STAR BRIDGE: A LATE MISSISSIPPIAN VILLAGE IN THE CENTRAL ILLINOIS RIVER VALLEY

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Dedication

For my wife Nikki, my daughter Charlotte, and any other children my wife and I potentially procure in the future.

Acknowledgments

A completed thesis is not a testament to a scholar's individual ability. Instead, it is a testament to the strength and guidance offered by the scholar's family, friends, and advisors. I am lucky to have numerous individuals who have offered motivation and love to see myself achieve this level of scholarship. First, to my wife Nikki and my daughter Charlotte, I love you both with my whole heart. To my dad, cheers! To Laura from Chancellors, thanks for keeping me sane during writing by pouring my beers and chatting with me. To my thesis committee, Drs. Jeremy Wilson, Paul Mullins and Edward Herrmann: Thanks for the mentorship you have offered as well as putting up with me. Frankly, that isn't easy. Thanks to Lawrence Conrad for providing access to research materials as well as providing mentorship and guidance. Thanks to Dr. Robert McCullough and the Illinois State Archaeological Survey for providing an extra magnetometer and help with my geophysical survey. To the numerous friends and professional colleagues who have motivated me and provided advice along the journey: Joshua Myers, Matthew Pike, Erica Ausel, Scott Hipskind, Ryan Peterson, Greg Wilson, Andrew Upton, Christian Friberg, Duane Esarey, Jeremy Beach, Seth Grooms, and the many more I am lucky enough to call my friends. Thanks to archaeologist (and neighbor) James Tharp, who introduced me to archaeology as a child and still helps me with artifact questions. Also, a big thanks to the IUPUI Department of Anthropology. You always made me feel welcome. Finally, thanks to Dr. George "Bill" Monaghan who continued to motivate/scare me to "just hurry up and finish writing" even after his death. I open beers with his bottle opener frequently. In the words of Bill, a good thesis is a done thesis. Here is a toast to you Bill, I finished. Cheers all!

John Scott Flood

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The late pre-Columbian period in the central Illinois River valley (CIRV) is demarcated by the development of large, often-fortified Mississippian towns, farming hamlets, extensive trade networks, and shifting political alliances between AD 1050 and 1450. The fission and fusion of local polities ceased with abrupt abandonment of the CIRV by AD 1450 as part of the larger Vacant Quarter phenomenon. Located on a hypothesized boundary between Mississippian and Oneota zones of socio-political influence during the 14th century, Star Bridge (11Br17) was a Mississippian village previously believed to have been incinerated during an assault. Through the analysis of an avocational surface collection, a 1992 excavation assemblage, and recent geophysical investigations, my research re-examines Star Bridge and assesses the site's integrity after decades of agricultural modification. Geophysical data and the material culture from excavations suggest Star Bridge never burned but was abandoned after one or two generations of occupation shortly before the exodus of Mississippian and Oneota groups from the CIRV. Meanwhile, my analyses also revealed a dearth of Oneota-derived or influenced material culture, indicating a dearth of interaction between Star Bridge's inhabitants and their neighbors upstream. Instead, the material culture suggests Star Bridge was part of a string of late 13th and 14th century villages known as the La Moine River polity.

Jeremy J. Wilson, PhD, Chair

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1 Introduction

In 1978, archaeologists from Western Illinois University took a series of aerial photos of a farm field just south of the La Moine River in Brown County, Illinois (Figure 1-1). These photos, taken shortly after deep plowing, showed a dark midden with some 200 pre-Columbian structure basins from a site routinely collected by regional avocational archaeologists Glen and Mary Hanning (Conrad 1991). Star Bridge (11Br17), originally known as the Snyders site, was a late Mississippian period, Native American village. Star Bridge was among a string of villages along the Illinois River from Hennepin, Illinois in the north to Meredosia, Illinois in the south (Harn 1978). Ceramics from a large surface collection procured by the Hannings suggest Star Bridge was a Crable phase (AD 1300-1450) community associated with the La Moine River Polity (Conrad 1991), one of two polities believed to have existed between AD 1050 and 1450 in the central Illinois River valley (CIRV).

The Mississippian period in the CIRV emerged over a century and a half (i.e., AD 1050-1200) of contact, interaction, and exchange with the Mississippian polity at Cahokia in the American Bottom near present-day St. Louis (Bardolph 2014; Wilson 2018; Wilson et al. 2020; Wilson et al. 2018) . Over the next two centuries, sizeable fortified temple towns and villages would develop in the CIRV, as well as numerous farming hamlets and farmsteads, who relied on extensive intra- and interregional trade and social networks. However, seemingly rapid regional abandonment occurred at the termination of Crable phase, no later than AD 1400-1450, in conjunction with the development of the larger abandonment of the Midwest known as the “Vacant Quarter,” where much of the Midwest became depopulated of permanent villages by AD 1500

(Cobb and Butler 2002; Meeks and Anderson 2013; Williams 1990; Wilson 2017). The Crable phase is also considered the time period when Oneota groups, as part of the Upper Mississippian tradition (Griffin 1960; Griffin 1966), moved into the CIRV from ancestral lands to the north and west between AD 1300 and 1350. Ceramic evidence from several sites, including Crable, suggests Mississippians and Oneota coexisted within the area for the better part of the 14th century somewhat peacefully (Esarey and Conrad 1998). Even so, skeletal evidence from the Oneota cemetery at Norris Farms #36 (*aka* Morton) suggests violent encounters also occurred (Milner 1995; Milner et al. 1991; Milner and Ferrell 2011; Santure 1990). Furthermore, late Crable phase occupants in the CIRV would have been subject to changing atmospheric moisture patterns associated with the Little Ice Age, resulting in unstable growing seasons and diminished agricultural productivity (Bird et al. 2017).

Figure 1-1 1978 WIU Aerial Image of Star Bridge. Photo angle is north-northwest.

Given this emerging regional and macro-regional pattern of abandonment, coupled with interaction with Oneota groups, Star Bridge's temporal and spatial setting provide an important case study for site configuration, resource utilization, culture contact, and acculturation during late Mississippian times. Unfortunately, existing professional research at Star Bridge is restricted to the excavation of two structures by Emily Blasingham of Western Illinois University (WIU) in 1992. Much like the Hanning Collection, the artifacts from this excavation were never systematically cataloged or analyzed. However, recent radiocarbon dating of antler tips from the 1992 WIU assemblage, obtained by Andy Upton (Michigan State University) as part of his dissertation research, indicates that Star Bridge was inhabited during the mid-14th century (Upton 2019). These new dates, the first for Star Bridge, provide a *terminus post quem* (TPQ) for site abandonment, though few additional data are available to understand the site's life history or potential relationships to and interactions with other late Mississippian and Oneota communities in the CIRV. Previous studies on Oneota/Mississippian relationships suggest varying levels of geopolitical integration and resistance to integration during the late 13th and 14th centuries. (O'Gorman et al. 2020; Wilson 2012).The 1978 Star Bridge aerial images led previous archaeologists to suggest that the village was purposefully incinerated in one warfare-related event at the hands of the Oneota or a rival Mississippian community (Conrad 1991; Wilson 2012; Wilson 2013).

My thesis serves to illuminate this gap in research by examining extant material culture from Star Bridge to better understand what role, if any, the village played in regional-level geopolitics. Additionally, a geophysical survey (i.e., magnetic gradiometry) was implemented to answer questions about Star Bridge's internal organization, abandonment, and current archaeological integrity after decades of modern agricultural usage. Furthermore, my use of magnetic gradiometry also tests the incineration hypothesis as intense burning consistent with the incineration of structures yields unique magnetic signatures (Kvamme 2006). Interestingly, the 1978 aerial images also shows a dearth of cross-cutting and superimposing features, suggesting the village was only occupied for a generation or two, unlike other Mississippian communities in the CIRV, such as Lawrenz Gun Club (11Cs4) and Orendorf (11F1284) among others (Conrad 1991; Krus et al. 2019).

With minimal research on Star Bridge to date, several questions emerge that my thesis research addresses. My primary goal is to understand Star Bridge's socio-political role and relationship to other Mississippian and Oneota communities within the CIRV during the 14th century through the analysis of extant material culture from the Hanning Collection and 1992 WIU excavations. These assemblages and data, which have never been systematically catalogued and analyzed, will allow archaeologists to better understand how the Native groups of the CIRV reacted to interregional migration and culture contact during times of socio-political and climatic instability as well as suspected resource depletion (i.e., the Little Ice Age). Additionally, my research examines questions about daily life in this late Mississippian village, where fears of an unknown people (Oneota) potentially provided some level of stress. Lastly, through a geophysical survey, my research serves to elucidate the site's internal organization and present physical integrity given prior damage from decades of deep plowing and landscape modifications.

The analyses of both the Hanning and WIU collections allows for the reconstruction of Mississippian dietary patterns and resource exploitation, enabling comparisons with existing scholarship on both Oneota and Mississippian foodways (VanDerwarker et al. 2013). In addition, understanding subsistence patterns and how food was served elucidates the circumstances people were living in over time (Bardolph 2014; VanDerwarker and Wilson 2016). If living in times when the threat of violence was real, individuals may have felt pressured to procure protein by fishing in a nearby stream as opposed to leaving the security of the village for foraging and hunting trips further away. My analyses also provide an in-depth study of ceramic attributes, better characterizing the temporal and cultural properties of ceramic industries at Star Bridge. Furthermore, while the 1978 aerial image provides preliminary data on site layout and organization, my magnetometer survey provides precise spatial data on features, including structures, which can be investigated in future research. Lastly, the magnetometer results test extant hypotheses about the incineration of Star Bridge, while also analyzing the current integrity of the site and sub-surface deposits.

The second chapter of this thesis discusses the environmental setting of the site, including local flora and fauna. It also reviews surficial and bedrock geology as a means to understand stone tool raw material resources found near Star Bridge. Further, a synthesis of prior archaeological research in the CIRV is presented, beginning with the Mississippianization of the CIRV in the 11th century and concluding with regional abandonment by the mid-15th century. Chapter three presents my thesis research design, including the methodologies employed during the field and laboratory components. Chapter four presents the results of my artifact cataloguing and analysis of the Hanning

Collection. Chapter five summarizes the results of WIU's 1992 excavation, while Chapter six presents the results of my geophysical survey. In Chapter seven, I provide a discussion and synthesis of the three results chapters. Chapter eight presents a final conclusion and interpretation of Star Bridge, placing it within the broader context of the late pre-Columbian period in west-central Illinois.

2 Environmental and Cultural Setting

Star Bridge is located on the south side of the La Moine River, roughly seven miles southwest of modern-day Beardstown, Illinois, and three miles west of the La Moine's confluence with the Illinois River. The site is situated in the southern portion of a physiographic zone known today as the central Illinois River valley (CIRV), a part of the Illinois River valley that stretches from Hennepin, Illinois in the north to Meredosia, Illinois in the south (Harn 1978). Much of the landform and topography of the CIRV formed as a result of the Illinoian and Wisconsinan glaciations (Leighton et al. 1948), including the Kankakee Torrent, a massive glacial flood that resulted in a relatively flat terrain (Curry et al. 2014; Curry et al. 2018; Hajic and Johnson 1989). Star Bridge is situated on the floodplain, roughly equal distances between the La Moine River to the north and a tall bluff face to the south and west. Today, the site and surrounding floodplain are agricultural fields, primarily corn and soybeans, with some adjoining areas serving as pastureland for cattle. As depicted in Figure 2-1, an early 20th century plat map for Brown County, Star Bridge has been farmed by the Snyder family for multiple generations.

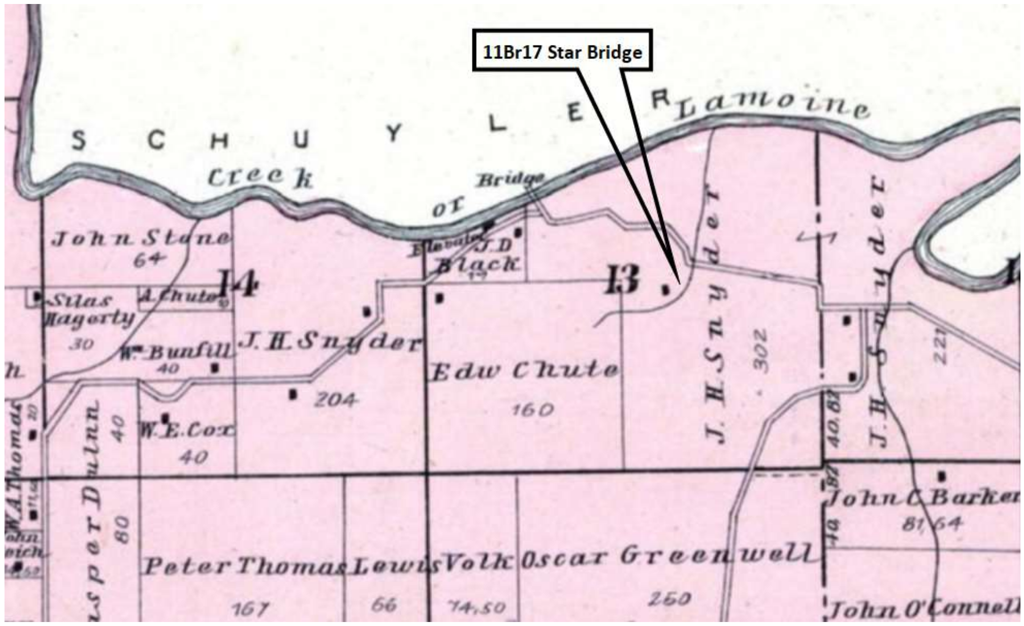


Figure 2-1 190x (Published Date Unknown) Plat Map of 11Br17

The dominating geographic feature of the land, the Illinois River and its associated floodplain Figure 2-2, flows southward to its eventual confluence with the Mississippi River, while deeply dissected bluffs at the edge of the floodplain yield tributary rivers, streams, and creeks (Green and Nolan 2000). With one of the world's lowest stream gradients, the Illinois River drops less than 10 meters from its head to its confluence with the Mississippi, facilitating past and present river travel, transport, commerce (Holtrop et al. 2005) as well as agriculture, as seen on early historic aerials (Figure 2-3). The Quaternary geomorphology was heavily influenced by the Wisconsin and subsequent Illinoian glaciations (Figure 2-4). The channel south of Hennepin, Illinois served as the Mississippi River before the Illinoian glaciation, which diverted the Mississippi waters to their present channel. As the Illinoian glacier melted, the Illinois River began to flow through this old channel. Around 19,000 years ago, the melting of the Wisconsin glacier resulted in the Kankakee Torrent, allowing the Illinois River to drain much of western Illinois (Curry et al. 2014).

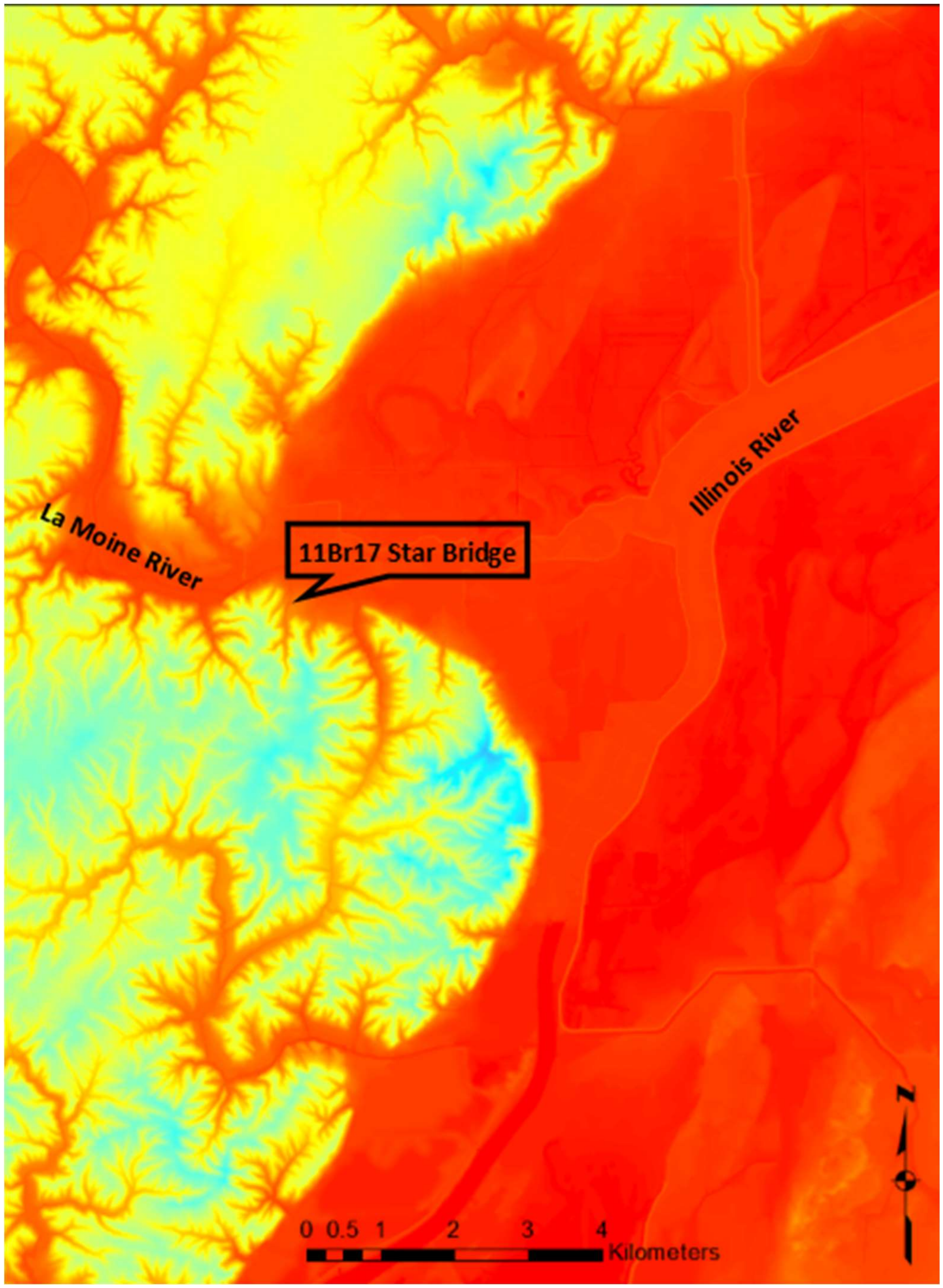


Figure 2-2 11Br17 Location. Cool colors indicate higher elevation, warm indicate lower elevation

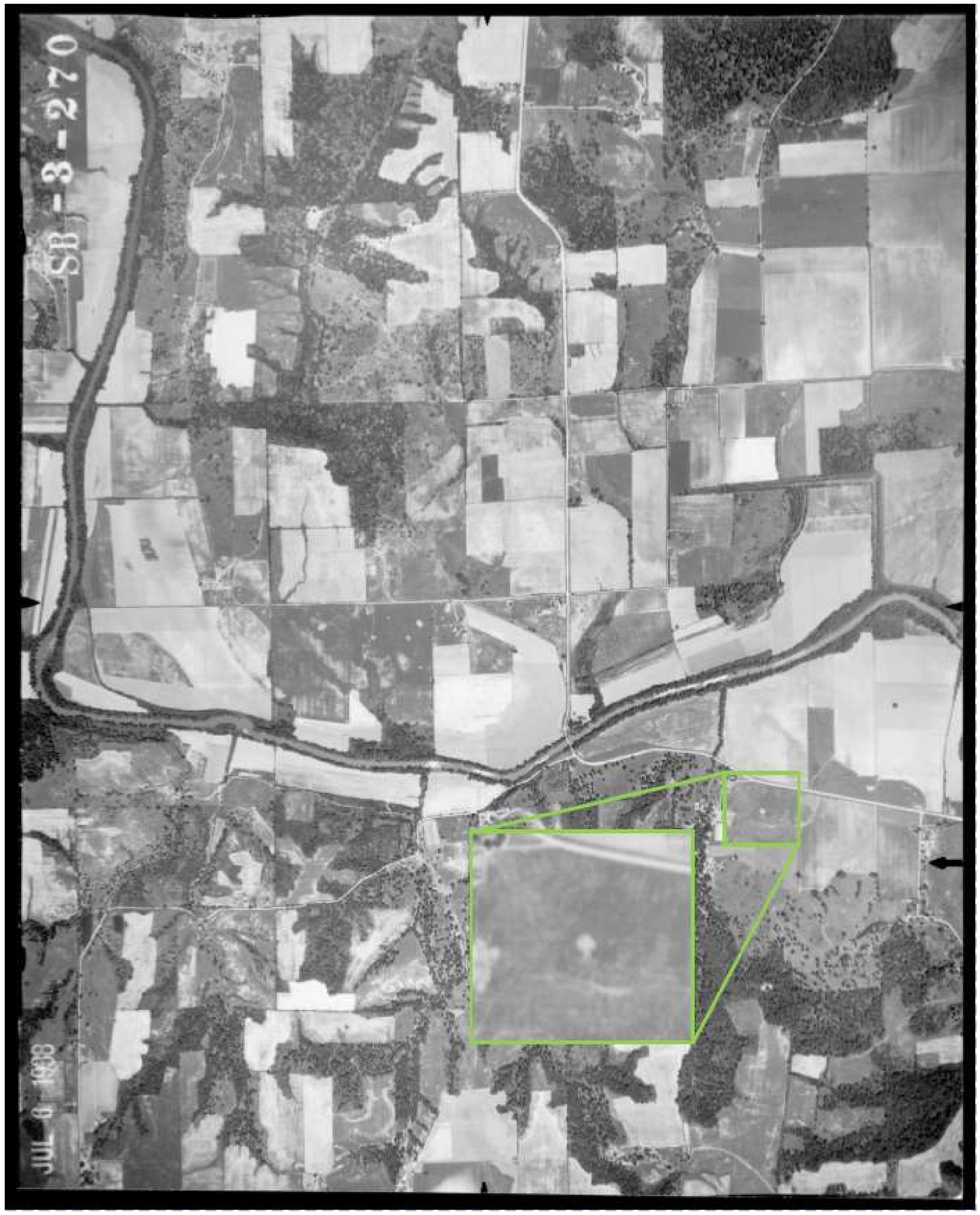


Figure 2-3 1938 USDA Aerial Photo of 11Br17

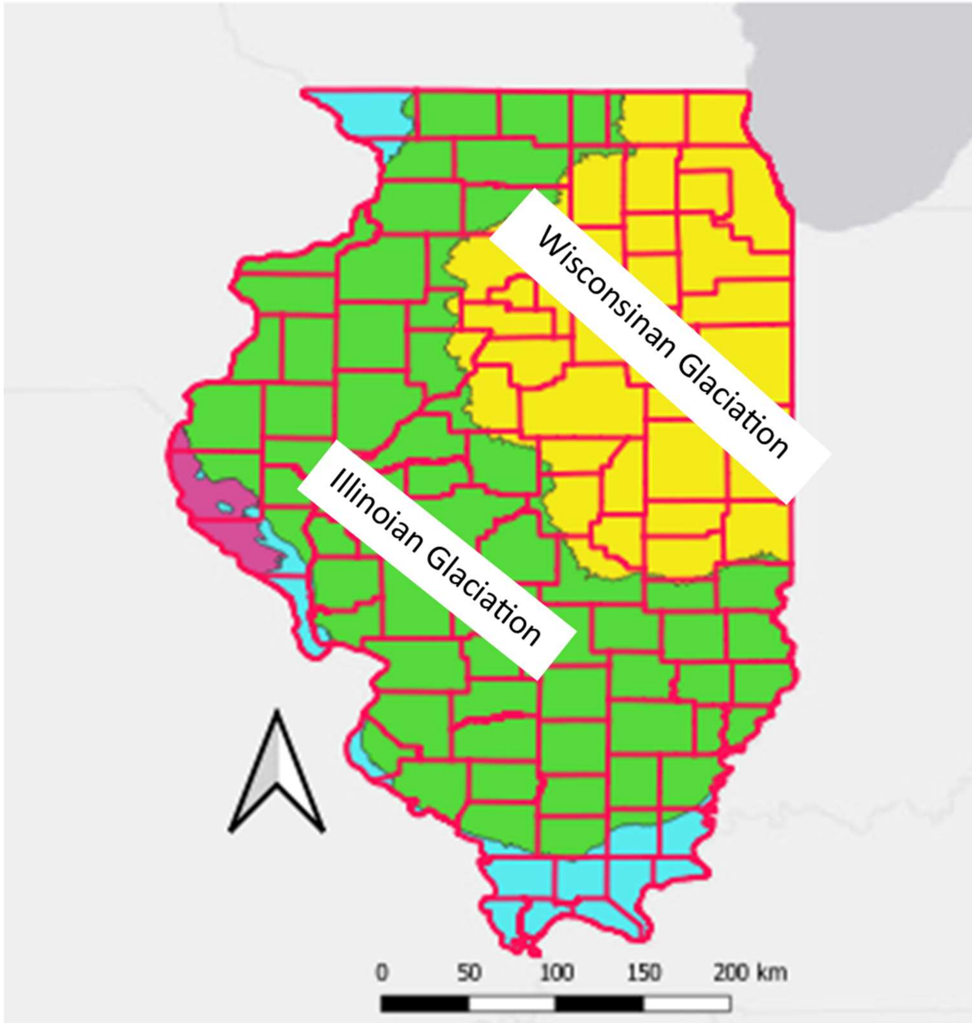


Figure 2-4 Farthest advances of Illinoian and Wisconsin Glaciation

The bluffs are comprised of Pennsylvanian geological units (Figure 2-5 and Figure 2-6), predominately the Carbondale and Tradewater formations that provide local cherts, including the dark La Moine River chert (Esarey 1983; Nolan and Fishel 2009). While a comparatively low-grade chert, La Moine was utilized throughout the CIRV, especially in the southern portion of the region (Figure 2-7). Other lithic resources, such as the Burlington formation, are located throughout the region (Figure 2-8) as well (Esarey 1983; Nolan and Fishel 2009; Reber et al. 2017; Stelle and Duggan 2003).

Burlington was the most utilized chert in west-central Illinois throughout pre-Columbian times (Reber et al. 2017), including the Mississippian Period in the CIRV.

Star Bridge is located in the Galesburg Plain physiographic zone of west-central Illinois. The bluff top soils are late Pleistocene loess sourced from the Mississippi and Illinois Rivers (Green and Nolan 2000). Numerous small drainages and tributaries to the Illinois River dissected the bluffs, allowing access to the multiple bedrock units listed above as well as sending soils into the floodplain. The floodplain soils (Figure 2-9) are nutrient rich, allowing for the prehistoric cultivation of maize, squash, and sunflowers, among other cultigens (Green 1987). In addition, leafy greens and fleshy fruits were recovered at Lamb (11Sc24) and Cooper (11F15), two recently analyzed Mississippian sites upstream from Star Bridge (Bardolph and VanDerwarker 2015; VanDerwarker and Wilson 2016), alluding to the importance of the fertile soils. In the floodplain, a variety of fish, avian, and mammal species would have been available for hunting and fishing (Harn 1978). Given the abundant ecosystem, the CIRV provided sustainable and ample resources for hunter-gatherer societies and later agriculturalists, allowing for both upland and floodplain settlements (Green and Nolan 2000).

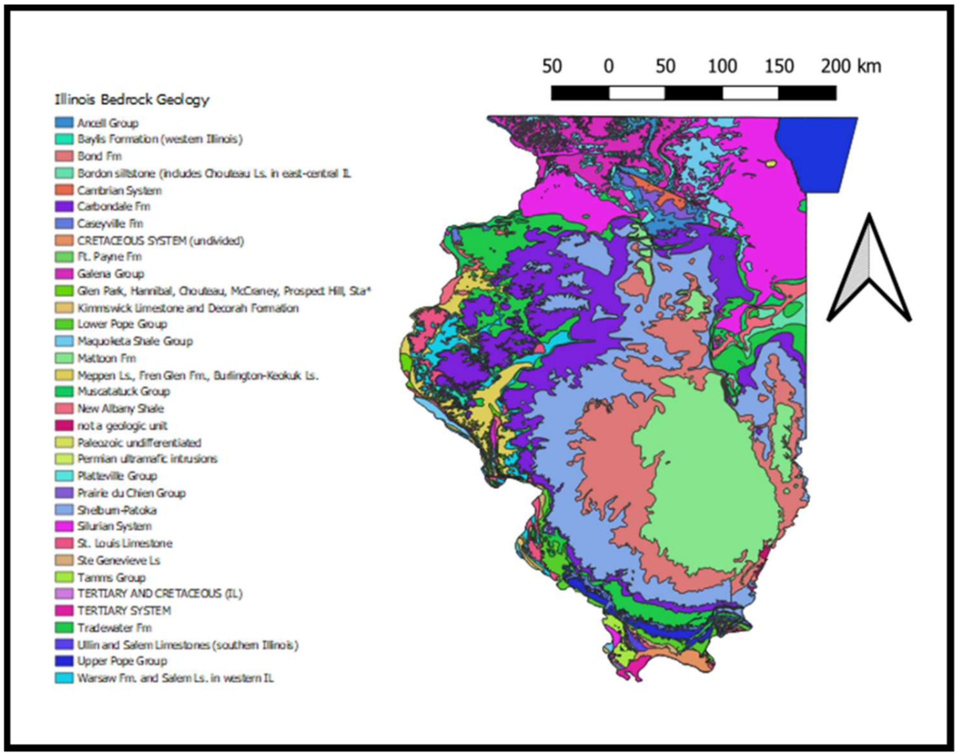


Figure 2-5 Illinois Structural Geology (Data Courtesy of Illinois State Geological Survey)

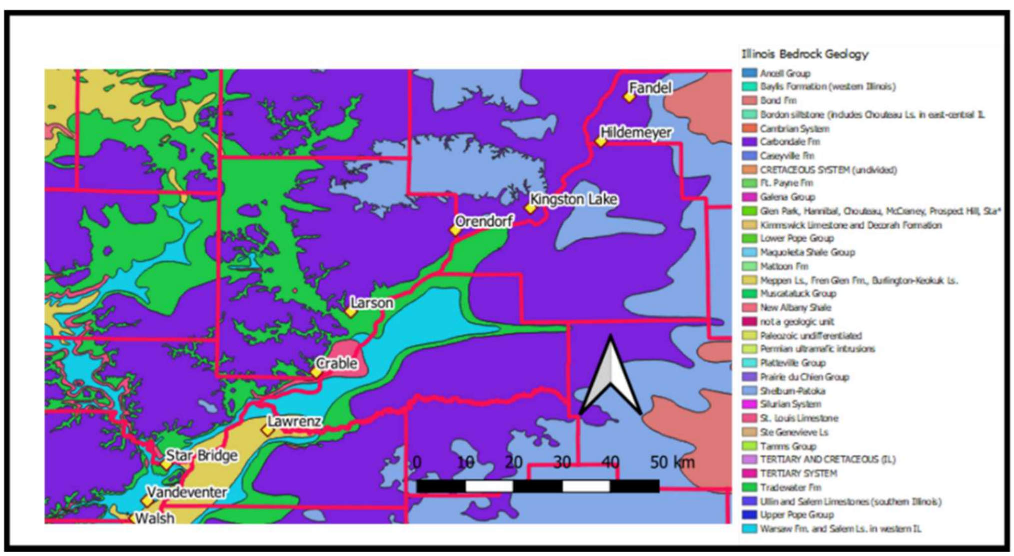


Figure 2-6 CIRV Specific CIRV Structural Geology in relation to Mississippian Villages (Data Courtesy of Illinois State Geological Survey)

Figure 2-7 La Moine chert usage in the CIRV A: La Moine Biface from Crable. B: La Moine Arrow projectile point from Lawrenz. C: La Moine bifacial knife from Star Bridge.

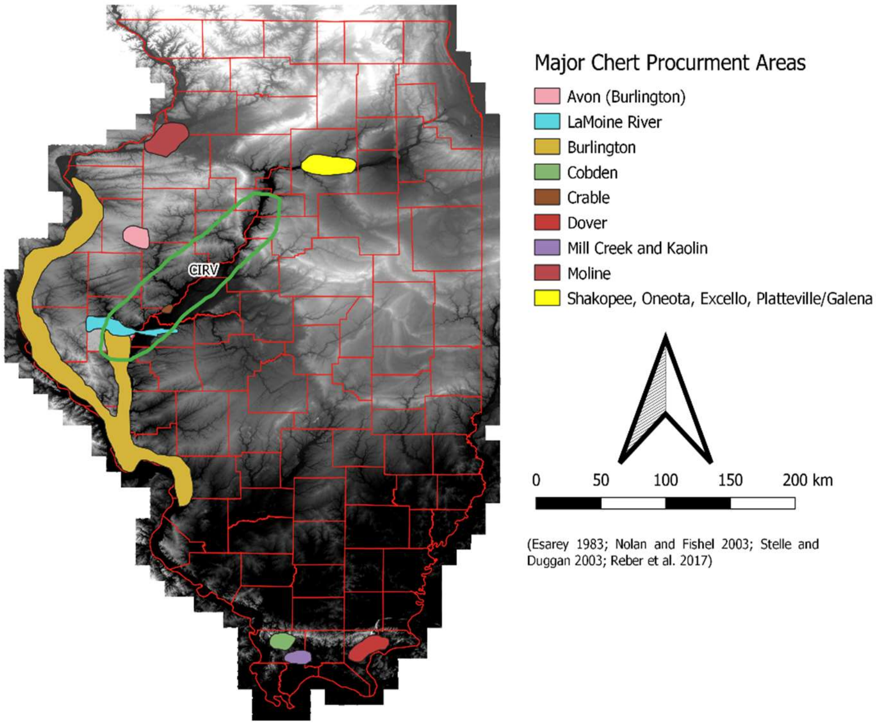


Figure 2-8 Major Chert Procurement Areas within the CIRV (Green Circle).

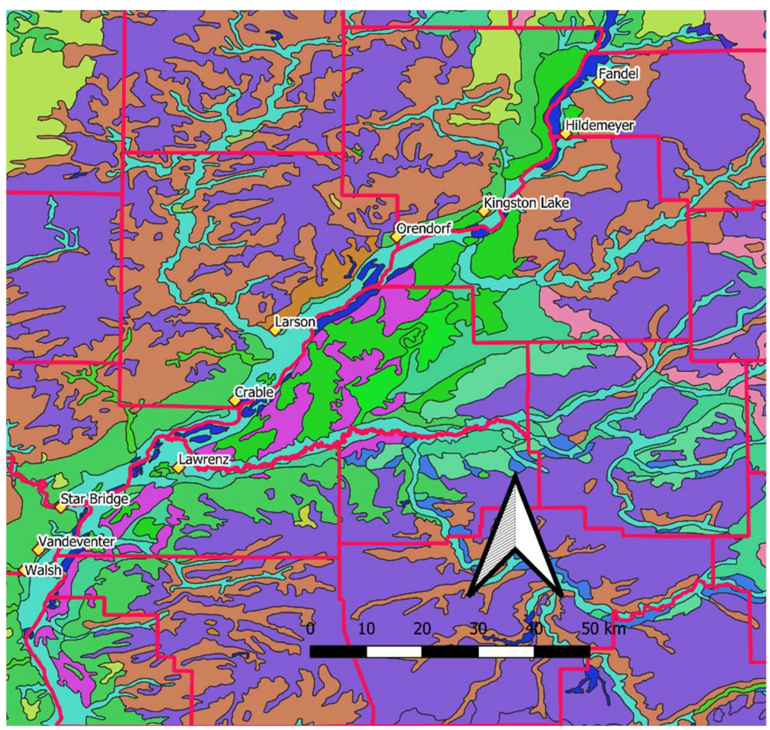


Figure 2-9 Soil map of CIRV in Relation to Mississippian Villages. Green and Purple Soils represent floodplain soils, Blue and Brown represent Upland Taxonomies. (Data Courtesy of Illinois State Geological Survey)

2.1 Mississippians in the Central Illinois River Valley

Before the emergence of Mississippian period towns throughout the CIRV (Figure 2-10) in the late 12th century, archaeologists contend that the region was occupied by at least two Late Woodland groups between the 9th and 11th centuries based predominantly of two coeval ceramic styles (Esarey 2000; Green and Nolan 2000; Studenmund 2000). The Maples Mills ceramic tradition and associated peoples were located in the north half of the CIRV, while the Bauer Branch and Jersey Bluff traditions were concentrated in the western uplands and south half of the region (Esarey 2000; Green and Nolan 2000; Studenmund 2000). Late Woodland peoples in the CIRV lived in small villages and hamlets, taking advantage of the abundant local flora and fauna. Citing the lack of fortified villages, Wilson (2010) suggests that very little strife existed between Late Woodland groups within the CIRV. Overall it appears that while some degree of strife likely occurred, warfare was relatively infrequent compared to that seen later during the Mississippian occupation of the valley.

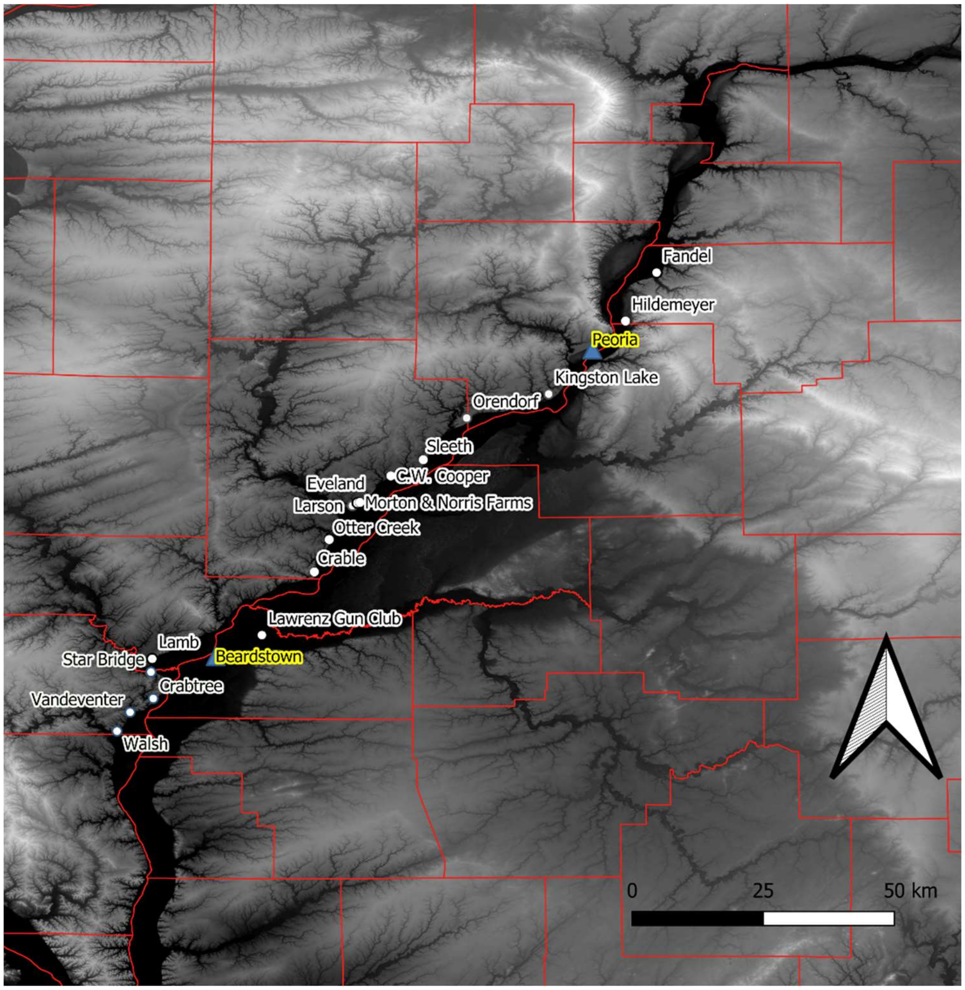


Figure 2-10 Central Illinois River Valley Late Prehistoric Sites (White) and Contemporary Towns (Yellow)

Around AD 1050, an abrupt, though non-uniform transition is denoted by changes in material culture from local terminal Late Woodland traditions to materials, structures, and settlements that emulate the socio-cultural, political, and religious transformations that were emerging from Cahokia and the American Bottom. Conrad (1991) argues that as Mississippian communities emerged in the CIRV, two geographically circumscribed socio-political units evolved between the late 11th and early 15th centuries: the Spoon River polity in the north and the La Moine River polity to the south. Lawrenz Gun Club, Walsh, Crable, Walsh, and Star Bridge fall into the southern La Moine River Valley polity, as well as smaller communities, such as Emmons, Vandeventer, J. Gillette, C. Conrad, Baehr South, and Crabtree (aka the Brown County Ossuary). The northern towns, such as Larson, Orendorf, Kingston Lake and Crable, are associated with the northern Spoon River polity. Conrad (1991) makes this taxonomical distinction between the two polities based on material goods distribution, such as more Mill Creek chert in the south and more bone tools in the north. Conrad (1991) interpreted this as a result of the different terminal Late Woodland groups that existed in the CIRV during the initial contact with American Bottom peoples.

The first Mississippian settlements in the CIRV occurred during the Lohmann (AD 1050-1100) and Stirling (AD 1100-1200) phases of the Mississippian Period in the American Bottom (Kelly 1991). In the CIRV, these are known as the Mossville (AD 1050-1100) and Eveland (AD 1100-1200) phases (Table 2-1) following Bardolph (2014), with the latter divided into "early" and "late" Eveland (i.e., early and late 12th century). Emerson (1991) hypothesized that some of Cahokia's population, potentially emissaries, migrated northwards along the Illinois River, and began making contact with local Late Woodland populations during the Mossville phase. Whether it was a Cahokian migration or emulation by the Late Woodland populations, these "Emergent" Mississippian populations appear to have clustered in two areas within the CIRV, largely corresponding to later socio-political developments (Table 2-1). These early sites, with radiometric dates falling between AD 1050 and 1150, include Lawrenz Gun Club (Krus et al. 2019; Wilson and Pike 2015), Lamb (Bardolph and VanDerwarker 2015; Bardolph and Wilson 2015; Wilson 2015a; Wilson 2015b), Fandel (Esarey et al. 2017; Wilson et al. 2020), Rench

(McConaughy et al. 1985), Eveland (Esarey 1996; Harn 1991), and C.W. Cooper (VanDerwarker et al. 2013; Wilson and VanDerwarker 2015), among others.

Many of early Mississippian sites in the CIRV contain ceramic assemblages that demonstrate a substantial degree of interaction or some form of imitation between local terminal Late Woodland and American Bottom groups (Bardolph 2014; Friberg 2018; Wilson et al. 2020). Interestingly, Bardolph (2014) notes at the early 12th century Lamb site that although many of these ceramics were shell-tempered, alluding to a Mississippian influence (Figure 2-11), the domestic assemblages more closely resemble Late Woodland ceramic patterns and foodways. This includes less serving ware (e.g., plates [Wilson 2015]) and more utilitarian wares, such as cooking vessels, suggesting local Late Woodland populations were using Mississippian technologies, such as shell tempering, but had not yet fully adopted Mississippian lifeways. Likewise, Maples Mills cord-marked vessels from the terminal Late Woodland Mossville site exhibit lugs on jars that have been modified into loop handles, further supporting emulation, at least within local ceramic traditions (Esarey 2000). Recent analysis of decorative motifs from ceramics vessels throughout Cahokia's northern frontier region suggests that while local artisans were producing ceramics in American Bottom form with shell tempering, ceramic motifs more closely reflect terminal Late Woodland designs, suggesting that the Cahokia-related religious system had not been fully adopted; instead these emergent populations were adopting Cahokian traditions piecemeal (Friberg 2018). Analysis of lithic artifacts from the Lamb site similarly suggests a lack of full Mississippianization (Wilson 2015b). Farmsteaders living at Lamb were not importing Mill Creek hoes for agricultural purposes, nor were they producing micro-blades for shell bead manufacturing. This suggests that the community at Lamb was making explicit and intentional decisions about daily practices and the outward expression of their identify to themselves and others.

