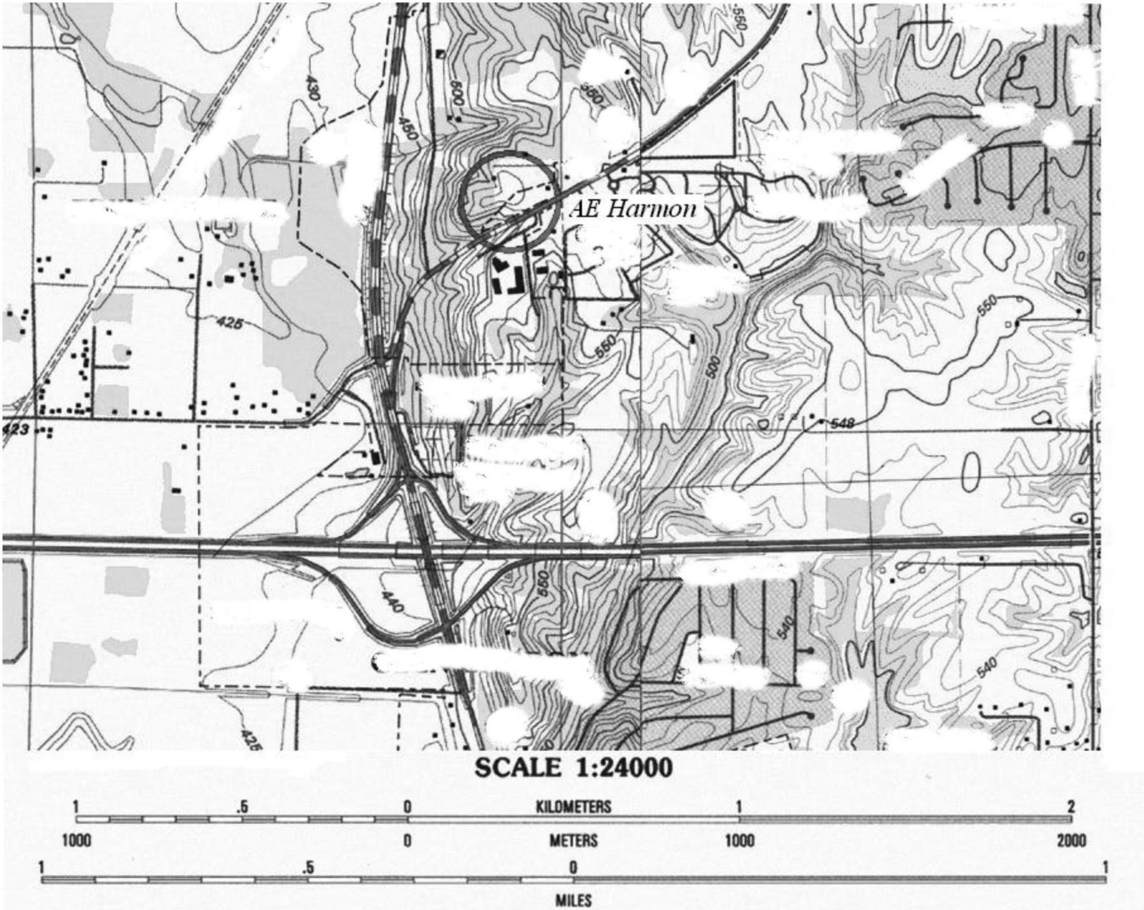


Figure 2. USGS map showing site location. Wood River and Edwardsville quads.

Figure 3. 1815 GLO map, Edwardsville township.

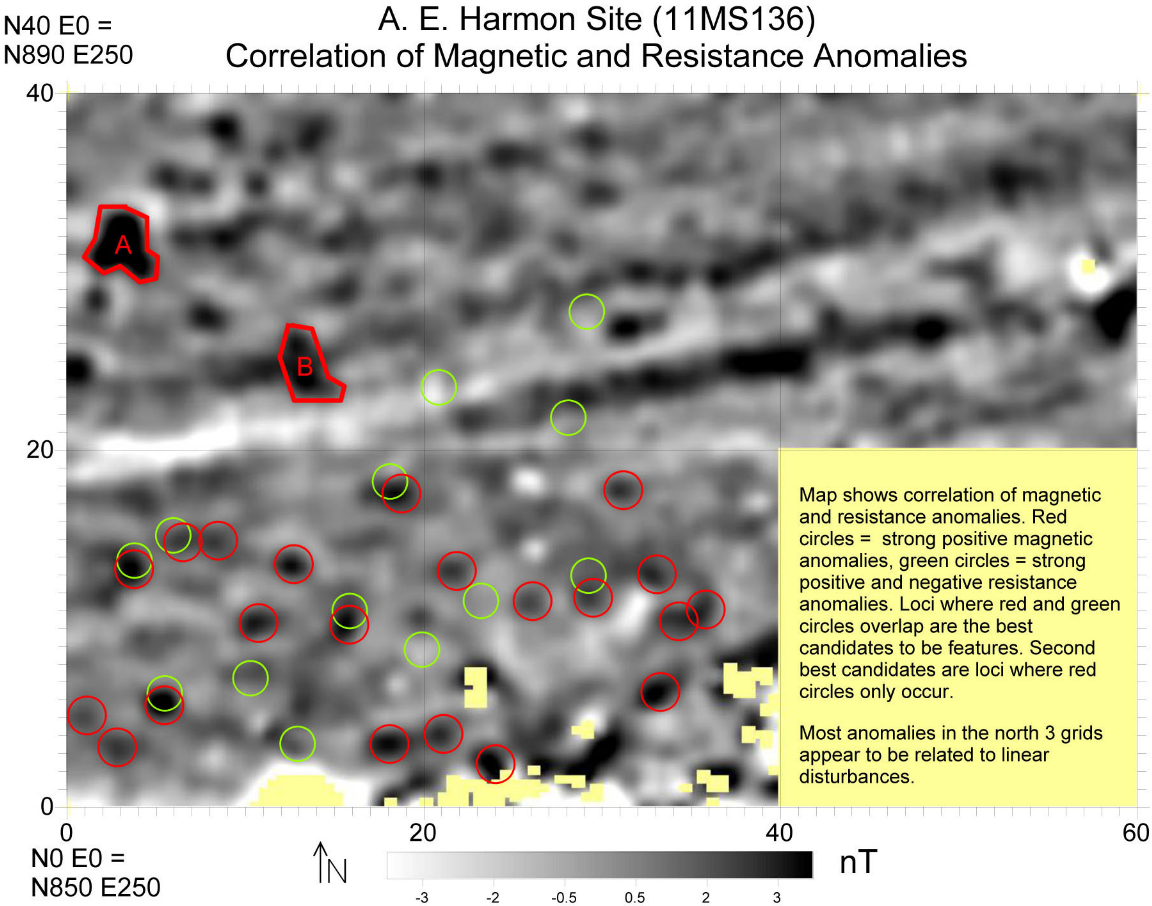


Figure 4. Locations of magnetic and resistance anomalies recommended for ground truthing excavation. Map by Dr. Michael Hargrave of ERDC/CERL.

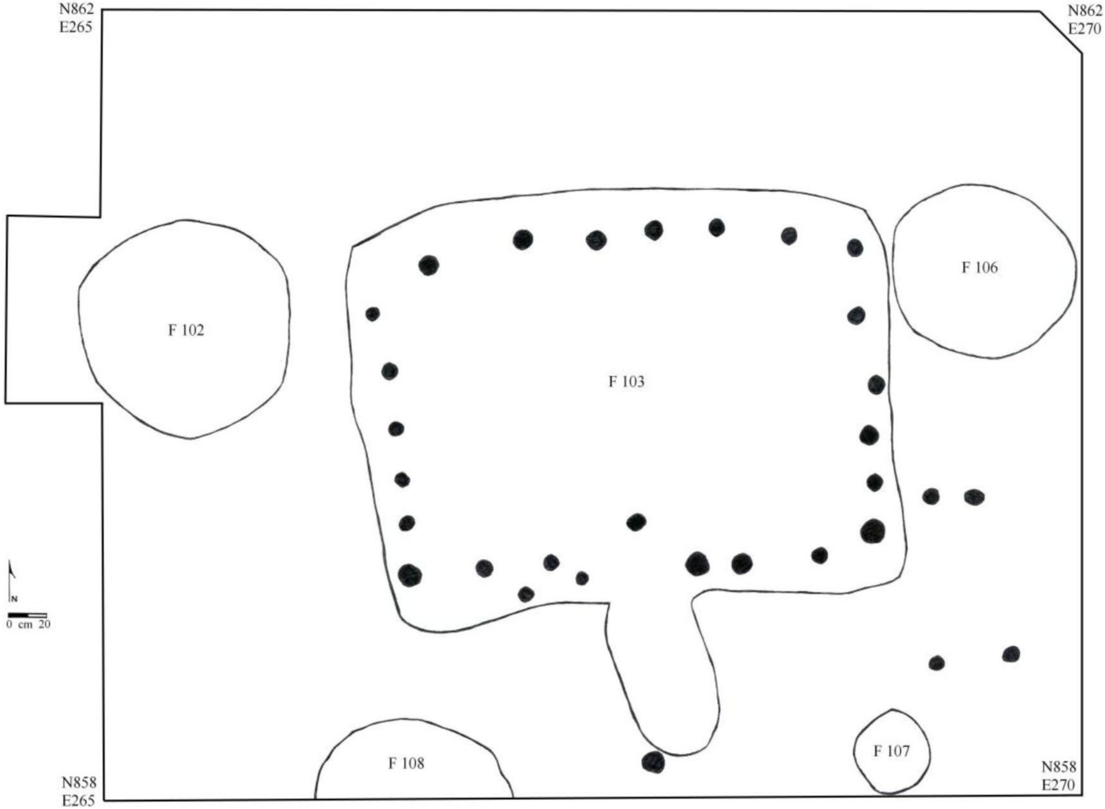


Figure 5. Eastern excavation block (Units A-B and I-L).

