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The Archaeology of Mississippian Vulnerability and Resilience in the New Madrid Seismic Zone

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by

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Abstract

This work examines the vulnerability and resilience of Mississippian people in the Central Mississippi Valley to the large-scale New Madrid seismic zone earthquakes of the late15th to early 16th century. This is done using the theory of eventful archaeology/anthropology to look at cultural materials both before and after an event (such as an earthquake and sand blows) to look for evidence of changes to the schema and resources on which a society relies. If changes are present, the event can be labeled as such, if there are no changes, it means that the society affected did not see the event as a problem which required a response. The Manley-Usrey site in northeast Arkansas was used to more accurately and precisely date the late 15th/early 16th century earthquakes to AD1460 ± 50, using Optically Stimulated Luminescence dating. This technique was employable due to the site being covered by sand from an earthquake induced sand blow while the site was occupied in the Late Mississippi period. The date of the earthquake coincides with the later part of the Late Mississippi period in the region. Based on the earthquake date, the material culture of Mississippi period sites dating to the Late Mississippi and Protohistoric periods were examined to look for changes from pre- to post-earthquake. Very few changes in cultural materials were found at any level of analysis from individual artifact types to settlement patterns within a site or across the landscape of the region. This suggests that not only did many of the region's resources remain stable and therefore changes or substitutes were not needed, there was also no change in schema or beliefs that are detected archaeologically through changes in the material culture being produced. This lack of change from pre- to post-earthquake suggests that the people in the region did not view the large-scale earthquakes and sand blows as a disaster and were quite resilient to their effects.

Acknowledgements

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Lastly, and most importantly, I must thank Marion Haynes, former Station Assistant at the Blytheville Station of the Arkansas Archeological Survey, and great human being. Without his friendship, support, and knowledge I likely would not have stayed in Arkansas or discovered what an interesting archeological and geological region northeast Arkansas truly is. I cannot thank him enough for simply being who he is: Amazing. Thank you, Marion.

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Introduction

“Later on, and a earthquake (1) come, so everybody (Quapaws) got scared, and you see that, oh, tree fall in that river and all like that, you know, you know them hill, big hill just shaking down, rock getting ready to fall, water come out of the hill. So, old people, uh, pray for all night, and sit around and sing and talk and, smoking all night, and in the morning they got horse. They took horse and them big brass kettle, broad cloth, tobacco, all like that. So, oh, one man take him, take him (horse) out there in the, uh, in the water, in the Arkansas. After get way down in that there middle, middle way and they kill him and then they drown that horse. So that’s, that’s what the earthquake, they stop, they said.

And uh, and uh, before uh, earthquake stop, and uh, man that, I guess, he ain’t, he ain’t got no sense, I guess he got, oh, bull, uh, buffalo hide. Wrap it up in there and roll around where earthquake going, he said sing for me, he said, just roll around in there.

That’s what story is right there, before the earthquake quit. So they come to, they stop they claim, and next time earthquake come they, they don’t think they stop anymore, that’s what story is. That, that’s all there is, that one there, story.” -Maude “Grandma” Supernaw (Quapaw Oral History 2019).

This oral history was recorded in the 1950’s by the daughter of the last hereditary chief of the Quapaw tribe, Maude Supernaw. She recorded many stories that were told to her by her father, and those recordings were transcribed by her decedents and made available on the website of the Quapaw Tribe of Oklahoma. This story is about the New Madrid earthquakes of 1811/12 when the Quapaw were living along the Arkansas River in eastern Arkansas.

The northeastern part of the state of Arkansas is part of the New Madrid seismic zone (NMSZ), which is the most seismically active region in the central and eastern United States (Chen et al. 2014; Li et al. 1998; Tuttle 1999; Tuttle et al. 1996, 2002, 2011). In 1811/12 three **M**7-8 earthquakes struck the region over the course of three months. There were also hundreds of smaller aftershocks following each of these large earthquakes. The large earthquakes also produced sand blows, which are geysers of sand and water that are produced from extreme earth shaking in regions where the water table is high, and saturated, sandy sediments can become fluidized below the ground surface. If these fluidized sediments find a weak spot in the overburden sediments, they will force their way to the surface as a sandy geyser, subsequently causing subsidence of the ground surface, leaving sand-covered surfaces around the sand dike through which the sand was extruded (Lafferty et al. 1987; Saucier 1989; Wolf et al. 2006).

Paleoseismologists have dated these large, sand blow producing earthquakes of the NMSZ to 1811/12 (which is also recorded historically), AD 1450 ± 150, AD 900 ± 100, and 2350 BC ± 250. They have often constrained these earthquake dates by dating carbonized materials from Native American cultural deposits that are located either above or below the sand blow layer. In this way, they can tell the earliest or latest possible date for the sand blow deposit, but because AMS dates can sometimes give wide ranges of calibrated ages, the uncertainty of the dates is large (Tuttle 1999; Tuttle et al. 1996, 2002, 2005, 2011).

The Central Mississippi Valley (CMV), which is partially within the NMSZ, was an area of heavy Native American occupation for hundreds of years before European contact and even for some time subsequent to De Soto’s entrada making its way through the region. Mississippian people lived in towns and villages of varying sizes across the CMV from the Early Mississippi period (ca. AD 700) through European contact (AD 1541 – ca. 1650). The Mississippian people of the CMV were increasingly dependent on farming through time and their pottery and lithic technologies changed as they developed better pottery tempers and shapes that allowed for longer exposure to direct heat to cook the starchy foods that they were growing and to make the nutrients in them more available to absorption and use by the body (Braun 1983; Griffin 1965). Hunting also became more efficient with technology such as bows and smaller arrow points allowing for meat from a variety of animals to be an easy source of nutrients as well (Morse and Morse 1998).

Many Mississippian groups were organized into chiefdoms, as evidenced by sites of varying sizes and varying numbers of mounds within a region. Typically, a Mississippian chiefdom is arranged with one large, multi-mound site at which many of the leaders of the chiefdom live. Smaller, single mound sites are located some distance from this central site and smaller-order leaders live at these sites and maintain some local control. Small hamlets and single-family farmsteads with no mounds are also scattered throughout the region and are inhabited by people who do much of the farming in support of the chiefdom. These small sites are connected to the chiefdom and larger Mississippian culture through tribute, ceremonialism, and feasting at the larger multi-mound centers. They are also typically set up in similar fashion to a larger site with houses arranged around a plaza area in which ceremonies or games could take place at a small scale (Beck 2003; Benson et al. 2007; Hally 1993, 1996; King 2003; Lafferty 1998; Mainfort 2012; D. Morse 1989; P. Morse 1981, 1990; Morse and Morse 1998; O'Brien 1994).

The people living in the CMV were long-term inhabitants of the region and were therefore possibly subject to the earthquakes of the NMSZ at multiple dates through prehistory. Both the AD900±100 and the AD1450±150 earthquakes could have affected the people here. Between the Middle and Late Mississippi period (ca. AD1400-1450), a large settlement pattern change has been mapped in the region (Lockhart et al. 2011). I had originally hypothesized that this change may have been brought about by the large NMSZ earthquakes of the 15th century.

This hypothesis was based on the response of European and Cherokee settlers in the region in response to the historic 1811/12 earthquake events. After the series of earthquakes in the early 19th century, the United States federal government allowed European settlers in the region to exchange their land grants in that region for land elsewhere, as the region was deemed unsuitable to live (Valencius 2010). Cherokee settlers, who had been removed to the region, also left the area and moved farther west in response to the earthquakes and sand blows (Valencius 2010). This left the region relatively uninhabited for a number of years before Europeans began to move west again and reoccupied the region, which was inhabited by the time of the Civil War in the 1860's.

Theory from hazard and disaster sociological studies that look for evidence of vulnerability and resilience in populations affected by hazards suggests that settlement pattern change in the face of a disaster such as an earthquake is one possible outcome. Disasters are difficult to predict even based on known hazards present in a region. People and societies that are aware of local hazards and their potential vulnerability to them often develop techniques and responses to hazards that make the society resilient in the face of a hazard, preventing the occurrence from becoming a disaster. This can be done through belief systems, social planning, or other proactive mediations of the possibility of a hazard striking. On the other hand, some societies do not take these proactive measures, either because they are unaware of the hazard, or because they do not think that it will affect them. This leaves them vulnerable when the hazard eventually strikes. This vulnerability and resilience can be observed at a number of levels within a society. Gunderson and Holling's (2002) idea of Panarchy illustrates this. Social feedback loops are constantly at work at various social levels (*i.e.* individuals, households, neighborhoods, governments, etc.). If one of these feedback loops is changed, it may affect other loops near it. For example, if a person's corn field is covered in sand and they cannot grow corn that year, the person may go hungry. But if some of the corn was meant to be given to the larger group, other people may be affected and go hungry as well. If enough people go hungry, they may stop believing in their government and the whole system will collapse. Conversely, if the government can compensate for the shortage, no one may go hungry and trust in the government will be secured, allowing all of the feedback loops to continue as usual.

Eventful archaeology (Beck et al. 2007) is a way to look at archaeological data to understand if an event (in this case a disaster or a breakdown of the panarchy on multiple levels) has occurred. The idea is based on Sewell's (2005) idea of eventful sociology. In Sewell's explanation, society runs via a feedback loop between schema and resources that are available to the society. The schema is the overarching ways and ideas behind doing things, and the resources are the physical things and mental ideas/knowledge available to the society to utilize to make the schema work. When the underlying resources are changed, the schema changes, and when the schema changes, the resources utilized may change. Beck and colleagues postulate that an event can be detected archaeologically by looking at changes in the material culture of a society from before to after the date of an event. This change in the resources would indicate a larger change in the overarching schema under which the people of the society are operating. Even without a known event, material culture changes can suggest that some kind of event occurred. In the CMV, we know that an earthquake occurred, the question is if that hazard event rose to the level of a disaster to the people living in the region. In this study, material culture is examined at multiple levels to look for material culture changes from before to after the date of the earthquakes to look for evidence that the earthquakes may have been considered a disaster by the Mississippian people living in the region. This is done with the knowledge that if the Mississippian people of the CMV were aware of the hazard, they may have already incorporated resilience strategies into their culture and would thus make very few changes to their archaeological signatures from before to after the earthquake date.

The Manley-Usrey site in northeast Arkansas was investigated archaeologically over three excavation seasons as well as two sessions of remote sensing work and shovel testing. From shovel testing and remote sensing, the site appeared to have been buried by a sand blow that extruded from an earthquake crack near the center of the site that covered 2,827 m^2 of the 18,000 m^2 site while the site was occupied or immediately after abandonment. Excavation of a trench perpendicular to the hypothesized earthquake crack proved that the linear feature on the gradiometry map was a sand dike and that at least three episodes of sand extrusion occurred through the dike, covering the center of the site under nearly a meter of sand. This protected the site from modern and historic farming damage and gave us a pristine Late Mississippi period hamlet to examine for pre-earthquake material culture characteristics.

To tie the timing of the earthquakes to the archaeological data and make comparisons to other site in the region that are meaningful, it was imperative to narrow the date of the earthquake to a smaller time-frame than the accepted dates from the paleoseismological studies of AD1300-1600. I did this by using a combination of AMS dating, which is problematic in this time-frame with the calibration curve being relatively flat, and Optically Stimulated Luminescence (OSL) dating, which dates the burial of sand grains. Because of the sand blows caused by the earthquakes, the midden surface of a buried archaeological site can be dated directly. The Manley-Usrey site in northeast Arkansas is a site that was buried by the ca. 15th century earthquakes, so I could date both carbonized remains from the site as well as the buried midden surface itself.

After the date of the earthquake had been more specifically established, the materials from the Manley-Usrey site excavations were compared to other chronometrically dated sites in the region to look for the material cultural changes hypothesized if the earthquakes and sand blow had been considered a disaster. Sites contemporary with the Late Mississippi Manley-Usrey site were examined as well as sites that continued occupation from the Late Mississippi period through to the Protohistoric period. Sites that post-date Manley-Usrey were also examined, although many of these are not chronometrically dated. The undated sites have been well-studied, however, making their assignment as Protohistoric sites secure despite not having a chronometric date.

The data from the sites were then examined at various levels, from individual artifact types to settlement patterning, to look for small and larger scale changes that might indicate changes in the overall operating schema and available resources of the CMV people from before to after the earthquake. Examination of the region at these various levels showed that there were in fact very few cultural material changes from before to after the earthquake dates. The Manley-Usrey site was directly impacted by a sand blow, and was subsequently completely abandoned, but other sites that were less directly impacted continued to be occupied after the earthquakes and the region in general continued with high population densities into the Protohistoric period.

This suggests that the people of the CMV and the NMSZ had incorporated enough resiliency strategies into their culture that a large-scale hazard that sent later European populations fleeing from the area hardly affected local society at all. At the smallest scale of an individual site, the earthquakes were a disaster, but on a larger, chiefdom, or regional scale, they were mostly unacknowledged.

2

Geomorphological Background

Geologic and Seismic History

The target area of this project is situated within the New Madrid seismic zone (NMSZ), which produces hundreds of earthquakes each year and is the most seismically active area in the central and eastern United States (Figure 2-1). The zone encompasses 5 states (Arkansas, Missouri, Illinois, Kentucky, and Tennessee) surrounding the Mississippi River and periodically produces earthquakes of large moment magnitude (≥**M** 6.5) that can be identified in the geological record via the production of sand blows (Chen et al. 2014; Li et al. 1998; Tuttle 1999; Tuttle et al. 1996, 2002, 2011). During the three historically recorded large-scale earthquakes of 1811-1812, shocks were felt across a 5,000,000 km^2 area and damage was caused over a 600-700 km radius. The shaking was violent enough to cause liquefaction and sand blows over 10,500 km^2 around the earthquakes' epicenters (Saucier 1989).

The NMSZ is a highly active intraplate seismic zone in the central United States. Seismic zones in general are understood to occur near plate boundaries whose movements in relation to each other cause earthquakes of varying magnitudes depending on the relationship of the plates (*i.e*., Transform boundaries, Convergent boundaries, or Divergent boundaries). The boundaries of the plates can typically be seen at the earth's surface or mapped on the ocean floor using sonar or other mapping technologies. The movement of the plates can also be measured using GPS to keep track of the strain that is being put on other parts of the plate boundaries. Intraplate seismic zones are much less well understood. They occur far from plate boundaries and by the standard rules of plate tectonics should not be seismically active (Guccione 2005; Pryne et al. 2013; Van Arsdale and Cox 2007). The NMSZ is hypothesized to be a failed rift that formed when the

South American plate moved away from the North American plate around 750-633 million years ago. This potentially left cracks in the lithosphere that had the potential to become seismically active under certain future conditions (Pryne et al. 2013; Van Arsdale and Cox 2007).

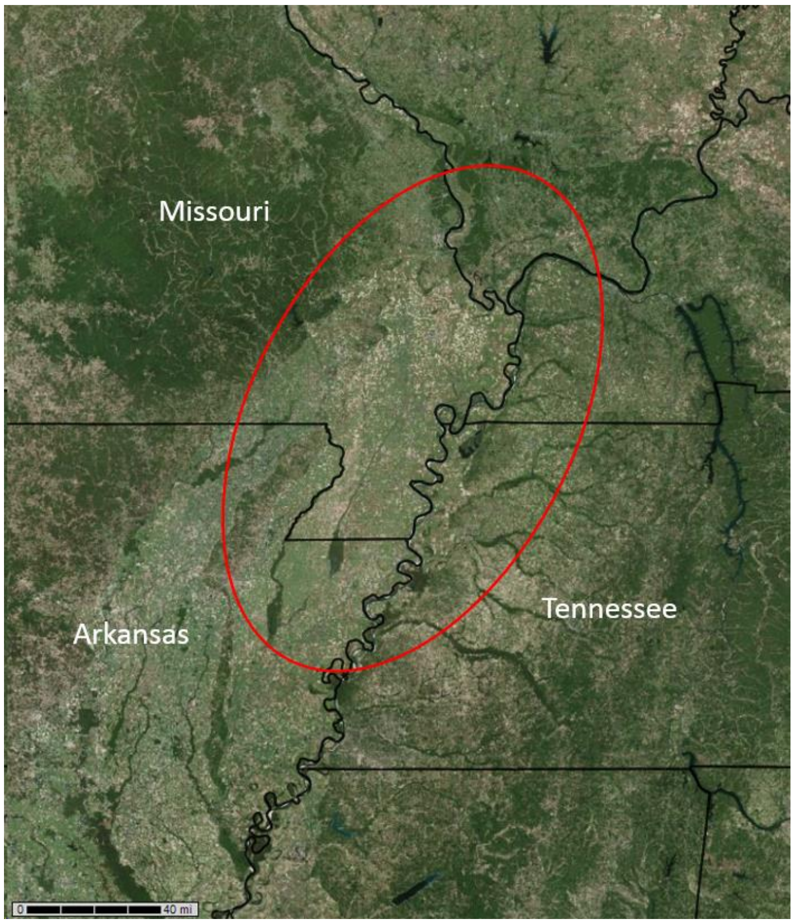

Figure 2-1: New Madrid seismic zone encompassing parts of Illinois, Missouri, Arkansas, Tennessee, and Kentucky outlined in red. Base map from Google Earth (2019).

The NMSZ is in the northern part of the Mississippi embayment, a broad, southwesterly plunging syncline of Upper Cretaceous (79-145 mya) and Cenozoic (66mya- present) sediments that overlie deformed Paleozoic (541-252 mya) rocks. This northern area is underlain by the Reelfoot rift, a northeasterly trending graben formed prior to the Mississippi embayment that is

70 km wide and 300 km long and has been detected using magnetic and gravity data (Zoback et al 1980). Cox and Van Arsdale (2002) suggest that the embayment itself began forming about 85-95 mya when the North American plate moved over the Bermuda hotspot. The hotspot is an area of very hot magma extending upward from the core of the earth. When the area that is now the Mississippi embayment moved over the hotspot, the heat caused the crust to expand and rise 2-3 km. Normal weathering processes over 10 million years eroded the expanded crust to the height of the surrounding continent. As the North American plate moved away from the Bermuda hotspot, the crust began to collapse back to its pre-expanded density and height. Because of the erosion that had taken place, and in spite of the pluton emplacement in the crust during its expansion, the area sunk nearly 2.6 km below sea level. This created the Mississippi embayment, which allowed rivers to flow to this new low area at the edge of the continent instead of to the north. It also potentially left the Reelfoot rift and its associated faults more susceptible to future seismic activation. Over the rest of the Cretaceous and Cenozoic period, sea level rises and rivers deposited sediments over the bedrock of the embayment creating the coast of the US in its current state (Cox and Van Arsdale 2002).

The Central Mississippi Valley (CMV) is the current name for the northern region of the Mississippi embayment where the Mississippi and Ohio Rivers sculpted the landscape through most of the Quaternary period (2.5 mya – present). The CMV extends from the confluence of the Ohio and Mississippi Rivers in the north to the confluence of the Arkansas and Mississippi Rivers in the south. The width of the valley varies from 80-160 km and encompasses 40,000 km^2. It is divided into the Western lowlands west of Crowley's Ridge and the Eastern lowlands east of Crowley's Ridge (the focus of this project) (Figure 2-2). Crowley's Ridge is a remnant of the uplands not eroded by the Mississippi River, though both the western and eastern lowlands are composed of ancient Mississippi River channels and their associated floodplains and backswamps (Morse and Morse 1998).

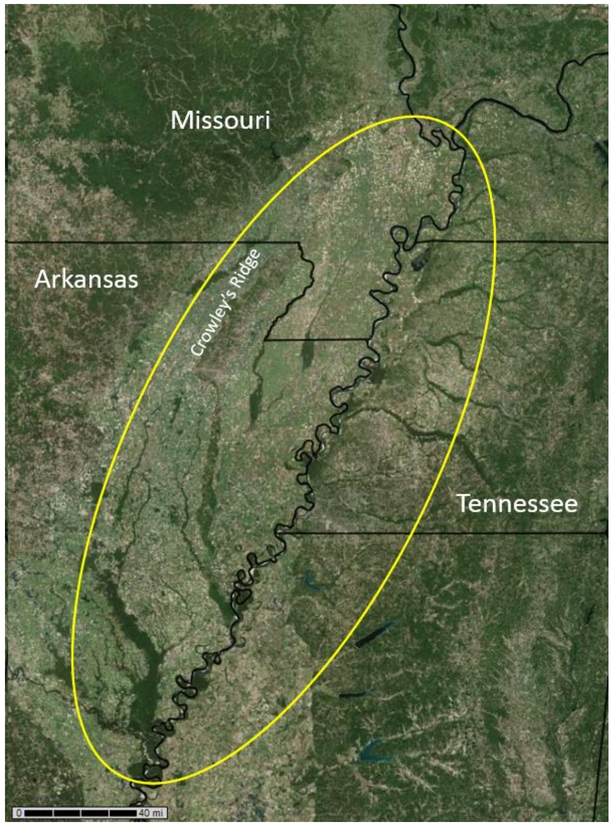

Figure 2-2: The Central Mississippi Valley as defined by Morse and Morse (1998) in yellow. The confluence of the Ohio and Mississippi Rivers is at the north of the image and the confluence of the Arkansas and Mississippi is at the south. Crowley's Ridge runs through the center of the river valley west of the bootheel of Missouri. Base Map from Google Earth (2019).

The Mississippi River as it flows now is 4100 km long and drains 3.25 million km^2 of the central and eastern United States. The CMV, as a long-standing river valley with a wide, flat plain (with the exception of Crowley's Ridge) has thick layers of alluvial deposition as well as areas of river belt cross-cutting. Saucier (1994) used these cross-cutting relationships to map the five meander belts of the Mississippi as well as older river deposits. During the Late Pleistocene (126 ka to 12.5 ka), the Mississippi was a braided stream flowing to the west of Crowley's Ridge and those fluvial deposits remain today. To the east of Crowley's Ridge the Ohio River flowed as a braided stream leaving valley train deposits throughout the valley. At the end of the Pleistocene the Mississippi River shifted to the east side of Crowley's Ridge and captured the Ohio. Throughout most of the Holocene (~5500 BC to the present) the Mississippi River has been a meandering stream on the eastern side of the Ridge. By 4000 BC the confluence of the Ohio and Mississippi Rivers was set at what is now Cairo, Illinois. Since about 800 BC the meander of the Mississippi River has been consistent within the same course that it currently occupies (Figure 2-3) (Morse and Morse 1998; Saucier 1994).

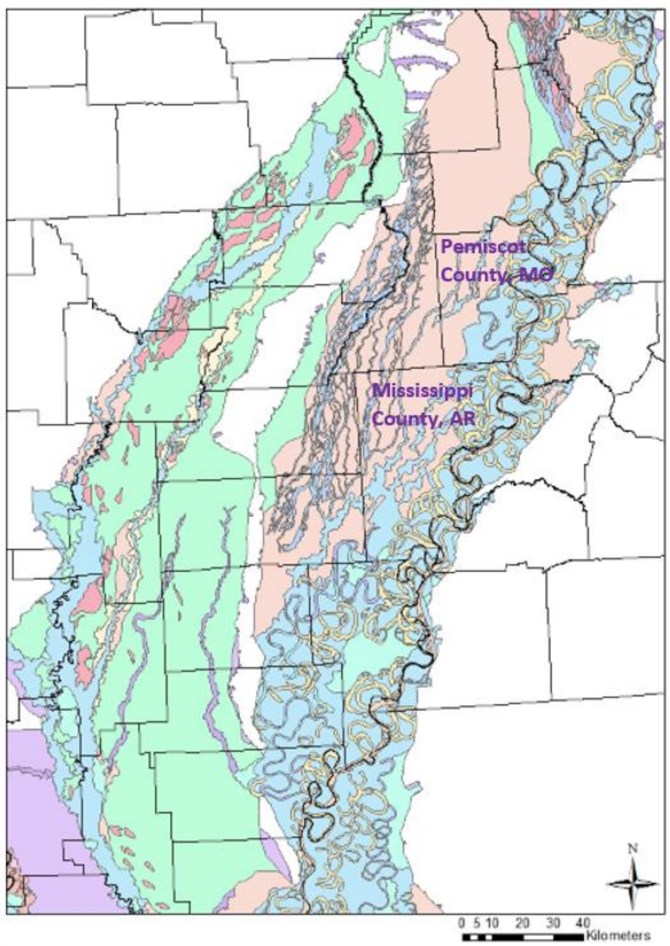

Figure 2-3: Quaternary Geologic Map of the Central Mississippi Valley. Yellow channels inside light blue area represent the most recent meander belts of the Mississippi River. White area in center is Crowley's Ridge. Based on Saucier 1994, shapefile downloaded from USGS website (2019).

Consequently, the two main soil/landform types in the valley are ancient braided stream surfaces and more recently abandoned meander belts and cut offs. The braided stream surfaces are harder, have a higher clay content, and are better for growing rice as the soils hold water well. The meander belt soils are loamier and good for growing cotton and other crops that do not need to be inundated with water. The more recent natural levees of the meandering river are also relatively higher and less prone to flooding than the backswamps or older braided stream surfaces. The entire valley is very fertile and has been used for farming for centuries. The area supports a wide variety of flora and fauna including bald cypress, hickory, oak, and pecan trees, cane, white-tailed deer, raccoon, ducks and geese, and a wide variety of fish. The availability of resources has made the CMV an excellent place to live for hundreds if not thousands of years (Morse and Morse 1998).

Unfortunately, the combination of the faults underlying the region and the kilometers of unconsolidated sediments above them make the region very destructive when a large earthquake occurs. During the Holocene (11.6 kya-present) is when geologists estimate major post-Paleozoic faulting began to occur in the region. But the faults are well below the current ground surface and impossible to study directly because of the rocks and sediments built up across the embayment throughout the late Cretaceous and Cenozoic periods (Zoback et al. 1980; Hamilton and Mooney 1990).

The most obvious indirect evidence for large earthquakes in the region is remnants of sand blows on the ground surface. Due to the unconsolidated nature of the river deposits that make up this area and the high water table maintained by the Mississippi River’s discharge, when large magnitude earthquakes (**M**7-8) occur along the buried faults, liquefaction of the subsurface deposits, and subsequently sand blows, occur. Liquefaction occurs when saturated, sandy sediments such as those of the CMV lose their shear strength during strong ground shaking events. This loss of strength can lead to fluidization of the sediments, allowing them to start to flow. If they can find a weak area in the overlying sediments, they will break through to the surface in the form of sand blows, or geysers, that shoot high into the air and spread across the ground surface (Wolf et al. 2006). These sand blow deposits manifest as steep-sided, conical, sand-filled eruptive vents at the point of extrusion and are connected to the sand filled feeder dikes that allow the sand and water to come up from the stratum of well-sorted sand ~2 meters or less below the ground surface. Sometimes these sand blows form close together along a linear fissure and can combine to be hundreds of meters long (Saucier 1989). Subsidence can then occur when the ground surface falls due to the opening left by the sand being extruded during the sand blow (Lafferty et al. 1987). Reelfoot Lake in Tennessee is an extreme example of an area of subsidence caused by liquefaction and sand blow extrusion. When the area subsided due to sand blows caused by the large-scale earthquakes of December 1811- February 1812, the creek there was dammed, and the Mississippi flowed into the low area creating a lake that exists to this day (Valencius 2013). Typically, the sand from the sand blow flows back into the subsided area and settles, forming stratified layers of sand, silt, and clay in the low area, but leaving the overall landscape relatively level (Figure 2-4) (Tuttle 1999; Tuttle et al. 1996, 2002, 2005, 2011).

Figure 2-4: Sand dike (on left) with layers of sand and silt overlying the midden of an archaeological site (3MS106). The layering suggests at least two and likely three sand blows were extruded through the dike. The midden layer is now at a slight angle dipping toward the sand dike due to subsidence.

Despite the difficulty in studying the mechanics of the seismicity of this area, years of paleoseismological research based on sand blows found on the surface, in river cut banks, and in association with archaeological sites have estimated the recurrence time of large (**M**7-8) earthquakes at an average of about 500 years. Sand blows have been identified that date to 2350±250 BC, AD 900±100, AD 1450±150, and 1811-1812. The sand blows from these different large-scale events occur in slightly different areas, suggesting that the epicenters were located along different faults during different events, but they are typically concentrated in the northern region of the CMV (Guccione 2005; Tuttle 1999; Tuttle et al. 1996, 2002, 2005, 2011).

Although only the large magnitude earthquakes leave a mark in the geological record, small earthquakes occur at least weekly throughout the region. The Center for Earthquake Research and Information (CERI) at the University of Memphis has an array of recording equipment across the region and records seismic activity constantly. These earthquakes are often too small to be felt by humans, but every few months a “felt” earthquake is reported. These “felt” earthquakes vary in magnitude depending on where the epicenter is located in relation to the surface and human occupation but are generally in the range of **M**3.5 or larger (Center for Earthquake Research and Information 2018).

Tectonic Features

The epicenters of many of the earthquakes occur in clusters along buried fault lines. Although understanding exactly how the faults work is not essential for this project, a detailed understanding of where the epicenters of the earthquakes occur (and, therefore, where they are most likely to be felt) and how these faults might affect and impact the ground surface beyond sand blows is important to consider. As such, it is essential to at least be cognizant of what geologists and paleoseismologists are studying and how they are explaining the NMSZ earthquakes. Over the past 20 years they have begun using various technologies to learn more about the faults in the NMSZ and how they work and consequently several hypotheses have been put forward about deep geostratigraphy, ground surface deformation, and what caused seismic activity to restart in the Holocene (Carlson and Guccione 2010; Crone 1998; Johnson et al. 2014; Liu et al. 1992; Mueller et al. 1999; Pryne et al. 2013; Rabak et al 2011; Spitz and Schumm 1997; Van Arsdale and Cupples 2013).

Multiple faults in addition to the Reelfoot Rift have been mapped in the CMV (Figure 2-5) (Johnson et al. 2014). These faults are sometimes identifiable by slight ground surface expressions such as uplifts or arches. Other times these uplift and arch features are only seen deep under the ground surface by using remote sensing technologies. The surface expressions are becoming more visible with the expanding availability of LiDAR across the region as an upgrade from contour maps which showed the geography in much coarser detail. The history of earthquake epicenter locations also helps geologists to look for possible faults below ground or as surface expressions (Pryne et al. 2013).

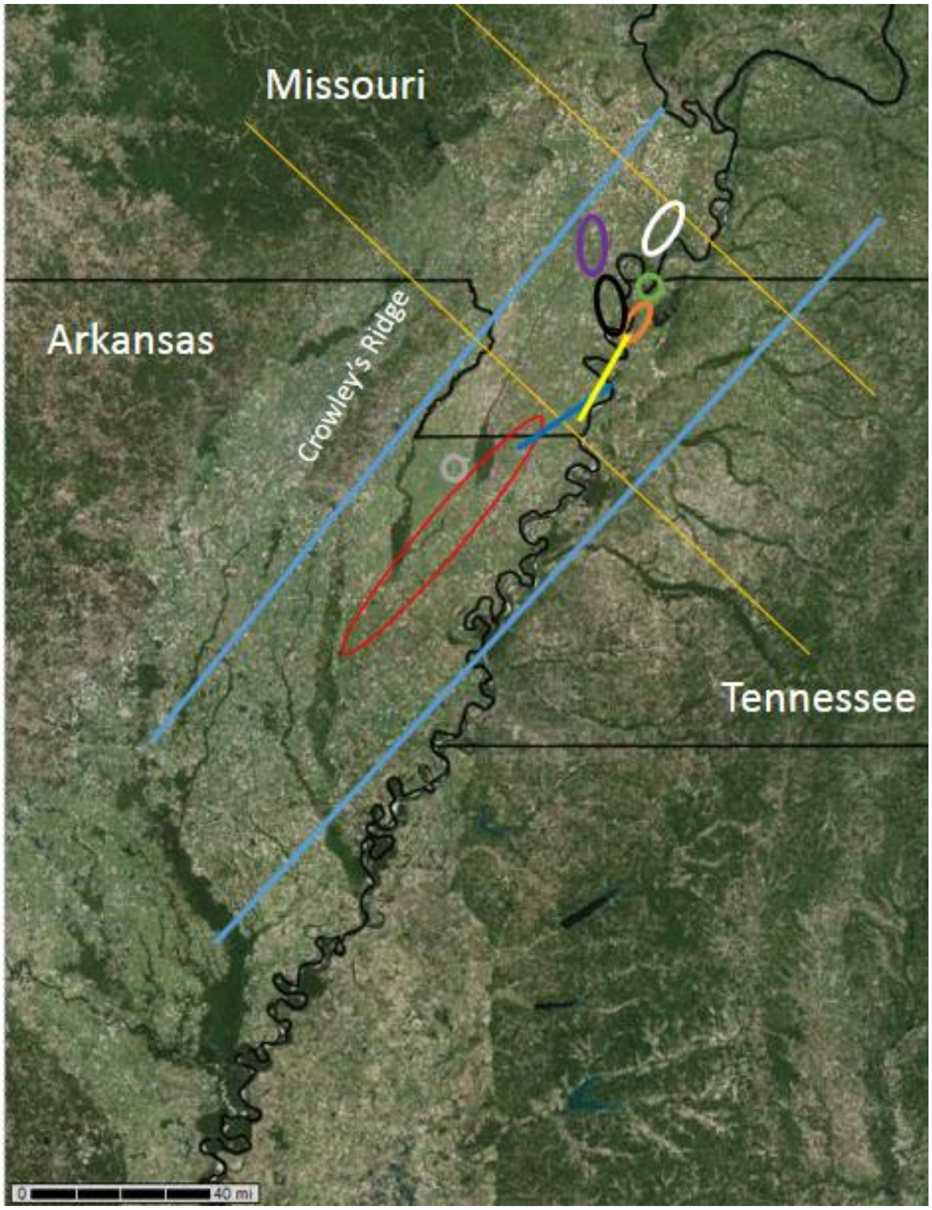

Figure 2-5: Tectonic features in the CMV. Light blue: Reelfoot Rift, Gold: Pascola Arch, Red: Blytheville Arch, Gray: Manila High, Bright Blue: Blytheville Fault Zone, Bright Yellow: Cottonwood Grove fault, Orange: Ridgely Ridge, Black: Lake County Uplift, Green: Tiptonville Dome, Purple: Sikeston Ridge, White: Charleston Uplift (Data adapted from Johnson et al. 2014, Guccione et al. 2000, and Pryne et al. 2013). Base map from Google Earth (2019).

The center of the Reelfoot rift contains right-lateral strike slip fault zones running northeast to southwest (Liu et al. 1992). Van Arsdale and Cupples (2013) suggest that although the majority of the faults in the NMSZ are right-lateral slip faults, there are also north-south reverse faults (that have been called stepover zones) and east-west normal faults. They base this on contour maps that they produced from data from 3891 well logs drilled across the NMSZ. They also mapped N-S profiles of the Upland Complex in western Kentucky and Tennessee and compared it to Crowley's Ridge in Arkansas to show identical distributions of highs and lows in the structure, suggesting a common origin. The parallelism of the top and bottom of the Upland Complex strongly indicate that it was caused by tectonic deformation (Van Arsdale and Cupples 2013). Subsequent erosion by the Mississippi River removed much of this structure within the river's meander belt area between Crowley's Ridge and the current location of the river (Van Arsdale 2015). Van Arsdale (2015) suggests that the lessening of pressure due to erosion may be the mechanism by which these old faults became reactivated in the Holocene.

Mueller and colleagues (1999) looked at a northeastern part of the NMSZ called the Lake County Uplift (LCU) (Figure 2-5), the surface expression of a compressive step-over fault composed of the Tiptonville Dome (which is raised 5-6 m above the surrounding floodplain) and Ridgely Ridge to try to better understand how this area of the NMSZ works. They used fault-related fold theory to model the growth of the LCU based on trench exposures, microseismicity, high-resolution seismic reflection profiles, and digital elevation models. In doing this, they found that the thrust fault along the LCU has three different orientations as it gets deeper below ground: a shallow slope, a 55° slope, then a 34° slope. The Tiptonville dome was also studied by Carlson and Guccione in 2010. Looking at geomorphology of the sediment layers, they found that the dome had been uplifted 1.6-3.9 m during the large-scale earthquakes of AD 1450±150 and 5.9-8.2 m in 1811-1812. The geomorphological evidence suggests that the uplift seen at the ground surface occurred during those two earthquake events and was not present before AD1450±150 (Carlson and Guccione 2010).

Guccione and colleagues (2000) studied the Manila high near Big Lake in northeast Arkansas. They showed that the Manila high was uplifted ~2-4 m immediately adjacent to and west of Big Lake. This uplift is understood to be tectonic in origin and dated prior to ~5400 years ago. This date is based on the diverting of the Little River around the Manila high, suggesting that the high existed before the river formed. It may have been raised more during the earthquakes of 1811-1812, but it was already in existence prior to those events (Guccione et al. 2000).

Pryne and colleagues (2013) studied the Charleston Uplift in Tennessee (which has no surface expression) but looked at Sikeston ridge as well due to its being in the area and at the correct orientation to be the surface expression of a fault (Figure 2-5). Sikeston Ridge was found to be an erosional remnant and not a sign of tectonism though. Below the ridge, Paleogene (66-43 mya) lithologic trends extend unbroken, demonstrating that the ridge was formed by erosion during the quaternary period. Although the geomorphology of the Mississippi River suggests that the Charleston Uplift has risen during the Holocene, to date there is no evidence of ground surface expression (Pryne et al. 2013).

The Pascola and Blytheville Arches have no ground surface expression but have been located using various remote sensing techniques. The arches are only seen in the deep stratigraphy of the underlying sediments, suggesting that the underlying faults have not moved much during the Holocene (Crone 1998; Rabak et al. 2011; Spitz and Schumm 1997).

Weather and Climate

In addition to the deep geological features of the region, the weather and climate also impact the geomorphology and livability of an area. The mean annual temperature for the CMV region is 60°F, with an average of 40°F in January and 80°F in July. The average precipitation (predominantly rainfall) is approximately 125 cm (50”) per year. The rainfall has historically been distributed evenly throughout the year making farming and keeping crops watered possible without much irrigation. Frost free days extend from the end of March to the end of October giving a long growing season and making multiple plantings of some crops possible (Morse and Morse 1998). Despite the average conditions of the region being good, the highs and lows in temperature and rainfall can change the character of the region quite substantially when those above or below average conditions are sustained for many years and the CMV is known to have undergone sustained drought conditions at various times throughout recorded history.

The Palmer Drought Severity Index (PDSI) is a measure of the duration and intensity of long-term drought-inducing circulation patterns that was developed by W.C. Palmer in 1965 (National Drought Mitigation Center 2018; NOAA 2018). Drought intensity is a cumulative problem, so the PDSI is dependent on not only the current weather patterns, but also those of the previous months, though it can respond fairly quickly to changes in these patterns (NOAA 2018). PDSI uses precipitation and temperature data from an area as well as the local Available Water Content of the soil, evapotranspiration, soil recharge, runoff, and moisture loss as the supply-and-demand inputs to an algorithm that calculates the severity (or not) of a drought in a region. The severity index runs from -4 (extreme drought) to +4 (extremely wet), with -.49 - +.49 being normal conditions (National Drought Mitigation Center 2018).

The North American Drought Atlas was developed using tree-ring data from 835 tree-ring chronologies from across North America (NOAA 2018). In the southeastern United States and northeast Arkansas, these chronologies come from baldcypress (*Taxodium distichum*), which is a slow-growing, long-lived species that lives on alluvial floodplains. Because baldcypress is long-lived, the living trees show a long annual tree-ring history which can then be matched to well preserved baldcypress wood recovered from archaeological sites as well as buried and preserved tree stumps and logs. The growth rings of baldcypress are strongly correlated with climate data (positive correlation to precipitation and negative correlation to temperature) despite the frequently flooded conditions of their floodplain environment. This suggests that baldcypress can be used for paleoclimate reconstructions (Stahle et al. 1985). Due to the strength of the paleoclimate correlations, the annual PDSI can be reconstructed from these annual tree-ring data so that it is comparable to that calculated from instrumental records from 1884 until now, though at an annual rather than monthly or seasonal scale. Tree-ring data, therefore, allows the drought atlas to extend back past the beginning of instrumental records to as far back as 0 BC in some areas of the United States and to ~AD900 in the northeast Arkansas region (KNMI Climate Explorer 2018).

Looking at the NADA PDSI anomalies for the 300 years around the date of the 15th century earthquakes (Figure 2-6), there appears to be a random distribution of short dry periods. There is an extended dry period at the end of the AD1500's, but de Soto's chroniclers wrote of an extended drought affecting the people in the area in 1541 and that drought is less evident in this data (Morse and Morse 1998) (Figure 2-6). There are drought years throughout the 300-year period in question (in AD 1380-1400, the AD 1450's, AD 1480-1495, AD 1565-1575) (Figure 2-

6, 2-7, 2-8, 2-9) and their extended nature would have made it difficult to raise crops in the region, especially as the drought continued from year to year.

Although the climate of the NMSZ and CMV are typically inviting and good for farming and settlement, there are still times when the weather can make life very difficult if you are a farmer. The drought patterns shown throughout the AD 1300-1600's could potentially be made even more problematic by being in an area of active tectonism. This is especially true during this period because large-scale earthquakes have been dated in this time-range. If an earthquake struck during or toward the end of a prolonged drought, the consequences could be much more disastrous than if it struck during a time of average climate conditions. The Mississippian farmers living in this area were large-scale cultivators and fluctuations in climate and landscape could have had a large impact on their lives.

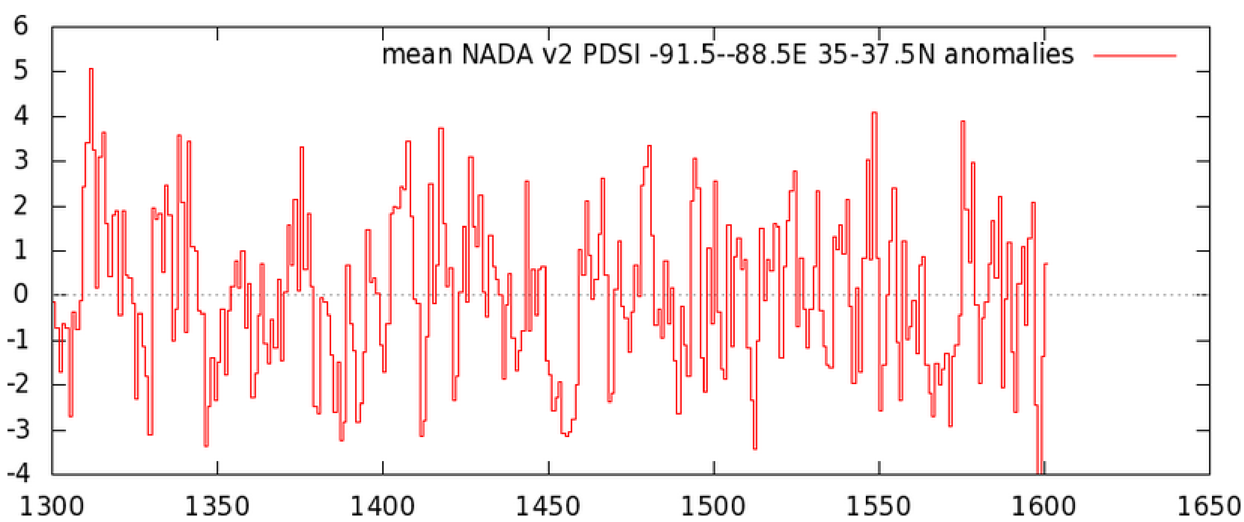

Figure 2-6: NADA PDSI data for NE Arkansas for AD 1300-1600, the years surrounding the AD 1450±100 earthquake (produced using KNMI Climate Explorer 2018).

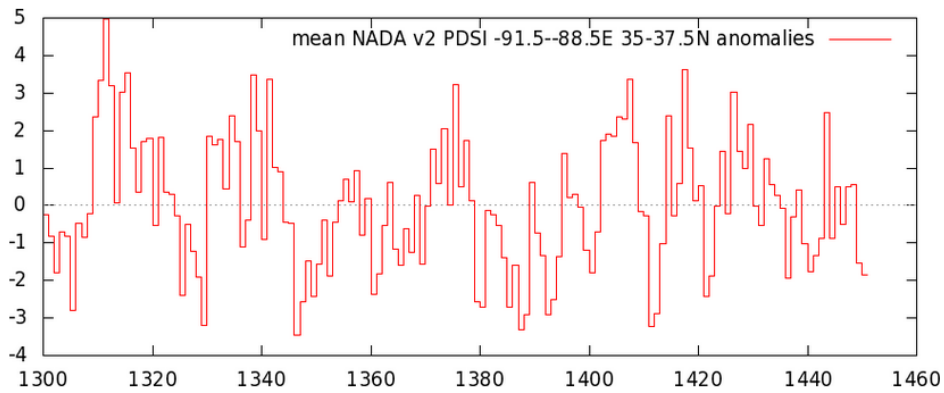

Figure 2-7: NADA PDSI data for AD 1300-1450 in the NMSZ (KNMI Climate Explorer 2018).

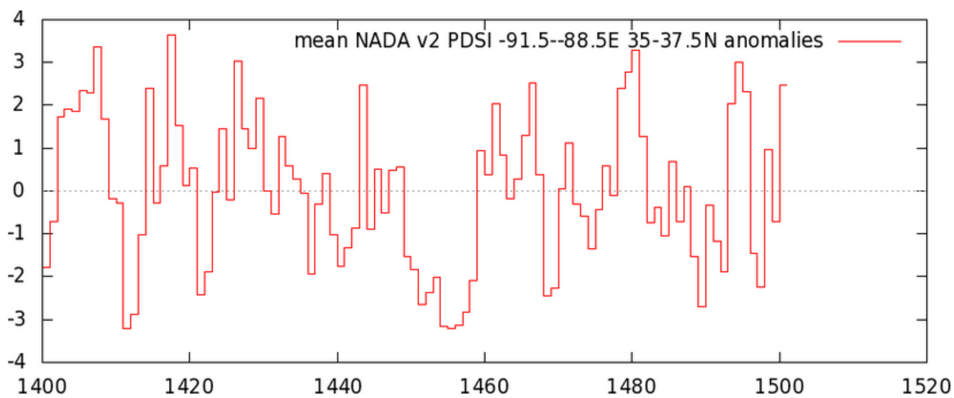

Figure 2-8: NADA PDSI data for AD 1400-1500 in the NMSZ (KNMI Climate Explorer 2018).

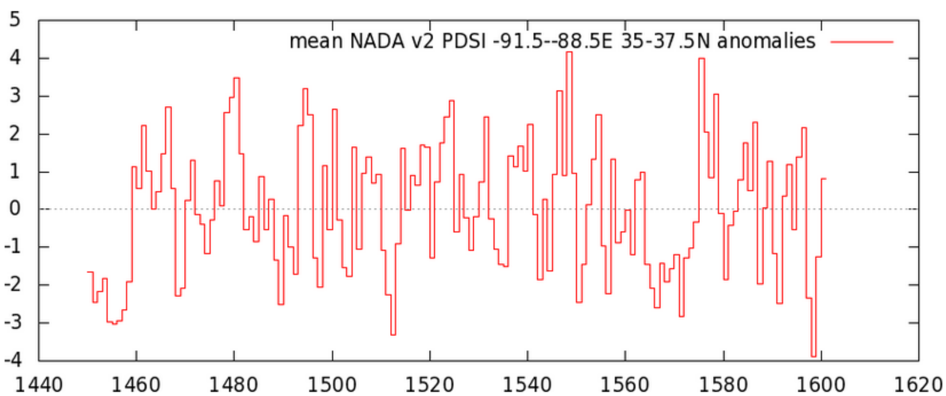

Figure 2-9: NADA PDSI data for AD 1450-1600 in the NMSZ (KNMI Climate Explorer 2018).

3

Archaeological Background

In the most general terms, Mississippi period sites are often identified by the presence of a pyramidal platform mound, a plaza area, and smaller mounds surrounding the plaza and across other areas of a site. There are often planned residential layouts and sometimes even demarcated neighborhoods located throughout large mound sites and sometimes segregated cemetery areas as well. These large sites are often located in a river valley or a similar area of prime agricultural soils and surrounded by smaller sites, some containing one or two small mounds and some with no mounds at all. These mounds sites and their relative sizes and numbers of mounds are generally inferred as markers of chiefdoms and the area of influence and control that a particular chiefdom was able to exert over people in a surrounding region. These settlement patterns, their abandonments and reoccupations, and their links to power structures have given rise to ideas of chiefdom cycling (Anderson 1994) or town fission-fusion processes through time (Blitz 1999) in the Mississippian world. They have also been used to interpret the different ways through which chiefs exerted and maintained power over their populations (a constituent hierarchy, usually depending on persuasive aggregation or an apical hierarchy, usually using coercive expansion strategies) (Beck 2003; Benson et al. 2007; Hally 1993, 1996; King 2003; Lafferty 1998; Mainfort 2012; D. Morse 1989; P. Morse 1981, 1990; Morse and Morse 1998; O'Brien 1994).

Reliance on maize agriculture as an important dietary staple is another marker of the Mississippi period and Mississippian culture. Isotopic analysis of human remains has shown increased reliance on maize through time throughout the southeast (Boutton et al. 1984). In the Woodland and Early Mississippi periods corn was available and being grown but was not a major dietary staple until the Middle and Late Mississippi periods (Morse and Morse 1998). As reliance on maize agriculture increased and it became a reliable dietary staple, people were able to focus on expanding it as a food crop and expand the ability of chiefdoms to provide food to constituents and people that they might be trying to convince to become members of the chiefdom. Maize agriculture also allowed for some members of society to focus on tasks other than food production such as the production and use of artistic or ceremonial objects, planning and carrying out warfare on neighboring chiefdoms or villages, hunting and trading excursions, and consolidating power (King 2003; Johnson and Earle 2000).

On a smaller scale, one of the main signifiers of a Mississippi period site is shell tempered pottery. Shell tempering is used almost exclusively by the Middle and Late Mississippi periods across the southeast and was already in substantial use by the Early Mississippi period. Temper in pottery is used to control paste plasticity during the manufacturing of the vessel as well as to increase the resistance of the vessel to cracking. This resistance to cracking is also important in the firing and use of vessels. As temper particle sizes decrease (as they do in shell tempered Mississippian pottery, especially fine-wares), the vessel becomes more resistant to thermal stresses after firing. This suggests that the technology of pottery-making was focused on creating a resilient vessel that could stand up to long exposures to high heat sources that would be required for cooking. Changes in vessel shape also suggest a larger emphasis on using vessels for cooking. Making vessels such as jars with thinner walls and in globular shapes allows for improved thermal resistance to damage while allowing for longer exposure to heat sources for simmering or boiling starchy seed foods in order to extract more of their nutritional value (Braun 1983; Griffin 1965). It has also been suggested that the calcium carbonate that was leached from the shell temper during the cooking process may help free niacin from the corn in order to prevent pellagra. This is done using lime in Mesoamerica and is a necessary step to making corn more nutritious (Morse and Morse 1998).

Mississippian people across the southeast also share a similar cosmological understanding of the world as a tripartite form that includes an Upper World, and a Lower World, with This World in between. Beings inhabit all three realms and some can travel between them and sometimes cause physical effects in This World. The Lower world is generally understood to be the realm of surprising phenomena such as earthquakes, floods, and the growth or lack thereof of crops. The Upper World is the realm of orderliness and predictability; anything that is cyclical and regular. Despite these differences, neither world is given a moral identification. Neither is evil or good, they just are (Lankford 2008). We can see some of the ideas of the shared cosmology expressed in varying ways in different communities and art styles throughout the southeast. As is common among other ancient societies, art functions as a material expression of the cultural constructs of Mississippian religious beliefs and practices. Although it takes different forms and styles in different regions, it serves dual purposes across the Mississippian world: 1) as ritual regalia, and 2) to provide a visual validation of the authority of the rulers of the chiefdom who possess it (Reilly and Garber 2007).

Central Mississippi Valley

The Central Mississippi Valley (CMV) encompasses the area carved out by the meandering channels of the Mississippi River from the mouth of the Ohio River on the north to the mouth of the Arkansas River on the south. This study focuses on the more northern extent of the CMV extending from south of the confluence of the Ohio and Mississippi Rivers to north of Memphis, TN (Figure 3-1). Based on archaeological and geological evidence, this region was heavily populated during the Middle and Late Mississippi periods as well as the beginning of the

Protohistoric period but was also heavily impacted by sand blows formed during large earthquakes produced by the NMSZ. Within the CMV, archaeologists have divided the region into 3-4 phases during the Late Mississippi period which they hypothesize may represent separate chiefdoms that interacted with de Soto's entrada when they entered Arkansas in 1541 (Clayton et al. 1993; P. Morse 1981, 1990; Morse and Morse 1998; Williams 2012).

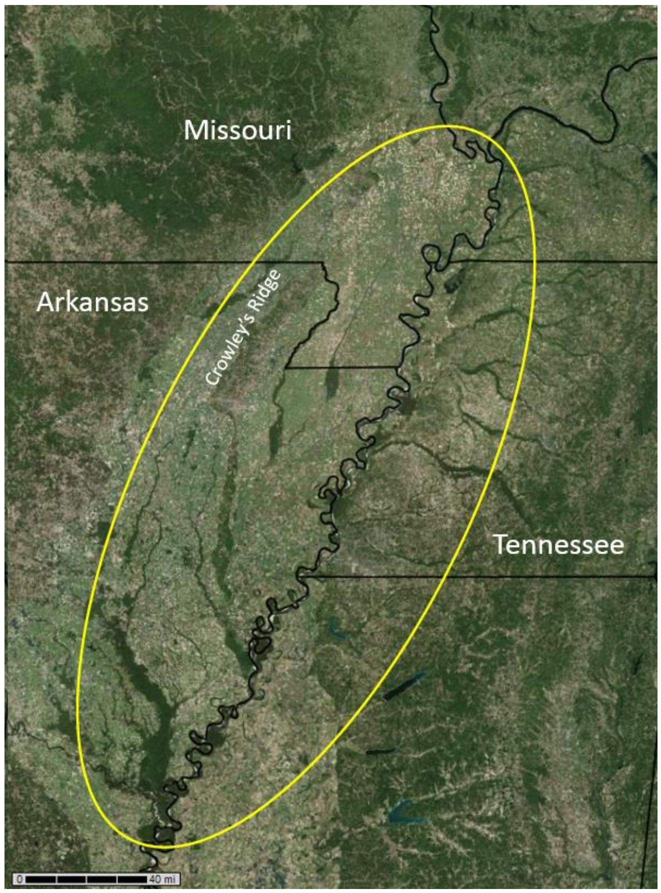

Figure 3-1: The Central Mississippi Valley as defined by Morse and Morse (1998) in yellow. The confluence of the Ohio and Mississippi Rivers is at the north of the image and the confluence of the Arkansas and Mississippi is at the south. Crowley's Ridge runs through the center of the river valley west of the bootheel of Missouri. Base map from Google Earth (2019).

From south to north, the Late Mississippi regional distinctions are: the Parkin phase (Morse 1981, 1990; Phillips, Ford and Griffin 1952), the Nodena phase (Morse and Morse 1998; Phillips, Ford, and Griffin 1952; Williams 1954), the Armorel phase (Williams 1954, 1980) (or the Pemiscot Bayou area [O'Brien 199]), and the "Vacant quarter" (Williams 1954, 2012) to the north. (Figure 3-2). Although the phase assignments are for the Late Mississippi period, there were people in all these areas during the Middle Mississippi period as well, and they and immigrants from west of Crowley's Ridge are the people who created and became the groups who occupied the region later. During the Middle Mississippi period the precursors to each phase developed in similar ways, but during the Late Mississippi some major differences between the north and south extents of the region appear (Benn 1998; Lafferty 1998; Morse 1981, 1990; Morse and Morse 1998; O'Brien 1994; Price and Griffin 1979; Teltser 1998; Williams 2012).

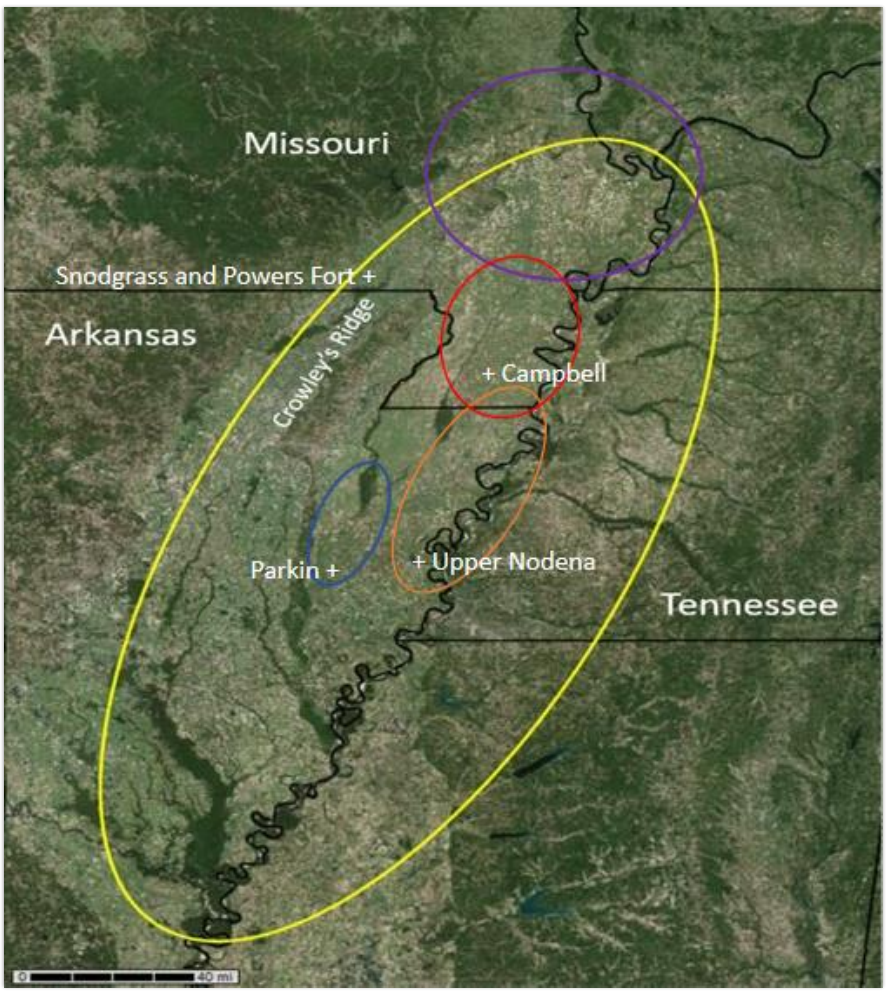

Figure 3-2: Central Mississippi Valley marked in yellow, with Parkin phase in blue, Nodena phase in orange, the Pemiscot Bayou area in red, and the "vacant quarter" in purple. Individual sites discussed in the text are marked. Base map from Google Earth (2019).

Settlement Patterning

In Arkansas, a major shift in settlement patterning is seen between the Middle and Late Mississippi periods, with population centers moving to occupy the natural levees of small rivers and bayous in the Mississippi River floodplain on the eastern side of Crowley's Ridge (Lockhart et al. 2011; Morse and Morse 1998). A similar change in settlement seems to occur in the bootheel of southern Missouri, but the data has not been demonstrated as clearly as that in Arkansas. Farther to the north in Missouri is what is called the "Vacant Quarter", where no large mound sites are recorded after the Middle Mississippi period, but small sites are numerous across the landscape (Lafferty 1998; Teltser 1998; Williams 2012).

Middle Mississippi Single sites of varying sizes have been studied within the Middle Mississippi period in the CMV and these show that there are hierarchies of site size and complexity. Some Middle Mississippi sites have mounds or multiple mounds, some are organized villages with no mound, and other are small hamlets or farmsteads. Within consolidated Middle Mississippi sites in the CMV, there also appears to be an organized site layout that changes depending on the size of the site and the presence or absence of a mound or mounds.

The Snodgrass site is a 1.3 ha fortified site surrounded by a ditch in SE Missouri (Figure 3-2). The site does not have a mound, but its layout does imply some level of social stratification. The site contained 90 structures, 38 of which were contained within a separate inner ward that was delineated by a plastered wall separating it from the rest of the site. The houses within this area were about 30 m^2 and were arranged in four rows around an open plaza area. The remaining 52 structures were located between the outside fortification and the inner wall. These houses were arranged in two separate areas. The first area contained 28 houses averaging 15 m^2, in 7 rows surrounding an open plaza area. The second area is composed of two long rows of structures with a small courtyard near the wall of the inner ward. The houses here average 17.4 m^2.

Even larger sites containing mounds such as the Powers Fort site were also occupied during the Middle Mississippi period. Powers Fort is a 4.6 ha rectangular, fortified site containing four mounds, one flat topped and pyramidal, and a large plaza. There are residential areas containing houses to the northwest, west, and south of the plaza. The full number of houses at the Powers Fort site remains unknown but is estimated to be in the hundreds based on limited excavation and surface observations. The houses are located around the periphery of the site outside of the mound and plaza area. The area to the northwest shows the largest quantity of painted, polished, and engraved ceramics that might be an indication of an area of specialized structures, or the living area of the more socially elite of the city (Price 1978). This distribution of houses and finer pottery suggests social stratification in the housing as well as in access to the mounds and plaza in the center of the site.

The site layout pattern of a large site with multiple mounds with smaller, surrounding sites within a limited region and similar layouts in nearby regions follows the pattern Hally (1993, 1996) described for chiefdoms in the southern Appalachian region of Georgia. This suggest that people in the CMV during the Middle Mississippi period may have been living in a similarly hierarchical social system. It is likely that people were consolidating into larger towns and cities and forming and becoming part of chiefdoms like much people in the rest of the southeastern US (Benn 1998; Morse and Morse 1998; Price 1978; Price and Griffin 1979).

To the east of the Powers Fort site in the Cairo Lowlands is part of what becomes the Vacant Quarter in the Late Mississippi period. Despite this, some settlement patterning from the

Middle Mississippi period has been studied. In southeast Missouri Teltser (1998) found in a systematic pedestrian survey of a 3570 km^2 area to the south of the 16 ha Middle Mississippi period Sandy Woods site (a known fortified multiple mound site) that there were few other outlier Mississippi sites. This suggests to her that Mississippian people were beginning to consolidate onto larger, more populous towns and villages rather than living in small groups across the landscape in the Middle Mississippi period (Teltser 1998). Teltser does caution, however, that the ceramic chronology for the Cairo Lowlands is not as well established as it is for areas farther to the south along the Mississippi river and that shell tempering was not adopted as early and as thoroughly in this area as it was in the southern areas of the CMV. Due to this, without absolute dates on some of the smaller sites in the region, late and protohistoric sites could possibly be misclassified and cause confusion in settlement pattern studies.

Lafferty (1998) came to a similar conclusion based on his survey work for the Corps of Engineers in the New Madrid floodway. In a systematic survey of two ridges (one 96 km^2, the other 256 km^2) west of the Mississippi River he found that there were many fewer sites containing Mississippian components than those containing Woodland elements. Like Tetsler, Lafferty concluded that this demonstrated a Mississippian move toward consolidation to larger towns likely administered by chiefs with only a few small hamlets or farmsteads spread across the outlying area during the Middle Mississippi Period (Lafferty 1998).

Late Mississippi During the Late Mississippi period in the CMV there is a change seen in settlement patterns from south to north. In the southern part of the study area (Arkansas and the southern bootheel of Missouri) movement to the Eastern Lowlands is seen and consolidation of settlement on natural levees of streams, bayous, and rivers occur (Lockhart et al. 2011; Morse and Morse 1998). Farther to the north, near the Ohio River, people leave towns in the Western lowlands for the Eastern Lowlands, but the vacant quarter also appears. The vacant quarter area is populated, and possibly with many people, but there is a lack of consolidated villages or even any large towns or cities at all found archaeologically in the region (Williams 2012).

Working from south to north, the Late Mississippi period Parkin Phase is located along the St. Francis and Tyronza Rivers in NE Arkansas (P. Morse 1981, 1990; Phillips 1970). The Parkin site itself is at the southern end of the area encompassed by the phase and is proposed to be the main village of the chiefdom of Casqui noted in the de Soto chronicles (Clayton et al. 1993). A pedestrian survey was carried out by P. Morse in the 1 km area surrounding the Parkin site to understand the hierarchy of sites in the area and how tribute and surplus may have flowed from outlier sites to the multi mound civil-ceremonial site of Parkin. Interestingly, no small hamlets or farmsteads were located during this survey despite heavy survey coverage of the surrounding land area. However, sites with small or no mounds, but larger than hamlets or farmsteads were mapped in a wider-reaching survey and established to be a part of the Parkin Phase. It was hypothesized by P. Morse that the lack of the smallest sites was due to ongoing conflict in the region that made it impossible to live outside of a fortified city. People would travel to their fields from a city during the day to work and grow the surplus needed to maintain the chiefdom, but they returned to the city at night for protection from enemy tribes (Morse 1981, 1990).

The smaller fortified sites to the north and south along the St. Francis and Tyronza rivers were subordinate sites to the main center at Parkin, which was built at the confluence of the two rivers, raised above the surrounding ground level through earth movement, and surrounded on three sides by a moat as well as a palisade wall. The Parkin site covers a 6.9 ha area with a large, flat topped pyramidal mound with an apron or lower extension on the southern end. Both parts of the mound had important structures built on them for the chief or as a temple. Six smaller mounds were mapped around the plaza near the main mound in 1940 and were likely house mounds for important people or families (Morse 1981). Other houses for less prominent people are located across the site. They are generally 4 m x 4 m and are only daubed around the smoke hole on the roof. The houses were built by placing individual posts around the perimeter and using lashed cane or stick "mats" to cover the walls. The roofs were thatched. Houses were rebuilt many times on the same location, creating a deep midden at the site and making dating individual construction or burning events difficult (Mitchem 2017). The land area inside of the ditch seems to be virtually full of houses with little space between them. It is unclear whether the houses at Parkin were laid out in a planned manner, but it is likely the case that they were arranged in rows around open courtyards or small plaza areas as most other St. Francis type sites in the area are and as their preceding large Middle Mississippi period sites were as well.

This site pattern and the larger layout of multiple sites suggests that the Parkin phase or at least part of it was being run as a chiefdom and possibly even a complex chiefdom with the presence of a site with multiple mounds based on comparisons with Anderson's (1996) and Hally's (1993, 1996) analyses of the settlement patterns of chiefdoms across the southeastern US (Mitchem 2000, 2017; P. Morse 1981, 1990). The fortification of Parkin phase sites and the lack of small sites outside of the larger centers suggests that warfare may have been a problem for the people of the Parkin phase and de Soto's chroniclers support that notion if we accept that the Parkin site was Casqui. The entrada's chroniclers note the ongoing war between the Casqui and Pacaha people, so it seems reasonable that the fortified sites of the Parkin phase were for protection against incursions by the northern Pacaha people of the Nodena phase (Clayton et al 1993).

To the northeast, the Upper Nodena site is the type site for Phillips's (1970) Nodena Phase, which is the Late Mississippi phase possibly associated with the Pacaha tribe noted in the de Soto chronicles (Clayton et al. 1993). As described, the phase spans the eastern edge of NE Arkansas from Memphis up into SE Missouri with sites located along meanders of the Mississippi River, the left-hand chute of the Little River and the Pemiscot Bayou. There are some large, fortified cities in this region, but also many smaller, unfortified towns or hamlets spread across the landscape. These smaller towns are generally still near the rivers on which the larger sites are located but are found up- and down-river from the large sites. The Upper Nodena site is a 6.27 ha site with 12 to 15 small mounds surrounding one larger, pyramidal mound with an apron extending off of one side, much like the mound at Parkin. An open plaza area is adjacent to the mound and between the two largest mounds on the site. Most of the excavation work through the years has focused on skeletal excavation, but maps drawn by Dr. Hampson (Morse 1989) indicate that houses of various sizes were arranged in lines and groups around the mounds and within the fortifications. At least one of the houses (excavated in 1973) measures 5.3 x 5.2 m, was built using a wall trench to hold wall posts and has internal roof support posts (Morse 1989). Dr. Hampson described houses that he excavated as having a rectangular pattern of post holes and a hard-burned floor (Mainfort 2010; Morse 1989). The houses may also have been arranged around open courtyard areas, but without more extensive excavation techniques to look at the houses it is difficult to tell. Burials were found throughout the site (with the exception of the plaza) as well as in separate cemetery areas outside the site. The presence of mounds of multiple sizes at the site and many smaller sites located throughout the phase would seem to suggest that there was some amount of social hierarchy present and likely a chiefdom based on comparisons to Parkin and the larger southeast (Anderson 1996; Hally 1993, 1996; Morse 1989;

Morse and Morse 1998). The well-studied burials at the site, however, do not necessarily hold that to be the case (Fisher-Carroll 2001; Fisher-Carroll and Mainfort 2000).

There is very little statistical difference in the quality or type of burial goods found with people buried in different areas across the site. Despite this general sense of similarities, there is some suggestion that the people buried in Mound C may have been higher ranking individuals. They are not buried with “symbols of authority” as the highly ranked individuals from Moundville are, but there is a clear spatial distinction between Mound C and the rest of the burials on the site. This could suggest that while Nodena was not a large chiefdom with authority and power on the scale of a site like Moundville, there was still social ranking and the elites were segregated from the rest of society after death. This also seems like a reasonable conclusion based on the fact that the Upper Nodena site is not nearly as large as a site like Moundville, suggesting that perhaps the power of the elites was not as strong and therefore the burial goods would reflect that (Fisher-Carroll 2001).

Overall, the settlement pattern and internal layout of sites in the Nodena phase suggest that some level of social hierarchy was at play. While perhaps not a chiefdom of the size and complexity of a city like Moundville or Etowah, some social stratification was present and the power and authority to build large mounds and fortified settlements was prevalent in multiple regions of the Nodena phase as seen at sites such as Bradley, Chickasawba, and Campbell in addition to Nodena (Childs et al. 2016; Childs and McNutt 2009; Fisher-Carroll 2001; Mainfort 2010; Morse 1989; Morse and Morse 1998). The fortifications at the larger sites in the Nodena phase also corroborate the idea that the Nodena people may have been at war with another group such as the people of the Parkin phase, and needed safe places to stay away from warring or raiding parties coming up from the south.