Recent excavations at two previously identified Mississippian sites, Orendorf (Andrea Alveshere personal communication) and Lawrenz Gun Club (Wilson 2018; Wilson et al. 2020) have uncovered 11th century components containing Late Woodland and early Mississippian artifacts predating the previously known temporal setting of these sites. Evidence from these sites and other early Mississippian manifestations (e.g., Fandel, Rench, Lamb, Garren, and Kingston Lake) include Mississippian architectural practices, such as wall trench residential structures, and hybridized material culture assemblages that include terminal Late Woodland grit tempered ceramics. This scenario of hybridization is supported by a bio-distance study that demonstrated continuity between Late Woodland and early Mississippian populations in the CIRV (Steadman 1998). While some immigration from the American Bottom most likely occurred, these data suggest emulation and *in situ* development among extant Late Woodland groups as the major means of Mississippianization in the CIRV. Not only do the earlier components at many later towns and villages provide lifeways data on transitional cultural practices between terminal Late Woodland and early Mississippian populations in the CIRV, but they also allude to long-standing habitation in the same locales for centuries. These data shed new light on Mississippianization and the general trajectory of Mississippians in the CIRV until abandonment in the early 15th century.

Table 2-1 Mississippian Chronology in the CIRV

CIRV Phase	Harn (1994)	Esarey and Conrad (1998)	Bardolph (2014)
Mossville	-	-	A.D. 1050-1100
Eveland Phase	A.D. 1050-1125	A.D. 1100-1175	A.D. 1100-1200
Orendorf Phase	A.D. 1125-1200	A.D. 1175-1250	A.D. 1200-1250
Larson Phase	A.D. 1200-1300	A.D. 1250-1300	A.D. 1250-1300
Crable Phase	A.D. 1300-1450	A.D. 1300-1450	A.D. 1300-1425

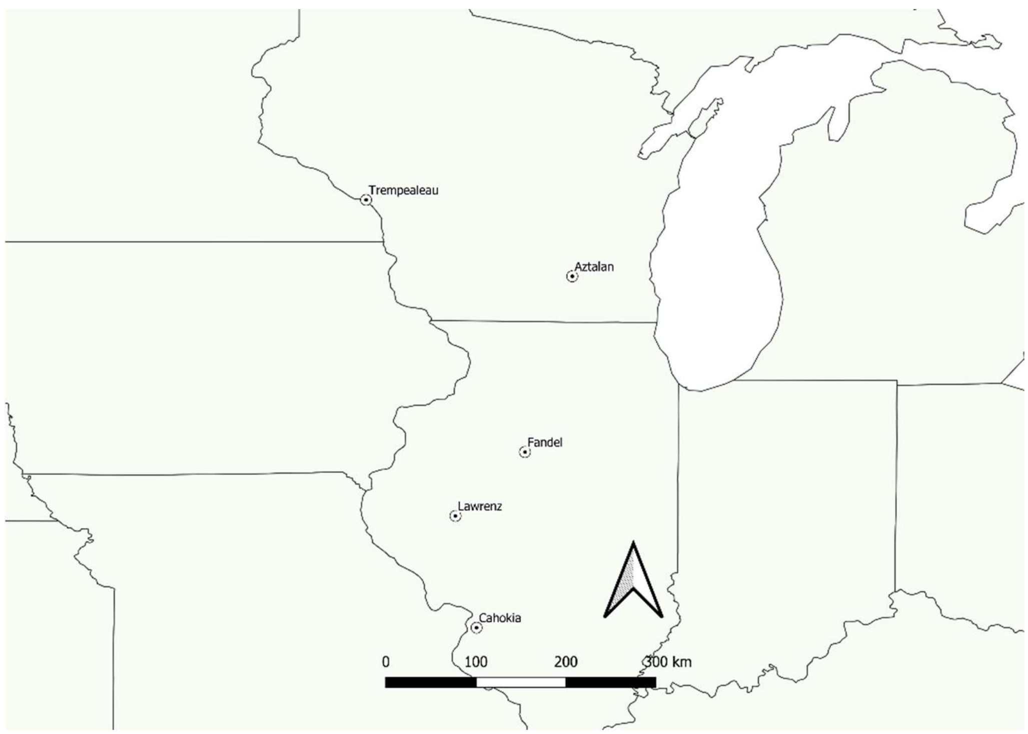


Figure 2-11 Cahokian Influence in the Northern Hinterlands

Located near the confluence of the Spoon and Illinois Rivers, Eveland was excavated in the 1950s (Conrad, 1991:124), eventually becoming the type site for the early Mississippian Eveland phase. Excavations uncovered several public and domestic structures, as well as material refuse that included maize, ceramic vessels, and a clay discoidal (Esarey 1996; Harn 1991). The relatively small number of structures (i.e., 8-10) at Eveland indicate that it was not a large habitation, though multiple rebuilding episodes suggest it was occupied for a generation or more. Other sites with Eveland Phase components include Garren, Kingston Lake, and Lamb (Conrad, 1991:125; Bardolph and Wilson 2015). While Conrad (1991) notes that insufficient information is known about subsistence and the exchange of material goods among Eveland Phase peoples of the CIRV, recent analysis of the Lamb assemblage has provided data related to subsistence patterns, food preparation, and its serving, as well as ceramic stylistic and functional patternings, thereby illuminating life in the 12th century at this smaller community (Bardolph 2014; Binardolph 2014; Wilson 2015a). This research has revealed that while Mississippian traits and technologies are present, community members are still consuming and procuring resources in a manner similar to Late Woodland peoples. For instance, food preparation was anchored in Late Woodland traditions, such as the utilization of earth ovens rather than utilizing jars (Wilson and VanDerwarker 2015) and serving ware, e.g. plates, were not utilized.

Meanwhile, a different relationship between terminal Late Woodland peoples and new Mississippian ideologies and practices is reflected in 12th-century mortuary practices. The retrieval of copper foil, Mill Creek chert knives, and marine shell from the approximately 250 Eveland Phase burials at Dickson Mounds suggest stronger inter-regional connections. These data from the Dickson Mounds burials suggest that by the 12th century, Mill Creek hoes and knives were being traded into the valley in relatively large numbers. This is interesting, as lithic analyses from the Mossville phase components at Lawrenz (Flood et al., *in progress*) and Lamb (Wilson 2015b) both indicate a dearth of Mill Creek artifacts. Overall, archaeological evidence suggests that the CIRV was a stable, though loosely integrated region during the Eveland phase, with no evidence of large-scale villages or warfare until the turn of the 13th century.

Evidence of fortified villages and warfare increases during the subsequent Orendorf Phase (AD 1175/1200-1250), beginning in the late 12th century and extending into the mid-13th century. The appearance of fortifications, including stockades and palisades, around larger villages in the CIRV around AD 1175 suggests the onset of an era of stress and strife. This period of increasing conflict was potentially exacerbated by drought, which resulted in abandonment of the uplands surrounding the American Bottom (Benson et al. 2009). For example, Orendorf, a collection of several sequential villages (Conrad 1991:132-135), was built on a western bluff top overlooking the valley. Several iterations of the stockade and a suspected redoubt offered a defense for the subsequent versions of the village that existed until ca. AD 1250 (Conrad, 1991: 132-133). The evidence of warfare goes beyond the defensive architecture, with Steadman (2008) documenting that roughly 9% of individuals buried at Orendorf died from violent injuries. Conrad (1991) suggests that it is during this era known as the Moorehead phase that Cahokia lost its control over its former colonies, possibly leading to the emergence of local polities and the re-drawing of socio-political lines of influence within the CIRV and elsewhere.

Similarly, recent radiocarbon dates from the impressive defensive architecture at Lawrenz Gun Club show that the fortifications existed from the latter half of the 12th century through the mid-13th century (Krus et al. 2019), before any known Oneota immigration into the region and, curiously, before the fortifications at Cahokia. Current hypotheses to explain the development of fortified villages in the CIRV and elsewhere range from a disruption in Cahokian political control (Emerson and Hedman 2016) to decadal-long droughts and resource shortages (Benson et al. 2009; Bird et al. 2017). The continued presence of Mill Creek chert, Kaolin chert and other associated artifacts suggest continued interaction with the American Bottom at some level, with the absence of associated lithic debitage suggesting that trade was primarily focused on complete tools and goods rather than raw material (Conrad, 1991:140).

The subsequent Larson Phase (AD 1250 to 1300) does not represent a dramatic departure from existing Mississippian lifeways, though there is an evolution in ceramic forms, including the departure of Ramey Incised motifs on the shoulders of vessels and the emergence of more localized traditions, such as incising replacing trailing on Mississippian vessels (Upton 2019). The most heavily investigated and type site of this phase, Larson, was constructed on a terrace looking over the Spoon River to the southwest of Dickson Mounds and Eveland (Harn 1978; Harn 1994). Larson was surrounded by a large rectangular stockade for at least part of its history. However, like Orendorf, no AMS dates exist on Larson's stockade. Larson's defensive walls lacked bastions and were built using a shallow trench as opposed to individual post-hole construction documented at Orendorf (Conrad 1991:141). Other sites associated the Larson Phase that Harn (1994) suggests were hamlets related to Larson include Buckeye Bend and Fouts, among many others (Harn 1994). Radiocarbon dating completed by Upton (2019) illuminated the temporal setting of Buckeye Bend, suggesting that the village was not associated with Harn's Larson settlement system, but a singular Spoon River Mississippian village that existed post-Oneota migration. Buckeye Bend has been studied through a series of aerial photographs that indicate a mid-sized village, which appears to have been burned, similar to the aerial photos of Star Bridge. While Mississippian houses were easy to catch on fire given the construction materials, the burning of an entire village is more likely indicative of warfare.

The final era of Mississippian occupation in the CIRV prior to abandonment is the Crable Phase (AD 1300-1450). The primary demarcation between the Crable Phase and earlier ones is the influx of Oneota peoples and new decorative motifs (Figure 2-12). The Bold Counselor Phase Oneota are believed to have immigrated to the valley from northern Illinois and the adjoining upper Mississippi River valley around AD 1300 (Esarey and Conrad 1998), bringing an influx of cultural changes, including ceramic motifs, tool assemblages, and conflict. While two sites, Crable (Morse 1960; Painter 2014; Smith 1951; Wray 1953) and Sleeth, have been part of few studies, they both show stark differences from previous Mississippian populations within the CIRV. Both villages, for instance, show co-habitation of Mississippians and Oneota (Conrad, 1991: 149), while La Moine Polity sites further south show a dearth of Oneota ware. In terms of better documented Oneota sites, large excavations at the Morton site have provided data on Oneota domestic architecture (Conner et al. 2014; Lieto and O'Gorman 2014; Schroeder 2000), while a large Oneota cemetery associated with Morton (i.e., Norris Farms) has provided a wealth of bioarchaeological data alluding to strife at the time of Oneota immigration (Santure 1990). Norris Farms #36 contained 264 burials, with 43 individuals having died from violence (Milner et al. 1991). The cemetery, dating to circa AD 1300, supports Milner and colleagues' (1991) suggestion that casualties were the result of raids and small-scale warfare. This pattern of interments in small-group succession alludes to a cycle of retaliatory killings and raiding between groups. Small-scale warfare appears to be the most common style of warfare undertaken in the Eastern Woodlands during the pre-Columbian and protohistoric periods (Dye 2009; Milner et al. 1991).

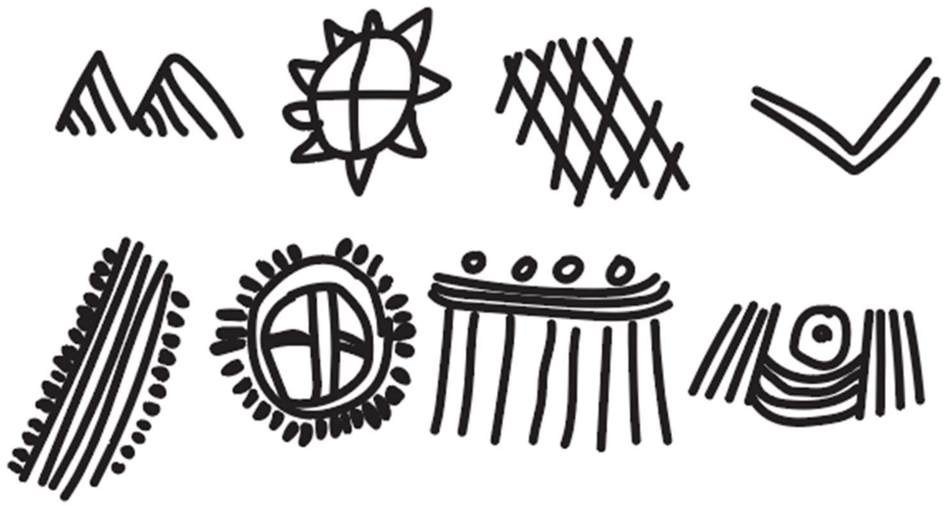


Figure 2-12 14th Century Mississippian (Top) and Oneota (Bottom) ceramic motifs.

Further hinting at tensions that may have existed within the region, Conrad (1991) suggests that the rectangular-shaped artifact distribution and sharp drop off in the midden around the Sleeth site may allude to the existence of a palisade. With no sub-surface archaeological excavations or geophysics conducted previously at Sleeth, minimal data exist to support this observation. Likewise, Star Bridge is suspected of being fortified and is located just south of the reported distribution of Oneota sites in the CIRV (Esarey and Conrad, 1998) raising questions about the village's possible interactions with their northern neighbors Figure 2-13. Fortifications are considered strong evidence of geopolitical strife, as communities would not waste resources or calories to construct them.

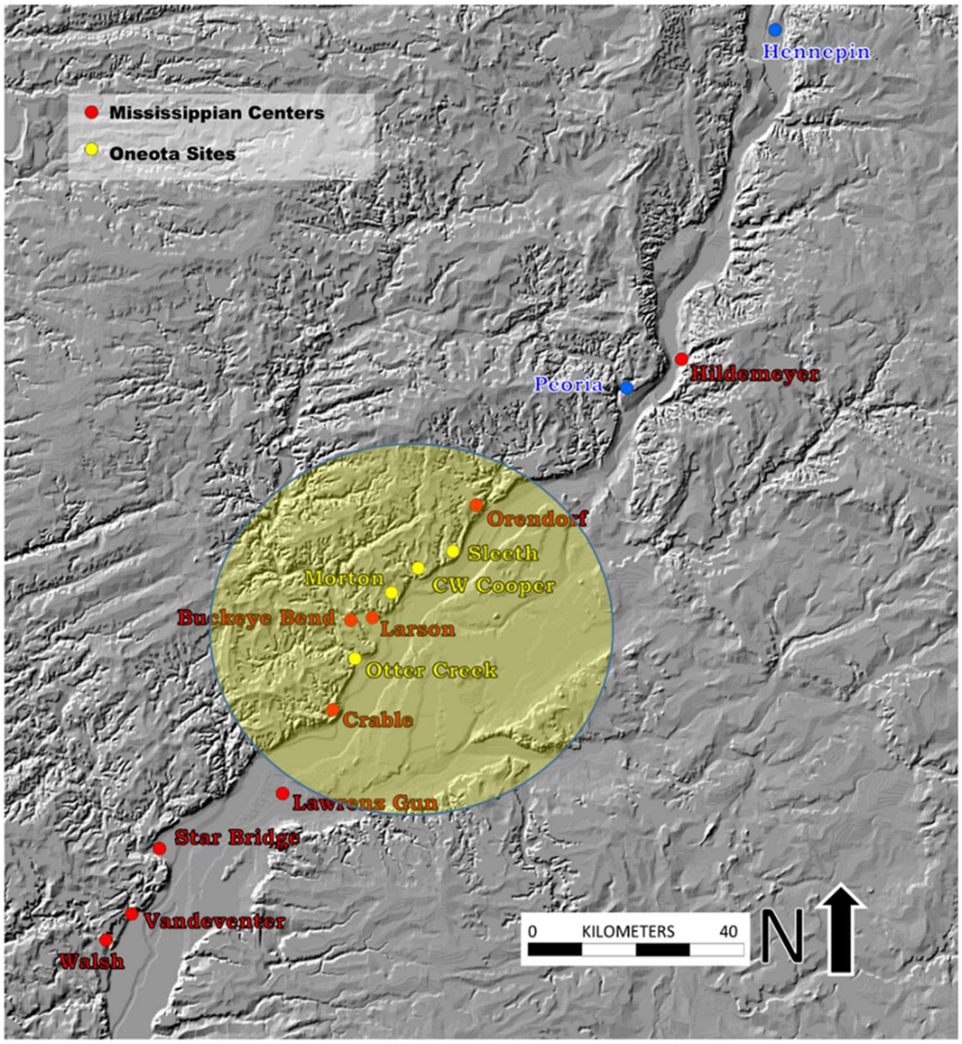


Figure 2-13 Late 13th and 14th Century Mississippian Centers and Oneota Sites

Interestingly, surface-collected material from the northernmost town of the La Moine River polity, Lawrenz Gun Club, contain several ceramic sherds that are consistent with Bold Counselor Oneota assemblages from Crable and other villages. However, the low frequency (n=2) combined with the fact that the sherds were not excavated, raises questions about an Oneota presence at Lawrenz. Somehow, these ceramics made it to Lawrenz either as trade goods or were crafted *in situ* by an Oneota immigrant or captive. While archaeologists do not understand the extent of cohabitation of the region, enough data exist to suggest the Crable Phase was characterized by both strife (Milner et al. 1991) and climate change (Bird et al. 2017; Wilson 2017), possibly contributing to the abandonment of the region by the mid-15th century.

Recent dating of La Moine Polity sites, as well as relative dating from others, shows that the occupation of Star Bridge coincided with the occupation of Walsh, Crabtree, and Vandeventer. This suggests that between the time of the Oneota immigration and regional abandonment, a political reorganization took place south of the La Moine River valley. Not unlike the development of the Common Field polity south of the American Bottom, (Buchanan 2019), or polities in the southeast (Hally and Chamblee 2019)it is possible that Mississippians migrated northwards into the CIRV from the American Bottom (Duane Esarey personal communication 2020). This would explain similarities in Moorehead phase mortuary sites at Crabtree in the CIRV, as well as Kane, Corbin, and Hill Prairie in the American Bottom (Emerson et al. 2019). Similarly, the presence of Cahokian style ceramic shell cup effigies and shell gorgets are reminiscent of Moorehead phase Cahokia (Duane Esarey personal communication 2020).

2.2 Chronology Synthesis

Decades of non-systematic excavations have shaped our current understanding of the chronology and cultural developments in the CIRV during the Mississippian Period, as well as geopolitical units (i.e, Spoon River vs. La Moine River). The phases discussed in this chapter (Mossville, Eveland, Orendorf, Larson, and Crable) provide a framework for understanding the developmental sequence of Mississippian villages in the valley (Harn 1994; Esarey and Conrad 1998; Bardolph 2014). However, broadly speaking there are three intervals that greatly influence and change social dynamics within the CIRV. As Table 2-2 shows, the first pivotal timeframe occurs when the local terminal Late

Woodland peoples make contact with Mississippian emissaries from the American Bottom sometime around AD 1000-1050. The next two centuries are marked by an uneven transition to Mississippian lifeways at places such as Lamb, Lawrenz Gun Club, Eveland, and Fandel (Figure 2-14). In particular, mound construction at Lawrenz and Fandel suggest these villages served as important early ceremonial centers. Further, platform mounds at both Lawrenz and Fandel were constructed on the same azimuth (Friberg et al. 2019), suggesting a common interest in the construction of these monumental architectural features. In turn, ceramic technologies, architecture, community layout, and social organization begin to reflect the Mississippian communities in the American Bottom by the time Cahokia loses its influence towards the end of the 12th century (Kelly 1991:78). Concurrently, ceramic motifs from the CIRV dated throughout the 13th century (Figure 2-15) suggest local Mississippians have forged their own identities, with trailing on vessels combining both American Bottom and terminal Late Woodland design elements (Friberg 2018). Additionally, perhaps as a result of the American Bottom's waning control, local warfare erupts, resulting in cemeteries that include warfare victims, while villages like Orendorf's Settlement D were burned wholesale. Lastly, during the late 13th and 14th centuries, Bold Counselor Oneota populations migrate into the central portion of the CIRV. The next century and last major cultural phase is characterized by evidence of sporadic warfare, but also peaceful cohabitation between Mississippians and their new neighbors (Figure 2-16). During this mixing of cultures, cycles of drought and unpredictable weather jeopardize the agricultural focus of Mississippians. Mississippians appear to organize in the southern portion of the CIRV, while Oneota-Mississippian cohabitation occurs in the central portion. Whether by warfare stress or climate change, the entire region is abandoned by AD 1450. In summary, Star Bridge does not simply represent a late Mississippian village among other Mississippian villages. Instead, Star Bridge and other late communities are the end product of 400 years' worth of culture interaction with outside influences on *in situ* populations as seen in Table 2-2 and Figure 2-17.

Table 2-2 Broad CIRV Chronology

	Phase I	**Phase II**	**Phase III**
	American Bottom Emulation	Regional Autonomy and Strife	Climate and Culture Change
	AD 1000-1175	1175-1275	1275-1450
Sites	*Eveland*	*Larson*	*Crable*
	Lamb	*Orendorf*	*Star Bridge*
	Fandel		*Morton*

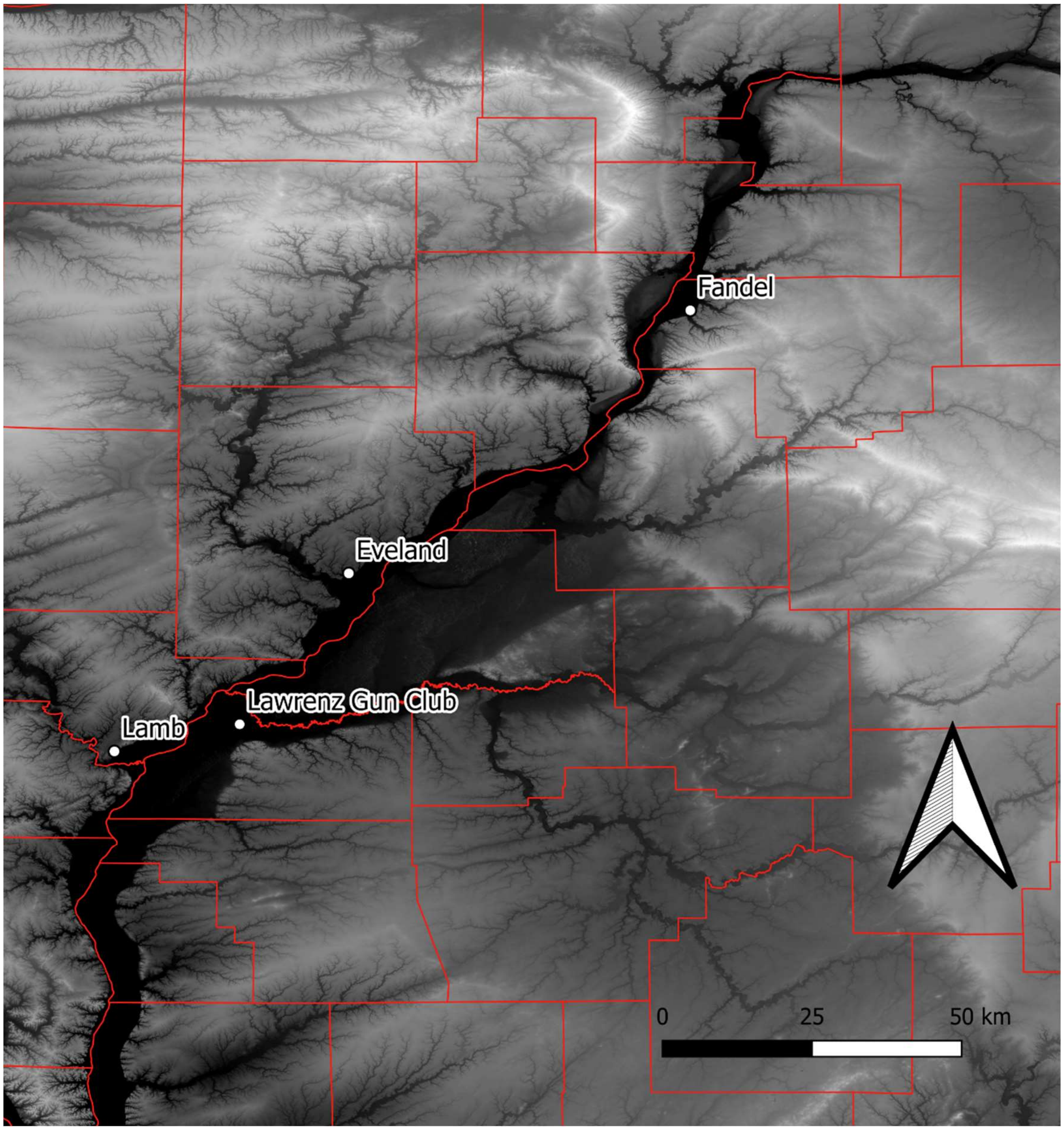


Figure 2-14 Mississippian Villages During Phase I

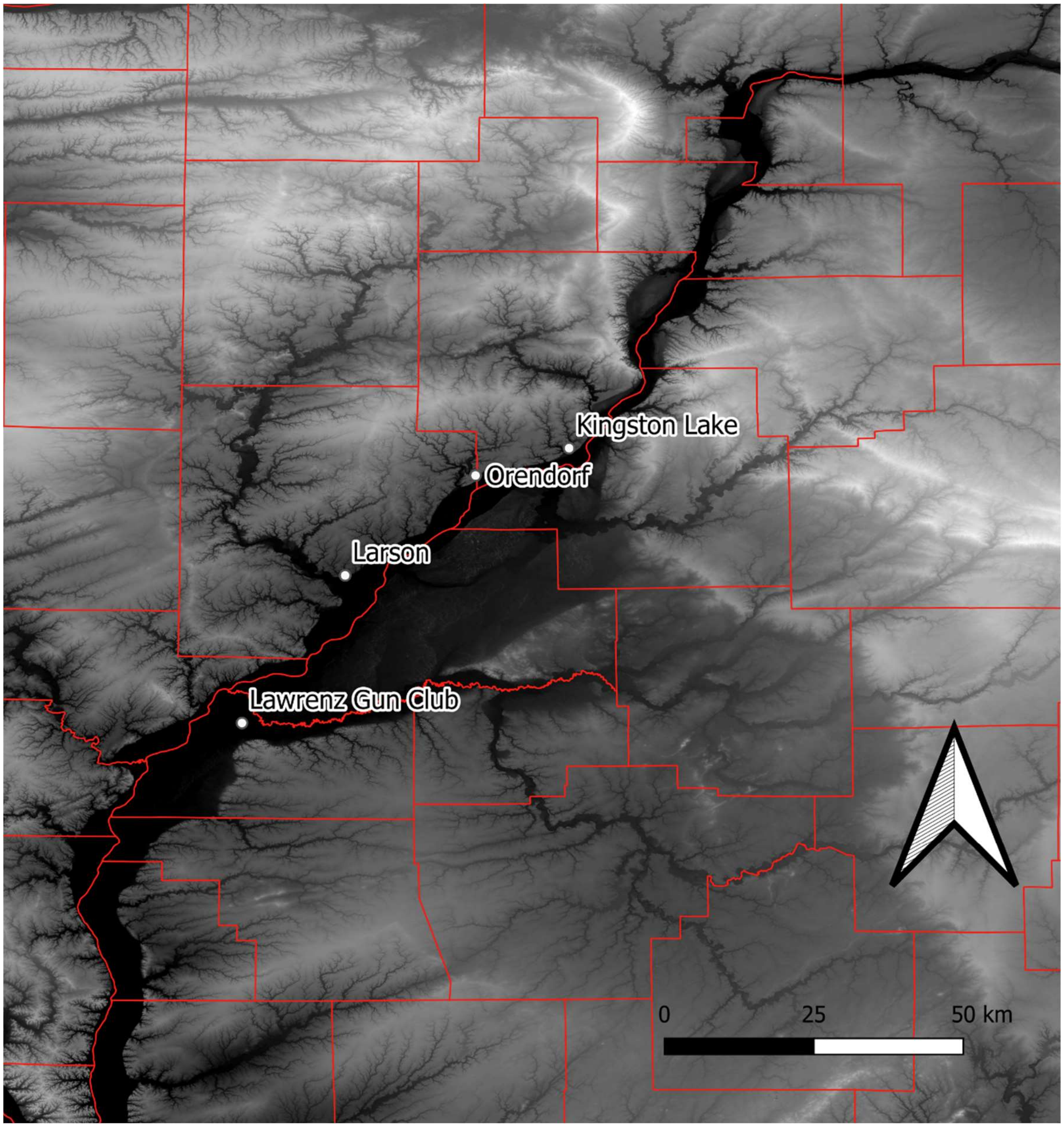


Figure 2-15 Mississippian Villages During Phase II

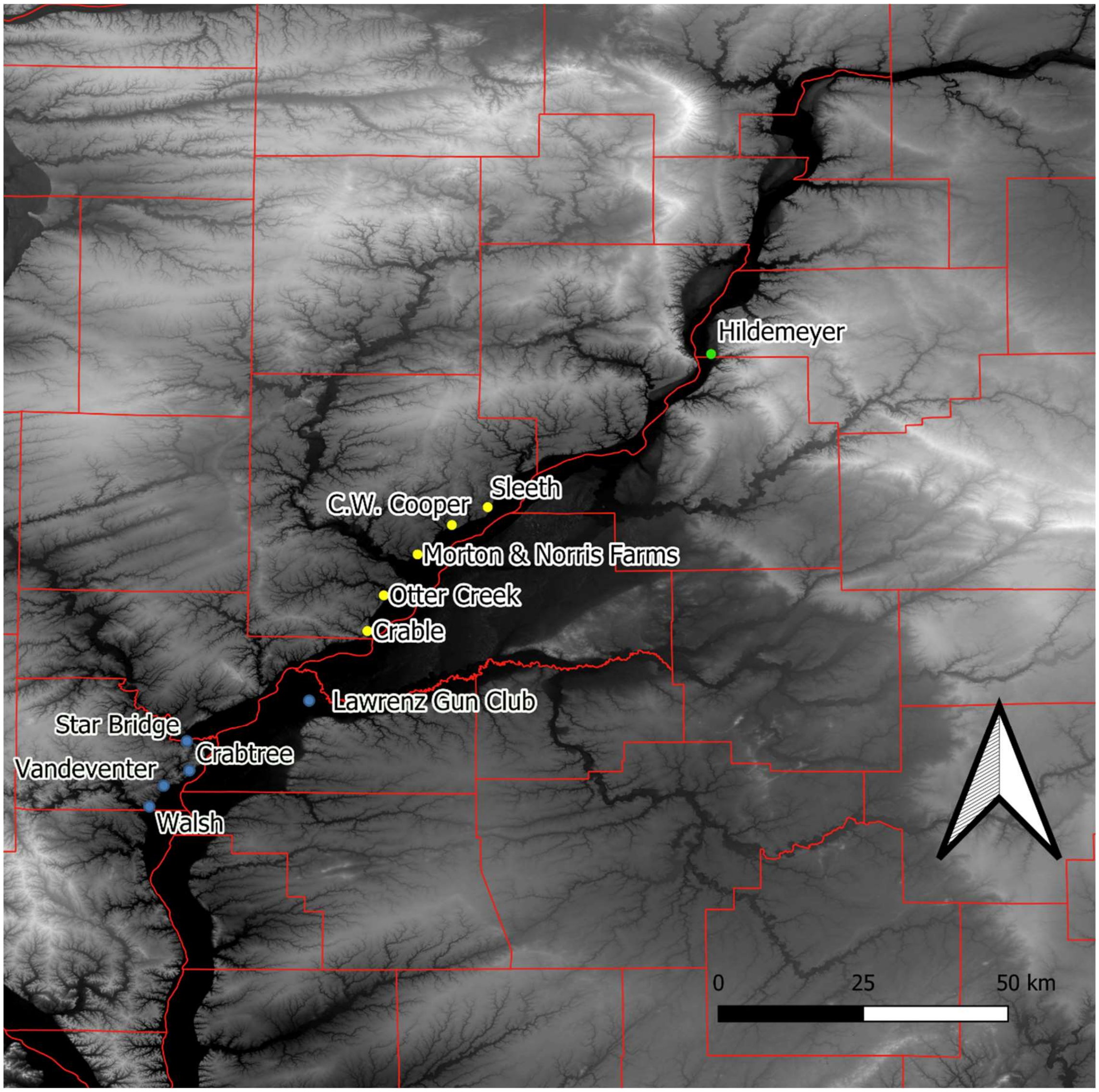


Figure 2-16 Mississippian (Blue) and Oneota (Yellow) Villages During Phase III. Note Mississippian and Oneota influences at Hildemeyer (Green) are not understood.

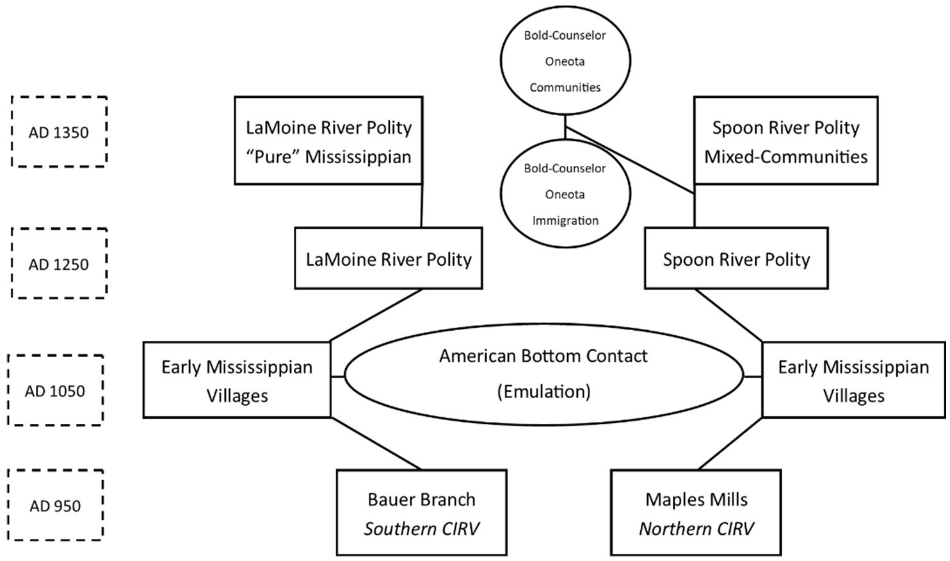


Figure 2-17 Hypothesized Time-Transgressive Polity Development

The above chronology and identity making processes discussed in this chapter broadly represents several centuries of culture contact, emulation, agency, and resistance to change. Analysis of the Hanning collection, WIU excavation ceramics, and geophysical survey of the physical survey of Star Bridge's physical landscape provides a framework for better understanding 14th century Mississippian geopolitics.

3 Research Intent and Methodology

The multi-pronged approach to assess Star Bridge included both artifactual and geophysical analysis with specific methodologies listed below. Geospatial data for cartography was downloaded from the Illinois Geospatial Data Clearinghouse.

3.1 Magnetometer Methods

The research questions concerning Star Bridge's spatial organization and site boundaries were investigated via magnetic gradiometry. While several types of geophysical survey are routinely utilized by archaeologists, my research utilized a magnetometer because of its ability to capture a high density of data for a large area in a relatively short period of time. Human activity, such as burning, soil enrichment, and sediment or soil displacement (digging of pits or trenches for structures), all disrupt the magnetic properties of natural strata (i.e., O to A to E to B to C horizon), resulting in either positive or negative changes in soil magnetism. The magnetometer works by measuring the location's magnetic field strength against the atmospheric field in nanoteslas (nT) compared to the earth's natural magnetic field, which ranges from 30,000 nT at earth's magnetic equator to around 60,000 nT at the magnetic poles (Kvamme 2006). This is significant to prehistoric geophysical research as the majority of prehistoric archaeological anomalies lie within +/-5 nT from the natural magnetic background, with differences between corresponding soil packages as subtle as 0.5 nT (Kvamee 2006). Ultimately, the magnetometer measures these variations in soil magnetism against the earth's natural magnetic background. This renders a map showing the locations of positive, negative, and dipolar magnetic anomalies (Figure 3-1), such as prehistoric structures and other features (e.g., storage/refuse pits). For instance, if a prehistoric wooden structure burned and eventually became stratified under sediments, the magnetometer would show a positively charged anomaly that would overwhelm nearby magnetic fluctuations that are weaker, such as an individual fire hearth. The intense heat from a structure fire charges the nearby soil, permanently changing the magnetic properties. When geo-referenced to a site grid or other Cartesian coordinate system (e.g., UTM), excavation with minimal disruption to the site is possible while targeting burnt structures and other magnetic anomalies.

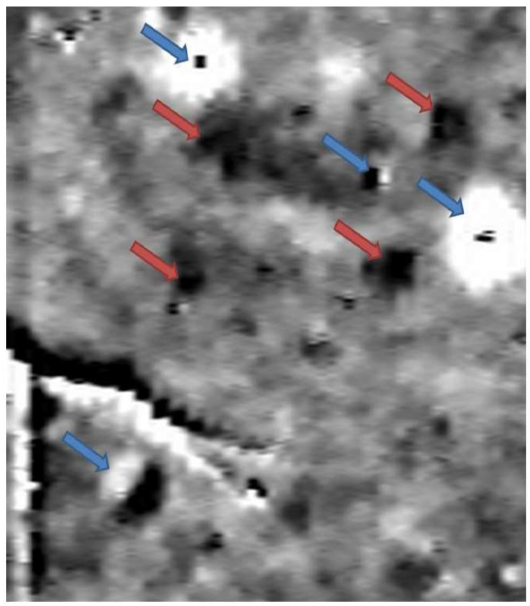


Figure 3-1 Examples of monopolar (red arrows) and dipolar (blue arrows) magnetic anomalies. (Photo Courtesy of Mathew Pike)

The magnetometer has limitations, mainly related to depth control, resulting in magnetic anomalies from all stratigraphic horizons displayed in one two-dimensional reading. In essence, the magnetometer records the magnetic variation from all buried deposits within the sensor's reach (Kvamee 2006). This is problematic because the area around Star Bridge contains numerous archaeological deposits from the late Pleistocene through the Historic and modern periods with the latter superimposed over features associated with the targeted Mississippian occupation of Star Bridge. Additionally, if the survey area is contaminated with historic, ferrous-rich metal debris or concentrations of fired ceramics, a strong dipolar or positive anomaly related to more recent occupations may be detected and mask older Mississippian ones. Fortunately, part of the post-processing of the data includes a clip function, allowing a specific set of values to be targeted. While strong readings, such as sub-surface utilities, would still show, the clip function will mitigate readings from some of the historic debris.

I conducted the magnetometer survey with two Bartington 601 dual-gradiometers and replicated similar methodology conducted by the IUPUI archaeological research team (Pike 2012; Wilson and Pike 2015). Before the field research began, a digital reconnaissance took place analyzing all visual representations of Star Bridge, including the 1938 USDA aerials from the Illinois Geological Survey, a geo-referencing of the 1978 aerial from Western Illinois University, and ArcGIS layers of contemporary topographic maps and satellite imagery. With this information, a cardinal direction grid system was laid out using 30 x 30 m squares, using the southwest corner of each square as individual datums. The grids were set up to parallel the nearby road, eliminating the need for partial grids. A primary datum and backsight were placed in locations with line of sight of the entire survey area and away from ongoing agricultural modifications. Each 30 x 30 m grid square was assigned a number (i.e. 17-1, 17-2 and 17-3). I assigned the primary datum the coordinates of 1000 N by 1000 E. The grid system of 30 x 30 m was anchored to the primary datum and backsight for the survey grid. The corners of the 30 x 30 m grids were demarcated by plastic flags that were marked with the associated coordinates. During the operation of the magnetometer, a zig-zag survey style was implemented in order to secure data in an efficient manner. Given the short window for fieldwork, a coarse-to-fine density survey was decided upon. The use of 50 cm transect spacing allowed for faster completion of individual grids, while in the future the grids could be re-walked with 25 cm spacing if a higher density of data were desired. Further, even at 50 cm transect spacing, data were collected every 12.5 cm, proving acceptable coverage given the research intent.

After the data were collected, they were processed in TerraSurveyor, software produced and supported by DW Consulting for near-surface, two-dimensional geophysics. Several filters were applied to the data to provide maximum clarity for the Mississippian-related sub-surface deposits at Star Bridge. First, a "clip" filter was applied (Figure 3-2), removing extreme high and low nT readings that fall outside of the range for prehistoric anomalies. This was especially important at Star Bridge as the site is located within an agricultural field that contains historic metal and modern ferrous-rich debris. Next, I applied a series of de-stagger and de-stripping filters (Figure 3-3 and Figure 3-4) to correct for operator error. As the Barrington 601 dual gradiometer takes reading every 12.5 cm across a 50 cm transect line, it is impossible for a human carrying the equipment to be accurate within that narrow of a margin. The filters correct for this human inconsistency and averages the adjoining transect readings. At Star Bridge, the research team was afforded relatively flat terrain in a fallow field. Even with these ideal settings, de-stagger and de-striping filters were required.