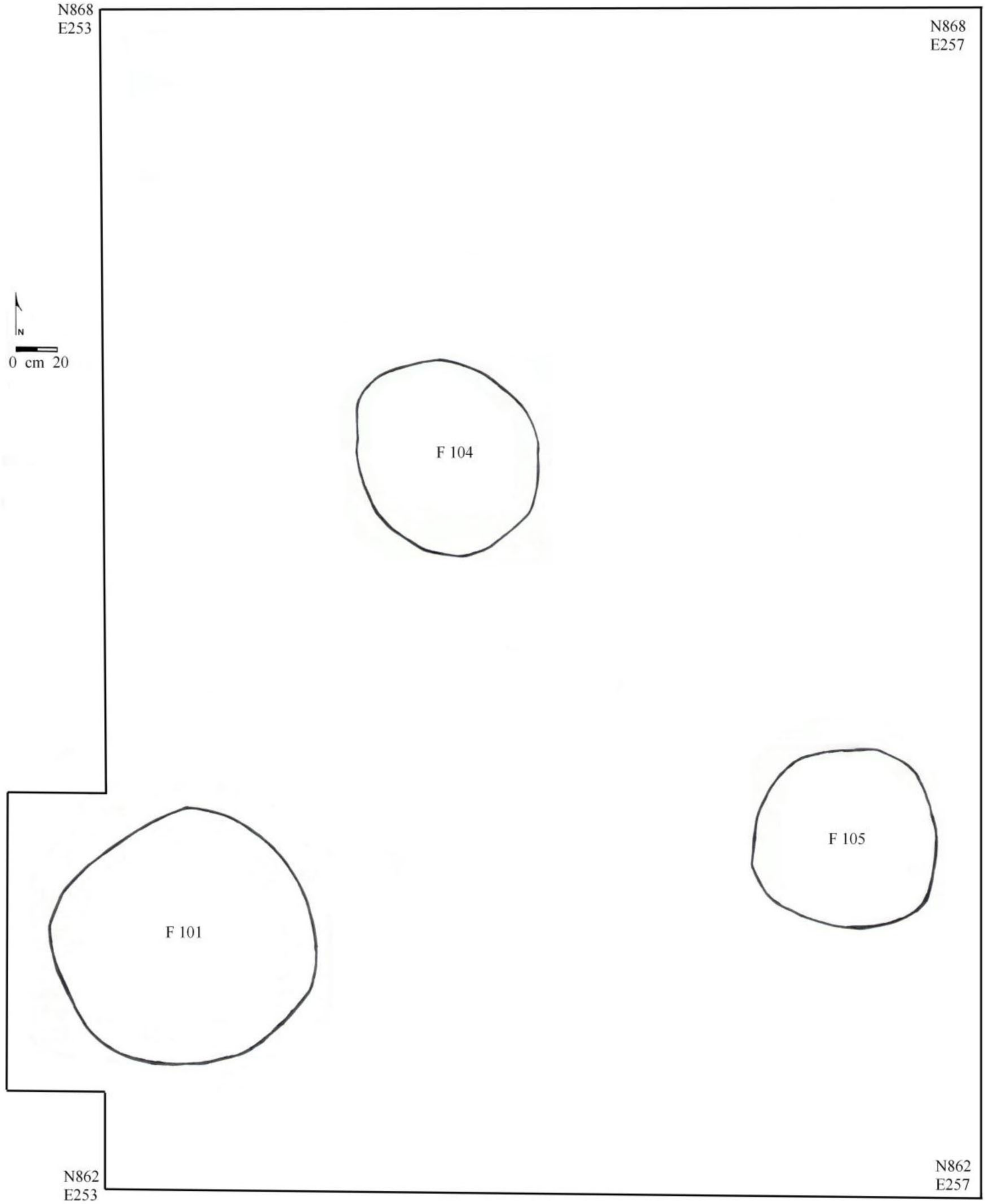
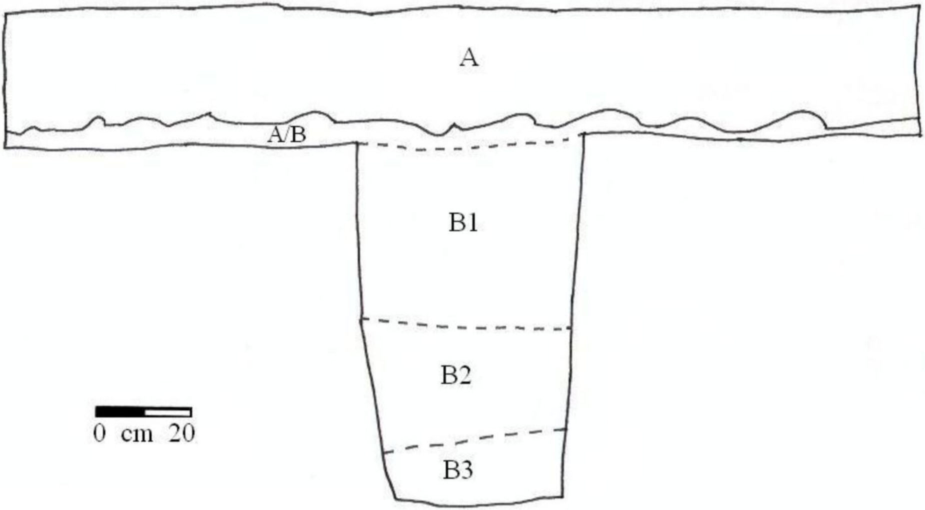


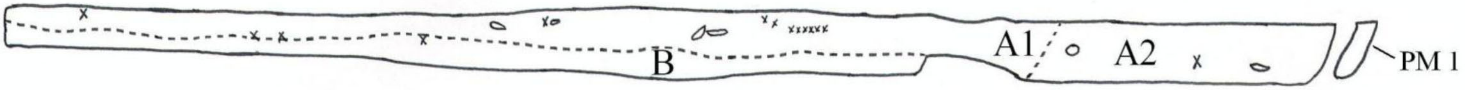
Figure 6. Western excavation block (Units C-H).



A = 10YR 3/2 silty loam (plow zone)
A/B = 10YR4/4 clay loam mottled with 10YR3/2 silty loam (mottled subsoil)
B1 = 10YR4/4 clay loam (subsoil)
B2 = 10YR4/4 very clayey loam (subsoil)
B3 = 1.25Y4/4 very clayey loam (subsoil)

Figure 7. Profile of north wall, Units G and H.

F 103



0 cm 20

A1= 10YR3.5/3 loam with charcoal
A2= 10YR3.5/3 with more charcoal
B = 10YR4/3clay loam

PM 1 = 10YR3/2 loam (postmold)

x = charcoal

Figure 8. Profile of Feature 103 facing east.