North of the Nodena phase is the Armorel phase or Pemiscot Bayou area. Many of the known sites in this region are from the very Late Mississippi period and extending into the Protohistoric period. The Campbell site is located in the bootheel of southeastern Missouri not far from the Arkansas/Missouri state line. It is well known for being a contact period Mississippian site with European trade goods in the form of glass beads and metal goods and a huge amount of finely decorated pottery including 24 head pots. Campbell may be the most looted site in the region with thousands of whole vessels in private and museum collections being traced to this site or others in the Pemiscot Bayou area. Other than the pottery assemblage though, not a lot is known about the site due to its never having been extensively excavated. The only non-outright-looting of the site was done by Anderson, but his techniques and record keeping leave something to be desired (Chapman and Anderson 1955). O'Brien and Holland try to make sense of the site and what is known about it in their 1994 work about the site. Williams (1954) conducted a surface collection of the site and collected almost 400 sherds which he used to assign the site first to the Nodena phase and later to the Armorel phase.

Only a crude map of the Campbell site exists, and it indicates a mound on the western edge of the site with a large open plaza area immediately to the east of the mound. No indication of fortifications is noted and it does not seem to have been something that was looked for. North of the plaza is a cemetery area and to the southeast of the plaza and some distance away is another cemetery area. No areas of structures or houses are indicated and no scale is given making interpretation of size quite difficult (O'Brien and Holland 1994). Chapman and Anderson (1955) estimate the site at about 16 ha or 160,000 m^2 and containing one mound. O'Brien and Holland (1994) question whether the "mound" was actually man made or a large levee remnant. The mound area was used as a burial pit, but that may have been due to the high water table on the site and the fact that this area was raised, allowing for deeper burials (O'Brien and Holland 1994).

Chapman and Anderson (1955) describe a plaza area to the east of the mound and cemetery areas to the north and southeast. Remapping of the excavated burials by Holland shows that burials occur across the site, including in the "plaza area." Because no systematic surface or subsurface investigation of the site was done in 1955, it seems likely that the plaza and cemetery areas were a misinterpretation of the data and that the site was much more uniformly covered in burial and structures (although structures are not mentioned) (O'Brien and Holland 1994).

House structures are mentioned briefly by Anderson and Chapman (1955). They describe two test pits, one to the west and one to the northwest of the northern burial area. They uncovered small amounts of pottery and some deer and bear bone in the west pit and what they describe as a puddled clay floor in the unit to the northwest. They did not expand excavations beyond these initial pits though, so little can be discerned about house structure or locations across the site.

Going farther north into southeast Missouri, the proposed "vacant quarter" is encountered. The vacant quarter is proposed to be an area around the Cairo Lowlands in which all of the Mississippian centers of the Middle Mississippi period were abandoned (Williams 1954). In this region there is no evidence of large, consolidated sites as had been seen in the Middle Mississippi period and as continue to be seen to the south in the Nodena (and Pemiscot Bayou and Armorel) and Parkin phases. This does not mean that there is a complete dearth of site, however. Even Williams, who proposed the Vacant Quarter, does not maintain that no one was living in the Cairo Lowlands and other areas around the confluence of the Ohio and Mississippi Rivers after the Middle Mississippi period (2012). He does point out, however, that it is very evident from years of survey by a variety of archaeologists that Late Mississippi cities and mound sites are not found in the area. Small towns and hamlets are noted, but opposite to what happens in the Parkin and Nodena phases, in this northern region, consolidation, fortification, and the possible formation of archaeologically visible chiefdoms or other large power structures are not seen. Based on the ideas of settlement patterns and site layouts indicating social stratification and the presence of a chiefdom though, it would seem that the chiefdoms of the Middle Mississippi period fell apart in the Late Mississippi period in southeast Missouri. Complete abandonment never took place, but social hierarchy seems to have been disbanded with people living in a more egalitarian system at smaller sites without monumental architecture or fortifications (Lafferty 1998; Mainfort 2012; Teltser 1998; Williams 2012).

Subsistence and Technology

Although there appear to be at least three regions or phases in the CMV moving through time from the Middle to Late Mississippi periods, many of the characteristics of at least the southern two phases are very similar through time and to each other and in both the Middle and Late Mississippi periods. As discussed above, in both periods, people were consolidating into larger towns and villages, but during the Late Mississippi period those large cities moved from the western lowlands to being concentrated along rivers and bayous in the eastern lowlands. While this settlement shift was taking place, people were also making some changes to their foodways in the region.

Agriculture Morse and Morse (1998) suggest that this shift in settlement patterns to the natural levees around small rivers and bayous was due in part to an increased reliance on maize agriculture. The soils of the natural levees in the CMV are prime agricultural land to this day due to their high nutrient content, moderate to well-drained soils, and low flood potential (Web Soil Survey 2019). They suggest that more maize could be grown more reliably in these areas than in the more clay-ey backswamp soils located farther away from natural levees and in the western lowlands more generally (Morse and Morse 1998; USDA Web Soil Survey 2019). Whether the shift in settlement pattern was due to agricultural need or another reason, we know that by the Late Mississippi period people in the CMV were heavily reliant on corn as a dietary staple (Lynott et al. 1986; Mainfort 2007; Morse 1981, 1990; Morse and Morse 1998; Perttula 1998; Rose et al. 1991).

Burned remains of maize and its empty cobs are found throughout the CMV, especially in the Late Mississippi period, but it is not identified from every site. This could be due to non-preservation of perishable goods that must be burned to be preserved in the typically wet soil conditions of the region. It may also be due to nonidentification of the plant remains or historical bias toward looking at burial and house remains rather than the trash pits where these remains may be more likely to be found. One particularly notable instance of maize identification is from the Upper Nodena site. A large assemblage of burned maize cobs and kernels was excavated from underneath the remains of what was interpreted to be a corn crib that had been holding a store of corn when it caught fire. This showed that the corn being grown at Upper Nodena was the 12 rowed variety, which is less hardy than the 8-rowed variety used elsewhere in the southeastern US. This variety suggests that the growing conditions for corn in the CMV were excellent as they were able to grow this less stress-resistant variety (Fisher-Carroll 2001; Morse and Morse 1998).

Isotope analysis (C13) of skeletons from early and late sites also indicates that people were becoming much more dependent on maize agriculture as time went on in the CMV.

Powell's (1990) work on the skeletal remains from the Middle and Upper Nodena sites show evidence of dental caries on many of the skeletal specimens as well as cribra orbitalia and porotic hyperostosis on some specimens that are often associated with the nutritional deficiencies that come from increased dependency on cereal agriculture such as maize (Fisher-Carroll 2001). Powell does point out, however, that general tooth wear is not prevalent, which suggests that people were not grinding their food with stone tools, but more likely with wooden mortars, making the food less gritty and less hard on tooth enamel. She also notes heavy calcified dental plaque on many of the dental surfaces in many of the specimens as evidence of a diet that would have promoted an alkaline oral environment. From this she hypothesizes that the maize being consumed at the Middle and Upper Nodena sites may have been soaked in highly alkaline lye water to convert it into hominy (Powell 1990). By soaking corn in an alkaline solution, niacin is released as an available dietary nutrient in the corn. Niacin is an essential nutrient in human populations as without it, people will develop pellagra, which causes diarrhea, dermatitis, and dementia and can be fatal (Morse and Morse 1998).

Like their counterparts in other regions of the Mississippian southeast, farmers in the CMV relied on the crops of the Eastern Agricultural Complex (sumpweed, goosefoot, maygrass, erect knotweed, and little barley) to supplement their diets during the shift to maize agriculture (Mueller et al. 2017). They were also cultivating beans and squash by the Late Mississippi period. In order to cultivate the amount of crop food that they would need to feed the large numbers of people living in the region as populations were consolidating it is likely that the people of the region were practicing swidden agriculture on a large scale. Historically, there are records of the Creek practicing this form of land clearing and use and the early historic descriptions of abandoned Native American fields are similar to those seen in varying states of use and fallowing. Because fallowing is a necessary step in swidden agriculture, a large area of land is needed by the people growing crops as different fields are in different stages and not all are producing food at any given time (Ethridge 2003).

Pottery Along with an exponential increase in reliance on maize and agriculture more generally as a dietary staple, came a change in pottery production technology. By the Late Mississippi period shell was used exclusively as the tempering agent in clay used to make pottery of all types of utilitarian and finewares in northeast Arkansas. Using shell as the tempering agent in clay was a huge improvement over the previous sand and grog tempers used in the CMV because the shell temper gave the clay stronger internal cohesiveness and flexibility, a higher resistance to cracking both before and after firing, and allowed for the production of a wide variety of vessel shapes with much thinner walls than was previously possible. Firing techniques were also improving, allowing for higher and more regular firing temperatures which would produce stronger, more resilient pottery. This improvement allowed for new vessel shapes that were conducive to cooking. Thin-walled globular shapes seen in the Mississippi period allow for improved thermal resistance to damage from long exposures to high heat sources during cooking techniques such as simmering or boiling, which are used to extract more nutritional value from starchy seed foods such as corn and the crops of the EAC (Braun 1983; Griffin 1965; Million 1980). This improvement in technology also allowed for the relatively few pottery types and decorative styles of the Middle Mississippi period to bloom into the much larger variety of types and styles seen in the Late Mississippi period.

In the Middle Mississippi period jars, bowls, and plates are common artifact types with a few effigy vessels present. Decorative techniques included incising and painting, but much of the pottery is plain utilitarian wares, sometimes decorated with slip. The slip may have been a functional choice to help stop leaching of liquids through the pottery rather than purely a decorative element though (O'Brien and Wood 1998). During the Late Mississippi period the decorative style of shell tempered pottery vessels became much more elaborate with many decorative styles used on both utilitarian and burial goods in the form of bowls, bottles, and jars (although as Dye (2018) points out, sometimes these vessels may have served both purposes). Although most of the decorative styles are seen across the region, the relative percentages of the different styles are used to help define the various phases in the Late Mississippian period. One possible technological difference in the pottery is the decision to grind the shell very finely or to leave it coarser. Both ways make strong pottery, and both are used as the base for both plain and decorated pottery. The decision to use one over the other may be a cultural trait rather than anything to do with the efficiency of the temper size itself (Braun 1983; Mainfort 1999; O'Brien 1994).

Hunting Evidence of hunting is most often seen in the form of arrow points or preforms for those points. During the Mississippi period people were well-versed in bow hunting and had arrow points of varying shapes and sizes. They used this and other hunting technologies to hunt nearly the whole animal assemblage available in NE Arkansas and SE Missouri. The CMV is within the flyway of bird migration making the number of migratory birds such as ducks and geese very high and easy to obtain at certain times of the year. The abundance of rivers, bayous, lakes, and ponds made fish and other aquatic food sources such as turtles readily available and utilized as well (Mainfort et al. 2007; Morse and Morse 1998). The partially forested and partially cleared and planted land around sites is a great habitat for prey species such as deer, who would likely be attracted to the corn as an easy source of food, making them easy prey. Other local mammal species such as racoons, rabbits, and squirrels would also have been hunted.

The variety of species utilized by the Mississippian people can be seen in the faunal assemblages of a number of sites across the region. Through those assemblages it is demonstrated that the use of animals stays generally the same through time, with the many of the available local species being utilized as food sources, but deer making up much of the biomass. Late in the Late Mississippi bison also enter the region and become a food source (Mainfort 2007; Orr 2009).

Lithics Much like the hunting methods and prey, the lithic technologies through the Middle and Late Mississippi period do not change drastically. People are using the bow and arrow as their preferred hunting tool for large mammals and possibly smaller animals as well as is evidenced by small "bird points" sometimes uncovered in the region. The usual arrow points are small and likely made from local chert, predominantly Crowley's Ridge chert, but sometimes other Lafayette gravels. The points are small, so the gravel bars in the Pemiscot Bayou and other small rivers would provide large enough cobbles to form these points, eliminating the need to travel to Crowley's Ridge or the eastern side of the Mississippi River to obtain raw materials for hunting. A marker of the Late Mississippi period is the Nodena point, which is a willow-leaf shaped arrow point that becomes prominent in the CMV late in time. It does not completely replace the triangular Madison point, which runs through time in the Mississippi period, but the earlier Scallorn point does disappear during the Middle Mississippi period (Morse and Morse 1998).

Another lithic marker in the CMV is the end scraper or snub-nosed scraper. It appears very late in the Late Mississippi period, likely after contact and trade with Europeans has been established and bison have moved into the CMV. Mainfort (2007) theorizes that the endscraper was utilized to clean bison hides, which were a major trade item between Native American groups and Europeans. The abundance of endscrapers on some Late Mississippi and protohistoric period sites, especially in southern Missouri, indicates that the people living in these cities were engaged in the fur trade. In some cases these same sites have some European trade goods associated with them as well, but not always, suggesting that the trade networks may have been far-reaching and the people of the CMV rarely saw the Europeans who ultimately bought their furs (Mainfort 2007).

Beliefs and Cosmological Imagery

The CMV is located within the larger geographical region through which the iconographic complex formerly called the Southeastern Ceremonial Complex (SECC) extends (Knight 2006). Although there are a few instances of items with imagery similar to that of the SECC in the CMV, it is far from ubiquitous as it is in other regions. Instead, the CMV, especially in the Late Mississippi period has a huge array of highly decorative and highly decorated pottery vessels. These vessels are sometimes painted with more abstract designs such as swirls, circles, or stripes, but are more often formed into effigies and left unpainted.

The effigy vessels of the CMV are fairly unique in that they are found throughout the region at sites of all sizes and in burials of all people. They are also unique in that they almost invariably depict identifiable natural elements. These elements include local animals as well as gourds and shells. The animals are sometimes depicted so accurately that they can be identified to species (Fisher-Carroll and Mainfort 2012). Payne (2005) called this pottery style of naturalistic ceramic effigy vessels the Nodena Art Style and interpreted it as much more benign, realistic, and commonplace than the images of the former SECC. While this is true of much of the effigy pottery of the region, two common pottery forms do not fit that description well.

These forms are cat serpent vessels and head pots. Dye (2018) notes the abundance of water spirit or "cat serpent" iconography in the CMV, identifying northeast Arkansas and southeast Missouri particularly as areas where water spirit imagery was crafted in ceramic form from after AD 1250 into the 17th century. The cat serpent in southeastern mythology is an underworld creature related to water, rain, lightning, and fertility. The underworld more generally is seen as the dwelling place of monsters, danger and evil, but is also a source of power against evil. This cat serpent imagery is a continuation of that seen in earlier Midwestern areas such as Cahokia (Emerson 1989). It spread from there southeast through the CMV to the Lower Mississippi Valley and much of the rest of the Mississippian southeast. Dye suggests that the ideas of needing to propitiate, supplicate, and venerate the water spirit are moving with the iconography through religious society. He also suggests that they are not strictly being used as burial goods or for display or visual purposes. Many of the ceramic vessels depicting the water spirit show extensive use-wear in the form of basal abrasions, rim nicking, and overall wear patterns (some even indicating where the hands were placed when holding the vessel). Ultimately many of these ritual vessels were disposed of in burials with individuals. Dye's interpretation is that they were filled with sacred medicines to accompany the dead to the afterworld, demonstrating belief in an afterlife and the continued need for these rituals in the realm of the dead (Dye 2018). Regardless of their final contents, these vessels were apparently being heavily used in some context before burial in this region possibly indicating a special connection to, respect for, or awareness of some aspect of the cat serpent's power or traits.

Cat serpent vessels generally have a forked eye motif around the actual eye of the creature. This iconography surrounding the eye of the cat serpent on ceramic vessels is divided into two categories: bi-forked eye surrounds and tri-forked eye surrounds. Based on Reilly's

(2004) and Sampson's (1988) analyses, Dye describes those depictions with bi-forked eye surrounds as having an association with the night sky while those with tri-forked eye surrounds are associated with the Beneath World watery realm. Members of religious sodalities that believed in and interacted with the water spirit would appeal to it for underworld or water related problems such as putting an end to floods, droughts, or earthquakes (Dye 2018). This association of the water spirit or cat serpent with the ability to end floods, droughts, and earthquakes is especially potent in the CMV where all three have been common at different times throughout history. The fact that the cat serpent vessels are not often found outside of the CMV indicates that perhaps the difference is the occurrence of earthquakes. Droughts and floods happen in most river valleys and would have been experienced by Mississippian people far outside of the CMV as well as those within the region, whereas the small weekly earthquakes centered in the NMSZ would have been localized to the CMV region.

Head pots are also found throughout the CMV with the majority coming from burials in NE Arkansas and SE Missouri, much like the cat serpent vessels. These vessels appear to be individual people (whether depictions of living people or works of fiction) as no two are exactly alike. They are jars formed into the shape of a human head (about ¾ life size) with hair (and sometimes a forelock with a hole for a feather or decorative element), ears (with piercings), open or closed eyes, a closed or open mouth sometimes depicting teeth, and various engraved or incised tattoos or scarification across the face depicting iconographic elements of the SECC. Some of the vessels give the impression of being deceased, but others are less clear. Like the cat serpent vessels, head pots are generally dated to the Late Mississippi period of the 15^{th}-17^{th} centuries (Cherry 2009).

It is evident from many lines of evidence that the CMV was connected with the larger Mississippian world in many ways, but also developed many of its own unique traits. Even within the various regions of the CMV some cultural patterns developed in similar ways while others were quite different. This study will be trying to understand if any of these differences may have been responses by the people of the various regions of the CMV to the earthquakes that happened in the NMSZ. People live in the face of hazards and disasters all over the world and have done since the beginning of humanity. They do this by incorporating different ways of doing things or different belief systems into their lives that help to explain and hopefully mitigate the damage that hazards can cause.

4

History of Hazard and Disaster Research

The NMSZ been intensely occupied by humans for hundreds of years, and the archaeological record, history, and current events show us that humans have been living in hazardous areas around the world for as long as there have been humans. Despite this, the first systematic study trying to understand how humans respond to large scale disasters was undertaken by sociologist Gilbert F. White in the 1940's. White's research looked at responses at the individual scale by interviewing people about their thoughts, reactions, and future plans in the wake of a disaster. At a larger scale, he also considered local and federal government responses to disasters and the plans for mitigating future disasters. White was particularly interested in flooding hazards, but his work quickly branched out to other "natural disasters" as well. The first collective volume that set out a standard way to study and understand people's responses to a "natural disaster" was White's (1974) edited volume, *Natural Hazards: Local, National, Global*. In it, White states that,

"by definition, no natural hazard exists apart from human adjustment to it. It always involves human initiative and choice. Floods would not be hazards were not man tempted to occupy floodplains: by his occupance he establishes the damage potential" (White 1974:3).

In this statement he highlights the definitional problems that continue to play out in the multitude of fields that encompass hazard and disaster research as well as the colloquial definitions of terms. In this dissertation, I will use the terms as typically defined in current archaeological hazard and disaster research (Table 1).

Table 4-1: Definitions of hazard and disaster terms as used in this and other archaeological hazard and disaster research. These terms can be used at various scales of spatial and time resolution and may be more or less applicable to any situation depending on the scale being considered.

Term	**Definition**
Hazard	A potential threat to a community that has not yet been manifested (Cooper 2012) such as an earthquake, volcanic eruption, tsunami, oil spill, etc.
Disaster	Severe environmental changes which massively impact societies (Cooper and Sheets 2012:2)
Vulnerability	The characteristics of a person or group and their situation that influence their capacity to anticipate, cope with, resist and recover from the impact of a natural hazard (Wisner *et al.* 2004:11)
Catastrophe	A disaster causing a major dislocation of the orderly processes of everyday life and requiring a long period of recovery (Burton *et al*. 1978)
Impacts	The consequences of a hazard; they can be both direct and indirect in nature and are relative as a result of potential mitigation strategies that can reduce their impact through intentional or unintentional preparation (Cooper 2012:92)
Resilience	The ability of a system to absorb disturbance without losing identity (Folke 2006) The interplay between disturbance and reorganization, sustaining and developing adaptive capacity, transformability, learning and innovation within an integrated system of cross-scale dynamic interaction and feedback (Folke 2006:259)
Adaptability	The capacity of actors within the system to influence or manage resilience (de Tapia 2012:147)
Transformability	The ability to create a fundamentally new system when ecological, economic, or social structures render the present system unviable (de Tapia 2012:147)

As sociologists, White and his colleagues were able to speak with their subjects, as well as see the immediate and longer-term aftermath of many disasters. They could ask how people who lived in disaster-prone areas perceived the risk of hazard both before and after the event's occurrence and establish how long those changes in thinking stayed in effect. In this way they were able to collect data about disaster response at short- and longer-term time scales as well as geographically small and larger scales in the form of data from individual people all the way to the responses and planning of the local, state, and federal governments (as most of his research was based in the United States).

In San Francisco people were interviewed about the possibility of future earthquakes and what precautions they had taken in preparation for this inevitable eventuality. Interestingly, most people refused to be interviewed, and of those that took the survey, many acknowledged the probability of another event occurring, but had taken no precautions to mitigate the damage that might be done (White 1974). This is a surprising result considering the size of the earthquakes that occur along the faults in California, as well as the fact that people were aware of them and acknowledged that they were likely to happen again, but it is not unique. In a 2005 study, Paradise found that in Agadir, Morocco, people would not discuss the possibility of future earthquakes in the city for religious reasons. Due to that belief and peoples' unwillingness to speak about the hazard, no precautions are being taken against the next large quake (Paradise 2005). White points out in his early work though, that in many cases, precautions taken by people or the government against natural disasters actually make people less safe because they think that the hazard has been overcome and they are no longer at risk, so perhaps not acknowledging a natural hazard in a society with a large centralized government taking precautions for you doesn't have a large effect on how society responds when the hazard strikes. White points out the levee building along the Mississippi River as an example. He says that no one would have built a house on a flood plain before the levees were constructed because of the likelihood of losing their house to a flood, but after the Army Corps of Engineers put in levees to keep floodwaters back, people started building houses and towns in these areas because they were now "safe", even though a levee breech (which is always possible and sometimes even planned in the case of flooding upstream) would cause these people to lose everything (White 1974).

After White's (1974) early work in how to look at peoples' responses to hazard and disaster, other social scientists, generally geographers, did similar studies of populations living in hazard areas. Many of these studies were done for or in association with the Committee on Disaster Studies at the U.S National Research Council which funded a lot of hazard and disaster response research (Stallings 2002). Though it was still early days, Burton, Kates, and White published another volume in 1978 to try to sum up what had been learned from disaster and hazard studies to that point. They explicitly introduce the concept of vulnerability to hazards (Burton et al. 1978; Table 1). They explain that the vulnerability to the disaster is a result of the trade-off between economic return and social risk. Part of the increased risk is due to choices made by both individual people and governments. Some of the hazards could be mitigated by inexpensive preventive actions on the part of the government, but this preventive action usually only occurs after a disaster has happened to stop another hazard of similar scale or magnitude in the future. On the individuals' part, the risk is generally increased because, as a newcomer to an area (because of suburban expansion, his economic situation, or any other reason) he is unaware of the danger that he is putting himself in, which locals who have lived in an area for generations know how to avoid or are at least aware of (Burton et al. 1978) (*i.e.*, Do people even know that they live in a flood plain if the levees are miles away as in the Mississippi Delta? Or in a drained wetland if they did not live in the area before it was drained as in Houston?).

The conundrum that Burton and colleagues' (1978) research points out is that, even in 1978, the average annual loss of life from natural hazards was decreasing, but despite this, relatively rarer catastrophes were and continue to claim more lives than ever due to a larger number of people becoming vulnerable to these hazards due to urban sprawl and population growth. This seems to be due to both increased mitigation of hazards in populated and prosperous areas, and the move of less prosperous people to more marginal areas. These people are then more vulnerable to disaster because of location and lack of mitigation efforts (Burton et al. 1978).

By 1994, the ideas of how to study disasters and hazards in living populations had become more developed. Wisner and colleagues (2004) use the concept of vulnerability in their definition of a disaster. They harken back to White to point out that disasters aren't "natural" in the sense that they are caused solely by a geophysical or climatic event, those things are just the hazards. Disasters only come about when people who are vulnerable to those hazards are harmed because of them (Oliver-Smith 1996; Wisner et al. 2004). Those people or groups who are less able to anticipate, cope with, resist, and recover from a disaster are more vulnerable. Though their demographics can vary, it is often the poor and lower classes who already live on the margins who are the most vulnerable (Wisner et al. 2004). Researchers point to landslides as a stark example of hazard versus disaster in that while houses have been swept away during heavy rains in both Los Angeles and Rio de Janeiro, only the latter instance became a disaster. The people in Los Angeles had *chosen* to live in a hazard prone area, had insurance *to replace* what was destroyed, and *had somewhere to go* after the landslide happened, whereas the people in Rio de Janeiro had been *forced by economics* to live in a hazard zone, had *no way to replace* what was destroyed and had *nowhere to go* after the landslide (Wisner et al. 2004).

Oliver-Smith and Hoffman (1999) and the various authors who contribute to the volume discuss examining disasters from an anthropological perspective. They note the work done by social scientists in other fields before them but argue that anthropology is the perfect field to study hazards, disasters, and their effects on people as it already has a system of ethnographic fieldwork that is ideal to do so (Oliver-Smith and Hoffman 1999). Anthropology is set up to look at how humans interact with their environments and the construction of sociocultural institutions and beliefs, so when a disaster occurs and "reveal[s] basic aspects of how a society conforms to the features of its physical environment" it gets to the crux of its survivability, and anthropologists are best equipped to observe, understand, and explain it (Oliver-Smith 1996; Oliver-Smith and Hoffman 1999:3).

Oliver-Smith and Hoffman propose that anthropologists can go about that in four ways. The first is through an archaeological/historical framework, giving time-depth to the understanding of humans and disasters. The second is political ecology in which the way that the environment is used is seen to contribute to the vulnerability that creates the disaster. The third is sociocultural/behavioral which deals with culture outside of its interaction with nature. The fourth is disaster behavior and response which is the conduct and reactions of individuals and groups toward disaster events and disaster aftermath (Oliver-Smith and Hoffman 1999). Through these four lenses, anthropologists can look at the fundamental elements of social/cultural systems that continue to function through a disaster and help the community and individuals to cope with what has happened. From the time of the disaster and moving forward, anthropologists can examine what parts of society change and what stays the same, giving them an idea of the basic, most important elements of that society's structure and beliefs and whether those elements were sustainable and resilient enough to uphold the culture through a trying event (Oliver-Smith 1996; Oliver-Smith and Hoffman 1999). These responses to the disaster impact can be examined through lenses at multiple scales from the household and site level to larger regional changes in settlement patterns or landscape use. While this method would work well with living populations who could be observed and interviewed, archaeologically these things may be harder to identify and place in relation to each other through time.

Though some archaeologists took up the ideas of hazard and disaster research through the years to varying degrees of success, it was not until 2002 that an edited volume of work in the archaeology of disasters was published. It draws on the work of disaster and hazard research in anthropology and the social sciences to look at the responses of ancient societies to various kinds of disasters across the world (Torrence and Grattan 2002). Torrence and Grattan use the general definitions developed by earlier social scientists in saying that the critical ingredient of a disaster is the victims and the fact that people or society are harmed (Table 1). They also set out an explicit difference between the ‘forcing mechanism’ (here: Impact), which can be natural (flooding, earthquake, volcano, etc.) or technological (oil spill, explosion, etc.), and the ‘natural hazard’ (here: Hazard) which both must be in place in an area and society to lead to disaster (Torrence and Grattan 2002).

Torrence and Grattan introduce the volume by highlighting some of the problems that have been pointed out in the archaeological study of disasters. The first and biggest problem is in assuming that the occurrence of an extreme natural event means that it is a prime mover in cultural change without adequately demonstrating that to be the case (Torrence and Grattan 2002). As Sheets and Grayson (1979) pointed out in one of the first archaeological forays into hazard and disaster research, precise and accurate dating methods are needed to even be sure that the “cause” and “effect” are in the correct order. The next problem is avoiding the trap of environmental determinism. While these hazards may have a large immediate effect on the environment and the society living there, if the society had adequately adapted to the threat of this hazard and therefore had a low level of vulnerability, there may not be any archaeologically visible change in the long term no matter the size of the event. On the other hand, a large change in the society may “signal the failure of a society to adapt successfully to certain features of its natural and socially constructed environment” (Torrence and Grattan 2002:4). Either of these responses to a hazard impact would help us to understand how a society had interacted with the environment, adapted to it, and set itself up in preparation for hazards (cf. Diamond 2005), not just simply show a non-socially derived response to a “natural” event.

Torrence and Grattan (2002) then propose a way in which archaeologists can look at disasters in and through archaeology to try to understand the effects that they had on the local culture. They say that there are four critical variables to consider when defining something as a disaster archaeologically (Torrance and Grattan 2002), and these correspond with key attributes laid out by Reycraft and Bawden (2001). The first is Magnitude. The magnitude of a hazard itself cannot be used with confidence to show the importance of the event to the local population. The archaeologist must try to find the implications of the natural hazard to the population to assess the magnitude of the disaster as it was perceived by the people living there. Evidence of a large-scale natural event does not necessarily equate to evidence of a disaster. The next variable is the Duration and Frequency of the impact. People will often choose to live under the threat of infrequent large-scale disaster as the trade-off to reap benefits in an area. The response of people to more frequent, though possibly slightly less catastrophic hazard impacts, can go multiple ways. The society may show quick changes in some parts of the culture (such as where and how settlements are built and subsistence strategies) while retaining other cultural traits or they may show a vast cultural shift that incorporates ways to deal with the natural hazards that effectively stop them from becoming disasters. The third variable to consider is the Perception of the hazard by the communities exposed. If the groups do not perceive the hazard as a threat or acknowledge that the hazard impact is the cause of the disaster (for religious or social reasons), there will be little to no effect on the way the society carries on after it recovers from the disaster unless the environment has changed significantly, forcing some level of change to account for the new environmental conditions. Alternatively, if they do acknowledge the hazard as a threat, they may have already taken it into account and structured their society so that the occurrence of the hazard would not constitute a disaster, and no cultural changes would be seen after the hazard impact. Lastly, the idea of Vulnerability is incorporated from the anthropological and geographical work in disaster and hazard research. Both anthropologists and the archaeologists in this volume consider this the most important aspect in how societies react to disasters and if a hazard becomes a disaster. What archaeology can do with this variable that other sciences cannot is to consider vulnerability throughout prehistory as well as history. Archaeology can study the effects of hazards and disasters on people in the same area over a much longer period of time than what is currently available with the study of extant populations. It can also compare the vulnerability of more and less politically centralized societies and how well they are able to cope with various types of disasters in different regions of the world. It can even make comparisons at multiple scales within one society to see if responses were widespread or localized or only seen at some scales and not others (Cooper and Sheets 2012; Torrence and Grattan 2002).

More recently, archaeologists have begun doing just that. In their 2012 volume Cooper and Sheets gather 10 chapters written by archaeologists working all around the world on a variety of civilizations and times. These archaeologists are all trying to better understand how living with the threat of hazards affects human societies and cultures on long, multi-generational timescales.

In a situation most similar to that of the CMV, Sheets has been trying to find a way to answer questions about hazard and disaster response since his early work with Grayson in 1979. He has been recording and collecting data about archaeological sites that have been affected by volcanic eruptions throughout Mexico and Central America. He has done this by first documenting the scale of the volcanic eruption at a given site, then looking at the social complexity/political organization of the archaeological group affected. He has done this by looking at both the individual site scale as well as the larger regional settlement patterns and landscape changes. To date he has found that more egalitarian villages of the Arenal coast in Costa Rica were much more capable of dealing with volcanic eruptions. He posits that this is because decision-making is based at a more local level and can be swift. He also points out that oral histories have been shown to keep track of knowledge for hundreds or thousands of years, so the 400-year recurrence of large volcanic eruptions (with smaller ones more often) would be well within the time range in which people would be aware of the hazard as well as what to do when the volcano erupted. Due to this knowledge and the society's ability to make decisions quickly, Sheets concludes that they were not very vulnerable to the hazard posed by the volcano that they lived near (Sheets 2012:57).

Alternatively, the complex and hierarchical Maya civilization in El Salvador never recovered from the single early fifth century eruption of the Ilopango volcano that was similar in magnitude to that in Costa Rica. Local sites were covered in volcanic tephra and abandoned, but even sites further afield were abandoned or significantly reduced in population. This is likely due to not only the local leadership leaving, being killed, or being forced out by the commoner populations' lack of trust in their leadership and deity appeasing abilities, but also due to loss of agricultural fields and breakdowns of trade networks when that hierarchy broke down. There is also evidence of intrusive Teotihuacan-style architecture at some of the sites in the region, suggesting that other unaffected cultures took advantage of the power vacuum left by the Maya hierarchical structure breaking down in response to the eruption. It was not until 50 years later that people really began to reoccupy the area and then it was Maya commoners, not elites (Sheets 2012:47-48).

Not addressed in either of Sheets' examples is the impact on the environment at a larger scale. While locations closest to these volcanic eruptions were damaged and covered by sometimes thick layers of tephra, locations farther away were helped. Small amounts of volcanic tephra can increase soil porosity and help to kill insects. Both side effects of a volcanic eruption would be of great value to societies living far enough away from the volcano to get beneficial effects. Likewise, societies whose infrastructure was not affected, such as Teotihuacan, were able to acquire more land when the Maya occupants left the region (Sheets 2012). Depending on the perspective taken, what was a disaster for one culture may have been a benefit or opportunity for another.

Other authors discuss their work looking at long duration adaptations of societies to other hazards as well. Cooper (2012) highlights Pre-Columbian civilizations on Caribbean islands. He notes that houses were wooden poled structures that were covered with thatched roofs. These would have been easy to reassemble after being knocked down by strong hurricane winds and would have survived flooding due to hurricanes or precipitation changes. The villages are also located within a short walk to open caves at higher elevations. Cooper suggests that people would have been able to evacuate to these caves in times of hazard impact to keep themselves safe. There is some evidence of the caves being used by Pre-Columbian people, but more research is needed to prove that hypothesis. The ability to quickly construct a dwelling and an alternative location to live temporarily made the people of the Caribbean islands rather invulnerable to local hazards for hundreds of years, but now with cement houses and no alternative dwellings, people in the Caribbean are very vulnerable to hurricane and flooding hazards (Cooper 2012:103-104).

Fitzhugh (2012) studies the Kuril Islands and the early Jomon, Epi-Jomon, Okhotsk, and Ainu people who lived on them for thousands of years. The maritime hunter-gatherers who lived on the islands from 3000-1000 years ago were undeterred by the islands' active volcanism.

Evidence of multiple large and small volcanic eruptions are evident on many of the islands, but so is evidence of nearly continuous human occupation. Archaeological sites occur most often on elevated platforms between 20-40 m above sea level. This is out of range of the effects of tsunami waves and could be a cultural adaptation to account for the major tsunamis that occurred every 500-1000 years. Ultimately what may have most altered the culture on the Kuril Islands could have been their socioeconomic isolation. They depended on trade with people to the north for obsidian and with people to the south for rice. When these trade networks became strained around AD 1200-1800 due to those people wanting more control of the Kuril Islands and their maritime resources, the hunter-gatherer-fisher culture began to disappear. Whether the newcomers pushed the Epi-Jomon people out or whether they were assimilated is unclear, but in either case their society was unable to overcome the disaster of human expansion and migration (Fitzhugh 2012:30-35).

Redman sums up the various studies in the volume and previous hazard and disaster work by suggesting that all the societies studied used one or more of four adaptive strategies when faced with the challenges brought on by hazard and disaster. These strategies are:

“1-Locational flexibility and mobility

2-Ecosystem management

3-Built environment and other technologies

4-Social complexification” (Redman 2012:240)

Each society discussed by the various contributors put these strategies to use in slightly different ways and not all societies use all of them. He also points out that the use of these strategies in the face of a disaster often helps the society to adapt in the short term to the consequences of the disaster but that in the longer term, these very adaptations are what cause the society to be susceptible to future hazards. Hazard and disaster response is, therefore, a never-ending part of how societies interact with their environments and how both elements affect each other over both the short- and long-terms.

In a hypothetical sense, the four strategies laid out by Redman make perfect sense, but how do we get from archaeological sites in the ground to these larger conclusions and theories? As most authors of anthropological studies of hazard and disaster point out, we must work at multiple scales of both time and geography to try to illuminate cultural changes from archaeological evidence that may be subtle. To understand how to work at various scales and how different levels of archaeological evidence can be understood, a number of archaeological perspectives will be employed in this work. In the end, combining the geological scale, landscape and settlement scale, and individual site scale should allow me to compare Mississippian sites in the New Madrid seismic zone and gain a better understanding of how and when they changed through time and if any changes may be related to or in response to the recurring earthquake hazard.

5

Theory

One of the most central and important concepts that comes up in hazard and disaster literature from Sociology to Archaeology is the theory of resilience. On its surface it seems very simple: the ability of a culture or society to absorb disturbance without losing identity (Folke 2006). In fact, resilience theory fits inside the larger idea of panarchy, and allows for discussions of cultural and environmental responses that are much more complicated, nuanced, and reciprocal. In this chapter I'll summarize these concepts and discuss how they will contribute to my research design.

Resilience

Resilience is a theory that developed out of ecology but has become influential in sustainability studies. It is now generally accepted across most environment-related fields that the human element must be understood as an important part of how ecosystems are understood and explained. Resilience is defined in ecology/sustainability literature as "the capacity of a system to absorb disturbance and re-organize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks" (Walker et al. 2004:2). When humans are considered, the definition changes slightly to "the ability of communities to withstand external shocks to their social infrastructure", such as environmental variability or social, economic and political upheaval (Adger 2000:361).

The way in which humans or the environment respond within themselves and to each other is envisioned in resilience literature as a Figure 8 loop (Figure 5-1). The four quadrants of the loop represent four phases of development that encompass the idea of resiliency. The first phase is characterized by exponential change (r) when the system is quickly taking on new adaptations in response to a disaster or other large change. This is followed by periods of growing stasis or rigidity (K) when the society is more or less stable and the conditions under which it was established are fairly unchanging. In the long-term, this can lead to a less resilient system due to the social investment in the current structure. The third stage consists of periods of readjustment and collapse (Ω) when the system is affected in a substantial way, possibly by a disaster, and is unable to completely cope under the current structure. The final stage involves periods of re-organization and renewal (α) when the system re-organizes itself to account for the event or culmination of events that led to the collapse (Folke 2006; Gunderson and Holling 2002; Redman et al. 2009).

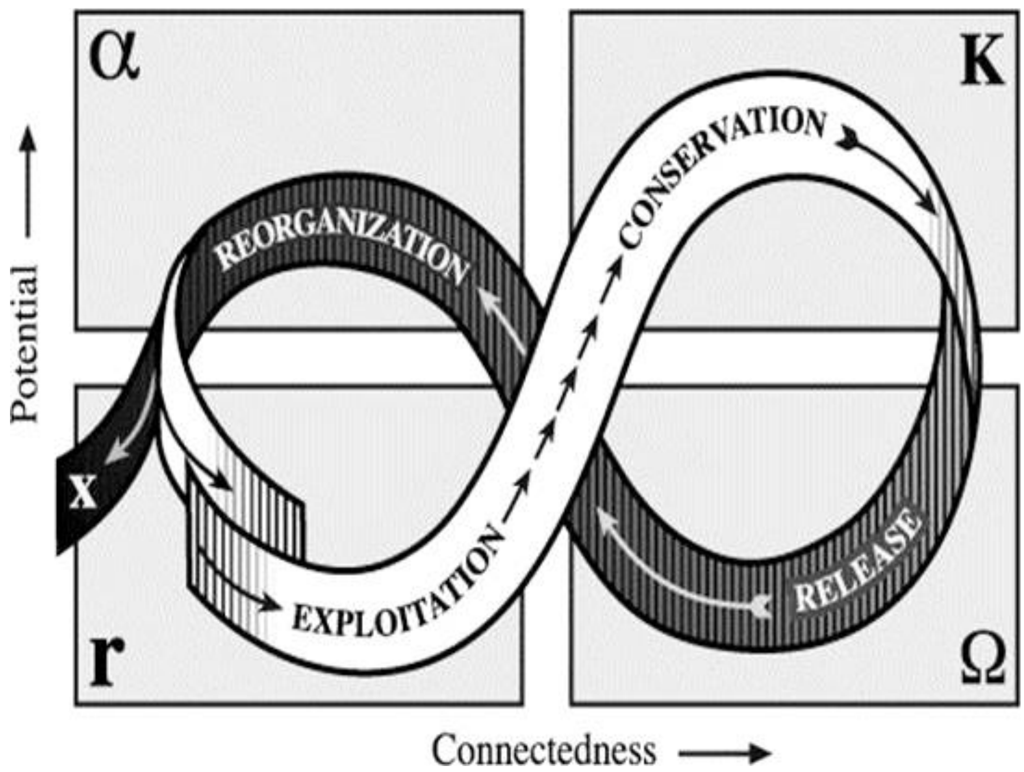

Figure 5-1: The resiliency loop. Chapter 2, Figure 2-1 from *Panarchy* edited by Lance H. Gunderson and C. S. Holling. Copyright © 2002 Island Press. Reproduced by permission of Island Press, Washington, DC.

European settlers moving into the CMV in the years leading up to the historic earthquakes of 1811/12 provide an example of this process. They claimed land, deforested the area, and cleared fields for the prime agricultural soils in the region. This was the r phase of the resilience loop. People learned to cope on the frontier edge of the United States and worked to build lives in the region. They also established towns, governments, and trade networks linking their communities to the rest of the country (the K phase). When the first earthquake struck in 1811, they entered the Ω phase and with the continuation of the earthquakes into 1812 the local society collapsed. People fled the area and the federal government allowed land grants in the region to be traded for new land elsewhere. Some people stayed in the region and they then entered the α phase by reorganizing their lives with the knowledge that large-scale earthquakes might happen again, making adjustments to their lives that accounted for that, and re-entering the r phase. For the majority of people, though, the disaster ended in collapse of the resilience loop locally.

In another example, research in the ancient Andean city of Machu Picchu has recently brought to light evidence of earthquake responses by the Inca in the mid-15th century. Paleoseismic evidence is beginning to show that a **M**6.5 earthquake struck the region during the reign of the Inca Pachacútec, who order the building of Machu Picchu. There are different building methods and architecture types employed at the site, implying that this technology change occurred during the site's construction. It is hypothesized by the researchers at the site that a large earthquake damaged some of the original, square stone buildings, causing cracks in the stones and large gaps to form between them. Here, the earthquake was a disruption that initiated the Ω phase. Society did not completely break down in this instance, but was able to rebound into the α phase, changing the walls of buildings to a trapezoidal shape that was more resistant to earthquake damage (Andina 2019).

Panarchy

Resilience helps to explain and conceptualize an adaptive renewal cycle at a single scale (in time or space). The concept of Panarchy is introduced by Gunderson and Holling (2002) as a heuristic model recognizing that many of these resilience cycles are working and interacting across various spatial and temporal scales in any given system (Figure 5-2). The largest cycles run on geological timescales of thousands of years and/or cover hundreds or thousands of miles. These large cycles can also include large social and trade networks through which people interact with other groups who are farther afield. In this case this could include networks that linked people in the CMV to others throughout the Mississippian Southeastern US. These cycles are typically very slow to change and need a very large impetus to do so. Intermediate cycles run on shorter timescales of tens to hundreds of years, tens to hundreds of miles, and/or regional networks of cities and towns such as the archaeological phases of the CMV discussed in chapter 3. These cycles need a smaller disturbance to change them and are quicker to move into readjustment or collapse from the relatively stable K phase. The smallest cycles run on day to month timescales, very local areas, and/or towns and villages or individual people (Folke 2006; Gunderson and Holling 2002; Redman et al. 2009).

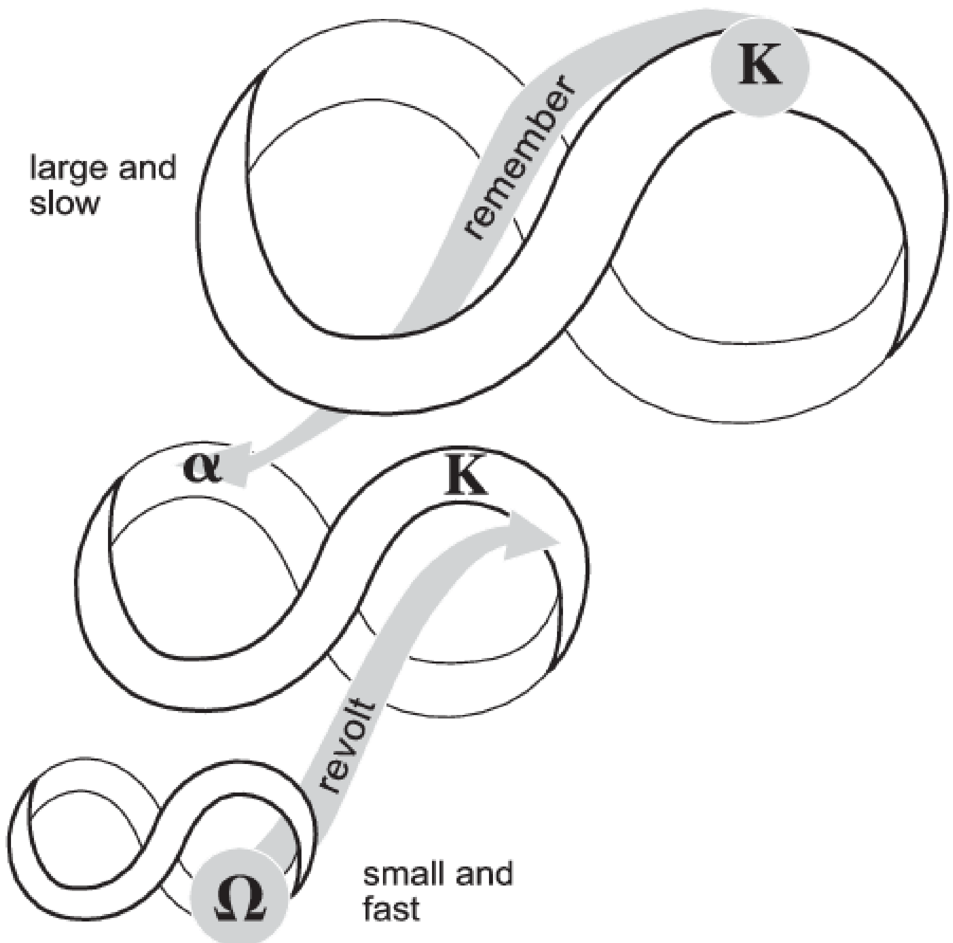

Figure 5-2: The Panarchy. Chapter 3, Figure 3-10 from *Panarchy* edited by Lance H. Gunderson and C. S. Holling. Copyright © 2002 Island Press. Reproduced by permission of Island Press, Washington, DC.

The concept of Panarchy allows for a system to be at once both static and dynamic. Any individual cycle can be changed while the others hold steady, not allowing the global system to be completely disrupted. The individual cycles do not work alone, however. They are interlinked inside of the larger panarchic system. This interlinked nature involves two more ideas about how the cycles work together and feed off each other. The concept of “revolt” occurs during the Ω phase in a small scale/fast cycle as a response to a local disturbance that has caused the cycle to reorganize or collapse. A large enough collapse of the small/fast cycle can lead to collapse of the larger cycle if the cycles are heavily dependent on the affected component for their continual function. The revolt may stop at one cycle or may move up the entire chain to affect the entire global system if vulnerabilities have been accumulated through the K phase. The other concept is "remember" and is the opposite of "revolt". "Remember" moves down the panarchic chain from larger cycles to smaller cycles. The K phase of the next higher cycle helps to stabilize a smaller/shorter cycle after a shift to the Ω phase. The stability of the larger cycle's K phase allows the smaller/shorter cycle to use adaptations already in the larger system when reorganizing after the initial collapse. This keeps the smaller cycle working within the boundaries of the larger system and may end up building vulnerabilities into all levels of the system that are exposed and exploited during a "revolt" (Gunderson and Holling 2002).

We can use panarchy to expand on the example of the reaction of European settlers in the CMV during the 1811/12 earthquake events. When the initial feedback loop collapsed during the Ω phase, people relied on the larger feedback loop of the federal government and its power to exchange their land grants for land elsewhere. Although the local governments and power structures fell apart with the desertion of the population, the larger, slower federal system continued to function as normal and proved able to intervene to keep people from having to give up everything in order to leave and move to a safer location (a "revolt" to the larger, slower feedback loop). Eventually people repopulated the CMV and the NMSZ, re-establishing a smaller feedback loop in the region by "remembering" and bringing the workings (government, religion, and business opportunities in this case) of the larger loop into that of the smaller, faster cycle.

In the Andes, the Incan ruler and the elite power structure set up through the region allowed for a quick change in building techniques after a large, damaging earthquake. The new techniques are the beginning of the reorganization phase and quickly move up the panarchic scale into the larger feedback loops. This is seen in the new building techniques at Machu Picchu being adopted at other Incan cities in the Andes. In this case, not only does the larger resilience loop in the panarchy help to stabilize a regional disaster, but the local response to the disaster feeds back into the larger loop and then the affects begin to expand to other regions (Andina 2019).

Folke (2006) reminds us that even when working within the idea of Panarchy, one must focus on the social-ecological concept of resilience at each scale rather than resilience that focuses on social or ecological concepts individually. Resilience is not only about being able to maintain or recover from disturbances but being able to incorporate novel opportunities that are presented in the face of that disturbance. The social-ecological resilience concept is broad and examines the interplay of disturbance and reorganization with a focus on adaptive capacity, transformability, learning, and innovation, not simply little-changed persistence through time. It is an integrated feedback system with cross-scale dynamic interactions (Folke 2006).

Eventful Archaeology

Beck and colleagues have suggested the notion of "eventful" archaeology, based on Sewell's idea of "eventful" sociology (2007). I suggest that Sewell's explanation of how to understand changes within a social structure fits well with resilience theory and lays out a concrete way to look for impacts of and responses to a disaster (Sewell's *event*) archaeologically. Sewell defines his concept of structure as consisting of both *schema* and *resources*. Schema is defined as: generalizable procedures applied in the enactment/reproduction of social life that can be applied in a variety of contexts (things like where to locate a village, how to build a house, where to bury the dead, etc.). Resources are defined as: objects or human traits such as strength or knowledge that can be used to enhance/maintain power (archaeologically, this can be understood as the artifacts found at a site or the coping strategies inferred from artifacts and artifact distributions across a site). Sewell asserts the necessity of both to sustain a structure (Sewell 2005:137). If either component is altered, modification of the other component may result. Although physical access to some resources may be altered without human agency, overall the structure is dependent on humans to produce and reproduce it in conjunction with the natural resources available. Humans in a society have knowledge of the schemas and resources upon which the structure is built and can apply each of those elements to new contexts as they arise or are created (Sewell 2005).

To once again build on the example of the earthquakes of 1811/12 in the CMV, the structure, in Sewell's terms, would be the way that people were living and interacting in the area. The schema would have entailed the legal claims to parcels land, how they were distributed and people's recognition of the federal government's ability to grant those parcels. It could also involve a person's religious community and its authority over how one lives aspects of their lives such as what or when to eat. The schema in the region would have also involved the everyday occurrences of working and earning something for your labor. Working (on your farm, logging, or any other type of work found in the region), buying from the local store, and selling your products to a company or distributor that could send them to the east coast or down the Mississippi for processing and distribution would have been a part of the overarching structure under which people lived in the region. This schema depended on the resources of the region holding steady to continue to support the enterprises that had been established. These resources included railroads and waterways such as the Mississippi River, as well as the manpower and political and economic capital to move products to markets in which they would be consumed and to move products needed in the NMSZ back to the region to be consumed. These objects would also include the tools of everyday life at the edge of European conquest on the continent such as your house and land, guns, knives, kitchen wares, farm tools, the products of your farming or logging enterprises, and possibly some religious paraphernalia.

In the Inca example, the structure would be the overarching Inca empire and its rules. People were sent to work at Machu Picchu to build this new site for the Inca Pachacútec. They built structures according to the accepted architectural traits and methods approved at the time. These rules were the schema and the physical components on the buildings, the laborers, and the knowledge of how to properly construct these buildings were the resources. When the schema failed to produce earthquake-proof buildings, most of the physical resources stayed generally the same, but the ideas of how to build a structure changed. This change in resources led to a change in the schema and structure that then flowed up the panarchic chain and back down again to other Incan sites (Andina 2019)

If social structure is reproduced by human agency, what factors cause the system to change? Here, Sewell introduces the idea of the event as mechanism. Events, like disasters or Ω phases, can be distinguished from nonevents only by the fact that they "violate the expectations generated by cultural structures" (Sewell 2005:199). It is in response to these violations that people can choose to alter schemas and/or resource use to achieve a satisfactory resolution, or they may disregard the change and attempt to reproduce the system as usual. The event/disaster is contingent upon its consequent impact on previously operational schemas and resources, and any resulting modifications (Sewell 2005). Archaeologically, this can be detected by alteration in activity-associated artifacts and/or settlement patterns (Beck et al. 2007).

I suggest that by using an "eventful" archaeology perspective to incorporate the expectations of resilience theory and panarchy (Beck et al. 2007; Folke 2006; Gunderson and Holling 2002; Redman et al. 2009), we can better operationalize the study of culturally impactful hazard/disaster events. We do this by defining the event specifically and studying the archaeological material both before and after the event. We make comparisons between the two by using the multiple scales of resilience recognized in the panarchy model. Through these scales we have a variety of opportunities to identify both short- and long-term changes in schema and resources implying a larger change in social structure.

This study

Panarchy and social-economic resilience are not novel concepts for archaeology, even if they are not always named as such. Archaeologists are typically aware of the feedback mechanisms at work between humans and their local environments. They also acknowledge that interpretation of archaeological evidence can be done at various scales both in time and space. Disaster and Hazard research wants to try to put all of those scales forward at once to try to identify either subtle or more pronounced evidence of change in the relationship between a society and its environment. Depending on if and at what scale these changes are identified, the level of revolt or remembrance can be discussed as can ideas about how vulnerable or resilient both the environment and humans were at those same scales. Using eventful archaeology, we have a way to look for those possible changes in the archaeological record.

Large/Slow Scale Changes on geologic timescales are outside the scope of this study. They do have a resilience feedback loop, albeit larger and slower than the times we are considering here. The Central Mississippi Valley changes slowly over time due to the amount of river discharge coming down the Mississippi, changes in sea level, river course changes, erosion, water table depth, and earthquakes. Most of these things are unchanging in the shorter, human time frames that are being addressed here, but there have been great changes to the environment of the CMV through time and humans have made it their home for thousands of years despite those changes. During the years of the Mississippi period (AD 900-1650), Mississippi River flow was relatively steady, stream channels did not change drastically (the river currently runs in much the same area that it did when Mississippian people lived there) and there were no large geological changes to the landscape. The climate also held steady during the Mississippi period. There were some extended periods of drought, but not enough to be a true change in the climate (Morse and Morse 1998).

The largest social scale that will be considered in this study is the Mississippian Southeastern US with a focus on the CMV (Figure 3-2). Although there was no overarching power structure that ruled all Mississippian people, their trade networks and interactions with each other allowed for similarities in power and village structure, religious beliefs, and agricultural practices throughout the CMV and extending throughout much of the larger Mississippian world (Hally 1996; Morse and Morse 1998). This allows us to understand these communities as falling within a single structure of resources and schemas as laid out by Sewell (2005). Due to this we should be able to identify changes at lower levels that may point to an event or disaster having occurred.

At this largest scale, the assumption being made is that resilience cycles of the geomorphological, climatic, and overarching cultural structures were in the K state during the time period in question and were largely unaffected by any possible changes to the intermediate and small/fast scale resilience cycles. They may even have been a modifying or “remember” influence on the smaller/faster cycles happening in various areas across the region, but especially in the New Madrid seismic zone. This means that to some extent, Redman's (2012:240) ecosystem management adaptive strategy is being considered here and is seen as overall holding steady through time.

Intermediate Scale At the intermediate scale is a regional view of the area and the Mississippian people living in the NMSZ during the decades around the 15th century earthquake. This involves the locations of villages/towns/hamlets across the landscape as well as local landscape use for agriculture, hunting, foraging, and materials for village construction. It also involves the local landscape itself in the form of elevations, small streams and lakes, and ease of moving from one town to the next. It can also involve consideration of the archaeological phases located in the region and if they made similar adjustments at similar times. Because northern areas of the region would have been more immediately affected by earthquakes and sand blows than southern areas, any difference seen in this variable may be particularly important and telling. The extended drought of the 16^{th} century would also fall into the intermediate timescale as it was multidecadal and regional, not a change in the climate of eastern half of the continent more generally.

From previous work in hazard and disaster areas around the world we know that a large factor in vulnerability can often be how long people have lived in an area. People with a longer history in a region are much more familiar with the potential hazards and disasters in an area and may make preparations for them, whereas people who are new to an area may be unaware that a hazard exists and therefore have no adequate response when the hazard occurs, leading to disaster.

By the time of the earthquake in the CMV, people had lived in the eastern lowlands along the natural levees of the Pemiscot Bayou and St. Francis and Mississippi Rivers for generations. Because the people of the CMV were prolific farmers and were quite in tune with the natural world (as suggested by the detail put into their effigy pottery), they may well have been aware of the earthquakes and the possibility of sand blows and have taken the possibility of such a disaster seriously. It is also possible that they had some long-term knowledge of large earthquakes via oral histories. In the northwestern US around Seattle, Native people have stories of a ground shaking event from 1100 years ago. In the 1990s geologists located a fault running under Seattle and the locations noted in the stories about ground shaking align with the fault and areas that would have been affected by landslides caused by the ground shaking (Krajick 2005). People lived in the CMV, sometimes in a very dispersed way, for thousands of years, so it is possible that there was some long-term cultural knowledge of these earthquake and sand blow events, although with groups moving into and out of the area and the changes in river courses over time that would be difficult to see archaeologically.

A cultural modification that may be detectable archaeologically is changes in settlement patterns. Redman's (2012:240) first and fourth proposed adaptive strategies, locational flexibility and mobility and social complexification deal with this. Do we see changes in settlement patterns across the region or abandonment of areas that were subject to sand blows? Do we see evidence of larger, consolidated villages that might suggest centralization of power into one area with less occupation outside of the village limits? Is there any evidence that the war between Casqui and Pacaha that was recorded by de Soto's chroniclers as well as archaeological evidence began after the earthquake and perhaps as a response to it? If it pre-dates the earthquake, can the war be set aside in order to work together and help each other rebuild, or does it exacerbate the effects of the disaster? With better dating of the ca. 1450's earthquakes it may be possible to form a hypothesis about the initiation and/or consequences of warfare in the region.

This analysis will be done using elements of settlement and landscape archaeological theory again looking for evidence of changes in resources or schema. Site locations and associated landscape features such as rivers, lakes, low and high elevation areas will be mapped across the region. Sites with chronometric dates will be prioritized to understand if there were immediate, short term effects caused by the earthquakes or if effects were longer-term or nonexistent.

Small/Fast Scale At the smallest/fastest scale are individual villages/towns/hamlets and the people living in them. This is also the scale at which the sand blows from the 15th century earthquake manifested themselves. While there were likely multiple large earthquakes, each one happened very quickly (a matter of seconds to minutes), and the aftershocks would likely have lasted a few months at most. Any destruction would have been either instantaneous or non-existent. Destruction could have been in a village or the agricultural fields associated with that village.

This scale is an examination of Redman's (2012:240) second and third adaptive strategies: ecosystem management and built environment and other technologies. I will be examining artifact assemblages and site layouts. If the local system was completely resilient to the threat of earthquakes, one should expect very little change to the material culture across the affected region. If there are changes, are those or similar changes seen farther afield across large/slower cycles? If so, perhaps the change is not in response to the disaster, but to wider cultural norms. On the other hand, if the farther afield changes take place after changes seen in the New Madrid seismic zone, perhaps those disaster responses are being taken up by people farther away who also felt the earthquakes but did not experience the full destructive power of the sand blows. In addition to artifact assemblages, I will also examine individual site layouts. Did people change where they positioned different features across their built environment?

At this level Sewell's (2005) ideas of schema, resources, and structure are being fully utilized. The hypothesis is that the large earthquakes and sand blows will have altered the resources enough that the schema will be changed to reflect changes in the overarching structure of the local society. If people recognize this as an event/disaster, according to Sewell (2005) it should result in changes to the material culture in the form of artifacts, house structure and town layouts. This may happen quickly or over time according to disaster and hazard research (Cooper and Sheets 2012).

By combining select elements of panarchy, eventful archaeology, and hazard and disaster theories I believe that we should be able to not only understand if the Mississippian people living in the New Madrid seismic zone made any changes to their social structure in response to large earthquakes, but we should also be able to make some inroads into how they understood these earthquakes. Ideas and techniques from eventful archaeology should allow us to identify if the earthquakes in the NMSZ rose to the level of a disaster in the minds of the Mississippian people who lived there. If we find that it did, Torrence and Grattan's (2002) four ideas about how to define a disaster archaeologically will allow for discussion of how people perceived them and how vulnerable they were. Whether they made changes or not may also give insights into how the Mississippians understood or felt about the possibility of another similar event; for example, the magnitude and duration and frequency variables put forward by Torrance and Grattan (2002).

6

Methods

A multitude of methodological strategies were used throughout this project, focusing on different scales of resolution from examining settlement patterns across the various phases and regions of the CMV to running OSL analysis on individual sand grains. This chapter will lay out and explain the use of different methodologies and their rationales. I will proceed chronologically from the start of the project to completion of this dissertation as many decisions and pursuant strategies were based on information obtained from the previous line of inquiry.

Field

The fieldwork for this project took place intermittently over six years during the winter when the field in which the site is located was fallow. Permission was given for the work by Mr. Max Usrey (the landowner) with the understanding that more specific permission as to dates and the actual work to be done would be granted or denied by Mr. John Nelson (the tenant farmer). Mr. Nelson granted permission for each stage of the work as it was planned and carried out (one State Burial Permit was needed during the course of the work and is attached as Appendix VIII).

In 2012, Marion Haynes (ARAS-retired) and I completed a visual inspection of the artifacts on the ground surface. As noted in the site forms in the AMASDA database, there was an area in the center of the site where very few artifacts were present on the surface. The surface soil was slightly sandy, and Haynes noted the crops never grew well in the area when he had farmed the field. To the south of the low-density area there is an area of increased unmodified gravels. Early site maps show a gravel road in this location that led to a house that no longer stands. To the West, North, and East of the low-density area there are some artifacts on the surface. These range from chipped lithics to pottery. Most pieces are small, and the density is not extremely high, but artifacts are present.

After observing the low-density area in the center of the site, we excavated two 2 m x 2 m test units as a pilot study to explore whether the low-density area was a plaza or was a sunken area of the site covered by sand from an earthquake-induced sand blow. One unit was placed within the low-density area and the other was to the east in an area with higher artifact density. The units were both excavated in 10 cm arbitrary levels with level forms, photographs, and FSN logs all recorded as per ARAS standards based on A State Plan for the Conservation of Archeological Resources in Arkansas (Davis 1994). This excavation showed that the low-density area was indeed covered by sand, very likely from a sand blow based on the multiple layers of sand and silt above the midden context. It also demonstrated that the midden surface below the sand was intact and buried deeply enough to have been unaffected by plowing, including one instance of subsoiling, which would usually heavily impact an archaeological site. The higher density area was also part of the site, but it was not buried and the first 10-15 cm of the midden surface had been affected by plowing, but pit features were still present and intact below the plow zone.

In 2013 I directed the excavation of two lines of shovel tests to determine the extent of both the site and the area of the site buried by sand in preparation to lay out grids for remote sensing work. The shovel tests were laid out at 20 m intervals with one line going N-S and the other going W-E (Figure 6-1 and Appendix I). These tests showed that in the center, the site was possibly buried by up to 1 m of sand (the shovel test was called off after digging through one meter of sand/silt and not locating the midden layer, which likely places it within the sand dike). Other tests showed that the sand/silt layer extended about 50 m (W-E) by 75 m (N-S) and got thinner as we moved away from the center of the site. The shovel tests also indicated that the site extent was about 150 m (W-E) by 100 m (N-S) (records in Appendix I).

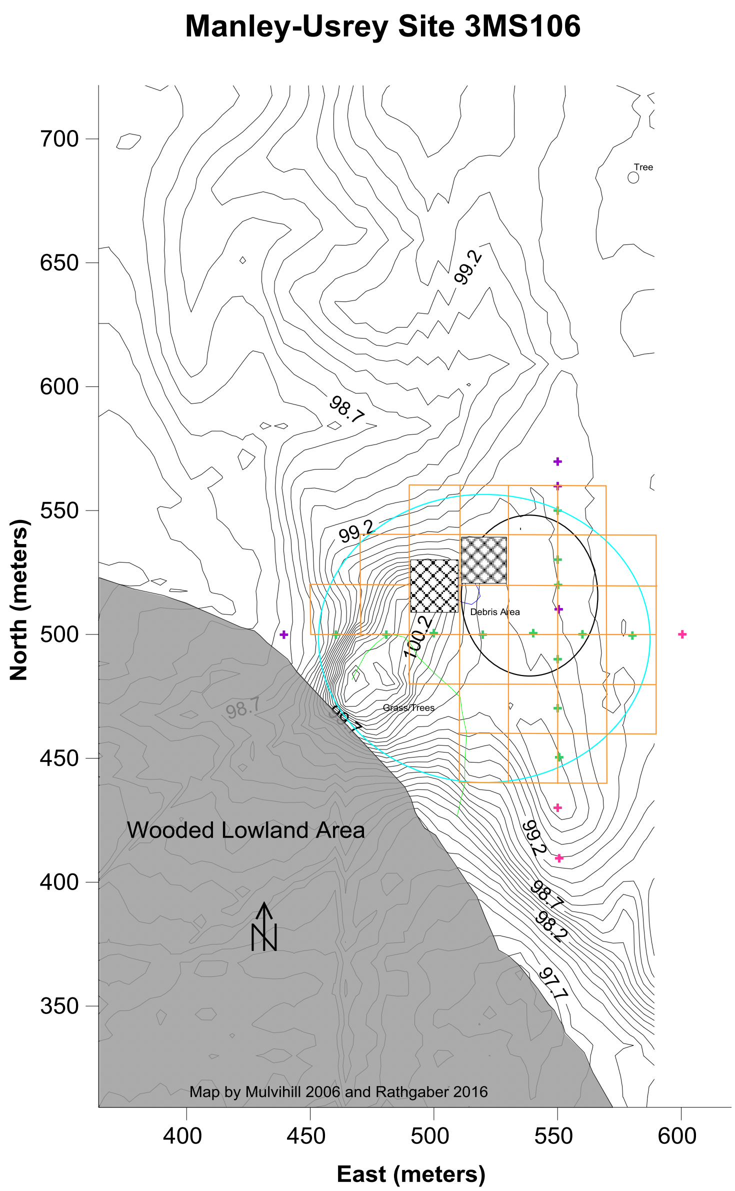

Figure 6-1: Topographic map overlaid with general site outline (blue circle), shovel test units (+ positive shovel test, + negative shovel test, + one artifact in plow zone of shovel test), and gradiometry units (orange squares, cross-hatching indicates area not surveyed).

This deep sand-covered area gave me an unusual chance to excavate a largely undisturbed area of a Mississippian site. I also wanted to unequivocally establish that the subsidence and sand were caused by an earthquake and sand blow (or multiple sand blows) rather than a flood deposit. To demonstrate that the sand was caused by a sand blow rather than a flood, I needed to locate the sand dike where the sand had broken through the overburden sediment and come to the surface. It had already been determined at other sites in NE Arkansas that both archaeological and geological features (especially sand blow features) can be identified by gradiometry and electrical resistivity survey (Eaker, Tinsley II, Old Town Ridge), so those were the methods chosen for our first round of remote sensing at the site.

In the fall of 2013, Dr. Jami Lockhart (ARAS-Computer Services) conducted a gradiometry survey over eight 20 m x 20 m units in the sand/silt covered area and followed that up with a resistivity survey of two of those same 20 m x 20 m units. His data showed what appeared to be a burned structure with a sand blow running NE-SW just along the NW edge of the structure, or possibly cutting through it (Figure 6-2).

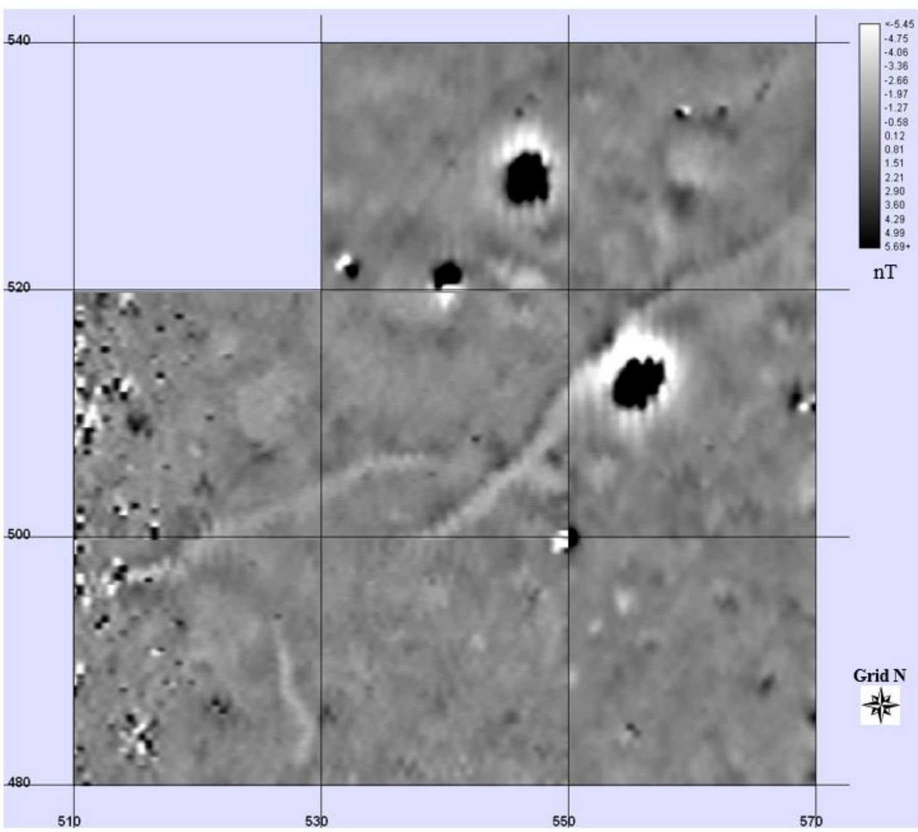

Figure 6-2: Original 8 gradiometry squares showing structure with earthquake cutting through the edge in northwest quadrant of square N500 E550. Map by Dr. Jami Lockhart.