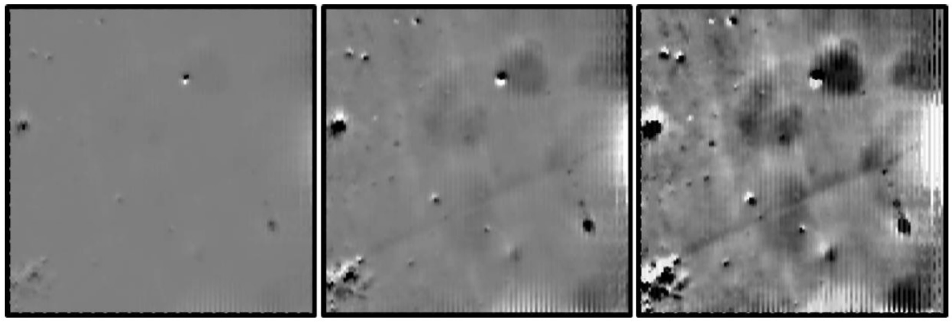


Figure 3-2 Clip Function Example. Removes High and Low nT readings (Photo Courtesy of Mathew Pike)

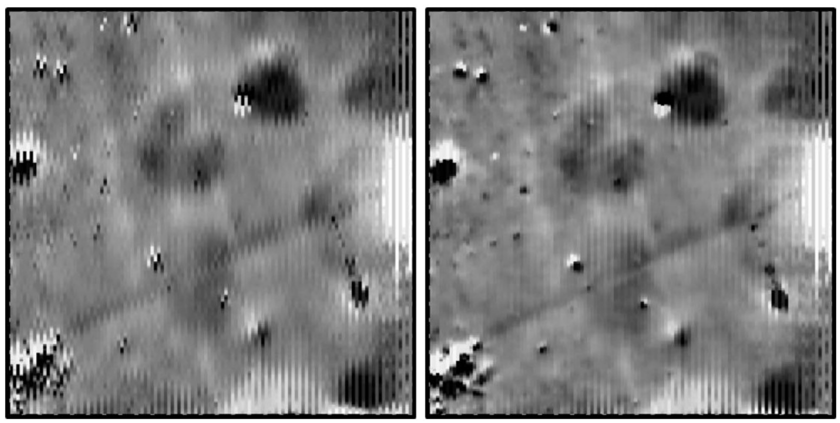


Figure 3-3 De-Stagger Function to Correct for Human Error (Photo Courtesy of Mathew Pike)

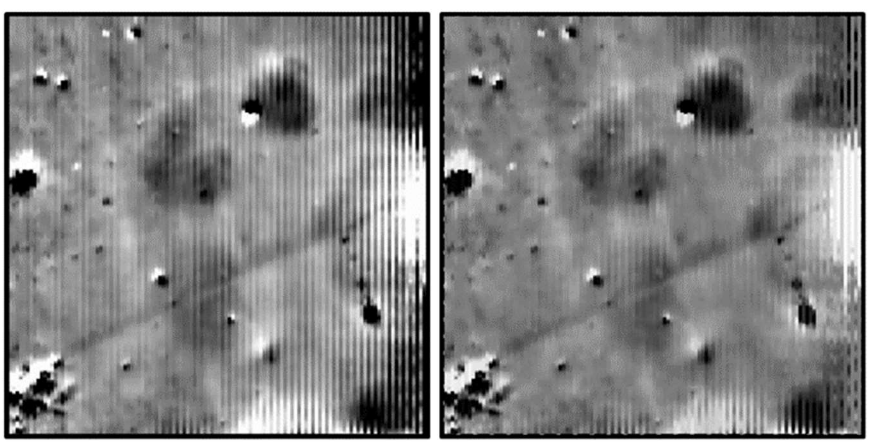


Figure 3-4 De-Stipe Function to Correct for Human Error (Photo Courtesy of Mathew Pike)

Once all grids were processed in TerraSurveyor, they were exported and embedded into ArcGIS, rendering a digital map showing the geo-referenced location of magnetic anomalies, including houses, storage pits, and modern sub-surface anomalies. This provided a high-resolution map for analyzing the site's margins, layout, and activity areas with a higher precision than the 1978 aerial photos. Additionally, this allows future archaeologists to place units directly upon features they wish to target.

4.2 Artifact Methodology

The analysis of both the Hanning Collection and the 1992 WIU assemblage included documenting, cataloging, and analyzing all associated material culture to varying degrees of specificity. Both collections were loaned by Lawrence A. Conrad at the Upper Mississippi Valley Archaeological Research Foundation (UMVARF, Macomb, IL), where both collections are permanently curated. Prior to analysis, the IUPUI Lawrenz Gun Club catalog system was adopted for use. This system of cataloging creates individualized numbers for each artifact, rendering the database searchable. These criteria and the taxonomy differentiate all artifacts based on material, function, and form. For example, at the primary level of the taxonomy, an analyst can differentiate between flora, fauna, ceramics, chipped stone, ground stone, and other human-derived material culture, while at the quinary level of the taxonomy specific ceramic styles and traditions are identified (e.g., Cahokia Cordmarked, Mississippian plain, Dickson Trailed, etc.).

While documenting the collections, limitations related to their control must be stated. Though the Hanning Collection represents a wide sample of cultural material from Star Bridge, it is not a controlled sample or systematic in the manner frequently deployed during reconnaissance surveys (i.e., walkovers) by professional archaeologists. Collectors walking a site are more likely to pick up and keep artifacts deemed more valuable or visually pleasing, such as recognizable and diagnostic rim sherds or projectile points. They are less likely to collect a body sherd from a vessel or lithic flake that would afford an archaeologist an opportunity to understand these industries. With this in mind, my analysis paid close attention to decoration motifs on ceramics and raw material of lithic artifacts, while recognizing the Hanning Collection is a biased/skewed sample of cultural material from Star Bridge.

Furthermore, many lithics that are diagnostic to previous time periods are present, raising concerns about the spatial boundaries of the Hanning Collection. It is important to note that several other archaeological sites are located within the vicinity, as well as at the edge of the bluffs located on Star Bridge's southern margin. It is conceivable that the Glen and Mary Hanning collected these other archaeological sites without demarcating the boundaries of the Mississippian village of Star Bridge. The largest artifact categories included in the Hanning Collection were ceramics and lithics with a small portion of faunal-derived tools. The WIU assemblage may also represent an incomplete sample as excavations notes from the 1992 field school indicate that the structures targeted appeared to contain plow scars at the structure floor level. Regardless, the size of both collections provides valuable insight into the material culture at Star Bridge and its inhabitants. Additionally, because of the size of both collections, only select measurements and metrics were taken as part of this thesis. This was done in order to 1) completely catalog both collections and 2) provide a reasonable starting point for future researchers.

3.2 Lithic Methodology

Lithic items were separated into two categories: flaked stone and ground stone. Flaked stone tools are defined as those requiring the manipulation of silica-rich materials, such as chert, which break with a predictable conchoidal fracture. These include debitage, un-refined tools, such as utilized flakes, and refined tools, including projectile points, scrapers, drills, hoes, and bifaces. As part of this thesis, only basic data were collected. Projectile point morphology was ascertained using the Illinois State Archaeological Survey's classifications (Reber et. al 2016). Given the broad range of Mississippian projectile points, I used attributes including bifacial reduction, notches, and denticulations. I identified raw material using a combination of Reber and colleagues' (2016) descriptions and the comparative collection at IUPUI. Beyond artifact type and raw material, I recorded weights and maximum/minimum measurements.

Ground stone tools include those that were created by pecking and grinding, such as celts, abraders, and nutting stones. This category also includes cobble tools, like hammerstones. For these items, basic metrics were taken, including weight, size, and raw material type.

3.3 Ceramic Methodology

The ceramic items from both the Hanning Collection and WIU assemblage contain many different categories based on style, form, and use. Vessel type served as the primary category (i.e., serving ware/cooking ware) for comparison and analysis, which has the potential to help researchers understand foodway themes, including food preparation or serving (Bardolph 2014; Wilson 2015). Furthermore, decorative items, such as effigies or other non-serving ware/cookware items like ceramic pipes or spindle whorls, were also subject to analysis to better understand daily life in the village.

Plates and Salt Pans:

Metrics taken for plates and salt pans included vessel diameter, lip width, lip thickness, and sherd weight. The presence or absence of decorative motifs was also annotated. Furthermore, whether the decoration was added pre- or post-fire was noted. For non-diagnostic sherds, weight and decoration data were recorded.

Jars:

Metrics for jars include vessel diameter, rim width (rim protrusion), rim thickness, and sherd weight (Figure 3-5). The presence or absence of body decoration, such as cord marking or slippage, was also annotated. For non-diagnostic sherds, weight and the presence or absence of body decoration or cord marking were recorded.

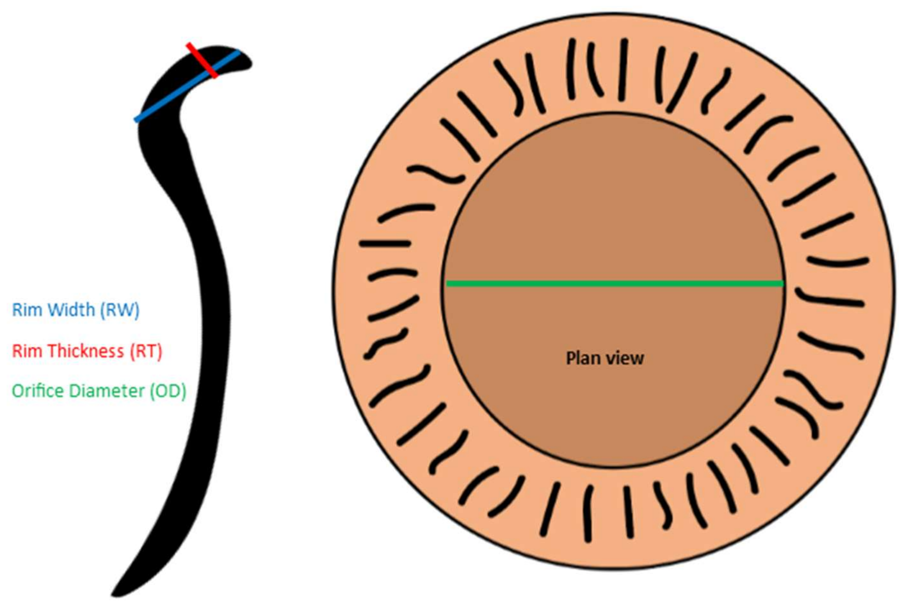


Figure 3-5 Jar Metrics

Jar Handles:

Jar lugs or straps were recorded based on their attachment method (Figure 3-6 and Figure 3-7). These analyses included the following metrics: lug width (top, middle and bottom), height, and thickness at the midpoint (Figure 3-8).

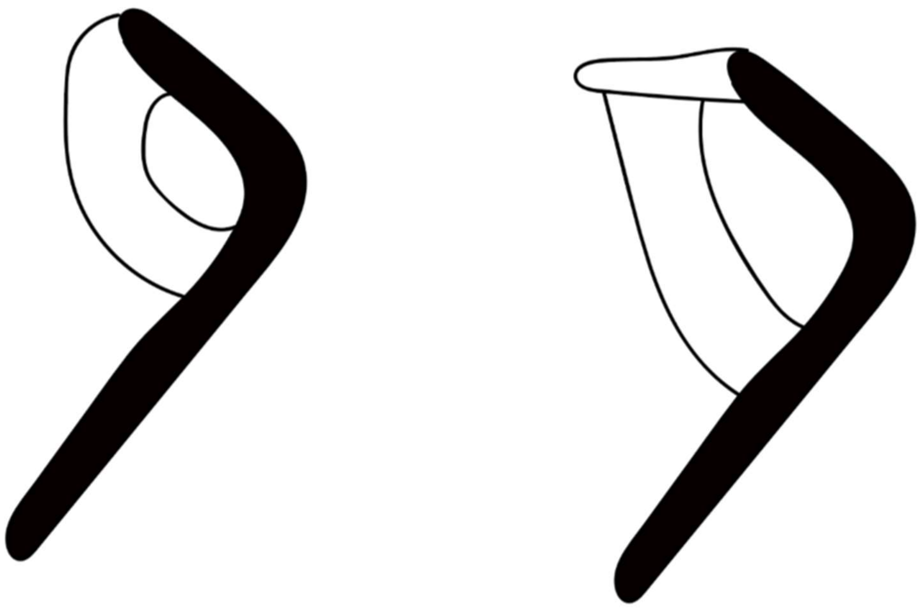


Figure 3-6 Handle Attachment Method

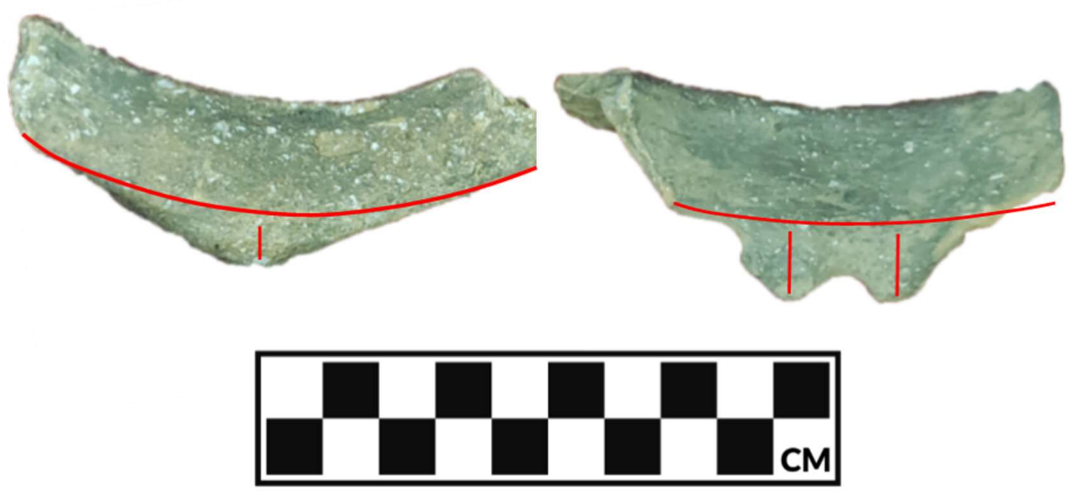


Figure 3-7 Plainview of Lug Attachment

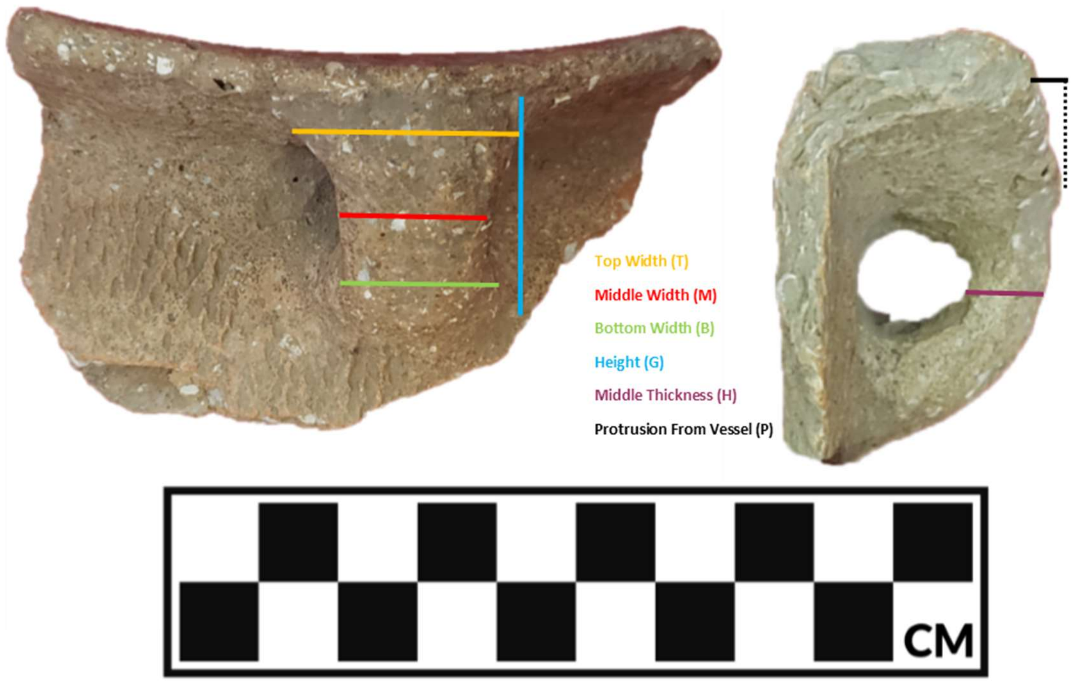


Figure 3-8 Lug Metrics

Bowls and Beakers:

Bowl and beaker metrics included diameter, vessel height, vessel thickness, and the presence or absence of decorative motifs or stylistic additions, such as rim rider effigies.

Ceramic Effigies:

Ceramic effigies were tabulated by one of two attachment methods. These include effigies sculpted as part of the vessel and those that were sculpted separately and attached before the vessel was fired. The two categories of effigies described were bird and non-bird given the ubiquity of the former. I did not try to interpret zoomorphic figures to a species, so as to avoid subjectively assigning meaning. Effigies were also weighed as part of the cataloging process.

Specific Faunal methodology:

While the faunal collection is relatively limited, all animal remains were recorded, measured, and weighed. Additionally, taxonomic species names were assigned when possible. For faunal-derived tools, the type of tool was annotated, as well as any use-wear.

The above methodology has been designed solely to capture basic metrics and document what artifacts exist within the two collections. It is recommended that further analysis be completed in the future as part of larger macro-scale regional analysis (e.g., Upton 2019), so potential researcher bias does not cloud results and subsequent interpretations.

4 Hanning Collection Results

The Hanning Collection from Star Bridge consisted of 1,465 individual artifacts enumerated in Table 4-1. As seen in Figure 4-1, the artifact categories were dominated by ceramics (57%) and flaked stone tools (37%). Table 4.1 illustrates that the Hanning Collection has few ground/cobble stone artifacts and even fewer faunal remains, placing some restrictions on these sub-assemblages' research potential. As Figure 4-1 (Artifacts by type) and Figure 4-2 (Artifacts by weight) depict, weight per artifact is dominated by ground stone and cobble tools (Table 4-1).

Table 4-1 Hanning Collection Artifacts by Count and Weight

Class	n	weight (g)
Ceramic	840	29592.08
Flaked Stone	548	4243.56
Ground/Cobble	43	9457.85
Faunal	34	184.28
Total:	**1465**	**43477.77**

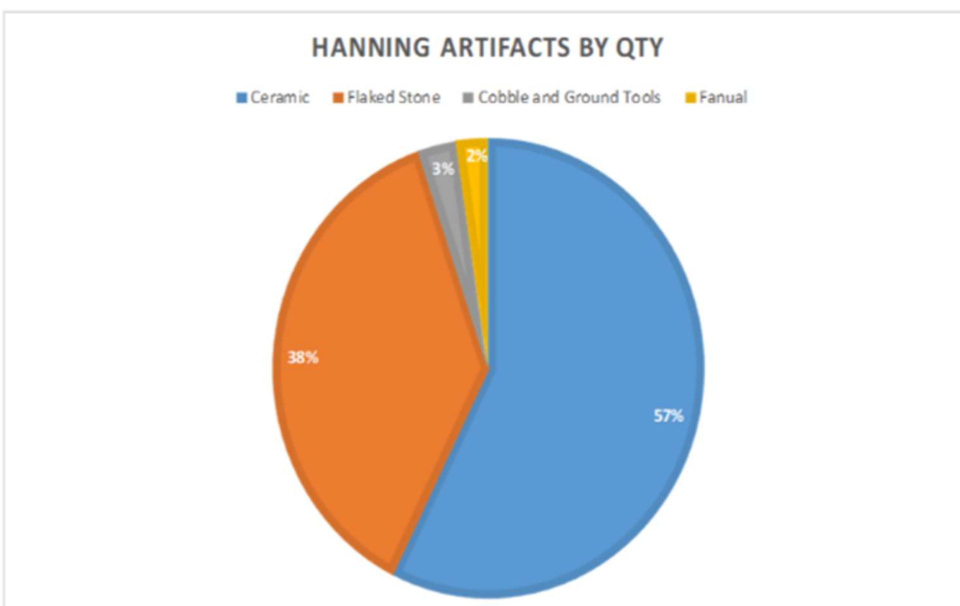


Figure 4-1- Hanning Collection Artifacts by Artifact Class

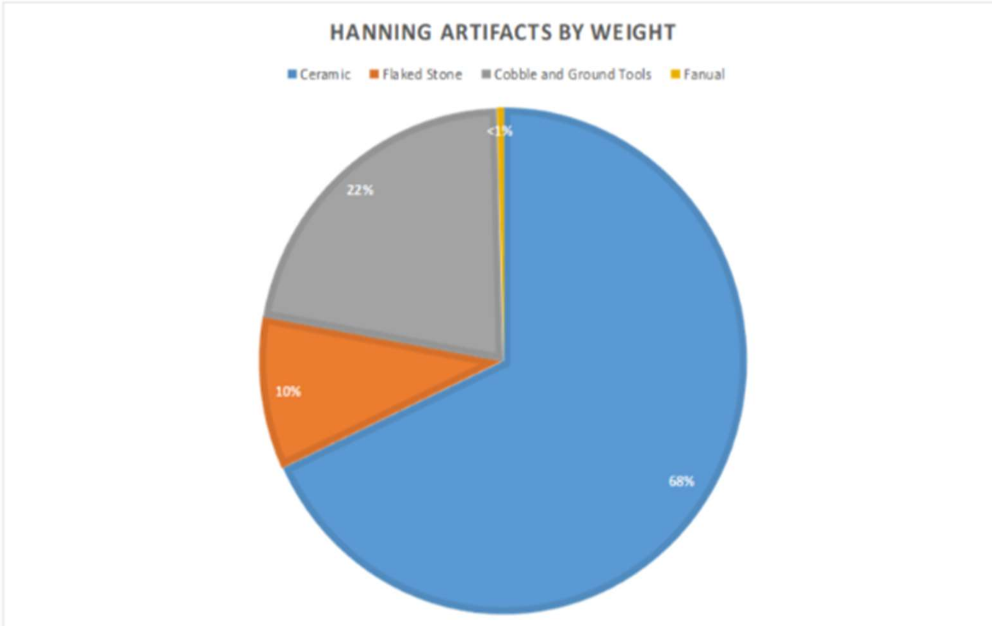


Figure 4-2 Hanning Collection Artifacts by Artifact Weight

4.1 Ceramic Results- Hanning

The Hanning Collection ceramic sub-assemblage was comprised of 840 sherds weighing 29.59 kg. All sherds are believed to have been surface collected by Glen and Mary Hanning shortly after the 1970's deep plow event, though no written accounting of their visit(s) exists. All analyzed sherds were shell tempered and visually comparable with late Middle Mississippian ceramic assemblages (Conrad 1991). Given that the exact provenience of these artifacts cannot be ascertained (e.g., domestic vs. communal space), these results should be viewed as a broad survey of late Mississippian Period ceramics at Star Bridge, rather than representing unique domestic assemblages.

Of the 29.59 kg of ceramic artifacts examined, 56% by weight represented jars and 40% represented plates (Figure 4-3). The remaining 4% of the total weight is represented by bowl, beaker, and salt pan sherds, as well as effigies and smaller artifacts such as pipes and spindle whorls.

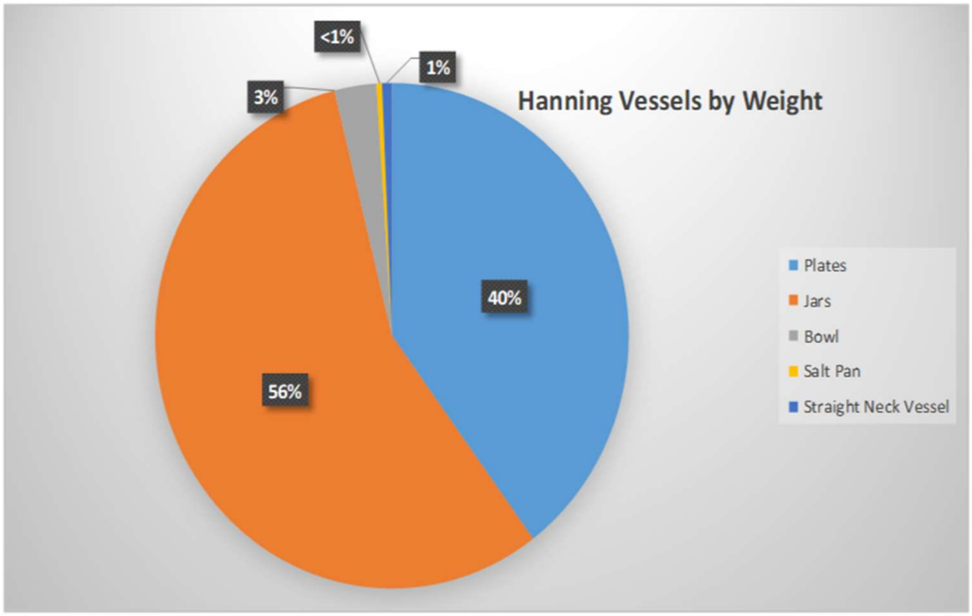


Figure 4-3 Hanning Ceramics by Weight

4.1.1 Jar Attributes

The majority of sherds within the Hanning Collection were coded as originating from jars. Within Mississippian contexts, jars are globular partially restricted vessels that were used for both cooking and storage (Blitz 1993; Hilgeman 2000). Generally, these large utilitarian pots were not decorated, although they regularly display cord-marking (Figure 4-5 and Figure 4-6). As part of my thesis, I analyzed 472 jar sherds weighing 14.88 kilograms. Of these, 86 provided diagnostic attributes, such as rim width, rim thickness, and orifice diameter. Twenty-five of these rims also displayed handles providing handle specific attributes.

Figure 4-4 Selected Cord-marked Jar Rim Profiles

Figure 4-5 Cord Marked Jar

Figure 4-6 Cord Marked Jar

As shown in Table 4-2 jar orifice diameter varied greatly between 11 cm and 51 cm with a mean of 27.95 cm. The variability in diameter produced a standard deviation of 8.95, which is also shown in Figure 4-7. Table 4-3 and Table 4-4, shows the same metric separated by presence or absence of handles, as jars with handles trend to be smaller. Overall, vessels with lugs yield slightly reduced diameters (median of 18 cm) than jars without lugs (median of 30 cm).

Rim width, a measure of how far the rim protrudes from the vessels' body, yielded comparable results between both lugged and non-lugged specimens with an overall median of 2.8 cm. The standard deviation for rim width was 0.66, with all data in close proximity to the mean of 2.89. Rim thickness produced a slightly higher standard deviation at 1.71 with a mean of 8.01 mm. The 1.71 standard deviation still provided a relatively tight distribution.

Table 4-2 Basic Jar Statistics

(n=86)	Weight (G)	Orifice Diameter (CM)	Rim Width (CM)	Rim Thickness (MM)
Minimum	19.11	11	1.62	2.91
Maximum	247.2	51	5.06	13.45
Median	65.59	28	2.88	7.75
Mean	74.39	27.97	2.89	8.01
Standard Deviation	43.76	8.95	0.66	1.71

Table 4-3 Basic Jar without Lugs Statistics

(n=67)	Weight (G)	Orifice Diameter (CM)	Rim Width (CM)	Rim Thickness (MM)
Minimum	19.11	14	1.62	2.91
Maximum	247.2	51	4.26	13.45
Median	77.16	30	2.89	8.12
Mean	85.16	30.41	2.9	8.22
Standard Deviation	40.3	8.3	0.6	1.8

Table 4-4 Basic Jar with Lugs Statistics

(n=25)	Weight (G)	Orifice Diameter (CM)	Rim Width (CM)	Rim Thickness (MM)
Minimum	16.39	11	1.77	6.36
Maximum	106.3	30	5.06	9.29
Median	43.32	18	2.78	7.14
Mean	45.52	19.32	2.84	7.27
Standard Deviation	20.91	4.79	0.82	0.74

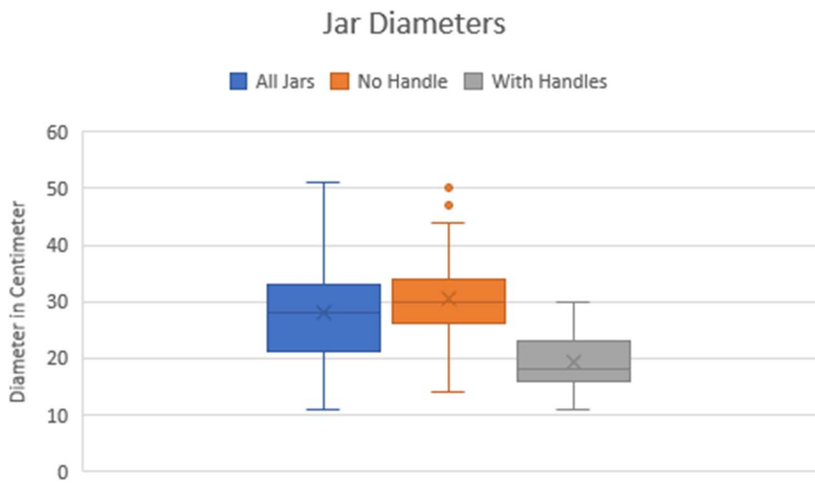


Figure 4-7 Jar Diameter

Twenty-five jars that had intact lugs provided metrics for top width, middle width, and bottom width, as well as lug height and the middle thickness (Figure 4-8). Additionally, how far the strap protruded from the vessel was recorded. As shown in Table 4-5, all metrics from this sub-assemblage produced standard deviations less than one, meaning the lugs displayed a tight distribution between different specimens. From the top of the lug to the bottom, the median measurements were 1.66, 1.46 and 1.68 cm respectfully. Overall, the heights of these lugs ranged from 2.48 to 4.38 cm. The median lug height was 3.22 cm. Straps protruded from rims ranging from 0, where they did not protrude at all, to 2.43 cm from the rim.

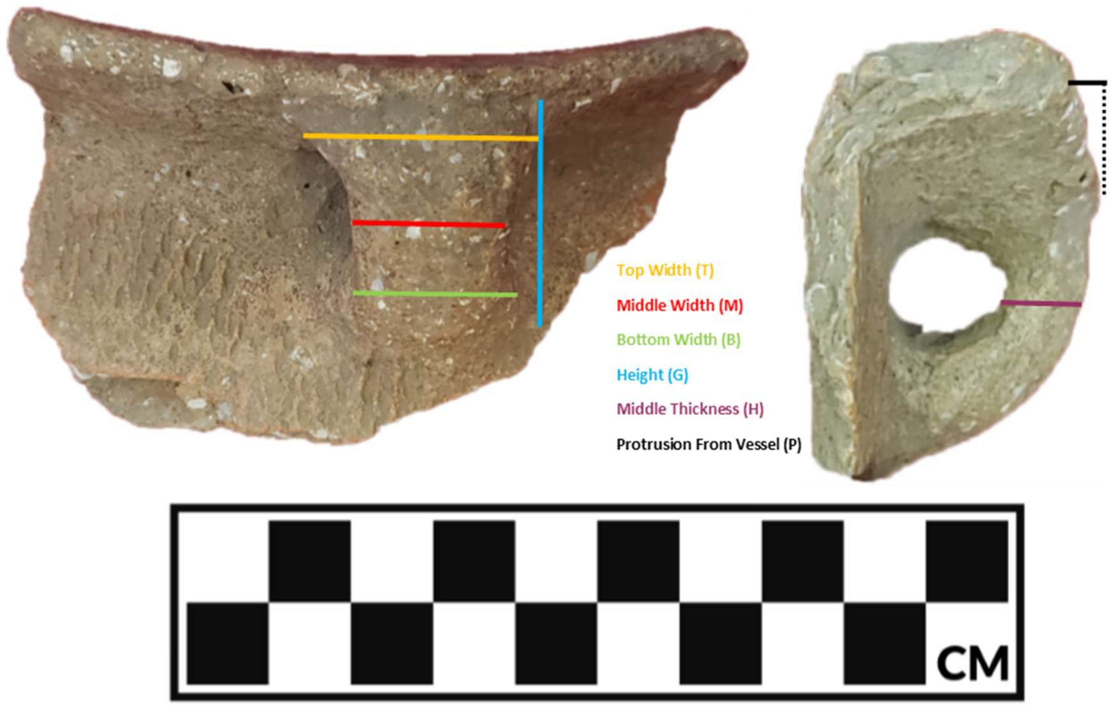


Figure 4-8 Lug Metrics

Table 4-5 Basic Lug Statistics (CM)

(n=25)	Top Width (T)	Middle Width (M)	Bottom Width (B)	Height of Lug (G)	Middle Thickness (H)	Protrusion from Rim (P)
Maximum	2.24	2.05	2.6	4.38	2.43	2.43
Minimum	1.12	1.01	1.15	2.48	1.47	0
Median	1.66	1.46	1.68	3.22	1.01	1.64
Mean	1.654	1.4656	1.73	3.2252	1.123158	1.411579
Standard Deviation	0.29	0.27	0.37	0.53	0.28	0.97

Non-metric attributes on jars largely involved the presence or absence of cord marking or other design implements. Of the 67 "lugless" rim sherds analyzed for diagnostic attributes, all but 10 (i.e., 85%) exhibited cord-marking. Among the same 67 rim sherds, three displayed some sort of rim notching (Figure 4-9). Three additional rim sherds displayed incising on the shoulder (Figure 4-10). An absence of Oneota design elements, such as dimpled nodes and punctations, was noted. Several of the jars also displayed a white/gray slip, which will be discussed later in this chapter.

Figure 4-9 Jar Rim Notching

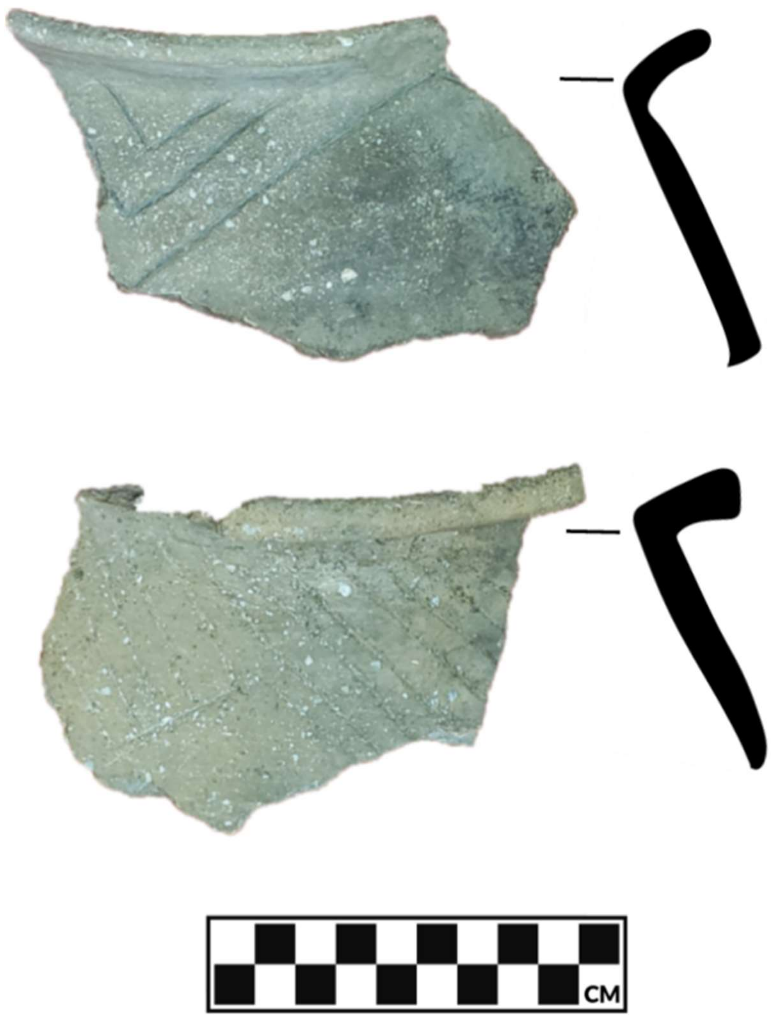


Figure 4-10 Shoulder Incising

4.1.2 Plate Attributes

Ceramic plates, representing serving wares, accounted for 243 individual sherds, weighing 9.97 kg. Of these, 45 were analyzed for both metric and non-metric attributes, while 83 sherds were analyzed solely for non-metric attributes. 115 were non-diagnostic and undecorated body sherds. Among the 45 diagnostic plate sherds (Table 4-6), the diameter of the orifice was found to vary between 12 and 51 cm, with an mean of 29.95 cm. Measurements on rim width ranged from 2.2 to 9.2 cm. The correlation of rim width to vessel orifice (Figure 4-11) is unsurprising, as Mississippian plates tend to be larger than vessels from earlier sites (Upton 2019). As Figure 4-12 shows, the majority of the plates contain rims measuring between 3 and 7 cm. Rim thickness varies from .9 mm to 9.4 mm in some of the finer vessels. The majority of the plates were found to be shallow (Figure 4-13), with only one deep-welled plate (Figure 4-14) in the collection. The overall diameter of the plates ranged between 12 and 51cm, with the majority of plates falling within 21-35 cm (Figure 4-15).

Table 4-6 Diagnostic Plate Attributes

(n=45)	Weight (G)	Orifice Diameter (CM)	Rim Width (CM)	Rim Thickness (MM)
Minimum	15.72	12	2.2	0.9
Maximum	255.42	51	9.2	9.4
Mean	79.47	29.95	5.77	6.50
Median	65.42	29	5.9	6.55
Standard Deviation	53.69	7.12	1.59	1.46

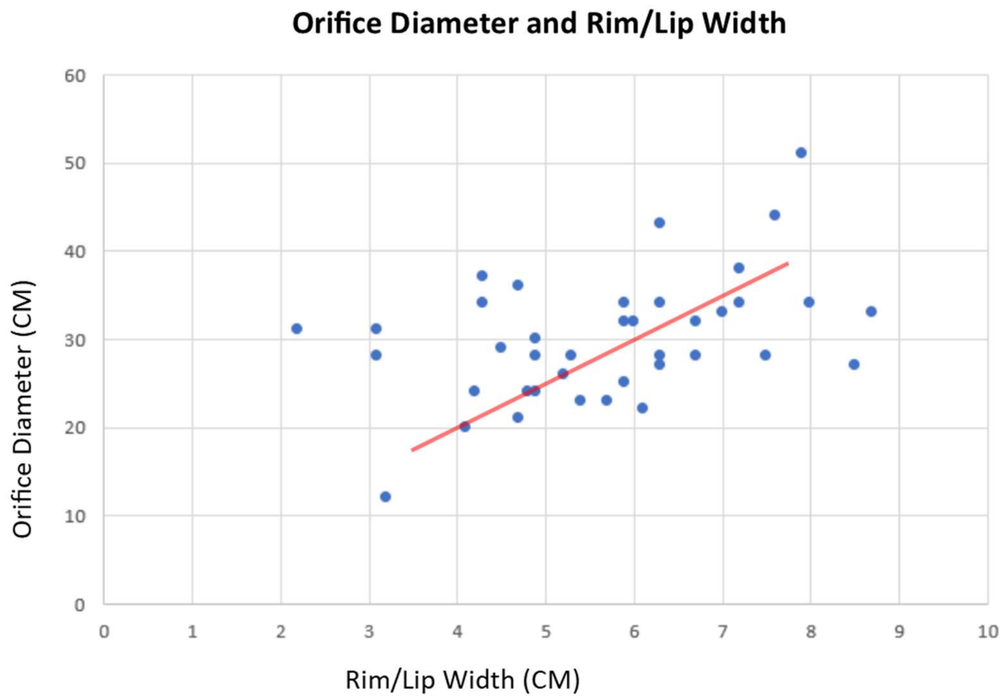


Figure 4-11 Plate Orifice Diameter vs. Rim Width

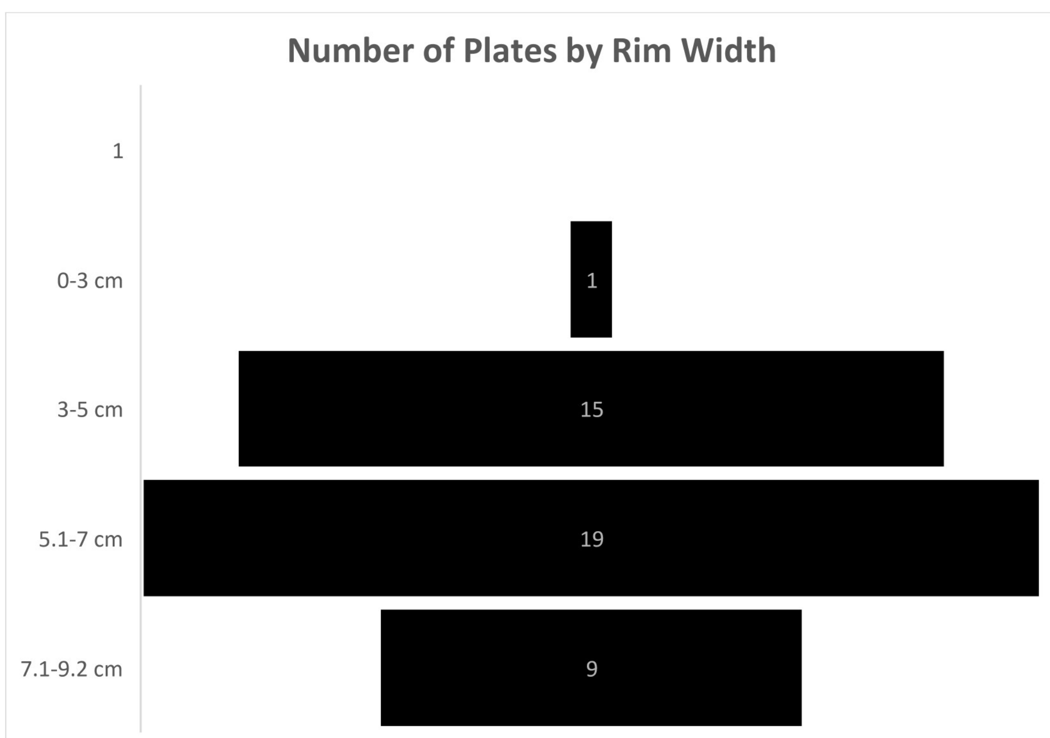


Figure 4-12- Star Bridge Plate Rims by Size

Figure 4-13 Shallow Plate

Figure 4-14 Deep-Welled Plate

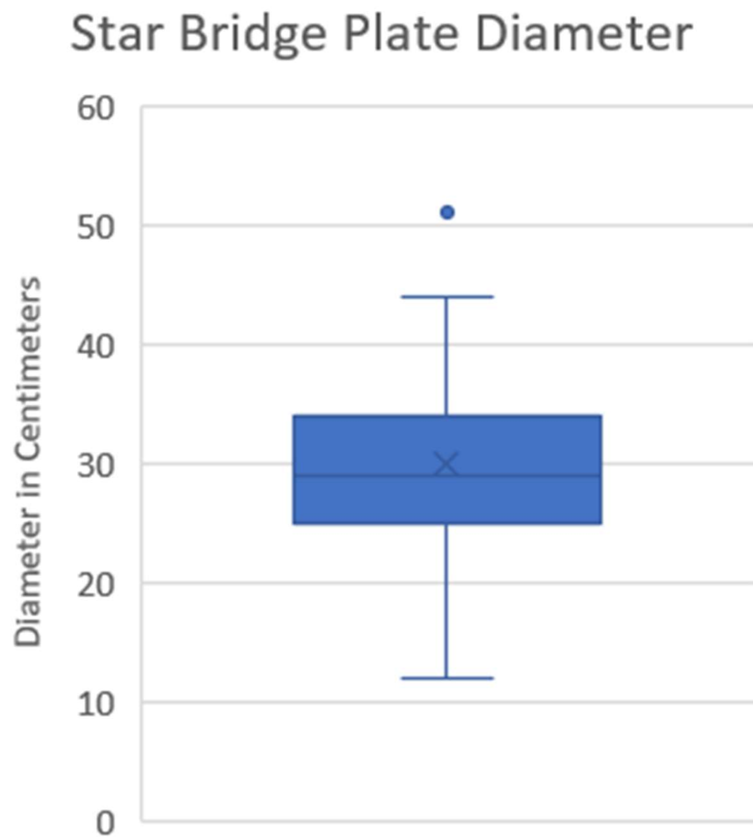


Figure 4-15 Star Bridge Plate Diameter

Rim decoration (Figure 4-16) on Star Bridge plate sherds fit squarely within extant Crable phase decoration norms. Plate decoration is dominated by the presence of line-filled triangles, making up some 62% of plate rims. Sunburst and Mississippian cross in sunburst motifs are present on 15% of the plate rim sherds, while undecorated pieces make up 6% of the collection. Cross-hatching and nested chevrons were found in less than 5% of the sherds. As seen in Figure 4-17, the majority of the plates were decorated so that the plate itself would look like the sun when viewed during food presentation, as noted by Upton (2019). An additional 115 sherds from plates were non-diagnostic, originating from the body. Thirteen plate sherds also exhibited a white/gray slip, which will be discussed later in this chapter. All plate sherds except one fit squarely within

Crable Phase range of variation, with a single sherd appearing to conform to an Orendorf horizon plate rim. The rim, as seen in Figure 4-18, exhibits a trailed horizontal chevron design. This sherd was potentially curated by Mississippians living at Star Bridge or subsequently mixed in from other collections by the Hannings.