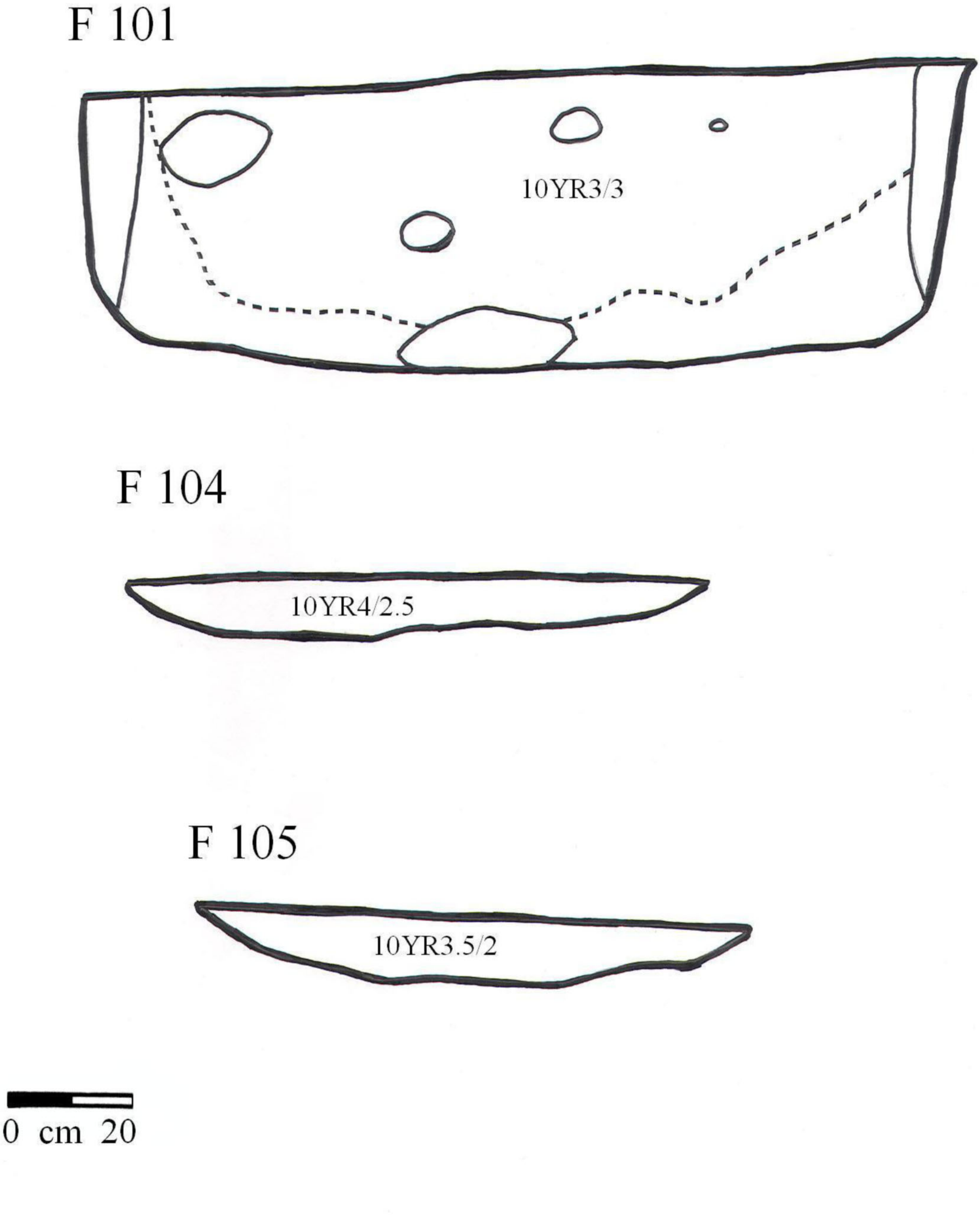


Figure 9. Profiles of Feature 101 (facing west), Feature 104 (facing north), and Feature 105 (facing east).

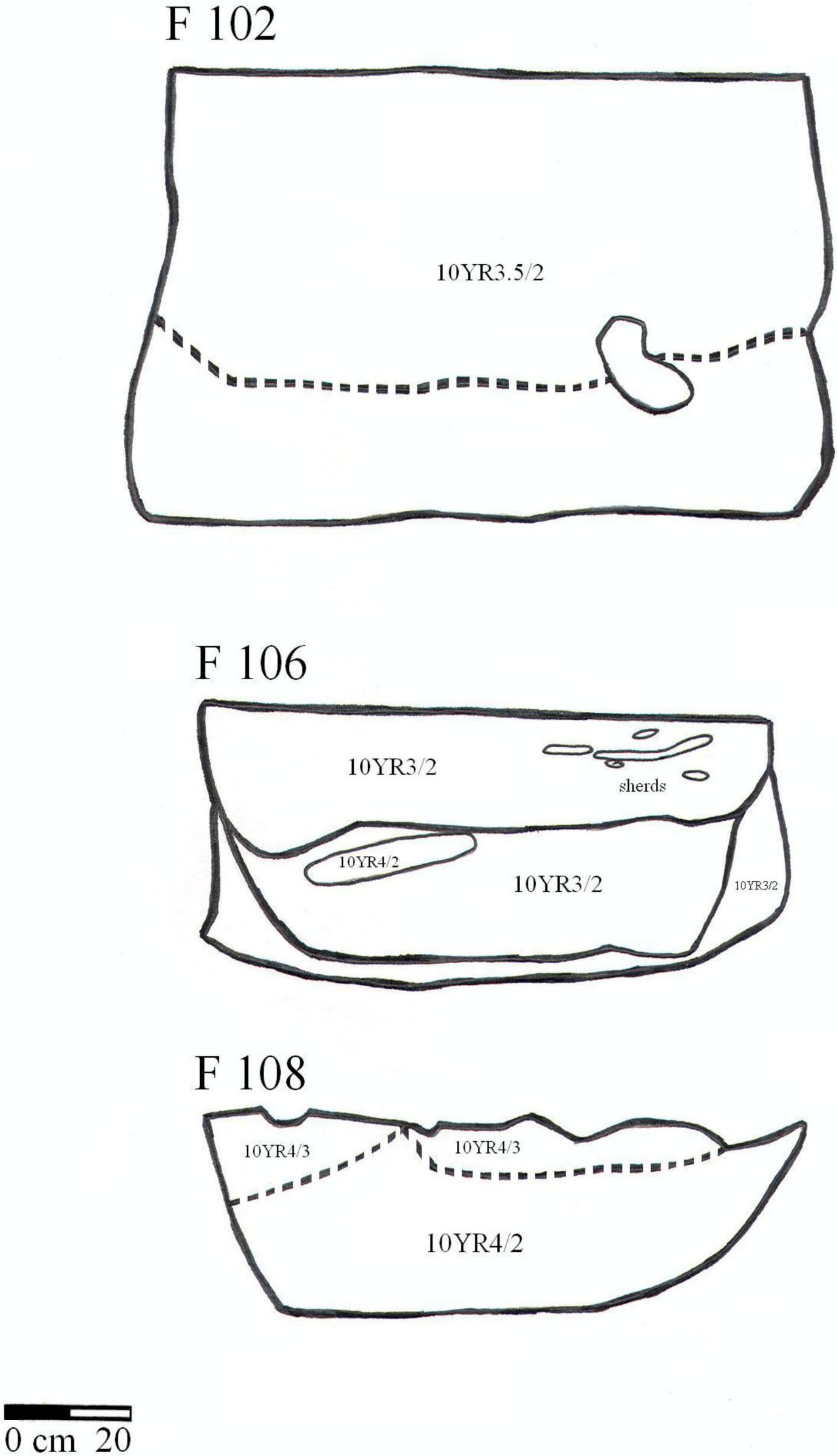


Figure 10. Profiles of Features 102, 106, and 108 (all facing south).