In spring of 2014 I led the excavation of an 8 m x 2 m trench running perpendicular to the orientation of the probable sand blow. By orienting the trench perpendicularly, I would be able to have the best view of the sand blow and the sand dike through which the sand was extruded and make a final determination about the origin of the sand/silt layers. Each unit within the trench was excavated in arbitrary 10 cm levels until the midden layer was encountered. When the midden layer was located, the unit was cleared to reveal midden across the entire surface. The units then proceeded down in arbitrary 10 cm levels. The sand blow and subsequent subsidence of the land to the SE of the sand dike left the relatively flat surface on which the site's inhabitants had lived at a 2.86° angle down toward the NW (Figure 7-14) and the arbitrary excavation levels took this angle into account. The layering of fining-upwards sand and silt layers in the wall and the broken pieces of midden falling into the sand at the sand dike were evidence that the sand and subsidence of the site were caused by a sand blow (Figure 2-4).

The trench also showed that the excavation units were within a structure, but the extent of the structure was unclear. We had excavated through a layer of daub fall, but not located any post holes or a hearth, which would be expected near the center of a house. In the fall of 2016, we returned to the site to excavate a 4 m x 4 m square to the NE of the 2014 trench to get a clearer picture of the structure. We again excavated arbitrary 10 cm levels through the midden after clearing the sand from above. This excavation revealed the hearth about 30 cm to the NE of the trench. It also uncovered part of a wall or ceiling fall that contained burned cane that we collected for AMS dating. Only a few post holes were located (Figure 7-13) near the NE corner of the structure.

In the fall of 2017, I returned to the site to collect samples of the sand blow sand/silt for Optically Stimulated Luminescence dating. I relocated the sand blow to the NE of our previous excavation areas and dug an approximately 1 m x 2 m unit down to the midden surface (Figure 6-3). I identified the two layers of sand/silt that I wanted to test and pushed 10” sections of rain gutter straight into the wall around the sample area. To get a sample from the midden I had to take the sample vertically by pushing the rain gutter down through a layer of sand and into the midden. Sampling horizontally was impossible with the density of the midden and the artifacts encountered by the edge of the metal container. All of the containers were labeled and wrapped in black plastic to keep light exposure of even the edges of the sample to a minimum. The samples were packaged and mailed to the Luminescence Lab at the University of Washington for analysis.

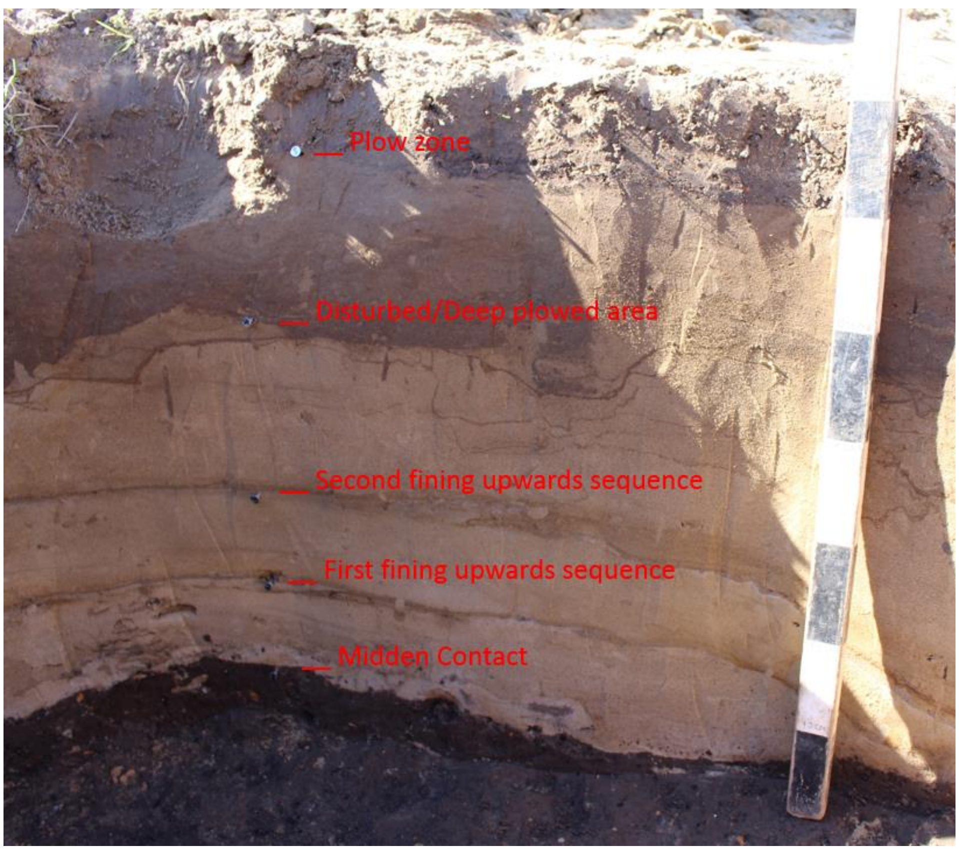

Figure 6-3: West wall of unit for OSL sampling. Layers marked. Midden, First, and Second fining upwards sequences sampled and tested.

In 2018 I laid out 20 more 20 m x 20 m gradiometry units around the previously surveyed units to understand what the site outside of the sand/silt covered area looked like under the surface. Some of these units were very disturbed by the historic metal scatter, but the units to the N, E, and S produced interesting results (Figure 7-5). The landowner has not given permission for further excavation thus far, but there is more testing to be done at this site in the future if permission is granted.

Laboratory

Artifacts collected in the field were cleaned, analyzed, and entered into a Microsoft Access database based on the DELOS artifact analysis system of the Arkansas Archeological Survey (Cande 1992). The database contains a table with information about the provenience of each field specimen number (fsn) as well as information about each artifact.

The faunal remains were analyzed as to species (or family or size class if speciation was not possible), bone, part of bone, cut marks or wear, burning, and fusion of epiphyses, and if it was a tool. Lithics were sorted by rock type, cortex presence, heat treatment, and tool type. If the object was a tool or partial tool, measurements were taken and a name was assigned if the tool was identifiable. Ceramics were examined by eye and with a hand lens (and in some cases a microscope) along a fresh break for temper type. Decorative elements such as paint, incising, appliqué, nodes, parts of effigies, rims, or handles were recorded, and Type and Variety were recorded when there was enough of the vessel present to make a determination. I was also able to photograph and document many of the whole vessels that had been looted from the site over the years (Appendix IV). These vessels were identified for form, rim attributes, paste and decorative style, as well as effigy form. The pottery decorative determinations were done using Phillips et al. (1951) and Phillips (1970). Daub was counted and weighed.

Chronometric

Carbon samples for AMS dating were chosen based on their provenience, then packaged and mailed to Beta Analytic for processing. Unfortunately, the carbon calibration curve from AD 1400-1800 is fairly flat, with each radiocarbon year representing multiple calendar years, making dating within a small range of variation difficult within the Mississippi period. Nonetheless, I wanted to assemble a comparative AMS data set to facilitate intersite comparisons, as archaeologists commonly use ^{14}C as a standard method of dating in the NMSZ and CMV (Lipo et al. 2005). I downloaded 134 radiocarbon assays from Middle and Late Mississippi period sites in Mississippi, Crittenden, Cross, Poinsett, Saint Francis, Clay, Craighead, and Greene counties from the AMASDA database. Carbon dates reported in various gray literature and published reports were also collected. All of the collected dates were run through Calib 7.1 software to calibrate them for more accurate comparison (Stuiver et al. 2018).

Dates from published literature on earthquakes in the region were also collected and calibrated in the same way. This information allowed me to locate sand blows and their associated archaeological sites within the CMV and make comparisons to other perhaps unaffected archaeological sites in the region.

Soil samples for OSL dating were shipped to Dr. James Feathers's Luminescence Laboratory at the University of Washington in Seattle. OSL dating is a technique by which quartz grains in a sample are exposed to light and the resulting luminescence is measured (Bush and Feathers 2003, Feathers 1997). When the grains are buried, energy builds up in the small imperfections of quartz crystals due to ionizing radiation from natural sources of radioactive decay in the surrounding deposit. When the crystals are subsequently exposed to a light source, such as the sun or a light source in the lab, the crystals release this stored energy and become partially bleached, or, given enough exposure time, reset to zero. By measuring how much energy the quartz has accumulated since burial and measuring the radiation to which they are exposed, the date at which the surface was buried can be calculated. As the now-buried midden layer at Manley-Usrey was previously a ground surface exposed to sunlight, the quartz crystals at the top of the midden layer should have started from a state of zero immediately after burial by the sand blow and accumulated energy from the surrounding matrix over the years that they remained buried. The quartz grains in the topmost sections of the fining-upward layers of sand/silt overlying the midden could potentially have been exposed to enough sunlight during the time between sand extrusions to have been bleached as well (the length of time needed for complete bleaching is ambiguous in the literature).

The OSL dating method can not only date the ground surface/sun-exposed layer itself, but the single-aliquot regenerative-dose (SAR) OSL technique can measure the luminescence of individual quartz grains. By testing individual grains, outliers bleached during collection or from an older context that may have been mixed into the context being tested can be isolated and rejected in the final statistical analysis before calculating the date of burial. At Manley-Usrey in particular this is essential because the sand that was blown out during the earthquake was buried much deeper and longer than the midden surface before coming up and being exposed to sunlight. Some grains may have only been partially bleached before being buried again by more sand and silt, but others may have been exposed long enough between sand blows to zero them before reburial. This SAR OSL technique is particularly well suited to this situation because it may be able to date the earthquake event itself via the quartz in the ground surface layer as well as the sand that was blown out during the earthquakes, rather than using proxies for the occupation and earthquake dates, such as radiocarbon from charred botanical samples and ceramic decorative styles (Feathers 1997, Jacobs and Roberts 2007). Thomas et al (2007) applied SAR OSL to ca. 15th century sand blows in NE India where carbon was unavailable and showed promising results, though they noted the precision needed in sampling only the topmost quartz crystals to get an accurate date. Sampling the layered sand blows at Manley-Usrey will allow for comparison of the date results from the midden sample to ensure that the dates produced are concordant. Using the map produced by the remote sensing data I was able to take samples from an area of the buried ground surface near the sand dike that was most likely to have been fully exposed to the sun during site occupation as there was no evidence of a structure in the gradiometry data (Figure 7-7).

The use of both of these dating techniques and comparing the results are likely to provide a more accurate and precise picture of when the people who lived at the Manley-Usrey site abandoned it and when a large-scale earthquake struck the NMSZ. With this detailed chronometric reconstruction, the archaeological characteristics of the Manley-Usrey site can be established as a benchmark for intersite comparisons of sites pre- and post- the date of the earthquake that affected the region.

GIS/Mapping

Golden software's Surfer program was used to produce a topographic map of the entire site using total station points taken by Tim Mulvihill (ARAS-UAFS) in 2006 as well as points taken by myself during the fieldwork portion of the project. The software was also used to show the layout of the excavation units and excavations as well as incorporating the gradiometry and electroresistivity maps.

Esri's ArcMap was used to produce maps of the larger region for site location comparisons. Site locations of Late Mississippi and Protohistoric sites in NE Arkansas were downloaded from AMASDA and sites in Tennessee and Missouri were located using Google Earth and the Missouri Department of Natural Resources' Archaeology Viewer. State and county outlines were downloaded from Esri, the Arkansas GIS Office, and the Missouri Spatial Data Information Service.

Literature Search

A literature search of published and gray literature site reports was completed, to obtain as much information about sites in the region as is known. In Arkansas this process is expedited by use of the AMASDA database to find reports on the site located in the region. Data from Missouri are more difficult to obtain as their site file database is less searchable. Published site reports and limited gray literature were reviewed, nonetheless. Lastly, I searched the literature on earthquakes and sand blows in the NMSZ, as much of it discusses archaeological sites and has an archaeological report component. This background research helps to understand the markers of vulnerability and resistance in the region as noted in the previous chapter. The data from the Manley-Usrey site is incorporated into this database as a baseline of the components of a Mississippian site occupied just prior to a large earthquake strike. From this data, comparisons of sites and site component are made across time and sites in the CMV.

7

Manley-Usrey

The Manley-Usrey site was a hamlet or small village of ~1.8 ha with no mound located on the northern bank of the Pemiscot Bayou. This likely makes the site a third order Mississippian site being under the hierarchical authority of larger mound and multi-mound sites in the region. The artifact assemblage from the site includes a variety of late Mississippi period markers such as Nodena points, punctated sherds, bowls with appliqué strips around the rim exterior, and effigy pottery depicting supernatural themes as well as natural, local animals as described in Payne's (2005) Nodena art style. The site is located on prime agricultural land as well as in an excellent location from which to travel along the Pemiscot Bayou to other local towns and, potentially, towns farther afield.

The hamlet consisted of at least 5 houses that had been burned at some point and possibly more that had never burned and were occupied when the site was destroyed and abandoned. The site was occupied primarily during the Late Mississippi period until its abandonment in the late AD 1400's or early AD 1500's when a sand blow caused by a large earthquake in the NMSZ covered the center of the site. This sand destroyed houses and cropland, covered a large area of the site in deep sand and made the immediate area unlivable as evidenced by the fact that the people who had been living there abandoned the site. The land on which the site was located was not reoccupied until well after European settlement of the area, and crops do not grow well in the sand covered area to this day.

Situating Manley-Usrey in the Region

There are 29 other sites located along the current and former courses of the Pemiscot Bayou in the immediate vicinity of Manley-Usrey (Figure 7-1). Beyond measuring surface scatters of artifacts, though, very little testing has been carried out on other sites in the vicinity to understand the various sizes and populations of Late Mississippi and Protohistoric towns and villages in the area. Based on surface scatter measurements, Manley-Usrey seems to be a mid-size village in the local region, but it is also one of many non-mound sites of a variety of sizes in the vicinity. This variance in size estimations of non-mound sites may be due to sampling bias as many sites are only noted as surface scatters in the site records and not fully delineated, under-representing their actual size in the estimates. It is also likely that small sites in the region are missed completely or larger sites are underestimated during archaeological surveys due to having been covered or partially covered by sand from sand blows in the Late Mississippi period or AD 1811 and 1812 (AMASDA site files 2019). Despite potential problems with site size estimations, it is likely that there would be multiple 3rd order sites in the vicinity around a major 1st order, multi-mound site such as Chickasawba is interpreted to be (Childs and McNutt 2009). Concurrently occupied sites of multiple sizes are noted in the Parkin Phase around the Parkin site and the Nodena Phase around the Nodena site, the Knappenberger site, and the Bradley site, as well as throughout the southeastern United States during the Mississippi period (Anderson 1994; Blitz 1999; D. Morse 1989; P. Morse 1981)

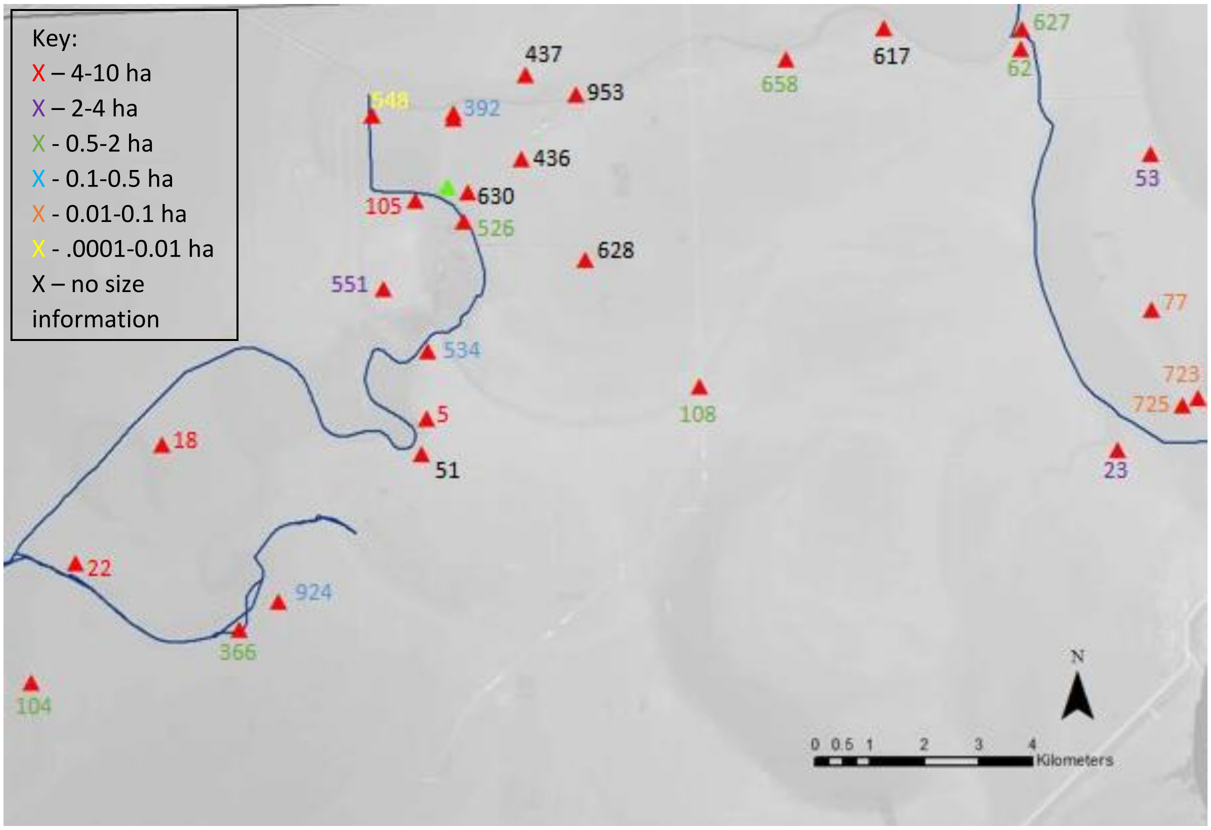

Figure 7-1: Manley-Usrey (green triangle) and other Mississippi period sites located along the Pemiscot Bayou (and relict channels of the bayou) in the vicinity (AMASDA site files 2019). Base map and water ways from Arkansas GIS Office (2019).

The Eaker site (105 in Figure 7-1) is a 10 ha site that is almost directly across the Pemiscot Bayou from the Manley-Usrey site and was excavated in the early 2000's, but the analysis has not been finished. Eaker is interpreted from initial analysis as being predominantly a Middle Mississippi period site but does have some evidence of a Late Mississippi period occupation in some areas. The Late occupation is noted as being much smaller than the overall site extent, but it is unclear how many houses may have been present, what the total extent of the Late occupation may have been, or how late the occupation extended through time. There is no evidence of a mound at the site, either in the Middle or Late Period occupation (AMASDA site files 2019; Payne 2007).

The Tinsley 1 site (658 in Figure 7-1), a 2 ha site 6 km northeast of Manley-Usrey by land and 13 km by the Pemiscot Bayou, may be a small village or hamlet similar to Manley-Usrey. It has also been interpreted as possibly a series of individual farmsteads occupied consecutively through time (Payne and Lockhart 2002). Another nearby small Late Mississippi period or Protohistoric site was accidently uncovered by land leveling in 1998. The Sigman site (617 in Figure 7-1) is ~8 km northeast of Manley-Usrey by land or 15 km via the Bayou and appears to be a small hamlet that was completely covered by sand, although the site boundaries were not completely defined due to the sand cover. The site had Campbell style pottery, likely dating it to the Protohistoric period, after Manley-Usrey had been abandoned, but no chronometric dating of the site was done. Neither of these sites have mounds and would likely have been 3rd order sites along the lines of Manley-Usrey or smaller (AMADSA site files 2019).

Two Late Mississippi period sites in the vicinity have been recorded as mound sites. Knappenberger (53 in Figure 7-1) is ~12 km northeast of Manley Usrey by land and is located about 3 km east of the nearest point of the Pemiscot Bayou by land after an 18 km trip up the Bayou. A small amount of professional excavation carried out in the 1970's showed evidence of Late Mississippi period artifacts and estimated the site at 2.8 ha but did not look for evidence of fortifications as are seen at mounds sites in the Parkin Phase. One mound was present at the site in the 1970's, but most evidence of it has been plowed away in the intervening years and no chronometric dating of the site has been done to firmly establish its occupation period (AMASDA site files 2019; Klinger 1974). This suggests that Knappenberger was a second order site in the local hierarchy, with one mound and some political power, but it was not the most important site in the local region.

The Chickasawba site (5 in Figure 7-1) is 4 km by land or 6 km via the Bayou to the southwest of Manley-Usrey and was a Late Mississippi to Protohistoric period multi-mound site, without fortifications. The site covers at least 25 ha and appears to be the largest site in the immediate region (the Crossno (18 in Figure 7-1) and Richardson (22 in Figure 7-1) sites are also very large, but without mounds). It was likely at least a regional ceremonial center, if not a central ceremonial site for the northern extent of the Nodena (and possibly Armorel) phase, making it a first order site in the local political hierarchy (Childs and McNutt 2009).

The locations and variety of site sizes and number of mounds at various regional sites supports the supposition that the CMV in the Late Mississippi period was organized as a series of chiefdoms, even if the hierarchical structure may not have been as strong or centralized as chiefdoms in other regions of the southeast (Anderson 1996; Fisher-Carroll 2001; Fisher-Carroll and Mainfort 2000; Hally 1993, 1996; Morse 1989; Morse and Morse 1998). An interconnected, overarching, regional hierarchical structure is a middle scale resilience loop in the panarchy that could be a protection against vulnerability by allowing local population movements of culturally or biologically related people from damaged sites to unaffected sites. This is suggested by Redman's (2012:240) first and fourth resilience adaptive strategies of locational flexibility and mobility and social complexification. If the schema of the chiefdom is too rigid though, the change in resources caused by the earthquake could cause effects throughout the panarchy, breaking down the resiliency loop at multiple scales, including the local chiefdom. Evidence for these scenarios will be examined in the following chapter through comparisons of the Manley-Usrey site to sites in the local and wider CMV region.

Manley-Usrey Background

The Manley-Usrey site was first recorded by the Arkansas Archeological Survey (ARAS) in 1973 after the historic house had been burned down. Only the footings remain visible in a wooded area on the south end of a cultivated field. The site is located on the north bank of the Pemiscot Bayou on Buckhorn Ridge (Figure 7-2). There is another branch of the Pemiscot Bayou about 1500m to the north of the site. Most of the site is in a field that is farmed most of the year, although the historic house site, which is higher than the surrounding site, has been overgrown with trees and bushes and there is a trash pile that contains the remains of the house and other barn structures to the north (Figure 7-3). Both of these areas are avoided by tractors and therefore remain high areas in the topography of the site. At the southern edge of the site, the ground surface drops off sharply toward the bayou and is tree and brush covered.

Figure 7-2: Aerial photograph (Google Earth 2019) with Buckhorn Ridge and Pemiscot Bayou marked. Bayou no longer flows N-S through the air force base, but the most recent active channel before human re-routing is marked.

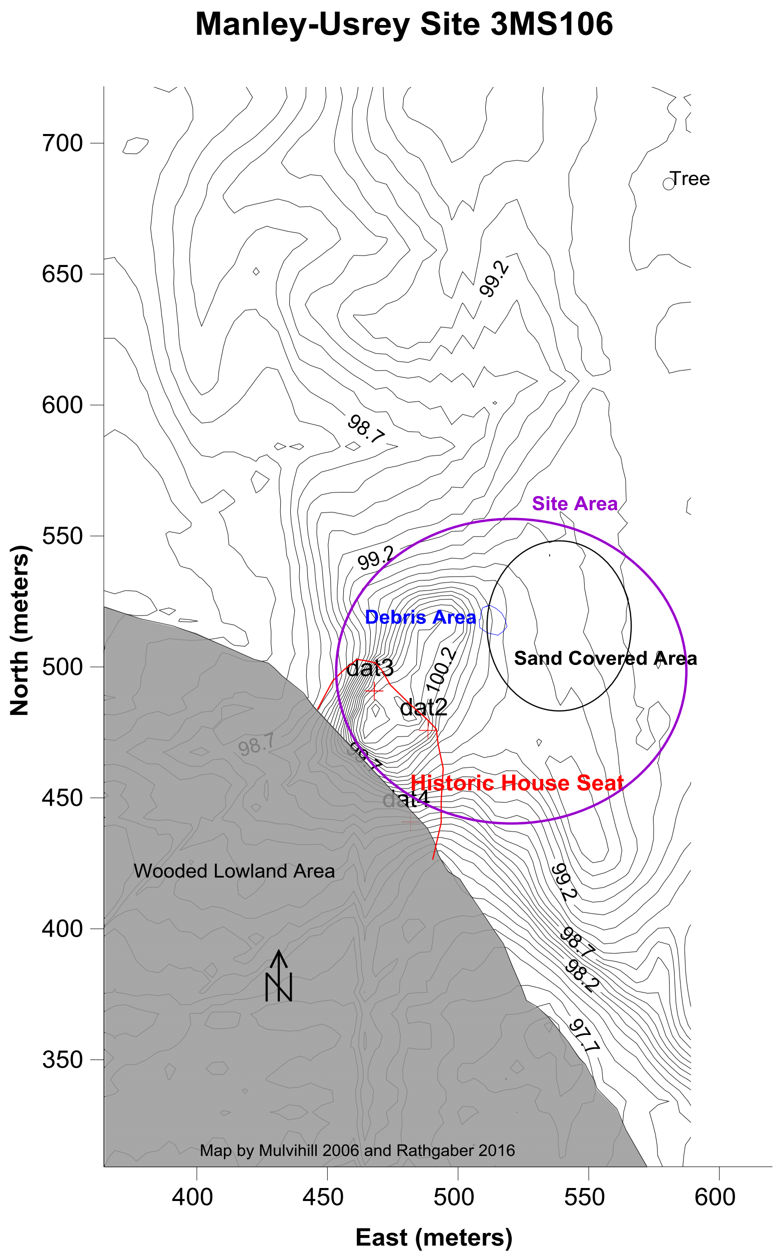

Figure 7-3: Topographic map with site area (purple), debris area (blue), sand covered area (black), historic house seat area (red), and low wooded Pemiscot Bayou channel area (grayed) marked.

The site is situated across three soil types according to the Natural Resources Conservation Service of the United States Department of Agriculture (USDA Web Soil Survey) (Figure 7-4). Buckhorn ridge consists of Tiptonville and Dubbs silt loams. These soils are moderately well to well drained with negligible runoff. The depth to the water table is 30-80+

inches and it does not flood. To the west of the ridge are Steele and Tunica soils. These soils are moderately well to poorly drained with low runoff. The depth to the water table is 6-30 inches and flooding is rare. To the east of the ridge is Dundee silt loam with 0-1% slopes. This is a somewhat poorly drained soil with negligible runoff. The depth to the water table in this area is 18-42 inches and flooding is rare (USDA-NRCS website 2019). These moderately- to well-drained soils would allow for quick drying of the ground after a rain and would likely assure that the town did not flood, even being situated mostly to the east of the slightly higher ridge. They are also prime agricultural land (Figure 7-5).

Figure 7-4: USDA-NRCS map of soil types around the Manley-Usrey site (USDA-NRCS website 2019). Relevant soils: Td-Tiptonville and Dubbs silt loams, St-Steele and Tunica soils, Du-Dundee silt loam with 0-1% slope. Site outline in blue.

In 1999 it was reported that the historic house seat was placed on a prehistoric mound at the site, but further evaluation of the raised area on which the house footings sit does not bear this out (Lafferty 1999). The house seat is located at the south end of Buckhorn Ridge, a ridge that runs N-S through the field and continues northeast toward the state line. The ridge is slightly eroded in the plowed areas of the field but is visible in aerial photography and from the ground. The surrounding farmland is also slightly lower than it would have been in antiquity due to erosion from years of plowing and subsequent runoff. Together, this makes the house seat area seem higher than the surrounding field, but nothing else indicates that the area was artificially raised.

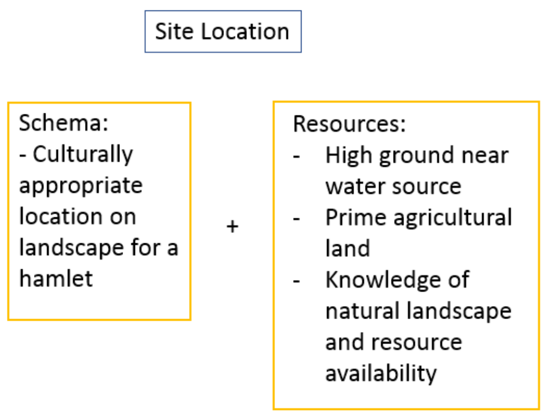

Figure 7-5: The schema and resources of choosing a site location in the CMV.

Paleoseismologists have recently taken an interest in the ridge, wondering if it is related to the New Madrid earthquakes in some way. Concurrent with our excavation in 2016, a student from the University of Missouri-Kansas City excavated a 100 m trench across the ridge at the north end of the field. His report is forthcoming, but he did see indications of tectonic deformation near the bottom of his trench below the ridge surface indicating that the ridge may have been raised due to tectonic activity in the region (Dunahue personal communication 2016).

Dates

Eventful archaeology (Beck et al. 2007) is based on the premise that events can be seen archaeologically by looking for changes in the cultural materials in the archaeological record from before to after the date of the event. These changes are the product of the changes in available resources (both physical objects such as food, tools, construction materials, etc. and the knowledge of how things are or can be done) in an area after the event that lead to changes in the overall schema under which the society operates (Sewell 2005). The actual historical events identified by Beck and colleagues (2007) were not all identifiable, but that some kind of event had occurred was evident by the change in cultural materials over a large region at a single time. In the NMSZ we have the opposite case, we know of a large hazard event that happened in the region, a **M**7-9 earthquake, and want to see if it can be classified as a disaster event archaeologically by looking for cultural material changes after the earthquake date. From hazard and disaster research we know that a hazard such as a large-scale earthquake is only classified as a disaster if it breaks down the resiliency loop and causes changes in some level of the panarchy, also making it an archaeological "event" (Beck et al. 2007; Cooper and Sheets 2012; Folke 2006; Gunderson and Holling 2002; Redman et al. 2009).

One large change that has been noted in the Mississippi period is the change in settlement patterns between the Middle and Late Mississippi periods (Lockhart et al. 2011). There are also material changes in artifact assemblages noted between the Late Mississippi period and the Protohistoric period (Mainfort 1999, 2012; Mainfort and Moore 1998; Morse and Morse 1998). In order to understand if these or other changes were made by Mississippian people in response to earthquake events in the NMSZ, we must be able to narrow the date of the hypothesized event/disaster to a time-period in which a local material culture response can be identified as an immediate response to a particular event rather than a gradual change through time.

Because the analysis and interpretations of the event (*i.e.* earthquake or disaster) and subsequent responses of the Mississippian people of the CMV rely on more securely and precisely dating the AD1450±150 earthquake, I will discuss the dating of the site first. The Manley-Usrey site was chosen as an excavation location because the sequence of artifacts in the buried midden surface and the overlying fining-up sand layers suggested that the site was occupied either at the time of the earthquake event, or up to very nearly the point of the event. To test this hypothesis we dated the site via the typical archaeological method of AMS dating (which often gives large calibration errors in this time period) and attempted Optically Stimulated Luminescence (OSL) dating on the soils themselves to get a more accurate date that did not need to be calibrated.

Three AMS dates were run on carbon samples excavated within Structure 1 (Table 7-1). Two samples (Beta-411229 and Beta-411228) were run on nut shell picked out of the flotation samples taken from the corners of the top 10 cm of midden at the base of the overlying sand (the midden surface) (Rathgaber 2015). At the time of excavation and testing, the context for the samples appeared sound. In our subsequent excavation season, we uncovered a large rodent burrow with rodent runs leading toward the previous units. Although we did not see evidence of these burrows in units 3 and 4 at the time (Figure 7-13), it is possible that these samples could have been contaminated by more modern carbon brought in by small animals. The third date (Beta 461961) was run on a piece of cane excavated from underneath an area of daub fall near the hearth on the floor of the structure in unit 8. This date is more reliable as it is from a firmer context and there was no evidence of contamination in the area. The 95% range of probability for the date of the structure is from AD 1487-1649. This spans most of the Late Mississippi period which is the period expected based on the artifact assemblage, but Manley-Usrey does not have many of the key artifacts to justify interpreting it as a contact or protohistoric period site such as large numbers of thumbnail scrapers, European trade goods such as glass beads and metal, and Campbell appliqué pottery decorations (Mainfort 2012; Morse and Morse 1998).

Table 7-1: AMS dates calibrated using Calib 7.10 (Reimer et al. 2019). Beta-411229 and 411228 reported in Rathgaber 2015.

Sample	**Radiocarbon Age**	**Median Probability**	**Calibrated Age (95% Probability)**	**Provenience**	**Material**
Beta-411229	280 ± 30 BP	1576	1498-1504, 1513-1600, 1616-1666, 1784-1795	Flotation sample from NE corner of excavation unit 4, 45-55 cmbs	Nut shell
Beta-411228	230 ± 30BP	1737	1532-1537, 1636-1682, 1736-1805, 1935-1950	Flotation sample from NW corner of excavation unit 3, 55-65 cmbs	Nut shell
Beta-461961	310 ± 30 BP	1562	1487-1604, 1608-1649	Sample located under daub fall on floor surface of excavation unit 8	Cane

The OSL dating of the midden surface of the site initially produced an estimated date of 3.94 ± 0.31 ka, or BC 1930 ± 310 (Table 7-2). This date was much earlier than the material assemblage found at the site. Upon further analysis of the individual grains of sand from the sample, it was found that 35% of the individually tested sand grains produced dates of AD 1460 ± 50. The remaining 55% of the grains produced older dates, leading to the estimate of BC 1930. OSL analysis is performed by measuring the luminescence given off by individual sand grains and then calculating how many years the grain was buried based on the rate of electron accumulation on the grains due to radioactive decay in the surrounding soils. Because measurements are taken on individual sand grains, we can look at the range of dates produced to look for the most likely scenario. Despite only 35% of the sample producing a date of AD 1460 ± 50, because none of the grains produce a more recent date, we can conclude that ca. AD 1460 was the date that the midden was last exposed to sunlight. If it had been exposed closer to the present some grains would indicate that with more recent dates. The 65% of grains that show very early dates are likely grains of sand extruded from below the site by the sand blow and worked into the midden surface by the undulations of the ground during the earthquake.

The three other OSL samples consisted of sand layers produced by earthquakes and subsequent liquefaction and sand blows. These sample all produced dates in the 3 kya range, although some have earlier and later components. This is not a completely unexpected outcome as it is always a possibility in OSL dating that the sand grains were not completely bleached before burial. Due to the nature of liquefaction and sand blows it is impossible to tell how long an individual grain of sand may have been exposed to sunlight during its journey from below ground to the surface. Bleaching may also depend on the clarity of the water in which the sand settles and how much sunlight is able to get through the water to the layer of settling sand.

The sand that was extruded via the sand blows could have come from any depth in the near surface area and may be a mix of river and bayou deposition layers, leading to these early dates. Importantly though, even though the sand itself has not been bleached enough to give us a clear date, its burial of the midden surface and those sand grains, gives a date for the earthquake by default. If the sand blows were a result of the known earthquakes of 1811/12 there would be some sand grains in the midden sample that date to more recently than AD 1460 ± 50 and there are none. This date also coincides with the AMS dates run earlier, especially the late 1400's date of the more reliable cane sample.

Table 7-2: OSL samples and dates.

Sample	Measured Date	Calendar date	Provenience	Material
UW3746 (youngest component)	.56 ± .05 ka	AD 1460 ± 50	Midden surface below sand blow	Midden soil
UW3746 (2nd youngest component)	3.94 ± .31 ka	BC 1930 ± 310	Midden surface below sand blow	Midden soil
UW3746 (sand)	3.46 ± .22 ka	BC 1440 ± 220	Sand directly above midden surface	Liquefaction sand
UW3747 (youngest component)	2.45 ± .29 ka	BC 430 ± 290	Sand from top of first liquefaction event	Liquefaction sand
UW3747 (oldest component)	4.50 ± .43 ka	BC 2480 ± 430	Sand from top of first liquefaction event	Liquefaction sand
UW3747 (central age)	3.44 ± .31 ka	BC 1420 ± 310	Sand from top of first liquefaction event	Liquefaction sand
UW3748	2.82 ± .23 ka	BC 800 ± 230	Sand from top of second liquefaction event	Liquefaction sand

The date of the site can be further constrained by examining the artifact assemblage excavated from the site, which rules out the earlier years of the OSL time-range. In the rest of this chapter the individual assemblages will be examined and will demonstrate that the site was occupied toward the later end of the Late Mississippi period, but not into the contact or Protohistoric period. This means that the site most likely was occupied and destroyed by an earthquake in the very late AD 1400's or early AD 1500's.

Having narrowed the date of the end of occupation of the site to the length of about a generation, comparisons of features of other dated sites can be made to look for evidence of changes in available resources or in the schema as reflected in resources used. This comparative analysis can also be scaled up and down to look for effects across scales in the panarchy. Gunderson and Holling's (2002) resilience and panarchy models demonstrate how localized responses can be contained by a society and its operating schema to have almost no effect on society at large or, alternatively, spread through various scales of power and geography to cause vast changes in a large part of the culture. Eventful archaeology reminds us, though, that even the largest hazard will not rise to the level of "event" in the archaeological record if the local culture does not respond to it with material culture changes. Whether or not people respond is due to the society's vulnerability to the hazard and its changes to available local resources. It may also depend on the schema of the society and if it had already incorporated the possibility of such an event and how to deal with it into the culture. Examining the various resiliency loops of the panarchy from the most local level to the large-scale settlement pattern level will allow us to identify changes at any scale and examine if those changes led to changes upstream to the larger panarchy feedback loops ("revolt") or changes downstream to smaller feedback loops ("remember") (Gunderson and Holling 2002) which may imply changes to the larger social schema and use of resources in the region (Sewell 2005).

We are considering the smallest scale (the local level) of the panarchy in the examination of the site, layout, structures, and artifact assemblages of the Manley-Usrey site. Because this site was covered by a sand blow and abandoned, it gives us an undisturbed baseline of the cultural materials and site layout representing the Sewellian resources and schema of a non-mound Late Mississippi period site in the very Late Mississippi period in the CMV. The characteristics of this site can then be compared against other regional sites occupied during the same time period, sites spanning both time periods and sites exclusively occupied in the Protohistoric period to look for the post-earthquake changes in resources and schema that are hypothesized by eventful archaeology (Beck et al. 2005). If the earthquakes were indeed considered a disaster by the Mississippian people of the CMV we should see changes in cultural materials that represent changes to the schema and available resources from pre- to post-earthquake.

Site Layout

As discussed in Chapter 3, Mississippian sites are often planned villages with houses laid out in relation to larger features such as mounds or plazas. These plans reflect the Sewellian idea of a schema of how sites are laid out as well as the resources of knowledgeable people to plan them and the resources to physically build them (Figure7-8). At mound sites they may also indicate knowledge and acceptance of a political hierarchy that has exclusive access to some areas of the town. By understanding the layout of the Manley-Usrey site, we can understand the schema of Late Mississippi Period, pre-earthquake site layout in the CMV region and how people at this 3rd order site reproduced that knowledge. The layout of the Manley-Usrey site is best understood through the topographic map (Figure 7-3), the shovel tests (Figure 7-6, Appendix I), and the gradiometry survey (Figure 7-7). The topographic map shows that the site is a relatively flat area with a ridge on the west side of the site and a wooded area that drops off into the Pemiscot Bayou on the southwest edge. There are two raised areas on the map. One is a historic garbage pit into which much of the historic house and barn debris was deposited when the site was cleared for farming. The other is where the historic house sat. Foundation blocks are still visible at the surface in this area and it has never been plowed or planted. It is currently overgrown with trees and brush. Examination of a looter hole during one excavation season showed a continuous, dark A horizon soil with no mottling to suggest that the area was a built mound.

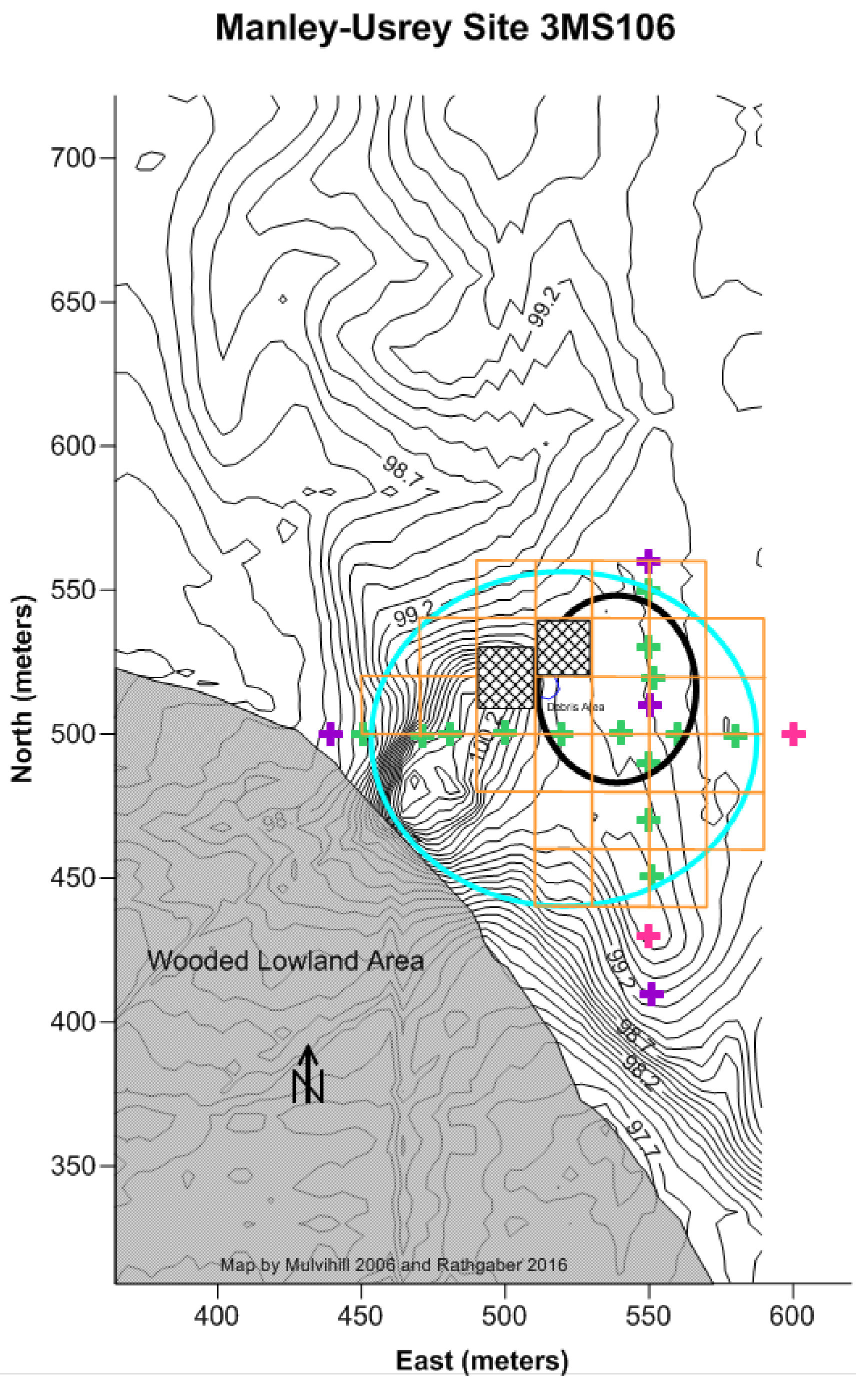

Figure 7-6: Topographic map overlaid with general site outline (blue circle), sand covered area (black circle), shovel test units (+ positive shovel test, + negative shovel test, + one artifact in plow zone of shovel test), gradiometry units (orange squares, cross-hatching indicates area not surveyed). Original map produced by Tim Mulvihill with additions by Rathgaber.

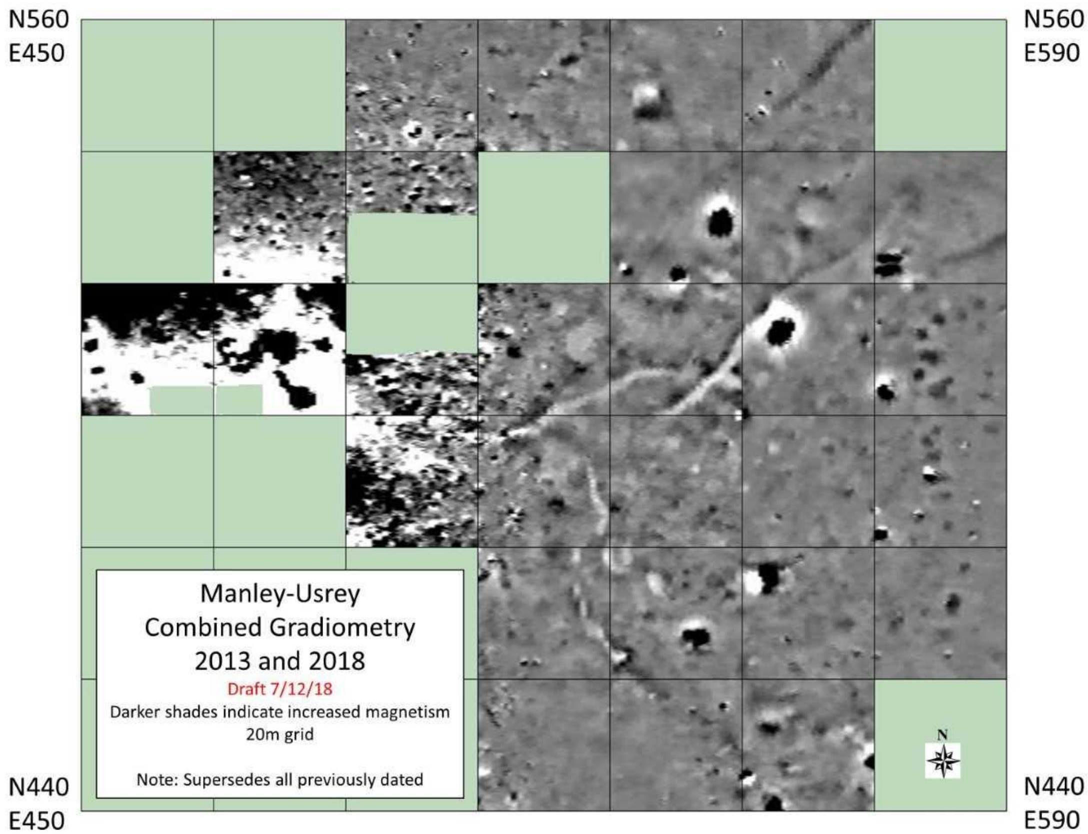

Figure 7-7: Gradiometry map. Dark areas indicate high magnetic signature, white areas indicate low magnetic signature. Map produced by Dr. Jami Lockhart.

To the west of the ridge, the ground drops off slightly and Prehistoric artifacts are scarce. The shovel test farthest west of the ridge shows three layers of sand overlying a dark buried A horizon that contains no artifacts. Heading east, the shovel tests continue to have layers of sand covering a dark soil, and near the top of the ridge this soil contained artifacts, suggesting that it was a midden layer in addition to being a part of the buried A horizon observed to the west. It also suggests that the few artifacts found in the first positive shovel test on the west may have been a result of artifacts moving down the slope of the hill rather than actual occupation of that area. Although we cannot use the gradiometry data as a comparison due to the interference of historic metal at the surface, it seems likely that artifact density falls off toward this area because it was not being lived on in the Mississippi period as it was a low-lying, flood-prone area. In addition, the artifact density is low in the shovel tests on the western slope of the ridge. The layers of sand in this area could be from flooding events on the Pemiscot Bayou, but could also be from the sand blow sand washing down the slope after being extruded over the ground surface to the east. The sand would have shot into the air, fallen in a wide area around the actual earthquake crack, and been quite fluid and able to flow from the top of the ridge to this nearby low-lying area. In addition, there may be additional earthquake cracks on the western side of the ridge that we do not see in this data.

From the top of the ridge to the east, the site extends for ~150 m. This is confirmed by both the shovel testing and the gradiometry survey. The N-S line of shovel tests and the gradiometry data show that the site extends ~120 m in this direction, making the site about 18,000 m^2 or 1.8 ha. The shovel testing also showed the extent of the sand covered area of the site (~2827 m^2 or .28 ha) (Appendix I). The sand is deepest near the center of the site where the most prominent earthquake crack is located and gets shallower as one moves away in any direction. According to the gradiometry data, occupation of the site in the form of structures rings a center area that shows less evidence of occupation, although possibly more earthquake disturbance (Gradiometry squares N480 E510, N500 E510, N480 E530, N500 E530 in Figure 7-6). This lack of occupation is also reflected in observations of the surface expression of artifacts.

Around this unoccupied area, five burned structures are visible along with seven smaller strong anomalies. The structures measure ~5 m x ~5 m and appear to be relatively square in outline. One additional probable structure is visible in gradiometry square N540 E530 (coordinates from SW corner), although it has a weaker magnetic signal than the others which may indicate that it was not burned or was not entirely burned. The three structures on the NE side of the site are spaced ~15 m apart, as are the two in the SE corner, but that may be more coincidental than conclusive as there are only 5-6 structures visible on the map. There is also a series of pits running in a N-S direction along the eastern edge of the gradiometry map. One of these pits was excavated and contained an array of Mississippian trash including small amounts of lithics, pottery, and faunal remains. The seven mid-sized magnetic anomalies may be large pits or burned features without associated burned structures around them. This could indicate a hearth outside of a structure, or an area where ash or other burned materials were dumped outside of a structure. None of these anomalies were tested, so it is impossible to say conclusively.

The earthquake cracks/sand blows show up as long, linear lines on the map and there are at least 4 visible. The most prominent is near the center of the site and cuts through one of the burned structures. It runs from southwest to northeast and measures ~45 m long and ~2 m wide where it cuts through the structure. The other three sand blows also run in generally this direction but are shorter and their magnetic signatures are less prominent. The orientation of these cracks is interesting because they are not oriented in line with the bank of the Pemiscot Bayou, but more with that of Buckhorn Ridge. Typically, these long, linear cracks are formed when a river bank subsides and creates a weak spot farther up the bank for the liquefaction sand to move through. The earthquake crack orientation is similar to that of the ridge, but not exactly. The ridge is quite low, but perhaps the shifting underneath the ridge visible in the geological trench caused shifting of surface sediments on the east side of the ridge, allowing for areas of cracking and surface weakness that were utilized by the fluidized sand and water mixture.

It does appear that there was a plan in the layout of the site and that it may be similar to that of the other small regional sites of Tinsley 1 and Sigman discussed above (AMASDA site files 2019; Payne and Lockhart 2002) (Figure 7-8). This plan includes the building of small houses using small (~ 15 cm diameter), single set posts, with thatched roofs that are heavily daubed around the smoke hole, which is situated in the center of the house above the hearth. The structures themselves would likely allow for occupation by a single family that carried out all the daily activities needed to sustain a household (as the artifacts excavated from the interior suggest), suggesting that they were low in the hierarchy of the chiefdom with few prestige goods. The location within the site (toward the center, possibly around an open plaza area) and the spacing of the houses suggests that the locations were planned and that there was space between the houses to keep small “kitchen” gardens or to do daily activities outside of the structures (evidence for which was not excavated in this project). Because there is only one series of houses, it is impossible to compare this to the multiple “neighborhoods” seen at some of the well-studied Middle Mississippi period sites from the region discussed in chapter 2, but the spacing of the houses is not unlike the houses within the neighborhood in those sites. The sizes, number of mounds, and locations of other contemporary sites within the immediate region also align with those of other Mississippian chiefdoms as discussed in chapter 2. This suggests that there was nothing atypical about Manley-Usrey or the people living there and how they interacted with the local chiefdom hierarchy except for the sand blow that eventually destroyed the site.

Site Layout

Schema:
- Culturally defined site areas and features

+

Resources:
- Open plaza
- Houses around plaza
- Pits at edge of site
- Knowledge of appropriate area and feature placement
- No mound (indicating acceptance of/participation in local hierarchical structure)

Figure 7-8: Schema and Resources associated with planning and building a 3rd order site in the CMV. The yellow boxes indicate that these elements are a part of a regional, larger, slower feedback loop that is seen at many sites in the region.

Artifact Assemblage

The overall artifact assemblage of a site allows us to see characteristics of material culture that express resources of knowledge and use of locally available natural resources (Sewell 2005). The faunal assemblage demonstrates the available animal resources as well as their relative use by the people living on the site. Lithic types and styles or pottery decorative styles and production techniques can reflect the available resources in production knowledge or, sometimes, the schema of overarching beliefs or cosmologies as seen in the production of effigy figures or symbols that represent either local (Payne's (2005) Nodena art style) or more expansive Mississippian cultural ideas.

The artifact assemblage from all contexts across the Manley-Usrey site is typical of other Late Mississippi period sites in the region with some evidence of earlier Woodland and Middle

Mississippian occupation, no evidence of European contact, and a later 19th-20th century historic component concentrated on the ridge and to the west. This assemblage consists mainly of lithic, faunal, and ceramic materials, as well as a large amount of daub from the burning of the structure. Pot hunting also occurred on the site in the 1970's and I have recorded and photographed many of those vessels to use in this analysis as well.

Lithics The two main chert types in the lithic assemblage are Crowley's Ridge and Lafayette gravels. Most of these are relatively small and were likely picked up from gravel bars in local streams and bayous rather than being traded for or acquired from regional locations such as Crowley's Ridge to the west, the bluffs on the east side of the Mississippi River, or locations farther afield. There is also a small amount of hematite, basalt, and one example of Reed's Spring chert (Appendix V). These stones outcrop farther away and are large enough that they are unlikely to have been found in a gravel bar. This means that the people living here did have access to more exotic goods, whether they got them through local trade, direct access to larger trade networks, or travel (Figure 7-9).

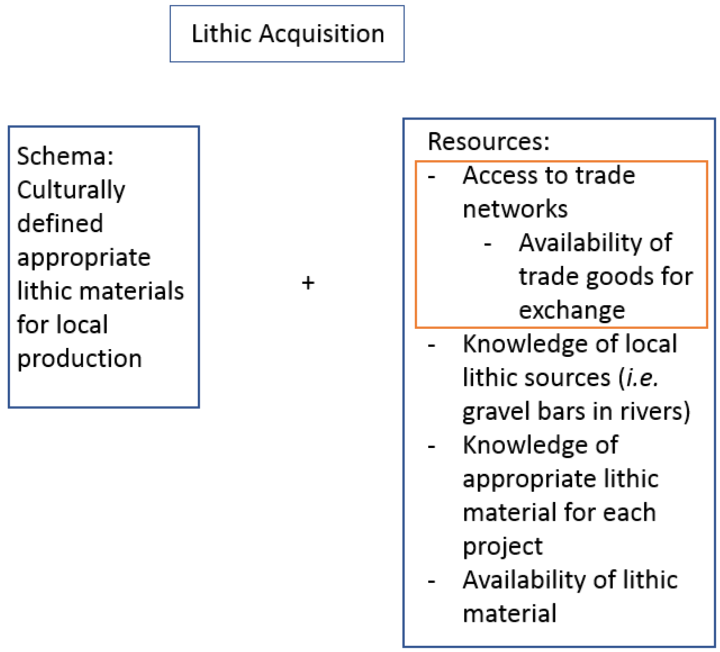

Figure 7-9: The Schema and Resources associated with Lithic Acquisition. Blue boxes indicate local, small, fast feedback loops, and orange indicates a regional, larger, slower feedback loop.

The majority of the lithic artifacts from the site are debitage in the form of production flakes with unmodified materials making up the next largest category (Figure 7-10). When these categories are removed, we get better insight into the diagnostic lithics at the site (Figure 7-11). The arrow points consist of Nodena (n=44) and Madison points (n=25). The preforms are likely formed for those point types as well because the preforms are typically small. These points and preforms are made of Crowley's Ridge and Laffayette gravels. There are drills, scrapers, and hammerstones present and one each of a discoidal and a chisel (Figure 7-12).

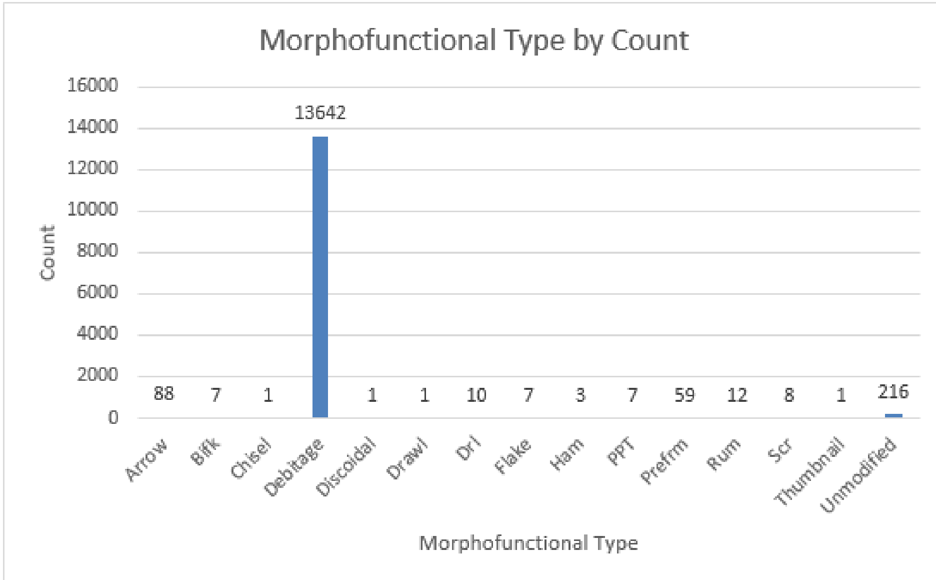

Figure 7-10: Morphofunctional types of lithic artifacts from all excavation contexts.

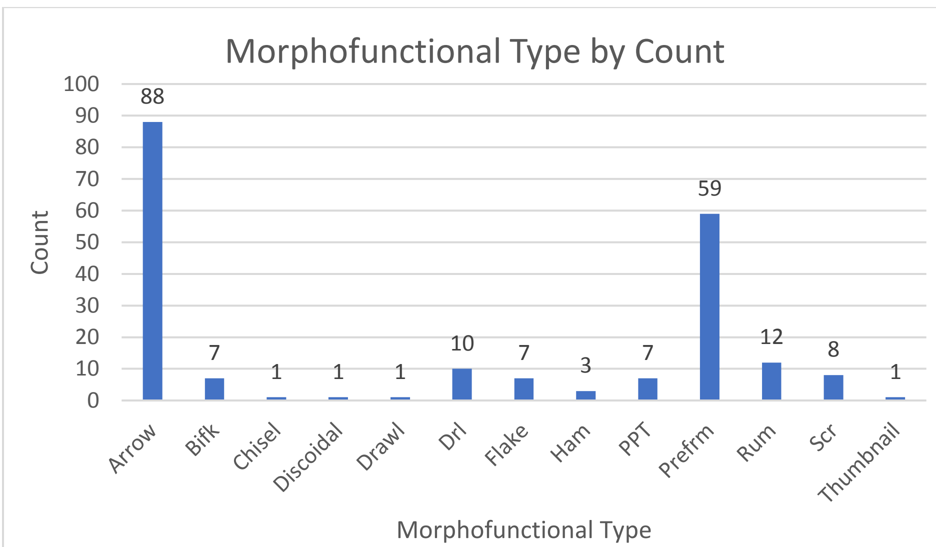

Figure 7-11: Morphofunctional types of lithic artifacts from all excavation contexts with debitage and unmodified materials removed.

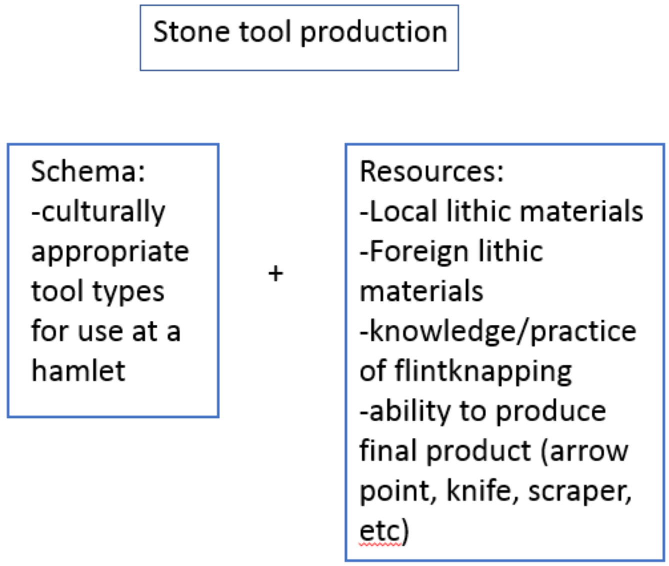

Figure 7-12: Schema and Resources of Stone tool production. The blue boxes indicate that his was a part of a local, small, fast feedback loop.

This lithic assemblage implies that a whole spectrum of activity took place across the site (Figure 7-13). Arrow points were being produced as well as other points for use as knives or other cutting implements. The presence of preforms and thousands of debitage flakes indicate that the points were being produced on the site, not being made elsewhere and brought to Manley-Usrey. Other unidentified bifaces were also being produced, likely for use as knives or other hafted implements. The presence of the discoidal indicates that chunky was being played on the site or nearby, as it was throughout much of the Mississippian world at the time, and that the people living in this town participated. Scrapers imply the preparation of animal skins for drying and use or trade. A thumbnail scraper suggests that the site was occupied in the Late Mississippi period, but the presence of only one makes it unlikely that the site was occupied during the protohistoric or contact period (Mainfort 2007). The drills could indicate the production of beads, pipes, and/or perforated ceramic disks (of which there is one example in the assemblage). The 12 retouched/utilized/modified flakes demonstrate that flakes were being produced and utilized for small jobs for which a formal tool was not necessary.

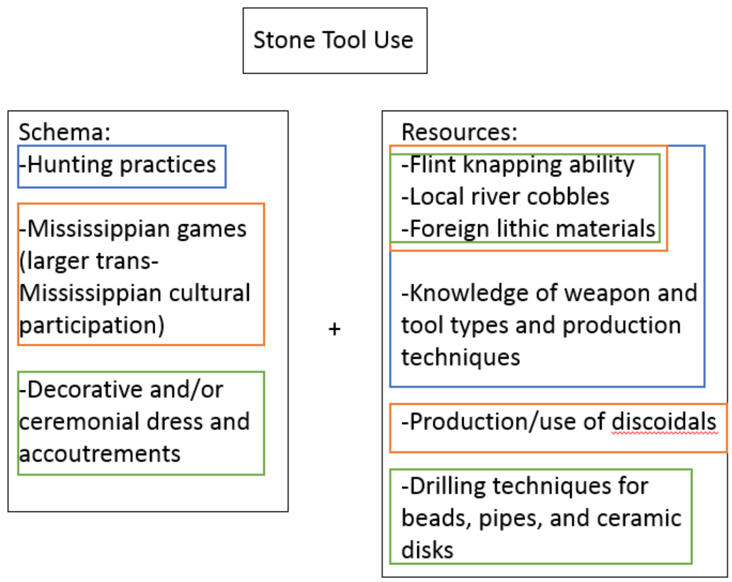

Figure 7-13: Schema and Resources of Stone Tool Use at the Manley-Usrey site. Blue boxes indicate the local, small, and fast feedback loops, Green boxes indicate regional, midsize loops, Orange boxes indicate larger, regional loops.

Faunal Analysis of the faunal assemblage ranges from large amounts of deer, to some elk and bison, as well as fish, turtle, and birds. The fish and bird specimens are abundant and are sorted by size. Turtles are also present in relatively high numbers (Figure 7-14). There is some mussel shell represented in the assemblage as well. Due to the limited nature of the faunal reference collection at the Arkansas Archeological Survey and the University of Arkansas Museum and the scope of this project, many small mammal, bird, and fish specimens were not identified to species level. They were instead often categorized to size class unless they were very distinct. While this is not ideal, it does give a sense of the faunal assemblage present on the site and the availability of different types of animals to people living at the site during its occupation. It also makes the assemblage generally comparable to other analyzed assemblages in the region.

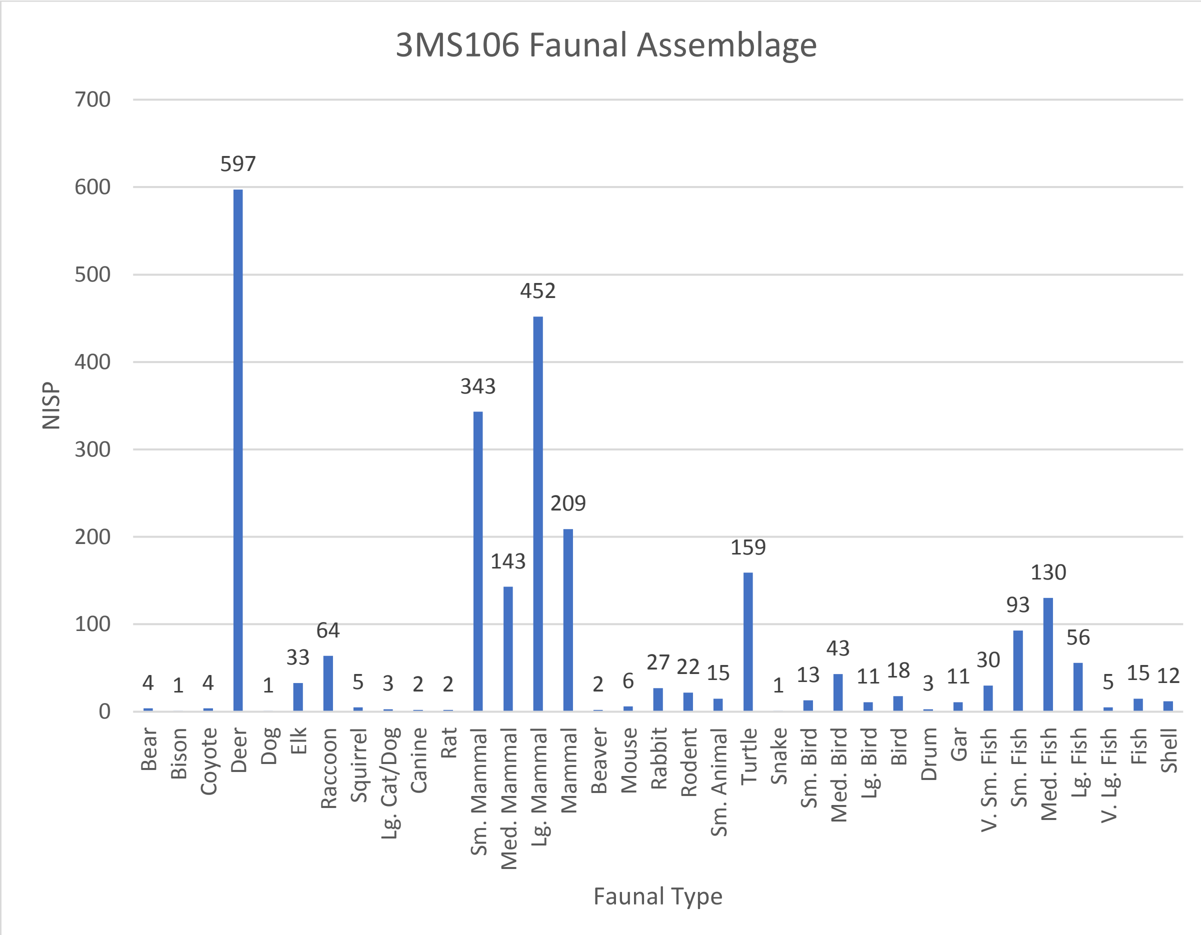

Figure 7-14: Number of individual specimens (NISP) of faunal assemblage from all excavation units on 3MS106 with unidentified specimens (NISP: 7410) left off of the chart. (NISP of identified specimens: 2523)

Overall, bone preservation was good across the site, but it was better in buried contexts. This is represented in both the number of bones present in the contexts beneath the sand blow as well as the number of different faunal types identified in those contexts. In my initial test units in 2012, the unit underneath the sand blow produced nearly 17 times as much bone as the unit with the archaeological context at the surface. Not only were the counts higher in the buried units, but the percentage of identifiable bone was over twice as high in the buried unit (24.06% buried, to 11.89% surface), with the rest of the excavated units producing around 25% identifiable bone. (Low, TU7: 21.22% to high, TU6: 40.35%). A difference between the buried and surface units is apparent in the number of faunal types/species identified. This number is much higher in buried contexts (26) than surface contexts (5). This is likely due to the truncation of the surface contexts due to plowing, as well as the subsequent increase in weathering due to moisture moving in and out of the soil at a faster rate near the surface, causing the bone to degrade faster (Appendix VI).

Deer was by far the most numerous species represented in the assemblage at 23.55% of identified specimens (and likely higher if the "large mammal" category is factored in). This representation ranges from broken long bones, to metapodials and phalanges, to vertebrae and pieces of skull and antler. Few cut marks are present, but with all portions of the animal present it seems likely that butchering of the animals was done onsite rather than at the location of the kill and that the butcher was skilled, not dulling his or her blade by knicking bone when cutting. Although elk makes up a sizable portion of the assemblage at 33 specimens, most of those (n=23) are broken pieces of one skull and antler set only representing the presence of one individual. Medium sized mammals such as raccoons, beavers, canines, and felines make up about 8.4% of the identified specimens. Small sized mammals such as mice, squirrels, rabbits, and other rodents account for about 16.57% of the identified assemblage (Figure 7-14).

Turtles make up 6.27% of the identified assemblage. These are largely represented by plastron and carapace pieces and may include a variety of species, but they were only identified to Order (testudines/turtle). Birds and fish make up two other large portions of the assemblage at 3.35% and 13.53%, respectively (Figure 7-14). The fish are mostly represented by vertebrae that were sorted by size. Some other fish bones were present and those were identified as gar and drum. Birds seem slightly under-represented which may be due to misidentification as small animal bones or may be due to their more delicate and thin composition not withstanding burial conditions in some contexts.