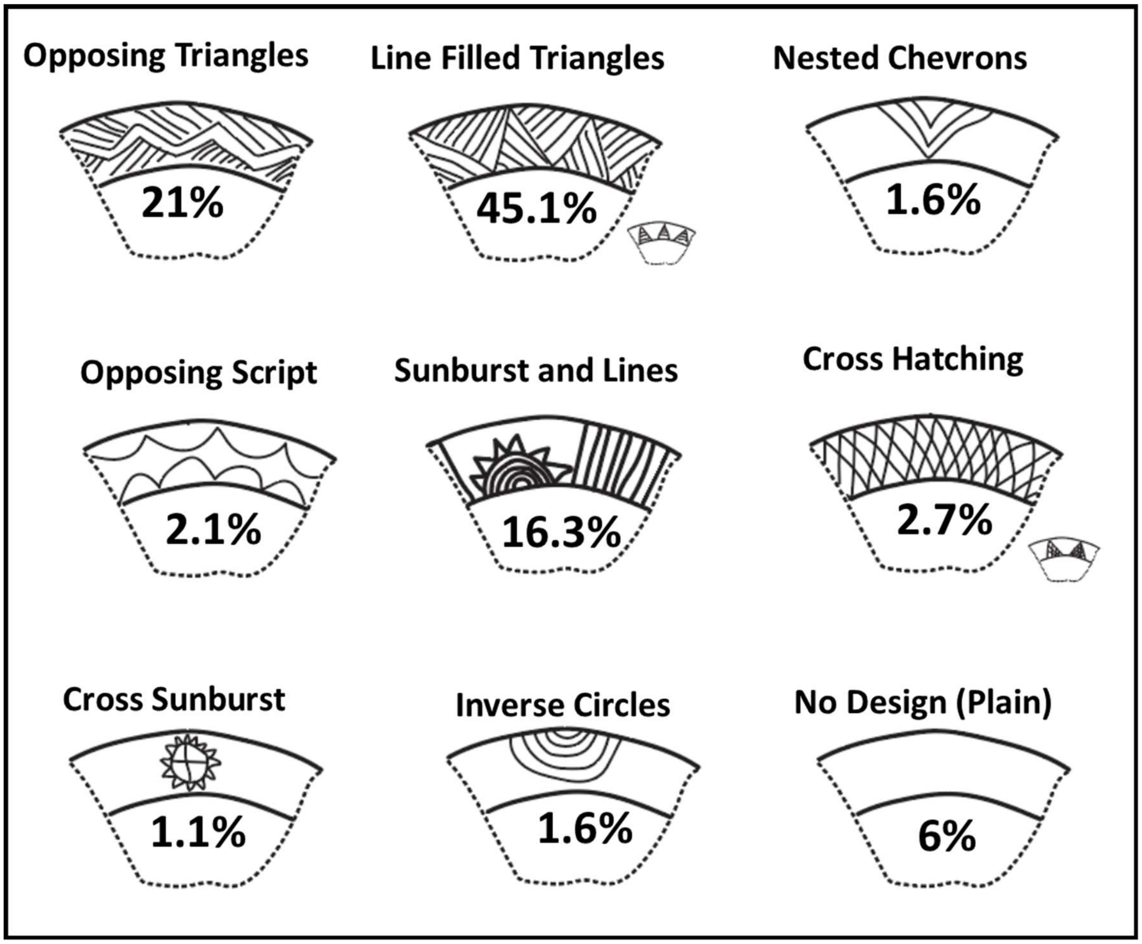


Figure 4-16 Plate Decoration

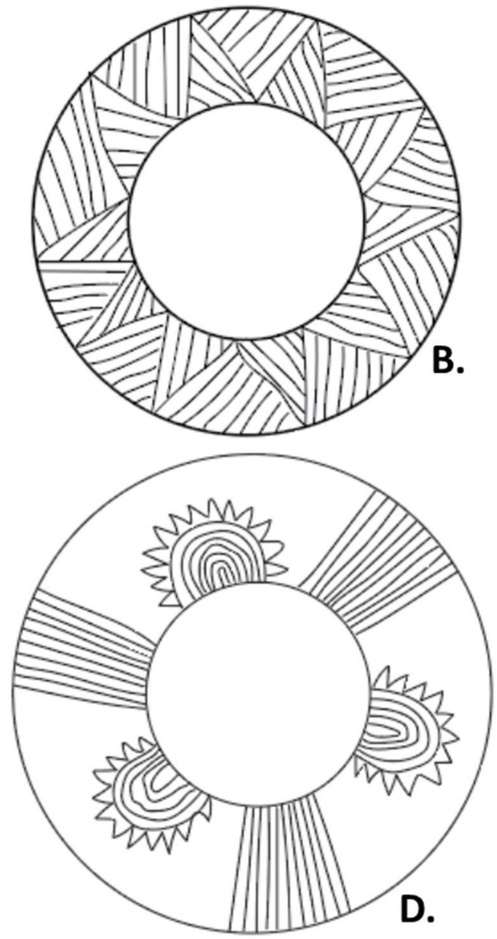


Figure 4-17 Reconstructed Plates

Figure 4-18 Orendorf Horizon Plate

4.1.3 Bowls and Bean Pots

Only three diagnostic bowl sherds were identified within the Hanning Collection, with an additional eight being non-diagnostic. The three bowls had projected diameters of 12, 16 and 22 cm, respectively (Table 4-7- Basic Bowl Attributes). Two of the three were decorated: one incised (Figure 4-19) and the other with a duck head effigy (Figure 4-20). The third sherd was plain. It is possible the undecorated bowl sherd was part of a compound jar, but a bowl seems more likely. Rim thickness ranged between 5.69 and 6.64 mm.

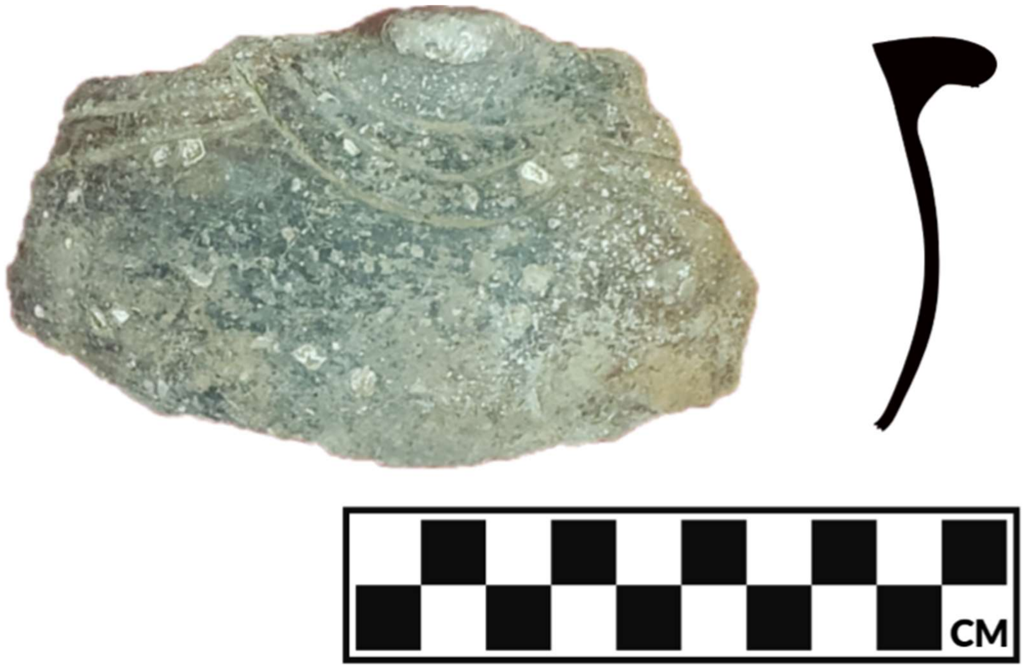


Figure 4-19 Trailed Bowl

Figure 4-20 Duck Head Effigy Bowl

Table 4-7- Basic Bowl Attributes

Vessel ID	Weight	Orifice Diameter	Rim Thickness (MM)
1006	107.33	22	6.64
1007	128.08	12	7.41
1008	61.98	16	5.69

Three separate beaker (or bean pot) sherds were identified within the collection. As shown in Table 4-8, the three vessels all produced similar diameters, varying between 11 and 13 cm. Two of the three beakers were decorated: Vessel 1019 displays nested chevrons and Vessel 1018 (Figure 4-21) displays a nested cross in a sunburst with a rising ladder. Figure 4-22 shows three beaker handles that were not associated with other vessel fragments.

Table 4-8- Basic Bean Pot Attributes

Vessel ID	Weight	Orifice Diameter	Decoration
1018	78.89	12	Sunburst
1019	14.14	13	Chevrons
1020	33.37	11	n/a

Figure 4-21 Beaker. Note Handle Attachment Location (Catalog 1018)

Figure 4-22 Beaker Handles

4.1.4 Salt Pans

Salt pans were potentially underrepresented in the Hanning Collection, raising the possibility the Glen and Mary Hanning did not collect these cruder vessels at Star Bridge (Figure 4-23). Two rims were located within the collection, weighing a combined 99.5 grams. These contained coarse-grained shell tempering and were undecorated. While the interior of these sherds was smooth, the exterior side was rough and fabric- a common occurrence for Mississippian salt pans.

Figure 4-23 Salt Pan Sherds

4.1.5 White/Gray Slip

Over the course of my analyses, several plate and jar sherds were identified as having a white/gray slip, meaning that they were dipped in a pure and uncolored clay mixture after firing (Figure 4-24 and Figure 4-25). These jar (n=5) and plate (n=13) sherds appear to have been fired, then slipped in a pure clay mixture, and fired again. Greg Wilson and Duane Esarey (personal communications, 2019) both state that this surface treatment is uncommon, but not unheard of in late Mississippian Period ceramic sub-assemblages from the CIRV.

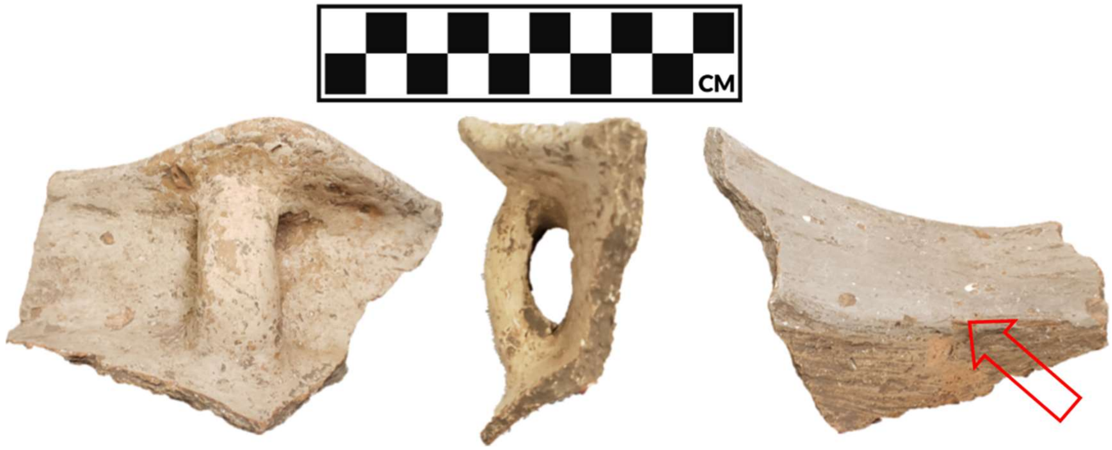


Figure 4-24 Gray/White slip on jar with lug. Notice limit of slip on inside of jar

Figure 4-25 Gray/White slip on trailed plates

4.1.6 Ceramic Effigies

Forty-six ceramic effigies are contained within the Hanning Collection, weighing a total of 2082.31 grams. These effigies are all rim-riders from jars or bowls (Figure 4-26). Of the forty-six effigies, twenty-eight represent avian species, such as ducks or swans (Figure 4-27), with an additional four of the effigies being tails most likely associated with water fowl. Of the additional eight effigies, one appears to represent a deer (Figure 4-28), a suspected underwater monster (Figure 4-29), a bear/dog, and the remaining six are indeterminate.

Figure 4-26 Rim Rider Effigies

Figure 4-27 Duck Head Effigies

Figure 4-28 Mammal Effigies

Figure 4-29 Suspected Underwater Monster Effigy

Interestingly, two of the effigies appear to have served as rattles (Figure 4-30). These can be described as hollow and make sound when shook due to the addition of small gravel-sized pieces of fired clay. Two additional effigy fragments were hollow, and show a mark where a potter created a small opening while the clay was still wet (Figure 4-31 and Figure 4-32). In Figure 4-31 particularly, marks in the clay can be seen extending from the hole in the clay. This is interpreted as a hole allowing air to escape so the effigy did not explode during the firing process. Found in conjunction with the effigies, Figure 4-33 presents the small, shell-tempered ceramic balls that appear to have come from one of the hollow effigies.

Figure 4-30 Hollow Rim-Rider Effigies that serve as rattles

Figure 4-31 Inside of Hollow Effigy, suspected to have been rattle. Note where a hole was poked through the wet clay prior to firing

Figure 4-32 Inside of Hollow Effigy, suspected to have been rattle. Note where a hole was poked through the wet clay prior to firing

Figure 4-33 Small ceramic balls found inside bag of Star Bridge Effigies. Suspected of coming from inside a rattle

4.2 Miniature Jars and Shell Cup

Two miniature jar sherds were recovered with enough of the vessel present to draw a profile of the shoulder (Figure 4-34). However, the two vessels did not display enough of a rim to estimate vessel diameter. Interestingly, both appear to exhibit different lip lengths. Figure 4-35 shows the distal portion of a ceramic shell cup. These vessels, understood as emulating Conch or Lightning Whelk shells, are common within greater Cahokia during Moorehead and Sand Prairie times (Kozuch 2013).

Figure 4-34 Miniature Jars

Figure 4-35 Shell Cup Effigy

4.2.1 Other Ceramic Items

Non-vessel ceramic artifacts that were identified within the Hanning collection included two spindle whorls for fabric production (Figure 4-36), weighing 20.67 and 17.09 g, respectively. One was completely drilled through, while the other was not. A single ceramic pipe fragment (Figure 4-37) was also identified, weighing 28.12 grams. All three of these items were shell tempered.

Figure 4-36 Spindle Whorls

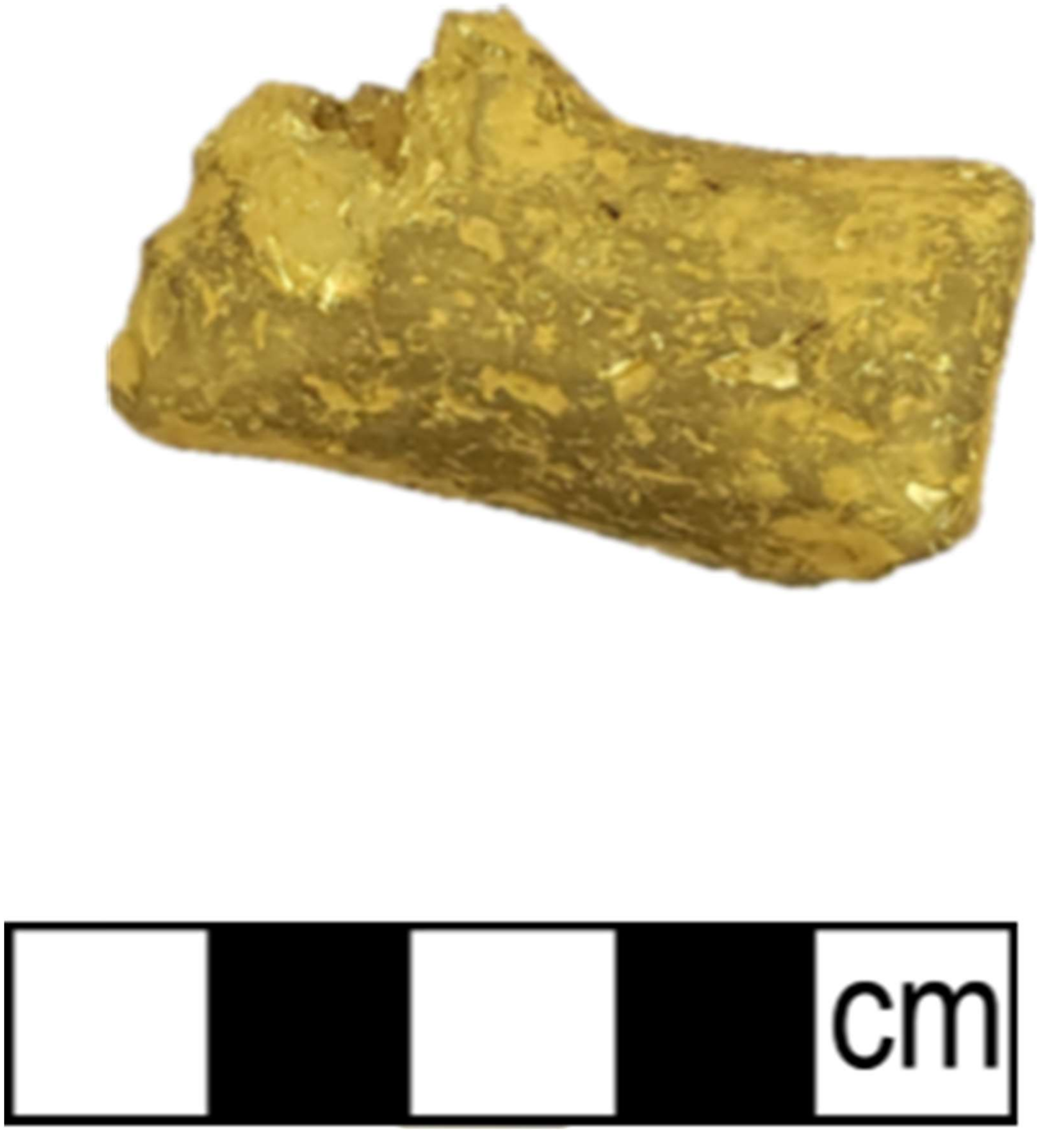


Figure 4-37 Pipe Fragment

4.3 Hanning Collection- Flaked Stone Results

A total of 548 artifacts weighing 4243.65 grams represent the recovered flaked stone industry at Star Bridge. Of these, 52 artifacts are debitage, while 32 are expedient flake tools. The remaining 464 are formal flaked stone tools. Unsurprisingly, the assemblage is dominated by Burlington chert, and other locally available stone, including

La Moine River chert. Mill Creek, Dongola, Cobden and glacially derived cherts are also found within the lithic sub-assemblage.

4.3.1 Debitage (n=52)

Debitage, the unmodified byproduct of producing stone tools, accounts for only 13% of the total weight of the flaked stone assemblage, likely given collector bias. The unmodified debitage represents flakes that show no apparent use-wear or evidence that they were used as an expedient tool. Burlington chert makes up roughly 80% of this sub-assemblage, followed by the La Moine River chert (Table 4-9). A single recovered flake can be sourced to the Lake Michigan glacial chert, while four flakes were not able to be identified.

Table 4-9 Debitage by Raw Lithic Material

Burlington	42
La Moine	3
Moline	1
Lake Michigan	1
Unknown	4
Total	**51**

4.3.2 Expedient Tools (n=32)

Unlike the debitage, the expedient tools assemblage all exhibited use-wear or retouch consistent with brief use before discard. The raw material closely follows the debitage pattern, being largely represented by Burlington chert (Table 4-10). Kaolin, Cobden, and Dongla, all high-quality non-local cherts, make up the remaining expedient tools.

Table 4-10 Expedient Tools by Chert Type

Expedient Tools by Chert Type	
Burlington	28
Kaolin	2
Cobden	1
Dongla	1
Total	**32**

The 83 artifacts accounting for debitage and expedient tools only represent 15% of the total flaked stone sub-assemblage and 12% of the weight of the overall flaked stone assemblage. This again reinforces collector biases that exists within this assemblage.

4.4 Formal Tools

Outside of the 83 flake and flake tools, the remainder of the flaked stone assemblage represents formal tools. Tools were separated by form/function to include projectile points, blades, drills and gravers, scrapers, bifaces, and oversized bifaces.

4.4.1 Projectile Points (N = 236)

I analyzed 236 projectile points as part of this thesis research, which represent half of the stone tools. All but 23 of these points are diagnostic to the Mississippian Period. The Mississippian projectile points (Figure 4-38) fluctuate from incurvate and excurvate to straight blades, as well as concave, convex, or straight bases. For purposes of this study, I partitioned the projectile points into the following categories: Mississippian Triangular, Mississippian Side-notch, Mississippian Other, Mississippian indeterminate, and non- Mississippian.

Figure 4-38 Star Bridge Projectile Point Morphology

4.4.2 Mississippian Triangular (n=171)

Of the 213 Mississippian projectile points, 80% of them are Mississippian Triangular (Figure 4-39). While these points are the most ubiquitous form of tool within the Hanning Collection, fluctuations in overall form are apparent. Only 27 (16%) of the 171 triangular projectile points are unifacial, while the remaining 144 are bifacial. Nineteen of the Mississippian Triangular points exhibit denticular notches running the length of the blade (Table 4-11 Mississippian Triangular Projectile Points). Of the triangles, 93% of them are crafted from Burlington chert.

Table 4-11 Mississippian Triangular Projectile Points

Bifacial	125
Unifacial	27
Denticulate	19
Total	**171**

Figure 4-39 Mississippian Triangles

4.4.3 Mississippian Side Notch (n=23)

Only ten percent of the Mississippian projectile points in the Hanning Collection exhibited notching (Figure 4-40 Mississippian Side No). As shown in Figure 4-40, size and form vary greatly among the side-notched points, although all 23 of these projectile points exhibit bifacial manufacture. Three exhibit additional notches, including two crude Cahokia tri-notched projectile points (Figure 4-41). Overall, these displayed subjectively higher craftsmanship than the unnotched, and a higher degree of variation in the base. Eighty-seven percent of these projectile points were crafted from Burlington chert. A single side notched projectile point was made of Mill Creek chert.

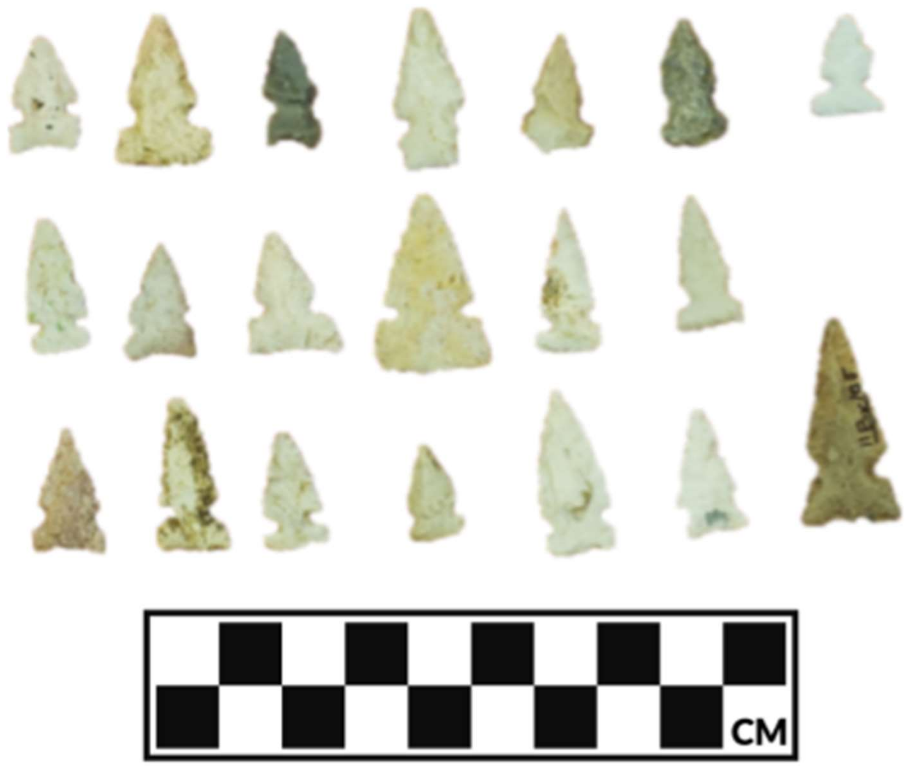


Figure 4-40 Mississippian Side Notch

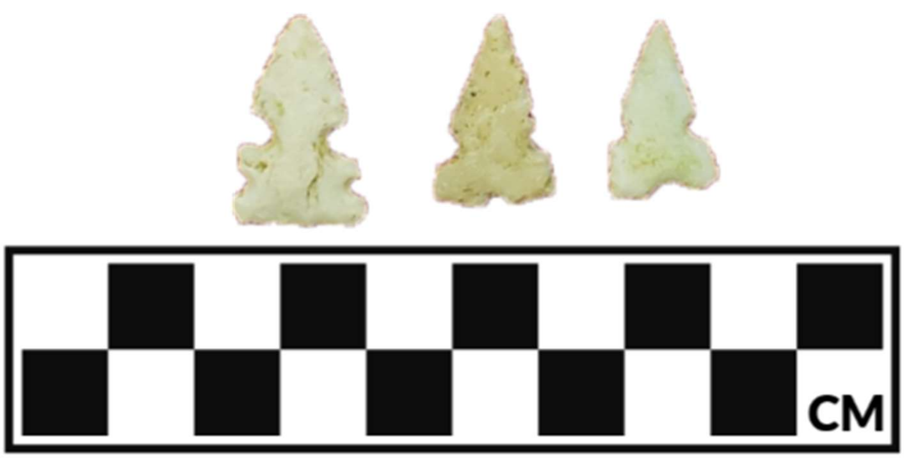


Figure 4-41 Multi-Notch

4.4.4 Mississippian Underrepresented (n=3)

Three projectile points were cataloged as Mississippian Other and are infrequently discussed in current literature. All three projectile points were crafted from the Burlington chert and are bifacial (Figure 4-42 Mississippian Underrepresented (Left to Right, Barbed Madison, Slanted Madison, Unclassified Basal Notch Point)). The total weight of the three is 2.28 g. The first projectile point is a barbed Madison. Although the tip is broken off, the barb is still clearly visable. It is possible the artifact is also an engraving tool. The second is a slanted Madison projectile point. Lastly, an unclassified projectile point with a basal notch may simply represent a heavily resharpened standard triangle, possiby being a tri-notch at one point.

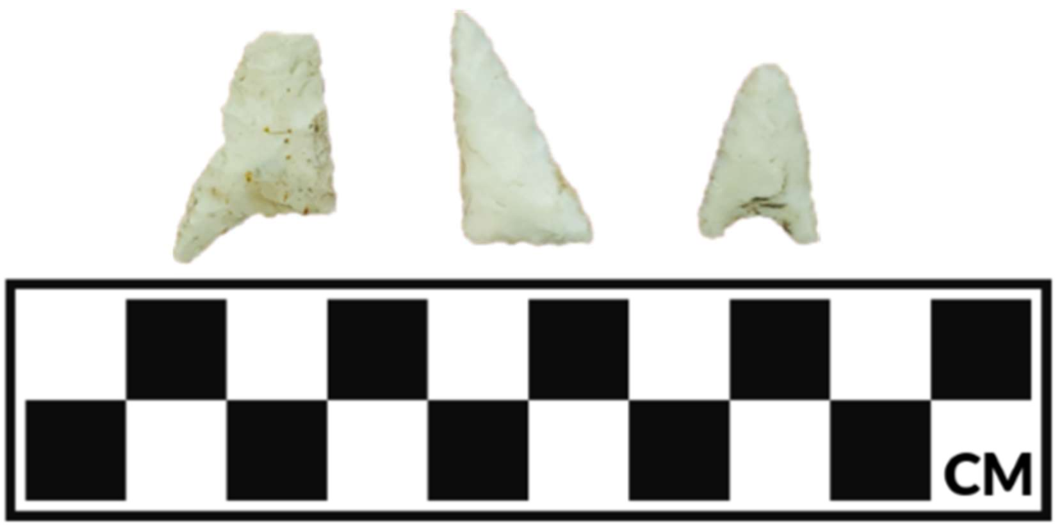


Figure 4-42 Mississippian Underrepresented (Left to Right, Barbed Madison, Slanted Madison, Unclassified Basal Notch Point)

4.4.5 Mississippian Indeterminate (n=16)

Sixteen projectile points were identified as Mississippian indeterminate as it could not be determined if they were notched or not. This category contained all basal or distal fragments. One projectile point in this category is made from La Moine River chert, while the remaining 15 points are Burlington.

4.4.6 Non-Mississippian Points (n=23)

Twenty-three projectile points from the Hanning Collection were diagnostic to older, pre-Mississippian occupations. The projectile points represent several millennia of landscape occupation (Table 4-12 Star Bridge Non Mississippian Points and Figure

4-43). Given that the physical boundaries for the Hanning Collection zone are unknown, it is impossible to state whether Star Bridge villagers curated these projectile points or they represent separate and older archaeological deposits. Raw material type was not recorded, although the majority of the projectile points were made from Burlington chert.

Table 4-12 Star Bridge Non Mississippian Points

Temporal Setting	n
Indeterminate	4
Paleo-Indian	0
Early Archaic	2
Middle Archaic	0
Late Archaic	6
Terminal Archaic	3
Early Woodland	0
Middle Woodland	4
Late Woodland	4

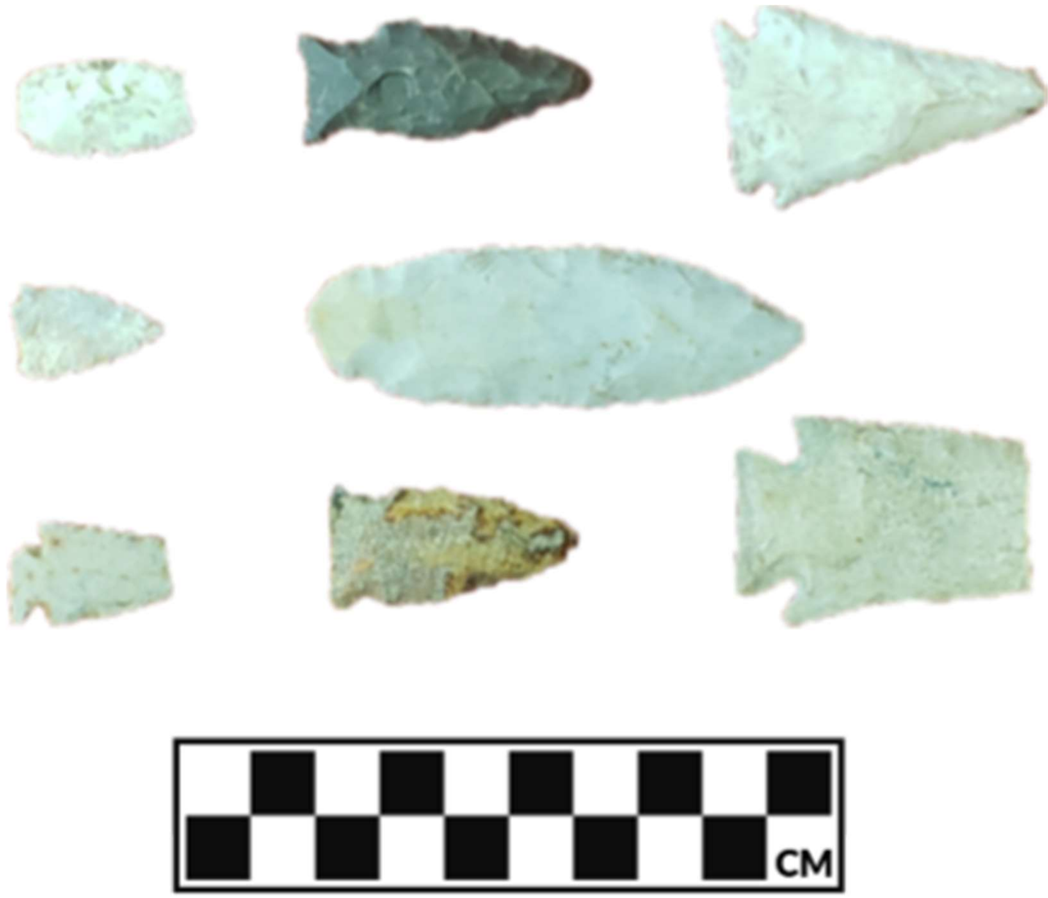


Figure 4-43 Non Mississippian Projectile Points: Left Column: Late Woodland Projectile Points. Middle Column: Late Archaic Projectile Points. Right Column: Early Archaic Projectile Points.

4.4.7 Blades (n=53)

Fifty-three blades were recovered from the Hanning Collection, weighing 178.5 grams. The smallest measured 2.33 x .074 cm, while the largest was 7.51 x 1.81 cm. The blades all appear struck from polyhedral cores (Figure 4-44 Blades). It is possible some of the blades represent curated Middle Woodland blades, as there are several Hopewell sites in the immediate vicinity of Star Bridge. Additionally, no polyhedral cores were found within the Hanning Collection. Among the 53 blades, all but four were produced from Burlington chert. The remaining four were produced from La Moine (n=1), Kaolin (n=1), and Moline (n=2) cherts.

Figure 4-44 Blades

4.4.8 Drills/Gravers (n=15)

Fifteen formal drills and gravers used for creating holes (e.g. fabric) were noted during my analysis (Figure 4-45). Nine gravers weighing a total of 39.85 g and six drills weighing a total of 15.74 g were catalogued. All fifteen of these artifacts were produced from Burlington chert. No morphological patterns were noted and all appeared to have been knapped in different styles.

Figure 4-45 Gravers (top) and Drills (Bottom)

4.4.9 Scrapers (n=104)

A total of 104 formal scrapers for processing meat were catalogued and analyzed as part of my thesis research (Figure 4-46). Of these, 75 were classified as end scrapers, while 29 were classified as side scrapers. Burlington made up 80% of the end scrapers and 90% of the side scrapers (Table 4-13 Scrapers by Raw Material). 80% of the end scrapers also exhibited use as side scrapers. In all, the scrapers weighed a total of 782 g. The largest side scrapper weighed 24.6 g and was 6.31 x 3.03 cm, while the smallest was 1.59 g and 3.10 x 3.03 cm. The largest end scraper weighed 27.7 g and measured 5.38 x 3.90 cm. In comparison, the smallest end scraper only weighed 0.97 g and measured 1.80 x 1.50 cm.

Figure 4-46 Sample of Star Bridge Scrapers

Table 4-13 Scrapers by Raw Material

Material	End Scraper	Side Scraper
Burlington	60	26
La Moine	3	1
Moline	4	1
Cobden	4	0
Kaolin	2	0
Crable	2	0
Dongla	0	1
Total	**75**	**29**

4.4.10 Bifaces (n=49)

Forty-nine bifaces displaying different stages of lithic reduction were also present in the Hanning Collection. Of these, seven exhibited sharpening of the distal bit, three displayed rounded bases, one was a near-finished knife, and the remaining 39 all appeared to be stages of preforms for formal tools (Figure 4-47). Forty-five bifaces were produced from Burlington chert, three from the La Moine River chert, and a single specimen was crafted from Cobden chert.

Figure 4-47 Star Bridge Bifaces

4.4.11 Large Bifaces (n=9)

Nine bifaces were separated from the general biface category as they were diagnostic. These nine artifacts weighed a total of 1,736.04 g, representing 41% of the total flaked stone weight (Figure 4-48). One Burlington adze and two worked adze preforms were recorded. These weighed 299.9 g together. A single complete Ramey knife was recorded, weighing 225.56 g and being made from Mill Creek chert. Four additional Mill Creek bifaces were also identified, with two displaying heavy polish. Two of the Mill Creek bifaces appear to have been ground into celts or adzes. In all, the Mill

Creek artifacts weigh a combined total of 894.75 g. A single heat-treated Burlington hoe displaying heavy polish weighed 542.3 g.

Figure 4-48 Oversized Bifaces

4.5 Cobble and Ground Stone Tools

Although the 43 artifacts in the Hanning Collection represent the cobble- and ground-stone tool industry at Star Bridge, accounting for less than 4% by artifact count, they represent 22% of the assemblage's weight (9457.85g). The largest class of artifacts within this sub-assemblage is celts, used for wood-working. A single three-quarter grooved axe and 15 celts were tabulated (Figure 4-49). Only one of these artifacts was a fragment; the rest were relatively complete. The complete celts range in weight from 849.7 to 11.5 g. All of the celts, except for the 11.5 g specimen, were produced from granitic stone, while the smallest one was derived from chert.

As seen in Table 4-14, the sub-assemblage also included a granitic Mississippian Discoidal (Figure 4-50) and slate pendant (Figure 4-51). Sandstone-derived items included a smoking bowl (Figure 4-52), ear plug, two net weights (Figure 4-53), and several pitted stones. Six hammer stones, all exhibiting use-wear, were also in the Hanning Collection. Several small fragments of pigment stone (i.e., hematite) and unmodified quartz crystal were also catalogued.

Table 4-14 Ground and Cobble Tools

Artifact ID	Description	Qty	Weight (g)	Material
100	3/4/ axe	1	582.1	Granitic
101	Celt	1	849.7	Granitic
102	Celt	1	730.7	Granitic
103	Celt	1	332.2	Granitic
104	Celt	1	392	Granitic
105	Celt	1	486.6	Granitic
106	Celt	1	545.5	Granitic
107	Celt	1	394.4	Granitic
108	Celt	1	237	Granitic
109	Celt	1	204.3	Granitic
110	Celt	1	232.9	Granitic
111	Celt	1	179.1	Granitic
112	Celt	1	160.2	Granitic
113	Celt	1	101.5	Granitic
114	Celt	1	34	Granitic
115	Celt	1	11.5	Chert
116	Discoidal	1	101.8	Granitic
117	Drilled Pendant	1	64.1	Slate
118	Abrader	1	46	Sandstone
119	Abrader	1	59.1	Sandstone
120	Abrader	1	48.8	Sandstone
121	Abrader	1	86.4	Sandstone
122	Abrader	1	56.8	Sandstone
123	Hammerstone	1	113.3	Chert
124	Hammerstone	1	194.3	Granitic
125	Hammerstone	1	201.8	Granitic
126	Hammerstone	1	280.4	Granitic
127	Hammerstone	1	271.9	Granitic

128	Hammerstone	1	296.8	Granitic
129	Pitted stone	1	619.1	Granitic
130	Pitted stone	1	226.2	Granitic
131	Pitted stone	1	408.9	Chert
132	Unknown	1	541	Sandstone
133	Unmodified quartz	3	11.58	Quartz
134	Hematite	3	147.46	Hematite
135	Smoking Bowl	1	127.29	Sandstone
136	Ear Plug	1	20.39	Sandstone
137	Net weight	2	60.73	Sandstone

Figure 4-49 Star Bridge Axe/Celt Size Variation

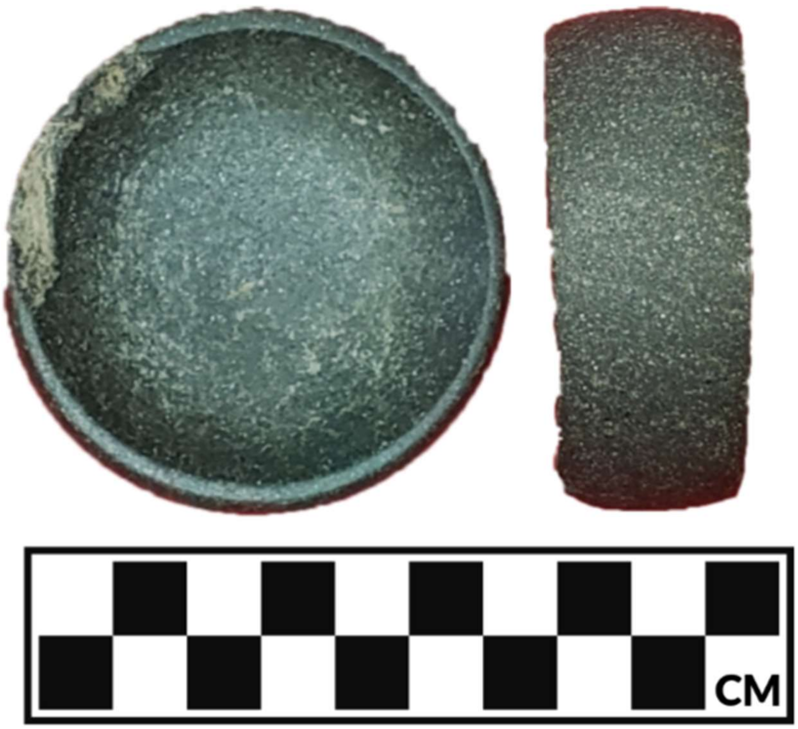


Figure 4-50 Mississippian Discoidal

Figure 4-51 Drilled Slate Pennant

Figure 4-52 Sandstone Smoking Bowl

Figure 4-53 Sandstone Artifacts. Top Row: Ear Plug. Bottom Row: Net Weights

4.5.1 Faunal Material

The faunal sub-assemblage of the Hanning Collection is comparatively small, making up only 2% of the overall collection by count (Table 4-15). Further complicating my analyses was the fact that well over half of these materials contained no visible human modification, meaning they could represent animals younger or older than the Mississippian occupation at Star Bridge. Anthropogenically modified bones include a number of awls (Figure 4-54), an antler tine pressure flaker, a single socketed bone projectile point (Figure 4-55), a fish hook (Figure 4-56), and a bone ring/bead (Figure 4-57). Many of these items still contained glue and felt from prior display in artifact cases.