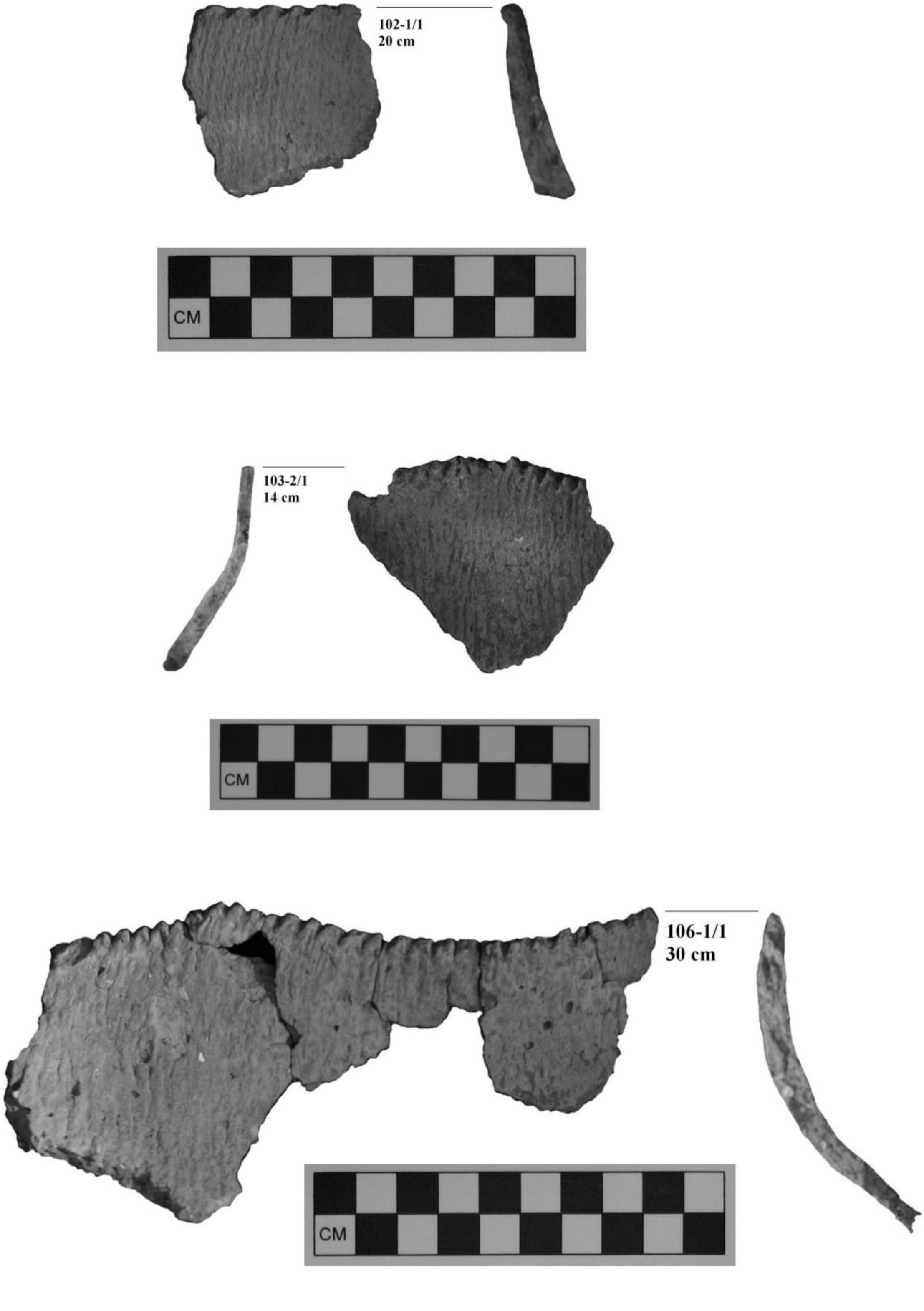


Figure 11. Sponemann phase rim sherds.

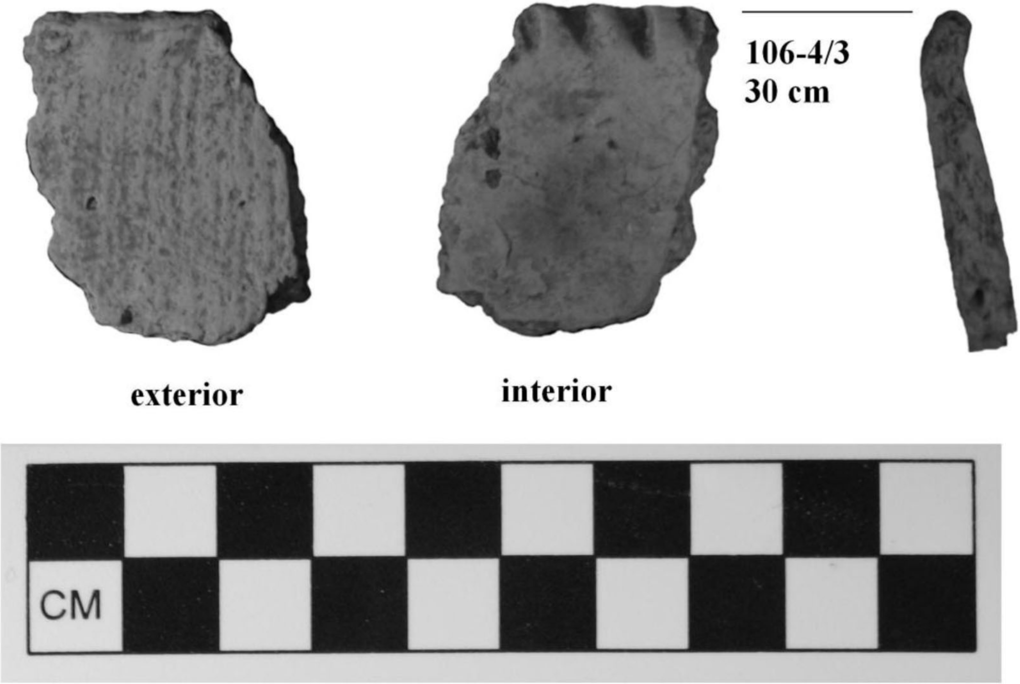


Figure 12. Patrick phase rim sherd.

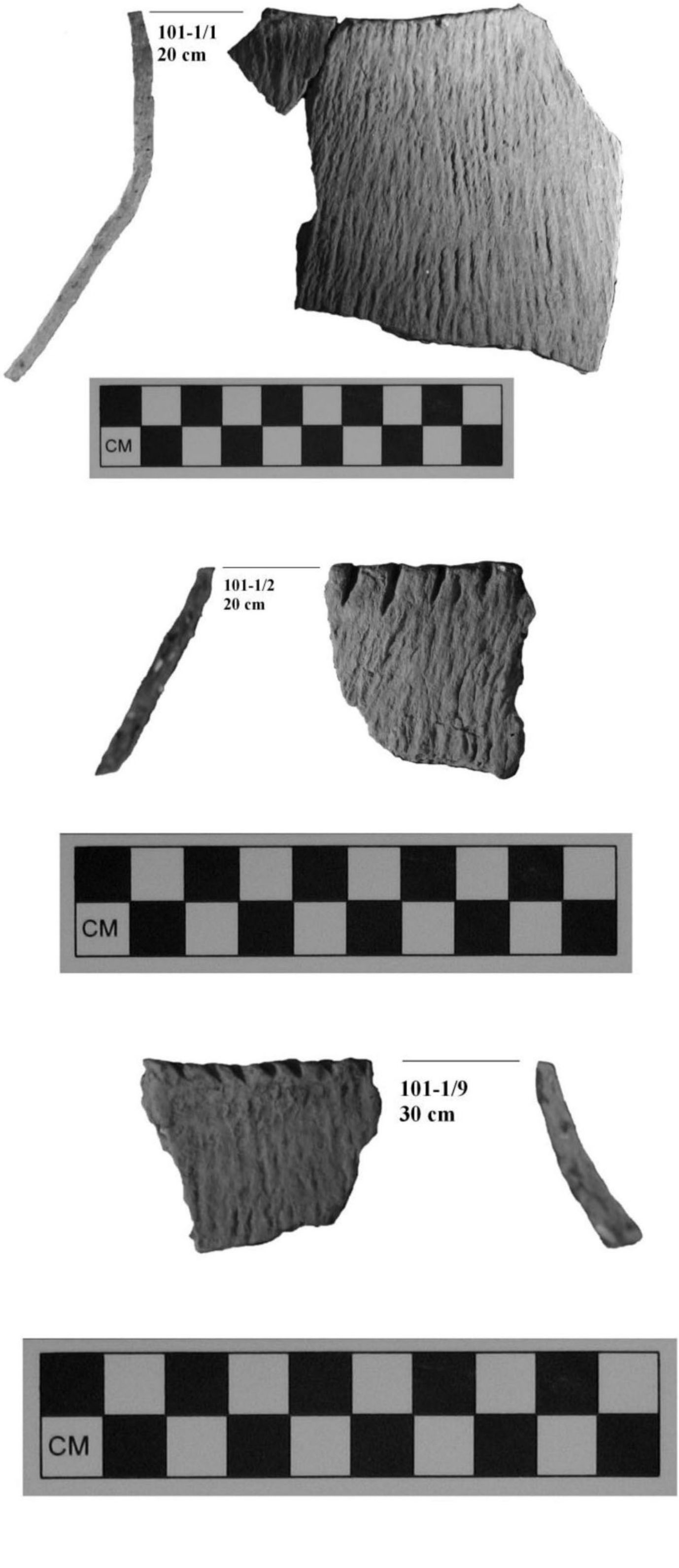


Figure 13. Late Woodland rim sherds from Feature 101.