The faunal assemblage at the Manley-Usrey site shows that the people living there were utilizing a wide variety of animals. Deer made up a large portion of the meat diet, but fish, turtle, and bird also accounted for a lot of the meat being consumed. This strategy of widespread resource utilization is noted by Redman's (2012:240) second adaptive strategy (ecosystem management) as a resilience strategy. By not focusing on a single resource, a group makes themselves less vulnerable to any changes in the availability of that resource (Figure 7-15). Although deer made up a large amount of the meat diet, people's knowledge and ability to hunt or catch other animals as meat sources is an important resilience adaptation.

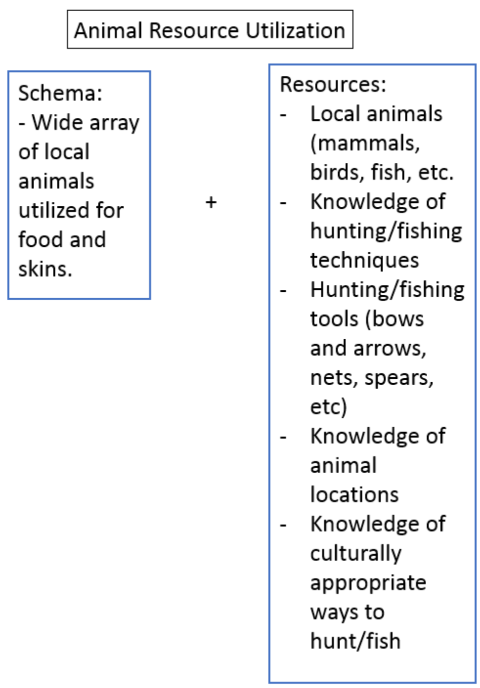

Figure 7-15: Schema and Resources associated with Animal Resource Utilization at the Manley-Usrey site. Blue boxes indicate that these are part of local, small, fast feedback loops.

Pottery Across the 11 units excavated at the site, 14,606 pieces of pottery larger than ¼ inch were collected. Of these, 4,188 pottery sherds were large enough to determine temper. Shell and very fine shell temper accounts for 3,099 sherds, followed by grog and shell tempering with 792 (Figures 7-16 and 7-17). Most of the sherds in the assemblage are from the body of the vessel and relatively few are decorated or have a finished edge such as a rim or handle. There are four coils, three effigy pieces, one perforated disk, and three pieces of a pipe bowl that are shell tempered and one clay plug for the mouth of a jar that is tempered with grog and shell.

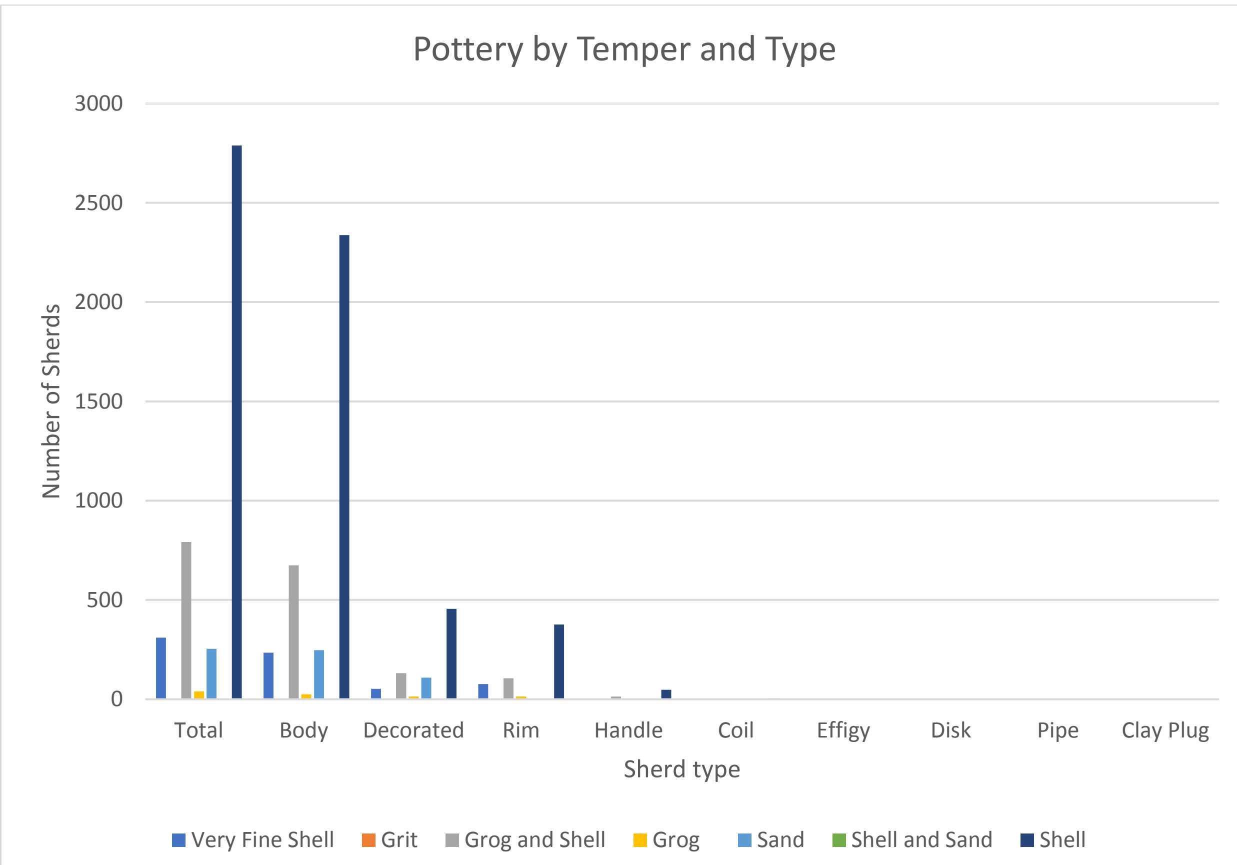

Figure 7-16: Pottery sherds large enough to determine temper categorized by temper and sherd type. 10,418 sherdlets of <1/2 inch not graphed.

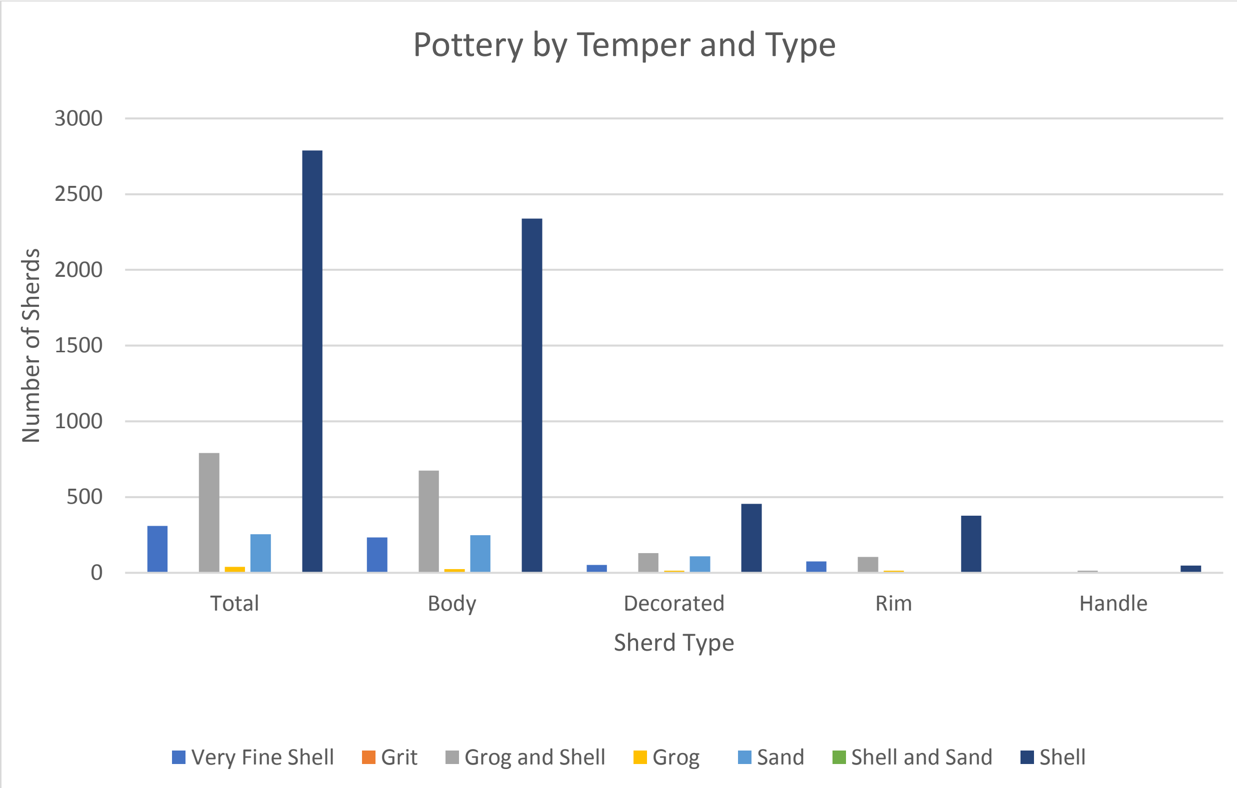

Figure 7-17: Pottery sherds large enough to determine temper categorized by temper and sherd type. Categories containing fewer than 5 sherds and 10,418 sherdlets of <1/2 inch not graphed.

Of the decorated pottery uncovered in the excavation units, all the sand tempered sherds are cord marked, which is a common Woodland period pottery type (Figure 7-18). This is reasonable in that the site would have been a good area to live throughout recent history due to being raised and on moderately to well-drained soils. These sherds were excavated from deeper contexts, suggesting that they were deposited before the Mississippian occupation of the site. Shell (Mississippi Plain) and very fine shell (Bell Plain) tempering (a Mississippi period marker) make up most of the decorated pottery at 405 sherds (Figure 7-19). Of these, 34% are punctated (typically across the body), 20% have an appliqué strip (typically running around the outside rim of a bowl), and 14% have a handle (typically attached at the rim and base of the neck of a jar). Other decorative types include painting, notching, nodes, and effigy shapes extending from the rim or body. Most of the sherds were too small or contained too little of their respective decorative style to be classified to a particular Type and Variety (as per Phillips et al. 1952 or Phillips 1970), but a few are identified specifically (*i.e.*, Carson Red on Buff and Avenue Polychrome) (Figure 7-19). There are also 142 decorated grog and grog and shell tempered sherds from the site. These follow a similar pattern with punctated being the most numerous (42%) followed by appliqué strips (16%) and handles (11%).

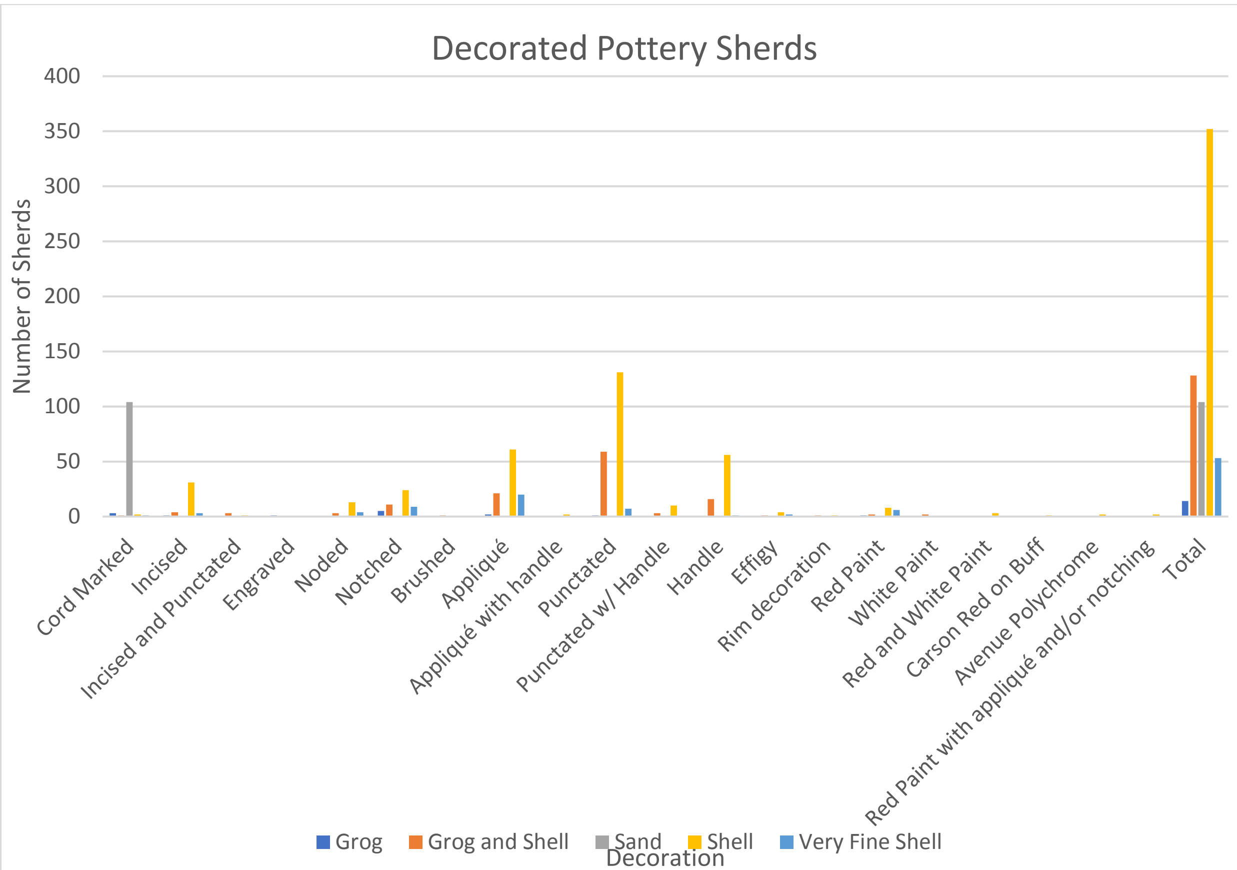

Figure 7-18: Decorated pottery sherds graphed by decoration and temper type. Total numbers of each temper type graphed at the end. 100% of the sand tempered sherds in this sample are cord marked.

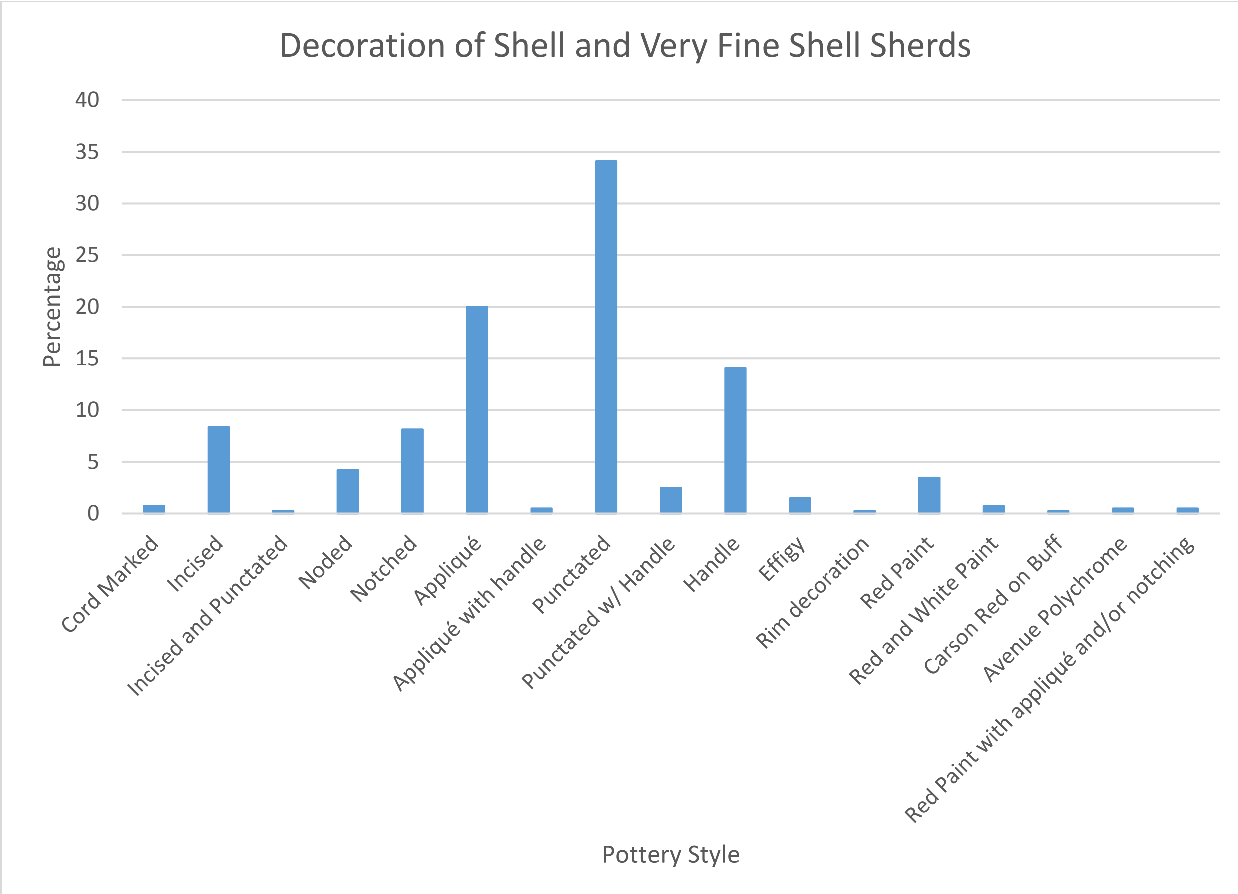

Figure 7-19: Decoration on sherds tempered with shell (Mississippi Plain) or very fine shell (Bell Plain). Percentages calculated from total of n=405.

Few difference in pottery decorative styles can be identified that allow for identification of sites as members of individual phases and even sites identified as being part of a particular phase do not have pottery assemblages that are more similar to each other than they are to those of other sites outside of the phase (Mainfort 2003; O'Brien 1994). Mainfort (2003) suggests that the rim attributes of pottery vessels may be a better way of understanding differences in pottery assemblages across the CMV than decorative styles and has shown some statistical groupings based on these attributes. House (1993) has also suggested that the beveling of the inside of the rim is a very late marker in the Walls and Kent phases and Mainfort (2003) suggests that this is true farther north into the Nodena Phase as well. The Manley-Usrey site had 529 rim sherds with shell tempering in its assemblage (Table 7-3). Of these, 53 had a notched appliqué strip applied below the exterior of the lip, 25 had notches cut into the exterior of the vessel just below the lip, 10 had nodes applied on the exterior just below the lip, and 172 had a beveled interior. Some of the sherds contained more than one of these attributes and others had none, but each category was counted separately and rims with more than one of the listed attributes were counted once for each attribute present.

Table 7-3: Rim attributes of shell tempered pottery in the Manley-Usrey assemblage. Total is the number of rim sherds present, with or without any of the listed attributes.

Rim Attribute	**Count**
Appliqué	53
Notched	25
Noded	10
Beveled interior	172
Total	529

In addition to the pottery excavated during this project, whole vessels have been looted from the site by landowners and farmers through the years. I was able to photograph 45 complete or nearly complete vessels from this site that are in private collections, including 18 bowls, seven jars, 20 bottles, and seven effigy vessels. These vessels represent a range of Late Mississippi period pottery styles including Nodena Red and White striped bottles, Carson Red on Buff striped bottles, a bottle with a red swastika painted on the base, a weeping eye bottle, two fish effigies, a hunchback woman effigy, a bat or possum effigy, a “cone head” or “corn god” effigy, a cat serpent effigy, and a bird effigy (Table 7-4)(see Appendix IV for artifact descriptions and pictures). All of the whole vessels are shell tempered and five of them (one bowl and 4 effigies) have very fine shell temper. In addition, a Mississippi plain bottle sitting inside of a bowl with a notched appliqué strip running below the outside of the lip was uncovered at the south end of the burial uncovered in TU 1.

Table 7-4: Number of whole vessel forms recovered from Manley-Usrey by looting.

	Count
Bottle	20
Bowl	18
Jar	7
Total	45

Table 7-5: Rim attributes of whole vessels recovered from Manley-Usrey by looting.

Interior bevel	Exterior notching	Appliqué band
19	4	12

Table 7-6: Paste and Decoration of whole vessels recovered from Manley-Usrey by looting.

	Count
Very Fine Shell Temper (Bell Plain)	11
Shell Temper (Mississippi Plain)	30
Nodena Red and White and Bell Plain	1
Carson Red on Buff and Mississippi Plain	2
Carson Red on Buff and Bell Plain	1
Parkin Punctated and Bell Plain	1
zoned punctated and Mississippi Plain	1
Walls Engraved and Mississippi Plain	1

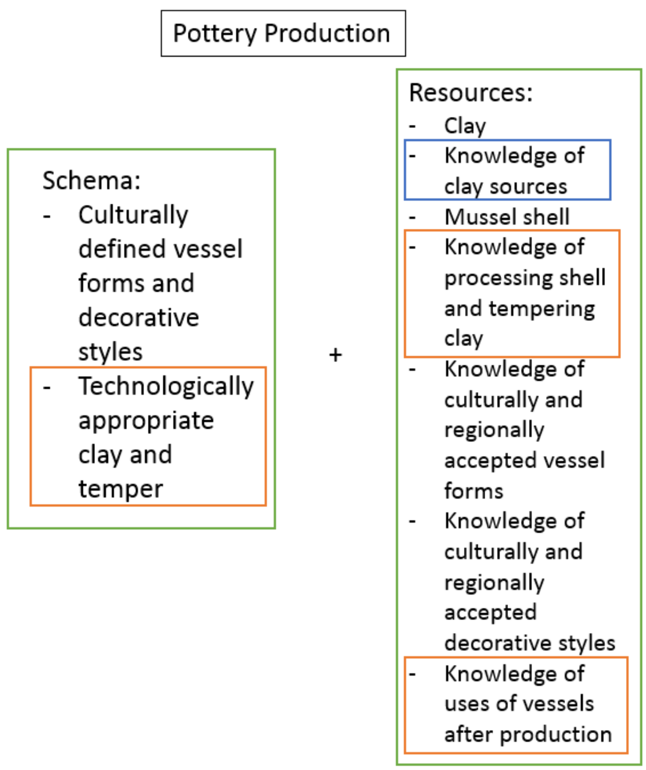

Figure 7-20: Schema and Resources associated with Pottery Production at the Manley-Usrey site. Blue boxes indicate resources and schemas that are part of the local, small, and fast feedback loops, Green boxes indicate regional, midsize loops, Orange boxes indicate larger, regional loops.

I will use the various characteristics of the artifact assemblages from the Manley-Usrey site as a baseline for comparisons to other sites in the region in the following chapter. Because this assemblage is locked in the Late Mississippi period by the sand blow layer and subsequent abandonment, it will allow for examination of possible changes in the resources and schema of the Mississippian people living in the area through time. Comparisons to Protohistoric sites and sites that were occupied from the Late Mississippi period through the Protohistoric will be made to try to find evidence of material culture change around the date of the earthquake to identify it as a disaster (Beck et al.'s (2007) "event") or just a passing occurrence that had no long-term impact on the people living in the region.

Structure 1

Analysis of features of individual structures within a site can give a much more precise picture of artifact assemblages, construction features, and activity areas of a more contained group. Mississippi period sites were often occupied for long amounts of time, so dating and analyzing individual structures allows for assemblages and features to be understood within a smaller time-frame rather than conflating assemblages from an entire site that may represent various occupation times. An artifact assemblage from a single structure represents a short amount of time and a small, intrasite area and can give a more nuanced picture of the characteristics of the assemblage at that particular time and of the people living in that house. This scale of analysis can then be used to make intrasite comparisons of sites that were occupied long-term as well as intersite comparisons to individual structures at other sites through time.

Structure 1 was investigated via an 8 m x 2 m trench and a 4 m x 4 m square, both excavated as individual 2 m x 2 m units (Figure 7-21). A ~2 m wide earthquake crack filled with sand runs through the structure, from SW to NE. The NW side of the structure appears to be mostly unaffected by the earthquake and remains at the level and orientation at which it originally sat. The side of the structure located on the SE side of the earthquake crack has subsided substantially and is buried by 45-65 cm of sand at a 2.86º angle down toward the crack (Figure 7-22).

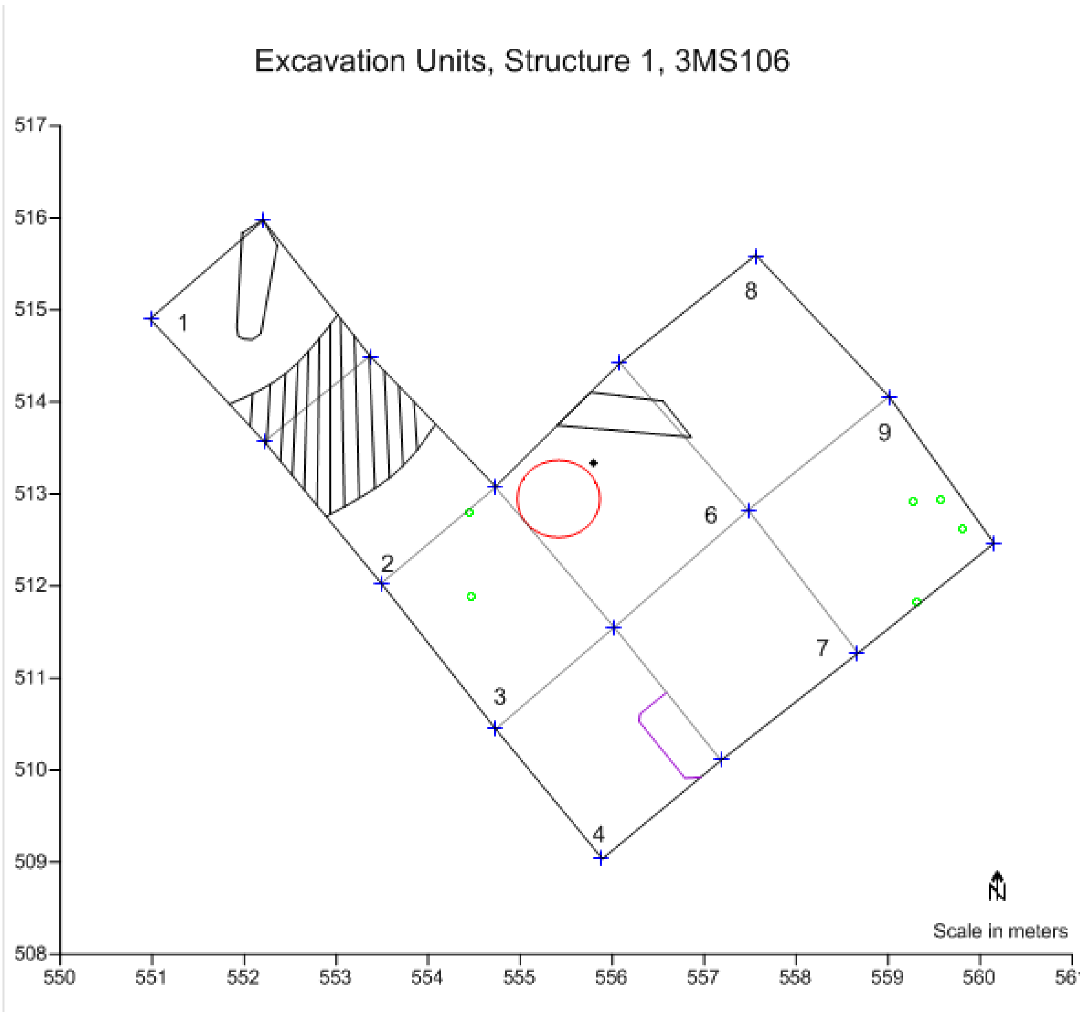

Figure 7-21: Map of excavation units uncovering Structure 1. Blue crosses are unit corners, green circles are post holes, red circle is hearth outline, black dot is burned post, black outlines are burials, purple outline is empty feature, cross hatching is sand-filled earthquake crack, and black numbers are unit numbers referred to in the text.

Figure 7-22: Southwest wall of 8 m excavation trench showing midden surface angled down to the NW at 2.86º. Dark layer on bottom is Midden, Light layer in middle is extruded sand, Medium layer on top is plow zone. Layering of sand and silt can be seen in the sand dike, or earthquake crack, to the right of the scale bar.

In test unit 1 (TU1), the first 23 cm of the unit were disturbed plow zone. Below the plow zone, the midden extended across ~2/3 of the unit to the southeast. The midden was filled with faunal, daub, ceramic, and chipped stone artifacts. These artifact concentrations decreased with depth and at ~65 cm below the surface a burial was encountered. No human remains were uncovered, but a ~40 cm wide linear anomaly of darker soil was visible in plan view running from SE to NW and into the corner of the unit (Figure 7-21). A Mississippi plain jar sitting inside of a bowl with an incised appliqué strip below the lip was uncovered at the end of the anomaly in the center of the unit. Because these are typical burial goods and because burials are often located in Mississippian house floors, further excavation of the unit was called off after consultation with the Quapaw Tribe of Oklahoma's NAGPRA representative. No structural or other features were identified in the unit.

Most of the structure was located to the SE of the earthquake crack in test units 2, 3, 4, 6, 7, 8, and 9. The units closest to the crack were buried under the most sand, with less overburden sand as we excavated to the SE. In these units the midden was filled with faunal, daub, ceramic and chipped stone artifacts with concentrations decreasing as excavation depth increased. At the base of this area there was another probable burial. Again, not much bone was obvious, but a dark soil measuring about 35 cm across ran linearly from west to east across the corner of the unit at ~95 cm below the ground surface (~55cm below the midden surface), which is close to the depth at which the burial in TU1 was located and it was similar in shape and characteristics causing us to again consult with the Quapaw and then discontinue excavation in TU6.

A solidly fired hearth was located near the center of the magnetic signature of the structure. The hearth was dug into the ground surface prior to use and the use of the hearth fired the surface to a thick, solid state with a color differential indicating a difference in heat penetration into the earth. The north side of the hearth was relined at some point during the hearth's use and was very solidly fired. The fired condition of the hearth extended to the surrounding floor area in a bulbous and unconfined shape. This thick, fired layer was easily removed from the underlying surface (Figure 7-23).

Figure 7-23: Cross section of the daub fall above the hearth showing the hearth outline and burned earth extending to the east.

Directly above this hard-burned area and filling the hearth was a thick layer of daub fall. Although there was daub in all of the units, the ~2 m extending from the hearth were the most concentrated, with the excavation level above the hearth consisting almost exclusively of daub. This indicates that there was a smoke hole above the hearth that was lined with daub to prevent fires in the thatch as has been seen at Parkin (Mitchem 2017). Walls may have also been daubed, but if so, they likely didn't burn hot enough to fire the daub as the concentration of daub toward the edges of the structure was much lighter than around the hearth. There was also a burned post adjacent to the hearth to the NE. It measured 10 cm in diameter and extended ~17 cm into the house floor. It is unclear what the purpose of this post was as there is no matching post to the SW to serve as a spit or other paired cooking mechanism.

In TU9 there are four post holes. They may be a corner of the structure. Two additional postholes are located in TU3 to the southwest of the hearth. These may be some sort of roof support or posts for internal structures as they are too close to the hearth to be a part of the wall and would exclude TU1 as part of the structure, which seems unlikely to be an accurate interpretation of the structure. They are also too far from the hearth to be part of a cooking structure despite one of them being in line with the burned post excavated to the northeast of the hearth.

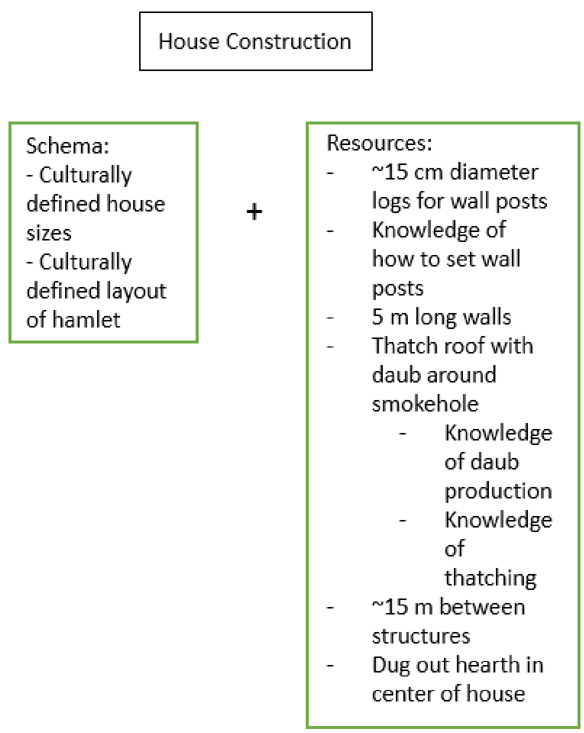

Figure 7-24: Schema and Resources associate with house construction at the Manley-Usrey site. Green boxes indicate that these attributes are part of a regional, midsize, feedback loop.

Lithics The patterning in the placement of lithic artifacts is interesting in that most of the lithics (points as well as debitage) were in the units surrounding the hearth and toward the wall of the house. Units 4, 7, and 9, along the southeast side of the structure, have 57 identifiable points as well as nearly 6500 production flakes between them (Appendix V). This could indicate sweeping of the floor toward the walls, but with 57 identifiable points, 27 preforms, and 3 hammerstones as part of the assemblage it is likely that production was taking place in this part of the structure and finished points were being kept there, likely along with other hunting supplies that did not survive archaeologically.

Nine scrapers, one a thumbnail scraper, were in the units around the edges of the structure, the presence of these tools suggest that people were cleaning animal skins on site. Seven drills were found, suggesting the possibility of bead making or drilling through ceramic disks for gaming pieces or weights. One chisel was found in TU6 indicating some woodworking being done on the site or wood splitting taking place near the hearth before burning. The range of lithic tools and their associated activities show a family that would have been self-sufficient to produce many if not all of the necessities of life in the Late Mississippi period. People could hunt, fish, produce clothing and trade items from furs, work wood for fires or to make houses and other structures as well as possibly canoes and other wooden goods. With drills for beads they could have been making personal decorations as well as spindle whorls or weights from broken ceramics or lithic materials.

Faunal In the 6 units that make up the bulk of Structure 1 (TU3, 4, 6, 7, 8, 9), 6,222 animal bones and bone fragments were recovered, 1,634 (26.26%) of which were identified to at least family and/or size class. The majority of the identified bones (900) represented deer, elk, or large mammals (typically deer or elk in this region). Small and medium mammals, turtles, and fish (of all sizes) were also well represented. Birds, rodents, and a small amount of mussel shell were also present. Two bear metapodials were found (and two teeth were found in other contexts), suggesting that bears were in the area and potentially being killed, but there is no evidence in this assemblage of them being eaten or appearing whole on site.

TU6, which contained the hearth, produced the smallest number of faunal remains out of the units that make up Structure 1. This reflects the same pattern as that of the lithic artifacts, lending support to the hypothesis that the area around the hearth was periodically swept and trash and small objects relocated toward the edges of the structure. The only outlier category in which there is little difference from the assemblage of other test units is fish bone. The numbers in this unit are similar to those of the other units that make up the structure, but as fish bone (and vertebrae in particular, which are the bones that make up the majority of the assemblage) are quite small, some could easily be missed when sweeping and be left behind on the floor without much notice. Most of the bone assemblage from TU6 was collected above the hardened, baked floor found in level 3 at ~30cm below the midden surface. One burned deer vertebra was found baked into the floor, implying that the floor may have been baked hard during the burning of the structure rather than while people were living in it. Many of the very small faunal remains, including mouse, juvenile mouse, and small mammal bones came from a flotation sample taken out of the hearth. Some of the bone in this sample was burned, but much was not, suggesting that it was deposited after the hearth was out of use. Some of the bone may also have come from small animals living in the roof around the smoke hole from which the daub likely fell as there were mice remains of multiple ages in the sample.

TU3 and TU8 contained relatively small numbers of bones in their assemblages. TU3 contained at least 6 deer bones as well as small mammals that could also have been a part of the mouse family from the roof fall identified in TU6. Fish, turtle, and bird were also present in small numbers. The assemblage of TU8 had 77 deer and large mammal bones, very few fish or bird bones, and only 6 turtle bones. This large amount of deer and large mammal bone, including 29 foot/ankle/lower leg bones, suggests the processing of deer in the structure, perhaps particularly in TU8. This processing was likely for the production of both food and hides for tanning and trade.

There were over 5000 bones in TU4, 7, and 9 combined. These units are toward the southeast side of the structure and, like the lithic assemblage, much of the faunal assemblage was excavated from this area. These units contain a sample of most of the animal type categories found throughout the site as a whole. TU7 contained the largest number of bones of all the units, including two bear metapodials that showed no signs of butchering or wear from use, but indicate that bear was either present in the area or that these bones were brought in for some reason, but appear unutilized in a way that would leave archaeological evidence. TU7 also contained many medium sized mammal remains such as raccoon and some canine foot bones as well as 54 pieces of turtle shell and 55 fish bones. There were also a large number of raccoon and medium mammal bones in TU4, as well as 42 fish and 11 turtle bones. TU9 contained the largest number of deer and large mammal bone, but fewer examples of medium mammal, turtle, and fish.

Collectively, the units of Structure 1 excavated beneath the sand blow show a pattern of faunal remains largely similar to that of the lithic assemblage. The unit around the hearth has the lowest numbers of bones as though the area around the hearth had been swept to the edges of the structure. The faunal concentrations increase in the units away from the hearth. Most of the bone in the faunal assemblage from these units is not burned, but some small mammal bones from the daub fall in the hearth may have been killed in the fire that took down the roof of the building.

Pottery Like the assemblage from the site as a whole, the pottery assemblage contained within Structure 1 was mostly made up of shell and very fine shell tempered pottery (1,872 sherds) followed by grog and shell tempering (689). The total count of pottery sherds larger than ½ inch and tested for temper was 2,686 with 4,235 sherdlets of undetermined temper. Most of the pottery sherds are from the body of vessels and relatively few are decorated. Some rims and handles are present, as well as three tempered clay coils, four effigy fragments, one drilled ceramic disk, and one pipe fragment (Figures 7-26 and 7-27).

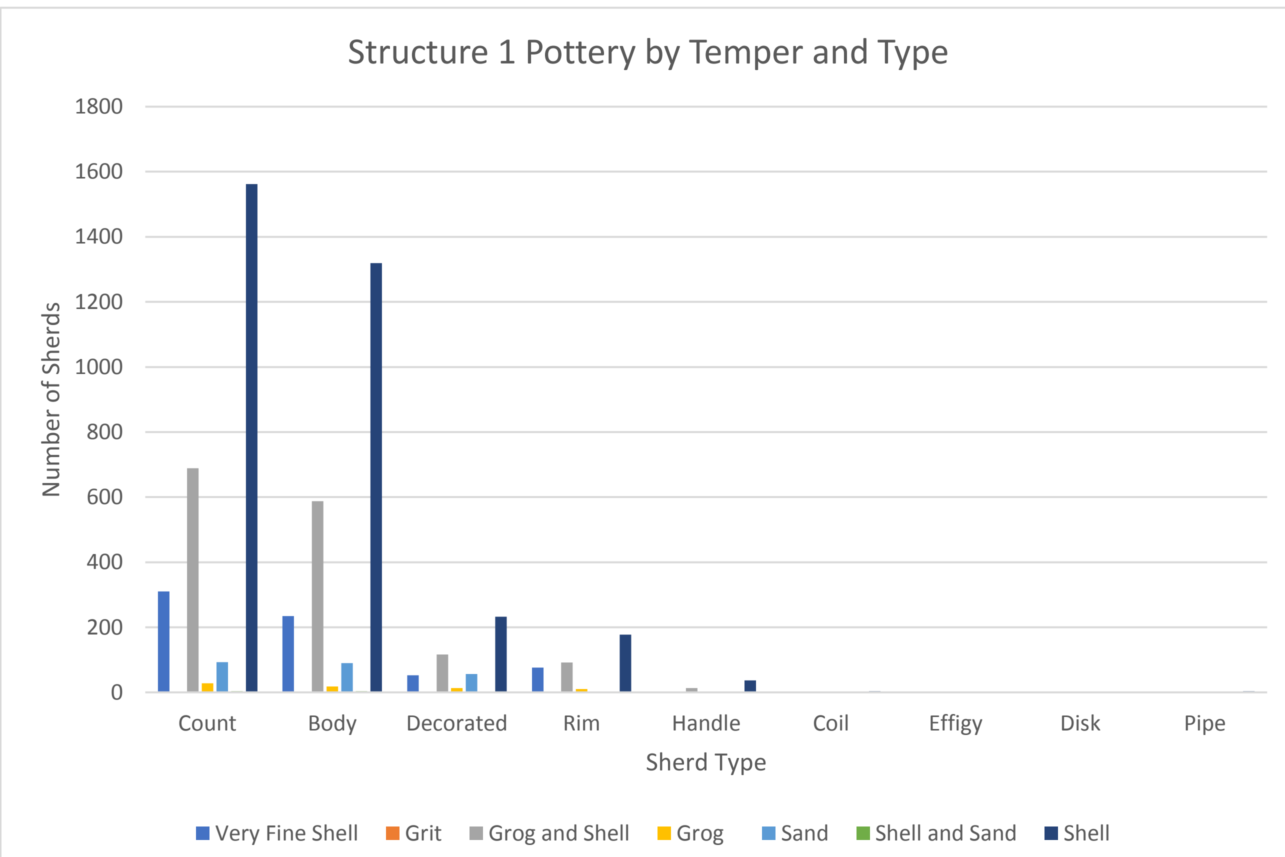

Figure 7-26: Pottery sherds large enough to determine temper in Structure 1 categorized by temper and sherd type. 4,235 sherdlets of <1/2 inch not graphed.

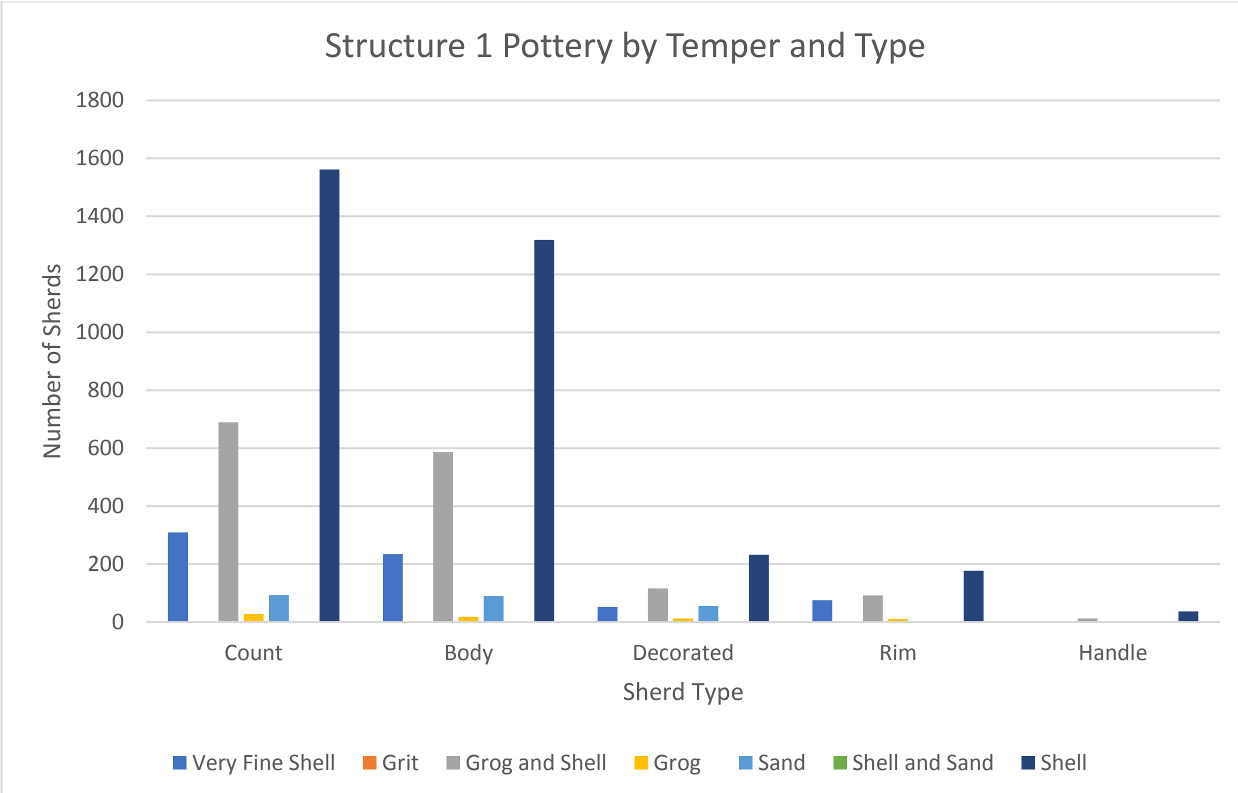

Figure 7-27: Pottery sherds large enough to determine temper categorized by temper and sherd type. Categories containing fewer than 5 sherds and 4,235 sherdlets of <1/2 inch not graphed.

The decorated pottery in Structure 1 accounts for 485 sherds (Figure 7-28). As with the total site assemblage, 100% of the decorated sand tempered sherds are cord marked. Just over half (56) of the total number of decorated sand tempered sherds from the site were located within the footprint of Structure 1, which makes sense as Structure 1 is contained in over half of the units excavated across the site. Shell or very fine shell tempered pottery accounts for 295 of the sherds in Structure 1 with grog accounting for 13 and grog and shell accounting for another 121.

Much like the site as a whole, punctations (typically across the body of the vessel) are the most prominent decorative style on the decorated shell and very fine shell tempered sherds accounting for 26% of the total (Figure 7-29). This is followed by appliqué strips (typically around the outside rim of a bowl) at 11% and handles (typically attached at the rim and bottom of the neck of a jar) at 8%. Other decorative styles are: red painting, notching, nodes, incising, and effigy shapes. Carson Red on Buff is the only decorative style identified specifically to its Type and Variety (as per Phillips et al. 1952 or Phillips 1970). The effigy shapes found in the structure include a bear head and a fish tail, both representing the Nodena Art Style (Payne 2005). The grog and grog and shell tempered ceramics account for 134 sherds and are predominantly punctated (43%) followed by appliqué (16%) and handles and notches (each 12%).

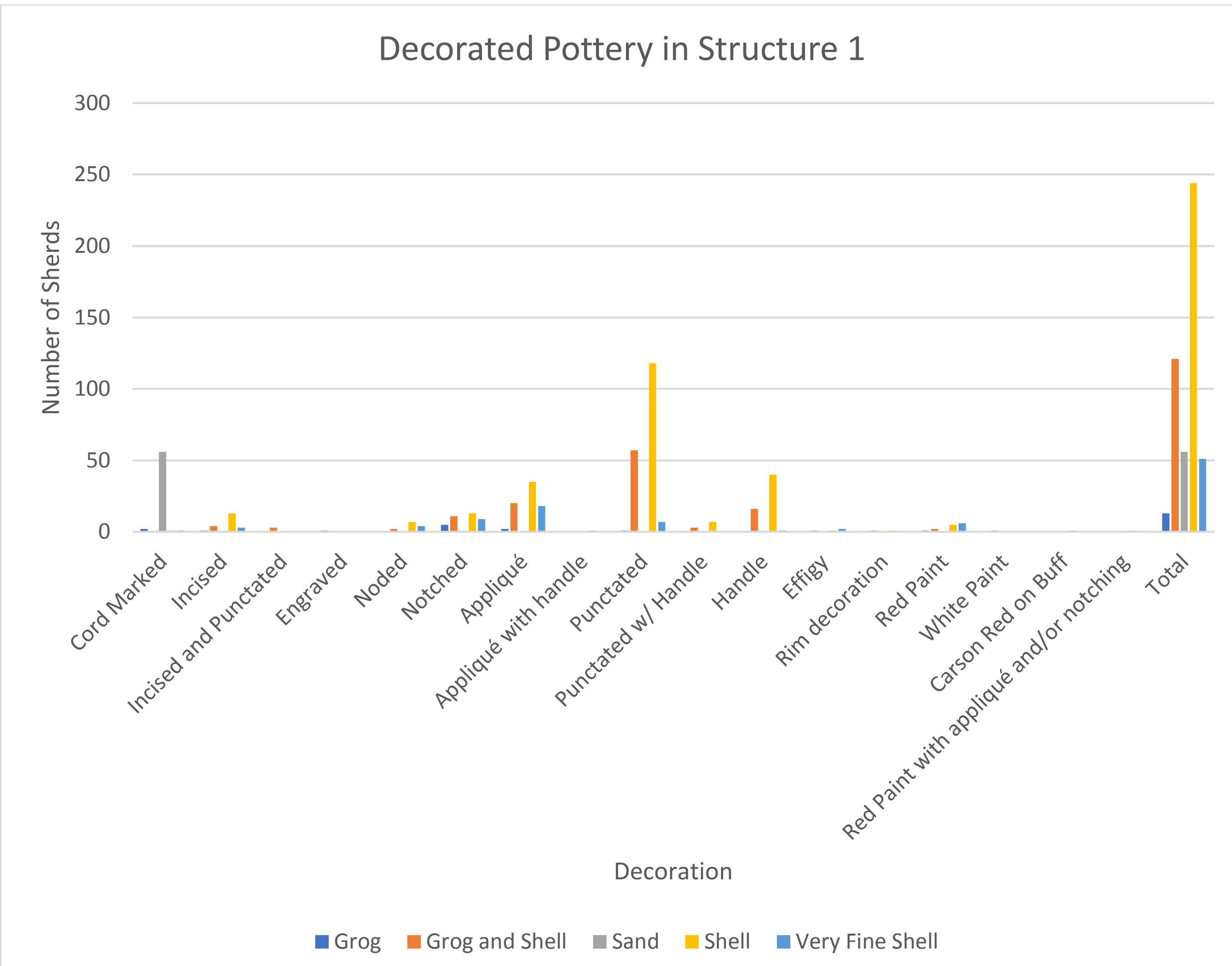

Figure 7-28: Decorated pottery in Structure 1 divided by temper type

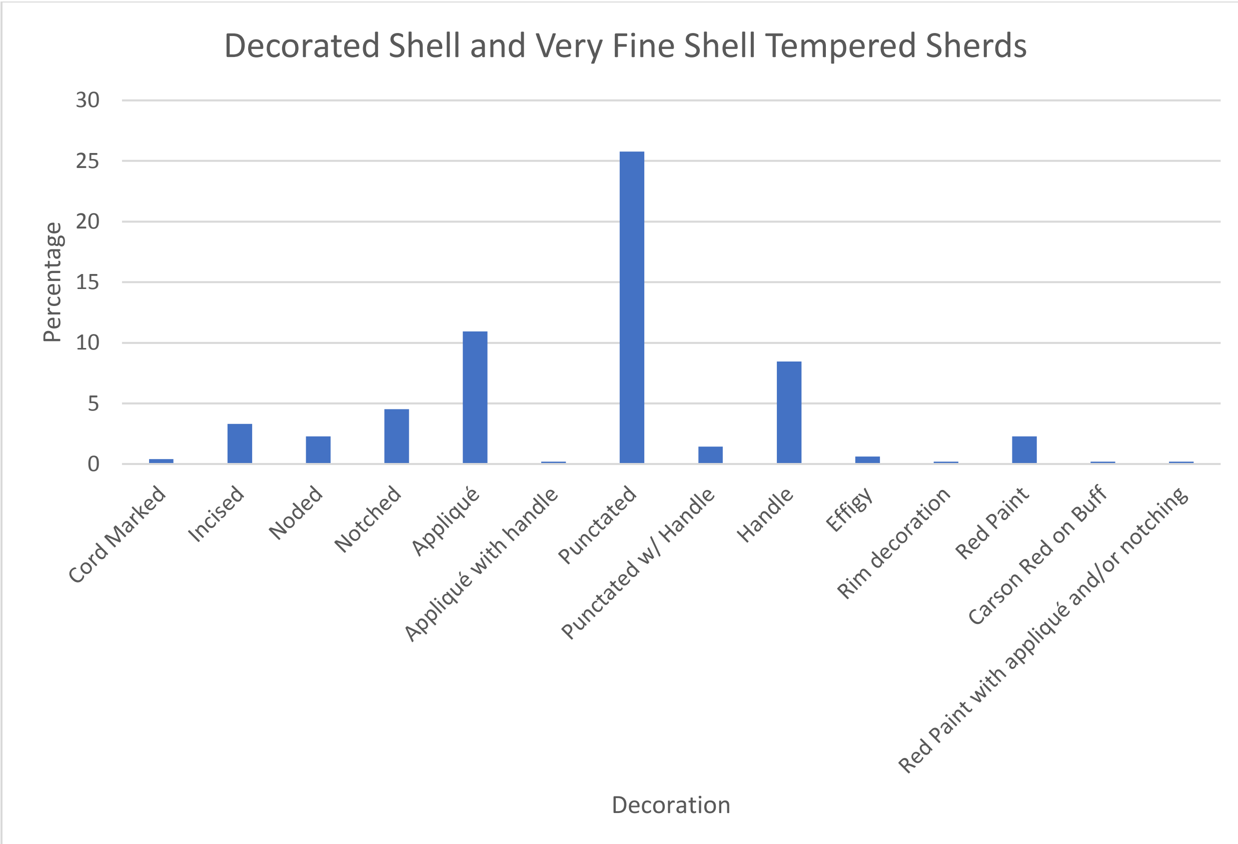

Figure 7-29: Percentage of decoration type on sherds tempered with shell or very fine shell within the units of Structure 1.

Pits on East Edge of Site

On the east edge of the site, a series of pits show up in the gradiometry data (Figure 7-7). The excavation of half of one of these pits revealed it to be two overlapping pits; one to the south, 67cm deep and the other to the north, 59 cm deep. It was unclear which pit overlapped the other, but the south pit had more artifacts and softer fill than the north pit. The pits were initially excavated as one feature and when it became apparent that they were individual pits (at ~30 cmbs), the feature fills were excavated separately (Table 7-7). The pottery in the pits was predominantly shell tempered and faunal preservation was not good with only 13 pieces of bone being present, a much smaller number than other excavation units across the site. The bone that survived was mostly deer, but there was one turtle fragment and one small mammal fragment.

The lithics (n=18) represented debitage, mostly in the form of production flakes. The decoration on the shell tempered pottery included two sherds with lug handles, three sherds with an appliqué strip applied below the rim of the bowl on the exterior surface, 14 punctated body sherds, and two sherds with notching on or just below the rim. One sherd of grog and shell tempered pottery was fired very orange and had white paint on the exterior.

While acknowledging that the excavated volume of the pits is less than that of a 10 cm excavation level in a 2 m x 2 m unit, (~.155 m^3 to .4 m^3, respectively), the number of artifacts in the pits is still far lower than that of the rest of the excavated area of the site. There may be an issue with preservation in the faunal assemblage, but the low numbers in the lithic and pottery assemblages may imply that the pits were mostly filled with organic material that broke down over time and not the more resilient ceramic and lithic trash found in other units.

Table 7-7: Artifacts contained in Feature 3, two overlapping pits on the east edge of the site.

	Faunal	**Lithic**	**Pottery**	**Daub**
Combined Top of Pits	7	10	54 shell	47
			3 sand	
			3 grog and shell	
			40 sherdlets	
North Pit	0	2	3 shell	7
			2 sherdlet	
South Pit	6	6	15 shell	43
			1 grog and shell	
			41 sherdlets	

Summary

Overall, the Manley-Usrey site presents as a typical, although possibly short-lived Late Mississippi period site. The Nodena points that make up the majority of the arrow point assemblage are a general Late period marker, although they appear earlier than some other markers. The thumbnail scraper in the lithic assemblage also supports a late date for the site. The presence of bison bone in the faunal assemblage agrees with other regional data that points to bison being a late introduction to the region only occurring on Late Mississippi sites (Mainfort 2007, Orr 2009). The pottery styles present also represent a typical Late Mississippi period assemblage with many punctated sherds, notched appliqué strips below the rims of bowls, effigy pottery in Payne's (2005) Nodena art style as well as some with connections to the more abstract Mississippian ideas such as the "cone head" or "corn god" figure, and the figure of the old woman kneeling.

The site itself is located on prime agricultural land that is moderately to well drained and would have been an excellent place to live and grow crops before it was covered with sand from a series of earthquakes. It is located on the north bank of the Pemiscot Bayou, which would have been an easy travel route to sites up and down the bayou as well as the nearby multi-mound ceremonial center of Chickasawba. A wide variety of wildlife was in the area and being hunted, fished, or trapped according to the faunal record.

All of this data points to the fact that the site was occupied in the Late Mississippi period when a series of large earthquakes struck. Some structures had been burned over the lifetime of the site, and we can see those in the gradiometry data in Figure 7-5. These structures may have been arranged around an open plaza area as it appears on the map, or they may have surrounded other structures that were still in use and had not been burned by the time of the earthquake strike. Some of the small magnetic features on the map may be hearths that were in use inside of unburned structures when the site was abandoned. These hearths would be the only somewhat strong signature of an unburned building and if they had not been in use for long or had not contained a very hot fire they still may not appear in the magnetic map. This makes the complete layout of the site difficult to discern. From the images and excavation data that we have it appears that the site is about 1.8 ha and had at least 5 burned structures. There is a series of pits running N-S toward the eastern edge of the site, but it is possible that the site extends farther to the east and south despite drop offs of artifact density in the shovel tests in those areas. If those areas were only occupied for a short amount of time before being abandoned, an artifact density decrease would be reasonable. Without a more thorough examination of the site and either more detailed remote sensing work or a more substantial excavation strategy, it will be impossible to know for certain the complete layout of the site, how extensive it is, how many structures were on it and how many people were likely forced to evacuate when the earthquake struck, but from the data available, we have a preliminary estimate of these features.

Based on the site data, we can infer that at this single site the late AD1400's to early AD1500's earthquakes were a disaster event. The site was completely abandoned, leaving no cultural material above the sand blow layer, which is an absolute change from the robust Late Mississippian artifact assemblage found below. This change from pre- to post-earthquake is a nearly perfect model of what Beck and colleagues (2007) describe as the evidence of an event archaeologically. It is also a prime example of a hazard becoming a disaster with people being displaced (Cooper and Sheets 2012). This change also shows that at the local scale, the resilience loop completely broke down. The people living there were unable to cope with the change in resources (houses on well-drained soil with fertile land in the surrounding area for growing crops) brought on by the sand blow and there was nothing in the schema that would allow for their typical lifestyle to continue on the now sterile land where their hamlet had been located (Sewell 2005) (Figure 7-30).

If I stopped the examination at the scale of this single, 3rd order Late Mississippi period site, I would call the event a disaster that displaced the town and dramatically changed the lives of the people living there. Panarchy, however, reminds us that there is not only one resiliency loop in play. The Mississippian people living at Manley-Usrey were part of a larger social network of a hierarchy of towns spanning the Pemiscot Bayou. They were also part of the even larger Nodena phase composed of towns and cities in the larger CMV region. People throughout this region had trade networks with other groups both inside and outside of the NMSZ. Whether the earthquakes of ca. AD 1460 rose to the level of disaster at these larger scales will be examined in the following chapter. By comparing the characteristics of the various scales of analysis examined in this chapter to similar levels of analysis at other sites in the region that pre-date the earthquakes, continue occupation from before to after the earthquakes, and that post-date the earthquakes, we can look for evidence of an archaeological event or disaster. By identifying changes in material culture at differing scales, I will be able to see evidence of the small scale resiliency loop "revolting" up from this single site scale and changing the resources available to those larger feedback loops, which would have an impact on the schema of the larger region. Alternatively, evidence for few or no changes would indicate that the larger feedback loops of the panarchy allowed downstream "remember" responses to help to utilize other local resources to uphold the current schema and stabilize society at large despite the small displacement of people at one site (Beck et al. 2007; Gunderson and Holling 2002; Sewell 2005).

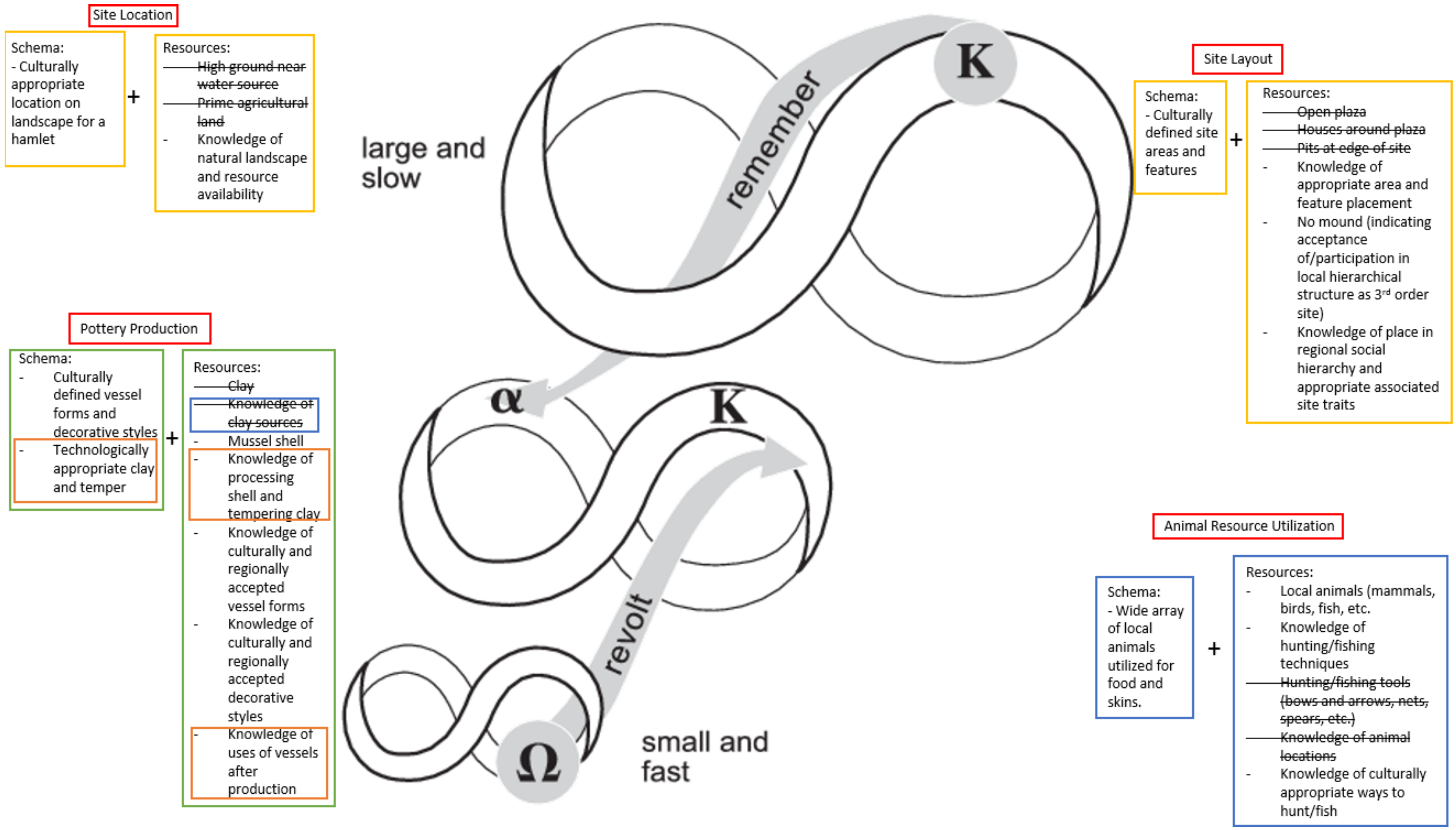

Figure 7-30: Resources and schema affected by the earthquakes and sand blows on Manley-Usrey. Crossed out resources would have been destroyed or changed by the sand blows, affecting the schemas that they contribute to. Blue boxes indicate resources and schemas that are part of the local, small, and fast feedback loops, Green boxes indicate regional, midsize loops, Orange boxes indicate larger, regional loops, and Yellow boxes indicate even larger, regional loops. Some, but not all, resources were affected at multiple levels, contributing to the disaster level reached at the Manley-Usrey site.

8

Comparisons

The previous chapter demonstrated that at the smallest and most local scale of the 3rd order Manley-Usrey site, people were vulnerable to earthquake hazards. I have established that at that site the earthquakes of ca. AD 1460 rose to the level of a disaster, the local resilience loop broke down, and everyone abandoned the site and never returned. To understand if this disaster was widespread across the region or a localized, small-scale event we must look for changes in the material culture of sites in the larger CMV region that date around the time of the earthquake. If I can identify material culture changes at various scales this will indicate a larger-scale disaster that affected not only the small-scale resilience loop and immediate resources and schema at the Manley-Usrey site, but also progressively larger feedback loops in the panarchy and the resources and schema of a larger area (Beck et al 2007; Cooper and Sheets 2012; Gunderson and Holling 2002; Sewell 2005).

A quick search of Arkansas's AMASDA database finds 32 Late Mississippi period sites and 31 Protohistoric sites in the CMV region of Arkansas (Figure 8-1). Some of these are in the immediate vicinity of Manley-Usrey as discussed in the previous chapter, but others are located farther to the south in the rest of the Nodena phase and the Parkin phase. The ubiquity of sites identified to both time periods demonstrates that the earthquakes could not have been interpreted as a disaster event at all scales of panarchy. At some level, the resilience loop held up, and the overarching resources and schema at that level proved not to be vulnerable to the earthquake and sand blow events. If this had not been the case, it would be quite likely that a large area of the region would have been abandoned as the Manley-Usrey site was. As discussed in chapters 5 and 6, it is necessary to be able to pinpoint a date at which cultural material changes began in order to see an event archaeologically (Beck et al. 2007), so this chapter will examine cultural materials from a variety of sites that have been chronometrically dated pre- and post- earthquake event to understand how vulnerable Late Mississippi period people of the CMV were to these earthquake and sand blow events. I will also look for evidence of which resiliency scale in the panarchy allowed their cultural and social networks to overcome the immediacy of disaster and allow life to continue with little change to the established schema and use of resources (Beck et al. 2007; Gunderson and Holling 2002; Sewell 2005).

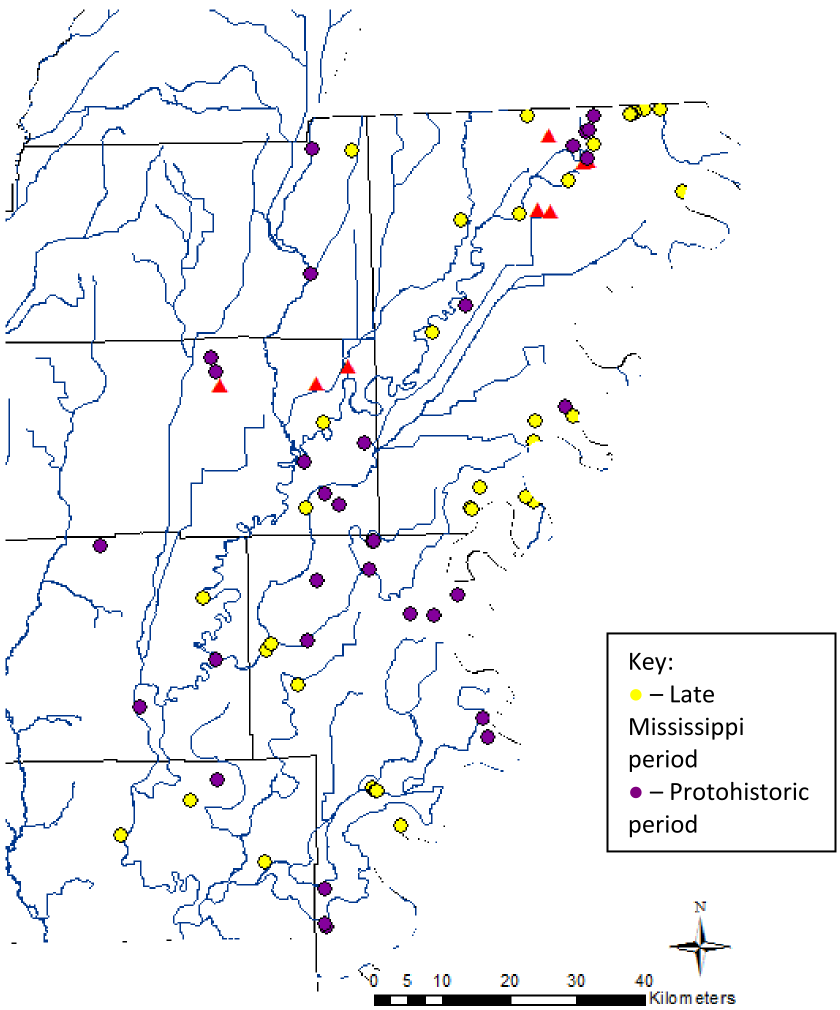

Figure 8-1: All identified Late Mississippi period and Protohistoric sites in Arkansas's AMASDA site file database. Red triangles are epicenters of earthquakes recorded between July and December 2018. Background shapefiles downloaded from Arkansas GIS Office (2019).

A closer look at the sites identified above shows that these period identifications are not based on chronometric dating, but on pottery assemblages and pottery characteristics that were relatively dated in the early to mid-20th century. Some sites' period identifications were given when this pottery chronology was new, and others were given 50 or more years later after many improvements and nuances had been added to the chronology. Some sites' identifications were based on small surface collections of artifacts and others were based on professional excavation. This makes it difficult to trust the period assigned to a site as listed in the database without a review of the artifacts on which that designation is based. Furthermore, the research design of this project was to attempt to look very specifically at sites with chronometric dates that occurred close to the date of the earthquake, both before and after, and sites that had continuous occupation throughout. This is hedged a bit by including the Pemiscot Bayou sites of southeastern Missouri, but a thorough analysis by O'Brien (1994) makes their identifications as Late Mississippi and Protohistoric sound. This leaves a limited number of sites in the region with which to compare the Manley-Usrey site, but by limiting the comparisons to chronometrically dated sites I will not be inadvertently comparing data that is far removed from the time period under consideration: the years surrounding the large earthquakes of the late AD 1400's to early AD 1500's.