Table 4-15 Faunal Material

Artifact ID	Description	Qty	Weight (G)
3000	Bone Awl	6	16.09
3001	Pressure Flaker	1	14.04
3002	Fish Hook	1	0.89
3003	Socketed Projectile Point	1	1.11
3004	Bone Ring/bead	1	1.8
3005	Coyote Teeth	5	7.39
3006	IND Faunal	18	142.82
3007	Rabbit Incisor	1	0.14

Figure 4-54 Bone Awls

Figure 4-55 Socketed Bone Arrow Point

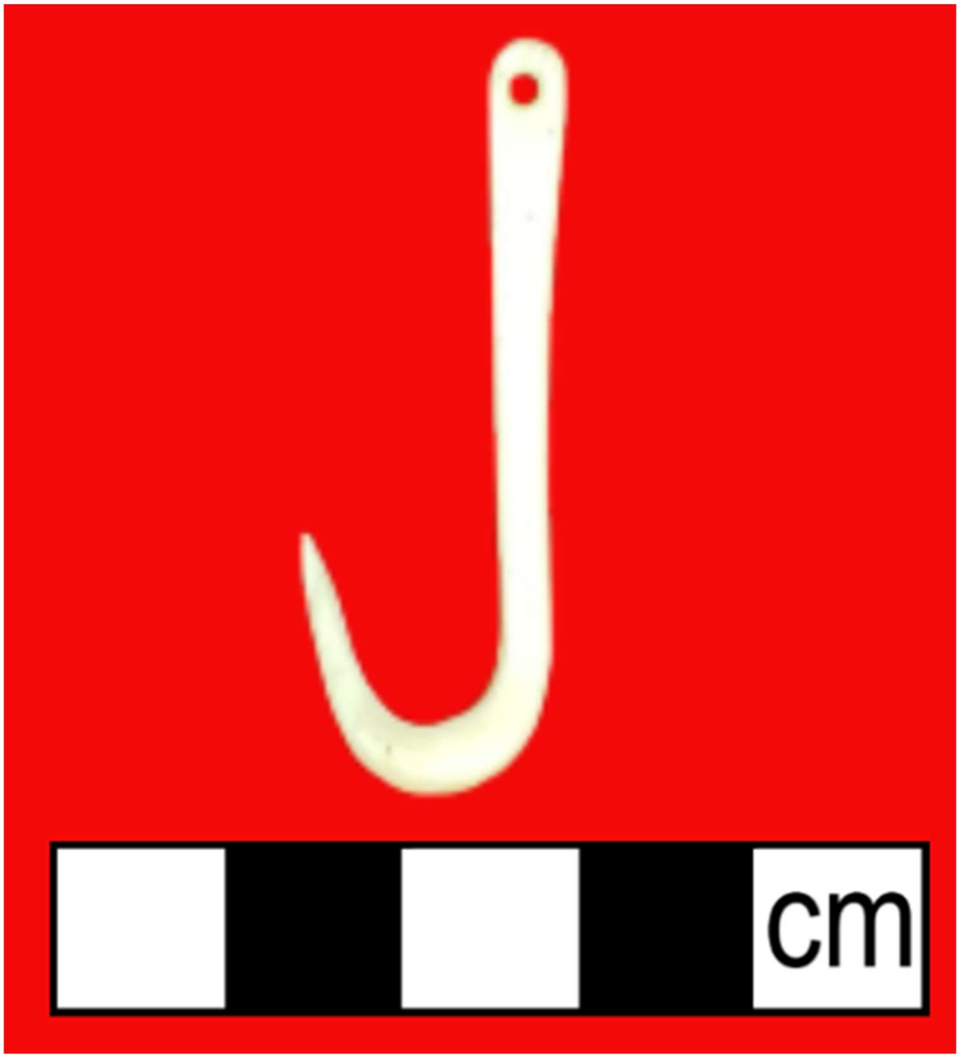


Figure 4-56 Bone Fishhook

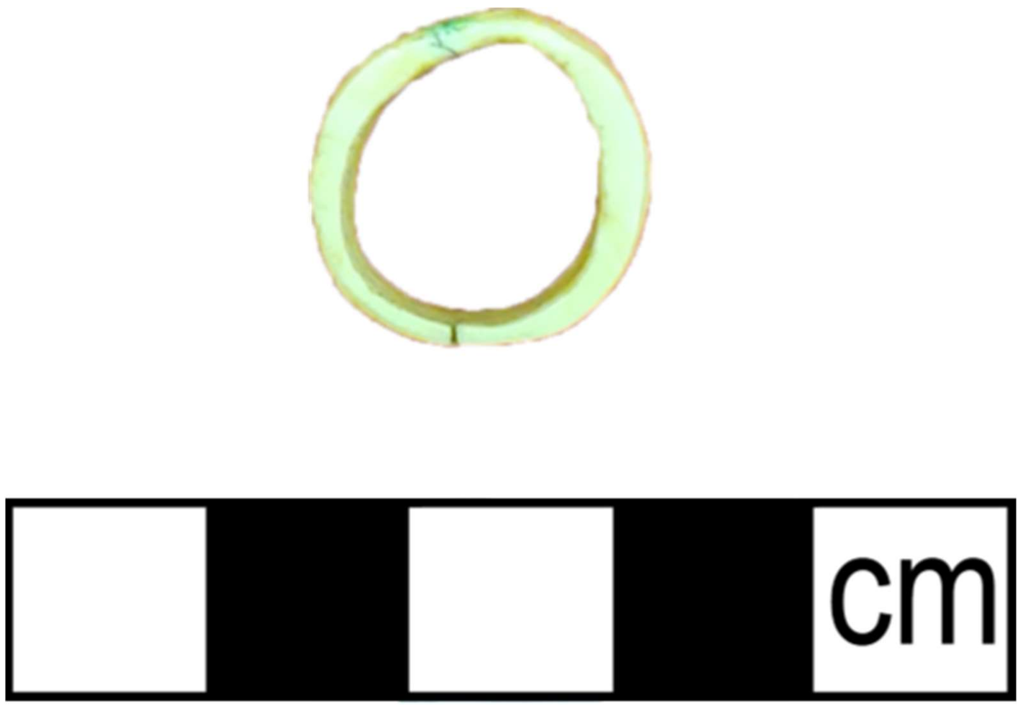


Figure 4-57 Bone Ring/bead

5 Western Illinois University Excavation Results

In June of 1992, Western Illinois University excavated three or four test-pits at Star Bridge, uncovering two structures that are hereafter referred to as Structure #1 and #2. The excavation, conducted through Dr. Emily Blasingham's field school, targeted structures appearing on the 1970's aerial photograph. The location of the excavation block is thought to be in the northeastern portion of the site, and will be discussed in the geophysical chapter. After the field school, the material culture and notes were curated at UMVARF along with the Hanning Collection and were retrieved for study at the same time. Though the recovered artifacts were cleaned and housed sometime after the excavation, the bags have became compromised over time and artifacts have lost their proveniences. My analysis of this assemblage was also hindered by the apparent lack of a bag or field specimen list, which would have denoted the test pit origin and potentially more specific information on proveniences. The 1992 WIU excavation bags were labeled either Test Pit 1, 2, 3, Structure 1, or Structure 2. It was not until a bag was located that was labeled "Structure 1, bulk (sic) between test pits 1 and 2" that I was able to discern which artifacts went with each structure (Figure 5-1). In the end, 33 bags were associated with Structure 1, 13 with Structure 2, and 10 bags lacked a provenience.

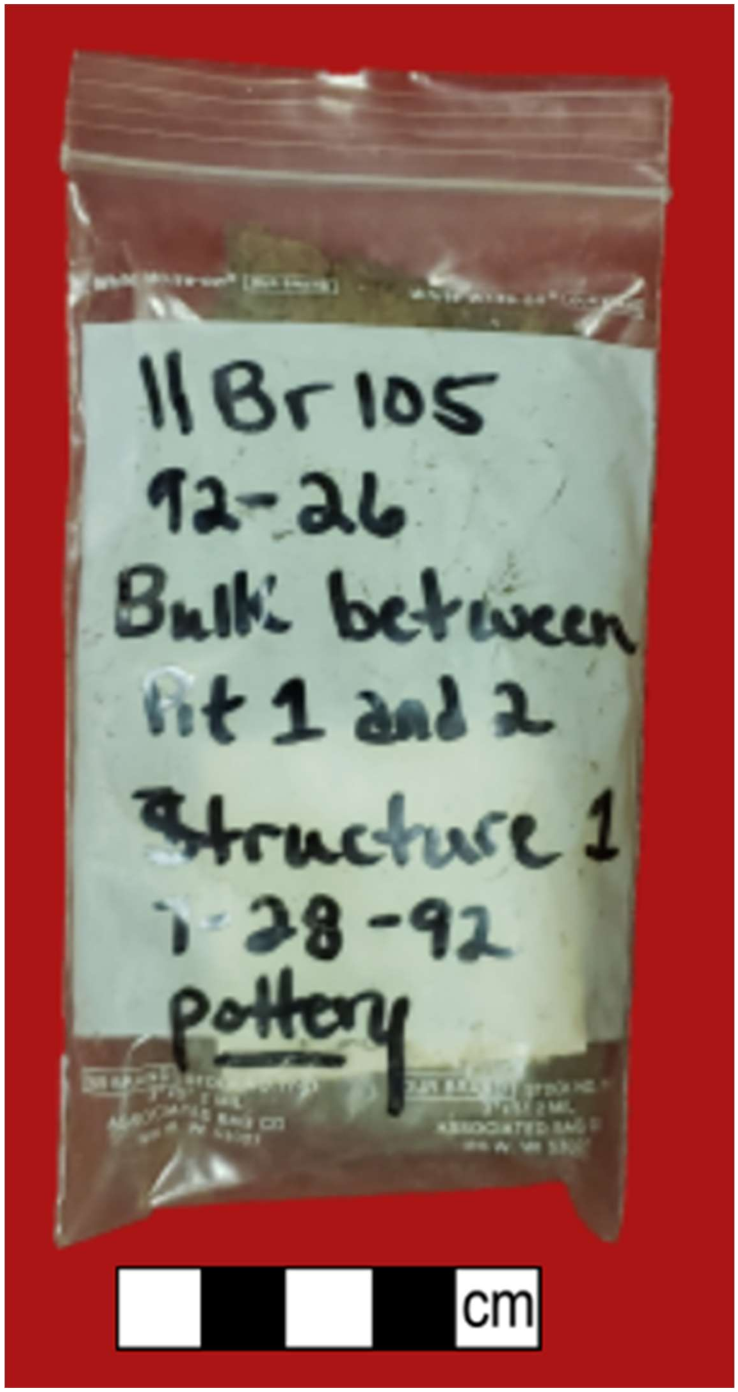


Figure 5-1 Bag that provided provenience between test pits and structure 1.

Unfortunately, only incomplete excavation notes from 1992 were recovered as well. These notes do provide some profiles of the excavation units and measurements. These recovered notes have been digitized and are included in the appendices.

Importantly, the profiles provide data on agricultural damage to the village (Figure 5-2); it appears that the plow zone extended to within several centimeters of the Structure #1 floor. Similarly, the notes appear to provide a piece plot (Figure 5-3) for artifacts located within test pit 2 of Structure #1, although the exact nature of the map is not known. The presumed size of the excavation block (s) is shown in Figure 5-4. Unfortunately, without more notes or documentation, the overall configuration of the excavation area cannot be discerned.

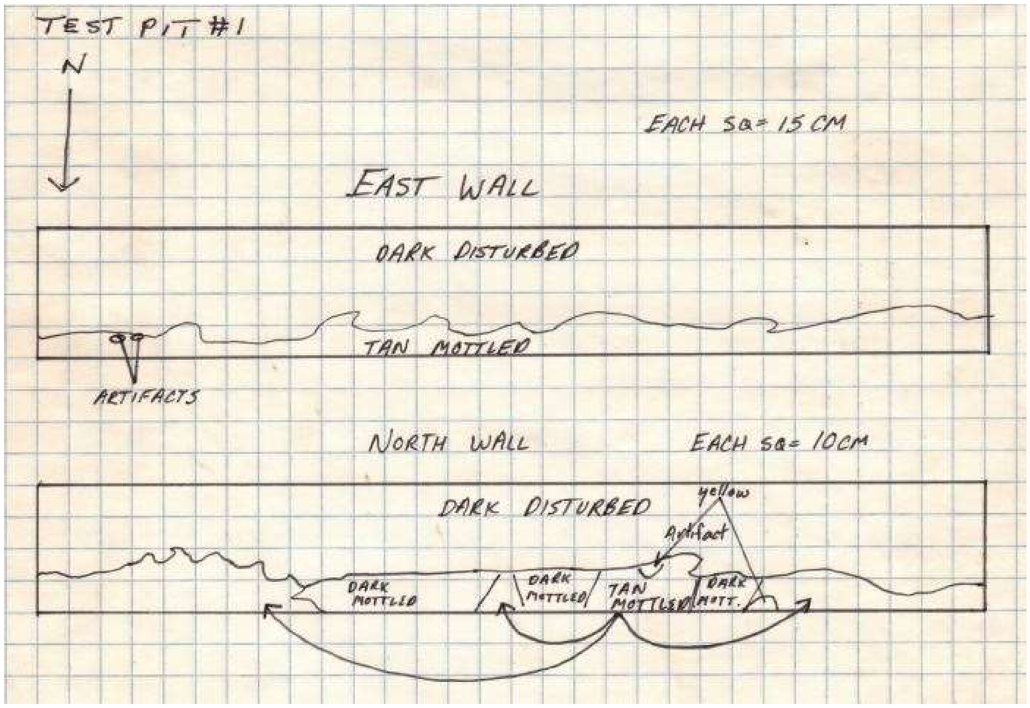


Figure 5-2 Test Pit 1, Structure 1 Excavation Profiles

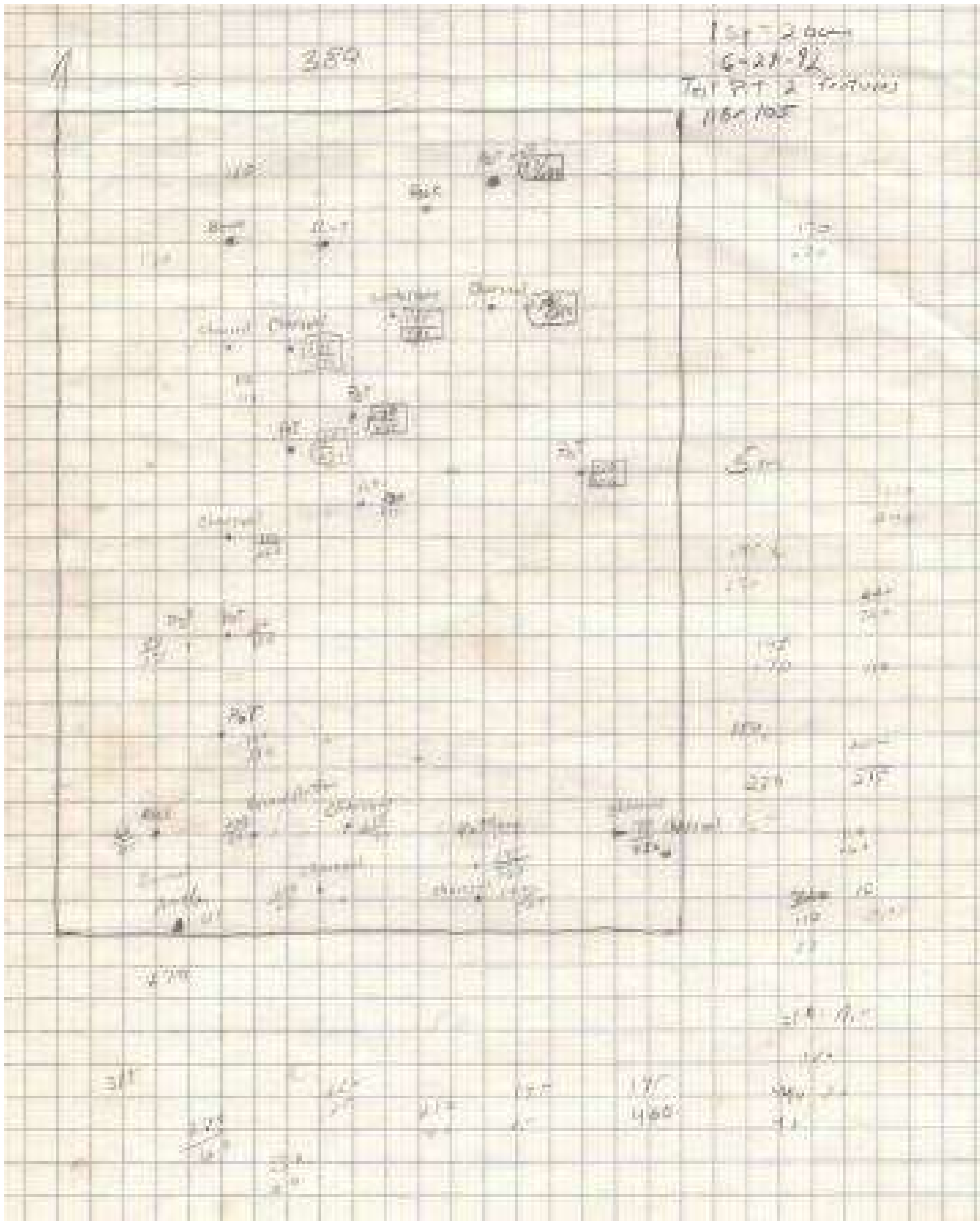


Figure 5-3 WIU Piece Plot Map, Test pit 2, Structure 1. One square equals two centimeters squared.

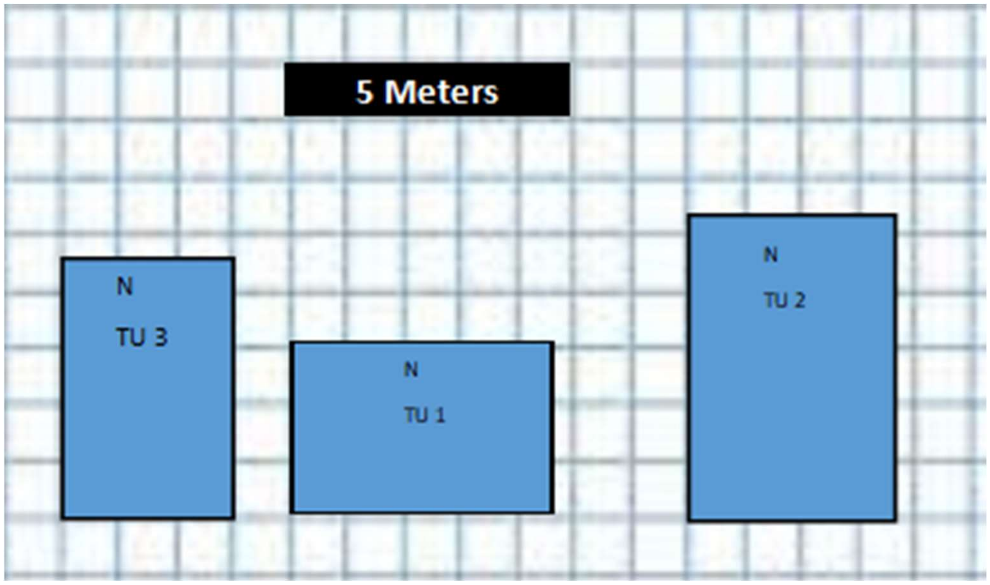


Figure 5-4 Presumed Size of WIU Test Pits based on WIU notes

Only the ceramics from this excavation were available for study. In all, 749 ceramic artifacts weighing 7177.29 g were analyzed. As many of the bags had degraded since 1992 and there was no bag list, I could not assign artifacts to a particular structure. For that reason, I took basic metrics from vessels confidently sourced from Structure #1 and provided a Minimal Number of Vessel (MNV) count from both structures. Artifacts were sorted by their provenance at the greatest taxonomic level (i.e. Structure 1, Structure 2, and unprovenanced) and then by vessel type. These data, as seen in Table 5-1, provided basic information related to artifacts left in the structures when the village was abandoned.

Table 5-1 Western Illinois University Excavation vessel ratios

	Structure 1 (g)	**%**	**Structure 2 (g)**	**%**	**Unprovenanced (g)**	**%**
Total Weight:	**5549.4**	**100**	**556.31**	**100**	**1071.58**	**100**
Weight of Jars	5173.28	93%	448.66	80.65%	1018.66	95.06%
Weight of Plates	169.38	3.10%	48.16	8.66%	52.92	4.94%
Weight of Bowls	161.43	2.91%	59.49	10.69%	0	0

	Total Weight	**%**
Total weight of WIU collection	**7177.29**	**100**
Total weight of Jars	6640.6	92.52%
Total weight of Plates	270.46	3.76%
Total Weight of Bowls	220.92	3.08%

Table 5-2 Diagnostic Rims from Structure 1 Floor

As shown in Table 5-2, 12 sherds representing four vessels originating from Structure #1 provided diagnostic attributes. These consisted of two jars, one bowl, and a plate sherd. The jars and bowl were consistent with examples from the Hanning Collection in terms of metric and non-metric attributes, except for a single plate sherd (Figure 5-5) that contained a mixed temper of shell and grog. Additionally, the plate sherd appeared oxidized. Perplexing was the number of sherds per vessel. While the plate was represented by a single sherd, the bowl was about 50% complete. Further, the two jars associated with the floor of Structure 1 and the level directly above the floor appear to be mostly complete. In other words, at the time of structure abandonment, two complete storage jars, half a bowl and a single plate fragment were all that was left behind.

Table 5-2 Diagnostic Rims from Structure 1 Floor

Artifact ID	Weight (g)	Type	Design	Diameter (CM)	Rim Width (CM)	Rim Thickness (MM)	Wall Thickness (MM)
706	66	Jar	Cord	21	3.05	8.61	6.74
707	64.4	Jar	Cord	-	3.71	9.29	9.78
710	29.3	Plate	Incised	-	-	9.68	-
711	159.3	Bowl	Plain	23	-	-	5.87

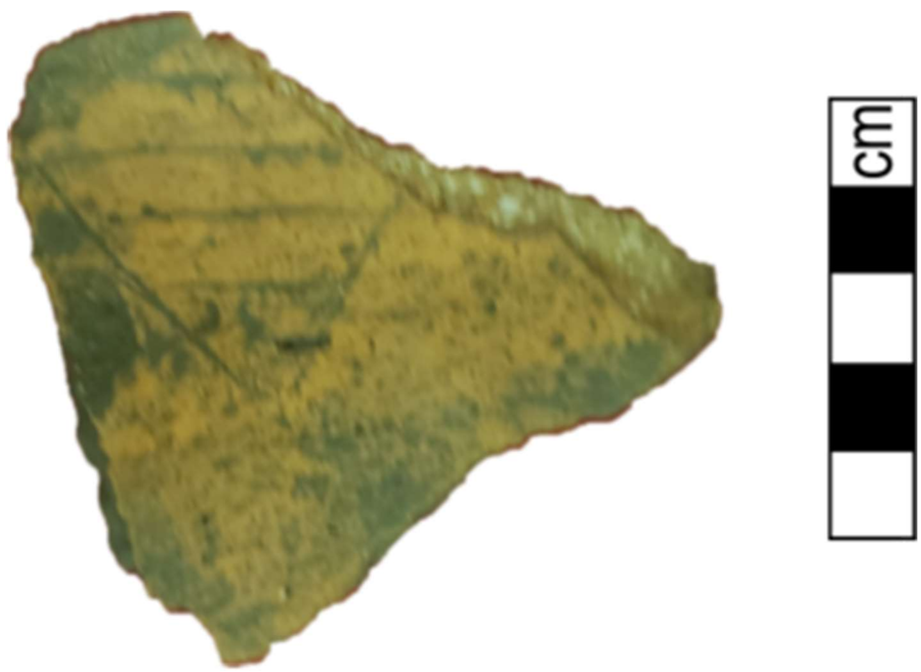


Figure 5-5 Overly Oxidized Grog Temper Plate Sherd from Structure 1.

Importantly, structure 1 was dated by Andrew Upton as part of his recent dissertation work (*sensu* Upton 2019). Upton recovered two dates from this structure, both from antler tips (Figure 5-6). The dates place Star Bridge firmly in the early to mid-14th century.

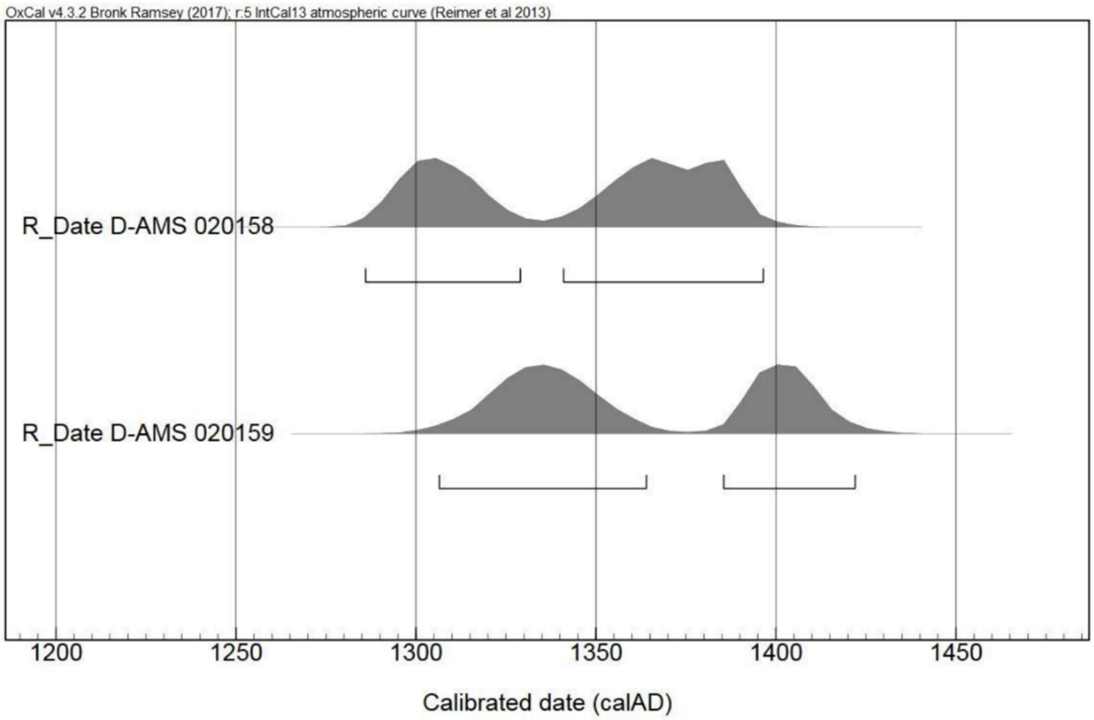


Figure 5-6 Upton 2019 Radiocarbon dates from structure 1 (11Br17)

In total, fragments of 11 separate vessels were identified between the two structures (Figure 5-7). Structure #1 contained seven vessels and Structure #2 contained four. The ceramics from both contexts (Figure 5-8) were relatively plain, with only a few decorated plate sherds and a single effigy rim rider. Importantly, only the jars appear to have been complete vessels. The total number of ceramic wares was unexpected as Star Bridge had been previously interpreted as an incinerated village (Conrad 1991; Wilson 2015), which commonly have intact household assemblages, including ceramic vessels. Interestingly, the bowl (Figure 5-9) from Structure #1 exhibited some degree of charring on the exterior, but not on the interior. This is consistent with firing the vessel (i.e. part of vessel production), but not with structure incineration. Figure 5-10 displays the entire ceramic assemblage (except sherds measuring less than ¼") that the WIU field school recovered from the floor of Structure 1. Figure 5-11 depicts the diagnostic materials from the same provenience. Again, while these artifacts represent somewhat of a diverse assemblage, only the jars appear to represent intact vessels.

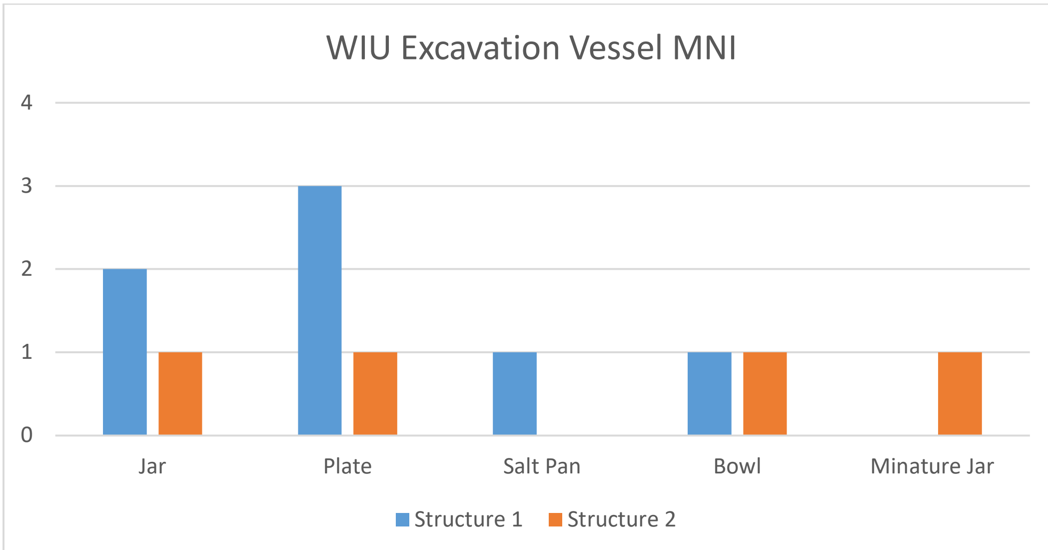


Figure 5-7 Minimum Vessel Count between Structure 92-1 and 92-2.

Figure 5-8 WIU Excavation Artifacts

Figure 5-9 Bowl Sherds from Structure 1

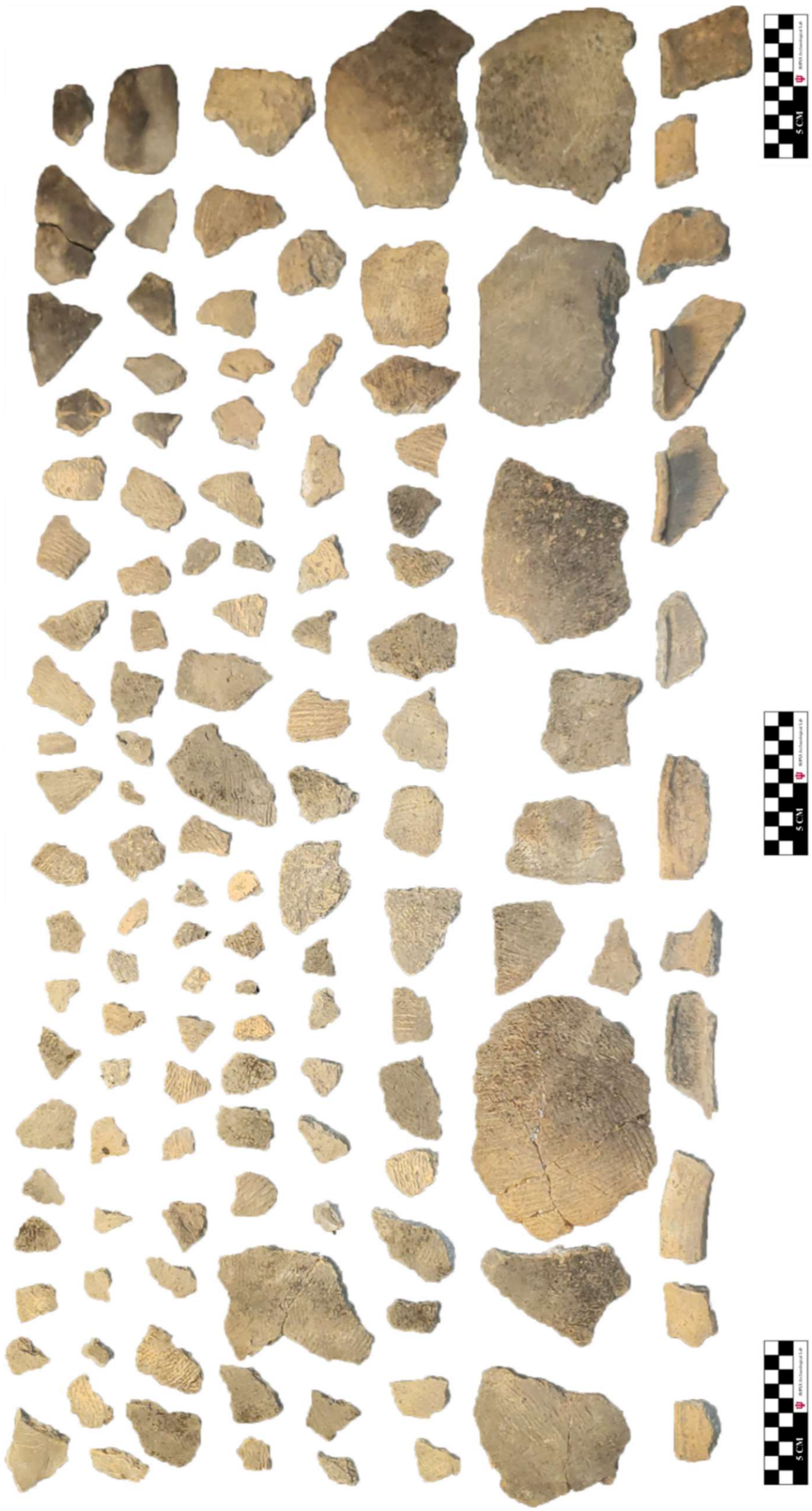


Figure 5-10 Sherds from floor level of Structure 1

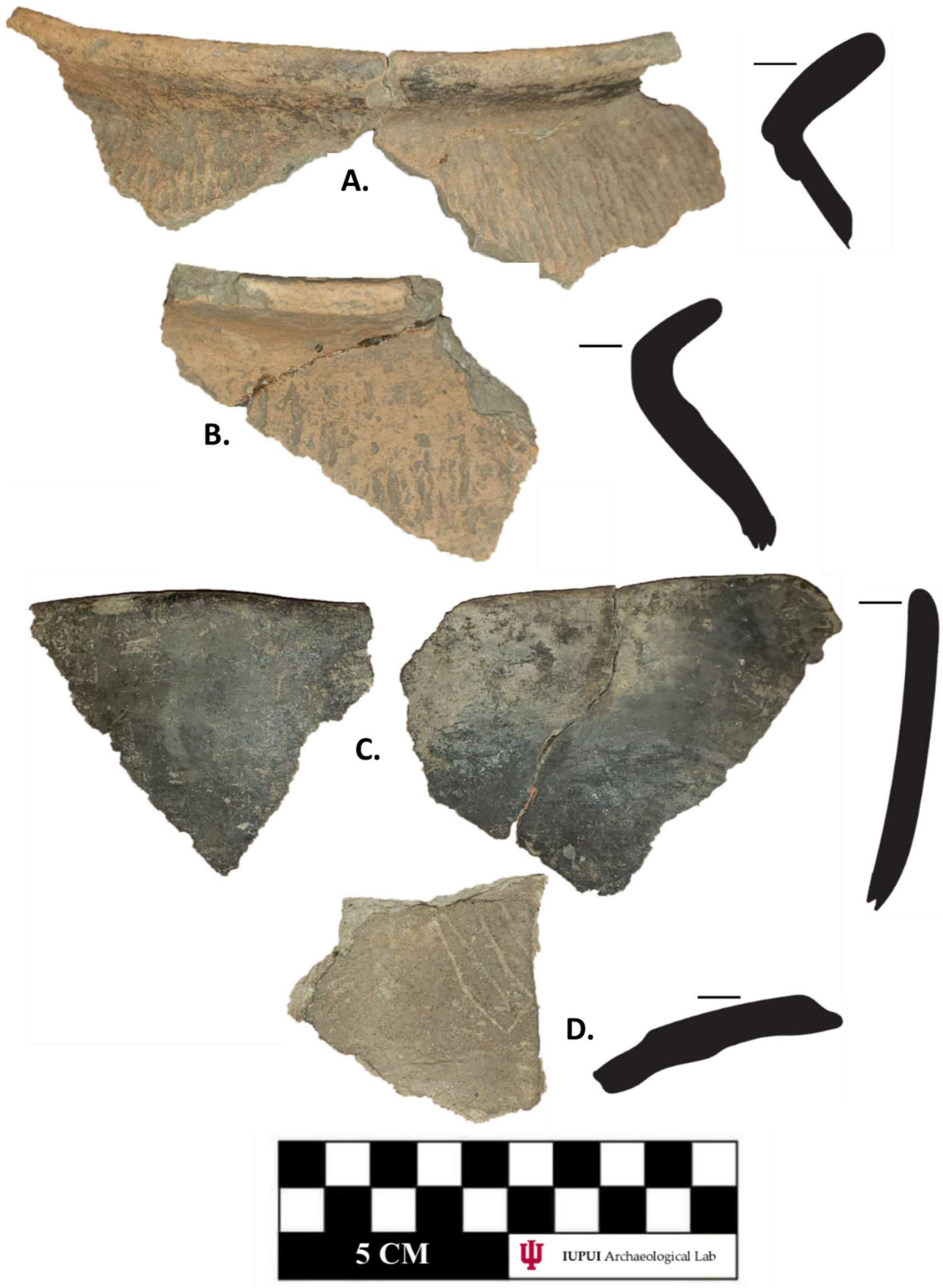


Figure 5-11 Artifacts from floor of structure 1. A-B: Storage Jars. C: Bowl. D: Grog tempered Plate Fragment

6 Magnetometer Results

6.1 Magnetometer Introduction

My magnetometer survey of Star Bridge was completed during March of 2018 with two Bartington Grad601 units. IUPUI's magnetometer was supplemented with a magnetometer provided by the Illinois State Archaeological Survey, along with the expertise of Dr. Robert McCullough. The field where Star Bridge resides has been under historic cultivation since the mid-19th century, although 2018's crop had yet to be planted at the time we conducted the survey. An original historic domicile stood on the southwest portion of the site until a new one was constructed in the late 19th century (see Figure 2-1 in chapter 1), which likely would have impacted subsurface results in that area.

As with most agricultural fields in the CIRV, crops are rotated between corn and soybeans. This was evident as we walked the site as old corn stalks littered the surface area. Prehistoric artifacts were also apparent, including numerous flakes, projectile points, and some ceramic sherds. These items were not collected. The landowner, Charles Snyder, alluded to the fact that a large metal pipe was put in the field during the late 19th century in order to provide the farmstead with water, suggesting a possible magnetic anomaly running through the prehistoric deposits. Additionally, several metal buildings and fences bordered our survey area, limiting the extent of what could be effectively surveyed and detected with the magnetometers.

We laid an arbitrary gird containing 30 x 30 m squares parallel to the County Road 940N. A permanent site datum was placed near the three silos adjacent to the fence (Figure 6-1). As our grid was arbitrary, we took several points around the survey area to help geo-rectify the grid (Figure 6-2). A "T" shaped survey strategy was adopted to identify the east, west, and south boundaries of the village, as well as to identify any potential fortifications. After presumed boundaries were discerned, grids were filled in. At the end of three days, 36 complete 30-by-30 m grids had been surveyed at 50 cm transect intervals between the two magnetometers. No partial grids were surveyed, resulting in a survey density of 3.24 hectares (32,400 m^2 [Figure 6-3]).

Figure 6-1 Datum Location

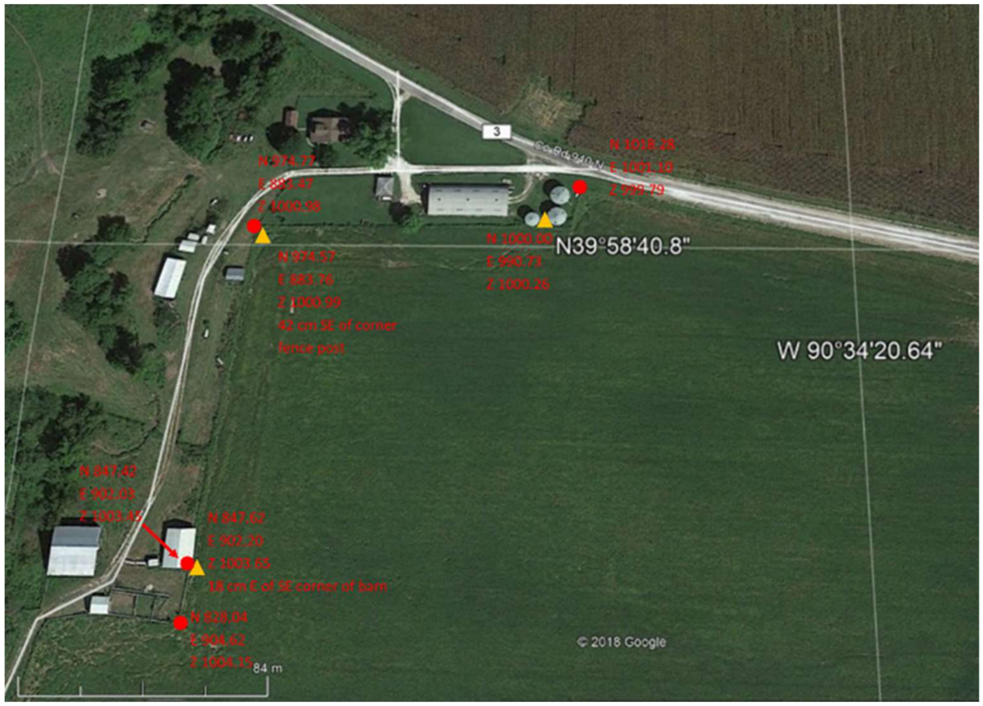


Figure 6-2 GPS reference points. Photo courtesy of Jeremy Wilson

Unfortunately, the geophysical data were not as striking as we originally hoped. Contrasting with the 1970's WIU aerial, less than one-fourth of the structures could be positively identified. Agricultural activities over the last 50 years have removed almost the entire eastern portion of the site and negatively impacted other areas as well. However, the western portion of our magnetometer survey produced numerous domestic features, including presumed houses (with internal hearths), as well as pit features. This portion of the site appears to be consistent with the central portion of the frame on the 1970's aerial photo. Nevertheless, it is evident that the dark staining in the aerial photo overwhelmingly represents Mississippian structures that were entirely plowed away in the 1970s, leaving little for the magnetometer to detect within the eastern portion of the site.