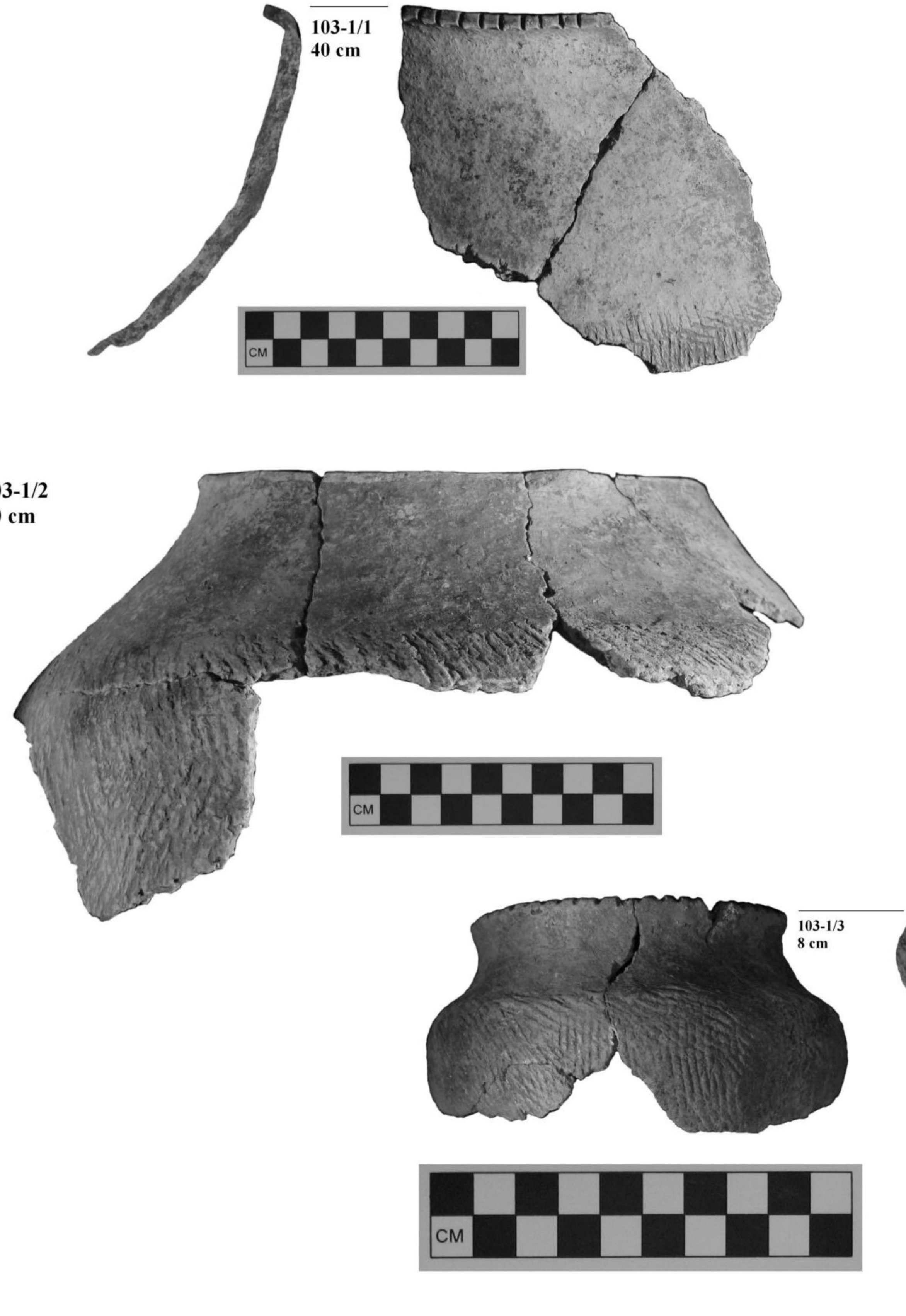


Figure 14. Edelhardt phase rim sherds.

Figure 15. Stumpware from Feature 103.

Figure 16. Bloated pottery from Feature 106.

Figure 17. Projectile points.

Table 1. Unit descriptions.

Unit Designation	Southwest Coordinate	Unit Size (m)
A	N860 E265	2 x 2
B	N858 E265	2 x 2
C	N862 E255	2 x 2
D	N862 E253	2 x 2
E	N864 E255	2 x 2
F	N864 E253	2 x 2
G	N866 E255	2 x 2
H	N866 E253	2 x 2
I	N860 E267	2 x 2
J	N858 E267	2 x 2
K	N860 E269	1 x 2
L	N858 E269	1 x 2

Note: Coordinates are abbreviated UTMs; e.g., N860E265 = 4294860mN 760265mE.

Table 2. Datum locations and elevations.

Datum location	Elevation (m asl)	Units	Features
N860 E267.1	172.756	A&B	
N861.9 E255	172.468	C&D	101, 105
N866 E257.1	172.678	E&G	
N866 E252.9	172.578	F&H	104
N862.2 E268	172.756	I-L	102, 103, 106, 107, 108

Note: Coordinates are abbreviated UTMs; e.g., N860E267.1 = 4294860mN 760267.1mE.

Table 3. Feature data (obtained from feature summary forms).

Feature	Length[1]	Width[1]	Depth[1]	Volume[2]	Plan	Profile	Function
101	1.44	1.44	0.50	814	circular	vertical	storage
102	1.13	1.11	0.75	739	circular	vertical	storage
103	2.75	2.07	0.15	854	keyhole	inslanting	house
104	0.95	0.95	0.10	36	circular	basin	processing
105	0.92	0.91	0.10	33	circular	basin	processing
106	0.99	0.87	0.46	312	circular	vertical	storage
107	0.42	0.40	0.23		circular	amorphous	shovel test?
108	1.05	?	0.30	?	circular?	inslanting	processing

[1]Length, width, and depth are in meters.

[2] Volume is in liters or dm^3; calculated using formulae presented by Kelly et al. 1987:145.

Table 4. Post mold data (obtained from profiles).

Post mold	Diameter[1]	Depth[1]
101	4	13
102	12	?
103	10	?
104	6	14
105	5	9
106	7	10
107	6	14
108	7	12
109	4	12
110	6	14
111	9	12
112	6	18
113	8	20
114	7	15
115	9	12
116	9	15
117	7	13
118	6	10
119	6	18
120	8	14
121	6	14
122	7	15
123	7	11
124	5	10
125	8	15
126	5	7
127	12	8
128	8	6
129	10	6
130	8	6
131	7	8

[1] Diameter and depth are in centimeters.

Table 5. Body sherds.

Provenience	Gt/cm	Gt/pl	Gt/rs	Gc/cm	Gc/pl	Gg/cm	Gg/pl	Gg/rs	L/pl	L/rs	S/rs	Total
F. 101	103			84		2						189
F. 102	155	3										158
F. 103 basin	353	55				168			1	23		600
F. 103 entry	7											7
F. 103 post	1											1
F. 103/106	1											1
F. 104	1			2								3
F. 105	1											1
F. 106	29			236				1				266
Unit A	252	49		17			1		6	2		327
Unit B	185	38								1		224
Unit C	213	39										252
Unit D	249	57								1	5	312
Unit E	309	105		17	5					5		441
Unit F	220	34								3		257
Unit G	141	25							5	3		174
Unit H	157	53							18	8		236
Unit I	210	48					2		2	3		265
Unit J	214	11		1						1		227
Unit K	119	14	1	11					2	3		150
Unit L	88	35	1									124
Total	3008	566	2	368	5	170	3	1	34	53	5	4215

Gt = grit temper
Gc = grit and chert temper
Gg = grit and grog temper
L = limestone temper
S = shell temper

cm = cordmarked
pl = plain surface
rs = red-slipped surface

Table 6. Rim sherds from features.

rim#	lip	profile	temper	paste	surface	cm twist	d (cm)	phase	comments
101-1/1	square/plain	inslanting/incurved	Gt		cm	s	20	Sponemann?	
101-1/2	ext notches diagonal/left	inslanting	Gc		cm	s	20	Sponemann?	
101-1/3	ext notches diagonal/left	inslanting	Gt		cm	z		Sponemann?	
101-1/4	ext notches diagonal/left		Gc		cm	s?		Sponemann?	
101-1/5	ext notches diagonal/left		Gt		cm	?		Sponemann?	
101-1/6	ext notches diagonal/left		Gt		cm	?		Sponemann?	
101-1/7	ext notches diagonal/left		Gt		cm	?		Sponemann?	
101-1/8	ext impressions diagonal/left		Gt		cm	s		Sponemann?	
101-1/9	ext impressions diagonal/right		Gc		cm	s	30	Sponemann?	
101-1/10			grog		plain?			?	
102-1/1	ext notches diagonal/left	inslanting/incurved	Gc		cm	z	20	Sponemann	
102-1/2	ext notches variable	inslanting	Gc		cm	z	20	Sponemann	
102-1/3	ext notches vertical	inslanting	Gc		cm	z	20	Sponemann	
102-1/4	ext notches variable	inslanting	Gt		cm	s	20	Sponemann	
103-1/1	notches vertical	everted	Gg	MCS	cm below shoulder	z	40	early Edelhardt	Peter Station Cordmarked
103-1/2	square with lugs	inslanting/incurved	Gg	MCS	cm below shoulder	z	20	early Edelhardt	Bluff jar
103-1/3	notches vertical	everted	Gg		cm below shoulder	z	8	early Edelhardt	miniature vessel
103-1/4	square	vertical	Gt	MCS	plain neck		20	Edelhardt?	Bluff jar? Shoulder not present
103-1/5	simple (no flare)	tapered feet?	Gg	MCS?	cm	z		Edelhardt?	stumpware; cf. BBB Motor F108 (1984:74)
103-2/1	cast; ext notch diagonal/left	vertical/incurved	Gt		cm	z	14	Sponemann	castellated
103-5/1	notches vertical		Gg					Edelhardt?	miniature vessel (prob. goes with 103-1/3)
106-1/1	cast; sup notch variable	inslanting/incurved	Gc		cm	s	30	Sponemann	bloated
106-1/2	superior notches		Gc		cm			Sponemann	severely bloated
106-1/3	superior notches		Gc		cm			Sponemann	severely bloated
106-1/4	superior notches		Gc		cm			Sponemann	severely bloated
106-4/1	cast; sup notch diagonal/left	inslanting/incurved	Gc		cm	s	30	Sponemann	bloated; mends with 106-1/1
106-4/2	ext notches diagonal/left	inslanting/incurved	Gt		cm	z	30	Sponemann	
106-4/3	int notches diagonal/right	vertical/incurved	grog		cm	s	30	Patrick	
106-4/4	superior notches		Gc		cm			Sponemann	severely bloated
106-4/5	superior notches		Gc		cm			Sponemann	severely bloated
106-4/6	superior notches		Gc		cm			Sponemann	severely bloated
106-4/7	superior notches		Gc		cm			Sponemann	severely bloated