Date

As discussed in chapter 7, the date of the 1450±150 earthquake identified by paleoseismologists has been narrowed by this project to AD 1460±50. It is further constrained by the fact that there are no protohistoric period markers in the Manley-Usrey artifact assemblage, meaning that the site had been covered by sand and abandoned by the time de Soto's entrada reached the CMV. This confines the earthquakes to the late AD 1400's to early AD 1500's, as indicated by the OSL dates and the early ranges of the AMS date calibrations.

It is also noted in Chapter 7 that the Manley-Usrey site has Late Mississippi period pottery and lithic assemblages. Those assemblages become prominent in the late 1400's to early 1500's and continue with some variability based on geographical location and time until the protohistoric period. To try to constrain the date from the early end of the estimate, the Manley-Usrey site contains some bison bone, which is a sign of the Late Mississippi period (Mainfort et al. 2007; Muller 1997). Thumbnail scrapers used to process deer and bison hides are also a feature of the Late Mississippi and protohistoric periods. One thumbnail scraper was identified in the excavation at Manley-Usrey, but not the large numbers seen on sites predominantly occupied during the protohistoric (Brain 1988; Mainfort 2007). This suggests that Manley-Usrey was occupied in the very late Late Mississippi period or near the beginning of the protohistoric period. This narrows the interpretation of the date to the very late 1400's and into the early 1500's. Sites with chronometric dates that surround and include the early this time range are examined in reference to the Late Mississippi period site of Manley-Usrey in this chapter (Figures 8-2, 8-3, 8-4, 8-5).

The Beck site in southern Crittenden county, Hazel site in Poinsett county, and Kochtitzky Ditch site in Mississippi county are all chronometrically dated to the late 1400's and early 1500's, putting them in the Late Mississippi period. Chucalissa and Graves Lake in Tennessee are also dated contemporaries of these sites (Table 8-1). The Pemiscot Bayou sites of McCoy and Dorrah were also occupied only during the Late Mississippi period, but they do not have chronometric dates associated with them (O'Brien and Williams 1994).

The Upper Nodena site dates are mostly contemporary with the Manley-Usrey site, but there is a later occupation dated above a sand blow feature to the east of the main area of the site. The Chickasawba site was likely a contemporary of Manley-Usrey that continued to be occupied after the earthquake. It may have even been the location to which the people of Manley-Usrey fled when their village was destroyed. It was the closest mound site to Manley-Usrey and may have been their local ceremonial center as it was a large, multi-mound, first-order site. Parkin was a site in Cross county that was occupied from the Late Mississippi period to the Protohistoric period (Table 8-1). The Nora Tucker site in Missouri also spans this time period, although it is not dated precisely (O'Brien and Williams 1994).

Campbell post-dates Manley-Usrey, thriving in the Protohistoric period. Without chronometric dating from the Campbell site it is impossible to say if it was also a contemporary, or if it became a major site only after the earthquake struck. It was definitely a flourishing site during the Protohistoric period and had numerous valuable European metal and glass trade goods and a huge supply of thumbnail scrapers to help in the processing of hides that were being traded. Berry, Cagle Lake, Brooks, Denton Mounds, Holland, and Kinfolk Ridge are other sites along the Pemiscot Bayou in Missouri that have evidence of being occupied in the Protohistoric period.

Table 8-1: Sites discussed in chapter with their associate time period of occupation.

Site	**Period**
Manley-Usrey	Late Mississippi
Graves Lake	Late Mississippi
McCoy	Late Mississippi
Dorrah	Late Mississippi
Kochitzky Ditch	Late Mississippi
Beck Plantation	Late Mississippi
Hazel	Late Mississippi
Chucalissa	Late Mississippi
Chickasawba	Late Mississippi - Protohistoric
Upper Nodena	Late Mississippi - Protohistoric
Nora Tucker	Late Mississippi - Protohistoric
Parkin	Late Mississippi - Protohistoric
Campbell	Protohistoric
Berry	Protohistoric
Cagle Lake	Protohistoric
Brooks	Protohistoric
Denton Mounds	Protohistoric
Holland	Protohistoric
Kinfolk Ridge	Protohistoric

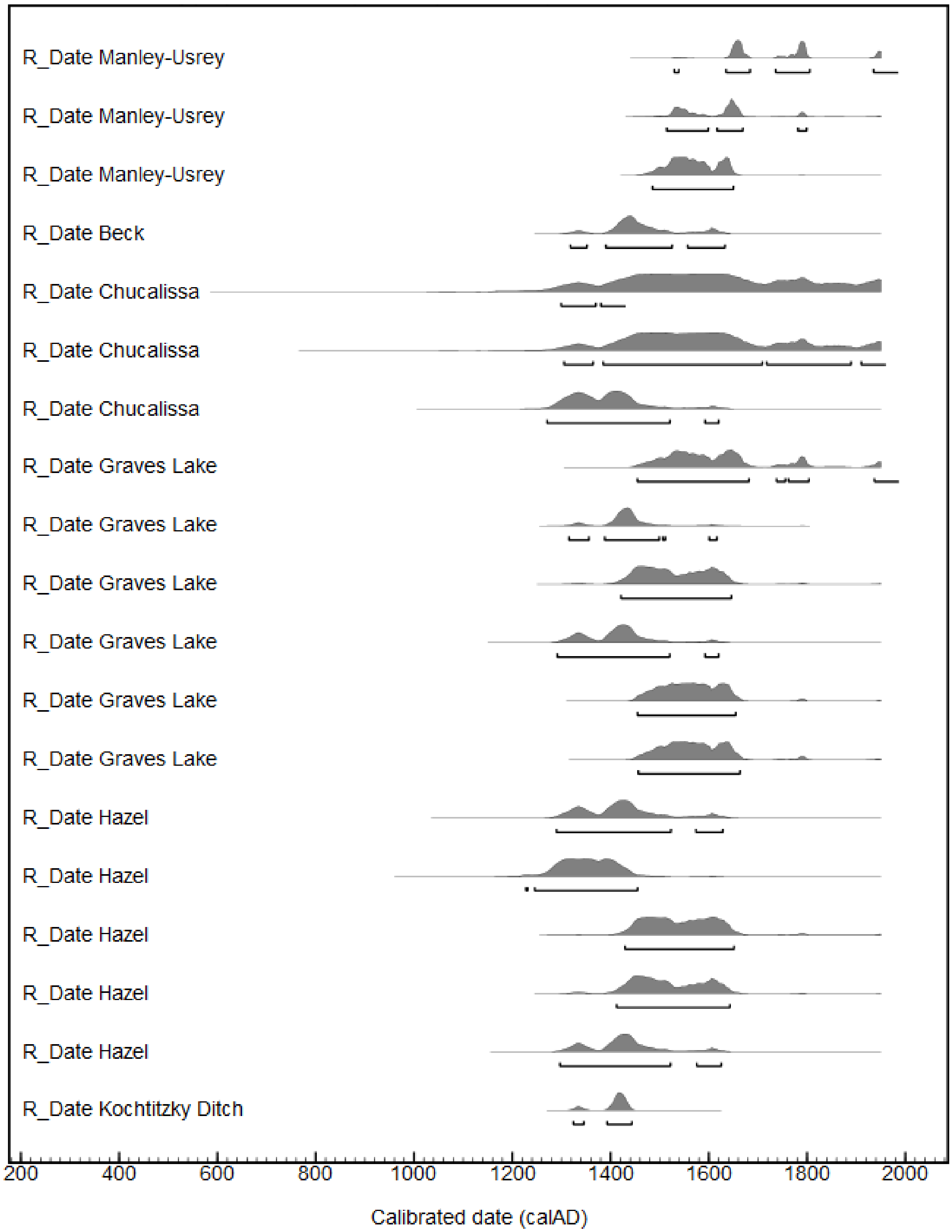

Figure 8-2: Calibrated date ranges of Manley-Usrey and other Late Mississippi period regional sites. Dates calibrated using IntCal13 atmospheric curve (Reimer et al 2013). Ranges graphed using Oxal v 4.3.2 (Bronk Ramsey 2017). (For raw date data and full range of dates for each site see Appendix VII).

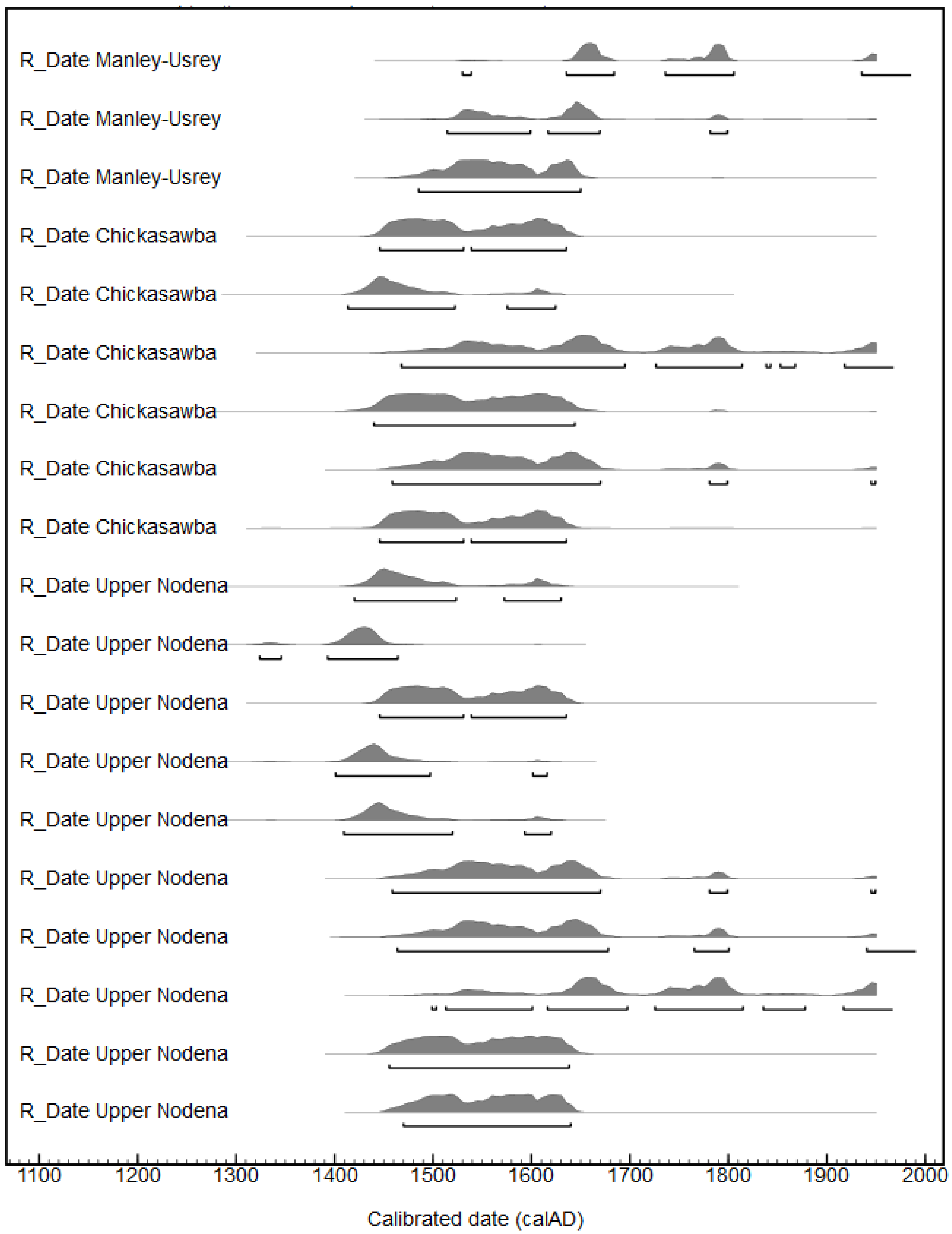

Figure 8-3: Calibrated date ranges of Manley-Usrey and Late Mississippi period to Protohistoric period regional sites. Dates calibrated using IntCal13 atmospheric curve (Reimer et al 2013). Ranges graphed using Oxal v 4.3.2 (Bronk Ramsey 2017). (For raw date data and full range of dates for each site see Appendix VII).

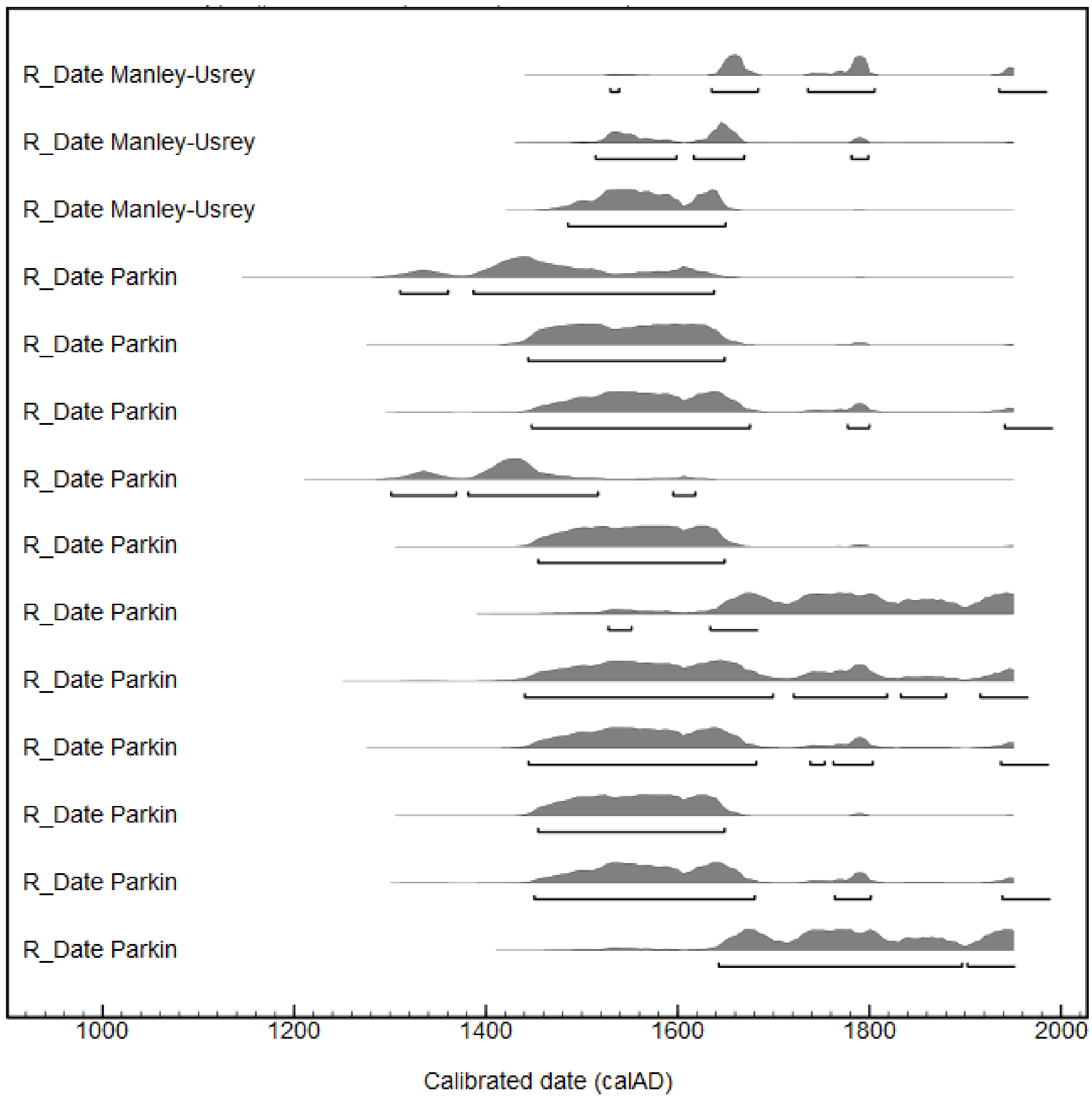

Figure 8-4: Calibrated date ranges of Manley-Usrey and Late Mississippi period to Protohistoric period regional sites. Dates calibrated using IntCal13 atmospheric curve (Reimer et al 2013). Ranges graphed using Oxal v 4.3.2 (Bronk Ramsey 2017). (For raw date data and full range of dates for each site see Appendix VII).

Settlement Pattern

The settlement pattern of the region pre- and post-earthquake is the largest cultural scale of resiliency that can be examined, but it is an intermediate scale in the overall panarchy of the region. Any changes seen at this scale would indicate that the small, localized disaster seen at Manley-Usrey was likely repeated at other small sites in the region and its effects “revolted” up the panarchy chain and caused changes across the region (Gunderson and Holling 2002). These changes would likely be in the form of resource use, the resource at this scale being the area chosen for a town or village and its soil and geomorphological qualities. If changes in site locations are not seen, it would indicate that the disaster event did not disturb the entirety of the panarchy, and either this largest resiliency loop, or a smaller one was able to compensate for the small-scale disaster and utilize the current schema to “remember” back down the panarchy to help to re-establish resiliency at the local level (Gunderson and Holling 2002).

Seventeen sites dated by AMS or the presence of European artifacts on site to the Late Mississippi and Protohistoric periods were considered in this study. Locations were mapped in reference to soil type, landform, and location of nearest water source for aquatic resources and/or travel. The epicenters of small earthquake events that occurred in the region between July and December of 2018 was also mapped. These events give reference to the Reelfoot rift, running southwest to northeast through Arkansas and Missouri, and the Lake County uplift-Reelfoot North fault running northwest to southeast in Missouri and Tennessee (Figure 8-5).

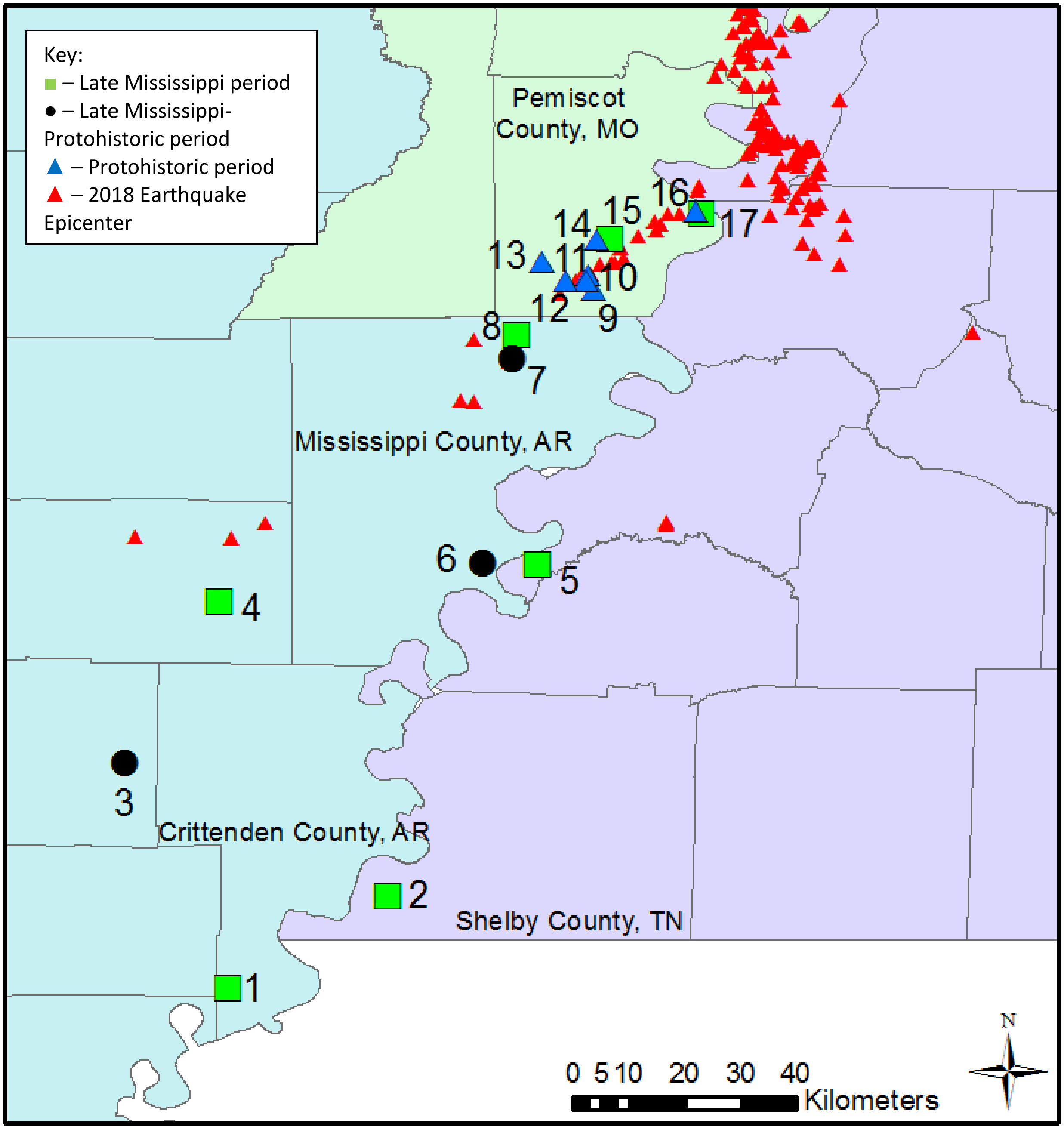

Figure 8-5: CMV with Late Mississippi period, Late Mississippi-Protohistoric, and Protohistoric sites marked. Sites: 1-Beck Plantation, 2-Chucalissa, 3-Parkin, 4-Hazel, 5-Graves Lake, 6-Upper Nodena, 7-Chicksawba, 8-Manley-Usrey, 9-Berry, 10-Campbell, 11-Brooks, 12-Holland, 13-Denton Mounds, 14-Cagle Lake, 15-Dorrah, 16-Kinfolk Ridge, 17-McCoy. Background shapefiles downloaded from Arkansas GIS Office (2019), Missouri Spatial Data Information Service (2019), and Tennessee GIS Clearinghouse (2019).

In some cases, Late Mississippi and contact period sites are the same site that was continually occupied through the transition, but even on sites that were not continuously occupied, Mississippian people through time had a typical site location that they preferred. Due to this, the settlement characteristics are largely similar. Sites are located on natural levees of abandoned channels of the Mississippi River or natural levees of then-active channels of the Pemiscot Bayou or St. Francis River (Table 8-2). Some sites were also located along a lake or pond that was a cut-off channel of an old river course. This proximity to water makes fishing, traveling, and water procurement efficient, but also makes the site more susceptible to the effects of liquefaction during an earthquake event.

The placement of sites on natural levees also means that they are located on and surrounded by moderately- to well-drained soils that are excellent for farming (Table 8-2). When this land was cleared of trees, it would have been able to support large fields for maize agriculture and any other crops that were being grown on a large scale in fields, or on a smaller scale in kitchen gardens near people's houses. The surrounding landscape would have been home to a variety of wildlife similar to that identified in the faunal assemblage at the Manley-Usrey site.

Table 8-2: Soil type, soil description and general developmental areas at the locations of Late Mississippi and Protohistoric sites in the CMV. Soil descriptions from the USDA Web Soil Survey 2019.

Site	Period	Soil Type	Soil Description	Develops On
Manley-Usrey	Late Mississippi	Tiptonville and Dubbs silt loams	Prime farmland if protected from flooding or not frequently flooded during the growing season	Stream terraces which are old natural levees of the Mississippi River
Graves Lake	Late Mississippi	Memphis Silt Loam	All areas are prime farmland	Loess Hills, Summit, Interfluve
McCoy	Late Mississippi	Caruthersville very fine sandy loam		Flood plains or natural levees
Dorrah	Late Mississippi	Commerce Silt Loam	Prime farmland when drained	Natural Levees of the Alluvial Plain of the Mississippi River
Kochitzky Ditch	Late Mississippi	Tunica silty clay	Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	Lower parts of natural levees on younger meander belts of the Mississippi River
Beck Plantation	Late Mississippi	Commerce Silt Loam	Prime farmland when drained	Natural Levees of the Alluvial Plain of the Mississippi River
Hazel	Late Mississippi	Tunica Clay, 0-1 percent slopes	Prime farmland if drained	Lower parts of natural levees on younger meander belts of the Mississippi River
Chucalissa	Late Mississippi	Memphis Silt Loam	All areas are prime farmland	Loess Hills, Summit, Interfluve
Chickasawba	Late Mississippi - Protohistoric	Tiptonville and Dubbs silt loams	Prime farmland if protected from flooding or not frequently flooded during the growing season	Stream terraces which are old natural levees of the Mississippi River
Upper Nodena	Late Mississippi - Protohistoric	Morganfield fine sandy loam	Prime farmland if protected from flooding or not frequently flooded during the growing season	Flood plains and upland drainages
Nora Tucker	Late Mississippi - Protohistoric	Caruthersville sandy loam		Flood plains or natural levees
Parkin	Late Mississippi - Protohistoric	Dubbs fine sandy loam, gently undulating	All areas are prime farmland	Natural Levees or Low Terraces of the Mississippi River
Campbell	Protohistoric	Commerce Silt Loam	Prime farmland when drained	Natural Levees of the Alluvial Plain of the Mississippi River
Berry	Protohistoric	Commerce Silt Loam	Prime farmland when drained	Natural Levees of the Alluvial Plain of the Mississippi River
Cagle Lake	Protohistoric	Commerce Silt Loam	Prime farmland when drained	Natural Levees of the Alluvial Plain of the Mississippi River
Brooks	Protohistoric	Commerce Silt Loam	Prime farmland when drained	Natural Levees of the Alluvial Plain of the Mississippi River
Denton Mounds	Protohistoric	Commerce Silt Loam	Prime farmland when drained	Natural Levees of the Alluvial Plain of the Mississippi River
Holland	Protohistoric	Commerce Silt Loam	Prime farmland when drained	Natural Levees of the Alluvial Plain of the Mississippi River
Kinfolk Ridge	Protohistoric	Commerce Silt Loam	Prime farmland when drained	Natural Levees of the Alluvial Plain of the Mississippi River

River banks and natural levees are also prone to bank failure and subsequent sand blow extrusion during earthquakes. Most of the eastern lowlands of the CMV are within an area of the NMSZ that has been identified as being more than 1% covered with sand from sand blows and many large sand blows occur near current or older river channels where there is room for banks to cave (Tuttle et al. 1998). One percent coverage of the ground surface seems like a small number to worry about at first glance, but Mississippi county Arkansas is 2400 km^2, meaning that a total of 24 km^2 of the land surface is estimated to be covered with sand from sand blows. This equates to 148 40-acre farm fields or 2396 ha. Spread across the county and concentrating on areas that are also prime Mississippian village locations and farmland, this is a lot of area that is not as fertile as surrounding areas and on which many crops die in the extreme heat of summer if not irrigated and fertilized. These modern farming techniques would not have been available to Mississippian people in the region and these areas of sand would have been useless as fields. Not all of the sand blows seen at the ground surface today would have occurred during the Late Mississippi period, but it gives an idea of the extent of the farming and resource procurement issues that could arise at a town or village even if the location of the town itself was not covered by a sand blow. It is likely that fertile fields were lost to the earthquake and sand blows, some fields that had been left fallow and allowed to grow in fruit trees and bushes for gathering/foraging were damaged, and fields that were in the process of being prepared for agriculture through girdling and clearing of trees were also lost.

Despite this potential for damage, the data from these 17 Late Mississippi period to Protohistoric sites shows that most Mississippian people were not largely affected by the earthquakes from a large-scale view (Figure 8-6). Three large sites continued to be occupied from before the earthquakes until long afterward into the Protohistoric period. Other sites were newly situated on similar landforms, soils, and proximity to water ways after the earthquake and sand blows occurred. From this largest perspective, then, the landforms and site locations do not appear to have been considered vulnerable or dangerous to Mississippian people in the CMV. Because they were not considered vulnerable, there was no need to make any changes to the schema or resource use at this level, so life, settlement location choice, and agriculture continued as before.

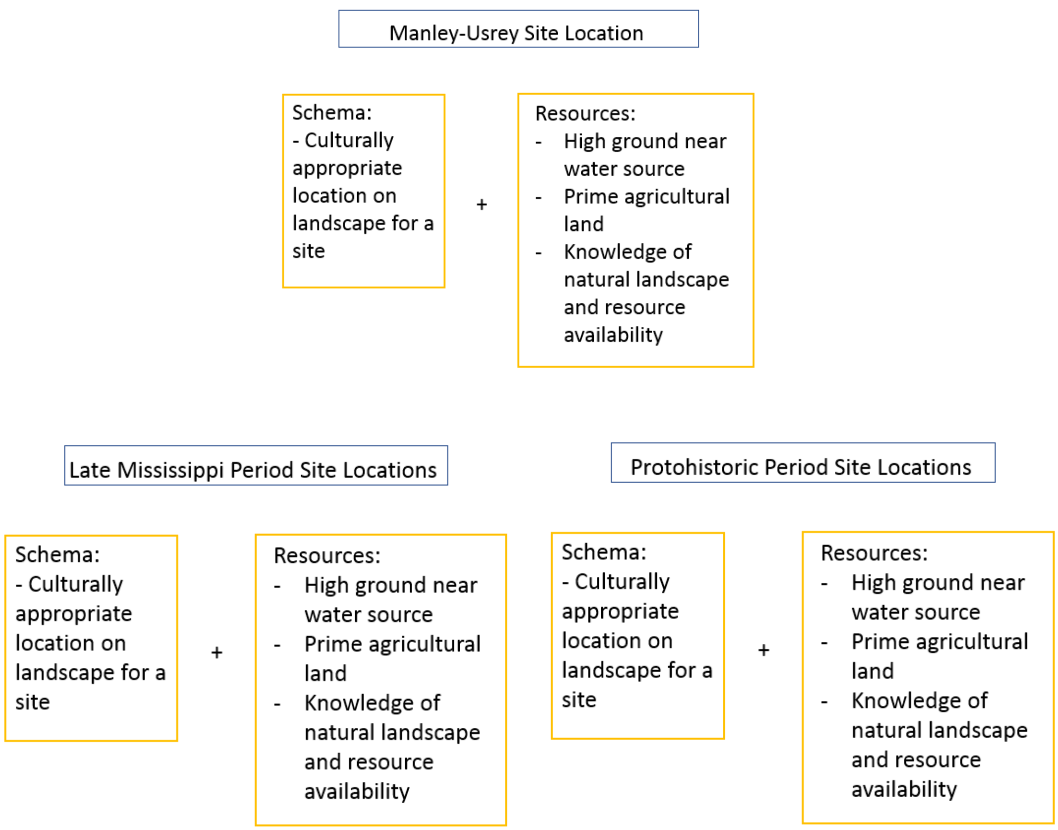

Figure 8-6: Schema and resources of the Manley-Usrey site in comparison to regional Late Mississippi period and Protohistoric sites at the larger, slower, regional level feedback loop as indicated by the yellow boxes. No changes in the schema and resources are seen from the Late Mississippi to Protohistoric period.

Layout

Changes in site layout through time can help to interpret if the schema of where to locate features across a Mississippian site was impacted by the earthquakes. This is a small-scale resiliency loop in the panarchy as it focusses on single sites and their individual characteristics. Changes in this pattern could include numbers of mounds and fortifications, as well as the placement of houses and burials. Houses at large Middle Mississippi period sites were often laid out in neighborhoods around open plazas with these individual areas surrounding one or multiple mounds. Late Mississippi period sites at Upper Nodena and Parkin are a bit more crowded, but also show evidence of planning and organization. Because sand blows typically occur along rivers where banks have caved in, it is possible that some movement of important features of a site away from the river or bayou may occur in response.

I will examine the layout of Late Mississippi and Protohistoric sites at two levels. The first is the layout of the site as a whole. This includes whether one or multiple mounds are present, whether the site is fortified, if there is a plaza, and the relationship of houses and burials in relation to these larger features. Information about the presence or absence of mounds is available for many sites, even those that have not been professionally excavated. These above ground expressions of human occupation were noted by Europeans early in the exploration and settlement of Arkansas and Missouri and are often noted on GLO maps as well as in early literature references to sites. The presence of a plaza or fortification is more difficult to assess if the site has not been excavated or well-documented through detailed surface collections or remote sensing. In many instances the only evidence of a fortification is the post holes from the palisade wall, and those are not visible except through excavation or, in some cases, remote sensing. The same is true of a plaza area on a site. An unused open area can only be established in reference to other, occupied areas. These, in turn, must be established through remote sensing, or systematic surface collections, which can still be suspect due to dragging of artifacts by plows in cultivated fields. In the case of Manley-Usrey, however, even the remote sensing and surface collections may not produce an accurate picture of the site due to sand covering the central area of the site and the likelihood that some houses on the site were not burned and would therefore leave little evidence for the remote sensing equipment to detect and map. Despite these limitations, it is still worthwhile to look at the layout of other Late Mississippi and Protohistoric sites in relation to the Manley-Usrey site (Table 8-3).

The Manley-Usrey site is a relatively small site (1.8ha) that was limited in the length of its occupation to the Late Mississippi period due to the earthquake, sand blow, and subsequent abandonment, and within the region it appears to have been a 3rd order site. Within the Late Mississippi period, the Graves Lake site is the closest to Manley-Usrey in size and layout according to the data available. Both are under 2 ha, have no mounds, are not fortified, and have burials scattered across the site, making them both 3rd order sites (Table 8-3). Dorrah is close in size to these two sites at 2 ha but has a mound and unknown fortifications, likely making it a 2nd order site along the lines of Knappenberger, which is not chronometrically dated. The McCoy site is ~3 ha and also has 1 mound, making it another 2nd order site. Beck Plantation is also ~3 ha in area, but has 8 mounds, likely making it the 1st order site of the southernmost extent of the Nodena phase. Chucalissa and Hazel appear to be 1st order sites with multiple mounds. Chucalissa is in the Walls phase in Tennessee and Hazel is part of the northern extent of the Parkin phase. Burials are found across the Hazel site, but not enough excavation has taken place at Chucalissa to know the pattern of burials. Fortifications are unknown for either site.

Table 8-3: Late Mississippi period and Protohistoric sites in the CMV with their size, number of mounds and fortifications listed. ? indicates that the data is unavailable or inconclusive.

Site	Occupation Period	Size (ha)	# of Mounds	Fortified	Burials	Reference
Manley-Usrey	Late Mississippi	1.8	0	no	Across site?	
Graves Lake	Late Mississippi	1.53	0	no	Across site?	Mainfort and Moore 1998
McCoy	Late Mississippi	3.3	1	?		O'Brien and Williams 1994
Dorrah	Late Mississippi	2	1	?		O'Brien and Williams 1994
Beck Plantation	Late Mississippi	3?	8	?		AMASDA site files 2019
Hazel	Late Mississippi	6	1-9?	?	Across site	AMASDA site files 2019
Chucalissa	Late Mississippi	4.9	2	?	?	Lumb and McNutt 1988
Chickasawba	Late Mississippi - Protohistoric	25	6	no		Childs and McNutt 2009
Upper Nodena	Late Mississippi - Protohistoric	6.27	14-17	no		Mainfort 2010
Nora Tucker	Late Mississippi - Protohistoric	2	?	?		O'Brien and Williams 1994
Parkin	Late Mississippi - Protohistoric	6.8	7	Palisade and Ditch	Across site	Mitchem 1996; Klinger 1977
Campbell	Protohistoric	16	1	no	Across site	Chapman and Anderson 1955; O'Brien and Williams 1994
Berry	Protohistoric	>3	0	?	Across site?	O'Brien and Williams 1994
Cagle Lake	Protohistoric	2	1	?		O'Brien and Williams 1994
Brooks	Protohistoric	?	1	?	?	O'Brien and Williams 1994
Denton Mounds	Protohistoric	6	5	?		O'Brien and Williams 1994
Holland	Protohistoric	4	5	?		O'Brien and Williams 1994
Kinfolk Ridge	Protohistoric	2	2	?		O'Brien and Williams 1994

Sites that span the Late Mississippi period into the Protohistoric period seem typically larger, but with a sample of only 4 this is an initial assessment. The two sites toward the south, Upper Nodena and Parkin, named the paramount sites in their respective phases by Morse and Morse (1998) are between 6 and 7 ha and have multiple mounds of varying sizes. Upper Nodena has 14-17 mounds and Parkin has 7. Parkin is fortified with a palisade and ditch, but professional excavation has not shown fortifications at Upper Nodena. Chickasawba, the site nearest to Manley-Usrey that is chronometrically dated only has 6 mounds but is 25 ha in village area. It was likely the 1st order site of the northern extent of the Nodena phase. Nora Tucker has an unknown mound count and is only 2 ha. Without a mound count it is difficult to draw conclusions, but because the site is only 2 ha and in many instances if there were multiple mounds on a site at least some memory or remnant remains, especially at heavily looted sites, I suggest that Nora Tucker was a 3rd order site in the Pemiscot Bayou region when it was occupied. Its small size also makes it the smallest of the chronometrically dated Late Mississippi-Protohistoric sites, and the farthest to the north.

Sites dating exclusively to the Protohistoric period range in size from 2 - 16 ha (although the extend of the Brooks site is unknown) and contain between 0 and 5 mounds (Table 9-3). Based on the widespread occurrence of pot hunting on these protohistoric sites, it is likely that burials were placed across the sites, but no maps were kept, and no areas of greater or lesser artifact density were noted by the pot hunters who were later interviewed. Campbell, Cagle Lake, and Brooks are some of the best-known sites in the region due to their history of being looted, but they are all singe mound, 2nd order sites, whose burials contained the collectable pots coveted by looters and collectors. Denton Mounds, Holland, and Kinfolk Ridge all have multiple mounds, making them 1st order sites in this northernmost Pemiscot Bayou region. It seems unlikely that three 1st order sites would be occupied in such close proximity in this region, but it is possible that this is a response to the movement of people in the region after the earthquakes. If local leaders at single mound sites were forced to move, could they have consolidated at another single mound site and shared local power over their people with another local leader as suggested by the idea of chiefdom fission-fusioning (Blitz 1999)? A more thorough look at sight layouts of these sites through future remote sensing or excavation may be able to give more insight into this.

Only one site is known to be fortified and that is the Parkin site. Most Parkin phase sites are noted in the literature as being fortified, but this may not be as widespread as indicated based on the excavation of the Parkin phase site of Richard’s Bridge which contained no fortification despite extensive remote sensing and excavation programs designed to look for it (Jeffrey Mitchem personal communication 2015). Manley-Usrey, Graves Lake, and Campbell are noted to not have evidence of fortifications. For the remaining sites there is no evidence for either case. It is notable that the only fortified site is located in the Parkin phase, which may have been the chiefdom of Casqui. If this is the case, the presence of the fortification may be a marker of the phase for a reason other than as a response to the earthquakes, but the need for the fortification could be a downstream result of the earthquake and destruction of crops and fields in the Nodena phase. Some people, such as those at Manley-Usrey, would have been displaced, and this may have led to warfare over areas unaffected by sand blows. The southern extent of the CMV is less affected by sand blows than the northern region, so perhaps the Parkin phase was under threat due to more of its area not being affected.

I also examined the layout and building techniques of individual houses at this small scale (Table 8-4). There is evidence of houses being built using single post construction and wall trenches during the Late Mississippi period. With the more precise dating comparisons employed in this study it was hoped that it would be possible to identify if one of these techniques was a response to the damage to houses caused by earthquakes as has been found in Machu Picchu. If so, it will be an identifiable vulnerability in the resilience system that was overcome and perhaps had effects both up and down the panarchy if the new practice became widespread (Gunderson and Holling 2002). The availability of this information is generally dependent on the site having been professionally or semi-professionally excavated, chronometric dates run on the site, and the results published. House (2016) did a similar comparative analysis of houses, but his analysis extended outside of my study area to the south and included many Middle Mississippi sites that are not relevant to the current analysis and are therefore not included here.

Table 8-4: Structure size and shape in Late Mississippi and Protohistoric contexts in the CMV.

Site	**Provenience**	**Occupation Period**	**Shape**	**Size (m)**	**Area (m^2)**	**Construction Method**	**Reference**
Manley-Usrey	Structure 1	Late Mississippi	Square	5 x 5	25	likely post	
Graves Lake	House 2	Late Mississippi	Square	5 x 4	20	post	Mainfort and Moore 1998
Kochitzky Ditch	Structure 2	Late Mississippi	Square	5.9 x 5.9	35	post	Buchner at al. 2003
Chucalissa	Structure 1 and 3, Unit 6SW	Late Mississippi	Square	3.9 x 3.9	15.21	wall trench	Lumb and McNutt 1988
Chucalissa	Unit 2	Late Mississippi	?	?	?	post	Lumb and McNutt 1988
Upper Nodena	House 1A	Late Mississippi – Protohistoric	Square	5.7 x 5.7	32.5	wall trench	Mainfort 2010
Upper Nodena	House 1B	Late Mississippi – Protohistoric	Square	5.2 x 5.2	27	wall trench	Mainfort 2010
Upper Nodena	Large Structures	Late Mississippi – Protohistoric	Rectangular	6 x 3.7	22.2	post	Hampson in Mainfort 2010
Upper Nodena	Small Structure	Late Mississippi – Protohistoric	Square	3 x 3	9	post	Hampson in Mainfort 2010
Parkin	Structure 4	Late Mississippi – Protohistoric	Square	4 x 4	16	post	Mitchem 1996
Parkin	Structure 7	Late Mississippi – Protohistoric	Square	4 x 4	16	post	Mitchem 1996
Parkin	Structure 11	Late Mississippi – Protohistoric	Square	4 x 4	16	post	Mitchem 1996
Cagle Lake	Structure 1	Protohistoric	Square	5.8 x 5.2	30.16	wall trench	O'Brien and Williams 1994
Denton Mounds	Structure 1	Protohistoric	Square	8.2 x 8.2	67.2	post	O'Brien and Williams 1994
McCoy	Multiple Structures	Protohistoric	Rectangular	3.6 x 5.5	19.8	?	O'Brien and Williams 1994

The Late Mississippi Manley-Usrey site remote sensing and excavations showed a structure that was built by setting individual posts for the walls in a square shape measuring about 5 m x 5 m, enclosing an area of ~25 m^2. The Late Mississippi period house at Graves Lake is very similar in size and shape to that at Manley-Usrey. Chucalissa has two different house styles, one wall trench and one individual posts, that were excavated in different areas of the site. The single post structure was not excavated thoroughly enough to establish its size and shape, but the wall trench structure was a square measuring 3.9 m x 3.9 m (Lumb and McNutt 1988). At Kochitzky Ditch a square, single set post house was excavated, and it measures slightly larger than the previous two at nearly 6 m per side (Buchner et al. 2003).

The Upper Nodena site is a contemporary of the Manley-Usrey site that continues occupation after the earthquake. Unlike the other three sites, the Upper Nodena site has had multiple structures excavated and at least partially published. Two structures excavated by Dan Morse are overlapping square houses measuring in the 5-6 m per side range, built using wall trenches to set the posts for the walls. Dr. Hampson's notes show 31 large structures and 21 smaller structures, all constructed of individual wall posts. Mainfort (2010) points out, however, that these are idealized illustrations with all of the postholes in perfect alignment and no extraneous posts shown so must be understood with some skepticism. Dr. Hampson's notes are generally well done, and it seems reasonable to accept that he observed two general size classes of structures in his excavations, even if the exact dimensions are not available. The illustrations show both larger rectangular structures (with generalized dimensions of about 6 m x 4 m) and smaller, square structures (with generalized dimensions of about 3 m x 3 m). It seems unlikely that he observed only houses with individually set posts when the only professional excavation of the site uncovered two wall trench houses, so assuming that all of Hampson's 52 structures were built using single set posts is likely incorrect (Mainfort 2010). It is possible that some were built in this fashion though if, based on the other contemporary sites to the north and east with single set post structures, we assume that building walls using single post placement was common at the time that these structures were built.

Houses from sites that post-date Manley-Usrey and were occupied into the Protohistoric period follow much the same non-pattern of wall structure and house size (Table 8-4). The three structures noted from Parkin are square with single set posts that measure slightly smaller than many other Late Mississippi period houses at 4 m x 4 m (Mitchem 1996). At the other end of the region in Missouri, the Cagle Lake site excavation uncovered a structure that was roughly square at 5.8 m x 5.2 m but was built using wall trenches. The excavated structure at Denton Mounds was built by placing individual posts and measured ~8.2 m x 8.2 m. It was noted as possibly being associated with burial practices rather than a house, but this is unclear based on the rest of the context, so I have included it here. Last, the McCoy site in southeast Missouri showed surface evidence of multiple structures after a land leveling event. These surface expressions were not clear enough to demonstrate if the structures where built with wall trenches or single posts, but they did all measure to rough rectangles of ~3.6 x 5.5 m (O'Brien and Williams 1994).

It may be noteworthy that structures at Parkin and Manley-Usrey seem to have been primarily daubed around the smoke-hole on the roof and there is much less evidence of a large amount of daub being on the walls when the structures burned. This evidence is in the form of large quantities of daub being present on top of the hearths of these structures, with much less daub toward the edges (Mitchem 1996). If the walls had been covered in daub when the houses burned, there should be large amounts of daub across the area of the structure and directly on top of the house floor in the excavation units, which is not observed. On the structure at Kochtitzky Ditch, however, that pattern is observed, suggesting that both the walls and smoke hole of the roof were daubed in that village (Buchner et al 2003). The amount and location of daub associated with structures is not indicated for other sites.

Although this is an extremely small sample a slight pattern does seem evident. On the Late Mississippi period sites, most houses are squares of roughly 5-6 m per side. The later sites show much greater variability in their sizes, but that may be due to the outlier at Denton Mounds. Structures at Parkin are slightly smaller than the strictly Late period sites and structures in southeast Missouri are slightly larger (Cagle Lake and Denton Mounds) or rectangular (McCoy). Overall though, the size, shape, and construction method of the sites do not have any major differences.

Overall, at this small panarchy scale of site layout and house construction techniques, no major differences between the Late Mississippi and Protohistoric periods stand out in either resources or schema (Sewell 2005) (Figures 8-7 and 8-8). This is evidence of cultural resilience at this intermediate panarchy scale and that the earthquakes and sand blows were not considered disasters by the Late Mississippian people living in the CMV (Beck et al. 2007; Cooper and Sheets 2012; Gunderson and Holling 2002).

Manley-Usrey Site Layout

Schema:
- Culturally defined site areas and features

+

Resources:
- Open plaza
- Houses around plaza
- Pits at edge of site
- Knowledge of appropriate area and feature placement
- No mound (indicating acceptance of/participation in local hierarchical structure as 3rd order site)
- Knowledge of place in regional social hierarchy and appropriate associated site traits
- 1.8 ha

Late Mississippi Period Site Layout

Schema:
- Culturally defined site areas and features

+

Resources:
- 3rd order sites: Burials located across site, no mounds, < 2 ha
- 2nd order sites: Burials located across site, 1 mound, 2-4 ha
- 1st order sites: Burials located across site, multiple mounds, 2-25 ha
- Knowledge of place in regional social hierarchy and appropriate associated site traits

Protohistoric Period Site Layout

Schema:
- Culturally defined site areas and features

+

Resources:
- 3rd order sites: Burials located across site, no mounds, >3 ha
- 2nd order sites: Burials located across site, 1 mound, 2-16 ha
- 1st order sites: Burials located across site, multiple mounds, 2-25 ha
- Knowledge of place in regional social hierarchy and appropriate associated site traits

Figure 8-7: Schema and Resources of site layout at the Manley-Usrey site in comparison to regional Late Mississippi period and Protohistoric sites at the larger, slower, regional level feedback loop as indicated by the yellow boxes. No large changes in the schema and resources are seen from the Late Mississippi to Protohistoric period.

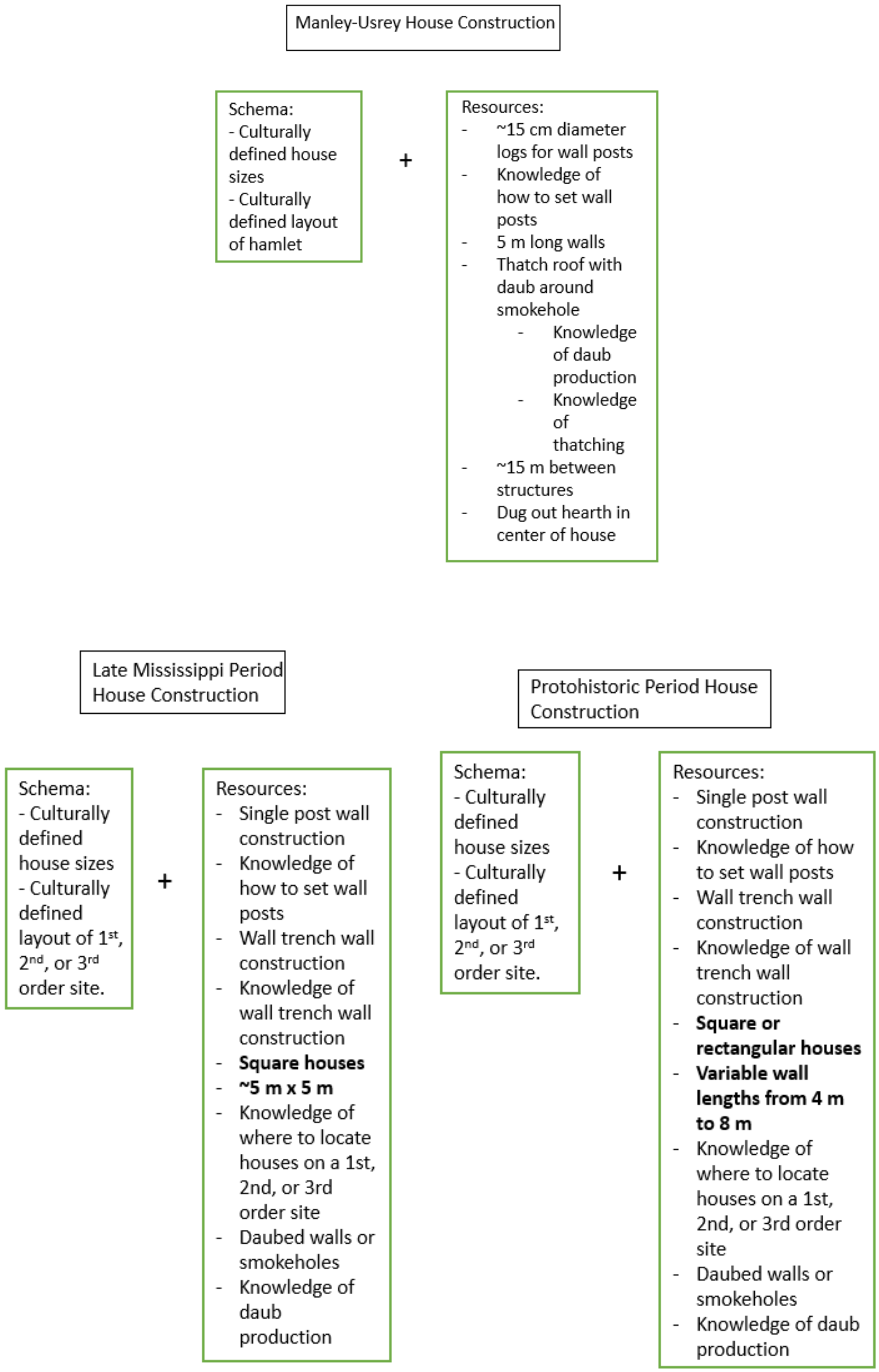

Figure 8-8: Schema and Resources of house construction at the Manley-Usrey site in comparison to regional Late Mississippi period and Protohistoric sites at the midsize, regional level feedback loop as indicated by the green boxes. Bold type indicates changes in resources that are seen from the Late Mississippi to Protohistoric period.

Pottery

At another small scale in the panarchy, individual artifact assemblages can be compared to look for changes in material culture that may indicate changes in the availability or use of local resources, thereby indicating a change in the overarching schema of how the society utilized those resources. Changes in decorative styles may indicate a change in the schema without a huge change in the most basic resources of pottery production (Beck et al. 2007; Holling and Gunderson 2002; Sewell 2005).

Based on the types and decorative styles of pottery present, the pottery assemblages of the Late Mississippi and Protohistoric period pre- and post-earthquake do not appear to have any major differences (Table 8-5). The biggest difference is the addition of the Campbell Appliqué decorative style in Missouri in the Protohistoric. It may also be the case that burial goods get more elaborate and that effigy and other highly decorated pottery becomes more common, but without good chronometric dating of the Pemiscot Bayou sites of Campbell, Berry, and Brooks, it is impossible to tell if burial goods increased after the early 1500's or if these more highly decorative and elaborate burial goods were already a trait of the northern edge of the region before the earthquake struck. The same is true of Chickasawba and Upper Nodena, as they span the pre- and post-earthquake time period. There hasn't been enough dating done to have a good understanding of what parts of these sites date to which period and if there are intrasite differences based on these dates.

The assemblage from Manley-Usrey most closely resembles that of Denton Mounds, a Protohistoric site to the north in Missouri. Both have a very high percentage of Neeley's Ferry/Mississippi Plain sherds in their assemblage, with around 10% Bell Plain. Manley-Usrey has much more Parkin Punctated represented in its assemblage and no Campbell Appliqué, while

Denton Mounds has small amounts of each of those types. Parkin, a site that spans the Late Mississippi to Protohistoric period also shows similar percentages of Neeley's Ferry/Mississippi Plain and Bell Plain. It also shows a surprising lack of Parkin Punctated pottery for being the namesake site of that type. These similarities across time periods and geographical area make a case that the pottery assemblages do not indicate much difference through time or space during this particular time frame of Late Mississippi to Protohistoric. The most notable thing is the appearance of the Campbell Appliqué style, and it is seen predominantly in the Protohistoric sites from Missouri, although Graves Lake does have 3 sherds. This could indicate that Campbell Appliqué is as much a marker of northern CMV sites as Protohistoric sites.

Table 8-5: Pottery sherd paste and decorative types (percentage) found on dated CMV sites

	Manley-Usrey Excavation	Graves Lake Excavation	Graves Lake Surface collection	Chucalissa 6SW excluding Sq. 56R3	Chucalissa Unit 2	Chickasawba Excavations	Upper Nodena Excavation 1973	Parkin Excavation 1966	Cagle Lake Excavation	Cagle Lake Surface Collection	Campbell Surface Collection	Denton Mounds Excavation Area I &II
	Late Mississippi	Late Mississippi	Late Mississippi	Late Mississippi	Late Mississippi	Late Mississippi-Proto-historic	Late Mississippi-Proto-historic	Late Mississippi-Proto-historic	Proto-historic	Proto-historic	Proto-historic	Proto-historic
Neeley's Ferry Plain/Mississippi Plain	78%	40%	59%	47%	29%	667/65%	47%	76%	54%	27%	21%	79%
Bell plain	8.5%	48%	35%	34%	39%	210/21%	51%	5%	30.5%	44.5%	41.5%	10.5%
Red-slipped	.6%	2%	2%	<.5%	<.5%	3/<.5%	<.5%	<.5%	3%	11%	4%	3%
Barton incised		4%	1%	1.5%	<.5%	3/<.5%	<.5%	7.5%	2%	4%		<.5%
Parkin punctated	7%	2%	2%	9%	12%	11/1%	1%	10%	6%	10%	8%	1%
Campbell applique		.6%							4%	.7%	17%	2%
Campbell punctated									<.5%	<.5%	2%	<.5%
Mound Place incised									<.5%	<.5%		
Kent incised				<.5%	<.5%		<.5%		<.5%		1%	
Ranch incised		2%	.8%	.7%	.8%		<.5%		<.5%		3%	<.5%
Nodena red and white	<.5%	<.5%	<.5%	<.5%	<.5%		<.5%	<.5%	<.5%			
Walls engraved			<.5%	.5%	.6%		<.5%			<.5%		
Fortune noded	.6%			<.5%	<.5%		<.5%	<.5%		<.5%		
Matthews incised							<.5%			<.5%		
Manly punctated										<.5%		
Rhodes incised		<.5%	</5%	<.5%	.6%			.8%		<.5%		.6%
Vernon Paul applique		.6%					<.5%	<.5%		<.5%		<.5%
Carson Red on Buff	<.5%				<.5%			<.5%				
Avenue Polychrome	<.5%			<.5%	<.5%							

Table 8-5 (cont.)

	Manley-Usrey Excavation	Graves Lake Excavation	Graves Lake Surface collection	Chucalissa 6SW excluding Sq. 56R3	Chucalissa Unit 2	Chickasawba Excavations	Upper Nodena Excavation 1973	Parkin Excavation 1966	Cagle Lake Excavation	Cagle Lake Surface Collection	Campbell Surface Collection	Denton Mounds Excavation Area I &II
white slipped	<.5%		<.5%	<.5%	<.5%					<.5%		
punctated										<.5%		
incised	1%						<.5%			<.5%	2%	<.5%
engraved	<.5%									<.5%		
slipped							<.5%					
Barnes Plain						2%						<.5%
Barnes cordmarked	3%					9%						<.5%
Barnes checkstamped						<.5%						
Baytown plain				6%	17%	1%						
Clay temper												2%
Sherd Disk							<.5%	.6%				
Total	3086	463	2238	5800	1412	1020	13176	2065	852	438	1325	1738
Reference		Mainfort and Moore 1998	Mainfort and Moore 1998	Lumb and McNutt 1988	Lumb and McNutt 1988	Childs and McNutt 2009; Childs et al 2016	Mainfort 2010	Klinger 1977	O'Brien and Williams 1994	O'Brien and Williams 1994	O'Brien and Williams 1994; Chapman and Anderson 1955	O'Brien and Williams 1994

Rim Attributes Mainfort (2003) points out that pottery types and styles may not be the best way to get at changes through time in the CMV. He points to House's (1993) work on the Kent phase and his use of the beveling of the inside of the rim of vessels as a marker of time. The Manley-Usrey site's pottery was examined for rim attributes used by Mainfort (2003) to compare its assemblage to other late prehistoric sites. Of the 529 rims identified in the assemblage, 33% of them had a beveled interior. This is similar to the percentages at the Chickasawba, Upper Nodena, Denton Mounds, and Cagle Lake sites. It is also well below the 80% beveled rims seen at Campbell and Berry. In the Manley-Usrey assemblage 10% of the rim sherds have a notched appliqué strip applied below the lip of the vessel (typically a bowl). This is similar to Chucalissa and Denton Mounds, again spreading the artifact similarities across time and space. All sites with rim data available have low percentages of noded rims and no one site stands out. Manley-Usrey has the lowest percentage of notched rims of all of the sites. This is another category in which no site has a very large number, but Campbell does have 32% of rim sherds in this category.

Mainfort's (2003) analysis of similar data from a variety of sites in the CMV shows that these attributes do not support the current model of phases under which we typically label sites, but it is unable to assign more reasonable groupings. I suggest that this may be due to upheaval and movement of people throughout the region after the earthquake. More chronometrically dated pottery assemblages would need to be available to test this hypothesis further.

Table 8-6: Rim sherd attributes of sites in the CMV

	Manley-Usrey	**Chucalissa**	**Beck**	**Graves Lake**	**Chickasawba**	**Upper Nodena**	**Parkin**	**Campbell**	**Berry**	**Denton Mounds**	**Cagle Lake**
	Late Mississippi	Late Mississippi	Late Mississippi	Late Mississippi	Late Mississippi-Protohistoric	Late Mississippi-Protohistori c	Late Mississippi-Protohistoric	Proto-historic	Proto-historic	Proto-historic	Proto-historic
Applique	10%	9%	2%	6%	18%	25%		37%	39%	9%	20%
Notched	5%	12%	12%	15%	9%	26%	6%	32%	16%	9%	11%
Noded	2%	1%	2%	1.5%	.8%	6%				1%	4%
Beveled interior	33%	11%	23%	45%	31%	28%	7%	80%	80%	34%	38%
Total	529	90	183	203	354	103	67	115	473	145	273
Reference		Lumb and McNutt 1988	O'Brien and Williams 1994	Mainfort and Moore 1998	Childs and McNutt 2009	Mainfort 2010	Klinger 1977	O'Brien and Williams 1994	O'Brien and Williams 1994	O'Brien and Williams 1994	O'Brien and Williams 1994

W*hole Vessels* Only the Upper Nodena site and Campbell have published counts of a large number of whole vessels from the sites (Table 8-7). Most of the pottery from Upper Nodena was semi-professionally excavated, but the data about vessels from Campbell and Manley-Usrey has been predominantly obtained through contacts with collectors and looters who have dug on the sites. The provenience of any data gathered in this fashion is somewhat questionable, but it does give at least an idea of the types of vessels coming from each site. Table 8-7 shows the paste and decorative styles of the vessels from each site. All three sites show a variety of decorative styles, although the majority of the vessels are plain. Some of the vessels logged as Bell or Mississippi plain are bowls with notched appliqué strips around the exterior just below the lip, but otherwise are undecorated and have no named style. The Upper Nodena and Campbell sites have the largest number of vessels in the Bell Plain category while the majority of the Manley-Usrey vessels are Mississippi Plain. This may be a sampling bias due to the much smaller number of vessels examined from the Manley-Usrey site, or it may indicate real differences in paste type between the sites. The sherd data shows a similar opposite Bell Plain to Mississippi Plain pattern between the sites, so it may be a real phenomenon that the people of Manley-Usrey were using more Mississippi Plain based pottery than the people of Upper Nodena and Campbell.

Table 8-7: Counts of pastes and decorative styles of whole vessels from Manley-Usrey, Upper Nodena, and Campbell.

	Manley-Usrey	Upper Nodena	Campbell
Bell Plain	11	148	93
Bell and Mississippi Plain		2	
Barton incised			1
Kent Incised and Bell Plain		1	1
Kent Incised and Mississippi Plain		3	
Kent Incised, Parkin Punctated, and Mississippi Plain		1	
Kent Incised, Ranch Incised, and Mississippi Plain		1	
Leland Incised and Bell Plain		1	
Mississippi Plain	30	24	40
Nodena Red and White and Bell Plain	1	3	2
Nodena Red and White and Mississippi Plain		1	
Carson Red on Buff and Mississippi Plain	2		2
Carson Red on Buff and Bell Plain	1		
Old Town Red and Bell Plain		2	15
Parkin Punctated and Bell Plain	1	2	
Parkin Punctated and Mississippi Plain		3	
Rhodes Incised and Bell Plain		2	
Rhodes Incised or Ranch Incised and Bell Plain		1	
Rhodes Incised, zoned punctated, and Mississippi Plain		1	
zoned punctated and Mississippi Plain	1	1	
Walls Engraved and Bell Plain			3
Walls Engraved and Mississippi Plain	1		
Campbell punctated			17
Campbell appliqué			11
Campbell incised			2
Hollywood white slipped			1
Total	**48**	**197**	**188**
Reference		Tavaszi 2004	O'Brien and Williams 1994

All three sites show similarities in the vessel forms in their whole vessel assemblages (Table 8-8). All of the assemblages are predominantly bottles, with bowls being a close second. There are many fewer jars at all three sites, suggesting that jars were less prevalent in the burial material overall. One burial that was partially uncovered at the Manley-Usrey site contained a bottle sitting inside of a bowl. If this was common, it could explain the similar counts of bowls and bottles in the assemblages.

Table 8-8: Vessel Forms of whole vessels from CMV sites

	Manley-Usrey	Upper Nodena	Campbell
Bottle	20	99	133
Bowl	18	73	98
Jar	7	49	19
Total	**45**	**221**	**250**

The Manley-Usrey, Upper Nodena, and Chickasawba sites have reported information about the effigy vessel shapes from the site. These show a variety of the naturalistic species discussed by Payne (2005) as part of the Nodena art style, as well as supernatural cat serpent vessels and head pots. The cat serpents are found on all three sites, whereas head pots are only found on the later-dating sites of Upper Nodena and Chickasawba. This may indicate that head pots originate after the earthquake, but with only three sites and so few chronometrically dated sites in general this is impossible to determine with certainty.

Table 8-9: Types of effigy pottery from sites in the CMV. x indicates presence reported, but not fully counted.

	Manley-Usrey	Upper Nodena	Chickasawba
Bat		1	3
Bird	1	4	1
Cat Monster	1	2	1
Fish	2	3	3
Gourd		1	
Human	1	1	3
Shell		1	
corn god	1		
Possum	1		1
Rabbit		2	
Head pots		x	3
Unknown		14	
References		Tavaszi 2004	Childs et al 2016; Rathgaber 2014

Only the Upper Nodena (Tavaszi 2004) and Manley-Usrey sites have counts of rim attributes from whole vessels (Table 8-10). These show that appliqué bands around the exterior rim were common to both sites, although much more common at Manley-Usrey. Interior beveling was present in around 50% of the whole vessels from each site. Exterior notching was also similar in both assemblages. It is interesting to note that the relative percentages of rim attributes of whole vessels vary quite a bit from those of the rim sherds in the excavated assemblages from the same sites. This demonstrates the importance of the context of an assemblage. Which is more representative of the site and what was available and preferred by the people living there?

Table 8-10: Rim attributes from whole vessels from Upper Nodena and Manley-Usrey.

	Interior bevel	exterior notching	appliquéd band	**Total**
Upper Nodena	92	21	19	**221**
Manley-Usrey	19	4	12	**35**

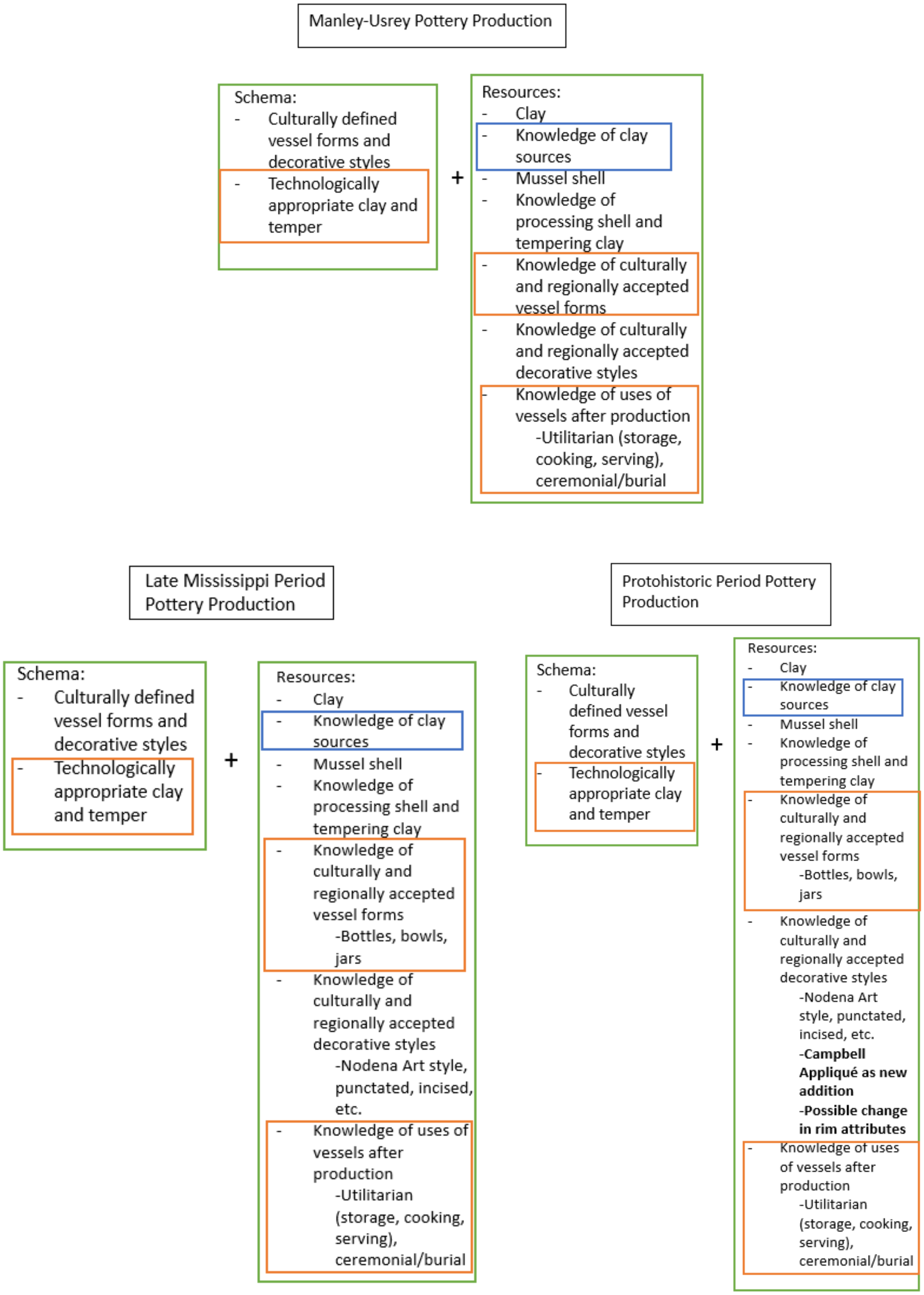

Figure 8-9: Resources and schema of pottery production at the Manley-Usrey site in comparison to Late Mississippi and Protohistoric sites. Blue boxes indicate resources and schemas that are part of the local, small, and fast feedback loops, Green boxes indicate regional, midsize loops, Orange boxes indicate larger, regional loops. Bold type indicates changes in resources from the Late Mississippi to Protohistoric period.

Lithics

The lithic assemblages from site to site and through time do not vary greatly. A mix of Nodena and Madison points make up most of the point types in each available assemblage. Most of the lithics are small local cherts that could be obtained from gravel bars of the Mississippi River, St. Francis River, or Pemiscot Bayou. Some exotic materials are present, indicating participation in wider trade networks, but these pieces do not make up much of each individual assemblage. Each site has a wide variety of lithic tools that suggest the people at the site were able to perform all necessary daily tasks of daily life from hunting, to woodworking, to butchering and skinning animals.

One lithic category that stands out is thumbnail scrapers. There is one from the excavation at Manley-Usrey, four from Nodena, none noted from Chickasawba, but 115 from a surface collection at Campbell (Table 8-11). That is 11.7% of the lithic assemblage. The next largest percentage of thumbnail scrapers is 8% from the Cagle Lake site, another Protohistoric site. Interestingly, Denton Mounds does not have any thumbnail scrapes listed in its lithic assemblage despite having other markers of being a protohistoric site, such as Campbell Appliqué pottery and bone dice (O'Brien and Williams 1994). The only other site with no thumbnail scrapers is Chickasawba, although collectors have reported picking up these artifacts from the surface (Marion Haynes, personal communication 2019). These two sites have the smallest artifact assemblages, so the lack of these artifacts may be an example of sample size bias as they only make up 12% of the assemblage in even the largest collection.