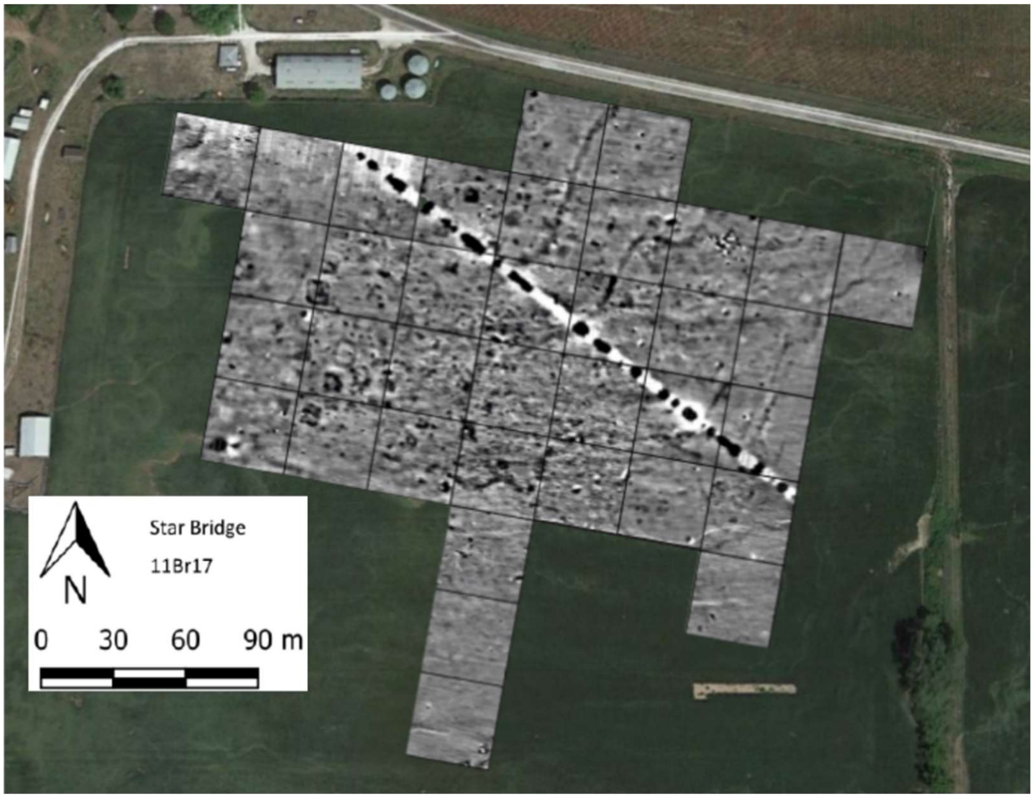


Figure 6-3 IUPUI Star Bridge Magnetometer Survey Results

6.2 Historic Features and Disturbances

Before the pre-Columbian features are discussed, multiple anomalies unrelated to the Mississippian village should be discussed. Historical agricultural and construction produced multiple anomalies and disturbed large areas of Star Bridge (Figure 6-4). The most striking and obvious feature is the linear dipolar anomaly I interpret as the 19th century pipe that moves water from the southern bluff to the Snyder farmhouse northwest of the site. In both the magnetometry data and historic aerials, this pipe cuts through numerous square structures, suggesting their partial or total destruction. Additionally, the large metal fence surrounding the field produced interference, especially in the northwest portion of the survey area. A further impact to the site is the presence of numerous natural drainages and ruts cutting through the plowed field, largely trending from southwest to northeast in the direction of the La Moine River. These drainages, as seen in Figure 6-5, also appear to cut through cultural deposits further affecting preservation of the village.

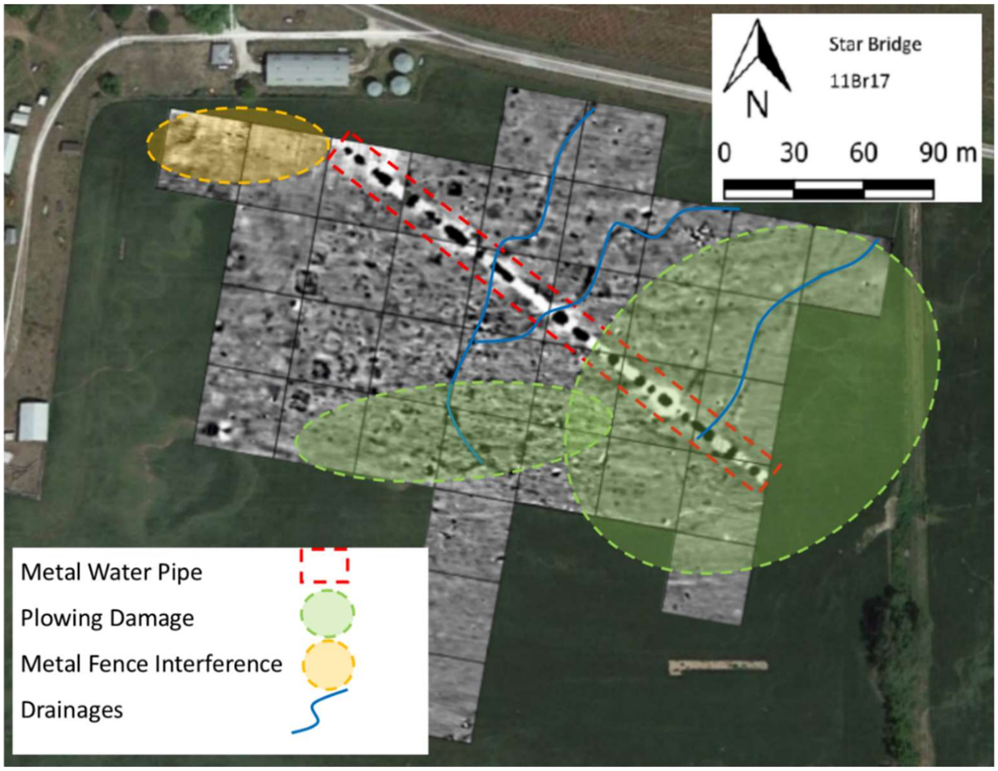


Figure 6-4 Non Pre-Columbian Disturbances

Figure 6-5 Drainage running through site area.

6.3 Features Associated with the Mississippian Occupation: Structures

While the magnetometry failed to capture the complete village as seen in the 1970s aerial, our geophysical survey did succeed in providing a geo-referenced map of the village and some data relating to the overall layout of Star Bridge. As hypothesized by Conrad (1991) and Wilson (2015) based on the 1978 aerial, it appears the village is centered around a central plaza impacted by the aforementioned 19th century water line (Figure 6-6). The overall results appear to closely resemble the 1970's aerial photograph in terms of both structure size and orientation. Broadly, the magnetometry confirms Star Bridge was an aggregated community loosely organized around a central plaza, rather than an azimuth.

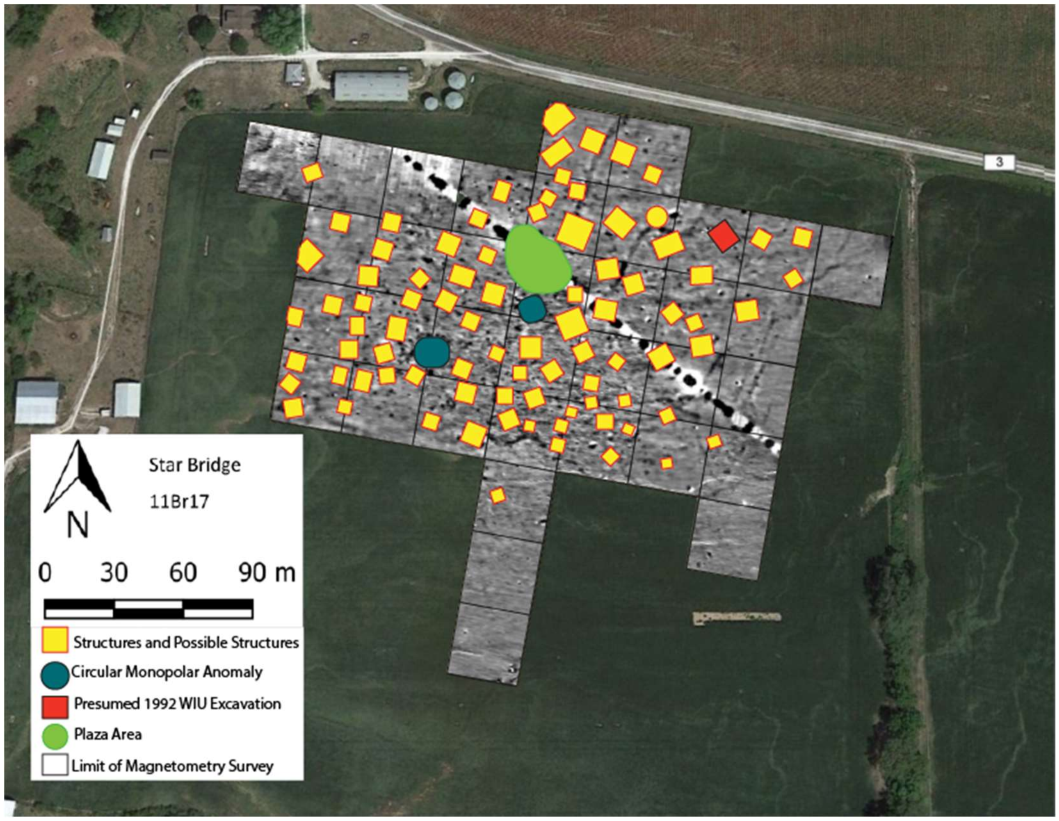


Figure 6-6 Magnetometry Results

Magnetic anomalies consistent with structures were identified by the presence of rectilinear positive magnetic signatures, which generally surround equal or negative values. These are interpreted as Mississippian wall trench structures, similar to those identified at other Mississippian sites. The average size of these structures were 8.026 m N-S and 7.588 m E-W for a mean floor area of approximately 60.9 m^2. These structures were loosely organized around a central plaza that is truncated by the enormous dipolar anomaly interpreted as a historic water pipe. While structures in the southwestern portion show above-average integrity (interior features visible), the majority of the square monopolar signatures we interpret as structures suggest plowing down to their basin. These anomalies were often complimented with an internal anomaly exhibiting high nT values, likely representing internal features, such as cooking hearths or interior storage/trash pits. In all, 86 individual structures and potential structures were tabulated. Some of these structures were easily identifiable by the attributes listed above (Figure 6-7 and Figure 6-8), while some (especially in areas negatively impacted by plowing) were more challenging to demarcate.

Importantly, these anomalies are also consistent with structures that decomposed naturally as opposed to burning. If a structure was burnt, one would expect to see an extremely high monopolar signature that would overwhelm the surrounding magnetic anomalies consistent with wall trenches or central hearths. All but one structure analyzed as part of my research failed to exhibit the magnetic signature consistent with incineration (Figure 6-9 and Figure 6-10). Figure 6-11 shows a burnt structure at Lawrenz, excavated in 2014 and 2015, with the dipolar anomaly consistent with firing. As the prevailing winds are easterly at Lawrenz, the structure collapsed largely toward the east. Had the majority of the Star Bridge structures burned, one would expect to see a recognizable pattern of structure collapse, which we do not.

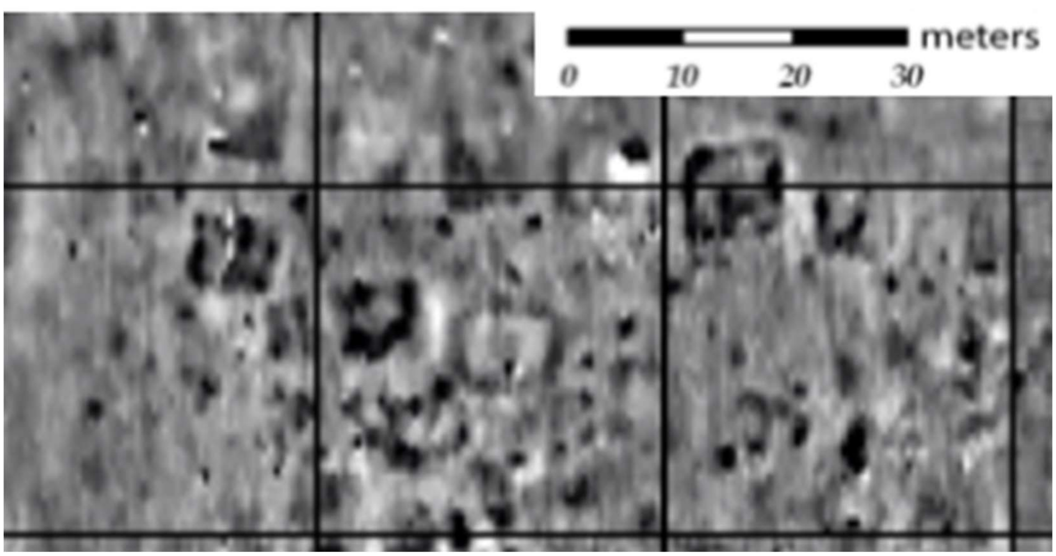


Figure 6-7 Row of Mississippian Houses

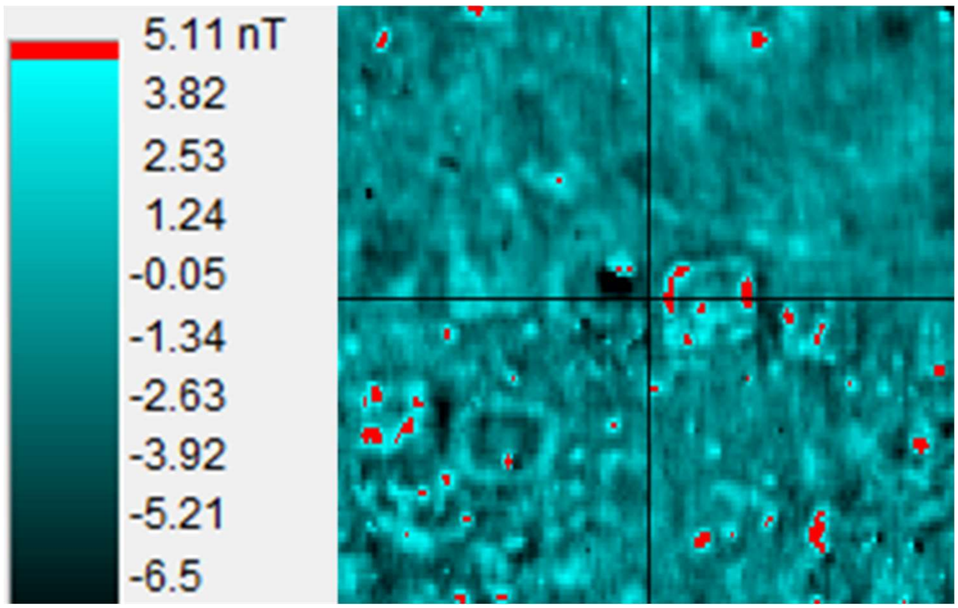


Figure 6-8 Blue Palette. Note: Each Grid is 30 meters by 30 meters

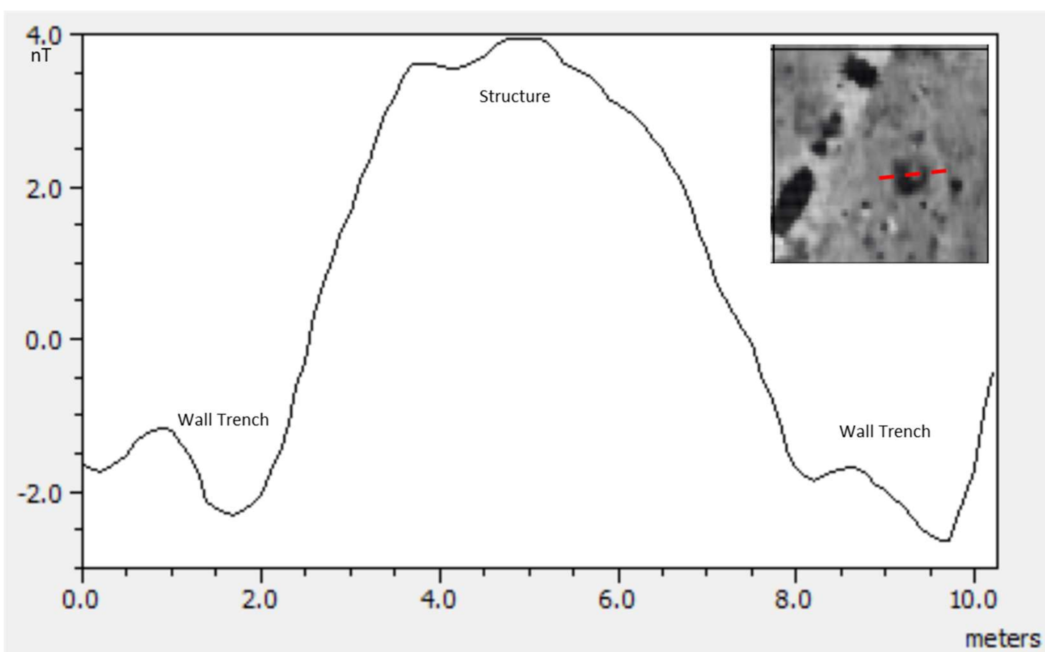


Figure 6-9 Structure mostly plowed away

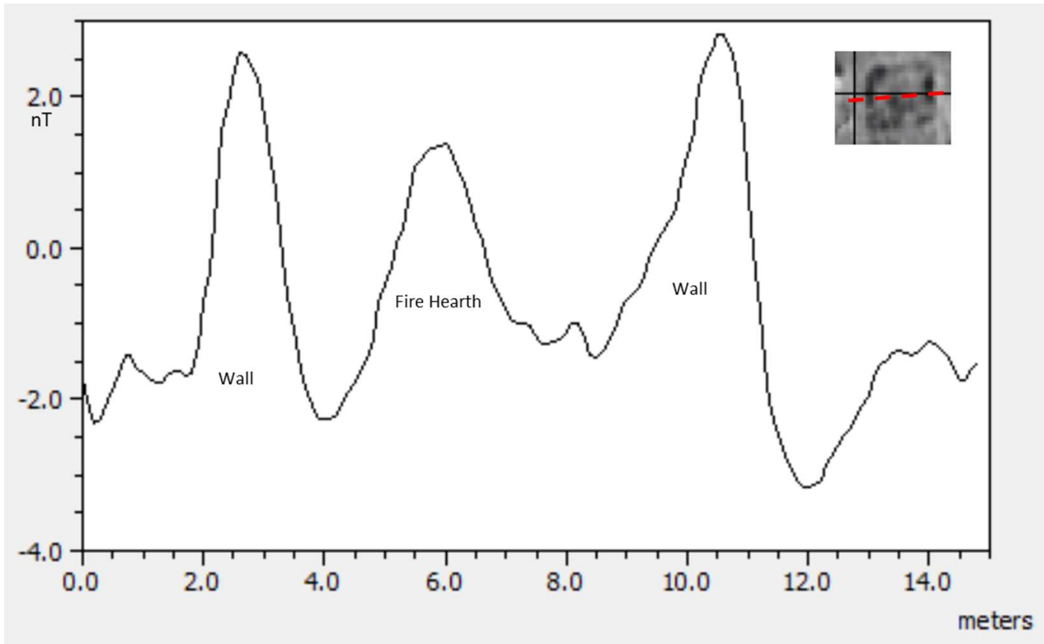


Figure 6-10 Relatively Intact Structure

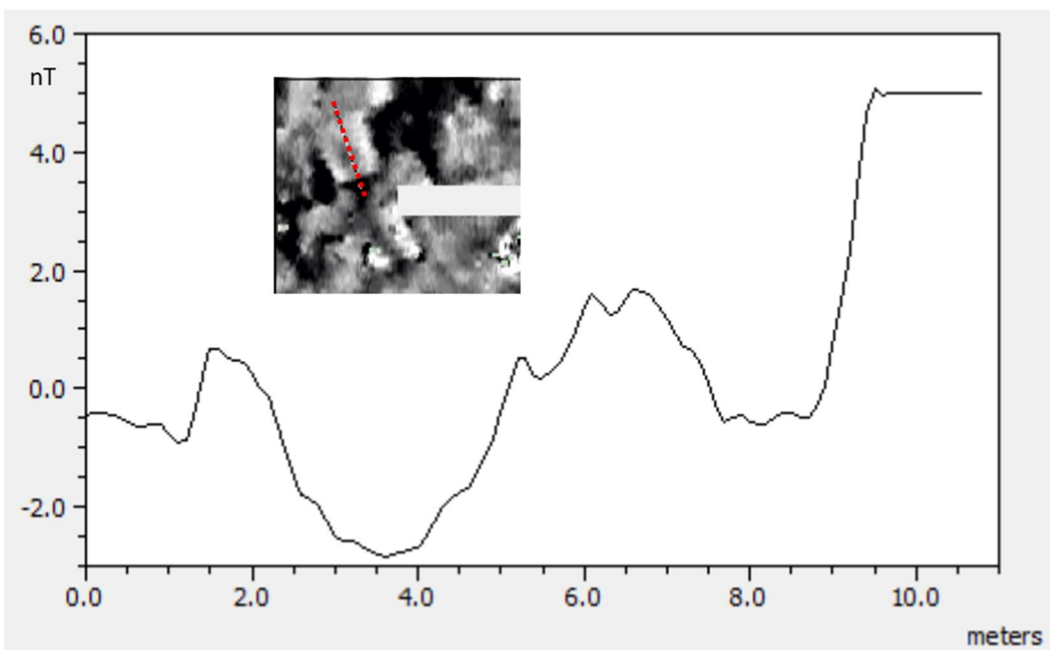


Figure 6-11 Burnt Structure from Lawrenz Gun Club (11Cs4)

6.4 Features Associated with the Mississippian Occupation: Non-Structures

At least two circular monopolar anomalies were also identified during our survey (Figure 6-12). These potentially represent either large post-hole constructed circular structures or a ring of pits surrounding a central structure. Both show evidence of potential structures in the center (Figure 6-13), suggesting a possible screen (i.e., wall) around the structures. The larger of the two anomalies measured approximately 25 m in diameter, with a probable structure 8 x 8 m in size in the center. While it is possible the monopolar anomalies are simply pits around a structure, future ground-truthing of these anomalies is recommended. In addition to these anomalies, a potential circular structure was also identified (Figure 6-14). This structure produced a negatively charged circular halo around a negative charged interior. At the center of the structure is a positively charged anomaly consistent with a large, interior hearth. Given the circular shape and the proximity to some of the largest structures, I interpret this structure as a potential sweat lodge similar to ones noted at Cahokia (Alt 2012), the Emerald Acropolis (Pauketat et al. 2017), as well as throughout the CIRV (Conrad 1991) .

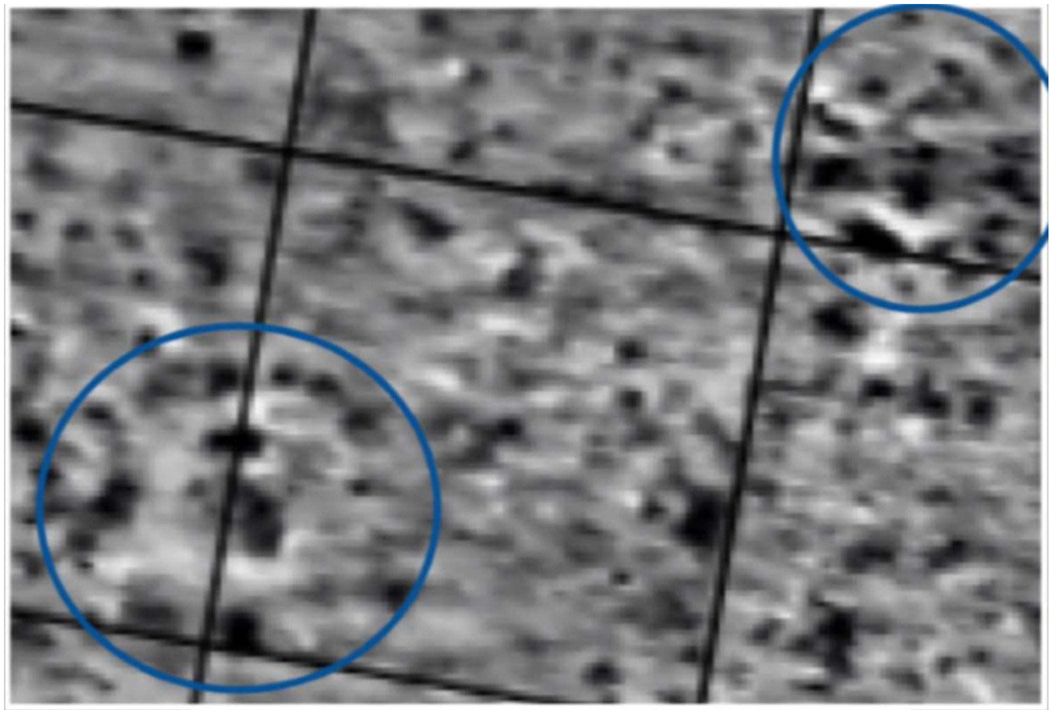


Figure 6-12 circular monopolar anomalies. Note Grid is 30x30 meters and is aligned to magnetic north.

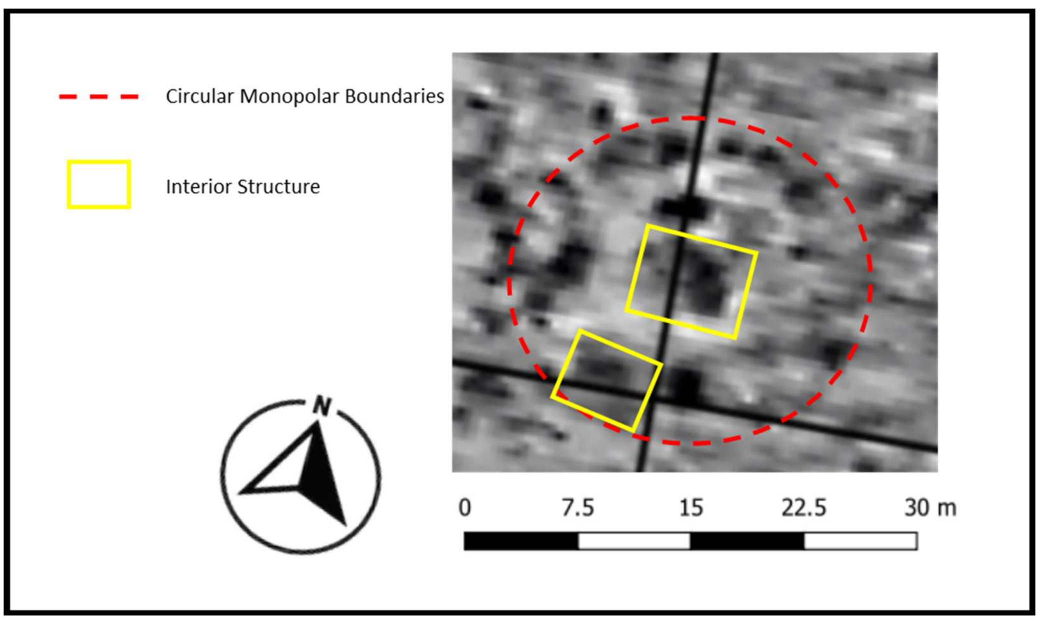


Figure 6-13 Circular Monopolar Structure

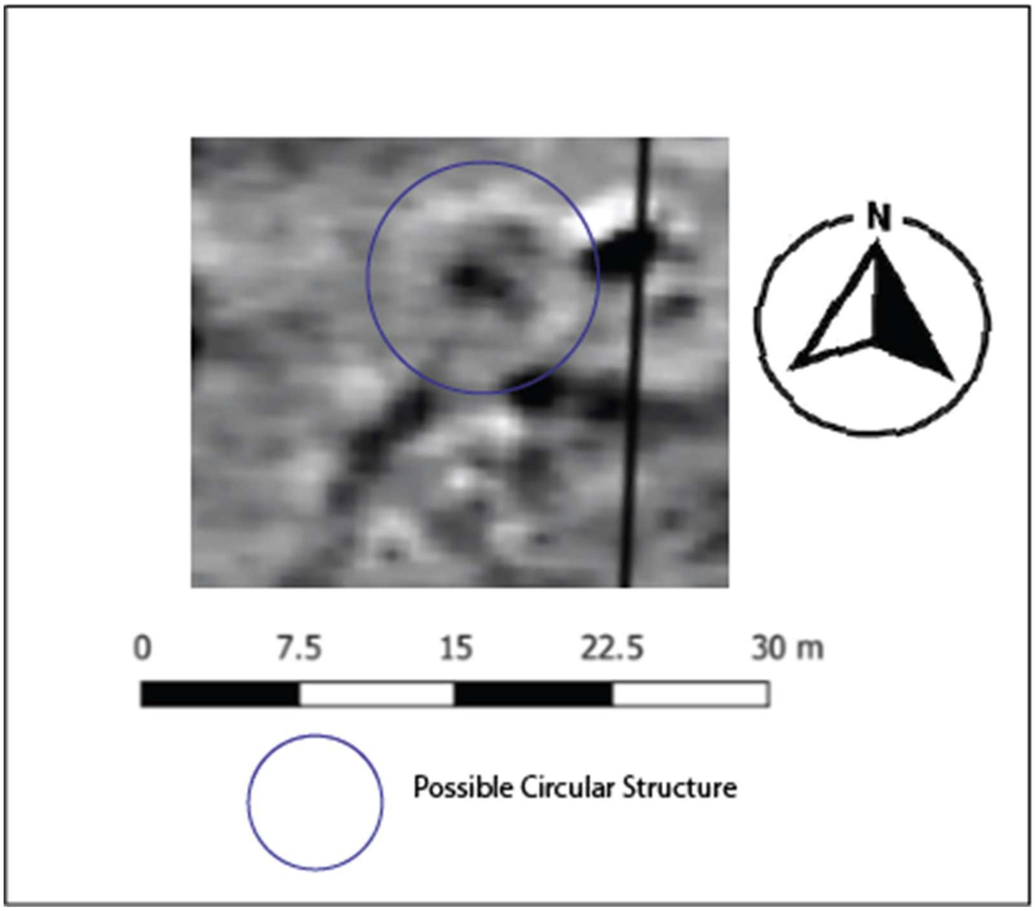


Figure 6-14 Possible Circular Structure

We identified numerous pit features across the site. The southwestern portion of the village, which appears to be protected by colluvium from the adjacent bluffs, shows pit features both within and outside of structures (Figure 6-15 and Figure 6-16). Pit features generally produced measurements from 1-3nT around the site as seen in Figure 6-17.

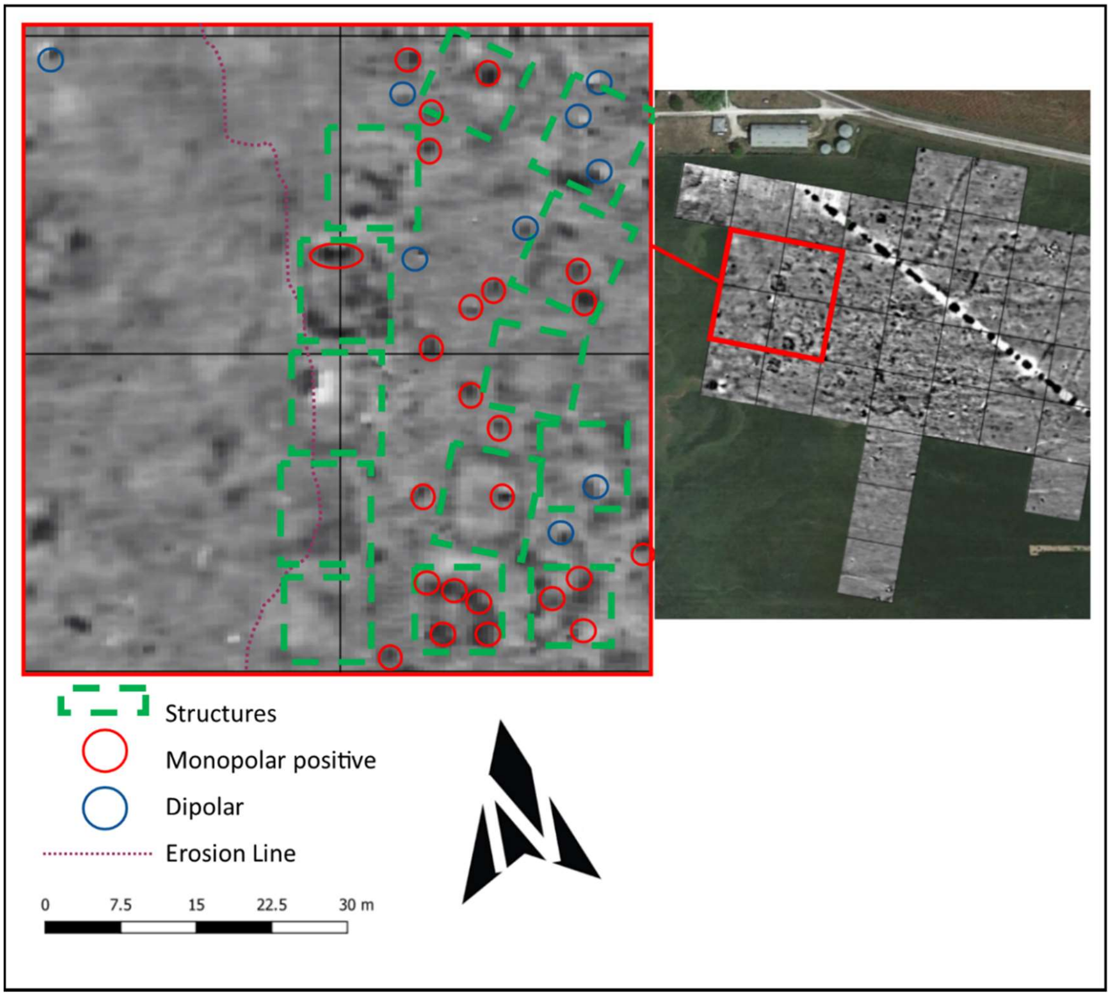


Figure 6-15 Southwestern Houses and Pit Features.

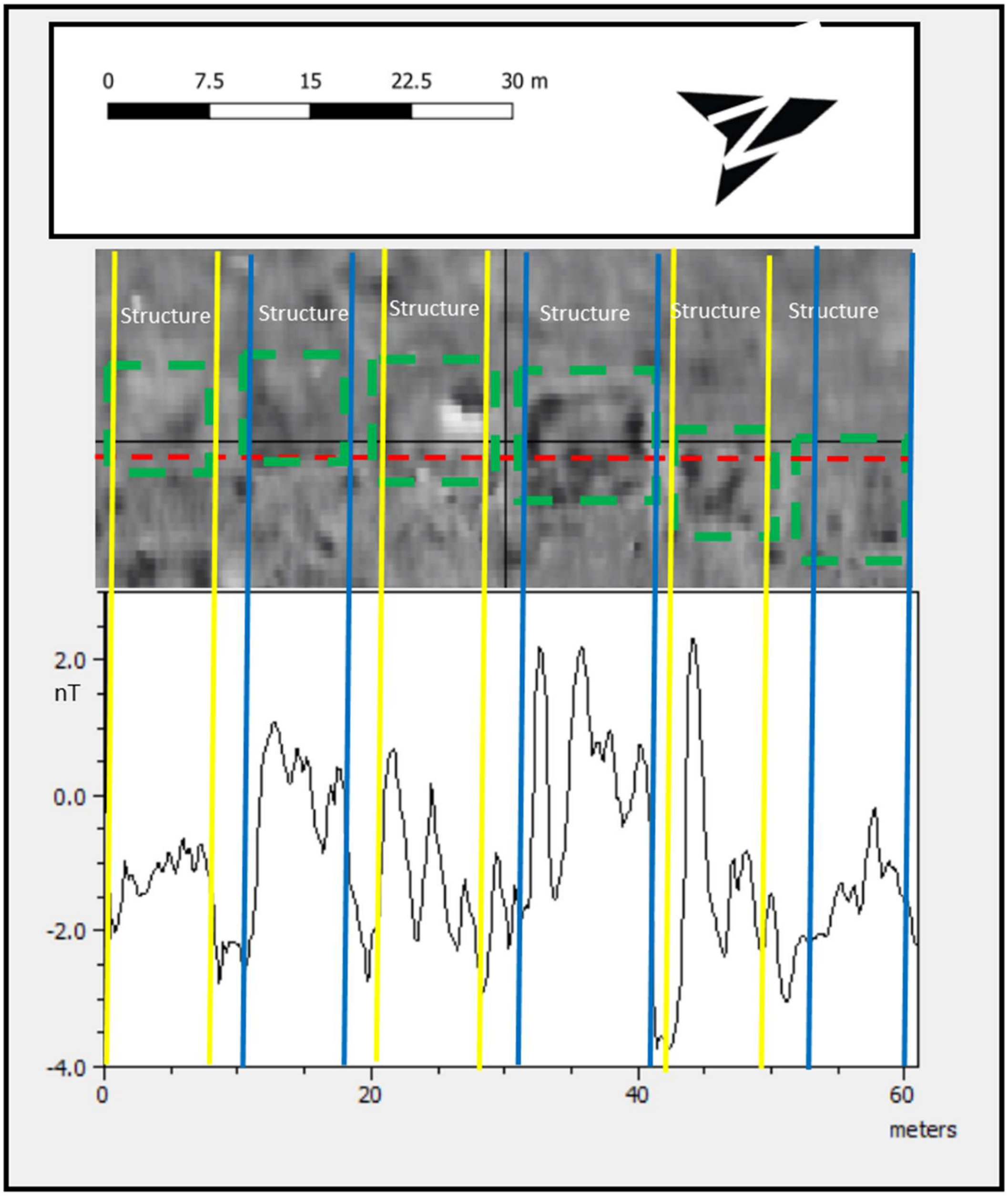


Figure 6-16 Southwestern Portion of Site Houses and Interior Pit features

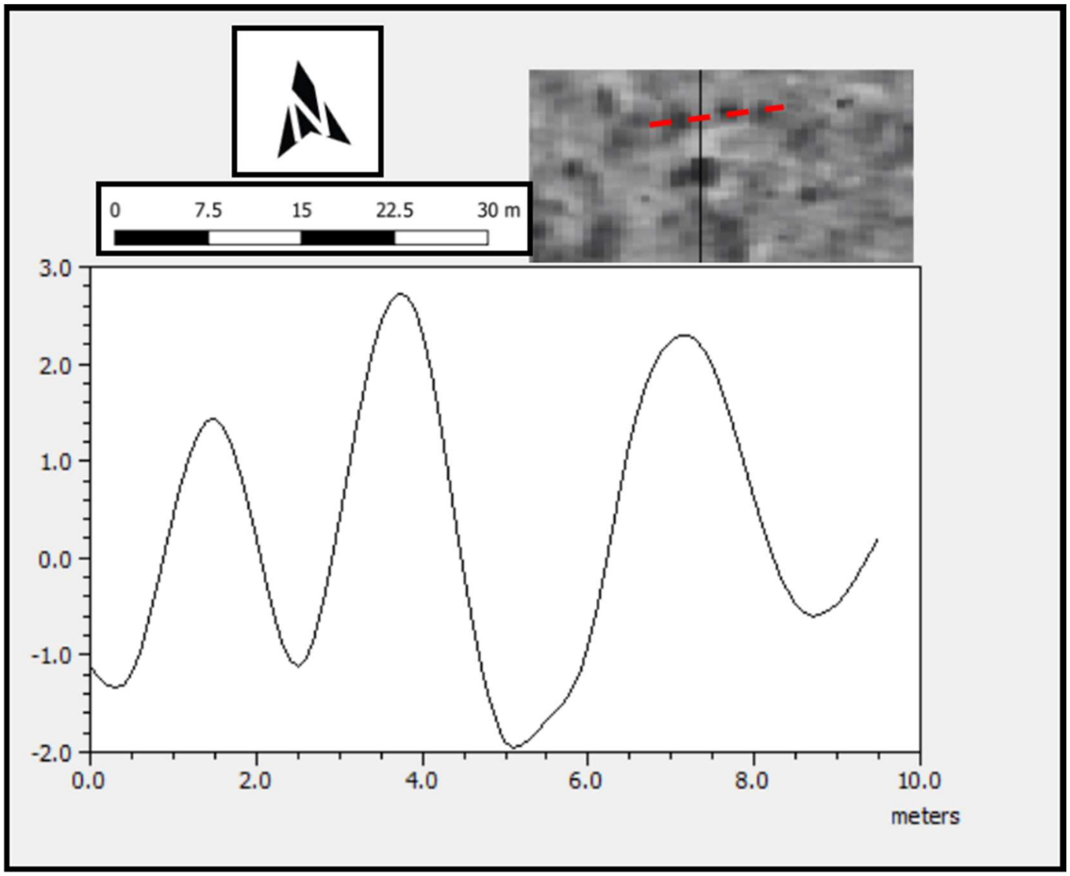


Figure 6-17 Three Pit Features in Southwestern Portion of Site

Additionally, our magnetometry survey located an anomaly consistent with the location of the 1992 WIU excavation (Figure 6-18). As discussed in previous chapters, the WIU excavation materials contain fragmented and incomplete notes (see appendix). Furthermore, in what notes that exist, Emily Blasingham mentions the excavation took place roughly 40 feet west of the road. As the road runs east and west it is likely this estimation was incorrect. According to the notes, the east wall of Test Unit #1 was 4.5 m long, while the north wall was 3 m. Test Unit #3 was the same size as test unit three, while Test Unit #2 was 3.80 m by 5.2 m. A fourth test unit is mentioned, but not described. It is possible that the anomaly highlighted in Figure 6-18 represent WIU excavation block. Regardless, the magnetic signature is consistent with relatively recent digging and backfilling.

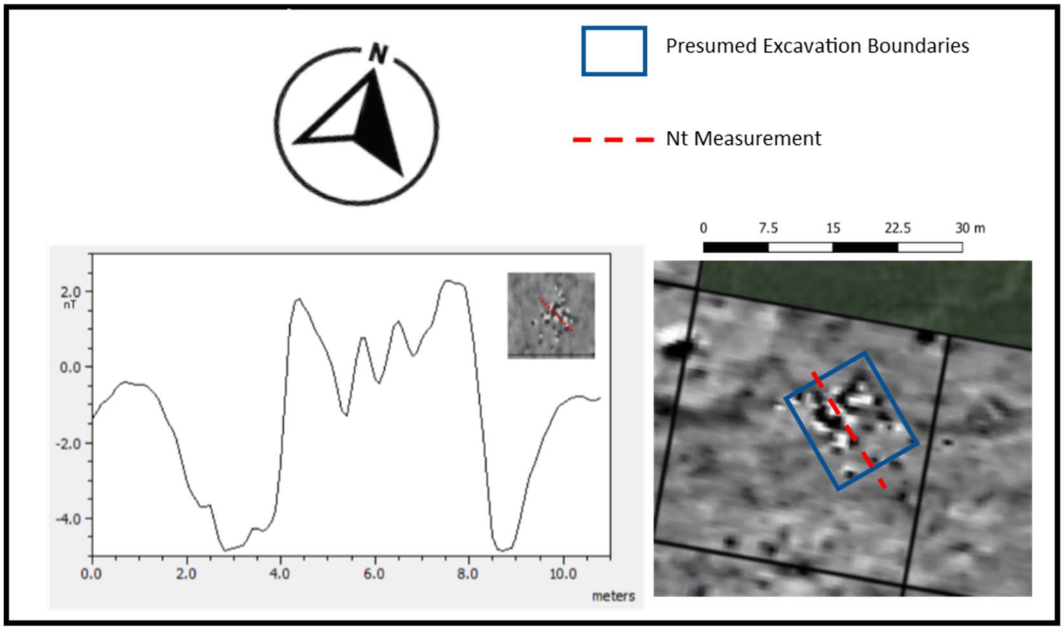


Figure 6-18 Presumed WIU Excavation Block. Note varying positive and negative charges related to backfilling.

Overall, the magnetometry data supplement the extant knowledge on Star Bridge in terms of lifespan and site layout. First, the dearth of cross-cutting features suggest that the village did not exceed the life span of the Mississippian structures. Further, the village conforms with other late Mississippian layouts by not residing on a cardinal grid. Unfortunately, as anticipated, the sub-surface integrity of the site leaves much to be desired and has been impacted in the last two centuries by agriculture, plowing, and subsequent erosion. Fortunately, pockets of buried cultural materials appear to have remained untouched by these historical disturbances. These areas could be targeted by archaeologists in the future, providing an in-depth look at households shortly before regional abandonment. Importantly, a lack of cross-cutting features was identified, suggesting a relatively short occupation life for Star Bridge. Furthermore, a lack of burned structures suggests village abandonment occurred by choice rather than persuasion.