Gt = grit temper
Gc = grit and chert temper
Gg = grit and grog temper
L = limestone temper
S = shell temper

cm = cordmarked
pl = plain surface
rs = red-slipped surface
MCS = Madison County shale
d = diameter (in centimeters)

sup = superior
ext = exterior
int = interior
cast = castellated

Table 7. Rim sherds from the plowzone.

bag#	lip	profile	temper	paste	surface	period	comments
A-1	square		Gt	MCS	plain	EM	
A-1	slanted		Gt	MCS	plain	EM	
A-1	square		Gt	MCS	plain	EM	
A-1	extruded		Gt	MCS	plain	EM	
A-1	ext notches diagonal/right		Gt	MCS	plain	EM	applique
A-1	ext notches		Gt		cm	LW	
A-1		inslanting	Gt		cm	LW	
A-1	cast? ext notches		Gt		cm	LW	bloated; castellated?
A-2	ext notches diagonal/left		Gt		cm	LW	
B-1		inslanting	Gt	MCS	plain	EM	
B-1	ext notches vertical		Gt		cm	LW	
B-1	ext notches		Gt		cm	LW	
B-1	ext notches		Gt		cm	LW	
C-1	square		Gt		plain	EM	
C-1		everted	Gt	MCS	plain	EM	
C-1	sup notches		Gt		plain	EM	
D-1	square	vertical	Gt	MCS	plain	EM	Bluff jar
D-1	square	vertical	Gt	MCS	plain	EM	
D-1	square		Gt		plain	EM	
D-1	square		Gt		plain	EM	
D-1	square		Gt		cm	LW	
E-1	square		Gt		cm	LW	
E-1	ext notches diagonal/left		Gt		cm	LW	
E-1	ext notches vertical	everted	Gt	MCS	plain	EM	
E-1	ext notches vertical	everted	Gt	MCS	plain	EM	
E-1	square		Gt	MCS	plain	EM	
F-1	square		Gt		plain	EM	
F-1	ext notches vertical		Gt		cm	LW	
F-1	square	vertical	Gt		plain	EM	
F-1	square		Gt	MCS	plain	EM	
F-1	square		Gt		cm	LW	
F-1	ext notches	everted	Gt	MCS	plain	EM	
F-1		inslanting	Gt		cm	LW	
F-1	square		Gt	MCS	plain	EM	
F-1	ext notches diagonal/right		Gt		cm	LW	
F-1	ext notches diagonal/left		Gt		cm	LW	
F-1	square		Gt		plain	EM	
F-1	ext notches vertical	vertical/incurved	Gt	MCS	plain	EM	
G-1		everted	Gt	MCS	plain	EM	
G-1	ext notches vertical		Gt		cm	LW	
G-1		everted	Gt	MCS	plain	EM	
H-1	ext notches		Gt		cm	LW	
H-1	sup incised		?		plain	?	
H-1	sup notches		Gt		cm	LW	
H-1	int incised		?		?	?	
H-1		everted	Gt	MCS	plain	EM	
H-1	square		Gt	MCS	plain	EM	
I-1	square		Gt	MCS	plain	EM	
I-1	ext notches diagonal	everted	L	MCS	plain	EM	late EM: Pulcher plain
I-1	sup notches		Gt	MCS	plain	EM	
I-1	?		?		?	?	
I-1	ext notches	everted	Gt	MCS	plain	EM	
I-1		everted	Gt	MCS	plain	EM	
I-2		everted	Gt	MCS	plain	EM	
J-1		outslanting	Gt		cm	LW	bowl
J-1	square		Gt		plain	EM	
J-1	ext notches diagonal/left		Gt		cm	LW	
K-1	square		Gt	MCS	red - slipped	EM	Merrell Red Film? 10R4.5/8
K-1	ext notches diagonal/left		Gt		cm	LW	
K-1		everted?	Gt		plain	EM	
K-2	square		Gt		cm	LW	
L-1	square		Gt	MCS	plain	EM	
L-1	rounded	everted?	Gt		plain	EM	

Gt = grit temper
Gc = grit and chert temper
Gg = grit and grog temper
L = limestone temper
S = shell temper

cm = cordmarked
pl = plain surface
rs = red-slipped surface
MCS = Madison County shale
LW = Late Woodland

sup = superior
ext = exterior
int = interior
cast = castellated
EM = Emergent Mississippian

Table 8. Local Chert

Bag #	Burlington flake		Burlington core		Burlington biface		Burlington flake tool		Burlington adze flake		Burlington point fragment		Burlington drill		Unid. chert point frag		Unid. chert flake tool		Unid. cher primary fl
	#	Wt.	#	Wt.	#	Wt.	#	Wt.	#	Wt.	#	Wt.	#	Wt.	#	Wt.	#	Wt.	#
Sur-1	1	0.52																	
A-1	106	58.07	1	9.49	1	0.89	1	0.55	1	0.11									
A-2	4	1.06					1	0.61											
A-3	3	5.67																	
B-1	80	55.92					4	16.66			3	1.81							
B-2																			
C-1	98	70.64					3	7.66					1	1.16					
C-2	6	2.41													1	1.26			
D-1	88	66.95	1	4.55			3	7.63			1	3.38							
D-2	11	5.42																	
D-3																			
E-1	91	76.62					3	7.11	1	5.47									
E-2	6	1.66																	
E-3	1	0.5																	
F-1	88	95.66					2	6.47	1	3.01					1	0.72			
F-2	5	1.66																	
G-1	103	70.64					4	4.99			2	6.89							
H-1	102	68.98	2	18.19			5	11.34											
H-2	3	1.15																	
H-3																			
I-1	50	54.9					2	2.39											
I-2	3	2.23																	
J-1	44	67.33									1	0.65							
J-2	4	1.89					1	1.03											
K-1	29	35.15	2	16.53			2	3.5											
K-2																			
L-1	28	20.18					3	8.33			1	6.01							
L-2																			
101-1	18	12.38																	
101-3	2	0.89																	
101-7	2	0.56																	
102-1	10	4.16					1	6.18											
102-3	15	16.64																	1
103-1	7	8.07					7	53.57									4	7.7	
103-2	3	0.51																	
103-5	4	2.62					3	13.98									2	1.39	
103-6	1	2.37																	
103-8	1	2.36																	
103-9	2	12.48																	
104-1	1	1.56																	
104-3	1	0.49																	
105-1	1	0.22																	
105-3																			
106-1	1	0.11																	
106-2	2	1.96																	
106-4	9	7.42					3	10.67									1	0.94	
106-7	4	1.33															1	2.36	
106-9							1	1.05											
108-1																			
Total	1038	841.34	6	48.76	1	0.089	49	163.72	3	8.59	8	18.74	1	1.16	2	1.98	8	12.39	

Table 8. Local chert.

	Burlington flake		Burlington core		Burlington biface		Burlington flake tool		Burlington adze flake		Burlington point frag.		Burlington drill		Unid. chert point frag.		Unid. chert flake tool		Unid. chert prim. flake		Unid. chert flake		Glacial till flake		Glacial till core	
Bag #	#	Wt	#	Wt	#	Wt	#	Wt	#	Wt	#	Wt	#	Wt	#	Wt	#	Wt	#	Wt	#	Wt	#	Wt	#	Wt
SUR-1	1	0.52																								
A-1	106	58.07	1	9.49	1	0.89	1	0.55	1	0.11											70	44.53	25	60.32		
A-2	4	1.06					1	0.61													2	1.22	3	4.54		
A-3	3	5.67																								
B-1	80	55.92					4	16.66			3	1.81									88	46.07	25	67.37		
B-2																							3	0.62		
C-1	98	70.64					3	7.66					1	1.16							99	42.6	41	86.56		
C-2	6	2.41													1	1.26					2	0.49	3	0.85		
D-1	88	66.95	1	4.55			3	7.63			1	3.38									117	41.28	36	91.03		
D-2	11	5.42																			7	2.47	1	11.79		
D-3																							3	25.4		
E-1	91	76.62					3	7.11	1	5.47											133	58.08	29	112.68		
E-2	6	1.66																					5	3.07		
E-3	1	0.5																								
F-1	88	95.66					2	6.47	1	3.01					1	0.72					101	42.28	25	95.78		
F-2	5	1.66																					2	6.43		
G-1	103	70.64					4	4.99			2	6.89									138	63.82	27	65.15		
H-1	102	68.98	2	18.19			5	11.34													119	36.08	35	72.12	1	16.18
H-2	3	1.15																					5	2.82	9	2.55
H-3																					1	0.61				
I-1	50	54.9					2	2.39													59	19.89	21	58.12		
I-2	3	2.23																					2	5.18		
J-1	44	67.33									1	0.65									69	26.43	33	157.03		
J-2	4	1.89					1	1.03													4	1.26	1	5.94		
K-1	29	35.15	2	16.53			2	3.5													31	12.38	24	36.97		
K-2																							5	3.34		
L-1	28	20.18					3	8.33			1	6.01									34	12.46	27	57.11		
L-2																							1	0.24		
101-1	18	12.38																			11	3.91	13	8.65		
101-3	2	0.89																			3	0.42	5	55.18		
101-7	2	0.56																					4	2.41		
102-1	10	4.16					1	6.18													17	4.57	32	38.22		
102-3	15	16.64																	1	4.26	10	1.34	19	62.38		
103-1	7	8.07					7	53.57									4	7.7			18	4.03	16	20.74		
103-2	3	0.51																			2	0.92	4	1.31		
103-5	4	2.62					3	13.98									2	1.39			4	0.95	6	6.03		
103-6	1	2.37																			1	1.41	2	0.41		
103-8	1	2.36																								
103-9	2	12.48																					2	3.13		
104-1	1	1.56																								
104-3	1	0.49																			1	0.71				
105-1	1	0.22																					4	0.82		
105-3																					1	0.15				
106-1	1	0.11																			3	1.05	3	0.74		
106-2	2	1.96																			8	1.84	9	8.18		
106-4	9	7.42					3	10.67									1	0.94			4	0.37	3	5.07		
106-7	4	1.33															1	2.36			7	2.31	3	5.17		
106-9							1	1.05													3	0.53	1	0.18		
Total	1038	841.34	6	48.76	1	0.89	49	163.72	3	8.59	8	18.74	1	1.16	2	1.98	8	12.39	1	4.26	1167	476.46	508	1249.08	10	18.73