Cagle Lake stands out in its relative percentages of Nodena to Madison points. All of the sites in the comparative sample (Table 8-11) have larger percentages of Nodena points than Madison points. At Cagle Lake this is not only opposite, but Madison points far outweigh

Nodena points at 47% to 12% of the assemblage, respectively. This could be due to sampling bias as the assemblage is composed of a surface collection and shovel testing, but the other assemblages are mixes of contexts as well and none are a completely systematic sampling for all artifact types present on the site. It is possible that the number of Madison points is inflated due to unclear descriptions of the points: “14 triangular projectile points, and 24 triangular points with slightly convex sides” (O’Brien and Williams 1994: 276) were all classified in this table as Madison points. Even if only 14 of the points were classified as Madison, there would still be more Madison than Nodena points at the Cagle Lake site. The site appears to be contemporary with Campbell and Denton Mounds in southeast Missouri, so the explanation for this pattern is unclear.

The lithic assemblage from Manley-Usrey is overall similar to the other sites throughout time in the region. The major difference in the assemblage is the number of production flakes (n=12,616). This is likely due to the nature of the excavation at Manley-Usrey, which was a much larger scale than at the other sites. Eleven 2 m x 2 m units were opened at Manley-Usrey which is similar in scale only to the excavations at Parkin and Nodena. It is likely that the numbers of flakes and debitage from those excavations were not published in the reports despite being present. It is implied in the reports that lithics were being produced locally at both sites using cherts from gravel bars near each site, which would produce large numbers of flakes in lithic production areas. The other assemblages were mostly focused on surface collections or collections made after plowing, so small lithic flakes were likely overlooked in favor of larger, more identifiable artifacts.

Table 8-11: Lithic types identified at comparative Late Mississippi and Protohistoric sites in the CMV. Total counts and percentages of total identified types (excluding flakes and debitage) are listed as count/percentage.

Type	Manley-Usrey	Chucalissa	Chickasawba	Nodena	Parkin	Denton Mounds	Campbell	Cagle Lake
	Late Mississippi	Late Mississippi	Late Mississippi-Protohistoric	Late Mississippi-Proto-historic	Late Mississippi-Proto-historic	Proto-historic	Proto-historic	Proto-historic
Nodena/Nodena Preform	24%	12%	12%	7%	5%	46%	39%	12%
Madison/Madison Preform	14%	40%	9%	5%		41%	36%	47%
Arrow	15%	10%	34%	18%				
Drill	6%	7%		3%			2%	8%
Preform	32%		27%	10%	1%			
Thumbnail scraper	.5%			2%	1%		12%	8%
Scraper	4%			5%	33%			
Biface	4%			20%	15%			2%
core/hammerston	.5%		9%	28%	28%		7%	2%
Adze/chisel	.5%			3%		8%	2%	13%
celt		14%			2%	5%	.2%	3%
Abrader					5%		.2%	
Discoidal	.5%	14%					1%	
Groundstone		2%	6%		2%		.1%	
Basalt Tool			1%		1%			
Polishing Stone			1%		5%			
Hoe				.4%	1%			
Flakes	12616		1215					106
Debitage	106				54			10
Unid			45				23	
Total Identified tools	185		67	240	85	37	962	80
Total	12907	99	1327	240	133	37	985	196
		Combined excavation areas, only notable tools recorded	1998 and 2011 Excavations	1973 Excavation	1966 Fieldwork	Total Excavations	Surface Collection	Shovel testing and surface collection
		Lumb and McNutt 1988	Childs et al. 2016	Mainfort 2010	Klinger 1977	O'Brien and Williams 1994	Chapman and Anderson 1955; O'Brien and Williams 1994	Buchner 2002; Williams 1968

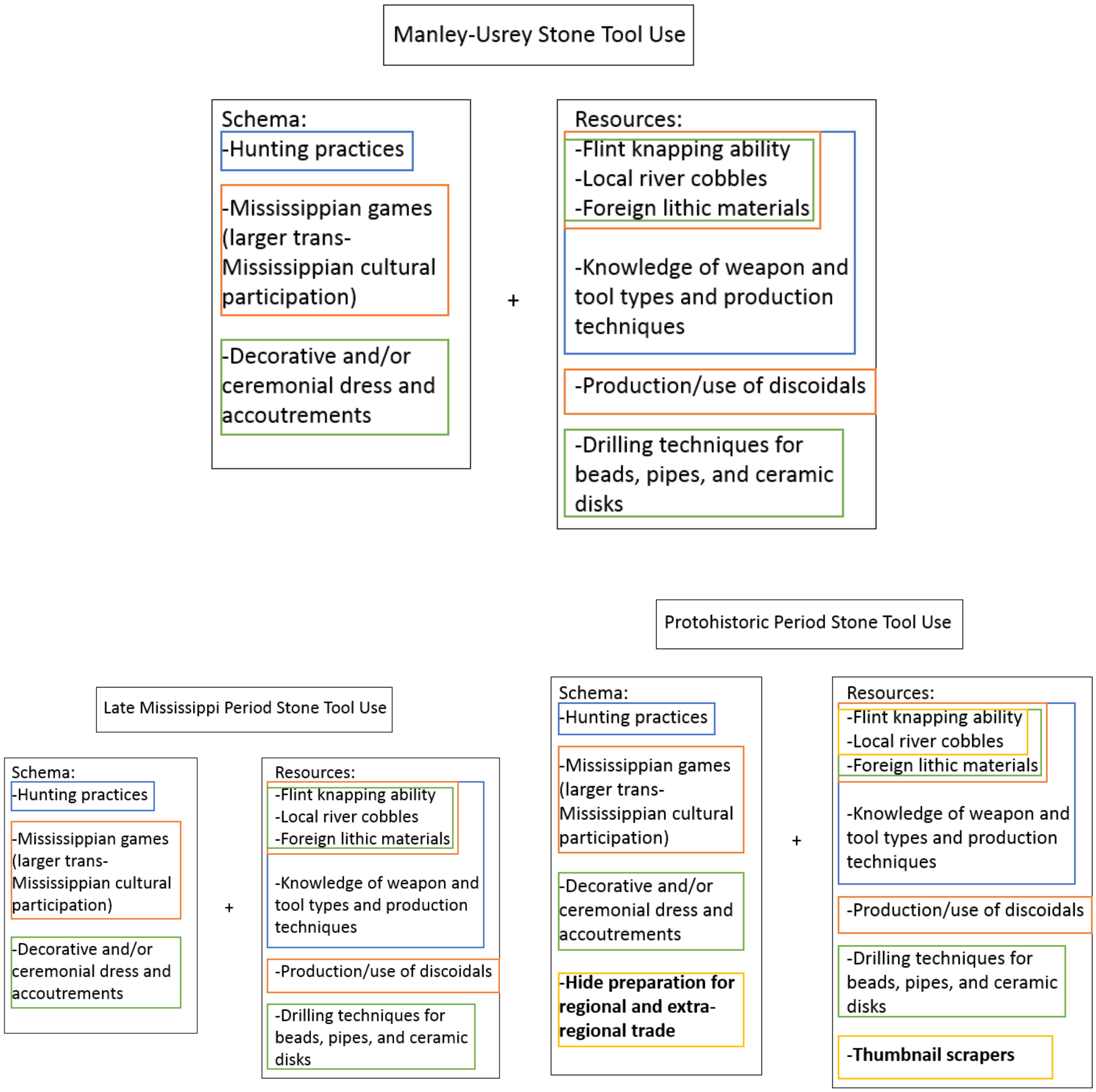

Figure 8-10: Resources and schema of stone tool use at the Manley-Usrey site in comparison to Late Mississippi and Protohistoric sites. Blue boxes indicate resources and schemas that are part of the local, small, and fast feedback loops, Green boxes indicate regional, midsize loops, Orange boxes indicate larger, regional loops, Yellow boxes indicate larger, regional loops. Bold type indicates changes in resources from the Late Mississippi to Protohistoric period.

Faunal

Faunal comparisons cannot be carried out except in the broadest of terms. This is because many of the latest Late Mississippi period and Protohistoric sites are mostly known from their looted materials rather than professional excavations. Even professionals often do not have the resources to complete a faunal analysis on the animal remains recovered and these data do not get reported. Despite that, some information about animal presence can be gleaned from some reports. Bear is noted as being present on Manley-Usrey, Chickasawba, Nodena, and Campbell but it is in very small amounts. Bison is present on Manley-Usrey, but not the other three. Deer makes up the majority of the assemblage on all of the sites and fish, turtles, birds, and small animals round out the rest of the assemblage (Table 8-12).

It should also be noted that when detailed studies have been done on earlier sites or sites in different regions, it appears that Mississippian people through time adapted to take full advantage of their local environments, which is undoubtedly a large component of the overall resiliency of the Mississippian communities in this region.. At Upper Nodena, Compton (2010) noted that deer was hunted seasonally in the fall through early spring when food reserves would be getting low and the extra protein could be used to stretch the stored food goods until crops began to grow and be harvestable again. He also suggested that the migratory waterfowl were utilized in a similar way when they made their way through the region on their migratory paths in the spring when food might be scarce or getting tight.

Table 8-12: Faunal data from four sites in the CMV. x indicates presence with no count given.

Type	Manley-Usrey	Upper Nodena	Chickasawba	Parkin
	Late Mississippi	Late Mississippi-Protohistoric	Late Mississippi-Protohistoric	
Bear	4	17	x	
Deer	597	752	x	x
Elk	33			
Raccoon	64	93		x
Squirrel	5	39		x
Lg. Cat	3	4		
Canine	5	22	x	x
Rat/Mouse	8	174	x	
Bison	1			
Small Mammal	358			x
Med. Mammal	143	25		
Large Mammal	452			
Mammal	209	2631		
Beaver	2	15		x
Rabbit	27	451		x
Rodent	22	35		
Turtle	159	729	x	x
Snake	1	38		
Lg. Bird	11	109		
Bird	74	1302	x	x
Drum	3	15		
Gar	11	187		x
Fish	329	1334	x	x
Unid	7410	594		
Amphibians		4		
Provenience of Assemblage		1973 Excavations	2011 Excavation	1966 Excavations
Reference		Mainfort 2010	Childs et al. 2016	Klinger 1977

Conclusions

Although the results of each individual scale of analysis in this chapter lead to the conclusion that there were no obvious changes in material culture from the Late Mississippi period (before the earthquakes struck and sand blows occurred) to the Protohistoric period (after the earthquakes and sand blows had occurred) this does not mean that we have learned nothing from this work. The idea of eventful archaeology is to find an event (or a disaster in this case) by using the material culture (the resources) as a proxy for the societal structure (schema). Society changing events can be seen archaeologically through changes in material culture from before to after the event (Beck et al. 2007; Sewell 2005). In the NMSZ and the CMV we know that a series of **M**7-8 earthquakes struck the region in the late AD 1400's to early AD 1500's causing massive ground shaking as well as sand blows that often occur along natural levees and river banks where Mississippian sites are also often located. Hazard and Disaster research tell us that any hazard, from nature or otherwise, has the potential to become a disaster, but only as a human response. No disaster is "natural" (White 1974:3) and only a culture impacting human response can elevate a hazard to a disaster (Cooper and Sheets 2012). By combining these two ideas I hoped to be able to understand if the earthquakes of the NMSZ during the Late Mississippi period were in fact a disaster to the people living in the CMV and particularly at the Manley-Usrey site.

Work at the Manley-Usrey site allowed us to date the site occupation and the earthquake that destroyed it to the late AD 1400's to early AD 1500's and declare it a "total loss" as the site was completely abandoned after the earthquakes and never reoccupied by Mississippian people. By bringing in ideas of panarchy and resilience loops of various scales, I was then able to look at the reactions of people in the region at a variety of scales (Gunderson and Hollings 2002). The comparisons of sites across the region that were well-dated (chronometrically and through thorough analysis) were able to demonstrate that it was only on the smallest scale of a 3rd order, individual site that the NMSZ earthquakes rose to the level of a disaster. Manley-Usrey was completely abandoned, but other regional sites continued to thrive. Even Upper Nodena which was affected by a sand blow on the eastern edge of the site, had people continue living not only at the site, but on top of the sand blow itself to some extent as there is a midden layer containing artifacts both below and above the sand in this area (Tuttle et al. 2000). Not only did some sites continue to thrive from before until well after the earthquakes, but new sites were placed on similar landforms throughout the region even after people knew that sand blows formed in those locations.

It seems as though most of the resources in the region were unharmed and unchanged, which allowed for overall schemas to stay consistent as well (Sewell 2005). As demonstrated in figures 8-6, 8-7, 8-8, 8-9, and 8-10 no schemas were lost from the Late Mississippi period to the Protohistoric period although some resources supporting some of those schemas were affected. Most of the resources affected were only seen on the very small scale of loss of resources in the immediate vicinity of the Manley-Usrey site. These resources are identified in figure 7-30, and were local, physical resources such as clay sources, hunting implements, and other tools lost inside of houses and the destruction of houses themselves. On a slightly larger scale, the prime farmland on which the site was located and by which it was surrounded was covered by sterile sand. This caused the schema of site location to break down because the main resource that upheld the schema was destroyed. Knowledge of the schemas was not lost however, as the people living at the site survived to move to other local sites and in the larger region, the resources and schema show little change. The consistency in schemas and resources demonstrated across the region allowed for the panarchy to compensate for the disaster at the smallest scale and not let the effects of the destruction of a small 3rd order site and the displacement of those people to “revolt” up the panarchy and make large changes to the culture of the region or to cause complete regional social breakdown and abandonment (Gunderson and Hollings 2002).

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Discussion

In chapter 5 I discussed how I would go about looking for signs of vulnerability and resilience in the archaeological record of the CMV. I discussed using multiple scales of analysis and comparison and how those analyses aligned with Redman's (2009) proposed adaptive strategies and how and where various responses would fit into Gunderson and Hollings (2002) resiliency and panarchy feedback cycles. I also discussed using these comparisons to look for evidence that the earthquakes were considered a disaster or "event" by the Mississippian people of the CMV and if there were any archaeologically visible changes in the schema under which their society operated or the resources available. The comparisons of site features in chapter 8 was laid out based on those scales and they were discussed briefly in each section. This chapter will further discuss the features observed at the differing scales and what they tell us about the vulnerability and resilience of the Mississippian people of the Late Mississippi period to the large-scale earthquake event in the region. I will then discuss the lines of future research needed to strengthen the conclusions of this study and what will be gained from future work in those areas to better understand the strength of Mississippian resiliency and the overwhelming factors that must have been needed to finally break down the panarchy as a whole and cause the near abandonment of the area seen in the mid AD1700's.

Large Scale

During the Late Mississippi period and into the Protohistoric period when the large NMSZ earthquakes took place, the climate was holding relatively steady in the region, with only short periods of drought and no extended periods of rain (Figure 2-6). In the ~100-year time period in question the Mississippi River, Pemiscot Bayou, and St. Francis River were all relatively stable within their courses near the sites in this study (Although we cannot be sure what they did in the very short term relative to the large earthquakes. During the February 1812 earthquake, the Mississippi River was dammed, and it flooded a small stream to the east to create Reelfoot Lake. The river eventually broke through the dam downstream and continuing to flow normally, but the lake remained. It was also reported that islands within the Mississippi River were destroyed and created during the earthquakes (Valencius 2011)). Despite any possible very-short-term daily or monthly changes, the climate and geography of the CMV hold steady in the time around the earthquake strikes. This puts the largest resiliency and panarchy loop in the K stage, holding steady and proceeding as expected. This means that despite any changes in smaller scale resiliency loops, people could rely upon the largest loops of climate, geography, and regional availability of resources, such as wild food in the form of both animals and plants, to hold steady.

Intermediate Scale

The climate data show that the rainfall was on average normal in the years around the large earthquakes of the Late Mississippi period. There was an extended period of lower rainfall in the AD 1480's, but the driest years were interspersed with higher rainfall years, which did not allow for the driest drought conditions to be reached during this interval (Figures 2-6, 2-8 and 2-9). In addition, years of much higher rainfall both preceded and followed the 10-15 years of lower rainfall conditions. These short-term weather patterns could have made life difficult in the area on an intermediate time-scale by reducing crop production in the driest years, but it seems unlikely that people who had been living in the region for at least 100 years and had lived through other, longer droughts would have been unable to cope with these conditions. Part of the larger schema of Mississippian culture was that they kept stores of corn and other foods for these kinds of short-term problems. People had both surplus crops saved from previous harvests and the knowledge of how to keep the surplus of the crop harvest safe in storage. Due to this combination of lack of large change in the environmental conditions, the resources of the region and crop productivity, and the Mississippian schema of storage of surplus harvest, they were unlikely to be vulnerable to this short-term change in weather patterns, holding their intermediate resiliency loop in the K phase during the late AD1400's to early AD1500's.

The settlement pattern analysis of the chronometrically dated sites in the CMV show that there is very little change in the placement of sites on the landscape from the Late Mississippi period to the Protohistoric period. This sameness of site placement does not follow Redman's (2012: 240) hypothesized first adaptive strategy of locational flexibility and mobility as a way to protect against vulnerability, but people in the region do not appear vulnerable to earthquakes at this scale. Unfortunately, the number of well-dated sites in the region is small, but of the sites that are dated and examined, some continue occupation through both the Late Mississippi and Protohistoric periods. Most sites, whether continuing through time, or newly created in the years after the earthquake, are located on levee remnants. These levees are made up of fertile soils that are moderately- to well- drained and are excellent for farming. They are also above the usual flood stage of the local river or bayou, protecting the town from flooding, which would be a seasonal and yearly hazard in and of itself. The sites in the northern part of the region were located along an active channel of the Pemiscot Bayou when they were occupied, and sites farther south were also located along active river channels (of the Mississippi River or St. Francis River). This would have given people easy access to fish and other aquatic resources (which are seen in the limited faunal data available) as well as a means of travel between sites in the immediate area and the larger region.

In addition to the use of aquatic resources, the land around villages was a combination of wooded and swampy areas (Compton 2010). This provides opportunity to hunt a large number of wild species such as deer and other woodland animals as well as swamp dwelling animals such as swamp rabbits, turtles, and birds. Commensal species are also identified in faunal assemblages in the region, showing that there were cleared areas of land and that food and garbage was being kept around towns as that is what attracts these species to an area. This ability and preference to utilize the whole variety of animal species in the region made the people there less vulnerable to possible habitat changes created by earthquake affects as well as the changes created by the people themselves. The trees were cleared from areas around towns to make room for the town itself as well as the fields. This would have provided wood for building structures and fires and more land was likely cleared through time as more fields were needed to feed growing populations. This created larger areas of open land for animals, such as turkeys and migrating water fowl and eventually larger mammals such as bison. Mississippian people's knowledge and use of the full range of local resources reduced their vulnerability to earthquake hazards significantly. With a wide variety of available food resources and widespread knowledge of how to acquire them, a small change in the very immediate local food resources would not cause a disaster or even a vulnerability. People might have to go slightly farther afield for certain resources if a wetland area was drained or fruit trees were killed by sand, but they had enough variety in their resource knowledge and use that these small changes did not lead to larger schema changes.

Due to the earthquakes in the late 1400's or early 1500's and the susceptibility of these natural levee locations to sand blows, some fields and foraging areas were inevitably destroyed or damaged and some forested or swampy areas became more or less wet due to ground movement, sand blows, and subsidence. Despite this, the continuation of the practice of Mississippian people locating their towns and villages on natural levees after the earthquakes suggests that this practice was not viewed as dangerous or potentially hazardous and the earthquake itself was not considered a disaster or event that warranted a response on this scale. In spite of the damage done by sand blows during the Late Mississippi period earthquake, sites and farm fields continued to be located on and around these landforms. Again, the variety of resources available and utilized by Mississippian people appears to have made them relatively invulnerable to earthquakes at this scale and the need for flooding interventions may have been more important than the need for earthquake precautions. Some immediately local resources may have been impacted, but people were likely able to overcome this by using stored harvested crops and possibly foraging farther afield in the short term and opening new fields or possibly restoring already fallowed fields or planting more in unaffected fields over the slightly longer term. Although establishing or re-establishing fields may have been inconvenient, it would not have been difficult, as most of the soils of the CMV are very fertile and good for agriculture. This would allow for the cultural schema to go on mostly unaffected after a few years.

Social complexification is hypothesized as another way for a society to combat vulnerability and become more resilient to disasters (Redman's (2012:240) forth adaptive strategy), but it is impossible to examine that directly with the data available because the sites in the study are too varied in size and components to come to any conclusions. A wider variety of well-dated and thoroughly researched sites of various sizes, from small hamlets, to single mound sites, to multi-mounds sites is needed to even begin to assess this issue. The most well-known Protohistoric site in the region, Campbell, was a large town with a single mound, while the nearly twice as large multi-mound Chickasawba site has had so little professional excavation that we do not know the dimensions or building techniques of even one structure at the site. The region has been hypothesized as a series of complex chiefdoms (the Nodena and Parkin phases being the two major ones in the region), and if this is the case, that overarching political structure may have made the people of the region less vulnerable to earthquake hazards by nature of being part of a larger social order in which not all parts would be equally affected by earthquake affects and the damage could be mitigated by population movement and resource redistribution. This hypothesis is not supported by the evidence in this study and the idea of the Nodena and Parkin phases even being complex chiefdoms is disputed.

Although we cannot look at social complexification as a strategy to overcome vulnerability, we can try to see if there is any evidence that any large political, religious, or social structure is in place that might help to reduce the vulnerability and increase the resilience of the local population. In this respect, I suggest that Dye (2018) and Cherry (2009) might provide evidence of a local spin on a belief system in their work. Cat serpent vessels are identified from many of the sites discussed in the previous chapter, dated both before and after the earthquake. Even some sites that do not have a full list of whole pottery note that cat serpent vessels have been recovered (*i.e.* Berry and Brooks) and cat serpent vessels are reported from across the region by a collector (Bogg and Bogg 2015). Headpots are also a regional phenomenon in the Late Mississippi and Protohistoric periods according to Cherry (2009) and these vessels are reported from many sites in this study (*i.e.* Parkin, Upper Nodena, Campbell, Berry, Brooks). These two pottery styles already existed before the earthquake of the Late Mississippi period struck, so they were not developed as a response, but they may indicate a strong social, religious, or cultural connection between the people living on sites throughout the CMV which would have been beneficial to helping them cope with the aftermath of the sand blows in areas and towns that were heavily affected. Social connections are pointed out by sociologists and hazard and disaster researchers as an essential deterrent to a hazardous situation becoming a full blow disaster to the people directly affected, and this is alluded to in Redman's (2012: 240) idea of mobility as an adaptive strategy to combat vulnerability.

Overall, there are very few changes seen in the intermediate scale data in this region at this time. People were subject to short periods of drought during the late 1400's and early 1500's, towns and villages either continued in place or were newly built on sand blow prone natural levee areas throughout the Late Mississippi and Protohistoric periods, and despite damage to some fields and foraging areas, people did not leave the region based on the number and size of sites attributed to this time period (Figure 8-1). This indicates that at an intermediate scale Mississippian schemas of culturally appropriate site locations and ideas about how to build those sites and how the people living at them understood themselves to fit into the larger regional hierarchy or chiefdom was able to account for and deal with the large-scale earthquakes of the Late Mississippi period and the damage that they caused to some areas and sites. This was likely helped by kin relationships of the people at various local sites as well as shared belief systems (as seen in the cat serpent bowls and headpots), and the overarching power structure of the chiefdom to which the people at the sites ceded power, but also expected some level of reciprocity, especially in the case of a disaster in their hamlet. The evidence shows that there was no breakdown of regional structure that caused abandonment or massive reorganization of settlement locations on the landscape in the CMV. By all archaeological accounts, very few changes seem to have taken place, indicating that life went on as usual and that the earthquakes did not rise to the level of event or disaster. The intermediate resilience loop in the panarchy stayed in the r to K phase throughout the Late Mississippi period to the Protohistoric period.

Small Scale

As discussed in chapter 5, the smallest scale of the resiliency and panarchy feedback loops is the most local. The categories examined here equate to Redman's (2012:240) adaptive strategies of ecosystem management and built environment and other technologies (strategies 2 and 3). These ideas require examination of single local sites for changes in material culture in the form of artifact assemblages, site layouts, and building techniques before and after the date of the earthquake. Any changes seen in one area can then be compared to a wider geographic sample to see if the changes are localized, or something that was taking place across a larger feedback loop within the panarchy, indicating that an event had occurred, altering the schema and resources being utilized.

At the most local scale to this project, the Manley-Usrey site is abandoned after at least one and possibly three consecutive sand blows covered the site in the Late Mississippi period. The sand covered the site when the earthquake struck and there is no evidence of any occupation on top of the sand. This means that the people who were living on the site immediately before the earthquake struck abandoned the site in the aftermath. At a 3rd order site, this earthquake event would be considered a disaster by the standards set by "eventful" archaeology (Beck et al. 2007) and the breakdown of the resilience loop (the Ω phase) (Gunderson and Hollings 2002). People were unable to cope with the effects of the earthquake and roll them into their normal course of life in a short time-frame so they had to leave their village for another location. The access to resources of houses, crops, and local daily necessities was cut off at the village level and the schema could not account for it, causing the local structure to fail (Sewell 2005). The site itself failed, but the people there likely did not leave the immediate area. They were absorbed by the intermediate panarchy loop by moving to another nearby site such as Chickasawba which was not directly affected by a sand blow and was able to offer the power of the downflowing "remember" to stabilize the displaced people. The larger intermediate loop was unshaken by the earthquake, as demonstrated above.

Other sites that are not occupied past the Late Mississippi period are the Graves Lake and Chucalissa sites in Tennessee, the McCoy and Dorrah sites in Missouri, and the Beck Plantation and Hazel sites in Arkansas. Of these sites, none except Manley-Usrey show evidence of sand blows directly over the site. Sand blows do, however, occur throughout the region, mostly concentrated on the western side of the Mississippi river. The eastern side of the river in Tennessee is generally at a higher elevation and not formed by the meandering of the river. This is true of both Graves Lake and Chucalissa, which are located on elevated surfaces above and adjacent to the Mississippi river, and therefore not susceptible to sand blows, although they still would have experienced the massive earth shaking that accompanied a local **M**7-9 earthquake. It is unclear why these sites may have been abandoned during the Late Mississippi period, but it is impossible to say with certainty whether it had anything to do with the earthquakes.

Pulling back to a slightly larger geographic scale, the much larger, multi-mound Chickasawba site is only a few miles to the southwest of the Manley-Usrey site and its occupation spans from the Late Mississippi period to the Protohistoric period, through the date of the earthquake. At this site, the earthquake appears not to have been a disaster. Occupation continued through the date of the earthquake and late Late Misssissippi and Protohistoric markers such as endscrapers are reportedly found on the site. Other sites in the larger region also span these time periods. The Upper Nodena site has evidence of a sand blow on the southeast edge of the site with occupation layers both below and on top of the sand layer. This demonstrates that the earthquake was not so disastrous as to cause site abandonment as it did at Manley-Usrey. The Nora Tucker site in Missouri and Parkin site in Cross County Arkansas were both also occupied through the Late Mississippi to Protohistoric periods. Parkin is on the southern edge of where heavy sand blow expression is noted in the paleoseismic research (Tuttle 2011), but like the sites in Tennessee, strong ground shaking would have been experienced at the site. The Nora Tucker site in Missouri would also have experienced strong ground shaking during earthquakes but does not have evidence of a sand blow on the site itself. Still, these sites and the region at large were not abandoned, indicating that the ground shaking itself was not considered a disaster or event to which a change in resources or schema was needed.

In addition to times of site occupation, it was hypothesized that examining building techniques pre- and post- earthquake might show material changes as it did at Machu Picchu in Peru. As discussed in chapter 8, this does not appear to be the case. House structures at sites from the Late Mississippi to the Protohistoric show a combination of single set posts and wall trenches, with some sites even having both types. Most houses are also square and around 16 m^2 to 25 m^2. There are a few that are larger, and a few that are smaller, but no pattern through time or geographical location is apparent.

A number of new sites appear in the Protohistoric period in southeastern Missouri. These sites are not well chronometrically dated, so it is possible that they already existed in the Late Mississippi period, but their artifact assemblages include very high numbers of Protohistoric markers such as endscrapers, Campbell Appliqué pottery, and European trade goods such as metal, glass beads, and bells. This implies that even if they existed earlier, the Protohistoric was their major time of occupation. Because they most likely appear after the earthquake, it is possible that they are formed by people abandoning other sites that were directly impacted by sand blows. It is also possible that they were formed for other reasons. They all include Campbell Appliqué pottery, which is a new decorative type not identified before the Protohistoric.

Other than a complete lack of Campbell Appliqué pottery on any site that is not in Missouri (and 3 sherds from the Graves Lake site in TN), the pottery sherd assemblages and whole pottery assemblages of the sites examined throughout the region are largely similar. Some have higher percentages of Neeley's Ferry/Mississippi Plain than Bell Plain and some have the opposite, with more Bell Plain than Neeley's Ferry/Mississippi Plain, but these differences do not appear to correlate with time or geographical location. All sites have Parkin Punctated and red slipped pottery. Two of the Missouri sites, Denton Mounds and Campbell, as well as Chickasawba in Arkansas, lack Nodena Red and White pottery while the remaining sites have <.5% of this decorative style in their sherd assemblages. All of the assemblages also have small amounts of many of the decorative styles prominent throughout the Late Mississippi and Protohistoric periods. Some also contain sand tempered pottery indicating earlier Woodland occupations of the sites, which is typical on sites in the CMV.

Because there are no obvious differences in pottery decorative assemblages through time (with the exception of the appearance of Campbell Appliqué, which is also regional), the only comparison to be made is simply that. Per the hypothesis, no changes in artifact assemblages across the region would indicate that the earthquake was not viewed as a disaster at the regional level as there was no societal response to the event. Individual sites may have failed and been abandoned, but within the larger panarchy structure, the people who lived in those villages were absorbed into the larger feedback loops of the region and the abandonment of those villages was not enough to break down the intermediate and large feedback loops.

Pottery rim attributes were suggested by Mainfort (2003) as a way to further break down pottery analysis and to get a more nuanced look at differences in pottery assemblages that may be disguised by simply using the type and variety system based on paste and decorative style that was laid out in the 1950's by Philips, Ford, and Griffin (1951). In his analysis, Mainfort (2003) demonstrates that the Late Mississippi period phases laid out for the region by Philips (1970) based on pottery types and varieties do not hold up when examined through rim attributes. Examining rim attributes from dated Late Mississippi and Protohistoric sites in the CMV shows much of the same variety seen across time and geography as the examination of the entire sherd assemblage. The Manley-Usrey site does have a close resemblance in rim assemblages to that of Chickasawba, Denton Mounds and Cagle Lake, especially when looking at interior beveling. This could indicate a connection between the people living at these sites, but the other Protohistoric and northern assemblages of Campbell and Berry are quite different. Sites around the region also have varying percentages of each attribute which don't coincide with geographic location or time period.

This line of analysis also supports the idea that the earthquake was not viewed as a regional disaster by the people living there. There were no discernable changes in the pottery rim attributes that correlate with pre- and post-earthquake dates, although there are differences in the assemblages of various sites with this level of comparative data. This data set does seem the most likely to be able to produce comparative data if future excavations can be done on discrete and securely dated proveniences at various sites. More comparable data may be produced if they are from very similar proveniences such as individual houses or structures rather than surface collections or aggregated assemblages from across sites as is the data in this report.

Overall, on the small-scale, it seems that the people of the CMV were vulnerable to earthquakes but their interconnected social networks and settlement pattern of spreading sites out along natural levees in the region were also resilient. One site (Manley-Usrey) was definitely abandoned subsequent to the Late Mississippi period earthquakes, but other sites that show evidence of sand blows were not abandoned and some sites that do not show evidence of earthquake effects were. Other sites in the region continued to be occupied from the Late Mississippi period through the Protohistoric period, and new sites were established or became more prominent during the Protohistoric, so the region was obviously not considered a place that was too dangerous to live. Many resources of the area remained the same and the general schema did not have to be changed, meaning that the larger panarchy was able to contain the small changes brought about by abandonment of some sites and allow life to continue mostly unchanged for most people in the region. The Mississippians in the CMV during the Late Mississippi period were a truly resilient society (Figure 9-1).

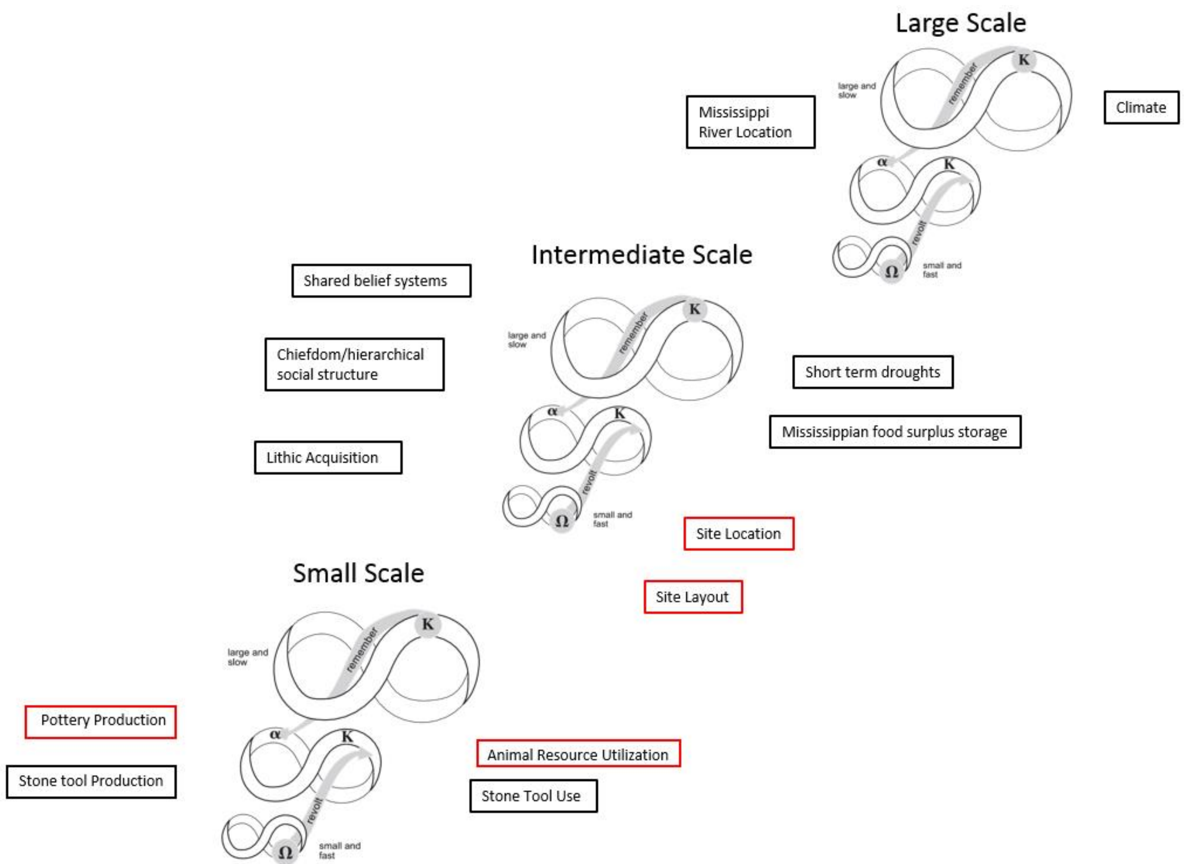

Figure 9-1: Categories of schemas and resources at various levels of the panarchy in the CMV as discussed in the text. Categories in black boxes stayed consistent from the Late Mississippi period to the Protohistoric period with few changes to the resources that support the schema. Categories in red boxes broke down at the Manley-Usrey site (specifics identified in Figure 7-30). Despite these breakdowns, society at large was largely unaffected as discussed in Chapter 8. The schema and resources in the feedback loops of the intermediate scale were largely unaffected, and were able to contain the breakdowns of a single site at the small scale.

Future Research

This current work is based on the data available from Late Mississippi and Protohistoric sites in the region that have been chronometrically dated or thoroughly studied and placed in time. Chronometrically dated sites were chosen because in order to make a determination of an event (or disaster) archaeologically, Beck and colleagues (2007) point out the need for a tight time constraint. Without accurate and precise knowledge of the timing of changes in cultural features, it is impossible to associate them with an event. They may be gradual changes in the culture through time, or they may begin before the "event" occurred. Correlation is not causation, and even with accurate and precise dates we can never be absolutely positive that the event actually caused any changes seen, but we can highlight it as a likely scenario.

The downside of working with well-dated sites is that there are so few in the region. Only 10 sites have AMS dates that put them in the Late Mississippi to Protohistoric time period in which I am working. Another 8, located in Missouri, were thoroughly studied by O'Brien (1994), and placed in time based on well-studied artifact assemblages (including those held in private collections and recollections of looters from the area about what was present) using recent definitions of artifact types and time periods to identify them as Late Mississippi and Protohistoric. The small number of chronometrically dated sites in the region is disheartening, especially because AMS has become a relatively cheap, easy, and streamlined dating strategy. Many sites excavated in the 20th century do not have carbon dates associated with them. Some have carbon samples in their curated excavation assemblages, and some of those samples have been used more recently for dating (Mainfort 2010). A look through the artifact collections of sites that were excavated and assigned to the Nodena, Parkin, or Armorel phases may yield more dateable carbon that would allow the sites to then be included in future comparative analysis.

It may be argued that all sites assigned to the Nodena, Parkin, or Armorel phases should have been used in this comparison with or without chronometric dates associated. The problem is that the Nodena and Parkin phases themselves are not well-dated and potentially begin 100 years before the earthquake struck. Features that are present at the beginning stages of a phase may not be the features that continue throughout the life of a site, and the comparisons in chapter 8 were meant to be of features that were present on sites immediately before the earthquakes and immediately afterward, to look for changes to material culture that would most likely be associated with a single large-scale event or disaster. Additionally, the phases themselves do not hold up under close scrutiny (O'Brien 1994; Mainfort 1999). Many features of the pottery assemblages that are used to identify a phase are ubiquitous across the region and the assemblages of sites located in any single phase do not show a single pattern. In fact, Mainfort (1999) and O'Brien (1994) both show that the assemblages of most sites within a phase are no more similar to each other than they are to sites outside of that phase. This is problematic in itself, but also makes using a phase identification as a time period marker in this comparative work impossible.

Another problem encountered in this work is the precision of AMS dating in the time frame of the Late Mississippi and Protohistoric periods. As discussed in chapter 6, the carbon calibration curve used to convert radiocarbon years into calendar years is very flat during this time frame. This means that multiple intercepts are encountered and the date ranges of any given carbon sample can be hundreds of years, even if the sample is from an annual plant that should theoretically give a very precise date. The solution found for the Manley-Usrey site was OSL dating in addition to traditional AMS. I was able to get the date of site occupation and the earthquake strike by having the individual sand grains from the occupation surface dated. This was possible because OSL depends on previously sun-exposed sand grains being covered and electrons collecting on them over time which can then be measured to calculate how long a sample has been buried. This was possible at Manley-Usrey because part of the site was deeply buried by the sand blows caused by the earthquakes and was therefore undisturbed by plowing and not exposed to light until it was measured in the lab. This dating technique will not be possible at most sites in the region because they are not buried, but those sites that are buried should be sampled for and dated using OSL as it gives a much more precise date of occupation than AMS does during this time.

Alternatively, fired clays from pottery or hearths can be dated using the very similar technique of Thermoluminescence dating (TL). This technique depends on the fact that fired clay is zeroed out of measurable electrons during the firing process, similar to sun exposure of sand grains when using OSL. After firing, the fired clay begins to collect electrons from the surrounding environment during its lifetime. The luminescence of the fired clay can then be measured in a lab and the date of firing calculated based on the amount of luminescence measured. Dating pottery may be slightly problematic as this technique dates the firing of the pottery, not necessarily the time of use. Heirloom pottery would give a much earlier date than its date of last use if it was chosen as a TL sample, but that is a risk in AMS dating as well. Hearths would make better samples, but may not always be fired hot enough to be completely zeroed out.

In any case, combining OSL and/or TL dating with the usual technique of AMS dating would be helpful to better understanding settlement and changes in the region during this problematic time-frame of the carbon calibration curve. It is more expensive, and the lab time is much more extensive (1-2 years rather than 2 weeks for AMS), but rather than running many AMS dates that do not give a precise date, smaller numbers of OSL and TL dates will likely give a better estimate of the date of site occupation or pottery production. Using this technique may also allow for dates from sites that were excavated, but from which there is no datable carbon available. This could open a lot of sites to comparative analysis which are currently undated except for general time periods based on pottery assemblages.

TL analysis could also allow us to directly date pottery of specific decorative styles such as Campbell Appliqué. Being able to date the pottery itself should be able to shed light on whether the style appeared before or after the earthquakes. This would help in the examination of if the new style was a response to the changes brought on by the earthquakes and sand blows, or a new style that developed in the region for other reasons. Pottery with the various rim attributes discussed in chapter 8 could also be dated to look for similarities in date of production of those characteristics across the region. This would give more weight to the analyses looking at these attributes as a way to regroup sites in a way that does not depend on the phases currently in use.

In addition to needing more chronometric dating of sites as a general imperative, dating and analyzing structures at a site individually would allow for an excellent comparative analysis at the small scale in this type of multi-scalar work. Because many Mississippian sites are occupied long term, individual structures may date from various times during the site's occupation. Dating one structure does not necessarily tell us when all structures were in use. At Manley-Usrey we did both of these things. The end date of the site as a whole was dated using OSL on the occupation surface. Structure one was dated using AMS on burned cane and nut shell fragments found within the structure itself. These two techniques gave similar dates, but that would not always be the case. By dating each individual structure, we can make better comparisons at this small-scale resilience loop. Many sites have multiple building techniques used at a single site and because we only have consolidated dates and assemblage information, parsing out changes through time is impossible. If we could view the structures on the site and their dates with a more precise level of detail, better comparisons could be made about most of the categories considered in this dissertation from building techniques and materials to pottery and lithic assemblages.

It was disappointing to find that many site reports do not contain a faunal analysis. This is a specialized analysis that usually cannot be done by the excavator, but, like thoroughly dating the site, is important to the interpretation and understanding of the local environment and how people were utilizing the animal resources available to them. Compton (2010) writes extensively about the local environment of the Upper Nodena site at the time of its occupation based on the excavated animal species. If more data like this was available for other chronometrically dated sites in the relevant time periods we could, perhaps, take a closer look at local scale environmental change that may have been caused by the earthquakes. Reelfoot lake was created by the large-scale earthquakes of 1811/12, and it is possible that environment-changing affects could have taken place during the Late Mississippi period event. As it is, we can only note the similarities of species at the four sites with this data reported, and look at the wide variety of terrestrial, avian, and aquatic species. This leads us to conclude that changes in local environments would not likely have been a source of vulnerability because the people in the region were familiar with and utilizing a variety of animal food sources and likely could have managed if some of those sources changed. With more detailed data, perhaps we could interpret areas of subsidence and flooding or areas of uplift and drainage from sites that had changed in their faunal representation from pre- to post-earthquake. A detailed comparative analysis of botanical materials from Manley-Usrey and other local sites would add to this line of interpretation as well.

The last major failing of the dataset is the lack of a fine-scale analysis of the pottery assemblages from many of the sites used in this work. This is partially because the analysis of rim features as a time-marker is not widely used and was only statistically tested by Mainfort in 2007. He went back to the pottery collections from sites in the Late Mississippi period in Arkansas and Tennessee to look at interior beveling, exterior notching, noding, and appliqué bands applied just below the outside of the lip. Some of this information was available for the excavated pottery assemblages of the sites considered in this work, but only the Upper Nodena site reported these characteristics from the whole vessels looted and/or excavated from the site. Mainfort (2003) suggests that these characteristics may be better markers of time or cultural groups in the region. With more of this data available, especially from whole vessels which were likely burial goods rather than only broken, likely utilitarian pottery we may learn even more about these characteristics and if they changed through time or geographical location within the region. We may also be able to see interconnected groups across the landscape if Mainfort's 2003 findings are correct. His analysis shows similarities of rim attributes at sites that are not necessarily in geographical proximity or even in the same archaeological phase. It might be reaching to consider at this stage, but if these rim attributes do show clusters of similar pottery styling decisions across the landscape, depending on the dates of the sites with those similar pottery rim attributes (or dates on the pottery vessels/sherds themselves), perhaps it would be possible to see movement of groups of people across the landscape due to displacement from the earthquakes and sand blows.

An especially interesting line of research that combines all of the previous suggestions would be to take a much closer look at the multiple multi-mound sites in the Pemiscot Bayou region of southeast Missouri. It is unusual for there to be more than one paramount multi-mound site in a chiefdom and especially not so close together as these sites are. I have suggested that these sites could be evidence of population movement and a town fission-fusioning process as suggested by Blitz (1999) as a strategy of chiefdom formation, population movement, and town consolidation (Beck 2003; Benson et al. 2007; Hally 1993, 1996; King 2003). Blitz also discussed the historic phenomenon of twin towns, in which a polity that has been displaced from its town (usually by warfare) moves to the town of another polity with which it has friendly relations and the two merge, with the refugee town taking a subordinate status, but building its own mound and ceremonial buildings, which could give the impression archaeologically of a 1st order, multi-mound civic-ceremonial center when it is not (Blitz 1999). Excavations or remote sensing work at one or more of these multi-mound Pemiscot Bayou sites may shed light on this by looking for difference in neighborhood layouts around each mound. Differences could suggest that different polities were occupying different areas of a single site, rather than the site being one of several 1st order sites in the immediate region. If they were also chronometrically dated to after the earthquakes and sand blows occurred, we might conclude that the disaster affected larger feedback loops than initially thought and that consolidating towns without any polity giving up complete power to another in order to relocate became a standard response.

In the end though, more precise dating of regional sites is what will allow this type of comparative, eventful archaeology study to be really robust in its future conclusions. More sites in the region are being chronometrically dated as a matter of course, but they are also often not being fully excavated due to being small sites that are being tested before construction projects, or only the part of the site that will be impacted by the project is test and then destroyed. A project to look at old excavation materials of sites that are relatively dated to the Late Mississippi or Protohistoric periods would be a good way to improve our knowledge about the region and its chronology without the time and expense of new excavations. Doing a deep analysis of the material attributes of those collections as well as looted materials that can be traced to the sites, such as O'Brien (1994) did in his book would be very helpful. Testing old carbon samples using AMS techniques to get some preliminary chronometric dates for these excavated and reported sites would be a great start. If the dates show that the site likely was occupied in the period of interest, following up with TL dating of pottery samples could then further narrow the time period at which the pottery was produced, and potentially, when the site was occupied. These sites could then be added to this comparative analysis to make a stronger argument for the vulnerability or resilience of the CMV Late Mississippian population at multiple scales, especially the responses to the earthquakes and sand blows at more 3rd and 2nd order sites in the region.

10

Conclusion

This study examined sites located within the southern end of the NMSZ in the CMV. The NMSZ is the most seismically active region in the central and eastern United States and has been the location of **M**7-8 size earthquakes at least four times in the recent past (Chen et al. 2014; Li et al. 1998; Tuttle 1999; Tuttle et al. 1996, 2002, 2011). These large earthquakes cause massive ground shaking, sand blows, and surface subsidence. They have also caused small uplifts on the ground surface that have impacted river meanders over time, although most of the geological evidence of the faults is below ground and has only been detected through radar and seismic studies.

After the earthquakes of 1811/12, the European settlers in the region were allowed by the US government to exchange their land grants for land elsewhere in the country as the region was deemed unfit for settlement. Cherokee people who had been removed from the southeastern US to Arkansas also left the area and went farther west in response to the earthquakes. Religious revivalism swept through the US in both European and Native American populations and the area of the NMSZ was left mostly empty for some time before slowly being repopulated by Europeans spreading west (Valencius 2010).

During the earlier earthquake event of the late AD1400's to early AD1500's, Mississippian people lived in the region and had been living there in large numbers since the settlement pattern changes seen at the beginning of the Late Mississippi period. This study examined the effects of those large-scale earthquakes on the Mississippian people living in the region from the Late Mississippi period (before the earthquake struck) to the Protohistoric period (after the earthquake struck). A more accurate date of the earthquake was established by using

OSL dating on the sand grains of the midden surface of the Manley-Usrey site. The Manley-Usrey site was covered by sand from a sand blow in the later part of the Late Mississippi period while the site was occupied. OSL dating relies on the fact that sand grains previously exposed to sunlight are buried and only re-exposed to light when the luminescence can be measured in a lab. The sand blow caused the surface of the site, which had previously been open, to be buried, allowing for this dating technique to be used. Because the sand was nearly 1 m deep near the sand dike, the integrity of the site was also protected from the subsequent years of farming and plowing of the field. This meant that I had an area of pristine occupation surface that I could examine through remote sensing techniques to look at the site layout pattern of a 3rd order site in the northern extent of the Nodena phase. I could also excavate a sample of Late Mississippi period cultural materials located in areas inside of a house that was buried and protected by this sand. This allowed me to look at house construction techniques, use areas inside of a house, and lithic, faunal, and ceramic assemblages and their associated traits.

Using the Late Mississippi period characteristics of the Manley-Usrey site as a baseline, I then compared those characteristics to those of other chronometrically dated sites in the region to look for material culture changes from before to after the earthquake and sand blow events. This comparative sample turned out to be smaller than expected with few chronometrically dated site assemblages available for comparison, and of those, fewer with the full range of comparative data that is available from the Manley-Usrey site. Despite this, interesting and somewhat unexpected conclusions can be drawn from this work. I had hypothesized based on the historic response to earthquakes and the apparent abandonment of the Manley-Usrey site that there would be large changes put into place by the people of the CMV after the late AD 1400's to early AD 1500's earthquake struck.

In order to look for such changes archaeologically, I employed a variety of theoretical perspectives and ways of looking at and understanding human responses to disasters. First, I looked at the history of hazard and disaster research that comes mostly out of sociology studies. In these works, it is pointed out that hazards do not necessarily lead to disasters. It is the response of humans to the hazard event that defines the event as a disaster or not. In places or societies where the possible hazards are known and recognized as potentially problematic, societies often take steps to mitigate the possibility of disaster before the hazard strikes. In other cases, hazards are ignored (either because they are unknown, or for religious or political reasons) so no pre-emptive mitigation takes place. When hazards strike in these areas, they are much more likely to become disasters.

These ideas about responses to hazards are summed up in the sociological and anthropological ideas of vulnerability and resilience. Vulnerability is defined as the ability to cope with, resist, and recover from the impact of a natural hazard (Wisner et al. 2004:11). When these abilities are low, due to unknown hazards or social issues that interfere with the ability to respond, a society is considered vulnerable to a hazard. This vulnerability may not become apparent until a hazard strikes and the fall out is known. It may also only be parts of society that are vulnerable. Resilience is the ability of a system to absorb disturbance without losing its identity (Folke 2006). Resilience is illustrated as a figure 8 feedback loop in which actions and uses of resources by a society feed back on each other in various ways to keep the social system intact, or, in some cases, cause it to break down (Gunderson and Holling 2002).

In addition to the individual resilience loops, Gunderson and Holling (2002) introduce the concept of panarchy, which is a series of resilience loops at various scales of society that are interdependent on each other and which can change in similar ways as a single resilience loop, or by cascading changes up or down the panarchy (which could result in a breakdown of the panarchy, or a disaster). The panarchy can also protect against cascading changes by being a force that slows changes and brings back old resilience strategies from the larger scales to stabilize the smaller-scale resiliency loops (which could protect against a disaster by mitigating the immediate, local effects and stabilize the society from the top down). Identifying and studying these panarchy loops in living populations that can be interviewed for their views on their own vulnerability and examining the fallout of hazards to look at resilience is one thing, but how can we see these social concepts archaeologically?

Beck and colleagues (2007) suggest that archaeologists can utilize Sewell's (2005) idea of eventful sociology, to study eventful archaeology. Sewell suggests that the structure of society is made up of the interplay between schema and resources. Schemas are the generalizable procedures applied in the enactment/reproduction of social life that can be applied in a variety of contexts, and resources are the objects or human traits such as strength or knowledge that can be used to enhance/maintain power. If either of these things are altered, the other may also be altered in response (Sewell 2005:137). Archaeologically this means that we can look at the material culture remains (the resources: the artifacts themselves, or evidence of the knowledge of the local people inferred from the artifacts and production techniques used) for changes that may indicate a larger change in the schema or structure of society. Beck and colleagues (2007) demonstrate that an event can be identified archaeologically by evidence of changes in material culture across an area over a short time period. Sometimes the event can be identified as a particular occurrence and other times the actual event is unknown, but something happened to notably change the material culture from before to after the event.

Using this system, this study attempted to look for material culture changes from before to after the time that a large magnitude earthquake and sand blow struck the NMSZ and CMV region. A similar earthquake could be defined as an event or disaster in 1811/12, but would we see the same large-scale changes in the Late Mississippi period? At the Manley-Usrey site itself we did. The hamlet was partially covered by a sand blow and was subsequently abandoned. This means that no more material culture was produced at the site, a vast change from before the earthquake when houses were built, pottery was made for cooking, storage, and to support the local belief system, lithics and hunting implements were produced to process food and build houses, and all types of local animals were procured for food. At the Manley-Usrey site the earthquake was a disaster that broke down the local panarchy loops and caused a complete collapse of the hamlet.

When the region is viewed at a large scale, however, we do not see the same result. Comparisons at the smallest scales of artifact types and attributes do not vary significantly from before to after the earthquakes. A new pottery style (Campbell Appliqué) is introduced in the northernmost part of the region around the Pemiscot Bayou in southeastern Missouri, but it is possible that this may just be a local phenomenon. Thumbnail scrapers become more prominent in the Protohistoric period (post-earthquakes), but this is most likely due to increased trade in hides, which can be explained by increased interactions with Europeans and their market for animal hides. At a slightly larger scale, houses continue to be built in similar ways from pre- to post-earthquakes, and sites of various sizes (from 1st order multi-mound sites, to small hamlets) continue to be laid out in similar ways with houses surrounding open plazas and mounds and burials scattered across sites. Sites also continue to be located on similar landforms both before and after the earthquakes, despite the susceptibility of natural levees to sand blows and even the occurrence of sand blows on some sites occupied from before to after the earthquakes.

It appears that the Mississippian people in the CMV of the NMSZ were very likely aware of the earthquake hazard in the area and that their larger cultural system was able to account for and contain the effects of these large earthquakes and sand blows. On the smallest site scale a hamlet might be destroyed, but the larger panarchy was able to account for that and the breakdown of the local system did not “revolt” up the feedback chain. The larger systems were able to “remember” and accommodate people from the destroyed sites and the earthquakes did not become a society-wide disaster.

Due to this non-response at most levels of the panarchy, the earthquakes and sand blows of the late AD1400’s to early AD1500’s cannot be defined as an event archaeologically, and therefore can be interpreted as not being considered a disaster by the people living in the region. They had lived in the region for generations by the time of the earthquakes in the Late Mississippi period and had likely experienced smaller magnitude earthquakes from time to time. The also likely had knowledge of the sand blows left by the ca. AD900 and earlier earthquake events and may have been aware that they were caused by earthquakes. This may have allowed them in incorporate ideas about earthquakes and how to respond to them into their cultural schema at various levels that mitigated their vulnerability when a large earthquake occurred.

Although we may never know to what level they were aware of the earthquake hazard, we can tell that they were highly resilient in the face of it. At an individual site, the earthquake rose to the level of a disaster and the site was abandoned. Region wide, though, very few material culture changes can be documented from before to after the earthquake and life seems to have gone on as usual. The local political hierarchy, interconnectedness of sites and people, and the wide range of local resources used by people made the vulnerability to the destruction of or damage to any single resource low. This low level of vulnerability, along with the observed non-response to the hazard, demonstrates that the Mississippian people of the Late Mississippi period in the CMV were very resilient in the face of large-scale earthquakes of the NMSZ.

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Appendix I

Shovel Tests

Table I-1: Shovel Tests at Manley-Usrey. Locations of tests mapped on Figure I-1. Site area and sand covered area marked on Figure 7-3 based on artifact absence/presence and sterile sand presence in shovel tests.

Shovel Test	**Vertical Control**	**Remarks**	**Artifacts**
101	0-20	Plow Zone	
	20-98	Light Brown sand	
102	0-23	Plow Zone	
	23-50	Midden	Bone, daub, ceramic
	50-65	B Horizon, light brown, sticky, clayey	
103	0-27	Plow Zone	
	27-38	Orange Sand with channel coal inclusion	
	38-72	Midden	Bone, daub, ceramic, lithic
	72-74	B Horizon	
105	0-25	Plow Zone	
	25-55	Tan Sand, layer of channel coal @ 45 cmbs	
	55-98	Midden	2 pottery sherdlets
106	0-29	Plow Zone	
	29-54	Orange-Brown fine sand	
	54-66	Buried A Horizon	
107	0-19	Plow Zone	
	19-50	Midden	Bone, daub, ceramic, lithic
	50-57	B Horizon	
109	0-18	Plow Zone	
	18-60	Midden	Bone, daub, ceramic, lithic, historic metal
	60-69	Light colored silt	
111	0-22	Plow Zone	
	22-40	Light Brown Sand	
	40-102	Midden	Bone, daub, ceramic, lithic, historic glass
	102-110	B-Horizon	
113	0-12	Plow Zone	1 flake
	012-30	B Horizon	
115	0-15	Plow Zone	
	15-20	B Horizon	
122	0-26	Plow Zone	
	26-47	Midden, Dark Black	Bone, daub, ceramic, lithic
	47-50	B Horizon	
124	0-21	Plow Zone	

Table I-1 (cont.)

Shovel Test	Vertical Control	Remarks	Artifacts
	21-24	Midden	Bone, ceramic, lithic
	24-32	Mottled B Horizon, clayey	
126	0-29	Plow Zone	
	29-33	Midden	1 sand tempered sherd
	33-38	Mottled B Horizon, clayey	
129	0-26	Plow Zone, silty sand	
	26-50	Tan Sand	
	50-60	Gray Sand	
	60-100	Midden	Bone, daub, ceramic, lithic
131	0-30	Plow Zone	
	30-85	Tan Sand	
	85-100	Midden	Bone, daub, ceramic, lithic, historic metal
133	0-45	Midden	Bone, daub, ceramic, lithic; historic metal, ceramic, glass
	45-55	B Horizon	
135	0-12	Plow Zone	Daub, lithic, historic glass
	012-15	B Horizon	
136	0-18	Plow Zone	Daub, ceramic, lithic; Historic ceramic, metal, glass
	18-70	Light Brown sand	
	70-84	Light Brown sand (core sample)	
138	0-16	Plow Zone	Daub, Historic metal and cement
	16-37	Light Gray compact sand	
	37-47	Tan and gray loose sand	
139	0-20	Plow Zone	
	20-33	Midden	
	33-35	B Horizon	

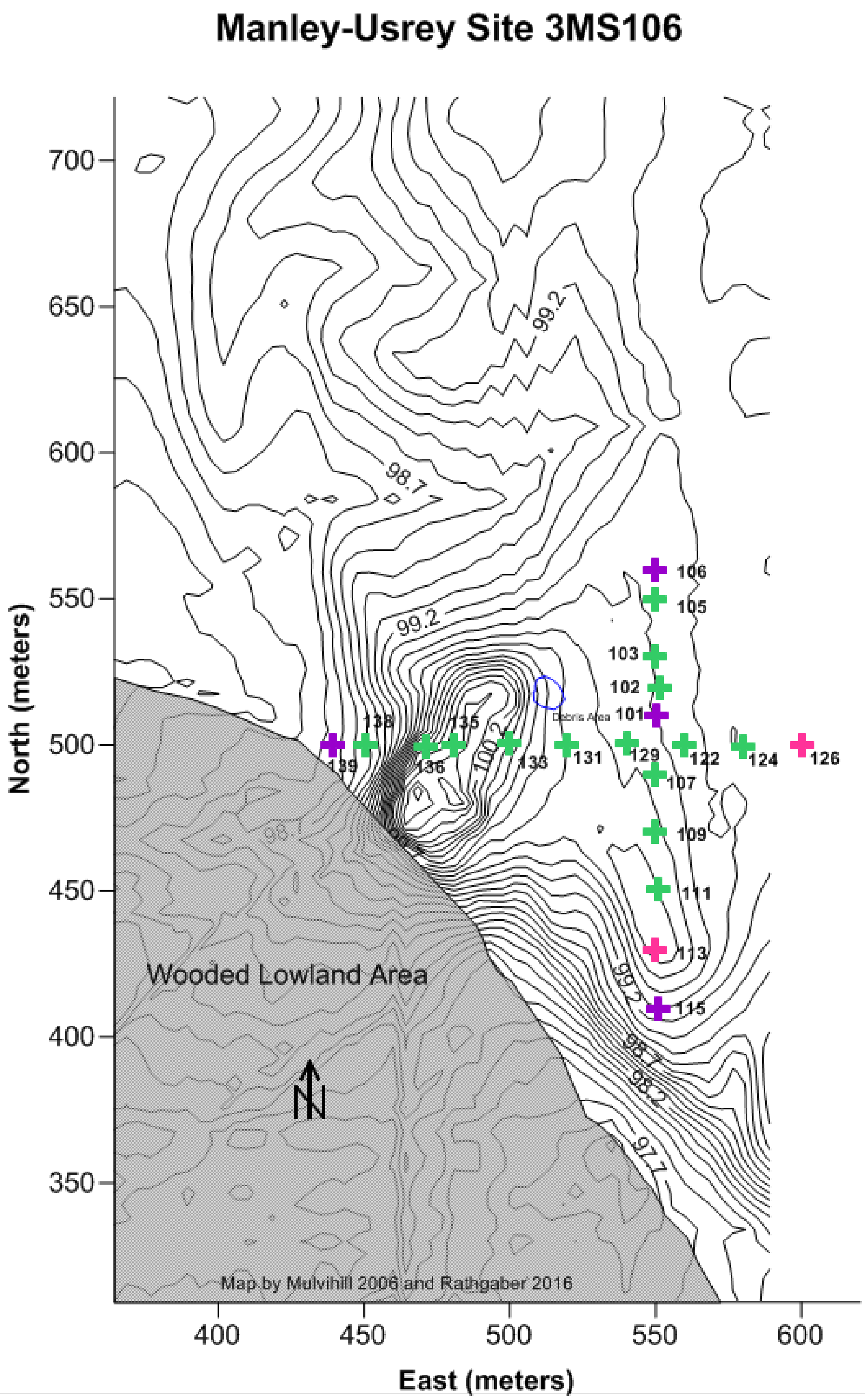

Figure I-1: Shovel tests label with number and colored to represent positive (green), single artifact (pink), and negative (purple).

Appendix II

Explanation of Excavation Units and Artifact Level Proveniences

The full excavation of the Manley-Usrey site done for this dissertation was accomplished over three field seasons. Two sessions of remote sensing work were carried out before the two larger excavations, and shovel testing (as discussed in Appendix I) was carried out to find the extent of the site and sand blow deposits. The Manley-Usrey site was thought to be covered by a sand blow due to the lower density artifact scatter on a sandier surface of the site within the larger artifact scatter of the site on a siltier and more organic rich plow zone surface.

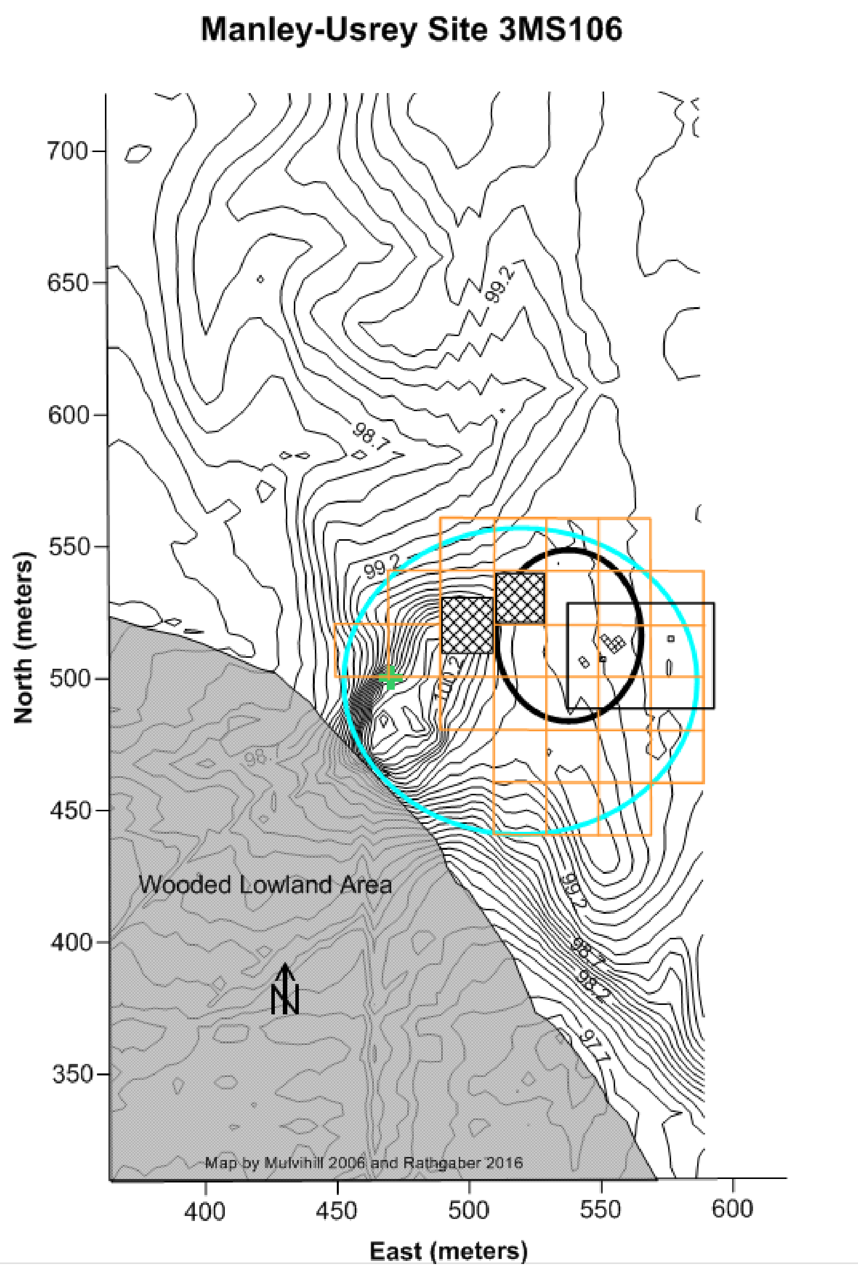

Figure II-1: Manley Usrey site topographic map. Geophysical units are in orange, black circle in sand covered area, blue circle is extent of artifact scatter. Black square contains all of the excavation units and is blown up in Figure II-2.

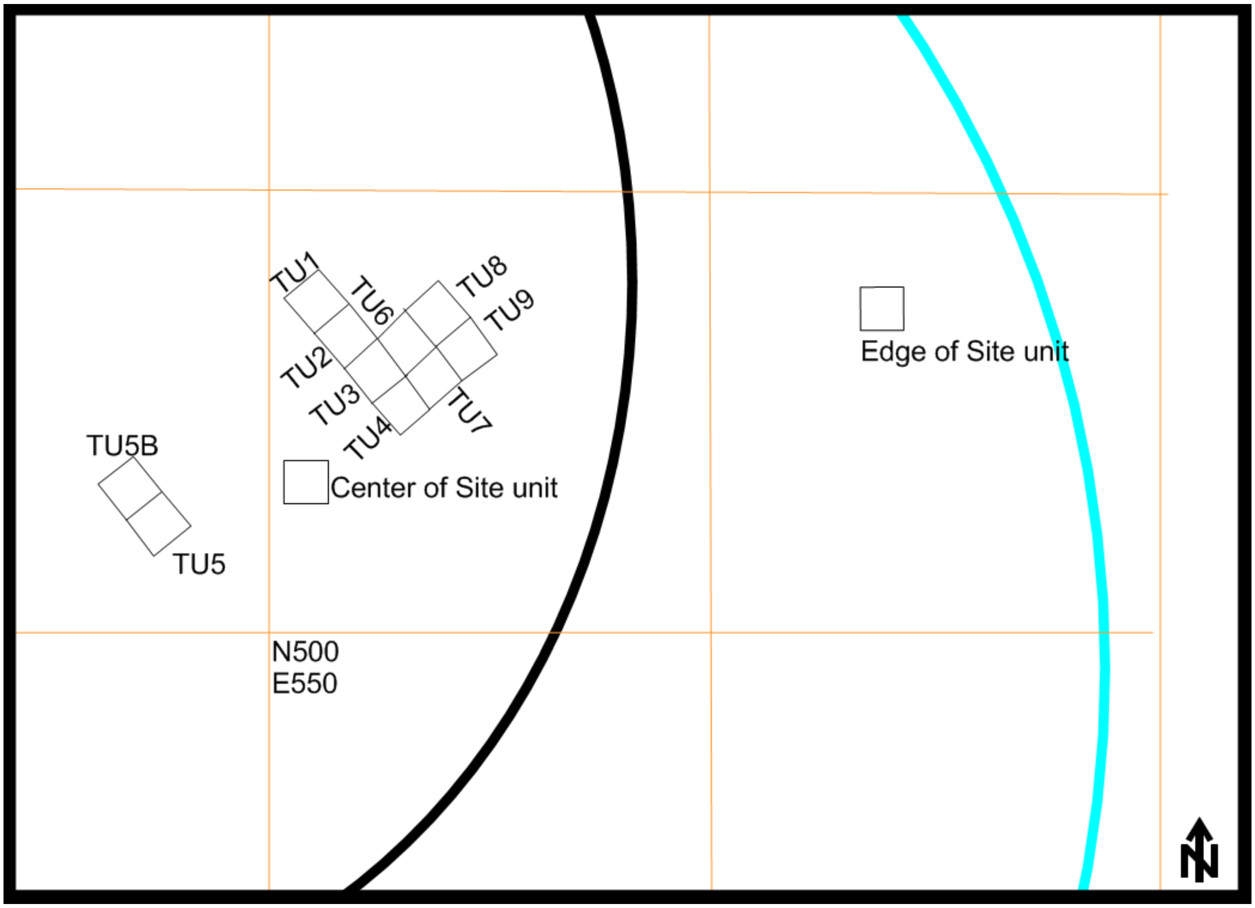

Figure II-2: Units excavated at Manley-Usrey during the 2012, 2014, and 2016 field seasons. Orange squares ate 20 m x 20 m and excavation units are 2 m x 2 m.