7 Discussion

In this thesis, I have employed a three-prong approach to provide an understanding and synthesis of Star Bridge and Mississippian life near the end of late prehistoric occupation in the central Illinois River valley. The combination of two separate artifactual analyses with my geophysical survey has not only yielded intra-site data, but it has also provided a broad lens into the changing socio-political atmosphere of the 14th century CIRV. My analysis of the 1,465 Hanning Collection artifacts provided a large sample of late Mississippian ceramic wares, tools, and personal items from throughout Star Bridge. While the material culture lack an intra-site provenience, these artifacts provide a cross-section of Mississippian goods from a variety of households, presumably ranging from low to high status in the community. This has enabled an understanding of resource procurement, interaction with Oneota populations, and foodways across the site.

For a more specific look at individual households, my analysis of the 1992 Western Illinois University excavated ceramics from two probable domestic structures at Star Bridge provided details related to everyday activities, such as food preparation and storage. While issues are present within the excavation notes, the minimal number of vessels (MNV) count provided at least some degree of data related to two Mississippian domestic assemblages during the structures' abandonment, namely that all that remained in the structures were large storage jars. This suggests that personal items and valuables were taken by the occupants and not left behind during the previously hypothesized conflagration of the village (*sensu* Conrad 1991).

Finally, my geophysical (magnetometry) survey provided an understanding of the village's internal organization and integrity, revealing that the eastern portion of the site has been destroyed by erosion and modern agricultural activities. My geophysical survey also yielded numerous magnetic anomalies consistent with pit features that the 1978 aerial images did not capture. Synthesizing these results, I am able to introduce Star Bridge into 21st century archaeological literature and prepare a baseline for future investigations into the relatively short-lived occupation of Star Bridge.

7.1 Site Population and Community Organization

As the 1978 aerial image clearly shows, the 6.25 hectares of Star Bridge was laid out in a mostly rectangular format. The geophysical results support this (Figure 7-1), although fewer structures are visible as a result of agriculture and erosion over the last four decades. In all, at least 184 anomalies assumed to be Mississippian structures are noted between the 1978 aerial and magnetometry results. Hypothesizing at least 175 of these structures were domiciles, we can create a rough population estimate for Star Bridge. If we apply parts of Milner (1986) estimation for Mississippian houses based on between four and six individuals living in a structure, we can arrive at a Star Bridge population estimate between 700 and 1,050 (Table 7-1). This number is conservative, as multiple structures probably lie under the current farm and barn, as well as to the North, where deep plowing did not occur at the time of the 1978 aerial image. Furthermore, it is unknown how many structures were utilized as public buildings, further complicating my estimate.

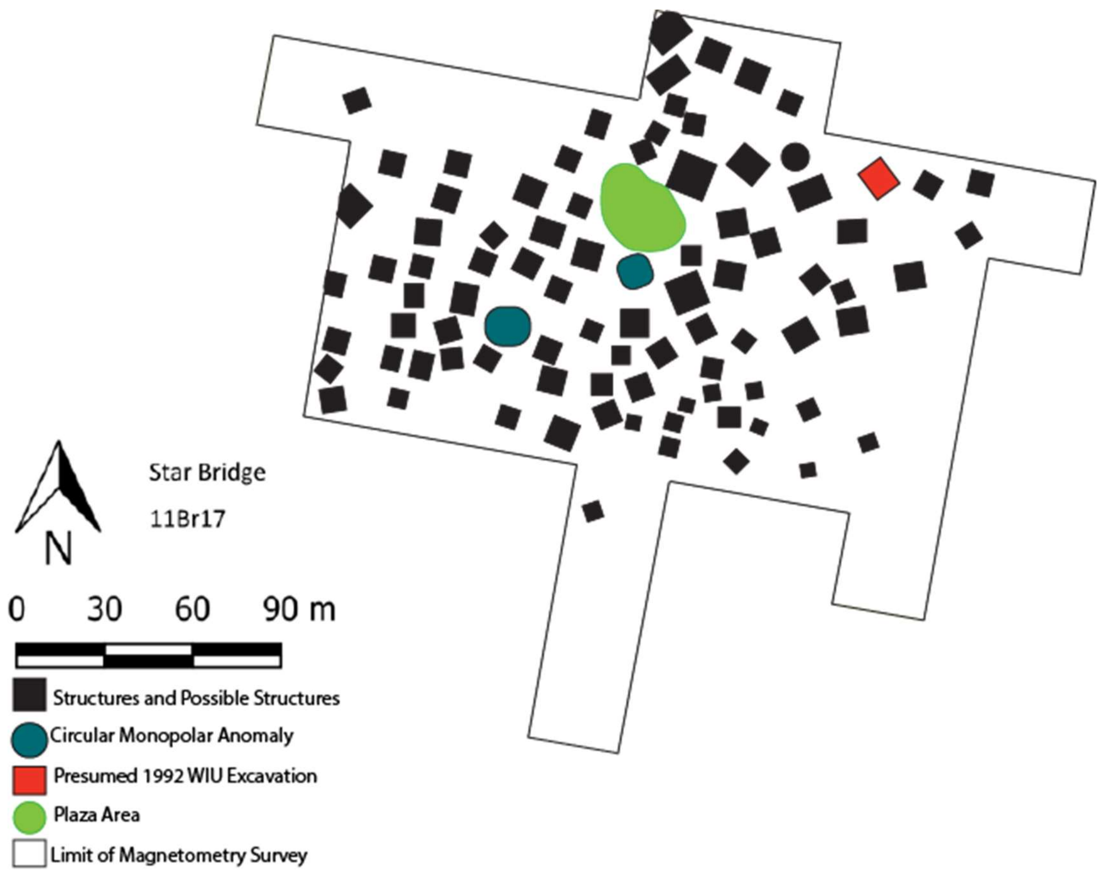


Figure 7-1 Star Bridge Feature Map

Table 7-1 Estimated Site Population
(Based on 175 domiciles)

Structures	PPH=	Site Population
175	4	700
175	5	875
175	6	1,050

**PPH= population per house*

The 1978 aerial images and my geophysical survey has revealed that houses and other structures were generally aligned in north-to-south rows (Figure 7-2), with walkways also running north-south in adjacent spaces. These structures were relatively close to each other, generally less than 6 m east-to-west and 3 m north-to-south. The presence of the two circular monopolar anomalies were the only other features detected during the geophysical survey besides pit features and square-to-rectangular structures. The largest buildings in the village surrounded a central plaza, providing a space for exchange and community making.

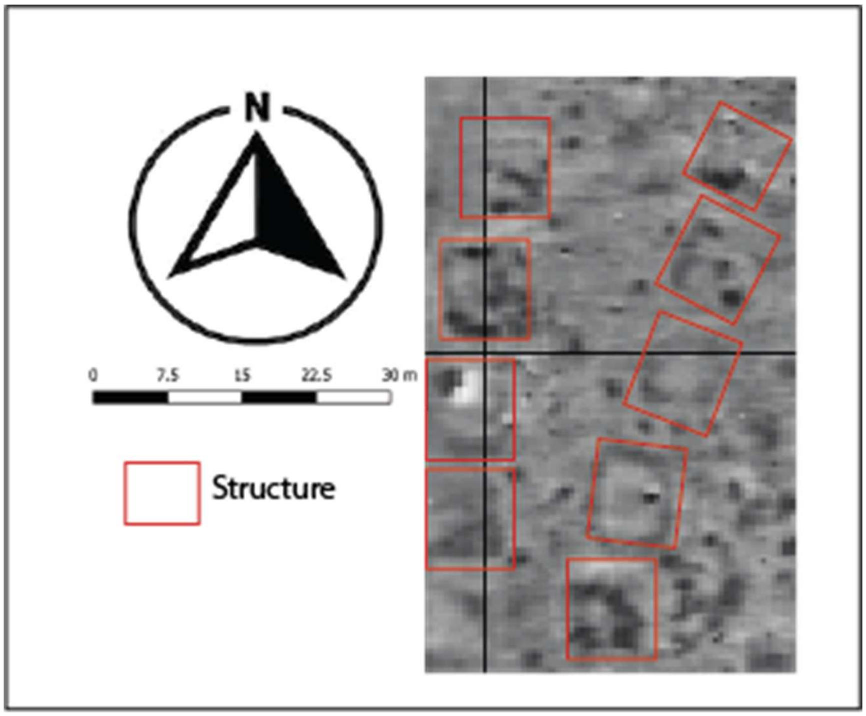


Figure 7-2 Rows of structures arranged in north to south running streets.

Interestingly, while Star Bridge is one of the largest Mississippian villages in the valley, the site departs from other similarly sized towns. For one, there is no evidence of a platform mound(s) that fronted the centrally located plaza. This is perplexing as the plazas and platform mounds are understood to occur in tandem at many Mississippian sites in the lower Midwest and Southeast, reflecting both a place for both ceremony and economic exchange (Lewis et al. 1998). While one would not expect to see a plaza or platform mounds at smaller Mississippian farmsteads, Star Bridge was a sizeable village.

Many sites containing mounds and plazas in the CIRV are only half the size of Star Bridge. Further, nearby sites such as Walsh, Vandeventer, and Crabtree all appear to represent complexes consisting of floodplain villages, blufftop villages, and earthworks on the bluff and bluff slopes. As Star Bridge is not associated with any other village or earthwork, it appears to be somewhat of an anomaly relative to other nearby villages. This may allude to the possibility that Star Bridge was part of a larger 14th century settlement system where certain tasks, such as defense or exploitation of riverine resources, explain the layout and configuration of the community.

Finally, the magnetometer survey failed to find evidence of fortifications. This was not surprising, as only a large palisade with deep posts and trenches would be present in the gradiometer data, especially given the agricultural disturbances on the eastern side of the site. However, the presence of a rectangular midden on the 1978 aerial suggests at least some degree of a physical barrier, possibly a small stockade or even thorn bushes. Future large-scale excavations, including mechanical stripping of the plow zone, has the potential to reveal a defensive feature(s) in the western portion of the site.

Even with questions remaining about site's defenses, several important conclusions can be drawn about the community's organization. First, the village is not aligned to a specific azimuth, unlike the early Mississippian villages in the valley (*sensu* Friberg et. al 2019). Secondly, the village certainly was an aggregated community unlike contemporary villages to the south, such as the sprawling complexes of Walsh, Crabtree, and Vandeventer. Lastly, while the village certainly contained a handful of suspected special-use buildings, village construction appears to have been more pragmatic than ceremonially focused.

7.2 Ceramic Assemblage

The Star Bridge ceramic sub-assemblage is dominated by jars and plates, and supplemented with a smaller number of bowls, beakers, pinch pots, and pans (Figure 7-3). Not unlike current Euro-American kitchens, jars serve primarily as storage vessels, while serving wares, such as plates or bowls, were used for the presentation and consumption of food. The general midcontinental trend in Mississippian ceramic wares studies shows a gradual shift in the ratio of serving vs. utility wares from the Late Woodland through the late Mississippian periods. Early Mississippian domestic assemblages contain a dearth of serving ware, with ceramic assemblages dominated by storage and cooking jars. As public feasting becomes more important, greater numbers of plates are recovered within domestic assemblages (Pauketat et al. 2002). Diagnostic plate rims make up over 30% of diagnostic rim sherds from the Hanning Collection (Table 7-2). Within the two structures excavated by Western Illinois University, six of the 11 vessels (55%) represent bowls or plates. With these data, the Star Bridge assemblage is comparable to existing late Mississippian assemblages, where serving-ware becomes increasingly more important. Furthermore, with the exception of one shell/grit tempered plate sherd from the WIU excavation, all sherds were shell tempered. Importantly, vessel types such pans and the shell cup show some degree of interaction with the American Bottom.

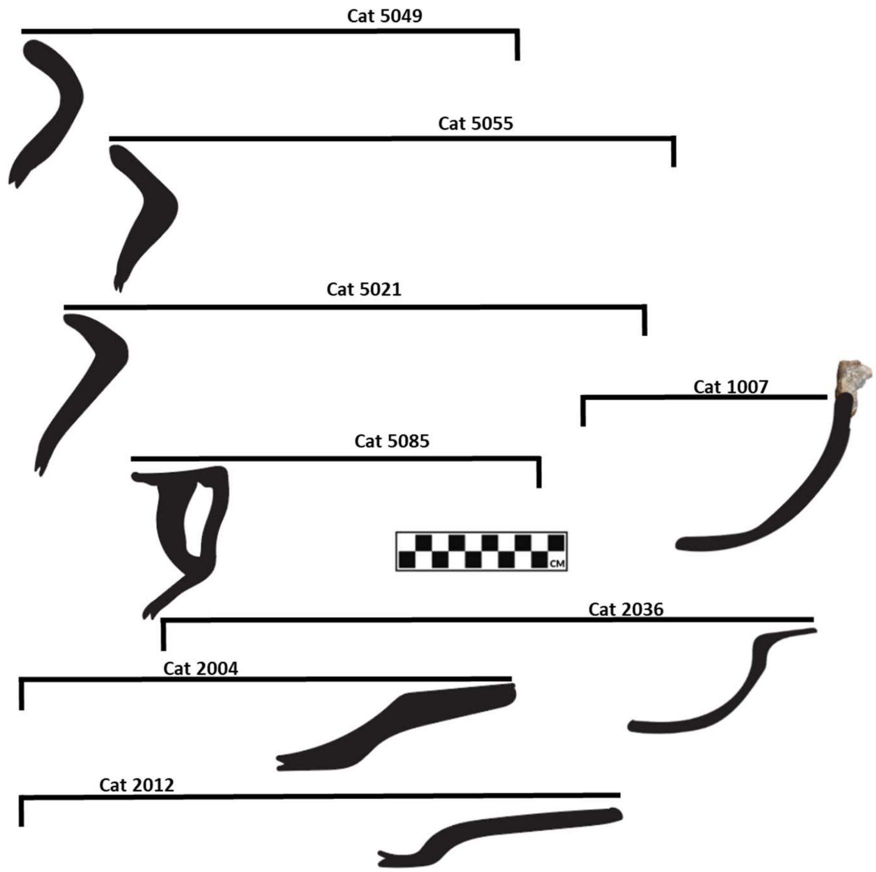


Figure 7-3 Selected Vessel's Profile and Diameters

Table 7-2 Hanning Collection Diagnostic Rims

Vessel	n	%
Plate	45	31
Jar	86	61
Bowl	3	2
Beaker	3	2
Small Jar	3	2
Salt Pan	2	1
Total:	**142**	

The decoration of the Star Bridge ceramics is also comparable to other Crable phase Mississippian sites, though lacking any evidence for Bold Counselor Oneota design elements or influence. 92% of the jars recovered from the Hanning Collection were undecorated besides cordmaking. Only three jars exhibited shoulder trailing and an additional three displayed rim notching consistent with Conrad (1991) and Harn’s (1978) notions that shoulder decoration was more common in the northern portion of the CIRV. In terms of the plates, the majority were broad-rimmed and contained line-filled triangle designs, as well as some sunburst and cross-hatching motifs. Other than these, several sherds exhibited decorative attributes that are under-represented in the current literature (Figure 7-4). The most common example within the Hanning Collection was the white/gray slip on some of these vessels. Around 6% of the jars (all displaying lugs) and 10% of the plate sherds had been slipped in this white clay mixture after they had been fired. In addition to the white/gray slipped vessels, a single ceramic shell effigy cup displayed small nodes protruding from the vessel’s walls. Importantly, these vessels are somewhat common in the American Bottom in Moorehead and Sand Prairie phases, during the decline and abandonment of Cahokia (Kozuch 2013). Lastly, a rim displaying intricate incising was identified that would better fit within Southeastern Ceremonial Complex (SECC) assemblages as it appears it represent a fish effigy jar, not unlike ones recovered from Moundville.

Figure 7-4 Under represented Decorated Ceramics: A-B: White/Gray Slip on Jars; C-D: White/Gray Slip on Plates; E: Southeastern Bowl Rim; F: Ceramic Shell Cup Effigy

The 46 rim effigies from the Hanning Collection and single effigy from the WIU structures highlight the importance of these zoomorphic expressions during the later Mississippian period. Effigies are relatively common throughout the Mississippian sphere, and substantial assemblages exist elsewhere. Duane Esarey (personal communication 2017) suspects that rim rider effigies are more common in the latter half of the Mississippian occupation in the midcontinent, largely due to their increase in frequency at Cahokia after the American Bottom's Stirling phase. The rim rider effigies that presumably served as rattles would have complemented plates in feasting rituals, adding a distinct sound while contents of these bowls and jars were being moved. Further, the presence of a ceramic shell cup effigy shows a connection to late Cahokia and the American Bottom (Kozuch 2013), which is surprising as Star Bridge existed after the decline of Cahokia.

The Star Bridge ceramic assemblage shows strong similarities in both metric and non-metric attributes to Walsh, Vandeventer and Crabtree's floodplain village (*aka* Baehr

South). Cord-marked utility jars, plates adorned with line filled triangles and sunbursts for public feasting, and beakers with symbols of the Mississippian cosmos possibly filled with the caffeinated black drink (Crown et al. 2012) cement the relationship between these sites. Until more extensive radiocarbon dating exists, a refined temporal serration cannot take place.

While the Hanning Collection provided a wide survey of Star Bridge ceramics, the analysis of ceramics recovered from the two structures excavated by Western Illinois University presents at least a small window into specific late Mississippian households. Though the 1992 excavation appears to have been conducted less than systematically, enough data were available to reconstruct the excavation materials, so a more scientific analysis could be completed. Importantly, as the location of this excavation was likely revealed during my geophysical survey, we now know that these two households were located significantly outside of the central portion of the village (to the northeast), likely alluding to non-elite households as opposed to ones that figured prominently in the socio-political dynamics of the community. Between the two structures, three cord-marked jars, four plates, two bowls, a miniature jar, and a salt pan were recovered. Importantly to this thesis, only the jars appear to represent complete vessels. The bowls, plates, and other smaller vessels are incomplete (i.e. less than 50%). This suggests that while the structure's occupants had time to remove valuables from the structure, they may have had to leave large storage jars and old broken pottery pieces they were utilizing behind. This suggests the village was abandoned relatively quickly, only taking valuables and essentials. Even on the low end of our above population estimate, 700 people abandoning a village quickly suggests some degree of a perceived or real threat.

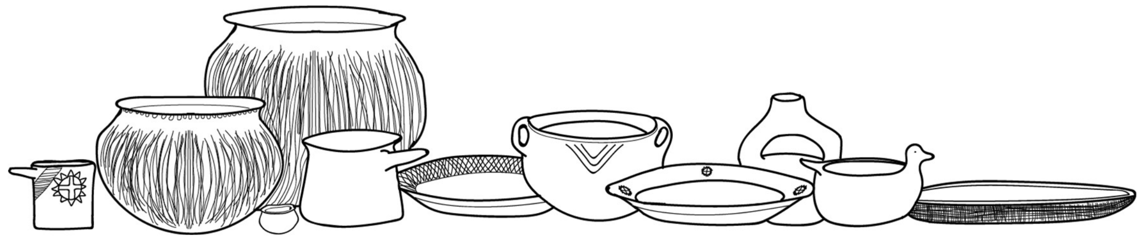


Figure 7-5 Hypothesized Star Bridge Household Ceramic Assemblage

7.3 Lithic Assemblage

The Hanning Collection contained some 548 artifacts weighing over 4000 g representing the flaked stone industry at Star Bridge. Of these, 52 artifacts represent debitage and an additional 32 items represent expedient flake tools (i.e. flake with re-touch). The remaining 464 specimens represent formal tools. Unsurprisingly, the assemblage is dominated by Burlington chert, and supplemented by other locally available stone, such as La Moine River chert. Overall, the lithics from Star Bridge can be described as a prototypical late Mississippian assemblage, with the emphasis of formal tools alluding to low-settlement mobility and specialized industries, such as the butchering of carcasses and farming. While Mississippian lifestyle focused on agriculture, the numerous end and side scrapers, as well as projectile points in the Hanning Collection, are testament to the importance of animal hunting and processing and would have provided Star Bridge with a valuable export in the form of deer hides.

The projectile points themselves follow the trend seen at other CIRV sites, displaying a wide range of morphological expressions. While the majority are un-notched triangular Madison style points, roughly a quarter are notched Cahokian style projectile points. The large assemblage of arrow points represents two separate points. First, sampling bias, because collectors' eyes are drawn to tiny stone triangles and would pick one up before a flake. Secondly, arrows would have been a necessary tool both for hunting and warfare.

While Burlington was the preferred raw material choice, probably because of a combination of workability and accessibility, the presence of Mill Creek artifacts (Figure 7-6) suggests that trade certainly existed after the American Bottom's 13th century population decline. Interestingly, outside of the complete Ramey Knife, Mill Creek artifacts at Star Bridge appear more adze-like than hoe-like in morphology. The only hoe within the collection is made of Burlington chert, not Mill Creek. Other nearby 14th century La Moine River sites, such as Vandeventer, Crabtree, and Walsh, have all yielded numerous Mill Creek bifaces, including a series of dance swords from Vandeventer (Esarey Personal Communication 2019). Regardless, the presence of Mill Creek chert at Star Bridge tells us that the chert trade was still active in the CIRV during the mid-14th century, especially south of the Spoon River/Oneota areas. Given the large number of scrapers and arrow points, it seems likely that the pelt trade was the primary trade item to procure the Mill Creek.

Figure 7-6 Mill Creek Bifaces. A: Ramey Knife; B-D: Ground Celts/Chisel E: Indeterminate Biface

7.4 Faunal Assemblage

The faunal collection is comparatively small in the Hanning Collection, making up only 2% of the assemblage in terms of artifact quantity. Anthropogenically modified bones include a series of bone awls, a bone ring or bead, a fishhook, and a single socketed bone projectile point. Positive taxonomical identification has not been made on all of the faunal artifacts, but tools appear to have been produced from a broad spectrum of different species, including white-tailed deer and catfish.

7.5 Settlement Subsistence

Star Bridge food procurement was likely broad-based (Figure 7-7), anchored around maize agriculture, but supplemented by hunting, fishing, and foraging. With a broad-based strategy, Star Bridge would have been poised to weather unproductive agricultural years by instead supplementing calories from both aquatic and terrestrial species, as well as from other foraged flora. For example, the presence of both fishhooks and net weights show that multiple strategies were used to procure different aquatic species. Depending on the resources desired, specific items were crafted to procure and process them. Flexible strategies would have been immensely important during the Crable phase as precipitation patterns shifted to favor drier growing seasons by the mid-14th century (Bird et al., 2017). With an overall lower population, Star Bridge and the rest of the CIRV were more resilient than regions more densely populated, including the American Bottom.

Figure 7-7 Broad-based subsistence strategy. Artifacts associated with Farming, Hunting, fishing and nut-foraging.

7.6 Star Bridge and the Late Mississippian Central Illinois River Valley

One of the more interesting comparisons between Greater Cahokia and the central Illinois River valley is the time-transgressive relationship of latter with the former, which potentially included migration from the American Bottom to the Illinois Valley during the 13th and 14th centuries. The Mississippianization of the central Illinois River valley occurred with decades of interaction with Cahokian peoples and ideas. However, after two centuries, Cahokia and the American Bottom became de-populated due to a combination of factors related to climate change (Benson et al. 2009). While the American Bottom influenced the Mississippianization of the CIRV around AD 1050, CIRV Mississippians outlasted their southern neighbors in terms of village construction and material culture record.

Star Bridge was potentially one of the last sizeable Mississippian communities in the central Illinois River valley. Unfortunately, a dearth of radiometric dates exists for other Crable phase sites, so Star Bridge's exact temporal relationship with other late Mississippian communities in the valley is unknown at this time. It seems likely that Star Bridge was part of the La Moine River polity, supplementing Lawrenz Gun Club and the three temple-towns farther to the south: Walsh, Crabtree, and Vandeventer. While existing radiometric dates and relative dating of artifacts place Star Bridge and these other sites in the post-migration timeframe, their exact chronology is not well understood. For one, we are unsure of how long Lawrenz Gun Club remained occupied during the 14th century. Sunburst motifs and two surface collected Oneota jar rims (Duane Esarey Personal Communication 2016) suggest occupations into the 14th century post-Oneota migration, but exact site abandonment remains an enigma. Meanwhile, we know mound construction at Walsh occurred between the late 13th and early 14th centuries (Wilson et al. 2019), Crabtree was occupied post-AD 1300 (Upton 2019), and the Vandeventer ceramics appear to bridge the same horizon (Figure 7-8 and Figure 7-9). Effectively, the La Moine polity appears to form post AD 1250, either concurrent with or slightly before the influx of Bold Counselor Oneota and during the waning days of Cahokia and the American Bottom.

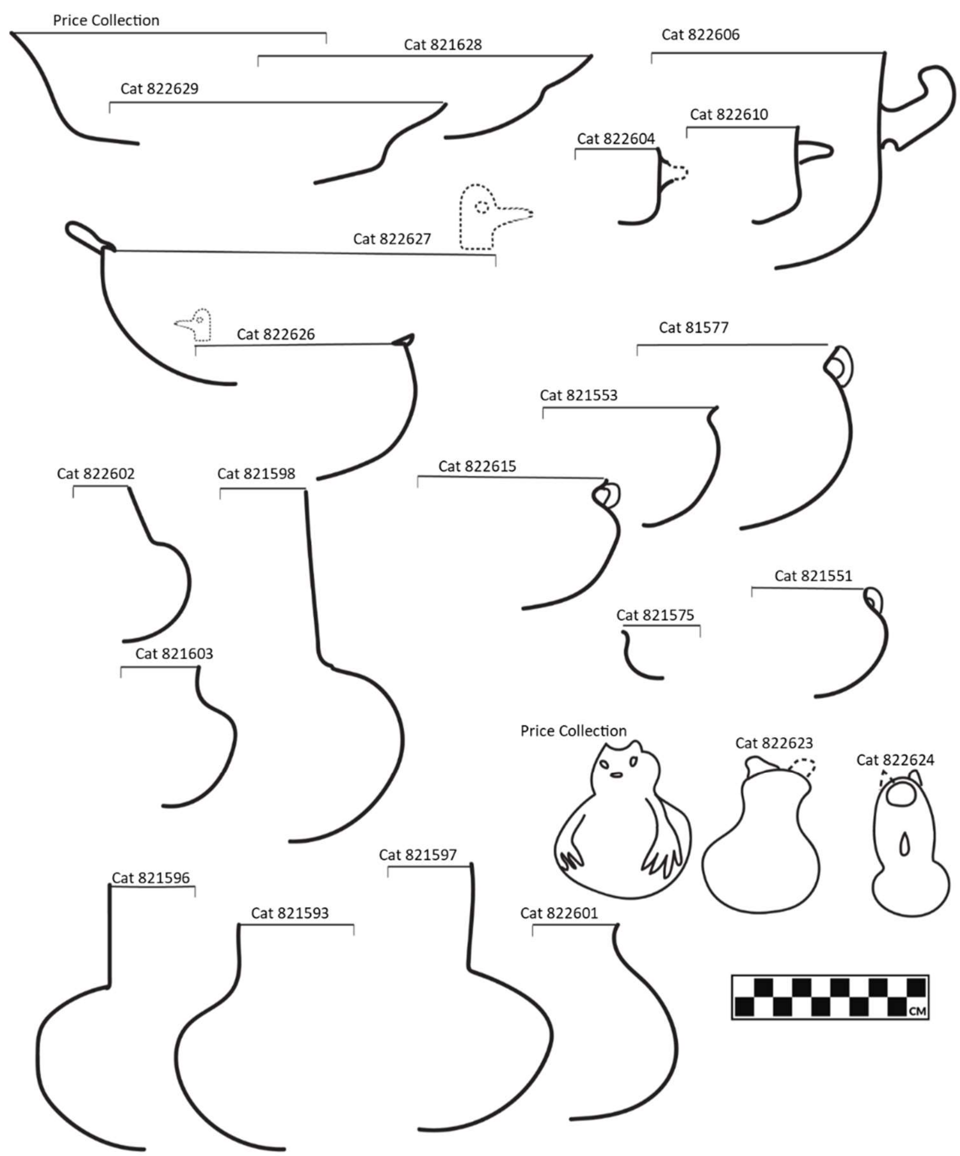


Figure 7-8 Vandeventer Vessel Profiles and Diameters

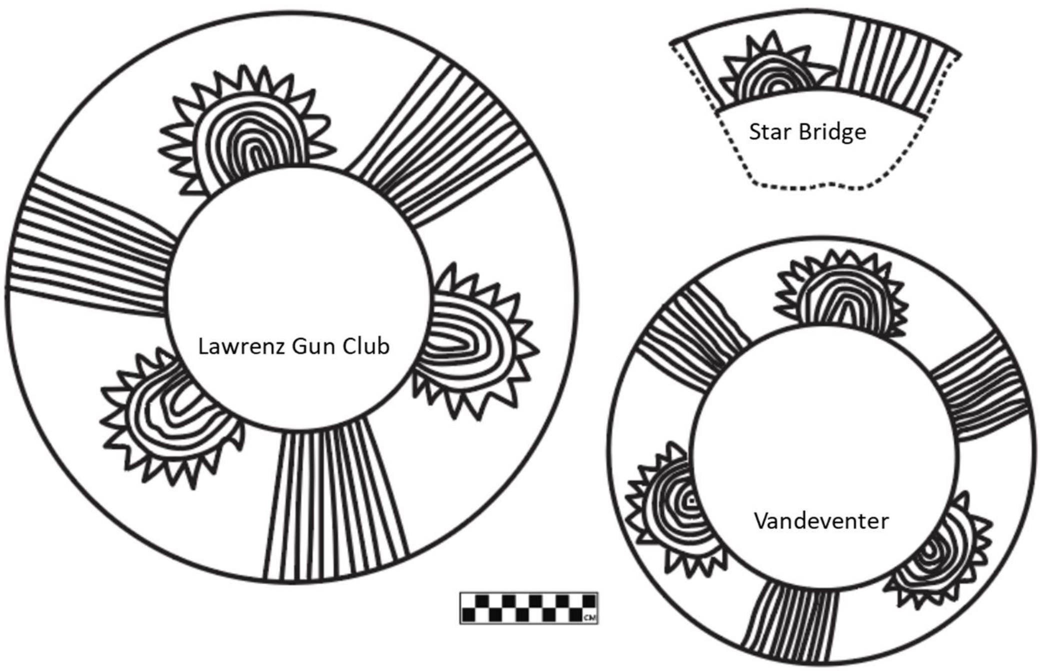


Figure 7-9 La Moine Polity Plates

Given the Oneota migration into the valley around AD 1300 and the dearth of Oneota-wares at these southern villages, I hypothesize that Mississippians underwent a political reorganization in the southern portion of the valley, residing on the western floodplain and blufftops along the Illinois River from the La Moine River in the north to McKee Creek in the south, creating a potential buffer zone to minimize interaction with Oneota populations (Figure 7-10). Further, it is possible that immigrants from Cahokia, possibly returning to their ancestral homeland, populate the western bluffs of the Illinois River south of Lawrenz (Duane Esarey personal communication). In terms of Cahokian migrants, Lawrenz may have seemed more Cahokia-like than sites farther upstream, providing a sense of familiarity during a potential diaspora-like event. This perhaps explains Walsh, Vandeventer, and Crabtree in terms of their layout. All three sites represent numerous complexes and villages clustered around mounds, somewhat consistent with Moorehead phase upland sites in the American Bottom (*sensu* Buchanan

2020). Star Bridge does not fit this pattern however, as it is a singular aggregated village, much like Lawrenz. It is possible the La Moine polity represents a mixture of *in situ* Mississippians associated with Lawrenz, and Cahokian migrants moving up the Illinois River. Star Bridge and the rest of the La Moine Polity's exact cultural and political relation with Oneota populations remains an enigma. Clearly, the La Moine Polity sites were occupied concurrently with the Spoon River/Bold Counselor peoples to the north. Warfare does not seem likely beyond small-scale raiding, as our best evidence of fortifications remains the sharp drop off in Star Bridge's midden seen in the 1970's aerial. However, the lack of Oneota artifacts suggests some degree of resistance to Oneota lifeways, and a clinging to of what was imagined as "Mississippian."

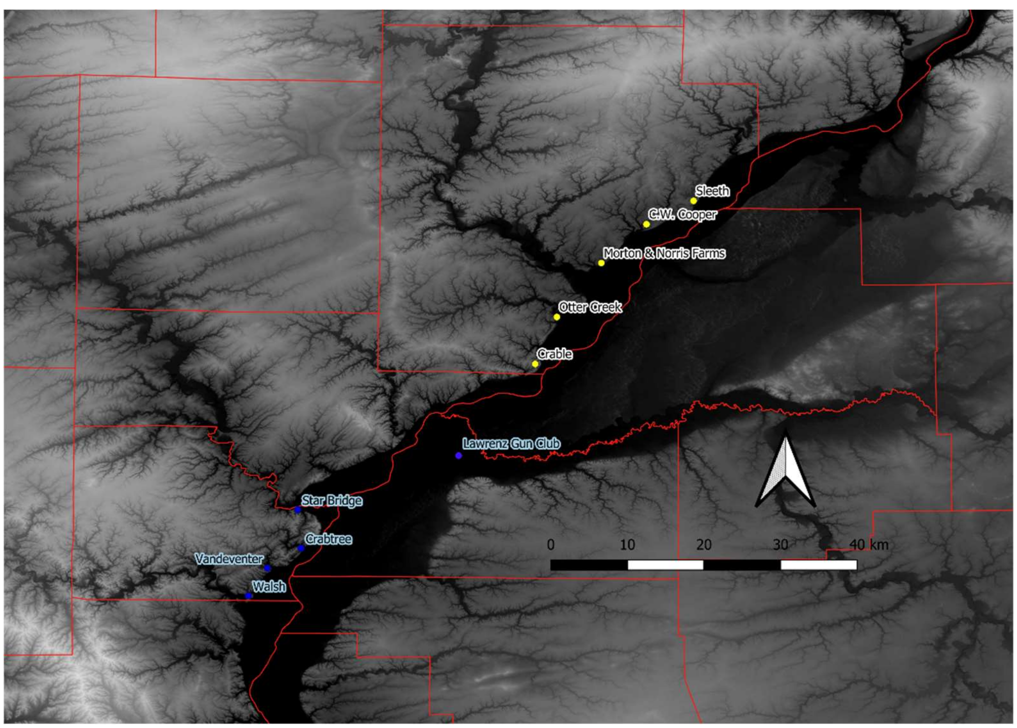


Figure 7-10 Post Migration La Moine (Blue) and Spoon River/Bold Counselor (Yellow) Centers

Pragmatically, my analysis seems to indicate Star Bridge was established quickly and then abandoned with comparable rapidity. We see a village that was not destroyed in conflagration, but one that was abandoned with a potential sense of urgency. Theoretically, the implications of this thesis seem to bolster existing scholarship (Milner 1995; Milner et al. 1991; Milner and Ferrell 2011; Santure 1990; Upton 2019; VanDerwarker and Wilson 2016; Wilson 2012; Wilson 2013) that concludes an uneasy, yet murky geopolitical setting during the 14^{th} century. Star Bridge was the first line defense between two zones of competing ideologies and lifeways during a time of unpredictable growing seasons. Villagers at Star Bridge appeared to develop broad-based food strategies that mitigated the effects climate change, but by the mid-14^{th} century something forced them to abandon their homes, only taking valuables. Given evidence of both Oneota and Mississippians perishing from small-scale warfare (e.g., Morton and Crabtree), it seems plausible that the perceived threat of violence led villagers at Star Bridge to abandon their village and what was a successful habitation.

8 Conclusions

This thesis served to examine if Star Bridge villagers had any contact with their Oneota neighbors to the north, illuminate community organization and site boundaries, and assess the integrity of the site after two centuries of agriculture. Above all, this thesis strived to re-introduce Star Bridge into 21st century archaeological scholarship while contributing data for larger macro-level regional studies. As a result of data collected, several conclusions can be drawn from the three-part investigations into Star Bridge.

First, the material culture assemblages suggest that Star Bridge villagers had little, if any, contact with their Oneota neighbors upstream on the Illinois River. A single socketed antler point remains the best evidence of Oneota interaction, and this is circumstantial at best. No Oneota motifs were present on ceramics, which would have made the strongest case for material exchange or cohabitation. Furthermore, while warfare cannot be discredited, Star Bridge does not appear to have burned down as previously thought, although future excavation is needed to provide ground-truthing. While warfare could have been a contributing factor to village abandonment, no evidence currently supports this theory. However, my analysis of the WIU materials indicates the villagers abandoned their homes with valuables but left large storage jars in place, suggesting the village was abandoned somewhat quickly.

Secondly, my geophysical investigations not only show Star Bridge likely never burned, but that the community organization sets Star Bridge apart from other Mississippian villages in the valley. Star Bridge is the only sizeable village in the valley that lacks monumental architecture such as platform mounds. Besides numerous assumed pit features, the only non-domestic household features noted are the two circular monopolar anomalies and a single circular structure. With this in mind, Star Bridge appears to be a village laid out and abandoned relatively quickly, with houses in rows and a dearth of cross-cutting features exhibited in both the magnetometer data as well as the 1978 aerial image.

Lastly, while historic agricultural modification provided us with some degree of knowledge about the site between upturned material culture and the 1978 aerial photo, it also had adverse effects on the integrity of the site by removing cultural sediments from portions of the site. While much of the eastern portion of the site appears to have been largely plowed away, the western portion of the site is relatively intact and available for future research and excavation.

Importantly, this thesis only provided a preliminary analysis into Star Bridge. Future analysis should be considered, including further investigation of the previously recovered cultural material. A future lithic use-wear analysis and a more in-depth analysis of the faunal material may provide more substantial data on life in the CIRV shortly before the abandonment of the region. Furthermore, while the southern, eastern and western boundaries of the site are relatively known, the northern margin of the site remains undocumented, and it is possible it extends farther to the North across the current-day road. Houses identified as part of this thesis could also provide useful data for future archaeological excavations, and their presence should be considered before further agricultural disturbances take place.

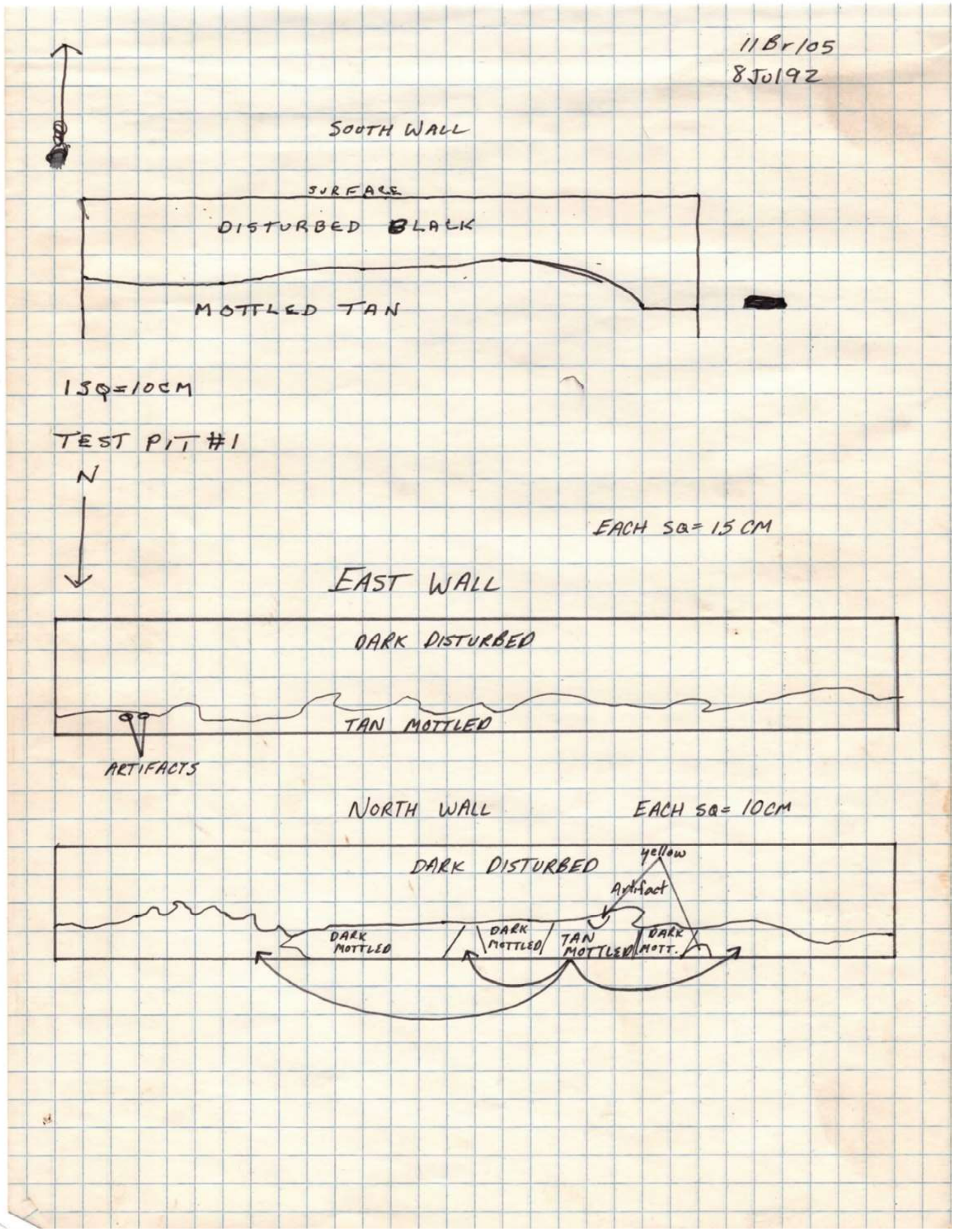
The southern portion of the central valley appears to represent a political complex of no less than five major Late Mississippian villages and mortuary centers. Star Bridge, Lawrenz, Vandeveter, Crabtree, and Walsh. As only scattered data exists from these, it is currently impossible to provide a regional level analysis. Currently, analyses like mine only provide case-studies on individual sites. Only through future investigation of these sites can we begin to decipher what political and environmental shifts were transpiring during the 14th century in the central valley at the macro-regional scale, therefore providing context for the existing data archaeologists have already collected. In regards to Star Bridge, this thesis has provided an investigation into what may have been the last large Mississippian floodplain occupation in the valley. While only mentioned sporadically in existing literature, we now know that the over 175 structures that make up Star Bridge were occupied at about the same time, making it one of the larger villages in the CIRV, eclipsed by only Lawrenz Gun Club. The lack of monumental architecture (i.e., mounds) may signify Star Bridge residents were more concerned with pragmatic aspects of daily life such as resource procurement and safety rather than ritualistic traditions. Motivated by easier access to fertile land and riverine resources, the inhabitants of Star Bridge located the village within an ecotonal environment. The broad-based subsistence procurement strategy employed by Star Bridge inhabitants provided a constant supply of calories, even during non-productive agricultural seasons or a bad hunting season.