Note: # = count Wt = weight in grams

Table 9. Exotic Chert

Bag #	Bailey flake		Chouteau flake		Chouteau biface frag		Cobden/ Dongola flake		Cobden/Dongola point frag		Salem		Salem flake tool		Mill Creek flake		Mill Creek hoe flake		Mill Creek hoe flk. reused as a tool		Mill Creek adze flake		St. Genevieve root beer flake		St. Genevieve root beer drill	
	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight
SUR-1																										
A-1																							5	19.05		
A-2																										
A-3																										
B-1																	2	2.53								
B-2																										
C-1					1	0.96	1	0.95							2	2.03							1	0.44		
C-2																										
D-1											1	1.66					3	13.35					2	3.68		
D-2							1	1.4															1	1.32		
D-3																										
E-1			1	1.77							1	2.45	1	12.44									2	8.71		
E-2					1	4.27																				
E-3																										
F-1									1	3.45					6	7.95	2	0.67					3	5.1		
F-2																										
G-1							1	3.9							4	3.6	2	1.55	1	2.08			3	1.32		
H-1							1	0.26							9	5.49	4	2.43	1	2.05	1	1.18	10	9.89	1	0.53
H-2															1	1.04										
H-3																										
I-1							1	0.86							3	2.02							2	1.96		
I-2																										
J-1			1	5.53			1	1.81							1	0.84							3	7.65		
J-2																										
K-1																	1	2.85					1	0.25		
K-2																										
L-1																										
L-2																										
101-1															1	2.99										
101-3																										
101-7																										
102-1															1	7.1										
102-3																										
103-1	1	3.68																								
103-2																										
103-5													1	1.93					1	5.12						
103-6																										
103-8																										
103-9																										
104-1																										
104-3																										
105-1																										
105-3																										
106-1																										
106-2																										
106-4																										
106-7																										
106-9																										
108-1																										
Total	1	3.68	2	7.3	2	5.23	6	9.18	1	3.45	2	4.11	2	14.37	28	33.06	14	23.38	3	9.25	1	1.18	33	59.37	1	0.53

Table 9. Exotic chert.

	Bailey flake		Chouteau flake		Chouteau biface frag.		Cobden/Don flake		Cobden/Don point frag.		Salem flake		Salem flake tool		Mill Creek flake		Mill Creek hoe flake		Mill Creek hoe flake reused as tool		Mill Creek adze flake		St. Genevieve root beer flake		St. Genevieve root beer drill	
Bag #	#	Wt	#	Wt	#	Wt	#	Wt	#	Wt	#	Wt	#	Wt	#	Wt	#	Wt	#	Wt	#	Wt	#	Wt	#	Wt
A-1																							5	19.05		
B-1																	2	2.53								
C-1					1	0.96	1	0.95							2	2.03							1	0.44		
D-1											1	1.66					3	13.35					2	3.68		
D-2							1	1.4															1	1.32		
E-1			1	1.8							1	2.45	1	12.44									2	8.71		
E-2					1	4.27																				
F-1									1	3.45					6	7.95	2	0.67					3	5.1		
G-1							1	3.9							4	3.6	2	1.55	1	2.08			3	1.32		
H-1							1	0.26							9	5.49	4	2.43	1	2.05	1	1.18	10	9.89	1	0.53
H-2															1	1.04										
I-1							1	0.86							3	2.02							2	1.96		
J-1			1	5.5			1	1.81							1	0.84							3	7.65		
K-1																	1	2.85					1	0.25		
101-1															1	2.99										
102-1															1	7.1										
103-1	1	3.68																								
103-5													1	1.93					1	5.12						
Total	1	3.68	2	7.3	2	5.23	6	9.18	1	3.45	2	4.11	2	14.37	28	33.06	14	23.38	3	9.25	1	1.18	33	59.37	1	0.53

Note: # = count Wt = weight in grams

Table 10. Projectile points

Bag #	Time Period	Chert Type	Weight	Maximum Width	Maximum Length	Maximum Depth
A-2	Late Woodland/ Emergent Mississippian	Burlington	1.81g	16.89mm	31.51mm	3.56mm
E-1	Late Woodland/ Emergent Mississippian	Unidentified	1.46g	12.55mm	28.27mm	5.11mm
E-1*	Late Woodland/ Emergent Mississippian	Burlington	1.68g	12.58mm	27.12mm	4.76mm
F-1*	Mississippian (Tri-notch)	Kaolin (heat treated)	1.36g	16.43mm	22.91mm	4.42mm
F-1	Late Woodland/ Emergent Mississippian	St. Genevieve	1.42g	12.46mm	27.58mm	4.63mm
F-1*	Late Woodland/ Emergent Mississippian	Unidentified	0.72g	15.10mm	16.63mm	2.83mm
I-1	Late Woodland/ Emergent Mississippian	Burlington	0.96g	9.96mm	23.79mm	4.79mm
J-1	Late Woodland/ Emergent Mississippian	Burlington	0.96g	11.60mm	21.48mm	3.85mm
L-1*	Middle Archaic (Godar)	Burlington	6.01g	26.55mm	24.52mm	7.70mm
102-1	Late Woodland/ Emergent Mississippian	Burlington	1.43g	14.65mm	26.96mm	3.79mm

* Incomplete points

Table 11. Cobble tools.

Bag #	Description	Weight (g)
SUR-1	Bipitted; hammerstone	156.8
B-2	Hammerstone; lightly used	203.7
108-1	Hammerstone	144.5
108-1	Hammerstone	248
108-1	Heat-fractured mano	136.6
108-1	Mano-anvil	1226
108-1	Mano-anvil-hammerstone	734

Table 12. Other artifacts.

Provenience	FCR count	FCR weight(g)	limestone count	limestone weight(g)	limonite count	limonite weight(g)	burnt clay	ochre	mica
F. 101	381	1572	36	166			1765	2	
F. 102	380	1990	195	1418			292	2	
F. 103 (basin)	72	750	1	252			51		
F. 103 (entry)	50	218	180	766			4		
F. 103 (pm)	1	0							
F. 104	6	28	1	26			6		
F. 105	22	56	3	42			22		
F. 106	204	3120.5	634	3026			294		
F. 108	3	350							
Unit A	570	2742					95	7	
Unit B	701	2064			4	0.98	129	6	
Unit C	697	2472					310	18	
Unit D	711	2406					433	15	
Unit E	1048	2326					314	17	
Unit F	267	2078					76		
Unit G	596	1816					415	21	
Unit H	287	2132					55	1	
Unit I	770	2358					81		1
Unit J	402	2114	63	312			207		1
Unit K	238	1352					115		
Unit L	132	994					382	3	

F = Feature
g = grams

Table 13. Carbonized plant remains recovered via flotation from Feature 103. All samples are 10 liters.