An initial test of the site was done in 2012 to test the extent and depth of the site midden and to test the idea of the sand area in the center being a sand blow as opposed to a plaza, which was also a possibility due to the site being identified as Mississippi period based on the artifacts collected from the surface and vessels looted from the site in the 1970's. The first 2 m x 2 m unit (Edge of Site unit) was placed toward the edge of the visible surface scatter to test the depth of the midden at what was interpreted at the time as the edge of the site (Figure II-2). The plow zone in this unit was quite deep (~27 cmbd) due to some deep plowing having been done in the field to help with drainage. Undisturbed midden was encountered at 27 cmbd and continued until ~37 cmbd when features were noted in the soil in two parts of the unit. Feature 1 was a post hole with few artifacts, but extending into the B-horizon to a depth of 57 cmbs. The feature was against the unit wall, so only the western half was excavated, and the fill screened. Features 2 and 3 were pits. Feature 2 was a shallow pit extending out of the north wall and only measuring 38 cmbd deep (11cm below the unit floor). Feature 3 turned out to be two overlapping pits upon extending out of the west wall of the unit (this is discussed in Chapter 7). The southern portion of the pits extended to 67 cmbd, 30 cm below the depth of the midden deposit, and the northern part of the pits extended to 59cmbd.

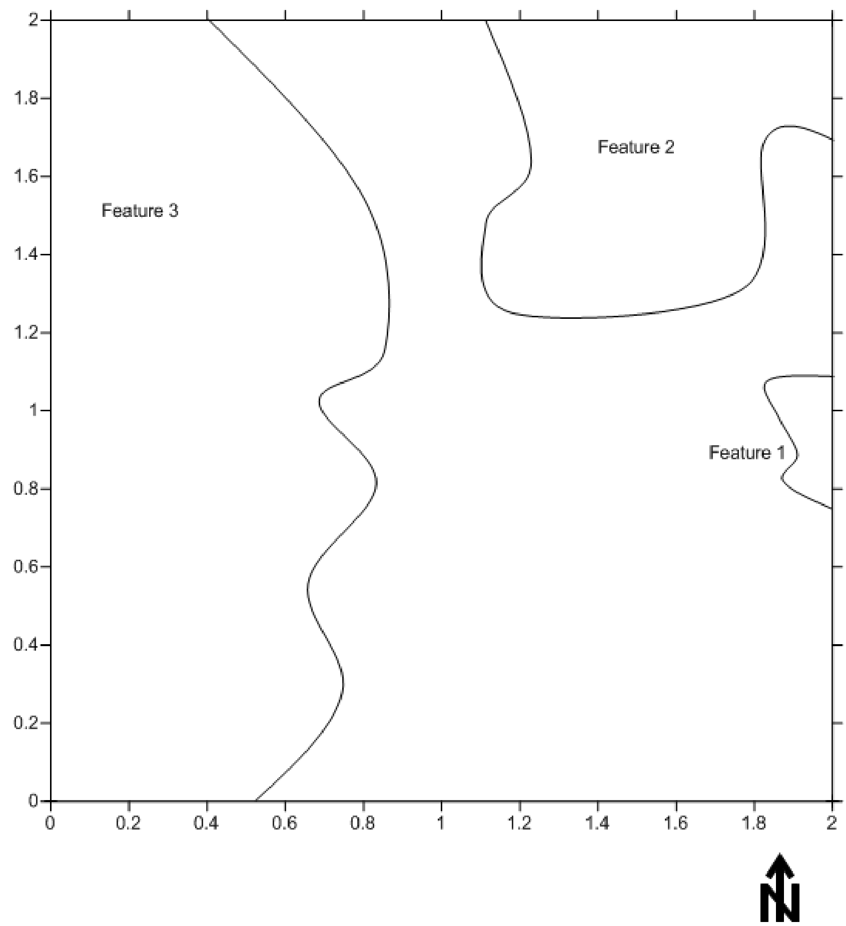

Figure II-3: Features at the base of Edge of Site unit excavated in 2012.

The second 2 m x 2 m test unit (Center of Site unit) was placed within the sand covered area in the hopes that it would show evidence of either a plaza or a sand deposit (either a sand blow or a flood deposit) (Figure II-1). In fact, the unit showed that three separate layers of sand were deposited across the site above the midden surface and this sand was deep enough to have completely protected the midden surface from plowing in this area of the site. The midden extended from 39 cmbd to 70 cmbd, which is not significantly deeper than the unit at the edge of the site, but none of this midden was disturbed by plowing, so the artifacts were all in place. Two features (4 and 5) were identified. Feature 4 is a post hole, that extends 20 cm below the unit floor along the south wall of the unit. Feature 5 is another small post hole that extends 17 cm below the floor of the unit and contained ceramic and bone artifacts. The two post holes are different diameters, so it is unclear if they are associated. Because the unit was excavated to test the question of the sandy area of the site being a plaza or sand covered, and due to time constraints based on the planting of crops in the field, the unit was not extended to look for more post holes in the area.

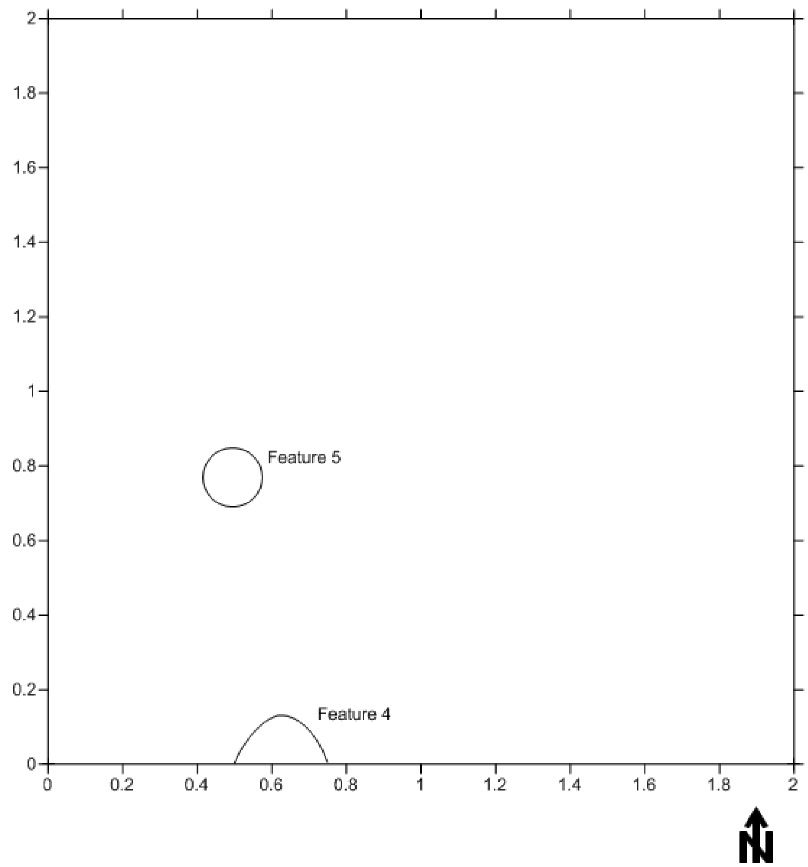

Figure II-4: Features at the base of Center of Site unit excavated in 2012.

In the 2014 excavation season I opened a trench that extended perpendicularly across what was hypothesized from the remote sensing data as a likely sand blow and a burned structure (Figure 7-14). In order to positively identify a sand blow rather than a flooding event, the sand dike through which the sand was extruded must be identified. By excavating a trench perpendicular to the line of the crack opened by ground failure caused by the earthquake, the sand dike should be visible as should any subsidence of the ground surface that may have occurred. The shovel testing and initial excavation unit indicated that the sand could be up to a meter deep, but I did not know how deep the sand was in the vicinity of the trench. Due to that, I decided to excavate the trench as four individual 2 m x 2 m units, and each unit was excavated in

10 cm arbitrary levels until color changes were seen. At the point that midden was encountered, the midden surface was cleared, and the levels were excavated below surface rather than datum to follow any subsidence and not excavate more deeply through the midden in some units than in others. Depths below ground surface were recorded at each corner of each unit to keep track of depth and any tilt in the midden surface. Artifacts were handpicked from the plow zone level if they were present, and there were no artifacts in the sand layers, so no screening was needed, but careful excavation was required as the depth to midden was unknown.

In TU1, the northwestern most unit, midden was encountered at 25 cmbs, just under the plow zone in the northwestern ¾ of the unit. This demonstrated that there was no subsidence of the ground surface on the western side of the earthquake crack. The southeastern ¼ of the unit was part of the earthquake crack and consisted of sand with small pieces of midden that had broken and fallen into the sand during the cracking and splitting of the ground surface and during the extrusion and back filling of liquified sand. The midden area of the unit was then excavated in arbitrary 10 cm levels through the middens with the sand being removed from the sand dike as well, but not screened, until a burial was encountered at 75 cmbs. A bottle inside of a bowl was encountered at the southern end of the burial and the burial pit extended into the northern corner of the unit. After consultation with the Quapaw Tribe of Oklahoma's NAGPRA representative, we photographed the vessels and stopped further excavation in the unit (Figure 7-13).

TU2 consisted almost entirely of sand (Figure 7-13). Only the southeastern 1/3 of the unit contained midden and that was encountered at 55 cmbs in the southeast corner of the unit, making Level 5 the first level at which artifacts were encountered in this unit. The previous 4 levels were sand and did not contain any artifacts or midden, even in the plow zone. The midden layer extended to 95 cmbs, or 40 cm of midden, which is similar to midden depths of the two initial test units from 2012. The excavators in the eastern corner of the unit noted an area of daub concentration, and this area extended into units TU3 and TU6.

In TU3 the midden was encountered 10 cm higher at 45 cmbs in the southeast corner. That makes Level 4 the first level with artifacts in TU3. This also indicates that the ground surface on the southeastern side of the earthquake crack subsided at an angle, falling deeper into the ground near the crack than it did farther away to the east. The midden extended to 95 cmbs, which is slightly deeper that in TU2. Two post holes were located at the base of the unit and the daub concentration from TU2 extended into the northwest corner of this unit. It was thought that the hearth would be located beneath the daub concentration, but it was not located in this unit (Figure 7-13). A carbonized nutshell from a flotation sample taken out of the north corner of the unit between 55-65 cmbs was used for an AMS date of the structure (chapter 7).

In TU4, at the southeastern end of the trench, midden was encountered at 45 cmbs (level 4) as well, although some artifacts were scattered into and handpicked from the plow zone. The midden in this unit extended to 90 cmbs making the total midden depth ~45 cm. A darker area was seen in the southeast corner of the unit, but when it was excavated to a depth of 16 cm where the soil color changed to that of the B-horizon it was found to not contain any artifacts, so may have just been an anomalous soil color (Figure 7-13). The flotation sample taken from the southeast corner of level 4 contained a carbonized nut shell that was used for AMS dating of the structure (chapter 7).

TU5 was placed to the southwest of the trench to look at what appeared in the remote sensing to be two crossed earthquake cracks and associated sand blows (Figure 7-13). This unit did not contain a lot of midden, but the midden that it did contain was in disarray with small broken chunks of midden suspended in sand. These midden chunks were broken up during the earthquake and sand blow and were moved around within the liquified sand layers. They then settled into place as the sand settled. Because two earthquake cracks open in this area the midden was greatly disturbed and beyond identifying what artifacts were present it is impossible to look at relative positions due to the disturbed nature of the redeposition of the midden chunks.

TU5B was excavated to the west of TU5 to see how far the earthquake disturbance extended (Figure II-2). Time constraints meant that we only were able to excavate through the plow zone (25 cmbs), but below that zone, the midden surface was visible. This indicates that the disturbance to the midden caused by the earthquake cracks to TU5 did not extend far to the west. Also, the midden to the west did not subside, similar to what was seen in TU1. Because this was what we had hoped to learn from this unit, it was abandoned and not reopened in the 2016 field season in favor of looking at the structure that we had encountered in the Trench.

TU6, 7, 8, and 9 were excavated in 2016 as an extension off of the Trench to the northeast to get a better view of the buried structure (Figure 7-13). Because of the excavation of the trench in 2014, the depth to midden was known to be ~45 cm, so a backhoe was brought in to uncover the midden in a 4 m x 4 m square. By removing the sand mechanically, we saved about 1.5 days of hand excavation of sand. This also means that the depth of each level as listed in the provenience table was measured from the surface of the midden rather than the actual ground surface. To be comparable in actual depth to the previous units, 45 cm must be added to each measurement. However, total depth is less relevant than depth through midden due to the subsidence of the ground during the earthquake and liquefaction. Therefore, because each level is 10 cm, it is most useful comparatively to look at which level within the midden is being considered, and that varies by unit in the trench. In the square, level 1 is the first level of midden excavated for each unit.

TU6 was immediately northeast of TU3. A heavy daub concentration was encountered in the first level of the unit and continued to level 3 where the hearth (Feature 6) was uncovered. The hearth extended into the balk wall between TU3 and TU6, and fsn 2016-503-21 accounts for those artifacts, which were considered part of TU6. From the hearth, a solidly fired amorphous floor extended to the southeast and east (Discussed in chapter 7). The hearth had been relined at some point as there were two layers of baked clay contained within the dug-out area. There was a charred post (Feature 7) to the north of the hearth that extended ~17 cm into the ground, but no matching feature to suggest that it was to hold a spit or other cooking implement to the south. Beneath the baked floor (55cmbs) in the northeast part of the unit we encountered another human burial. After consultation with the NAGPRA representative of the Quapaw Tribe of Oklahoma, it we decide that due to the depth of the burial it would be left in place and no further excavation would take place in the unit.

TU7 was located to the northeast of TU4 and was very bioturbated. A large, round, sand filled anomaly was located in the center of the unit with branches extending from it. I hypothesize that it was a rodent burrow. Most of the extending branches go outward and not down as roots tend to do. The rodent runs contained some artifacts that could have been moved out of place by rodents and they generally stayed above the level of the house floor, which would have been more compact and harder to dig through. Most of the disturbance had abated by the end of level 2, with only pockets of sand left on the unit floor. In the first level, the artifacts from the disturbed level were collected separately as we believed that the area might have been a looter pit, but when it became apparent that it was not, all level artifact were collected together. There were no features uncovered in TU7. Perhaps this was due to disturbance, but it was also near the center of the structure, so it is not unexpected for there to be no features.

To the northeast of TU6 was TU8. The daub concentration continued into the southwest edge of this unit, but it was less dense. Below the daub concentration near the southeast edge on the border of TU6, a piece of burned cane was uncovered (Feature 4). This was collected as fsn 14 and AMS dated as a more solidly provenienced sample than the nut shells found in the flotation samples from the Trench. The unit extended to 50 cmbs, with no features except the edge of the burial located in TU6, which was not recognized until TU6 was excavated a few centimeters deeper than TU8.

TU9 was a uniform midden surface with only small differences in artifact concentrations noted until level 4, where at 40 cmbs, 8 possible post holes were visible. Excavation of these possible features showed that only 4 of them were actually post holes. The others were tree root casts. Features 8, 9, 10, and 11 are plotted on the map of the structure in chapter 7. Feature 8 extended ~15 cm below the base of the unit, was 15 cm wide, and was rounded at the bottom. Feature 9 was rather large and square shaped in profile view, 15 cm wide, and extended ~25 cm below the base of the unit. Feature 10 was rounded at the bottom, was 15 cm wide, and only extended ~10 cm below the base of the unit. Feature 11 extended ~15 cm below the base of the unit, was 20 cm wide, and was rounded at the bottom as well. These four post holes do not form a shape, but they may not all be part of the same placement of posts because they are not uniformly deep although they are all about the same diameter.

Overall, the units of the structure were buried by about 45-55cm of sand and were at an angle of 2.86° downward toward the sand dike. The levels were excavated at that angle as well to preserve the relative location of artifacts to the ground surface when the site was occupied. The midden was about 40-50cm deep in the units and features were identified at the base of those units. Although my measuring technique was slightly different from the trench to the associated square, giving the first level in which midden was excavated different level numbers, the depth from the top of the sand or the top of the midden can be calculated by adding or subtracting 45cm. The “actual” depth is fairly irrelevant though, as the ground surface subsided and is not in its originally inhabited location. The depth below the midden surface is the relevant number and each level through the midden was 10 cm with the first level of midden excavation being noted in the fsn provenience chart below (Table II-1).

Table II-1: Provenience information for units and levels from Manley-Usrey excavation.

Access. Number	Field serial number	Proven-ience type	Proven-ience size	Unit #	Level	North grid coord	East grid coord	unit loca-tion	Coll-ection tech-nique	Screen size	stratum	Depth begin	Depth end	depth datum	comment
2012-310	1	test unit	2 m x 2 m	1	1	511.962	577.734	Edge of Site	dry screened	1/4 inch	Plow Zone	0	17	bd	
2012-310	2	test unit	2 m x 2 m	1	2	511.962	577.734	Edge of Site	dry screened	1/4 inch	Plow Zone	17	27	bd	
2012-310	3	test unit	2 m x 2 m	1	3	511.962	577.734	Edge of Site	dry screened	1/4 inch	Midden	27	32	bd	
2012-310	4	test unit	2 m x 2 m	1	4	511.962	577.734	Edge of Site	dry screened	1/4 inch	Midden	32	37	bd	
2012-310	5	point plot		1	4	511.962	577.734	Edge of Site	dry screened	1/4 inch	Above Feature 2	32	37	bd	
2012-310	6	point plot		1	4	511.962	577.734	Edge of Site	dry screened	1/4 inch	Above Feature 3	32	37	bd	
2012-310	7	cultural feature		1	Feature 1	511.962	577.734	Edge of Site	dry screened	1/4 inch	Feature 1	30	57	bd	Post hole
2012-310	8	cultural feature		1	Feature 2	511.962	577.734	Edge of Site	dry screened	1/4 inch	Feature 2	35	38	bd	
2012-310	9	cultural feature		1	Feature 3	511.962	577.734	Edge of Site	dry screened	1/4 inch	Feature 3	37	67	bd	
2012-310	10	cultural feature	Carbon Sample	1	Feature 3	511.962	577.734	Edge of Site	hand picked		Feature 3	37	67	bd	Carbon Sample
2012-310	11	cultural feature		1	Feature 3	511.962	577.734	Edge of Site	dry screened	1/4 inch	Feature 3 (N 1/2)	37	67	bd	
2012-310	12	cultural feature		1	Feature 3	511.962	577.734	Edge of Site	dry screened	1/4 inch	Feature 3 (S 1/2)	37	67	bd	
2012-310	13	test unit	2 m x 2 m	2	Plow Zone	504.904	551.854	Center of Site	dry screened	1/4 inch	Plow Zone	0	15	bd	

Table II-1 (cont.)

Access. Number	Field serial number	Proven-ience type	Proven-ience size	Unit #	Level	North grid coord	East grid coord	unit loca-tion	Coll-ection tech-nique	Screen size	stratum	Depth begin	Depth end	depth datum	comment
2012-310	14	test unit	2 m x 2 m	2	1	504.904	551.854	Center of Site	dry screened	1/4 inch	Sand	15	25	bd	
2012-310	15	test unit	2 m x 2 m	2	2	504.904	551.854	Center of Site	dry screened	1/4 inch	Sand	25	32	bd	
2012-310	16	test unit	2 m x 2 m	2	3	504.904	551.854	Center of Site	dry screened	1/4 inch	Sand	32	39	bd	
2012-310	17	test unit	2 m x 2 m	2	4	504.904	551.854	Center of Site	dry screened	1/4 inch	Midden	39	49	bd	
2012-310	18	test unit	2 m x 2 m	2	4	504.904	551.854	Center of Site	HF flotation sample		Midden	39	49	bd	18 L soil sample
2012-310	19	test unit	2 m x 2 m	2	4	504.904	551.854	Center of Site	HF flotation sample		Midden	39	49	bd	18 L soil sample
2012-310	20	test unit	2 m x 2 m	2	4	504.904	551.854	Center of Site	HF flotation sample		Midden	39	49	bd	4 L soil sample
2012-310	21	test unit	2 m x 2 m	2	5	504.904	551.854	Center of Site	dry screened	1/4 inch	Midden	49	56	bd	
2012-310	22	test unit	2 m x 2 m	2	6	504.904	551.854	Center of Site	dry screened	1/4 inch	Midden	56	67	bd	
2012-310	27	test unit	2 m x 2 m	2	7	504.904	551.854	Center of Site	dry screened	1/4 inch	Midden	67	79	bd	
2012-310	28	test unit	2 m x 2 m	2	7	504.904	551.854	Center of Site	dry screened	1/4 inch	Feature 4	79	96	bd	
2012-310	29	test unit	2 m x 2 m	2	7	504.904	551.854	Center of Site	dry screened	1/4 inch	Feature 5	79	95	bd	
2013-475	122	shovel test				500.065	560.255		dry screened	1/4 inch		0	50	bs	pz: 0-26, Midden: 26-47, B: 47-50
2013-475	124	shovel test				499.717	580.434		dry screened	1/4 inch		0	32	bs	pz: 0-21, Midden: 21-24. B: 24-32

Table II-1 (cont.)

Access. Number	Field serial number	Proven-ience type	Proven-ience size	Unit #	Level	North grid coord	East grid coord	unit loca-tion	Coll-ection tech-nique	Screen size	stratum	Depth begin	Depth end	depth datum	comment
2013-475	126	shovel test				499.941	600.475		dry screened	1/4 inch		0	38	bs	pz: 0-29, Midden: 29-33, B: 33-38
2013-475	102	shovel test				519.756	550.4		dry screened	1/4 inch		0	65	bs	pz: 0-23, Midden: 23-50, B: 50-65
2013-475	129	shovel test				500.461	540.088		dry screened	1/4 inch		0	100	bs	pz: 0-26, Sand: 26-50, Sand: 50-60, Midden: 60-100
2013-475	103	shovel test				529.903	550.471		dry screened	1/4 inch		0	74	bs	pz: 0-27, Sand: 27-38, Midden: 38-72, B: 72-74
2013-475	105	shovel test				549.754	550.234		dry screened	1/4 inch		0	98	bs	pz: 0-25, Sand: 25-55, Midden: 55-98 few artifacts
2013-475	131	shovel test				500.136	519.976		dry screened	1/4 inch		0	100	bs	pz: 0-30, Sand: 30-85, Midden: 85-100
2013-475	133	shovel test				499.737	500.241		dry screened	1/4 inch		0	55	bs	Midden: 0-45, B: 45-55
2013-475	135	shovel test				499.78	480.484		dry screened	1/4 inch		0	15	bs	pz: 0-12, B: 12-15

Table II-1 (cont.)

Access. Number	Field serial number	Proven-ience type	Proven-ience size	Unit #	Level	North grid coord	East grid coord	unit loca-tion	Coll-ection tech-nique	Screen size	stratum	Depth begin	Depth end	depth datum	comment
2013-475	136	shovel test				499.835	460.32		dry screened	1/4 inch		0	84	bs	pz: 0-18, Sand: 18-70, Sand: 70-84 (cored, likely overbank sand)
2013-475	138	shovel test				500.256	439.524		dry screened	1/4 inch		0	47	bs	pz: 0-16, Sand: 16-37, Sand: 37-47
2013-475	107	shovel test				490.304	550.27		dry screened	1/4 inch		0	57	bs	pz: 0-19, Midden: 19-50, B: 50-57
2013-475	109	shovel test				470.258	550.337		dry screened	1/4 inch		0	69	bs	pz: 0-18, Midden: 18-60, Silt: 60-69
2013-475	111	shovel test				450.403	550.371		dry screened	1/4 inch		0	110	bs	pz: 0-22, Sand: 22-40, Midden: 40-99, Core: 99-110 to B
2013-475	113	shovel test				430.089	550.337		dry screened	1/4 inch		0	30	bs	pz: 0-12, B: 12-30
2013-475	115	shovel test				409.628	550.435		dry screened	1/4 inch		0	20	bs	pz: 0-15, B: 15-20
2014-518	1	test unit	2 m x 2 m	TU5	1	505.073	543.899	Crossed Sand blos	hand picked		Plow zone	0	25	bs	
2014-518	2	test unit	2 m x 2 m	TU4	1	510.419	554.732	Trench	hand picked		Plow zone	0	45	bs	

Table II-1 (cont.)

Access. Number	Field serial number	Proven-ience type	Proven-ience size	Unit #	Level	North grid coord	East grid coord	unit loca-tion	Coll-ection tech-nique	Screen size	stratum	Depth begin	Depth end	depth datum	comment
2014-518	3	test unit	2 m x 2 m	TU1	1	514.903	550.985	Trench	hand picked		Plow zone	0	25	bs	shovel skimming plow zone
2014-518	4	test unit	2 m x 2 m	TU5	2	505.073	543.899	Crossed Sand blows	hand picked		Sand layer	25	35	bs	
2014-518	5	test unit	2 m x 2 m	TU1	2	514.903	550.985	Trench	dry screened	1/4 inch	Midden	25	35	bs	
2014-518	6	test unit	2 m x 2 m	TU1	2	514.903	550.985	Trench	HF flotation sample		Midden	25	35	bs	From SW corner
2014-518	7	test unit	2 m x 2 m	TU5	3	505.073	543.899	Crossed Sand blows	HF flotation sample		NW corner	25	35	bs	NW corner
2014-518	8	test unit	2 m x 2 m	TU5	4	505.073	543.899	Crossed Sand blows	hand picked		Midden	35	45	bs	NW corner
2014-518	9	test unit	2 m x 2 m	TU4	2	510.419	554.732	Trench	HF flotation sample		NE corner	45	55	bs	
2014-518	10	test unit	2 m x 2 m	TU4	2	510.419	554.732	Trench	dry screened	1/4 inch	Midden	45	55	bs	
2014-518	11	test unit	2 m x 2 m	TU1	3	514.903	550.985	Trench	dry screened	1/4 inch	Midden	35	45	bs	
2014-518	12	test unit	2 m x 2 m	TU1	3	514.903	550.985	Trench	HF flotation sample		Midden	35	45	bs	From SW corner
2014-518	13	test unit	2 m x 2 m	TU3	4	512.031	553.536	Trench	dry screened	1/4 inch	Midden	45	55	bs	
2014-518	14	test unit	2 m x 2 m	TU4	2	510.419	554.732	Trench	hand picked		Midden	45	55	bs	Carbon Sample
2014-518	15	test unit	2 m x 2 m	TU5	5	505.073	543.899	Crossed Sand blows	dry screened	1/4 inch	Midden	45	55	bs	
2014-518	16	test unit	2 m x 2 m	TU3	5	512.031	553.536	Trench	dry screened	1/4 inch	Midden	55	65	bs	

Table II-1 (cont.)

Access. Number	Field serial number	Proven-ience type	Proven-ience size	Unit #	Level	North grid coord	East grid coord	unit loca-tion	Coll-ection tech-nique	Screen size	stratum	Depth begin	Depth end	depth datum	comment
2014-518	17	test unit	2 m x 2 m	TU3	5	512.031	553.536	Trench	HF flotation sample		Midden	55	65	bs	From NW corner
2014-518	18	test unit	2 m x 2 m	TU5	5	505.073	543.899	Crossed sand blows	HF flotation sample		E edge Midden	45	55	bs	
2014-518	19	test unit	2 m x 2 m	TU1	4	514.903	550.985	Trench	HF flotation sample		Midden	45	55	bs	From SW corner
2014-518	20	test unit	2 m x 2 m	TU1	4	514.903	550.985	Trench	dry screened	1/4 inch	Midden	45	55	bs	
2014-518	21	test unit	2 m x 2 m	TU5	6	505.073	543.899	Crossed Sand blows	dry screened	1/4 inch	East 1/2 Midden	55	65	bs	
2014-518	22	test unit	2 m x 2 m	TU5	6	505.073	543.899	Crossed Sand blows	dry screened	1/4 inch	West 1/2 Midden	55	65	bs	
2014-518	23	test unit	2 m x 2 m	TU4	3	510.419	554.732	Trench	HF flotation sample		NE corner	55	65	bs	
2014-518	24	test unit	2 m x 2 m	TU4	3	510.419	554.732	Trench	dry screened	1/4 inch	Midden	55	65	bs	
2014-518	25	test unit	2 m x 2 m	TU4	3	510.419	554.732	Trench	hand picked		Midden	55	65	bs	Carbon Sample
2014-518	26	test unit	2 m x 2 m	TU3	6	512.031	553.536	Trench	HF flotation sample		Midden	65	75	bs	From NW corner
2014-518	27	test unit	2 m x 2 m	TU3	6	512.031	553.536	Trench	dry screened	1/4 inch	Midden	65	75	bs	
2014-518	28	test unit	2 m x 2 m	TU4	3	510.419	554.732	Trench	hand picked		Midden	55	65	bs	Carbon Sample
2014-518	29	test unit	2 m x 2 m	TU2	5	513.54	552.206	Trench	dry screened	1/4 inch	Midden	55	65	bs	
2014-518	30	test unit	2 m x 2 m	TU5	7	505.073	543.899	Crossed Sand blows	hand picked		East 1/2 Midden	65	75	bs	
2014-518	31	test unit	2 m x 2 m	TU1	5	514.903	550.985	Trench	dry screened	1/4 inch	Midden	55	65	bs	

Table II-1 (cont.)

Access. Number	Field serial number	Proven-ience type	Proven-ience size	Unit #	Level	North grid coord	East grid coord	unit loca-tion	Coll-ection tech-nique	Screen size	stratum	Depth begin	Depth end	depth datum	comment
2014-518	32	test unit	2 m x 2 m	TU2	6	513.54	552.206	Trench	dry screened	1/4 inch	Midden	65	75	bs	
2014-518	33	test unit	2 m x 2 m	TU2	6	513.54	552.206	Trench	HF flotation sample		Midden	65	75	bs	Maybe never taken?
2014-518	34	test unit	2 m x 2 m	TU1	5	514.903	550.985	Trench	HF flotation sample		Midden	55	65	bs	From ??
2014-518	35	test unit	2 m x 2 m	TU3	7	512.031	553.536	Trench	HF flotation sample		Midden	75	85	bs	From NE corner
2014-518	36	test unit	2 m x 2 m	TU3	7	512.031	553.536	Trench	dry screened	1/4 inch	Midden	75	85	bs	
2014-518	37	test unit	2 m x 2 m	TU5	8	505.073	543.899	Crossed Sand blows	dry screened	1/4 inch	Midden	75	85	bs	
2014-518	38	test unit	2 m x 2 m	TU4	4	510.419	554.732	Trench	dry screened	1/4 inch	Midden	65	75	bs	
2014-518	39	test unit	2 m x 2 m	TU4	4	510.419	554.732	Trench	HF flotation sample		NE corner	65	75	bs	
2014-518	40	test unit	2 m x 2 m	TU5	8	505.073	543.899	Crossed Sand blows	hand picked		Midden	75	85	bs	Carbon Sample from SE corner
2014-518	41	test unit	2 m x 2 m	TU5B	1	506.625	542.534	Crossed Sand blows	dry screened	1/4 inch	Midden	25	35	bs	
2014-518	42	test unit	2 m x 2 m	TU1	6	514.903	550.985	Trench	HF flotation sample		Midden	65	75	bs	From SW corner
2014-518	43	test unit	2 m x 2 m	TU2	7	513.54	552.206	Trench	HF flotation sample		Midden	75	85	bs	from NE corner
2014-518	44	test unit	2 m x 2 m	TU2	7	513.54	552.206	Trench	dry screened		Midden	75	85	bs	
2014-518	45	test unit	2 m x 2 m	TU1	6	514.903	550.985	Trench	dry screened	1/4 inch	Midden	65	75	bs	

Table II-1 (cont.)

Access. Number	Field serial number	Proven-ience type	Proven-ience size	Unit #	Level	North grid coord	East grid coord	unit loca-tion	Coll-ection tech-nique	Screen size	stratum	Depth begin	Depth end	depth datum	comment
2014-518	47	test unit	2 m x 2 m	TU4	5	510.419	554.732	Trench	HF flotation sample		NE corner	75	85	bs	
2014-518	48	test unit	2 m x 2 m	TU4	5	510.419	554.732	Trench	dry screened	1/4 inch	Midden	75	85	bs	
2014-518	49	test unit	2 m x 2 m	TU5B	1	506.625	542.534	Crossed Sand blows	HF flotation sample		S wall, center	25	35	bs	
2014-518	50	test unit	2 m x 2 m	TU3	8	512.031	553.536	Trench	dry screened	1/4 inch	Midden	85	95	bs	
2014-518	51	test unit	2 m x 2 m	TU4	5	510.419	554.732	Trench	hand picked		Midden	75	85	bs	Carbon Sample @80 Cm
2014-518	52	test unit	2 m x 2 m	TU3	8	512.031	553.536	Trench	HF flotation sample		Midden	85	95	bs	From NE corner
2014-518	53	test unit	2 m x 2 m	TU3	8	512.031	553.536	Trench	HF flotation sample		Window over hearth	85	95	bs	Window over hearth (hearth was actually further N)
2014-518	54	test unit	2 m x 2 m	TU3	8	512.031	553.536	Trench	hand picked		Midden	85	95	bs	Carbon Sample over "hearth"
2014-518	55	cultural feature		TU4	Feature 1	510.419	554.732	Trench	dry screened	1/4 inch	Pit	85	97	bs	No artifacts found
2014-518	56	cultural feature		TU4	Feature 1	510.419	554.732	Trench	HF flotation sample		Pit	85	97	bs	
2014-518	57	test unit	2 m x 2 m	TU2	8	513.54	552.206	Trench	dry screened	1/4 inch	Midden	85	95	bs	

Table II-1 (cont).

Access. Number	Field serial number	Proven-ience type	Proven-ience size	Unit #	Level	North grid coord	East grid coord	unit loca-tion	Coll-ection tech-nique	Screen size	stratum	Depth begin	Depth end	depth datum	comment
2014-518	58	test unit	2 m x 2 m	TU2	8	513.54	552.206	Trench	HF flotation sample		Midden	85	95	bs	
2014-518	59	test unit	2 m x 2 m	TU3		512.031	553.536	Trench	dry screened	1/4 inch	Feature 2 (S 1/2)	95	115	bs	Feature 2 (S 1/2)
2014-518	60	test unit	2 m x 2 m	TU3		512.031	553.536	Trench	HF flotation sample		Feature 2 (N 1/2)	95	115	bs	Feature 2 (N 1/2)
2014-518	61	test unit	2 m x 2 m	TU3	9	512.031	553.536	Trench	hand picked		Midden	95	115	bs	Carbon Sample Feature 2
2014-518	62	test unit	2 m x 2 m	TU3		512.031	553.536	Trench	hand picked		Midden				Soil Sample for dating if necessary
2014-518	63	test unit	2 m x 2 m	TU1	3	514.903	550.985	Trench	hand picked		Midden	35	45	bs	Carbon Sample @36 cm
2016-503	1	test unit	2 m x 2 m	TU6	1	513.107	554.571	Square	dry screened	1/4 inch	Midden	0	10	bs	Surface stripped of sand prior to start
2016-503	2	test unit	2 m x 2 m	TU7	1	511.566	555.894	Square	dry screened	1/4 inch	Midden	0	10	bs	Surface stripped of sand prior to start
2016-503	3	test unit	2 m x 2 m	TU8	1	514.427	556.082	Square	dry screened	1/4 inch	Midden	0	10	bs	Surface stripped of sand prior to start

Table II-1 (cont.)

Access. Number	Field serial number	Proven-ience type	Proven-ience size	Unit #	Level	North grid coord	East grid coord	unit loca-tion	Coll-ection tech-nique	Screen size	stratum	Depth begin	Depth end	depth datum	comment
2016-503	4	test unit	2 m x 2 m	TU9	1	512.826	557.48	Square	dry screened	1/4 inch	Midden	0	10	bs	Surface stripped of sand prior to start
2016-503	5	test unit	2 m x 2 m	TU7	1	511.566	555.894	Square	hand picked		Carbon Sample	1	10	bs	Surface stripped of sand prior to start
2016-503	6	test unit	2 m x 2 m	TU7	1	511.566	555.894	Square	dry screened	1/4 inch	Possible burned tree/roden burrow	0	10	bs	Surface stripped of sand prior to start
2016-503	7	test unit	2 m x 2 m		0	513.107	554.571	Square	hand picked		All units clean up @ lvl1	0	10	bs	Surface stripped of sand prior to start
2016-503	8	test unit	2 m x 2 m	TU7	1	511.566	555.894	Square	hand picked		Carbon Sample	0	10	bs	Surface stripped of sand prior to start
2016-503	9	test unit	2 m x 2 m	TU6	2	513.107	554.571	Square	dry screened	1/4 inch	Midden	10	20	bs	Surface stripped of sand prior to start
2016-503	10	test unit	2 m x 2 m	TU7	2	511.566	555.894	Square	dry screened	1/4 inch	Midden	10	20	bs	Surface stripped of sand prior to start

Table II-1 (cont.)

Access. Number	Field serial number	Proven-ience type	Proven-ience size	Unit #	Level	North grid coord	East grid coord	unit loca-tion	Coll-ection tech-nique	Screen size	stratum	Depth begin	Depth end	depth datum	comment
2016-503	11	test unit	2 m x 2 m	TU8	2	514.427	556.082	Square	dry screened	1/4 inch	Midden	10	20	bs	Surface stripped of sand prior to start
2016-503	12	test unit	2 m x 2 m	TU9	2	512.826	557.48	Square	dry screened	1/4 inch	Midden	10	20	bs	Surface stripped of sand prior to start
2016-503	13	test unit	2 m x 2 m	TU9	2	512.826	557.48	Square	HF flotation sample		Possible Pit, NE corner	10	20	bs	Surface stripped of sand prior to start
2016-503	14	test unit	2 m x 2 m	TU8	2	514.427	556.082	Square	hand picked		Midden	10	20	bs	Surface stripped of sand prior to start
2016-503	15	test unit	2 m x 2 m	TU6	3	513.107	554.571	Square	dry screened	1/4 inch	Midden	20	30	bs	Surface stripped of sand prior to start
2016-503	16	test unit	2 m x 2 m	TU7	3	511.566	555.894	Square	dry screened	1/4 inch	Midden	20	30	bs	Surface stripped of sand prior to start
2016-503	17	test unit	2 m x 2 m	TU8	3	514.427	556.082	Square	dry screened	1/4 inch	Midden	20	30	bs	Surface stripped of sand prior to start

Table II-1 (cont.)

Access. Number	Field serial number	Proven-ience type	Proven-ience size	Unit #	Level	North grid coord	East grid coord	unit loca-tion	Coll-ection tech-nique	Screen size	stratum	Depth begin	Depth end	depth datum	comment
2016-503	18	test unit	2 m x 2 m	TU9	3	512.826	557.48	Square	dry screened	1/4 inch	Midden	20	30	bs	Surface stripped of sand prior to start
2016-503	19	test unit	2 m x 2 m	TU8/6	3	514.427	556.082	Square	dry screened	1/4 inch	Feature 4	20	30	bs	Surface stripped of sand prior to start
2016-503	20	test unit	2 m x 2 m	TU8	3	514.427	556.082	Square	HF flotation sample		Feature 4	20	30	bs	Surface stripped of sand prior to start
2016-503	21	test unit	2 m x 2 m	TU6	1	513.107	554.571	Square	dry screened	1/4 inch	Balk Wall over hearth from Trench	0	20	bs	Surface stripped of sand prior to start
2016-503	22	test unit	2 m x 2 m	TU6	3	513.107	554.571	Square	HF flotation sample		N1/2 Hearth	20	30	bs	Surface stripped of sand prior to start
2016-503	23	test unit	2 m x 2 m	TU8	4	514.427	556.082	Square	dry screened	1/4 inch	Midden	30	40	bs	Surface stripped of sand prior to start
2016-503	24	test unit	2 m x 2 m	TU9	4	512.826	557.48	Square	dry screened	1/4 inch	Midden	30	10	bs	Surface stripped of sand prior to start

Table II-1 (cont.)

Access. Number	Field serial number	Proven-ience type	Proven-ience size	Unit #	Level	North grid coord	East grid coord	unit loca-tion	Coll-ection tech-nique	Screen size	stratum	Depth begin	Depth end	depth datum	comment
2016-503	25	cultural feature	2 m x 2 m	TU6	3	513.107	554.571	Square	hand picked		Carbon Sample	20	30	bs	Surface stripped of sand prior to start
2016-503	26	test unit	2 m x 2 m	TU7	4	511.566	555.894	Square	dry screened	1/4 inch	Midden	30	40	bs	Surface stripped of sand prior to start
2016-503	27	balk	2 m x 20 cm		1			Square	dry screened	1/4 inch	Midden	0	40	bs	Surface stripped of sand prior to start. Balk wall fall after rain.
2016-503	28	cultural feature	2 m x 2 m	TU6	3	513.107	554.571	Square	dry screened	1/4 inch	Feature 6 S1/2	20	30	bs	Surface stripped of sand prior to start
2016-503	29	test unit	2 m x 2 m	TU8	5	514.427	556.082	Square	dry screened	1/4 inch	Midden	40	50	bs	Surface stripped of sand prior to start
2016-503	30	test unit	2 m x 2 m	TU7	5	511.566	555.894	Square	dry screened	1/4 inch	Midden	40	45	bs	Surface stripped of sand prior to start
2016-503	31	cultural feature	2 m x 2 m	TU9	5	512.826	557.48	Square	dry screened	1/4 inch	Feature 8 N 1/2	40	50	bs	Surface stripped of sand prior to start

Table II-1 (cont.)

Access. Number	Field serial number	Proven-ience type	Proven-ience size	Unit #	Level	North grid coord	East grid coord	unit loca-tion	Coll-ection tech-nique	Screen size	stratum	Depth begin	Depth end	depth datum	comment
2016-503	32	cultural feature	2 m x 2 m	TU9	5	512.826	557.48	Square	HF flotation sample		Feature 8 S1/2	40	50	bs	Surface stripped of sand prior to start
2016-503	33	cultural feature	2 m x 2 m	TU9	5	512.826	557.48	Square	dry screened	1/4 inch	Feature 9 N1/2	40	50	bs	Surface stripped of sand prior to start
2016-503	34	cultural feature	2 m x 2 m	TU9	5	512.826	557.48	Square	HF flotation sample		Feature 9 S1/2	40	50	bs	Surface stripped of sand prior to start
2016-503	35	cultural feature	2 m x 2 m	TU9	5	512.826	557.48	Square	dry screened	1/4 inch	Feature 10 S1/2	40	50	bs	Surface stripped of sand prior to start
2016-503	36	cultural feature	2 m x 2 m	TU9	5	512.826	557.48	Square	HF flotation sample		Feature 10 N1/2	40	50	bs	Surface stripped of sand prior to start
2016-503	37	test unit	2 m x 2 m	TU6	4	513.107	554.571	Square	dry screened	1/4 inch	Midden	30	40	bs	Surface stripped of sand prior to start
2016-503	38	cultural feature	2 m x 2 m	TU9	5	512.826	557.48	Square	dry screened	1/4 inch	Feature 11 S1/2	40	50	bs	Surface stripped of sand prior to start
2016-503	39	cultural feature	2 m x 2 m	TU9	5	512.826	557.48	Square	HF flotation sample		Feature 11 N1/2	40	50	bs	Surface stripped of sand

Appendix III

Pottery

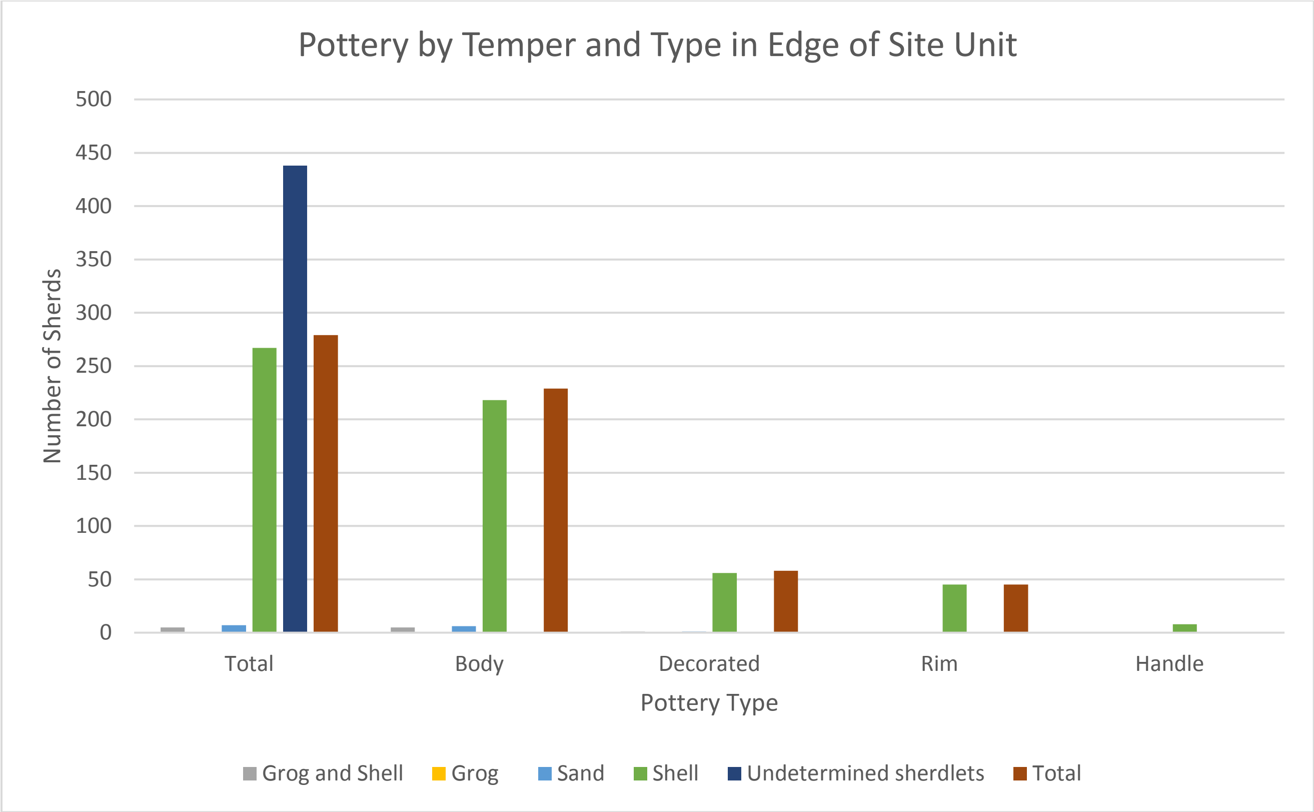

Figure III-1: Temper and Types of sherds in Edge of Site unit excavated in 2012.

Table III-1: Pottery sherds excavated from Edge of Site unit in 2012 as summarized in Figure III-1.

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2012-310	1	Level 1	RMBDY	Shell Temper	10.2	1	RIM/BODY	TRUE	Appliqué	rounded lip with out- beveled rim
2012-310	2	Level 2	SHERD	Grog and Shell Temper	0.5	1	RIM/BODY			
2012-310	2	Level 2	SHERD	Sand Temper	3.6	3	RIM/BODY			
2012-310	2	Level 2	RMBDY	Shell Temper	2.2	1	RIM/BODY			plain rim with flat lip
2012-310	2	Level 2	SHERD	Shell Temper	23.8	2	RIM/BODY			
2012-310	2	Level 2	SHERD	Shell Temper	0.9	1	RIM/BODY	TRUE	Punctated	4 small punctations visible
2012-310	2	Level 2	SHERD	Shell Temper	22.4	21	RIM/BODY			
2012-310	2	Level 2	SHERDLET	Shell Temper	8.8	34	SHERDLETS			
2012-310	3	Level 3	SHERDLET	Grog and Shell Temper	0.3	1	SHERDLETS			
2012-310	3	Level 3	SHERDLET	Sand Temper	0.1	1	SHERDLETS			
2012-310	3	Level 3	BODY	Shell Temper	1	1	RIM/BODY	TRUE		red slip on inside (?) face
2012-310	3	Level 3	RIM	Shell Temper	2.4	1	RIM/BODY	TRUE		slanted notches on outside of lip edge, flat lip, with slightly beveled inside rim
2012-310	3	Level 3	RIM	Shell Temper	1.2	1	RIM/BODY			
2012-310	3	Level 3	RIM	Shell Temper	1.5	1	RIM/BODY			in slanting beveled rim
2012-310	3	Level 3	RIM	Shell Temper	0.2	1	RIM/BODY	TRUE		notches on outside lip edge, possible in slanting beveled rim
2012-310	3	Level 3	SHERD	Shell Temper	47.7	24	RIM/BODY			

Table III-1 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2012-310	3	Level 3	SHERDLET	Shell Temper	16.2	54	SHERDLETS			
2012-310	4	Level 4	SHERDLET	Sand Temper	1.8	1	SHERDLETS	TRUE	Cord impressed	
2012-310	4	Level 4	SHERDLET	Sand Temper	2.2	1	SHERDLETS			
2012-310	4	Level 4	BODY	Shell Temper	6.6	1	RIM/BODY			neck fragment
2012-310	4	Level 4	BODY	Shell Temper	11.1	1	RIM/BODY	TRUE	Avenue Polychrome (Phillips 1970)	Red and Black bands similar in width with white in between unlike standard definition
2012-310	4	Level 4	BODY	Shell Temper	7.3	1	RIM/BODY	TRUE	Punctated	one line of punctations visible
2012-310	4	Level 4	BODY	Shell Temper	9	5	RIM/BODY	TRUE	Punctated	punctations across outside face
2012-310	4	Level 4	BODY	Shell Temper	435.3	70	RIM/BODY			
2012-310	4	Level 4	RIM	Shell Temper	3.9	3	RIM/BODY			Flat lip, 2 pieces refit
2012-310	4	Level 4	RIM	Shell Temper	2.9	1	RIM/BODY	TRUE	Notched	Notched appliqué strip below rounded lip on rim
2012-310	4	Level 4	RIM	Shell Temper	1.7	1	RIM/BODY	TRUE		Possibly folded lip, folded to the outside
2012-310	4	Level 4	RMBDY	Shell Temper	16	1	RIM/BODY			Handle attachement on rounded lip
2012-310	4	Level 4	RMBDY	Shell Temper	10	2	RIM/BODY	TRUE	Punctated	Handle attachement below punctated, outslanted rim
2012-310	4	Level 4	RMBDY	Shell Temper	27.7	1	RIM/BODY			Small handle from rounded lip to bas or outslanted rim
2012-310	4	Level 4	RMBDY	Shell Temper	1.5	1	RIM/BODY	TRUE		Possible node below lip
2012-310	4	Level 4	RMBDY	Shell Temper	7.4	1	RIM/BODY			Possible handle attachment on flat lip

Table III-1 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2012-310	4	Level 4	RMBDY	Shell Temper	5.2	1	RIM/BODY	TRUE	Notched	Notched appliqué strip below lip, possibly notched lip
2012-310	4	Level 4	RMBDY	Shell Temper	13	1	RIM/BODY			Very thick with rounded lip
2012-310	4	Level 4	RMBDY	Shell Temper	9.8	2	RIM/BODY			Outslanted rim with flat lip
2012-310	4	Level 4	RMBDY	Shell Temper	14.6	2	RIM/BODY			Outslanted rim with rounded lip
2012-310	4	Level 4	RMBDY	Shell Temper	9.3	1	RIM/BODY			Outslanted rim with rounded lip
2012-310	4	Level 4	RMBDY	Shell Temper	3.9	1	RIM/BODY			Flat lip with small diameter
2012-310	4	Level 4	RMBDY	Shell Temper	16.9	2	RIM/BODY			Flat lip
2012-310	4	Level 4	SHERD	Shell Temper	2.3	6	SHERDLETS			
2012-310	4	Level 4	SHERDLET	Shell Temper	108.5	242	SHERDLETS			
2012-310	5	Level 4 above Feature 2	BODY	Shell Temper	5.3	4	RIM/BODY			238-243 all part of same vessel (?) Similar matrix
2012-310	5	Level 4 above Feature 2	BODY	Shell Temper	6.8	2	RIM/BODY	TRUE	Punctated	Lines of punctations and areas of plain
2012-310	5	Level 4 above Feature 2	BODY	Shell Temper	19.7	2	RIM/BODY			
2012-310	5	Level 4 above Feature 2	HANDLE	Shell Temper	6	5	RIM/BODY			Handles. Wide at ends, narrow in centers with pinched strip down the center
2012-310	5	Level 4 above Feature 2	RIM	Shell Temper	11.2	3	RIM/BODY	TRUE	Punctated	One line of punctations just below rounded lip on outslanted rim with handle attachement below punctations

Table III-1 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2012-310	5	Level 4 above Feature 2	RMBDY	Shell Temper	10.4	1	RIM/BODY	TRUE	Notched	Notched, Outsloped rim
2012-310	5	Level 4 above Feature 2	RMBDY	Shell Temper	8.5	2	RIM/BODY	TRUE	Punctated	One line of punctations just below rounded lip on outstlanted rim
2012-310	5	Level 4 above Feature 2	SHERDLET	Shell Temper	3.1	16	SHERDLETS			
2012-310	6	Level 4 above Feature 3	BODY	Shell Temper	30	5	RIM/BODY	TRUE	Punctated	Covered in punctations
2012-310	6	Level 4 above Feature 3	BODY	Shell Temper	29	1	RIM/BODY	TRUE	Punctated	Half covered in punctations, partially plain
2012-310	6	Level 4 above Feature 3	BODY	Shell Temper	81.5	6	RIM/BODY			
2012-310	7	Feature 1	BODY	Shell Temper	1.7	1	RIM/BODY			
2012-310	8	Feature 2	BODY	Shell Temper	16.1	3	RIM/BODY			
2012-310	8	Feature 2	BODY	Shell Temper	0.9	1	RIM/BODY	TRUE	Red Paint	Possibly whit paint on top of red
2012-310	8	Feature 2	SHERDLET	Shell Temper	3.6	5	RIM/BODY			
2012-310	9	Feature 3	BODY	Grog and Shell Temper	19.2	2	RIM/BODY			
2012-310	9	Feature 3	BODY	Grog and Shell Temper	49.9	1	RIM/BODY	TRUE	white paint	very orange, hard fired matrix
2012-310	9	Feature 3	BODY	Sand Temper	9.8	3	RIM/BODY			
2012-310	9	Feature 3	SHERDLET	Sand Temper	0.9	1	SHERDLETS			
2012-310	9	Feature 3	BODY	Shell Temper	141.9	29	RIM/BODY			

Table III-1 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2012-310	9	Feature 3	BODY	Shell Temper	4.6	1	RIM/BODY	TRUE	Appliqué	Appliqué strip
2012-310	9	Feature 3	BODY	Shell Temper	18.3	13	RIM/BODY	TRUE	Punctated	Punctations covering outside surface
2012-310	9	Feature 3	BODY	Shell Temper	9.1	1	RIM/BODY	TRUE	Punctated	Punctations on part, plain on part
2012-310	9	Feature 3	RIM	Shell Temper	9	2	RIM/BODY	TRUE	notched	notching on outside of outslanted rim
2012-310	9	Feature 3	RIM	Shell Temper	6.9	1	RIM/BODY	TRUE	Appliqué	Appliqué strip or handle attached below flat lip
2012-310	9	Feature 3	RIM	Shell Temper	10.3	1	RIM/BODY	TRUE	Lug handle	Lug handle extended from flat lip
2012-310	9	Feature 3	RIM	Shell Temper	9.8	2	RIM/BODY			Outslanted rim with rounded lip
2012-310	9	Feature 3	RMBDY	Shell Temper	38.7	2	RIM/BODY	TRUE	notched	notching on outside below flat lip
2012-310	9	Feature 3	RMBDY	Shell Temper	49.5	1	RIM/BODY			Flat lip likely part of bowl
2012-310	9	Feature 3	RMBDY	Shell Temper	16.3	1	RIM/BODY			Flat lip
2012-310	9	Feature 3	SHERDLET	Shell Temper	18.6	39	SHERDLETS			
2012-310	11	Feature 3 N 1/2	SHERDLET	Sand Temper	0.6	1	SHERDLETS			
2012-310	11	Feature 3 N 1/2	BODY	Shell Temper	9.3	2	RIM/BODY			
2012-310	11	Feature 3 N 1/2	RIM	Shell Temper	11.4	1	RIM/BODY	TRUE	Lug handle	Lug handle extending from flat lip
2012-310	11	Feature 3 N 1/2	SHERDLET	Shell Temper	1	1	SHERDLETS			
2012-310	12	Feature 3 S 1/2	BODY	Grog and Shell Temper	4	1	RIM/BODY			
2012-310	12	Feature 3 S 1/2	BODY	Shell Temper	128.1	13	RIM/BODY			

Table III-1 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2012-310	12	Feature 3 S 1/2	RIM	Shell Temper	2.4	1	RIM/BODY			Outslanted rim with rounded lip
2012-310	12	Feature 3 S 1/2	RMBDY	Shell Temper	9.5	1	RIM/BODY	TRUE	Appliqué	Noded appliqué strip below outslanted rim with flat lip
2012-310	12	Feature 3 S 1/2	SHERDLET	Shell Temper	16.8	41	SHERDLETS			

Figure III-2: Shell tempered sherd with appliqué strip applied below lip. Excavated from Level 1 of Edge of Site unit.

Figure III-3: Shell tempered sherds, punctated on left, rim on right. Excavated from Level 2 of Edge of Site unit.

Figure III-4: Shell tempered sherds, red paint on left, plain rim sherds in center, notching on exterior of lip on right. Excavated from Level 3 of Edge of Site unit.

Figure III-5: Shell tempered sherds. Avenue Polychrome on top right, appliqué strip below rim in center and bottom left, remaining are punctated. Excavated from Level 4 of Edge of Site unit.

Figure III-6: Shell tempered sherds. Three in top right have handle attachments with broken handles, left is notched lip exterior, bottom center is a broken handle, remaining are punctated. Excavated from Level 4 above Feature 2 in Edge of Site unit.

Figure III-7: Shell tempered, punctated sherds. Excavated from Level 4 above Feature 3 in Edge of Site unit.

Figure III-8: Shell tempered, red slipped sherd. Excavated from Feature 2 in Edge of Site unit.

Figure III-9: Shell tempered sherds. Punctated on left, decorated rims on right (notched applique strip applied below lip adjacent to tag), right bottom is white slipped, remaining are notched lip exteriors. Excavated from Feature 3 of Edge of Site unit.

Figure III-10: Shell tempered sherd. Notched appliqué strip applied below lip exterior. Excavated from S ½ of Feature 3 in Edge of Site unit.

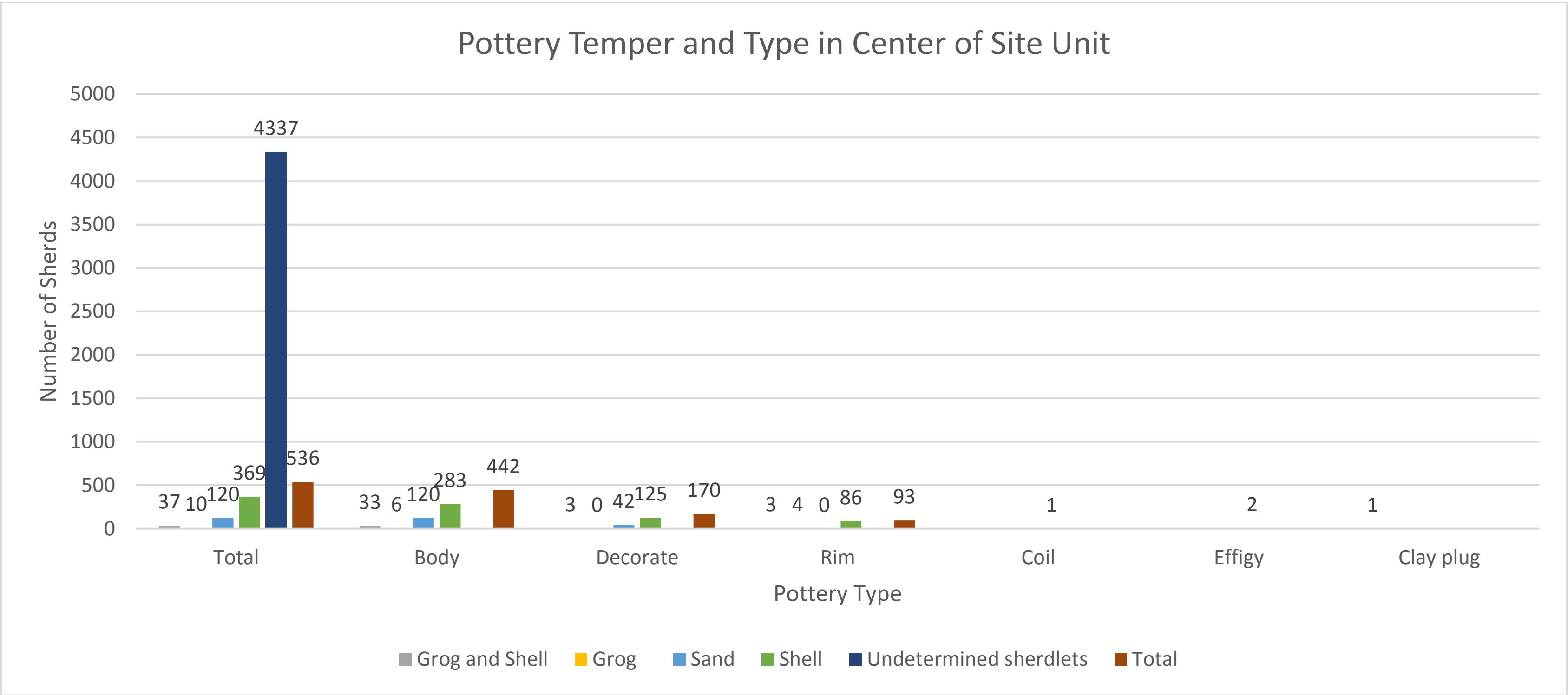

Figure III-11: Temper and Types of sherds in Center of Site unit excavated in 2012.

Table III-2: Pottery sherds excavated from Center of Site unit in 2012 as summarized in Figure III-11.