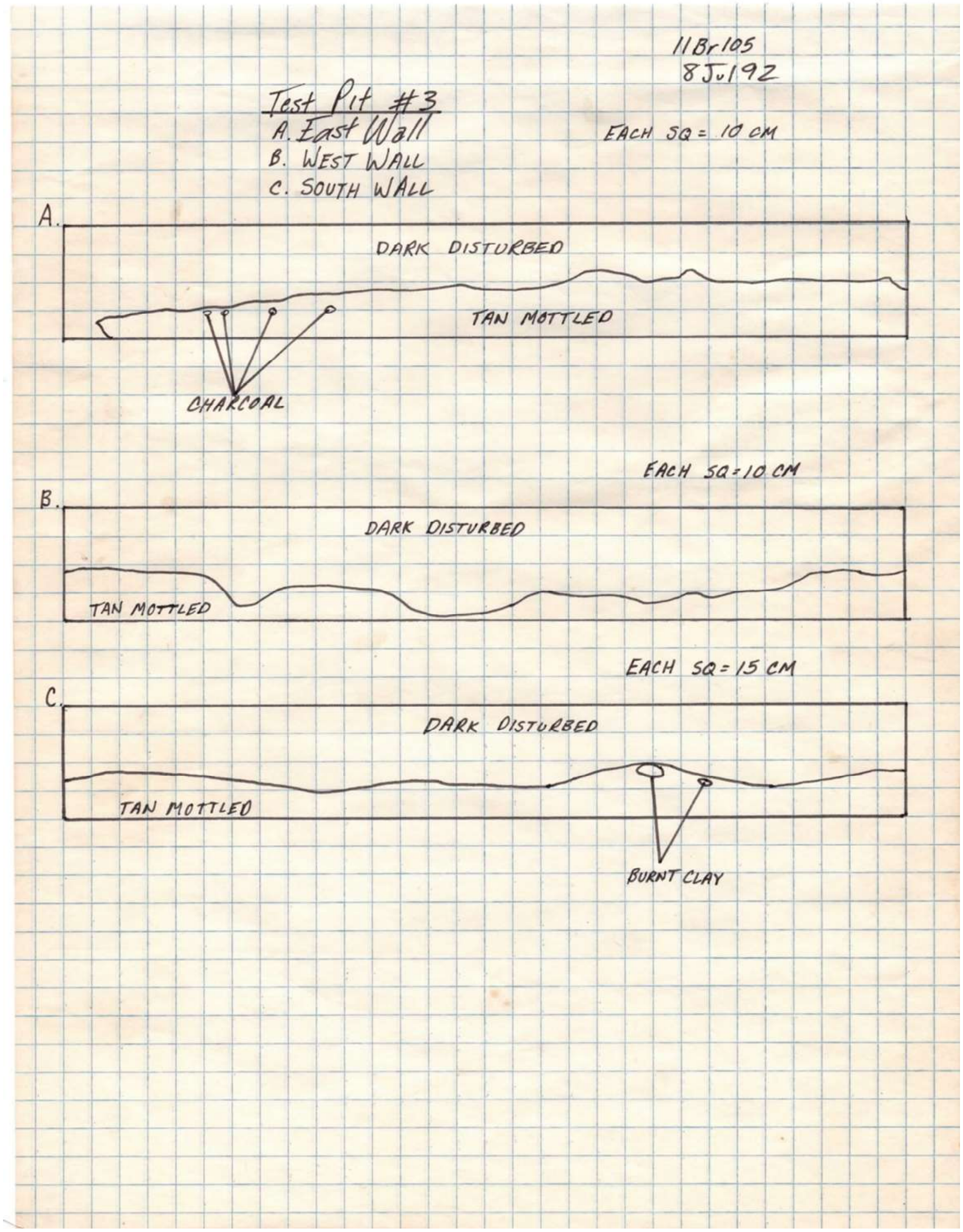
In summary, Star Bridge was a large Mississippian village located on the La Moine River floodplain roughly three miles west of the La Moine's confluence with the Illinois River. Star Bridge existed for a generation or two at the end of the Mississippian occupation in the valley during a time of political and climatic shifts. Although short-lived, Star Bridge maintained access to exotic goods such as Mill Creek chert from southern Illinois and shared ideas, such as ceramic motifs linked to the southeastern ceremonial complex. In regard to their northern neighbors, there is no direct evidence to link the abandonment of Star Bridge to warfare at the hands of the Oneota or other regional groups although it appears villagers abandoned the site quickly. The lack of Oneota motifs on any Star Bridge vessel suggests a lack of co-habitation or prisoner taking. While some mixture of strife and peaceful cohabitation was occurring in the central valley during the 14th century, it is likely that the short-lived village of Star Bridge was abandoned for reasons other than strife with neighbors- namely climatic shifts resulting in droughts.

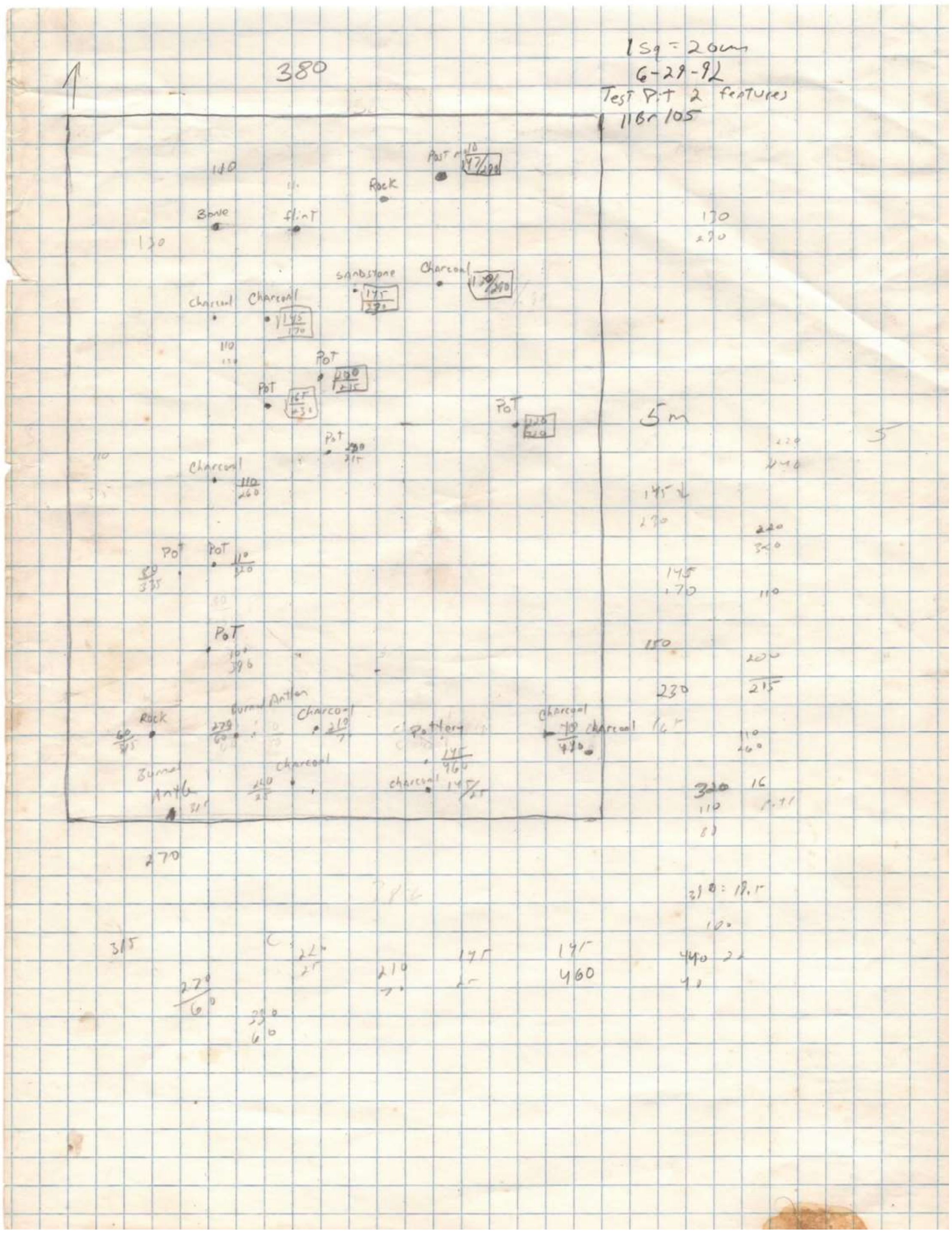
Appendix 1.1- Western Illinois University Excavation Notes

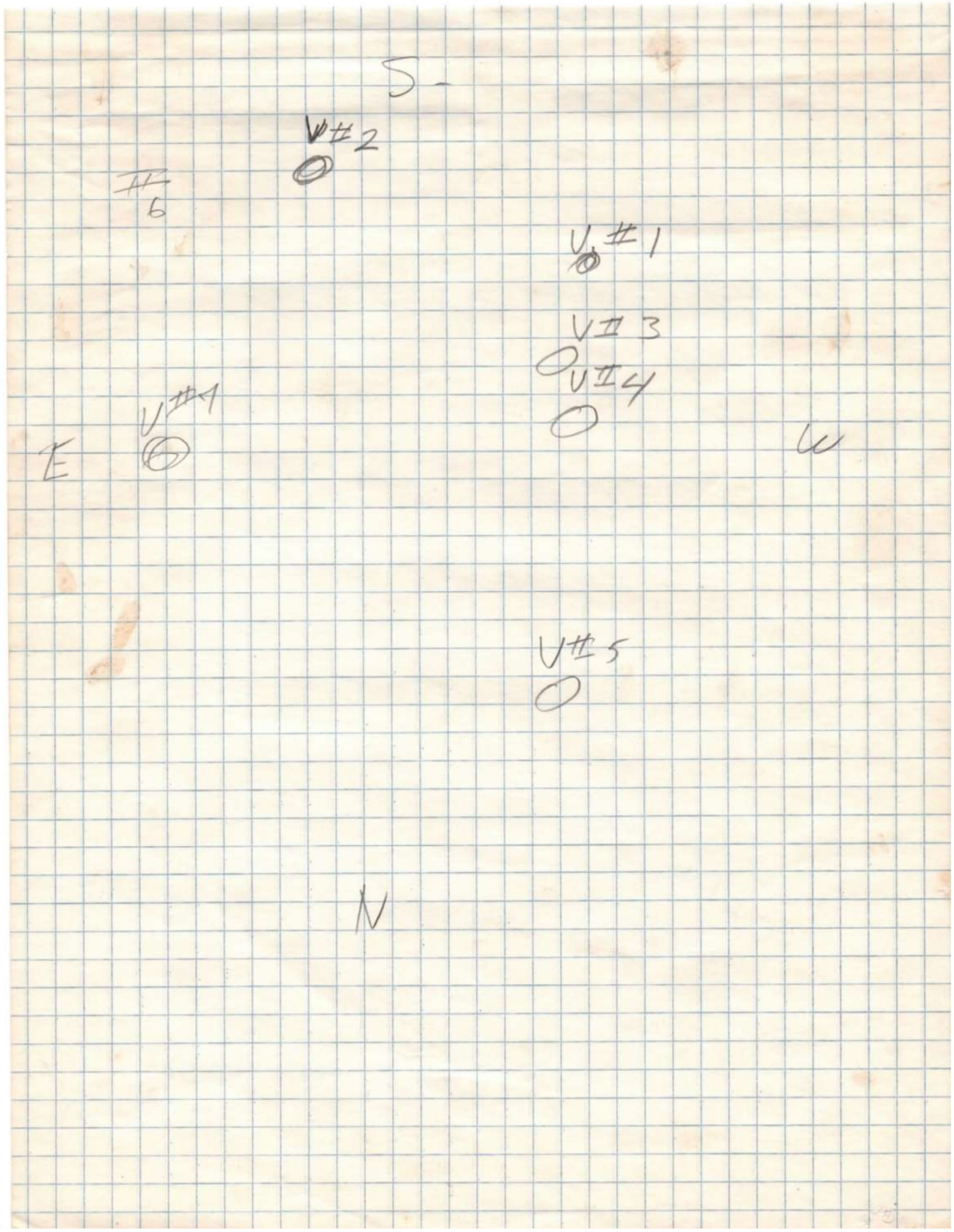
Monday - June 22 -

Moved to second site - 11Br 105 - Ster Bridge, located on the property of Bob & Effie Snyder. Using the 1979 infra-red photo taken after a deeper than usual mowing as a basic plat of the site, we elected to excavate a fairly large house located 3/4's of the way S of the main village and ca. 40 feet W. of the edge of the road. We used the corner of the Quonset barn as a basic reference point & determined that this house was approximately feet of this corner. We sank our 1st test pit at this point in the field and immediately encountered extensive cultural debris within the normal plow zone. Some larger pieces of charcoal were found along the west wall, near the side of this pit.


11Br105
8Jul92
SOUTH WALL
SURFACE
DISTURBED BLACK
MOTTLED TAN
1SQ=10CM
TEST PIT #1
N
EACH SQ= 15 CM
EAST WALL
DARK DISTURBED
TAN MOTTLED
ARTIFACTS
NORTH WALL
EACH SQ= 10CM
DARK DISTURBED
yellow
Artifact
DARK MOTTLED
DARK MOTTLED
TAN MOTTLED
DARK MOTT.


11Br105
8Jul92
Test Pit #3
A. East Wall
B. WEST WALL
C. SOUTH WALL
EACH SQ = 10 CM
A.
DARK DISTURBED
TAN MOTTLED
CHARCOAL
EACH SQ = 10 CM
B.
DARK DISTURBED
TAN MOTTLED
EACH SQ = 15 CM
C.
DARK DISTURBED
TAN MOTTLED
BURNT CLAY


1 sq = 20cm
6-29-92
Test Pit 2 features
11Br105
380
5m
Post mold
Rock
Bone
flint
Sandstone
Charcoal
Pot
Burned Antler
Pottery


S
V#2
#6
V#1
V#3
V#4
V#7
E
W
V#5
N

Elevation of Artifacts
#1 - 24 in Pit #2
#25 - 29 in Pit #3

11 Br 105
June 29, 1992 Monday
Datum 133.13
heigth of instrument 1.37

# 1	132.83	# 16	132.85
# 2	132.81	# 17	132.85
# 3	132.82	# 19	132.85
# 4	132.80	# 20	132.85
# 5	132.76	# 21	132.84
# 6	132.71	# 22	132.83
# 7	132.80	# 23	132.71
# 8	132.75	# 24	132.76
# 9	132.78	# 25	132.87
# 10	132.80	# 26	132.87
# 11	132.76	# 27	132.78
# 12	132.83	# 28	132.88
# 13	132.85	# 29	132.89
# 14	132.81	# 5A	132.77
# 15	132.85		

134.5 elevation of road

Exact Elevations of Pits 1-4 11 Br 105

June 29, 1992

Pit #1

NW	ground	133.07	floor	132.76
NE	ground	133.10	floor	132.44
SE	ground	133.15	floor	132.81
SW	ground	133.12	floor	132.82

Pit #2

NW	ground	133.16	floor	132.81
NE	"	133.09	"	132.79
SE	"	133.11	"	132.83
SW	"	133.17	"	132.87

Pit #3

NW	ground	133.19	floor	132.88
NE	"	133.08	"	132.82
SE	"	133.18	"	132.73
SW	"	133.27	"	132.93

Pit #4

NW	ground	133.17	floor	132.90
NE	"	133.10	"	132.85
SE	"	133.10	"	132.80
SW	"	133.19	"	132.89

Exact Elevation of Pits 11 Br 105 Pits 1-4

fl. 134.50
1.74
133.76

Pit #1
NW gr. 134.50
1.43
133.07

NE gr. 134.5
1.40
133.10

NW
NE
SE
SW
134.5

Pit #1

		ground	floor
ground	NW	134.50	134.50
		3.43	2.74
		11.07	131.76
ground	NE	134.50	134.50
		2.40	1.76
		132.10	132.44
gr	SE	134.50	134.50
		1.35	1.69
		133.15	132.81
gr	SW	134.50	134.50
		1.38	1.68
		133.12	132.82

Pit #2

	gr	fl.
NW	134.50	134.50
	1.34	1.69
	133.16	132.81
NE	134.50	134.50
	1.41	1.71
	133.09	132.79
SE	134.50	134.50
	1.39	1.67
	133.11	132.83
SW	134.50	134.50
	1.33	1.63
	133.17	132.87

Pit #3

	gr	fl.
NW	134.50	134.50
	1.31	1.62
	133.19	132.88
NE	134.50	134.50
	1.42	1.68
	133.08	132.82
SE	134.50	134.50
	1.32	1.67
	133.18	132.73
SW	134.50	134.50
	1.23	1.57
	133.27	132.93

Pit #4

NW 134.50
1.33
133.17

NE 134.50
1.40
133.10

SE 134.50
1.40
133.10

SW 134.50
1.31
133.19

NW fl. 134.50
1.60
132.90

NE fl. 134.50
1.65
132.85

SE 134.50
1.70
132.80

SW 134.50
1.61
132.89

to do

X wash artifacts + put into order
(so I know what is what!)

X showers - scrub floors (after dry - mops the ♀) - - floors of ♀ shower & stalls
X Johns - ~~stalls~~ stools, wash basins, floors

X empty trash baskets in showers & johns

- finish the tools - clean - brush, oil the steel - linseed oil all shovel handles -

x clean off feet of tripod

- pack up & label all tarps & associated supplies -

x pack up W/H - kitchen equipment

x clean out freezer - defrost -
x clean out the ~~fridge~~ frig. -
washing - me -

Mt. Sterling
X vacuum the van - wash the van
wash all stakes, ropes, markers -

x pack up all our food - either for self or Rhoda

X after ♀ bath has been scrubbed - take the 2 tables back down

1, 7, 12, 38, 39, 54

1) girls - take down rest of structure #2

2) guys - put up sun-shade over #1

3) the holes filled up that we dug
put penny in bottom of each one
retrieve markers

4) start troweling structure #2
do not take up artifacts

1 meter = 39.25

```
  440
   12
  880
 440
 5280

         134.5
39.25 | 5280.00
        3925
        1355 0
        1177 5
         177 55
         157 00
          2050 0
          1962 5
```

Groceries + Personal Expenses

MT. Sterling
19.26
6.77
38.69
7.81
19.12
6.99
15.95
4.91
5.68
27.52
1.60

Jacksonville
22.10 (W) ch.
22.84 (K) ch.
43.44

McComb
34.36 (W) ch.
36.96 (W) ch
21.30 (W) ch

Beardstown
13.76 (W)
10.73
11.45
10.25
17.45 (W) ch
20.06 (W.-cash)

Springfield
18.21

Versailles
7.38
12.64
5.74
9.50

Appendix 1.2- Artifact Catalogs

Jar Metrics

Artifact ID	Weight (G)	Rim Width CM	Orifice Diameter CM	Rim Thickness MM	Body Decoration	lip Decoration
5000	61.02	2.63	30	7.75		
5001	113.98	3.08	29	7.88		
5002	35.81	1.8	30	6.62	burnished	
5003	56.79	3.66	27	8.27		
5004	77.16	2.54	27	6.81		
5005	66.52	1.95	28	8.51		notched
5006	56.53	2.29	28	8.9		notched
5007	96.57	2.57	23	2.91		
5008	145.83	2.68	23	10.71	Line Filled	
5009	47.36	1.96	21	5.98		notched
5010	123.26	3.17	32	9.62		
5011	194.69	3.32	29	11.97		
5012	81.13	2.14	18	5.4		
5013	31.84	2.93	26	6.32	Slip	
5014	132.26	2.89	33	8.26		
5015	124.45	3.41	36	8.5		
5016	84.56	2.03	21	6.54		
5017	70.1	2.24	17	6.94		
5018	67.65	2.5	34	9.06		
5019	73.89	2.49	29	9.86		
5020	62.43	3.39	44	7.84		
5021	136.3	3.51	33	10.04	Slip	
5022	64.66	2.44	31	13.45		
5023	61.07	2.79	28	9.63		
5024	41.75	2.13	30	7.27		
5025	124.83	2.64	28	8.12	Chevrons	
5026	116.98	3.62	50	9.18		
5027	75.41	2.57	31	6.88		
5028	54.69	3.02	41	7.98		
5029	54.77	2.65	36	6.01		
5030	30.53	1.62	21	8.91		

5031	55.08	3.91	39	7.81	
5032	19.11	1.96	16	5.64	
5033	97.35	3.83	34	8.25	
5034	96.25	3.38	29	8.89	
5035	94.63	3.31	26	10.34	
5036	49.44	2.84	27	7.67	
5037	85.98	3.56	48	10.29	
5038	48.32	3.35	27	6.92	
5039	48.26	2.65	32	6.67	
5040	62.12	3.35	47	13.22	
5041	46.16	2.32	34	7.41	
5042	64.66	3.09	43	10.31	
5043	48.79	3.14	21	8.54	
5044	30.45	2.14	14	6.47	
5045	26.37	2.08	15	5.73	
5046	45.14	1.88	19	6.96	
5047	40.57	2.87	20	7.08	
5048	89.37	3.11	28	5.92	
5049	92.35	3.5	33	10.11	
5050	127.58	4.1	35	8.89	
5051	97.82	3.54	37	7.81	
5052	22.9	2.15	18	5.49	
5053	77.42	4.11	33	9.51	
5054	91.06	3.06	33	9.26	
5055	95.45	3.46	32	7.76	
5056	204.9	3.11	28	10.38	
5057	208.8	2.86	31	10.39	
5058	247.2	3.31	32	7.49	Slip
5059	160.34	3.44	41	9.76	
5060	112.45	3.42	28	8.15	
5061	107.24	2.88	42	7.51	
5062	107.54	4.26	51	10.36	
5063	115.62	2.61	34	8.67	
5064	82.71	2.98	31	6.72	
5065	101.77	3.6	41	8.94	
5066	39.74	2.71	25	7.63	

Jar Totals	**Weight (G)**	**Rim Width CM**	**Orifice Diameter CM**	**Rim Thickness MM**
Min	*19.11*	*1.62*	*14*	*2.91*
Max	*247.2*	*4.26*	*51*	*13.45*
Median	*77.16*	*2.89*	*30*	*8.12*
Mean	*85.160597*	*2.90343284*	*30.4179104*	*8.224925373*
SD	*46.301628*	*0.62087317*	*8.32329563*	*1.848475517*

Jars with Handles Attributes

Number	Description	Prov	Weight (G)	Rim Width CM	Orifice Diameter CM	Rim Thickness MM	Body Decoration
5067	Jar	lug-1	33.09	1.77	16	6.41	Triangles
5068	Jar	lug-1	51.26	2.21	17	8.2	
5069	Jar	lug-1	59.76	2.89	14	7.52	
5070	Jar	lug-1	55.95	2.19	20	6.98	
5071	Jar	lug-1	53.97	3.19	14	7.38	
5072	Jar	lug-1	72.34	4.04	24	6.87	
5073	Jar	lug-1	44.58	2.62	22	6.84	
5074	Jar	lug-1	38.57	2.25	17	6.36	
5075	Jar	lug-1	47.14	2.07	24	7.37	
5076	Jar	lug-1	37.6	3.01	11	7.61	Slip
5077	Jar	lug-1	43.32	2.78	18	6.59	
5078	Jar	lug-1	37.16	2.95	27	7.2	
5079	Jar	lug-1	35.98	3.84	16	8.47	
5080	Jar	lug-1	62.59	3.29	21	6.74	
5081	Jar	lug-1	69.94	2.36	30	9.29	
5082	Jar	lug-1	46.4	2.13	18	7.14	
5083	Jar	lug-1	37.02	2.11	19	7.43	
5084	Jar	lug-1	73.48	3.13	16	6.61	
5085	Jar	lug-1	106.3	5.06	23	7.1	Slip
5086	Jar	lug-1	23.01	-	-	-	
5087	Jar	lug-1	16.39	-	-	-	
5088	Jar	lug-1	24.5	-	-	-	
5089	Jar	lug-1	30.94	-	-	-	
5090	Jar	lug-1	17.88	-	-	-	
5091	Jar	lug-1	18.84	-	-	-	

Lug Totals:	Weight (G)	RIM WIDTH CM	Orifice Diameter CM	RIM THICKNESS MM
Min	16.39	1.77	11	6.36
Max	106.3	5.06	30	9.29
Median	43.32	2.78	18	7.14
Mean	45.5204	2.836316	19.31579	7.268947
SD	20.90872	0.818041	4.796441	0.739271

			Handle Attributes				1= Triangular 2= 2 probes 3= Extra Lip
				(cm)			
Artifact ID	Top Width (T)	Middle Width (M)	Bottom Width (B)	Height (G)	Middle Thickness (H)	Extend from Rim	Type :
5067	1.67	1.23	1.66	2.56	1	1.94	3
5068	1.8	1.73	1.97	2.87	0.99	1.64	1
5069	1.68	1.46	1.53	3.31	2.06	2.89	1
5070	1.53	1.54	1.98	3.72	1.13	2.98	2
5071	1.45	1.32	1.84	3.77	1.07	2.09	1
5072	1.66	1.53	1.56	3.38	1.03	1.93	1
5073	1.57	1.4	1.46	3.68	1.36	0.06	3
5074	1.49	1.35	1.96	2.61	0.74	1.76	3
5075	2.07	1.84	2.01	2.69	1.47	1.13	1
5076	1.36	1.15	1.21	3.22	0.92	1.75	1
5077	2.17	1.67	2.04	3.61	1.01	0.68	3
5078	1.72	1.54	1.75	2.89	1.09	0	3
5079	1.76	1.52	1.66	2.92	0.99	2.3	1
5080	1.82	1.28	1.78	4.1	1.42	0	33
5081	2.24	1.87	2.38	3.5	1.11	0.73	1
5082	1.38	1.17	1.2	2.56	0.97	0.99	1
5083	2.09	2.05	2.6	3.39	1.01	1.52	1
5084	1.69	1.52	1.68	3.39	0.97	0	3
5085	1.97	1.92	2.29	4.38	1	2.43	1
5086	1.56	1.51	1.93	3.09			
5087	1.12	1.02	1.15	2.59			
5088	1.58	1.18	1.46	2.9			
5089	1.48	1.45	1.54	4.05			
5090	1.17	1.01	1.2	2.48			
5091	1.32	1.38	1.41	2.97			

Totals	Top Width (T)	Middle Width (M)	Bottom Width (B)	Height (G)	Middle Thickness (H)	Extend from Rim
Min	1.12	1.01	1.15	2.48	0.74	0
Max	2.24	2.05	2.6	4.38	2.06	2.98
Median	1.66	1.46	1.68	3.22	1.01	1.64
Mean	1.654	1.4656	1.73	3.2252	1.123158	1.411579
SD	0.293499	0.27368	0.378021	0.534876	0.286881	0.967283

Ceramic, non-jar/plate

Number	Description	Notes	Qty	Weight (G)	Rim Width CM	Orifice Diameter CM	Rim Thickness MM
1000	spindle whorl		1	20.67		4.72	7.79
1001	spindle whorl		1	17.09		4.56	6.62
1002	Cearmic Pipe		1	28.12			
1003	Beaker Handle		1	23.18			
1004	Beaker Handle		1	13.28			
1005	Beaker Handle		1	98.16			
1006	Bowl		1	107.33	22	6.64	
1007	Bowl		1	128.08	12	7.41	
1008	Bowl		1	61.98	16	5.69	
1009	Bowl Sherds		7	361.02			
1010	Ceramic balls	< 5.20mm	8	0.99			
1011	Small Vessel Fragments		7	138.2			
1012	Salt Pan Rims		2	99.5			
1013	unknown Rim		2	40.8			
1014	Ear Plug		1	15.07			
1015	Water Spout		1	84.3			
1016	Fish Effigy Rim		1	68.02			
1017	Random Ceramic		4	78.45			
1018	Straight Neck Vessel	Sun burst motif	2	78.89		12	
1019	Straight Neck Vessel	Chevron	1	14.14		13	
1020	Straight Neck Vessel		1	33.37		11	
1021	non pigmant slipped		6	168.9			
1022	Straight Neck Vessel		2	51.87		IND	
1023	IND						
Total			**54**	**1731.41**			

Plate Metrics

Artifact ID	Weight (G)	Rim Width CM	Orifice Diameter CM	Rim Thickness MM
2000	163.7	8.7	33	6.98
2001	99.36	7.6	44	6.07
2002	83.62	6.3	28	7.06
2003	65.42	ind	ind	6.67
2004	255.42	5.3	28	7.84
2005	86.05	4.7	36	6.55
2006	37.69	5.9	ind	6.42
2007	102.83	7.5	28	4.6
2008	83.3	6.7	28	5.88
2009	35.5	4.8	24	7.9
2010	76.52	4.9	30	7.6
2011	108.78	8.5	27	9.4
2012	106.88	8	34	6.14
2013	60.72	5.9	32	6.3
2014	57.31	6.3	27	6.1
2015	24.09	3.7	ind	5.9
2016	27.4	4.9	24	0.9
2017	46.35	4.7	21	8.79
2018	43.9	6.1	22	6.78
2019	46.48	5.9	25	6.65
2020	15.72	3.2	12	5.8
2021	68.67	9.2	ind	6.73
2022	42.28	4.9	28	3.9
2023	60.35	6.5	ind	7.42
2024	125.13	6.7	32	8.14
2025	48.9	5.7	23	5.6
2026	22.06	4.2	24	4.6
2027	46.73	5.4	23	5.9
2028	57.48	7.9	51	6.7
2029	48.94	7	ind	6.05
2030	80.82	7	33	9.21
2031	50.98	6.3	43	5.71
2032	38.17	4.3	34	6.81

2033	27.99	4.1	20	5.01
2034	62.03	7.2	34	4.98
2035	46.69	5.9	34	6.3
2036	205.14	4.3	37	6.2
2037	77.01	5.2	26	8.06
2038	138.46	6.3	34	6
2039	129.18	7.2	38	7.2
2040	249.21	6	32	8.06
2041	89.4	2.2	31	5.37
2042	68.66	3.1	31	7.6
2043	89.97	4.5	29	7.6
2044	74.99	3.1	28	7.4

Flaked Stone

Artifact#	Description	Notes	Qty	Weight (G)	Material
200	Ramey Knife		1	225.56	mill creek
201	preform		1	41.33	burlington
202	preform		1	125.39	burlington
203	adze		1	132.27	burlington
204	knife		1	104.12	mill creek
205	celt	Chipped then ground	1	250.17	mill creek
206	celt	Chipped then ground	1	189.16	mill creek
207	celt	Chipped then ground	1	125.74	mill creek
208	hoe		1	542.3	burlington
209	Graver		9	39.85	Burlington
210	Drill		6	15.74	Burlington
211	Endscraper		60	450.5	burlington
212	Endscraper		3	12.78	la moine
213	Endscraper		4	27.87	moline
214	Endscraper		4	29.93	cobden
215	Endscraper		1	7.53	kaolin
216	Endscraper		1	11.8	crable
217	Side Scraper		26	215.7	burlington
218	Side Scraper		1	11	la moine
219	Side Scraper		1	6.03	moline
220	Side Scraper		1	8.86	dongla
221	Blade		49	161.4	burlington
222	Blade		1	5.83	la moine
223	Blade		2	8.54	Moline
224	Blade		1	2.73	kaolin
225	Biface		45	455.8	burlington
226	Biface		3	48.9	la moine
227	Biface		1	35.28	cobbden
228	Debitage		51	324.9	see Table
228A	Exped. Tools		32	189.1	see Table
229	Projectile Point	bifacial, ser, Madison	17	18.07	burlington
230	Projectile Point	bifacial, ser, Madison	1	0.93	harmilda
231	Projectile Point	bifacial, ser, Madison	1	0.99	moline
232	Projectile Point	bifacial Madison	114	113.83	burlington
233	Projectile Point	bifacial Madison	2	3.33	la moine
234	Projectile Point	bifacial Madison	5	4.19	kaolin
235	Projectile Point	bifacial Madison	3	6.12	unknown

236	Projectile Point	bifacial Madison	1	0.7	knife River flint
237	Projectile Point	unifacial Madison	26	17.56	burlington
238	Projectile Point	unifacial Madison	1	0.86	kaolin
239	Projectile Point	bifacial SideNotch	17	14.4	burlington
239A	Projectile Point	bifacial SideNotch	1	2.18	mill creek
239B	Projectile Point	bifacial SideNotch	1	1.1	la moine
239C	Projectile Point	bifacial SideNotch	1	0.49	cobden
240	Projectile Point	Special Miss	3	2.28	burlington
241	Projectile Point	Tri-Notch	3	2.02	burlington
242	Projectile Point	Broken Mississippian	15	12.6	burlington
243	Projectile Point	Broken Mississippian	1	0.9	la moine
244	Projectile Point	Non Mississippian Points	23	202.06	see table
245	Flake		1	32.84	basalt

Ground and Pecked Stone

Number	Description	Qty	Weight (G)	Material
100	3/4/ axe	1	582.1	Granitic
101	Celt	1	849.7	Granitic
102	Celt	1	730.7	Granitic
103	Celt	1	332.2	Granitic
104	Celt	1	392	Granitic
105	Celt	1	486.6	Granitic
106	Celt	1	545.5	Granitic
107	Celt	1	394.4	Granitic
108	Celt	1	237	Granitic
109	Celt	1	204.3	Granitic
110	Celt	1	232.9	Granitic
111	Celt	1	179.1	Granitic
112	Celt	1	160.2	Granitic
113	Celt	1	101.5	Granitic
114	Celt	1	34	Granitic
115	Celt	1	11.5	Chert
116	Chunkey Stone	1	101.8	Granitic
117	Drilled slate pennant	1	64.1	Slate
118	abrader	1	46	Sandstone
119	abrader	1	59.1	Sandstone
120	abrader	1	48.8	Sandstone
121	abrader	1	86.4	Sandstone
122	abrader	1	56.8	Sandstone
123	hammerstone	1	113.3	Chert
124	hammerstone	1	194.3	Ganitic
125	hammerstone	1	201.8	Ganitic
126	hammerstone	1	280.4	Ganitic
127	hammerstone	1	271.9	Ganitic
128	hammerstone	1	296.8	Ganitic
129	pitted stone	1	619.1	Ganitic
130	pitted stone	1	226.2	Ganitic
131	pitted stone	1	408.9	chert
132	Unknown	1	541	sandstone
133	unmodified quartz	3	11.58	quartz
134	hematite pigment stone	3	147.46	hematite
135	Sandstone smoking Bowl	1	127.29	sandstone
136	Ear Plug	1	20.39	sandstone
137	Net weight	2	60.73	sandstone

Faunal Material

Number	Description	SubType	Qty	Weight (G)
3000	Bone Awl	Catfish?	6	16.09
3001	Pressure Flaker	Antler	1	14.04
3002	Fish Hook		1	0.89
3003	Socketed Projectile Point		1	1.11
3004	Bone Ring/ear plug		1	1.8
3005	Coyote Teeth		5	7.39
3006	IND Faunal		18	142.82
3007	Rabbit Incisor		1	0.14

Work Cited

Alt, Susan M.
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Curriculum Vitae

John Scott Flood

Education:

May 2016 BA in Anthropology from Indiana University-Purdue University Indianapolis

August 2020 MA in Applied Anthropology from Indiana University-Purdue University Indianapolis

Archaeological and Professional Experience:

2019-Present- Adjunct Faculty Indiana University-East

2018-2020 Graduate Research Assistant- Indiana University Department of Earth and Atmospheric Studies

2018-present**-** Field Technician- Cardno Environmental- Phase 1a, 2 and 3 archaeological investigations. Human Burial Excavation.

2016-2020- Field Supervisor/Graduate Intern- IUPUI Charles Deam Wilderness Archaeological Phase 1b Survey. Teaching CRM methods to student-volunteers while conducting section 110 cultural resources for the forest service.

2017 Field Technician- Ball State Applied Anthropology Laboratories. Phase 1a CRM survey.

2017- 2019 Volunteer Graduate Assistant- Western Illinois University Orendorf Field School

2016- Field Supervisor/Archaeological Consultant to Crow Tribal Historic Preservation Office- Little Big Horn College 2016 Grapevine Creek Field School. Fort Smith, Crow Country, Montana. Survey and excavation of bison bone beds.

2016- Graduate Assistant- IUPUI Field School at the Lawrenz Gun Club site (11Cs4)- a Mississippian period village in the central Illinois River valley. Conducted research and supervised students.

2015- Volunteer- Maya Research Program, Blue Creek, Belize.

2015- Undergraduate Assistant- IUPUI/ National Science Foundation Archaeological Research Project & Field School at the Lawrenz Gun Club site (11Cs4)- a Mississippian period village in the central Illinois River valley. Conducted archaeological research and supervised students.

2015-2017- Research Assistant- IUPUI Archaeology lab.

2014- Volunteer- Indiana University Bloomington, Hoosier National Forrest, Geoarchaeological investigations into Rock House Hollow Rock Shelter. (12PP100)

2014- Field School student- IUPUI/ National Science Foundation Archaeological Research Project & Field School at the Lawrenz Gun Club site (11Cs4)- a Mississippian period village in the Central Illinois River Valley.

Awards and appointments:
2018 William Plater Civic Engagement Medallion Awardee
2018 IUPUI Elite 50 nomination
2017 Student committee chair for Midwest Archaeological Conference Meetings
2017 Sam H. Jones Service Learning Scholarship
2017 Graduate Professional Student Government- Liberal Arts Representative
2016 Student session Committee for Midwest Archaeological Conference Meetings
2016 Sam H. Jones Service Learning Scholarship
2016 IUPUI Student Employee of the year nominee
2015 Mary F. Criser Scholarship: Awarded by IUPUI School of liberal arts.
2015 IUPUI RISE program research scholarship awardee.
2015 Friends of Anthropology Scholarship: Awarded by IUPUI Department of Anthropology
2015 Top 100 student nomination at IUPUI
2015 Member of Lambda Alpha Honors for Anthropology
2014 Anthropology Club President, Academic year 2014-2015

Technical Reports:
2020- Phase 1a Investigations of Three Brown County Lake Monroe Shoreline Archaeological Sites: 12Br0006, 12Br0007, and 12Br0008. Authors: **John Flood** and Edward Herrmann

2018- *An Impact Study of the Archaeology and Geology of the Charles C. Deam Wilderness, Hoosier National Forest* Cultural Resource Reconnaissance Report No R2018091202341 Authors: Joshua Myers, **John Flood** and Edward Herrmann

2017- *A Phase I Cultural Resources Investigation of 109.5 Acres of the Charles C. Deam Wilderness* Cultural Resource Reconnaissance Report No. R2017091202316 Authors: **John Flood**, Joshua Myers, Edward Herrmann and Jeremy Wilson

Research Projects and Presentations:
2019- Society for American Archaeologists Annual Meeting- Paper: *Star Bridge: A Mississippian Bastion on the La Moine River* Authors: **John Flood** and Jeremy Wilson

2017- Midwest Archaeological Conference- Poster: *Star Bridge's Conflagration and Archaeologists' Consternations: A Preliminary Analysis of the Glen and Marry Hanning Collection* Authors: **John Flood** and Lawrence A. Conrad

2017- Midwest Archaeological Conference- Poster Symposium: *The Deam Project: A collaboration with IUPUI and Hoosier National Forest* Co-Chairs: **John Flood**, Angie Doyle

2017- Midwest Archaeological Conference-Poster: Collaboration in the Wilderness: *IUPUI and Hoosier National Forest*; Authors: **John Flood**, Angie Doyle, Joshua Myers, Edward Herrmann and Jeremy Wilson

2017- Midwest Archaeological Conference-Poster: *The Town of Todd: A Digital Reconstruction of a Lost 19th Century Landscape in South-Central Indiana* Authors: Joshua Myers, Edward Herrmann and **John Flood**

2017- Midwest Archaeological Conference-Poster: *The Eroding Mortuary Landscape of the Charles C. Deam Wilderness* Authors: Katie Hunt, Joshua Myers and **John Flood**

2017- Midwest Archaeological Conference- Poster: *What We Learned at School: Reconstructing the Life History of a 19th Century Schoolhouse* Authors: Ashley Brown, Joshua Myers and **John Flood**

2017- Midwest Archaeological Conference-Poster: *Fault the Fault: Lithic Procurement at 12Mo1555 Courtesy of the Mount Carmel Fault* Authors: Madeline Fasel, **John Flood** and Edward Herrmann

2017- Midwest Archaeological Conference-Poster: Following the Footprints: *A Survey of Domestic Structures in the Charles C. Deam Wilderness* Authors Melissa Long, Matt Young, Joshua Myers and **John Flood**

2017- Midwest Archaeological Conference-Paper: *Early Paleo-Indian Mobility and Lithic Resource Use in Indiana* Authors: Edward W. Herrmann, Mackenzie J.Cory, Katie Hunt, **John Flood**, Josh Myers

2017- IUPUI Research Day- Paper: *IUPUI Investigations into Lawrenz Gun Club, a Fortified Mississippian Village in the Central Illinois River Valley* Author: **John Flood**

2016- Midwest Archaeological Conference- Paper: *A Diachronic Analysis of Early and Late Mississippian Lithic Procurement and Utilization at the Lawrenz Gun Club Site (11Cs4)* Authors: **John Flood**, Edward Herrmann, Scott Hispskind and Jeremy Wilson

2016- Society for American Archaeologists Annual Meeting- Poster: *Fortifications in the Eastern Woodlands of Pre-Columbian North America: An Examination of Organized Warfare during the Mississippian Period* Authors: John Flood, Seth Grooms

2015- Midwest Archaeological Conference- Poster: Fortifying the Prairie-Plains: Understanding the Chronology of defensive fortifications at 11Cs4, a Fortified Mississippian village in West Central Illinois. Authors: **John Flood**, Matthew Pike, Jeremy Wilson

2015- Midwest Archaeological Conference- Poster: *Warfare Knapped in Stone: An Examination of Projectile Point Diversity and Blood Residue Analysis at Lawrenz Gun Club*; Authors: Tyler Heneghan, Edward W. Herrmann, Jeremy J. Wilson, **John Flood**

2015- Midwest Archaeological Conference- Poster: *The Best Offense Starts with a Strong Defense: Interpretations of "Defensive" Technologies and Strategies at Lawrenz Gun Club*; Authors: Edward W. Herrmann, **John Flood**, Matthew J. Rowe, Michael Ganis, Seth Grooms, Tyler Henegan

Classes Taught:
2020- ANTHp-200 Buried Cities and Lost Tribes of North America (Survey of the Late Prehistoric Midwest) (Indiana University- East)

2019- ANTHp-210 Life in the Stone Age (Experimental Archaeology) (Indiana University- East)

2016-2019- Anthp-405 Field School Graduate Assistant (IUPUI)

Spring 2018- ANTHa-103 Human Origins and Prehistory, TA (IUPUI)

Spring 2017- ANTHb-426 Human Osteology, TA (IUPUI)

Community Outreach:
September 2018- Star Bridge: A Mississippian Bastion on the La Moine River. Lecture at Strawtown, Hamilton County

September 2017- Thirty Centimeters of Indiana's Archaeology: Indiana Archaeology Today, Lecture at Danville Public Library

September 2017- Camp Atterbury Archaeology Day, flint knapping demonstration

June 2017- Let's go hunting! Atlatl demonstration with Hoosier National Forrest

September 2016- Camp Atterbury Archaeology Day, flint knapping demonstration

May 2016- "Save Indiana Prehistory" Fence building project around at-risk archaeological site, Hoosier National Forest

October 2015- Celebrate Science Indy, IUPUI Archaeology

November 2015- *Indiana Prehistory*, Van Buren Elementary School