	Sample 103-3 (upper stratum center)		Sample 103-4 (entry ramp)		Sample 103-7 (lower stratum)		Total	
	#	Weight (g)	#	Weight (g)	#	Weight (g)	#	Weight (g)
Total charcoal	378	3.64	430	3.41	4	.02	812	7.07
Total wood	27	.13	305	2.43	2	.01	334	2.57
wood	20	.13	305	2.43	2	.01	327	2.57
bark	2	-	-	-	-	-	2	-
grass stems	5	-	-	-	-	-	5	-
Total nutshell	225	3.51	55	.98	1	.01	281	4.5
Carya spp. (thick-shelled hickory)	48	*.76	16	.38	-	-	16	.38
Juglandaceae (walnut family)	173	2.75	34	.34	1	.01	256	3.8
Juglans nigra (black walnut)	-	-	4	.23	-	-	4	.23
unknown	4	.06	1	.03	-	-	5	.09
Total seeds	109	-	70	-	1	-	180	-
Chenopodium sp. (goosefoot)	67	-	4	-	-	-	71	-
Fabaceae (bean family)	1	-	-	-	-	-	1	-
Helianthus/Iva (sunflower/marshelder)	1	-	-	-	-	-	1	-
Panicum spp. (panic grass)	1	-	-	-	-	-	1	-
Phalaris caroliniana (maygrass)	3	-	23	-	-	-	26	-
Poaceae (Gramineae) (grasses)	2	-	-	-	-	-	2	-
Polygonum spp. (knotweed/smartweed)	1	-	-	-	-	-	1	-
Polygonum erectum (erect knotweed)	-	-	10	-	-	-	10	-
Portulaca oleracea (purslane)	-	-	1	-	-	-	1	-
Rubus sp. (blackberry/rasberry)	-	-	1	-	-	-	1	-
cf. *Scirpus* sp. (rush)	1	-	-	-	-	-	1	-
Sida spinosa (prickley mallow)	1	-	-	-	-	-	1	-
Solanum ptycanthum (black nightshade)	1	-	-	-	-	-	1	-
Strophostyles sp. (wild bean)	2	-	-	-	-	-	*2*	-
unidentified	23	-	28	-	1	-	51	-
unknown	5	-	3	-	-	-	8	-
Total other	17	-	-	-	-	-	17	-
Cucurbitaceae *Lagenaria* (squash rind frags.)	7	-	-	-	-	-	7	-
Zea mays	10	-	-	-	-	-	10	-
kernel frags.	9	-	-	-	-	-	9	_
embryo	1	-	-	-	-	-	1	-

* Estimated weight

Table 14. Economic seed frequency.

	Sample 103-3		Sample 103-4		Sample 103-7		Total	
Total starchy seeds	71	39.45%	37	20.55%	0	0%	108	60%
Chenopodium sp.	67	37.2%	4	2.2%	0	0%	71	39.5%
Phalaris caroliniana	3	1.7%	23	12.75%	0	0%	26	14.4%
Polygonum spp.	1	.55%	10	5.55%	0	0%	11	6.1%
Total oily seeds	1	.55%	0	0%	0	0%	1	.55%
Asteraceae (*Helianthus*/*Iva*)	1	.55%	0	0%	0	0%	1	.55%
All Other identified	9	5%	2	1.1%	0	0%	11	6.1%
unknown and unidentified	28	15.5%	31	17.25%	1	0%	60	33.3%
Total	109	60.5%	70	38.9%	1	.55%	180	99.95%

Table 15. Faunal remains recovered via flotation sampling. Sample size indicated in parentheses below feature number.

	Feature 101 (22.5 liters)	Feature 102 (25 liters)		Feature 103 (30 liters)		Feature 104 (10 liters)	Feature 105 (10 liters)	Feature 106 (30 liters)		Total	
		NISP	MNI	NISP	MNI			NISP	MNI	NISP	MNI
Amia calva		1	1	1	1			7	3	9	5
Ameiurus melas				1	1					1	1
A. nebulosus		2	1							2	1
Ameiurus sp.		4	2	3	0					7	2
Ictaluridae		27	3	11	2			3	3	41	8
Centrarchidae		5	2							5	2
Catostomidae		2	1							2	1
Esox sp.				1	1			1	1	2	2
Kinosternon sp.		1	1							1	1
Trionyx sp		1	1							1	1
Tympanachus cupido								1	1	1	1
Anatidae				1	1					1	1
Muridae		1	1					3	1	4	2
Ondatra zibethicus		2	1							2	1
Geomys bursarius								1	1	1	1
Sylvilagus floridanus				1	1					1	1
Mustela sp.								1	1	1	1
Canidae								3	1	3	1
O. virginianus								1	1	1	1
unidentified	p	p		p		p	p	p			
mussel								p			
Total		46	14	19	7			21	13	86	34

Note: p = present

Table 16. Faunal remains recovered via screening.

	Feature 101		Feature 102		Feature 103		Feature 106		Plowzone		Total	
	NISP	MNI	NISP	MNI	NISP	MNI	NISP	MNI	NISP	MNI	NISP	MNI
Amia calva							4	1			4	1
Ameiurus sp.			4	3							4	3
Ictaluridae			5	0							5	0
fish			2	0			1	0			3	0
Kinosternon sp.			1	1							1	1
turtle			6	0			2	1	1	1	9	2
Anas sp.			1	1							1	1
Charadriiformes			1	1							1	1
bird							1	1			1	1
Sciurus sp.			1	1							1	1
Mustelidae	1	1									1	1
Canidae							3	1			3	1
O. virginianus	6	1					8	1			14	2
large mammal	1	0									1	0
mammal			1	0	1	1	2	0	1	1	5	2
unidentified	1	0	17	0	4	0	34	0	4	0	60	0
Total	9	2	39	7	5	1	55	5	6	2	114	17

Table 17. Comparative data for keyhole structures and small rectilinear post structures.

Phase	Period	Site	Sample size	House Length	House Width	House Area	House Depth	ER Length	ER Width	ER Depth	Post Diameter	Post Depth
Collinsville?	EM-E	Kane Village	4	2.1	2.1	4.4						
Range	EM-E	Range	67	2.26	1.93	4.4	0.21				0.08	0.25
Dohack	EM-E	Dohack	15	2.25	1.98	4.49	0.26					0.11
Sponemann	LW	Sponemann	6	2.7	2.22	4.61	0.4	2.18	0.59	0.13	0.11	0.14
Dohack	EM-E	Range	3	2.26	2.08	4.7	0.27	1.68	0.31	0.08	0.08	0.26
Patrick	LW	Fish Lake	7	2.3	2.1	4.8	0.4	2.1	0.43	0.18		
?	EM-E	E.J. Pfeifer #1	11	2.67	2.2	4.9	0.08				0.09	0.07
Dohack	EM-E	Range	102	2.37	2.1	5	0.23				0.08	0.26
Patrick	LW	John H. Faust #1	1	2.84	2.38	5.38	0.25				0.08	0.06
Sponemann	**LW**	**A.E. Harmon**	**1**	**2.75**	**2.07**	**5.7**	**0.15**	**0.9**	**0.56**	**0.14**	**0.07**	**0.13**
Patrick	LW	Range	43	2.67	2.26	6	0.2				0.07	0.27
Patrick	LW	Range	38	2.62	2.33	6.1	0.3	2.54	0.47	0.17	0.08	0.25
Sponemann?	LW	Technique	1	2.55	2.53	6.45	0.08				0.07	0.09
Sponemann?	LW	Technique	1	2.74	2.4	6.6	0.3	3.68	0.56		0.09	0.1
Sponemann	LW	Sponemann	32	3.24	2.67	7.02	0.27				0.1	0.13
George Reeves	EM-L	Range	158	2.89	2.35	7.23	0.27					
Patrick	LW	John H. Faust #2	2	3.16	2.71	8.48	0.27				0.09	0.07
Sponemann	LW	John H. Faust #1	2	3.42	2.79	8.68	0.1	2.1	0.65		0.1	0.08
Sponemann	LW	John H. Faust #2	3	3.72	2.69	8.8	0.18				0.1	0.07
Lindeman	EM-L	Marcus	2	3.14	2.83	8.9	0.28					
Merrell?	EM-L	Kane Village	1	3.8	2.4	9.1						
Patrick	LW	AG Church	1	3.2	3	9.6	0.44	0.9	1			
Lindeman	EM-L	George Reeves	3	3.58	2.84	10.15	0.38					
Edelhardt	EM-L	BBB Motor	16	4.07	2.58	10.5	0.31					
George Reeves	EM-L	George Reeves	7	3.65	2.87	10.58	0.41					
Merrell	EM-L	Cahokia	7	4.07	2.93	12	0.79					
Merrell	EM-L	AG Church	1	4.4	3.1	13.64	0.77					
Merrell	EM-L	Radic	18	4.47	3.42	15.3	0.29					

Notes: Keyhole structures have entry ramps (ER) while small rectilinear post structures do not. Average measurements are provided for sites with sample sizes greater than one (i.e., more than one excavated house). All measurements are in meters; data are ordered by increasing house area. Feature 103 from A.E. Harmon is in bold print. Data are derived from Emerson and Jackson 1984 and 1987, Fortier et al. 1984 and 1991, Holley et al. 2001a and 2001b, Holt 1996a, John Kelly personal communication, Kelly 1980, Kelly et al. 1987 and 1990, McElrath and Finney 1987, McElrath et al. 1987, Munson and Anderson 1973, and Stahl 1985.