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2012-310	13	Plow Zone	BODY	Shell Temper	98.2	6	RIM/BODY			
2012-310	13	Plow Zone	BODY	Shell Temper	84.5	5	RIM/BODY	TRUE	Punctated	Punctations across surface with area of plain (plain is the neck of one sherd)
2012-310	13	Plow Zone	BODY	Shell Temper	1.7	4	RIM/BODY	TRUE	Punctated	Punctations across surface
2012-310	13	Plow Zone	BODY	Shell Temper	11.5	1	RIM/BODY	TRUE	Avenue Polychrome (Phillips 1970)	thicker red and black than white bands
2012-310	13	Plow Zone	RMBDY	Shell Temper	3.4	1	RIM/BODY	TRUE	Punctated	Line of punctations below outslanted rim with rounded lip
2012-310	13	Plow Zone	RMBDY	Shell Temper	14.6	1	RIM/BODY	TRUE		Notched appliqué strip below inrolled lip/rim
2012-310	13	Plow Zone	SHERDLET	Shell Temper	4.9	17	SHERDLETS			
2012-310	14	Level 1	RIM	Grog and Shell Temper	1.7	1	RIM/BODY	TRUE	nodes	two applied nodes under out-folded flat lip
2012-310	14	Level 1	SHERDLET	Grog and Shell Temper	0.5	1	SHERDLETS			
2012-310	14	Level 1	SHERDLET	Sand Temper	1	2	SHERDLETS			
2012-310	14	Level 1	BODY	Shell Temper	12.8	7	RIM/BODY			
2012-310	14	Level 1	BODY	Shell Temper	1.2	1	RIM/BODY	TRUE	notched	two small notches on plan sherd
2012-310	14	Level 1	SHERDLET	Shell Temper	23.3	63	SHERDLETS			
2012-310	16	Level 3	BODY	Shell Temper	2.9	1	RIM/BODY			
2012-310	16	Level 3	SHERDLET	Shell Temper	0.1	1	SHERDLETS			

Table III-2 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2012-310	17	Level 4	BODY	Grog and Shell Temper	18.9	12	RIM/BODY			Plain sherds and sherdlets
2012-310	17	Level 4	BODY	Grog and Shell Temper	3.5	1	RIM/BODY	TRUE	Brushed	parallel striations
2012-310	17	Level 4	BODY	Grog and Shell Temper	4.3	1	RIM/BODY	TRUE	cord marked	deep cord markings ~3mm wide
2012-310	17	Level 4	RIM	Grog and Shell Temper	2.4	1	RIM/BODY			rounded lip
2012-310	17	Level 4	BODY	Sand Temper	18.6	8	RIM/BODY	TRUE	Blue Lake cord marked	sand temper with shallow cord marks
2012-310	17	Level 4	BODY	Sand Temper	12.7	15	RIM/BODY			Plain sherds and sherdlets
2012-310	17	Level 4	BODY	Shell Temper	0.6	1	ORNAMENT	TRUE	Appliqué strip	two notches in appliqué strip
2012-310	17	Level 4	BODY	Shell Temper	13.1	7	RIM/BODY	TRUE	Ranch incised (PFG 1951)	
2012-310	17	Level 4	BODY	Shell Temper	45.6	14	RIM/BODY	TRUE	Punctated	Punctations of various sizes and shapes across surface
2012-310	17	Level 4	BODY	Shell Temper	68	4	RIM/BODY	TRUE	Parkin	Punctations with plain neck. No rim present
2012-310	17	Level 4	BODY	Shell Temper	8	2	RIM/BODY	TRUE		Handle attachement
2012-310	17	Level 4	BODY	Shell Temper	3.7	4	ORNAMENT	TRUE	Appliqué strips	small, thin appliqué strips
2012-310	17	Level 4	BODY	Shell Temper	8.7	1	RIM/BODY	TRUE	Vernon Paul Appliqué	4 strips visible on body sherd making vernon paul most likely

Table II-2 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2012-310	17	Level 4	BODY	Shell Temper	5.4	1	RIM/BODY	TRUE	likely Black paint	two parrallel strips of likely black paint on buff (could be from firing, not much is visible)
2012-310	17	Level 4	BODY	Shell Temper	5.4	1	RIM/BODY	TRUE	Parkin	Punctations hard to make out, but definite base of handle/rim decoration
2012-310	17	Level 4	BODY	Shell Temper	2031.4	2712	RIM/BODY			Plain sherds and sherdlets
2012-310	17	Level 4	DEB	Shell Temper	6.4	4	FBCLAY			Coil fragments
2012-310	17	Level 4	Effigy	Shell Temper	2.3	1	ORNAMENT	TRUE	effigy	human head with punctated eyes and mouth and pinched nose. Neck broken below mouth
2012-310	17	Level 4	Effigy	Shell Temper	6.9	1	ORNAMENT	TRUE	effigy	human head with punctations for eyes and mouth. Hair knot on back with two incised lines. Broken below neck and on bottom of hair knot.
2012-310	17	Level 4	HANDLE	Shell Temper	0.5	1	RIM/BODY	TRUE	Appliqué	Appliqué strip/handle broken from body
2012-310	17	Level 4	RIM	Shell Temper	9	1	RIM/BODY	TRUE	Noded	Outslanted rim with rounded lip. Round nodes attached below lip
2012-310	17	Level 4	RIM	Shell Temper	8.7	1	RIM/BODY	TRUE	Notched Appliqué	Outslanted rim with rounded lip. Appliqué strip ~1 cm below lip with notches

2012-310	17	Level 4	RIM	Shell Temper	3.1	1	RIM/BODY	TRUE	Notched Appliqué	Outslanted rim with abrupt lip. Appliqué strip below lip with notches
2012-310	17	Level 4	RIM	Shell Temper	3.7	1	RIM/BODY	TRUE	Notched	Outslanted rim with abrupt lip. One line of notches just below lip
2012-310	17	Level 4	RIM	Shell Temper	3.9	1	RIM/BODY	TRUE	Notched	Outslanted rim with rounded lip. One line of notches below lip. Sand in shell tempered matrix
2012-310	17	Level 4	RIM	Shell Temper	2.1	1	RIM/BODY	TRUE	Appliqué strips	Verticle appliqué strips attached below lip. Flat lip
2012-310	17	Level 4	RIM	Shell Temper	1.8	1	RIM/BODY	TRUE		Flat lip with appliqué strap handle (useless) attached below lip
2012-310	17	Level 4	RIM	Shell Temper	2.6	1	RIM/BODY	TRUE	Notched Appliqué	Flat lip with appliqué strip ~.5 cm below lip with notches
2012-310	17	Level 4	RIM	Shell Temper	17.2	2	RIM/BODY	TRUE		One line of punctations around the outside rim. Punctated from left
2012-310	17	Level 4	RIM	Shell Temper	5.2	1	RIM/BODY			Outslanted rim with folded lip
2012-310	17	Level 4	RIM	Shell Temper	5.2	1	RIM/BODY			Outslanted rim with flat, lip angled to form point at intersection of rim and lip
2012-310	17	Level 4	RIM	Shell Temper	3.8	1	RIM/BODY	TRUE		Outslanted rim with rounded lip and handle attached below lip
2012-310	17	Level 4	RIM	Shell Temper	1.9	1	RIM/BODY			Outfolded, flat lip

Table II-2 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2012-310	17	Level 4	RIM	Shell Temper	19.4	1	RIM/BODY	TRUE	Noded and Painted	Outslanted rim with folded, rounded lip. Appliqué strip cut into nodes applied below lip. Inside is buff slipped with rim painted red.
2012-310	17	Level 4	RIM	Shell Temper	2.7	1	RIM/BODY	TRUE	Notched	Outslanted rim with rounded lip and notches in lip
2012-310	17	Level 4	RIM	Shell Temper	14.1	4	RIM/BODY			Outslanted rim with rounded lip
2012-310	17	Level 4	RIM	Shell Temper	8.7	2	RIM/BODY			Outslanted rim/neck with rounded lip
2012-310	17	Level 4	RIM	Shell Temper	45.8	11	RIM/BODY			flat lip
2012-310	17	Level 4	RIM	Shell Temper	27.7	12	RIM/BODY			rounded lip
2012-310	17	Level 4	RMBDY	Shell Temper	8.8	1	RIM/BODY	TRUE		Outslanted rim with rounded lip. Strap handle attached just below lip
2012-310	17	Level 4	RMBDY	Shell Temper	34.3	1	RIM/BODY	TRUE		Flat lip. Strap handle (~6cm) with central node attaches below lip.
2012-310	17	Level 4	RMBDY	Shell Temper	36.7	1	RIM/BODY	TRUE		Outslanting rim with lip rounded into large strap handle (~5cm wide)
2012-310	17	Level 4	RMBDY	Shell Temper	26.8	1	RIM/BODY			body and part of neck/rim
2012-310	17	Level 4	RMBDY	Shell Temper	9.2	1	RIM/BODY	TRUE	Rhodes Incised	Outslanted rim with rounded lip. Appliqué "handles" attached unti lip. Looks like pic in Phillips, but body is missing

Table II-2 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2012-310	17	Level 4	SHERDLET	Shell Temper	1.9	8	RIM/BODY			
2012-310	18	Level 4 flotation sample heavy fraction		Sand Temper	1	1	SHERDLETS			Sorted from HF for ~60 min
2012-310	18	Level 4 flotation sample heavy fraction		Shell Temper	32.3	100	SHERDLETS			Sorted from HF for ~60 min
2012-310	20	Level 4 flotation sample heavy fraction		Sand Temper	2.1	1	SHERDLETS			Sorted from HF for ~15 min
2012-310	20	Level 4 flotation sample heavy fraction		Shell Temper	13.6	24	SHERDLETS			Sorted from HF for ~15 min
2012-310	21	Level 5	BASE	Grog and Shell Temper	18.2	1	RIM/BODY			Possible base or large decorative part of something. Very thick and rounded
2012-310	21	Level 5	BODY	Grog and Shell Temper	76.3	9	RIM/BODY			Sherds
2012-310	21	Level 5	NONVES	Grog and Shell Temper	2.1	1	clay plug			Possibly part of effigy, possibly part of unused coil
2012-310	21	Level 5	RIM	Grog Temper	18.6	4	RIM/BODY			Flat lip.
2012-310	21	Level 5	BODY	Sand Temper	24.7	3	RIM/BODY	TRUE	Cord marked	Fine cord impressions across surface

Table II-2 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2012-310	21	Level 5	BODY	Sand Temper	8.6	1	RIM/BODY	TRUE	Cord marked	Large cord impressions across surface
2012-310	21	Level 5	BODY	Sand Temper	23.1	12	RIM/BODY			Sherds
2012-310	21	Level 5	BODY	Sand Temper	2.5	2	RIM/BODY	TRUE	Cord marked	Cord Impressions across surface
2012-310	21	Level 5	BODY	Shell Temper	1570.1	1410	SHERDLETS			Sherds and sherdlets
2012-310	21	Level 5	BODY	Shell Temper	3.8	1	RIM/BODY	TRUE		Applied node
2012-310	21	Level 5	BODY	Shell Temper	1.1	1	RIM/BODY	TRUE		Punctations with straight line
2012-310	21	Level 5	BODY	Shell Temper	20.1	1	RIM/BODY	TRUE	Painted	Red and White paint on body surface
2012-310	21	Level 5	BODY	Shell Temper	25.6	6	RIM/BODY	TRUE	Ranch Incised (PFG 1951)	
2012-310	21	Level 5	BODY	Shell Temper	15.9	2	RIM/BODY	TRUE	Red Paint	Red paint on relatively flat sherd
2012-310	21	Level 5	BODY	Shell Temper	1.2	1	RIM/BODY	TRUE	Punctated	Punctations and possible handle attachement below neck
2012-310	21	Level 5	BODY	Shell Temper	4.2	1	RIM/BODY	TRUE		Pinched appliqué on body sherd
2012-310	21	Level 5	BODY	Shell Temper	64.7	16	RIM/BODY	TRUE	Punctated	Punctation across body frag
2012-310	21	Level 5	BODY	Shell Temper	3.8	3	RIM/BODY	TRUE	Ranch Incised (PFG 1951)	
2012-310	21	Level 5	BODY	Shell Temper	4	2	RIM/BODY	TRUE	Appliqué	Appliqué strips on body sherd
2012-310	21	Level 5	BODY	Shell Temper	13.6	6	RIM/BODY	TRUE	Punctated	Punctations across surface
2012-310	21	Level 5	NECK	Shell Temper	3.6	1	RIM/BODY			Neck of jar
2012-310	21	Level 5	NECK	Shell Temper	6.3	1	RIM/BODY			Neck of jar

Table II-2 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2012-310	21	Level 5	RIM	Shell Temper	4.2	1	RIM/BODY	TRUE		Flat lip with node below rim
2012-310	21	Level 5	RIM	Shell Temper	0.8	1	RIM/BODY			
2012-310	21	Level 5	RIM	Shell Temper	7.5	2	RIM/BODY			Flat lip
2012-310	21	Level 5	RIM	Shell Temper	5.3	2	RIM/BODY			Handle attached below flat lip
2012-310	21	Level 5	RIM	Shell Temper	0.2	1	RIM/BODY	TRUE		Red painted rim/lip
2012-310	21	Level 5	RIM	Shell Temper	3.9	1	RIM/BODY	TRUE		Punctations on extended flat lip/handle
2012-310	21	Level 5	RIM	Shell Temper	1.6	1	RIM/BODY	TRUE		Node below rounded lip on outstlaned rim
2012-310	21	Level 5	RIM	Shell Temper	7.2	1	RIM/BODY	TRUE		Pinched appliqué strip below flat lip on outslanted rim
2012-310	21	Level 5	RIM	Shell Temper	3.3	1	RIM/BODY	TRUE		Line of punctations just below rounded lip on outslanted rim
2012-310	21	Level 5	RIM	Shell Temper	5.3	1	RIM/BODY	TRUE		Line of punctations on outside of folded lip
2012-310	21	Level 5	RIM	Shell Temper	2.1	1	RIM/BODY	TRUE		Line of punctations on flat lip
2012-310	21	Level 5	RIM	Shell Temper	21.7	2	RIM/BODY	TRUE		Round punctation on outside of rounded lip on outslanting rim
2012-310	21	Level 5	RIM	Shell Temper	2.6	1	RIM/BODY	TRUE		Line of punctations on outside of flat lip . Some sand in matrix
2012-310	21	Level 5	RIM	Shell Temper	20.4	3	RIM/BODY			Flat lip
2012-310	21	Level 5	RIM	Shell Temper	3.8	2	RIM/BODY			Rounded lip on outslanted rim

Table II-2 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2012-310	21	Level 5	RIM	Shell Temper	14.1	1	RIM/BODY			Flat lip. Wide, almost a lug handle
2012-310	21	Level 5	RIM	Shell Temper	0.5	1	RIM/BODY	TRUE	Appliqué handle	Appliqué handle that has detached from rim
2012-310	21	Level 5	RIM	Shell Temper	6.6	1	RIM/BODY	TRUE		Handle attached ust below line of punctations on outside of rounded lip on outslanting rim
2012-310	21	Level 5	RIM	Shell Temper	12.9	1	RIM/BODY	TRUE		Punctations into rounded lip on outslanted rim
2012-310	21	Level 5	RIM	Shell Temper	1.6	1	RIM/BODY	TRUE		Notched into edge of rim. Possibly a lug handle or fish fin
2012-310	21	Level 5	RIM	Shell Temper	3.5	1	RIM/BODY	TRUE		Pinched appliqué strip below rounded lip on outslanted rim
2012-310	21	Level 5	RMBDY	Shell Temper	31.7	1	RIM/BODY			Flat lip
2012-310	21	Level 5	RMBDY	Shell Temper	8.2	1	RIM/BODY			Rounded lip
2012-310	21	Level 5	RMBDY	Shell Temper	50	2	RIM/BODY			Rounded lip on outstlanted rim
2012-310	21	Level 5	RMBDY	Shell Temper	16.6	3	RIM/BODY			Folded lip on outslanted rim
2012-310	21	Level 5	RMBDY	Shell Temper	20.4	1	RIM/BODY	TRUE		Linear punctations on outside of rounded lip on outslanting rim
2012-310	21	Level 5	SHERD	Shell Temper	0.7	5	SHERDLETS			
2012-310	22	Level 6	BODY	Grog and Sand Temper	4.7	5	RIM/BODY			

Table II-2 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2012-310	22	Level 6	BODY	Grog and Shell Temper	3.7	3	RIM/BODY			
2012-310	22	Level 6	RIM	Grog and Shell Temper	0.8	1	RIM/BODY			Flat lip
2012-310	22	Level 6	RIM	Grog and Shell Temper	2	1	RIM/BODY			Flat lip
2012-310	22	Level 6	BODY	Grog Temper	12	6	RIM/BODY			
2012-310	22	Level 6	BODY	Sand Temper	138.7	24	RIM/BODY	TRUE	Cord marked	~1mm cords
2012-310	22	Level 6	BODY	Sand Temper	63.9	51	RIM/BODY			
2012-310	22	Level 6	BODY	Sand Temper	35.6	4	RIM/BODY	TRUE	Cord marked	~2mm cords
2012-310	22	Level 6	BODY	Shell Temper	8	1	RIM/BODY	TRUE	Punctated	Punctations across body surface
2012-310	22	Level 6	BODY	Shell Temper	0.7	1	RIM/BODY	TRUE	Punctated	Small punctations across surface
2012-310	22	Level 6	BODY	Shell Temper	2.3	1	RIM/BODY	TRUE	Ranch Incised (PFG 1951)	
2012-310	22	Level 6	BODY	Shell Temper	116.47	160	RIM/BODY			
2012-310	22	Level 6	BODY	Shell Temper	1.6	1	RIM/BODY	TRUE	Appliqué	Appliqué strip that has broken off of body
2012-310	22	Level 6	RIM	Shell Temper	2.8	1	RIM/BODY			Flat lip
2012-310	22	Level 6	RIM	Shell Temper	6.4	1	RIM/BODY	TRUE		Punctations along outside of Flat lip
2012-310	28	Feature 4	BODY	Shell Temper	18.4	3	RIM/BODY			
2012-310	29	Feature 5	BODY	Shell Temper	20.7	4	RIM/BODY			

Figure III-12: Shell tempered sherds. Right to left: Notched exterior lip, Avenue Polychrome, notched, appliqué strip applied below lip exterior, punctated sherds. Excavated from Plow Zone of Center of Site unit.

Figure III-13: Right: notched lip exterior of shell tempered sherd, left: nodes on lip exterior of grog and shell tempered sherd. Excavated from Level 1 of Center of Site unit.

Figure III-14: Shell tempered sherds. Decorations on exterior of lips. Center sherd (both sides pictured, on in each photo) painted red on the bevel of the lip. Left below tag: Nodes applied below lip exterior, Far right center and bottom: notched applique strip applied below lip exterior, remaining: Notched lip exterior. Excavated from Level 4 of Center of Site unit.

Figure III-15: Shell tempered sherds. Left: appliqué strips, one on right notched. Right: Handles and handle attachments, node in center of handle attachment of sherd below tag. Notches into top of lip of sherd second from left in bottom row. Excavated from Level 4 of Center of Site unit.

Figure III-16: Shell tempered sherds. Left: Ranch incised and black slip (top-center), Right: Notched exterior rim. Excavated from Level 4 of Center of Site unit.

Figure III-17: Shell tempered sherds. Punctated sherds. Excavated from Level 4 of Center of Site unit.

Figure III-18: Human head effigy figures, shell tempered. Right figure pictured front (left) and back (right). Back of head has small extension that may be a hair knot. Excavated from Level 4 of Center of Site unit.

Figure III-19: Sand tempered, cordmarked sherds. Excavated from Level 4 of Center of Site unit.

Figure III-20: Sand tempered, cordmarked sherds. Excavated from Level 5 of Center of Site unit.

Figure III-21: Shell tempered sherds. Left: Ranch incised, Right: handles and handle attachments. Excavated from Level 5 of Center of Site unit.

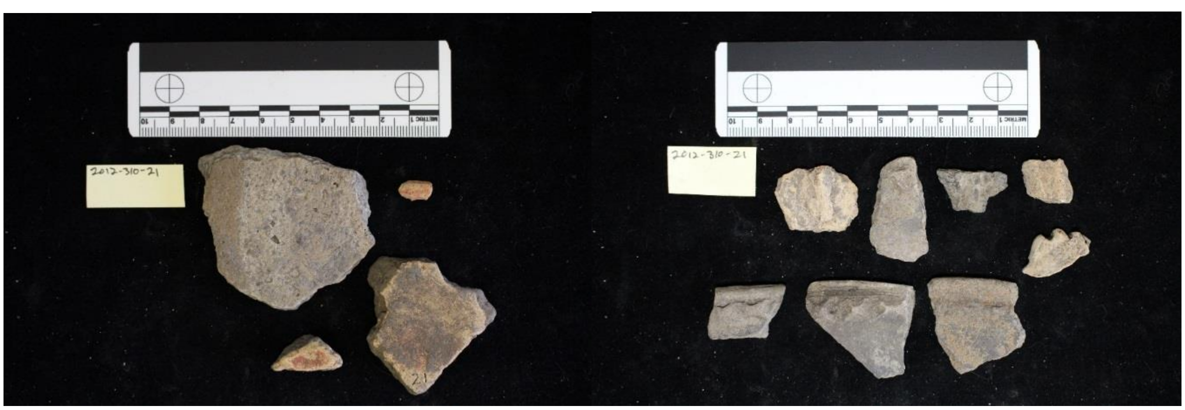

Figure III-22: Shell tempered sherds. Left: red slipped, Right: Top row, punctated, bottom row, notched appliqué strips applied below lip, far right, notches into the top of lip. Excavated from Level 5 of Center of Site unit.

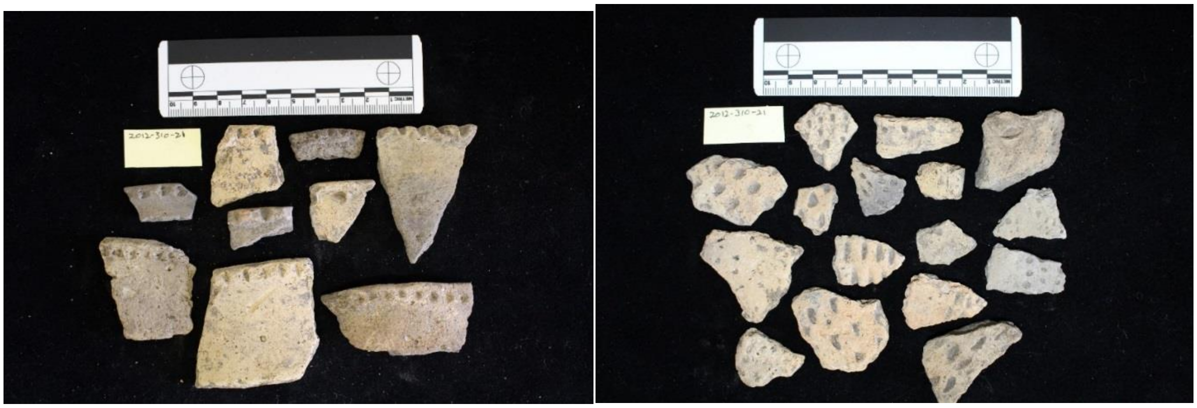

Figure III-23: Shell tempered sherds. Left: Notches into lip exterior. Right: Punctated. Excavated from Level 5 of Center of Site unit.

Figure III-24: Shell tempered sherds. Punctated (large sherd), notched and incised sherds (remaining). Excavated from Level 5 of Center of Site unit.

Figure III-25: Sand tempered, cordmarked sherds. Excavated from Level 6 of Center of Site unit.

Figure III-26: Shell tempered sherds. Top row: punctated. Bottom row: Appliqué strip, notches into lip exterior, curved appliqué strip. Excavated from Level 6 of Center of Site unit.

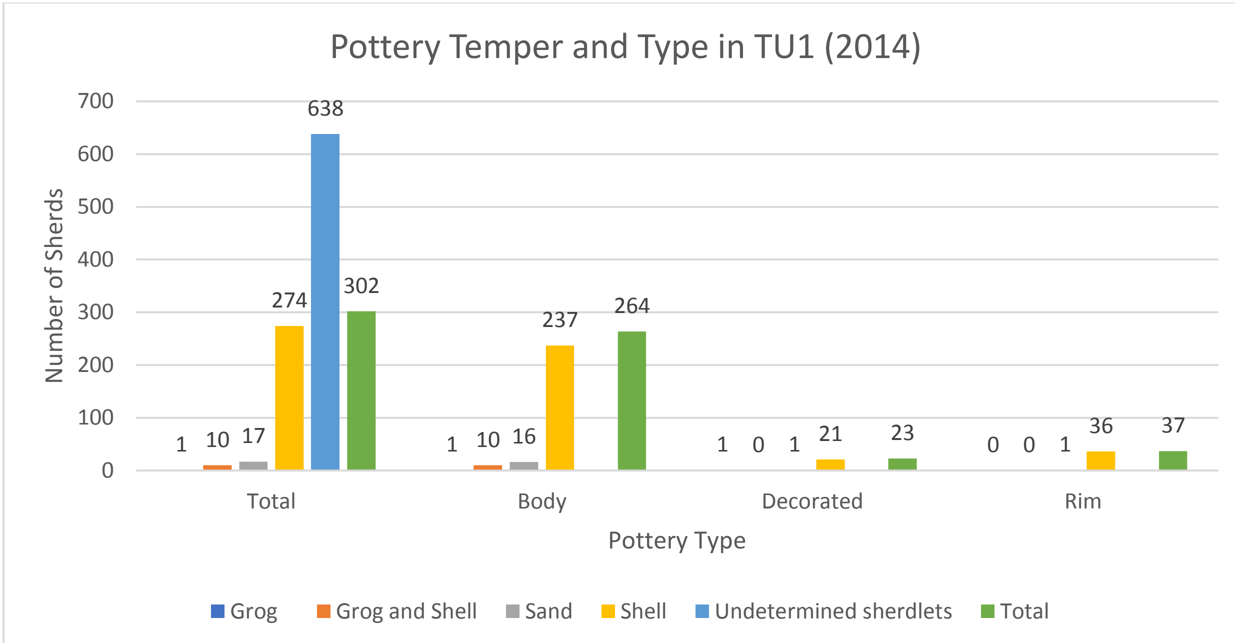

Figure II-27: Temper and Types of sherds in TU1 excavated in 2014.

Table II-3: Pottery sherds excavated from TU1 in 2014 as summarized in Figure II-27.

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2014-518	3	Level 1	BODY	Grog and Shell Temper	21.2	3	RIM/BODY			
2014-518	3	Level 1	BODY	Shell Temper	44.1	4	RIM/BODY			
2014-518	3	Level 1	RMBDY	Shell Temper	27.6	1	RIM/BODY			Rounded lip on straight rim
2014-518	3	Level 1	SHERD	Shell Temper	2	1	SHERDLETS			

Table II-3 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2014-518	5	Level 2	BODY	Grog and Shell Temper	61.6	7	RIM/BODY			
2014-518	5	Level 2	BODY	Sand Temper	12.3	3	RIM/BODY			
2014-518	5	Level 2	BODY	Shell Temper	418.3	59	RIM/BODY			
2014-518	5	Level 2	BODY	Shell Temper	15.7	4	RIM/BODY	TRUE	punctated	Punctations across body
2014-518	5	Level 2	BODY	Shell Temper	3.8	1	RIM/BODY	TRUE	incised and punctated	one line of punctations with incised lines running at an angle below the punctations
2014-518	5	Level 2	RIM	Shell Temper	5.6	2	RIM/BODY			rounded lip on outslanted rim
2014-518	5	Level 2	RIM	Shell Temper	5.4	2	RIM/BODY			Rounded lip
2014-518	5	Level 2	RIM	Shell Temper	1.5	1	RIM/BODY			Flat lip that extends outside rim with outslanting rim on inside
2014-518	5	Level 2	RIM	Shell Temper	3.7	1	RIM/BODY			Flat lip on straight rim that was folded out to form
2014-518	5	Level 2	RIM	Shell Temper	3.2	1	RIM/BODY	TRUE	Notched appliqué strip	notched appliqué strip applied below rim (rim broken)
2014-518	5	Level 2	RIM	Shell Temper	11.7	3	RIM/BODY			Flat lip on straight rim that was folded out to form
2014-518	5	Level 2	RIM	Shell Temper	3	1	RIM/BODY			Flat, turned out lip. Pot and handle/outside of lip edge broken
2014-518	5	Level 2	RMBDY	Shell Temper	32	1	RIM/BODY	TRUE	Shaped rim	Flat lip that extends up to a point and is then broken. Possible effigy

Table II-3 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2014-518	5	Level 2	RMBDY	Shell Temper	21.8	1	RIM/BODY			Flat lip on slightly outstlanting rim
2014-518	5	Level 2	RMBDY	Shell Temper	11.6	1	RIM/BODY	TRUE	Notched appliqué strip	Notched appliqué strip applied below rounded lip on straight rim
2014-518	5	Level 2	RMBDY	Shell Temper	11	1	RIM/BODY			Flat lip on straight rim
2014-518	5	Level 2	RMBDY	Shell Temper	12.5	1	RIM/BODY	TRUE	Punctated	Line of punctation below flat lip on straight rim
2014-518	5	Level 2	SHERD	Shell Temper	285.4	381	SHERDLETS			
2014-518	6	Level 2 flotation sample heavy fraction	BODY	Shell Temper	44.9	52	RIM/BODY			HF sorted for 10 min
2014-518	6	Level 2 flotation sample heavy fraction	RIM	Shell Temper	8.3	2	RIM/BODY			HF sorted for 10 min, flat lip
2014-518	6	Level 2 flotation sample heavy fraction	RIM	Shell Temper	0.9	1	RIM/BODY			HF sorted for 10 min, outslanted rim with folded out, flattened lip
2014-518	6	Level 2 flotation sample heavy fraction	RIM	Shell Temper	3.3	1	RIM/BODY			HF sorted for 10 min, folded out and flattened lip
2014-518	11	Level 3	BODY	grog	1.2	1	RIM/BODY	TRUE	Fabric/Cord impressed	
2014-518	11	Level 3	BODY	Sand Temper	7.3	3	RIM/BODY			
2014-518	11	Level 3	BODY	Shell Temper	214.5	52	RIM/BODY			
2014-518	11	Level 3	BODY	Shell Temper	181.3	29	RIM/BODY			
2014-518	11	Level 3	BODY	Shell Temper	14.9	1	RIM/BODY	TRUE	Punctated	Punctations forming unknown pattern

Table II-3 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2014-518	11	Level 3	BODY	Shell Temper	3	2	RIM/BODY	TRUE	Punctated	Punctations on body
2014-518	11	Level 3	BODY	Shell Temper	4.5	1	RIM/BODY	TRUE	Punctated	Line of punctations on body
2014-518	11	Level 3	RIM	Shell Temper	6.5	1	RIM/BODY	TRUE	Punctated	Outsloping lip with punctations on the outside of the lip
2014-518	11	Level 3	RIM	Shell Temper	25.8	1	RIM/BODY	TRUE	Punctated	Outsloping rim with folded out rounded lip. Line of punctations directly below lip
2014-518	11	Level 3	RIM	Shell Temper	7.1	1	RIM/BODY			Rounded lip on a small opening (bottle?)
2014-518	11	Level 3	RIM	Shell Temper	28.2	1	RIM/BODY	TRUE	Punctated	Outsloping rim with rounded lip, pinched line below lip with punctations cut into it.
2014-518	11	Level 3	RIM	Shell Temper	2.6	1	RIM/BODY	TRUE	Nodes	Nodes just below pinched lip on outsloping rim
2014-518	11	Level 3	RIM	Shell Temper	7.9	3	RIM/BODY			Flat lip on straight rim
2014-518	11	Level 3	RIM	Shell Temper	1.3	1	RIM/BODY			Rounded lip on outsloping rim
2014-518	11	Level 3	RIM	Shell Temper	5.3	1	RIM/BODY			Outsloping rim with rounded lip
2014-518	11	Level 3	SHERD	Sand Temper	1.1	1	SHERDLETS			
2014-518	11	Level 3	SHERD	Shell Temper	68.1	155	SHERDLETS			
2014-518	12	Level 3 flotation sample heavy fraction	SHERD	Sand Temper	0.3	1	SHERDLETS			HF sorted for 10 min

Table II-3 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2014-518	12	Level 3 flotation sample heavy fraction	SHERD	Shell Temper	1.8	5	SHERDLETS			HF sorted for 10 min
2014-518	12	Level 3 flotation sample heavy fraction	SHERD	Shell Temper	1.9	1	SHERDLETS	TRUE	cord marked	HF sorted for 10 min, Large cord marking
2014-518	19	Level 4 flotation sample heavy fraction	SHERD	Shell Temper	5	14	SHERDLETS			HF sorted for 5 min
2014-518	20	Level 4	BODY	Sand Temper	6.3	2	RIM/BODY	TRUE	Cord marked	cord impressions on surface
2014-518	20	Level 4	BODY	Shell Temper	80	20	RIM/BODY			
2014-518	20	Level 4	RIM	Sand Temper	0.8	1	RIM/BODY			Rolled out lip on straight rim
2014-518	20	Level 4	RIM	Shell Temper	1.02	4	RIM/BODY			Rounded lip on straight rim
2014-518	20	Level 4	RMBDY	Shell Temper	6.1	1	RIM/BODY	TRUE	Punctated and handle	Flat lip on outslanting rim. Line of punctations ~1 cm below lip just above handle? Attachment (actual handle/attachment gone)
2014-518	20	Level 4	RMBDY	Shell Temper	3.6	1	RIM/BODY	TRUE	Punctated and handle?	Rounded lip on outslanting rim. Row of punctations ~1cm below lip above attachement for handle?
2014-518	20	Level 4	SHERD	Sand Temper	1.8	2	SHERDLETS			
2014-518	20	Level 4	SHERD	Shell Temper	26.8	62	SHERDLETS			
2014-518	31	Level 5	BODY	Shell Temper	37.9	6	RIM/BODY			

Table II-3 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2014-518	31	Level 5	BODY	Shell Temper	2.4	1	RIM/BODY	TRUE	Punctated	Rows of punctations on body
2014-518	31	Level 5	RIM	Shell Temper	2.7	1	RIM/BODY			Rounded lip on outsloping rim
2014-518	31	Level 5	RMBDY	Shell Temper	40.2	1	RIM/BODY	TRUE	Notched	Straight, folded out rim with rounded lip. One line of notches directly on outsid of lip.
2014-518	31	Level 5	SHERD	Sand Temper	3.6	2	SHERDLETS			
2014-518	31	Level 5	SHERD	Shell Temper	7.2	18	SHERDLETS			
2014-518	34	Level 5 flotation sample heavy fraction	SHERD		0.01	1	SHERDLETS			HF, totally sorted, very tiny
2014-518	42	Level 6 flotation sample heavy fraction	SHERD		2.1	0	SHERDLETS			HF, totally sorted, very tiny
2014-518	45	Level 6	BODY	Sand Temper	8.3	2	RIM/BODY			
2014-518	45	Level 6	BODY	Shell Temper	26.9	3	RIM/BODY			

Figure III-28: Shell tempered pottery. Decorated rim (large sherd), notched rim (right of large sherd), notched appliqué strip applied below lip (3 bottom left), and punctated sherds. Excavated from Level 2 of TU1.

Figure III-29: Shell tempered sherds. Punctated (center of top row, bottom right), notches cut into exterior lip (Right and left of top row and sherd below tag), notched appliqué strip applied below lip (center). Excavated from Level 3 of TU1.

Figure III-30: Sand tempered, cord marked sherd. Excavated from Level 3 of TU1 flotation sample.

Figure III-31: Left: shell tempered sherds, appliqué strip applied below lip. Right: sand tempered, cordmarked sherds. Excavated from Level 4 of TU1.

Figure III-32: Shell tempered sherds. Punctated (left), notched appliqué strip applied below lip (right). Excavated from Level 5 of TU1.

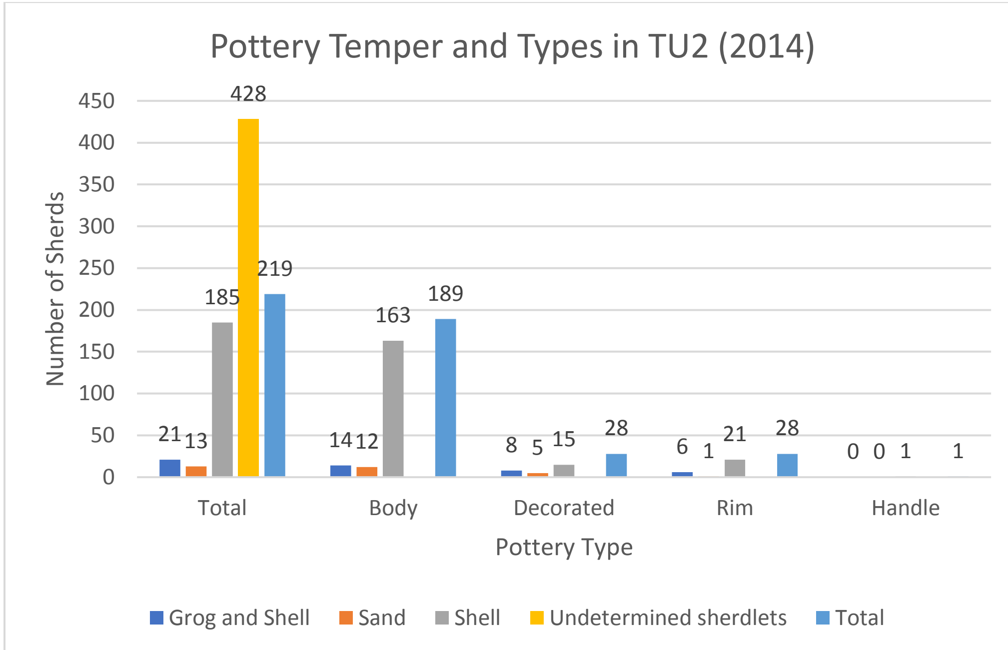

Figure II-33: Temper and Types of sherds in TU2 excavated in 2014.

Table II-4: Pottery sherds excavated from TU2 in 2014 as summarized in Figure II-33.

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated ceramic	type	General comment
2014-518	29	Level 5	RMBDY	Shell Temper	14.4	1	RIM/BODY	TRUE	Appliquéd and notched	Rounded lip on outsloping rim. Appliqué strip applied below lip and notched.
2014-518	32	Level 6	RIM	Grog and Shell Temper	9.9	2	RIM/BODY	TRUE	Notched	Folded out lip on outslanting rim. Notches into lip.
2014-518	32	Level 6	RIM	Grog and Shell Temper	2	1	RIM/BODY	TRUE	Notched	Flad lip on straight rim. Notch just below lip
2014-518	32	Level 6	SHERD	Sand Temper	1.3	1	SHERDLETS			
2014-518	32	Level 6	BODY	Shell Temper	3.1	1	RIM/BODY	TRUE	Incised/engraved	Two parallel lines incised/engraved onto surface
2014-518	32	Level 6	BODY	Shell Temper	194.6	38	RIM/BODY			
2014-518	32	Level 6	RIM	Shell Temper	4.3	1	RIM/BODY	TRUE	Appliqué	Rounded lip on outslanting rim. Applied square nodes just below lip (or applied strip with chunks cut out between nodes)
2014-518	32	Level 6	RIM	Shell Temper	1.9	1	RIM/BODY			Rounded lip on outslanting rim
2014-518	32	Level 6	RIM	Shell Temper	1.7	1	RIM/BODY	TRUE	Appliqué and notched	rounded lip on straight rim, appliqué strip below lip with notches cut into it
2014-518	32	Level 6	RIM	Shell Temper	5.2	1	RIM/BODY			Rounded lip on outsloping (almost flat) rim
2014-518	32	Level 6	RIM	Shell Temper	2.5	1	RIM/BODY			Rounded lip on outslanting rim.
2014-518	32	Level 6	SHERD	Shell Temper	71.8	99	SHERDLETS			

Table II-4 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated ceramic	type	General comment
2014-518	32	Level 6	SHERD	Shell Temper	0.7	2	SHERDLETS			
2014-518	43	Level 7 flotation sample heavy fraction	BODY	Shell Temper	1.9	1	RIM/BODY	TRUE	Appliqué	HF sorted for 15 min, appliqué strip on body
2014-518	43	Level 7 flotation sample heavy fraction	BODY	Shell Temper	3.9	6	RIM/BODY			HF sorted for 15 min
2014-518	43	Level 7 flotation sample heavy fraction	RIM	Shell Temper	1.9	1	RIM/BODY			HF sorted for 15 min, Rounded lip on straight rim
2014-518	44	Level 7	BODY	Grog and Shell Temper	58.7	10	RIM/BODY			
2014-518	44	Level 7	BODY	Grog and Shell Temper	8.4	1	RIM/BODY	TRUE	Appliqué	Vertical appliqué strip is broken off of body sherd
2014-518	44	Level 7	BODY	Grog and Shell Temper	0.9	1	RIM/BODY	TRUE	Appliqué	Appliqué strip on body
2014-518	44	Level 7	RIM	Grog and Shell Temper	4.7	1	RIM/BODY	TRUE	Appliqué, Notched	Rounded lip on outslanting rim. Appliqué strip below lip with notches pressed in to leave raised squares,
2014-518	44	Level 7	BODY	Sand Temper	12	5	RIM/BODY	TRUE	Cordmarked	
2014-518	44	Level 7	BODY	Sand Temper	8	4	RIM/BODY			
2014-518	44	Level 7	RIM	Sand Temper	1.2	1	RIM/BODY			Rounded lip on straight rim

Table II-4 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated ceramic	type	General comment
2014-518	44	Level 7	BODY	Shell Temper	4.2	1	RIM/BODY	TRUE	Handle	This handle is broken, and broken off of a vessel
2014-518	44	Level 7	BODY	Shell Temper	503.4	92	RIM/BODY			
2014-518	44	Level 7	BODY	Shell Temper	1.3	2	RIM/BODY	TRUE	Incised	Incised lines on thin body sherds
2014-518	44	Level 7	BODY	Shell Temper	21.2	4	RIM/BODY	TRUE	Punctated	Punctations across body
2014-518	44	Level 7	RIM	Shell Temper	2.5	1	RIM/BODY			Rounded lip on straight rim
2014-518	44	Level 7	RIM	Shell Temper	1.8	1	RIM/BODY	TRUE	Appliqué, Notched	Rounded lip on outslanting rim. Appliqué strip below lip with notches cut to leave raised squares
2014-518	44	Level 7	RIM	Shell Temper	0.7	1	RIM/BODY			Rounded lip on straight rim
2014-518	44	Level 7	RIM	Shell Temper	12.9	1	RIM/BODY	TRUE	Appliqué, Notched	Rounded lip on outslanting rim, Appliqué strip with cresent shaped notches below lip
2014-518	44	Level 7	RIM	Shell Temper	2.2	1	RIM/BODY			Rounded lip on straight rim
2014-518	44	Level 7	RIM	Shell Temper	20.5	1	RIM/BODY			Rounded lip on straight rim
2014-518	44	Level 7	RIM	Shell Temper	14.6	1	RIM/BODY			Flat lip on stright rim
2014-518	44	Level 7	RIM	Shell Temper	1	1	RIM/BODY			Rounded lip on outslanting rim
2014-518	44	Level 7	RIM	Shell Temper	16.4	1	RIM/BODY			Rounded lip on straight rim
2014-518	44	Level 7	RIM	Shell Temper	1.5	1	RIM/BODY			Rounded lip on straight rim
2014-518	44	Level 7	RIM	Shell Temper	1.6	1	RIM/BODY			Rounded lip on outslanting rim

Table II-4 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated ceramic	type	General comment
2014-518	44	Level 7	RIM	Shell Temper	2.6	1	RIM/BODY			Flat lip on straight rim
2014-518	44	Level 7	SHERD	Shell Temper	170.8	300	SHERDLETS			
2014-518	57	Level 8	BODY	Grog and Shell Temper	35.8	3	RIM/BODY			
2014-518	57	Level 8	RIM	Grog and Shell Temper	4.4	1	RIM/BODY	TRUE	Appliqué, Notched	Flat lip on straight rim, lip extends outside of bowl. Appliqué strip below rim with notches cut in to form raised squares.
2014-518	57	Level 8	RMBDY	Grog and Shell Temper	93.3	1	RIM/BODY	TRUE	Appliqué, Notched	Rounded lip on outslanting rim. Appliqué strip just below lip with notches cut into it to form raised squares
2014-518	57	Level 8	BODY	Sand Temper	3.4	3	RIM/BODY			
2014-518	57	Level 8	BODY	Shell Temper	31.5	1	RIM/BODY		Daub	Daub with grass impressions adhered to the front of the sherd
2014-518	57	Level 8	BODY	Shell Temper	82.5	19	RIM/BODY			
2014-518	57	Level 8	RIM	Shell Temper	5.7	1	RIM/BODY			Rounded lip on straight rim
2014-518	57	Level 8	RIM	Shell Temper	3.4	1	RIM/BODY	TRUE	Appliqué, Notched	Flat lip facing outside of bowl on outslanting rim, Appliqué strip just below lip with "pressed" notches to form raised squares

Table II-4 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated ceramic	type	General comment
2014-518	57	Level 8	SHERD	Shell Temper	10.6	22	SHERDLETS			
2014-518	58	Level 8 flotation sample heavy fraction	SHERD	Shell Temper	2.6	4	SHERDLETS			HF sorted for 10 min

Figure III-34: Shell tempered sherd. Notched appliqué strip applied below lip. Excavated from Level 5 of TU2.

Figure III-35: Shell tempered sherds. Notched lip exterior (center), Notched appliqué strip applied below lip exterior (left and right). Excavated from Level 6 of TU2.

Figure III-36: Left: Punctated shell tempered sherds (top), notched appliqué strip applied below lip exterior (center: grog and shell tempered, center left: shell tempered), incised (bottom left, shell tempered), applique strip (bottom, second from left: grog and shell tempered) and handle attachments (bottom right, shell tempered). Right: sand tempered, cordmarked sherds. Excavated from Level 7 of TU2.

Figure III-37: Notched appliqué strip applied below lip exterior (right and bottom: grog and shell tempered, top left: shell tempered). Excavated from Level 8 of TU2.

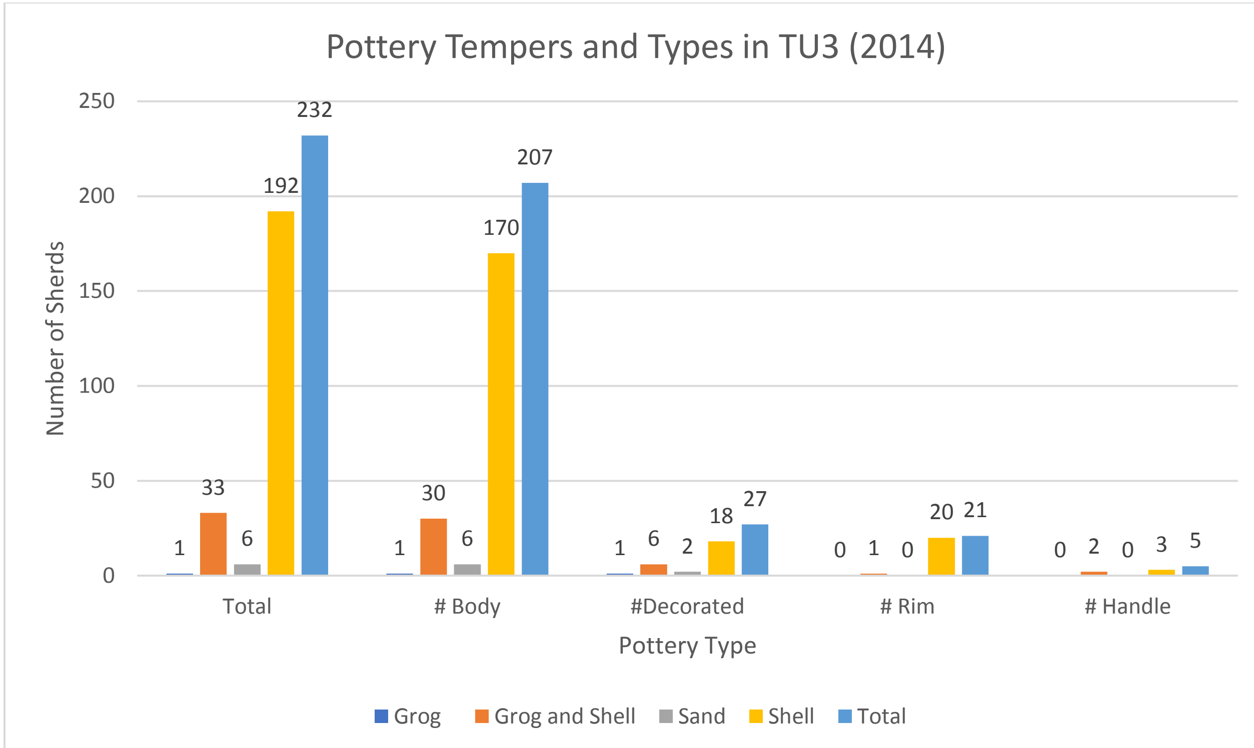

Figure II-38: Temper and Types of sherds in TU3 excavated in 2014.

Table II-5: Pottery sherds excavated from TU3 in 2014 as summarized in Figure II-38.

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2014-518	13	Level 4	BODY	Grog and Shell Temper	0.6	1	RIM/BODY	TRUE	Appliqué, Handle	Handle with vertical appliqué strip
2014-518	13	Level 4	BODY	Shell Temper	14.3	6	RIM/BODY			
2014-518	13	Level 4	RIM	Shell Temper	5.2	1	RIM/BODY			Rounded lip on straight rim
2014-518	13	Level 4	RIM	Shell Temper	0.8	1	RIM/BODY			Rounded lip on straight rim
2014-518	13	Level 4	SHERD	Shell Temper	10.3	16	SHERDLETS			
2014-518	13	Level 4	SHERD	Shell Temper	0.3	2	SHERDLETS			
2014-518	16	Level 5	BODY	Grog and Shell Temper	1.3	1	RIM/BODY			
2014-518	16	Level 5	BODY	Grog and Shell Temper	31.6	5	RIM/BODY			
2014-518	16	Level 5	RIM	Grog and Shell Temper	5.4	1	RIM/BODY	TRUE	Handle	Bottle neck with outslanting rim, lip broken. Small appliqué handle with slight space, but not functional connects at lip and to bottle body at neck.
2014-518	16	Level 5	BODY	Grog Temper	5.3	1	RIM/BODY	TRUE	Incised	Two thin incised lines on body
2014-518	16	Level 5	BODY	Shell Temper	8.4	4	RIM/BODY			
2014-518	16	Level 5	BODY	Shell Temper	0.8	1	RIM/BODY	TRUE	Punctated	Punctations across body
2014-518	16	Level 5	BODY	Shell Temper	1.6	1	RIM/BODY	TRUE	Appliqué	Appliqué strip on body
2014-518	16	Level 5	BODY	Shell Temper	101.3	27	RIM/BODY			

Table II-5 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2014-518	16	Level 5	RIM	Shell Temper	8.2	1	RIM/BODY	TRUE	Handle	Flat lip on straight rim, Strap handle attachment just below lip
2014-518	16	Level 5	RIM	Shell Temper	16.4	1	RIM/BODY	TRUE	Carson Red on Buff	Rolled out and rounded lip on outsloping rim, red slip on inside
2014-518	16	Level 5	SHERD	Shell Temper	120.5	214	SHERDLETS			
2014-518	16	Level 5	SHERD	Shell Temper	3.5	9	SHERDLETS			
2014-518	26	Level 6 flotation sample heavy fraction	SHERD	Sand Temper	0.3	1	SHERDLETS			HF sorted for 15 min
2014-518	26	Level 6 flotation sample heavy fraction	SHERD	Shell Temper	4	3	SHERDLETS			HF sorted for 15 min
2014-518	27	Level 6	BODY	Grog and Shell Temper	74.4	8	RIM/BODY			
2014-518	27	Level 6	RIM	Grog and Shell Temper	13.7	1	RIM/BODY	TRUE	Punctations	Beveled lip with outsloping rim. Verticle punctations/incisions just below lip
2014-518	27	Level 6	BODY	Sand Temper	19.5	2	RIM/BODY			
2014-518	27	Level 6	BODY	Shell Temper	327.2	86	RIM/BODY			
2014-518	27	Level 6	BODY	Shell Temper	6.1	1	RIM/BODY	TRUE	Punctated	Punctations on body surface
2014-518	27	Level 6	BODY	Shell Temper	2.8	2	RIM/BODY	TRUE	Red paint	Red paint/slip on body. Pieces refit
2014-518	27	Level 6	HANDLE	Shell Temper	1.7	1	RIM/BODY	TRUE	Handle, appliqué	Handle with verticle appliqué strip in center

Table II-5 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2014-518	27	Level 6	HANDLE	Shell Temper	2.6	1	RIM/BODY	TRUE	Handle, node	Strap handle that gets thinner toward the center. Node is applied at attachement end
2014-518	27	Level 6	RIM	Shell Temper	4.8	1	RIM/BODY			Rolled out lip on straight rim
2014-518	27	Level 6	RIM	Shell Temper	3.1	1	RIM/BODY	TRUE	Punctations	Rounded lip on outsloping rim. Punctations just below lip.
2014-518	27	Level 6	RIM	Shell Temper	2.9	1	RIM/BODY			Flat lip on Straight rim (Jar neck?)
2014-518	27	Level 6	RIM	Shell Temper	8.2	1	RIM/BODY			Flat lip on straight rim
2014-518	27	Level 6	RIM	Shell Temper	9.1	1	RIM/BODY	TRUE	Handle	Handle attachement just above neck. Rim broken.
2014-518	27	Level 6	RIM	Shell Temper	11.4	1	RIM/BODY			Round lip on outsloping rim
2014-518	27	Level 6	RIM	Shell Temper	14.1	1	RIM/BODY	TRUE	Appliqué, Handle	Beveled lip on outsloping rim. Appliqué strip with notches applied at lip. Handle attachement below appliqué strip.
2014-518	27	Level 6	RIM	Shell Temper	1.1	1	RIM/BODY			Flat lip on outsloping rim
2014-518	27	Level 6	RIM	Shell Temper	1.6	1	RIM/BODY			Flat lip on straight rim
2014-518	27	Level 6	RIM	Shell Temper	1.4	1	RIM/BODY			Rolled out lip on outsloping rim
2014-518	27	Level 6	RIM	Shell Temper	3.6	1	RIM/BODY	TRUE	Appliqué	Rounded lip on straight rim. Verticle appliqué strip applied ~1 cm below lip
2014-518	27	Level 6	SHERD	Shell Temper	0.1	1	SHERDLETS			
2014-518	27	Level 6	SHERD	Shell Temper	64.2	100	SHERDLETS			

Table II-5 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2014-518	35	Level 7 flotation sample heavy fraction	SHERD	Shell Temper	0.3	2	SHERDLETS			HF sorted for 10 min
2014-518	36	Level 7	BODY	Grog and Shell Temper	55.7	10	RIM/BODY			
2014-518	36	Level 7	BODY	Grog and Shell Temper	159.7	3	RIM/BODY			2 pieces refit
2014-518	36	Level 7	BODY	Grog and Shell Temper	9.9	3	RIM/BODY	TRUE	Punctated	Punctations across body
2014-518	36	Level 7	BODY	Shell Temper	80.2	2	RIM/BODY			
2014-518	36	Level 7	BODY	Shell Temper	144	21	RIM/BODY			
2014-518	36	Level 7	RIM	Shell Temper	5.4	1	RIM/BODY	TRUE	Notched	Flat rim on straight lip with notches cut vertically into lip
2014-518	36	Level 7	RIM	Shell Temper	9.2	1	RIM/BODY			Rounded lip on outslanting rim
2014-518	36	Level 7	RIM	Shell Temper	11.8	1	RIM/BODY			Rounded lip on straight rim
2014-518	36	Level 7	RIM	Shell Temper	10.8	1	RIM/BODY	TRUE	Appliqué, notched	Rounded lip on outstanting rim, Appliqué strip applied below lip and notched
2014-518	36	Level 7	SHERD	Shell Temper	47.2	43	SHERDLETS			
2014-518	36	Level 7	SHERD	Shell Temper	2.1	6	SHERDLETS			
2014-518	50	Level 8	BODY	Sand Temper	10.3	2	RIM/BODY			
2014-518	50	Level 8	BODY	Sand Temper	6.1	2	RIM/BODY	TRUE	Cordmarked	Cord impressions on body
2014-518	50	Level 8	SHERD	Sand Temper	1.3	2	SHERDLETS			

Table II-5 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2014-518	50	Level 8	BODY	Shell Temper	46	15	RIM/BODY			
2014-518	50	Level 8	BODY	Shell Temper	4.4	1	RIM/BODY	TRUE	Appliqué	Curved appliqué strip on body
2014-518	50	Level 8	BODY	Shell Temper	22.3	1	RIM/BODY	TRUE	Appliqué	Appliqué strip cut into squarish nodes in line. Probably below lip, but lip/rim is broken off
2014-518	50	Level 8	RIM	Shell Temper	12.2	1	RIM/BODY	TRUE	Nodes	Nodes applied just below lip. Rounded lip on outsloping rim
2014-518	50	Level 8	RIM	Shell Temper	2.6	1	RIM/BODY			Rounded lip on outsloping rim
2014-518	50	Level 8	SHERD	Shell Temper	15.3	27	SHERDLETS			
2014-518	52	Level 8 flotation sample heavy fraction	SHERD	Shell Temper	1.3	1	SHERDLETS			HF sorted ~5 min
2014-518	53	Window over "hearth" flotation sample heavy fraction	SHERD	Sand Temper	0.6	1	SHERDLETS			HF sort for 10 min
2014-518	53	Window over "hearth" flotation sample heavy fraction	RIM	Shell Temper	3.7	1	RIM/BODY			HF sort for 10 min. Rounded lip on outsloping rim
2014-518	53	Window over "hearth" flotation sample heavy frac.	SHERD	Shell Temper	2.1	2	SHERDLETS			HF sort for 10 min

Figure III-39: Grog and shell tempered sherd. Handle with appliqué strip. Excavated from Level 4 of TU3.

Figure III-40: Handle (grog and shell tempered), applique strip on body (shell tempered), punctated (shell tempered), Carson Red on Buff), handle attachment (shell tempered), incised (grog and shell tempered). Excavated from Level 5 of TU3.

Figure III-41: Shell tempered sherds. Notched exterior lip (top left, center), punctated (top center), handles (bottom right) and handle attachments (left, center, top right), red slip (bottom left). Excavated from Level 6 of TU3.

Figure III-42: Notched appliqué strip applied below lip exterior (top left, shell tempered), punctated (right, grog and shell tempered, shell tempered), notches cut into top of lip (bottom left). Excavated from Level 7 of TU3.

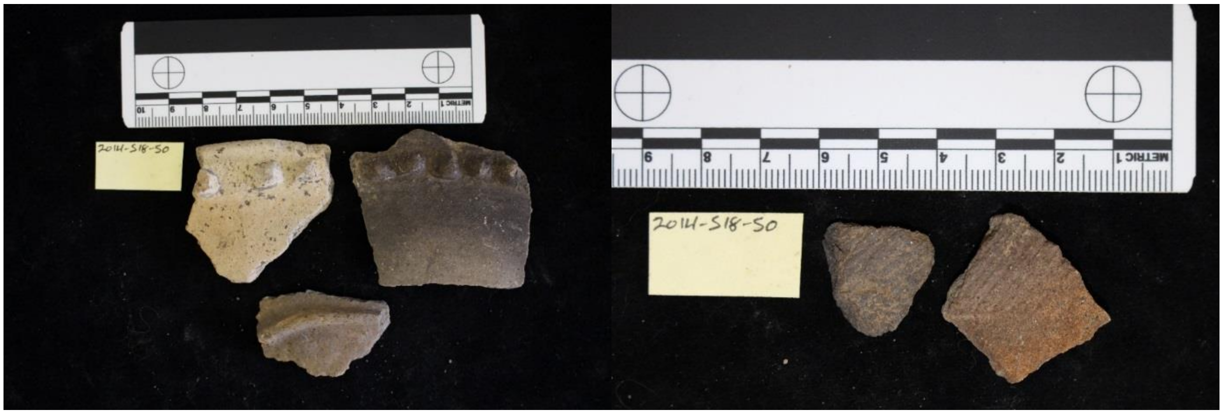

Figure III-43: Left: Shell tempered sherds. Nodes attached below lip exterior (shell tempered), curved appliqué strip (shell tempered). Right: Sand tempered, cordmarked sherds. Excavated from Level 8 of TU3.

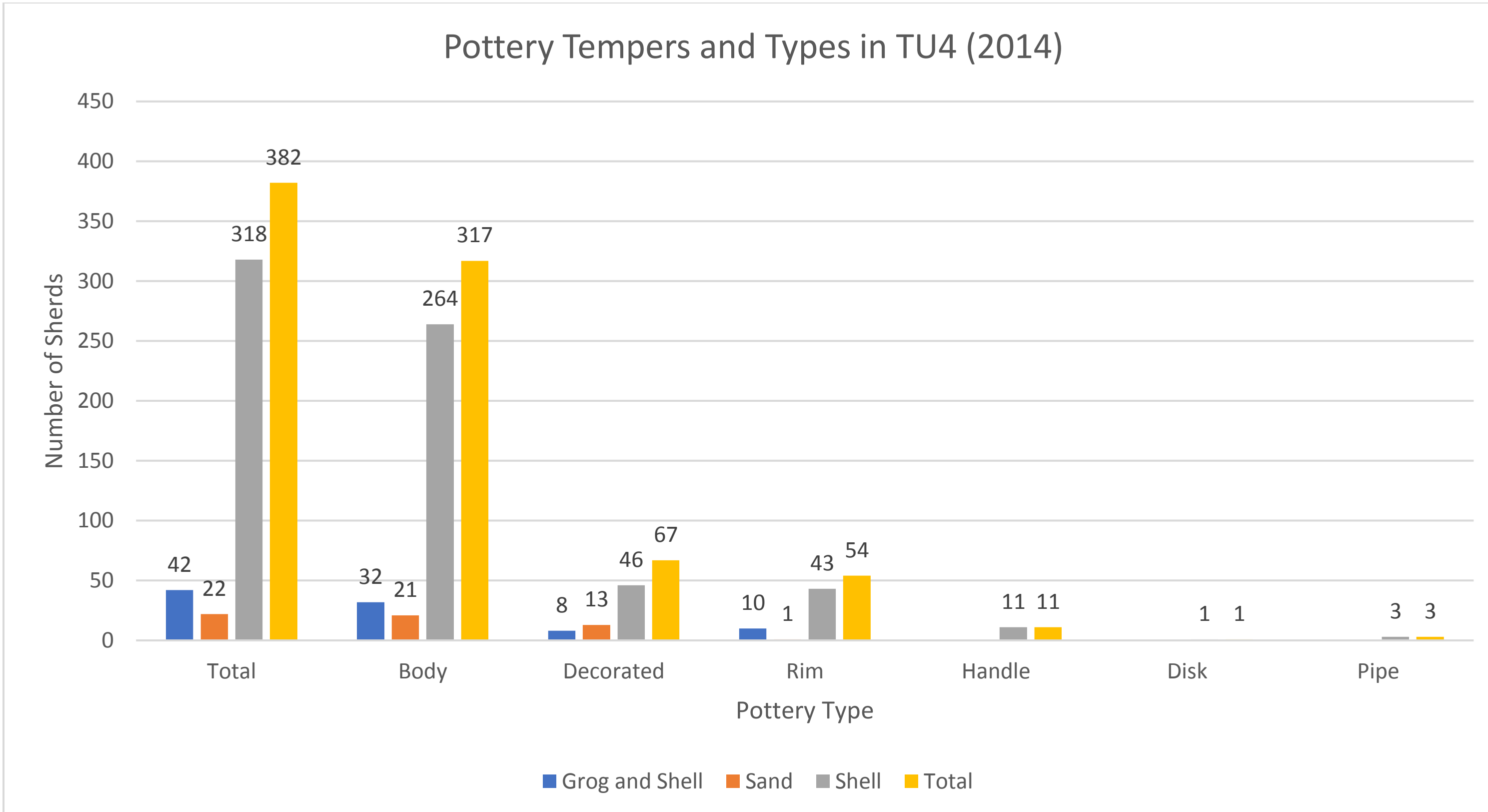

Figure II-44: Temper and Types of sherds in TU4 excavated in 2014.

Table II-6: Pottery sherds excavated from TU4 in 2014 as summarized in Figure II-44.

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2014-518	2	Level 1	BODY	Shell Temper	5.7	1	RIM/BODY			
2014-518	10	Level 2	BODY	Grog and Shell Temper	47.4	7	RIM/BODY			
2014-518	10	Level 2	RIM	Grog and Shell Temper	7.3	1	RIM/BODY	TRUE	Appliqué, notched	Rolled out and flattened lip on straight rim. Appliqué stripp applied below rim with notched cut straight in to form squares
2014-518	10	Level 2	RIM	Grog and Shell Temper	17.2	2	RIM/BODY	TRUE	Appliqué, notched	Rounded lip on outslanting rim. Appliquéd strip applied at lip and clay pushed to right in wide strokes
2014-518	10	Level 2	BODY	Sand Temper	2.8	1	RIM/BODY			
2014-518	10	Level 2	BODY	Sand Temper	1.4	1	RIM/BODY	TRUE	Cord marked	
2014-518	10	Level 2	RIM	Sand Temper	1.4	1	RIM/BODY			Flat lip on straight rim
2014-518	10	Level 2	BODY	Shell Temper	1.8	1	RIM/BODY	TRUE	Punctations	Small circular punctation across body surface
2014-518	10	Level 2	BODY	Shell Temper	1.9	1	RIM/BODY	TRUE	Appliqué	Thin appliqué strip
2014-518	10	Level 2	BODY	Shell Temper	1.6	1	RIM/BODY	TRUE	Punctations	Punctation across body surface
2014-518	10	Level 2	BODY	Shell Temper	15	1	DISK			Pottery disk with hole drilled at angle through center
2014-518	10	Level 2	BODY	Shell Temper	166.9	39	RIM/BODY			

Table II-6 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2014-518	10	Level 2	HANDLE	Shell Temper	8.1	1	HANDLE	TRUE	Nodes	Strap handle with two nodes applied near the attachement to the body
2014-518	10	Level 2	HANDLE	Shell Temper	3.1	1	HANDLE			Thick strap handle broken off body at attachement
2014-518	10	Level 2	HANDLE	Shell Temper	3.1	1	HANDLE			
2014-518	10	Level 2	RIM	Shell Temper	1.6	1	RIM/BODY			Rounded lip on outslanting rim
2014-518	10	Level 2	RIM	Shell Temper	7.5	1	RIM/BODY	TRUE	Handle	Rounded lip on outslanting rim. Handle attachement
2014-518	10	Level 2	RIM	Shell Temper	11.2	1	RIM/BODY	TRUE	Notched	Flat lip on straight rim. Notches cut into outside edge of lip
2014-518	10	Level 2	RIM	Shell Temper	3.3	1	RIM/BODY	TRUE	Handle	Rounded lip on outslanting rim with broken handle attachement
2014-518	10	Level 2	RIM	Shell Temper	1	1	RIM/BODY			Rounded lip on outslanting rim
2014-518	10	Level 2	RIM	Shell Temper	1.8	1	RIM/BODY			Rolled out lip on outslanting rim
2014-518	10	Level 2	RIM	Shell Temper	2.9	1	RIM/BODY			Rounded lip on outslanting rim
2014-518	10	Level 2	RIM	Shell Temper	3.1	1	RIM/BODY			Flat lip on straight rim
2014-518	10	Level 2	RIM	Shell Temper	2.8	1	RIM/BODY			Rolled out lip on outslanting rim. Rim/lip overhangs both sides of body
2014-518	10	Level 2	RIM	Shell Temper	2.6	1	RIM/BODY			Pinched to point lip on straight rim
2014-518	10	Level 2	RIM	Shell Temper	9.1	1	RIM/BODY			Rounded lip on outslanting rim

Table II-6 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2014-518	10	Level 2	SHERD	Shell Temper	13.5	11	SHERDLETS			
2014-518	10	Level 2	SHERD	Shell Temper	165.2	243	SHERDLETS			
2014-518	23	Level 3 flotation sample heavy fraction	BODY	Shell Temper	6.1	1	RIM/BODY	TRUE	Punctated	HF sorted for 10 min. Punctations across body
2014-518	23	Level 3 flotation sample heavy fraction	BODY	Shell Temper	46.4	4	RIM/BODY			HF sorted for 10 min.
2014-518	23	Level 3 flotation sample heavy fraction	RIM	Shell Temper	1.1	1	RIM/BODY			HF sorted for 10 min. Flat lip on straight rim
2014-518	23	Level 3 flotation sample heavy fraction	SHERD	Shell Temper	4.5	5	SHERDLETS			HF sorted for 10 min.
2014-518	24	Level 3	BODY	Grog and Shell Temper	75.5	10	RIM/BODY			
2014-518	24	Level 3	BODY	Grog and Shell Temper	6.6	2	RIM/BODY	TRUE	Punctated	Punctations across body sherd
2014-518	24	Level 3	BODY	Grog and Shell Temper	4.1	1	RIM/BODY	TRUE	Paint	White paint on inside and outside
2014-518	24	Level 3	RIM	Grog and Shell Temper	2.5	1	RIM/BODY			Broken lip on outslanting rim
2014-518	24	Level 3	RIM	Grog and Shell Temper	1.1	1	RIM/BODY			Rounded lip on outslanting rim

Table II-6 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2014-518	24	Level 3	RIM	Grog and Shell Temper	6.5	1	RIM/BODY	TRUE	Appliqué, Notched	Rolled in, flat lip on straight rim. Appliqué strip applied below lip and notched to form squares.
2014-518	24	Level 3	RIM	Grog and Shell Temper	4.1	1	RIM/BODY	TRUE	Appliqué, Notched	Flat lip on straight rim. Flattening has caused some dual overhang of lip. Appliqué strip attached below lip and notched to form squares.
2014-518	24	Level 3	BODY	Sand Temper	15	4	RIM/BODY			
2014-518	24	Level 3	BODY	Sand Temper	21.2	6	RIM/BODY	TRUE	Cordmarked	
2014-518	24	Level 3	BODY	Shell Temper	13.2	1	RIM/BODY	TRUE	Incised	Curved incised line on body
2014-518	24	Level 3	BODY	Shell Temper	1.2	1	RIM/BODY	TRUE	Paint	Red paint on outside
2014-518	24	Level 3	BODY	Shell Temper	459.1	91	RIM/BODY			
2014-518	24	Level 3	BODY	Shell Temper	39.4	13	RIM/BODY	TRUE	Punctated	Punctations across body sherd
2014-518	24	Level 3	HANDLE	Shell Temper	3.8	2	HANDLE	TRUE	Appliqué	Verticle appliqué strip down center of strap handle
2014-518	24	Level 3	HANDLE	Shell Temper	0.7	1	HANDLE	TRUE	Appliqué	Appliqué strip that has fallen off of handle or vessel
2014-518	24	Level 3	RIM	Shell Temper	7.1	1	RIM/BODY			Flat lip on straight rim
2014-518	24	Level 3	RIM	Shell Temper	3.4	1	RIM/BODY	TRUE	Incised	Flat lip on straight rim. Parallel verticle incisions below lip
2014-518	24	Level 3	RIM	Shell Temper	6.1	1	RIM/BODY			Rolled out, flat lip on straight rim

Table II-6 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2014-518	24	Level 3	RIM	Shell Temper	1.4	1	RIM/BODY			Flat lip on outslanting rim
2014-518	24	Level 3	RIM	Shell Temper	1.6	1	RIM/BODY	TRUE	Handle	Flat lip on straight rim. Handle attached at lip
2014-518	24	Level 3	RIM	Shell Temper	17.6	1	RIM/BODY			Bottle neck. Rounded lip on outslanting rim.
2014-518	24	Level 3	RIM	Shell Temper	0.8	1	RIM/BODY			Rounded lip on outslanting rim
2014-518	24	Level 3	RIM	Shell Temper	6.7	1	RIM/BODY			Rounded lip on outslanting rim
2014-518	24	Level 3	RIM	Shell Temper	2.8	1	RIM/BODY			Flat lip on straight rim
2014-518	24	Level 3	RIM	Shell Temper	1.6	1	RIM/BODY			Rolled out, flat lip on outslanting rim
2014-518	24	Level 3	RIM	Shell Temper	2.5	1	RIM/BODY			Rounded lip on outslanting rim
2014-518	24	Level 3	RIM	Shell Temper	3.7	1	RIM/BODY	TRUE	Punctated	Broken lip on outslanting rim. Line of punctations below lip. Pushed to right
2014-518	24	Level 3	RIM	Shell Temper	7.2	1	RIM/BODY	TRUE	Notched	Rounded lip on outslanting rim. Notches into edge of lip. Vertical, parallel to each other.
2014-518	24	Level 3	RIM	Shell Temper	2	1	RIM/BODY			Rounded lip on outslanting rim
2014-518	24	Level 3	RIM	Shell Temper	2.8	1	RIM/BODY			Rolled out and crudely smoothed at attachement. Flat lip on straight rim
2014-518	24	Level 3	RIM	Shell Temper	8.8	1	RIM/BODY			Flat lip on straight rim.
2014-518	24	Level 3	RIM	Shell Temper	9.2	1	RIM/BODY			Flat lip with slight outward overhang on straight rim

Table II-6 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2014-518	24	Level 3	RIM	Shell Temper	6.1	1	RIM/BODY			Rounded lip on outstlanting rim
2014-518	24	Level 3	RIM	Shell Temper	5.5	1	RIM/BODY	TRUE	Handle	Flat lip on straight rim. Handle attachment below lip
2014-518	24	Level 3	SHERD	Shell Temper	234	380	SHERDLETS			
2014-518	24	Level 3	SHERD	Shell Temper	6.3	9	SHERDLETS			
2014-518	38	Level 4	BODY	Grog and Shell Temper	114.2	9	RIM/BODY			
2014-518	38	Level 4	RIM	Grog and Shell Temper	22.7	1	RIM/BODY			Flat lip on straight rim
2014-518	38	Level 4	RIM	Grog and Shell Temper	8.7	1	RIM/BODY			Flat lip on straight rim
2014-518	38	Level 4	RIM	Grog and Shell Temper	3.6	1	RIM/BODY			Rolled out, flat lip on straight rim
2014-518	38	Level 4	BODY	Sand Temper	23	5	RIM/BODY	TRUE	Cord marked	
2014-518	38	Level 4	BODY	Shell Temper	561.5	79	RIM/BODY			
2014-518	38	Level 4	BODY	Shell Temper	30	9	RIM/BODY	TRUE	Punctated	Punctations across body sherd
2014-518	38	Level 4	BODY	Shell Temper	2.9	3	RIM/BODY	TRUE	Red paint	
2014-518	38	Level 4	HANDLE	Shell Temper	13.8	1	HANDLE	TRUE	Node	Strap handle with node applied in upper center. Broken off of vessel at attachment point
2014-518	38	Level 4	RIM	Shell Temper	2.9	1	RIM/BODY			Flat lip on straight rim
2014-518	38	Level 4	RIM	Shell Temper	3.3	1	RIM/BODY			Flat lip on straight rim

Table II-6 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2014-518	38	Level 4	RIM	Shell Temper	7.5	1	RIM/BODY			Flat lip on straight rim
2014-518	38	Level 4	RIM	Shell Temper	2.2	1	RIM/BODY			Pinched lip on outslanting rim
2014-518	38	Level 4	RIM	Shell Temper	16.4	1	RIM/BODY			Flat lip on straight rim
2014-518	38	Level 4	RIM	Shell Temper	24.7	1	RIM/BODY			Flat lip on straight rim
2014-518	38	Level 4	RIM	Shell Temper	5.1	1	RIM/BODY			Rolled out, flat lip on straight rim, something broken off below rim
2014-518	38	Level 4	SHERD	Shell Temper	129.5	173	SHERDLETS			
2014-518	39	Level 4 flotation sample heavy fraction	SHERD	Sand Temper	0.4	1	SHERDLETS			HF sorted for 10 min
2014-518	39	Level 4 flotation sample heavy fraction	BODY	Shell Temper	4.6	1	RIM/BODY	TRUE	Punctations	HF sorted for 10 min. Punctations across body surface
2014-518	39	Level 4 flotation sample heavy fraction	SHERD	Shell Temper	5.2	9	SHERDLETS			HF sorted for 10 min
2014-518	47	Level 5 flotation sample heavy fraction	BODY	Shell Temper	5.6	2	RIM/BODY			HF sorted for 10 min
2014-518	48	Level 5	BODY	Grog and Shell Temper	190	3	RIM/BODY			one very large sherd (jar?)
2014-518	48	Level 5	BODY	Sand Temper	2.5	3	RIM/BODY			

Table II-6 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2014-518	48	Level 5	BODY	Sand Temper	2	1	RIM/BODY	TRUE	Cord marked	
2014-518	48	Level 5	BODY	Shell Temper	4	1	RIM/BODY	TRUE	Punctated	Punctation across body surface
2014-518	48	Level 5	BODY	Shell Temper	1.9	1	RIM/BODY	TRUE	Punctated	Single line of punctations
2014-518	48	Level 5	BODY	Shell Temper	86.7	14	RIM/BODY			
2014-518	48	Level 5	NONVES	Shell Temper	29.2	3	PIPE			Recent break into three pieces that refit. Part of rounded lip visible on edge.
2014-518	48	Level 5	RIM	Shell Temper	7.3	2	RIM/BODY			Rounded lip on straight rim
2014-518	48	Level 5	RIM	Shell Temper	4.2	1	RIM/BODY			Flat lip on straight rim
2014-518	48	Level 5	RIM	Shell Temper	27.8	1	RIM/BODY	TRUE	Appliqué, notched	Rolled out, flat lip on straight rim. Appliqué strip applied just below lip with notches cut to form squares.
2014-518	48	Level 5	RIM	Shell Temper	1.2	1	RIM/BODY			Rounded lip on straight rim
2014-518	48	Level 5	SHERD	Shell Temper	18.7	39	SHERDLETS			
2014-518	56	Feature 1 flotation sample heavy fraction	SHERD	Shell Temper	3.6	3	SHERDLETS			HF sorted for ~5 min

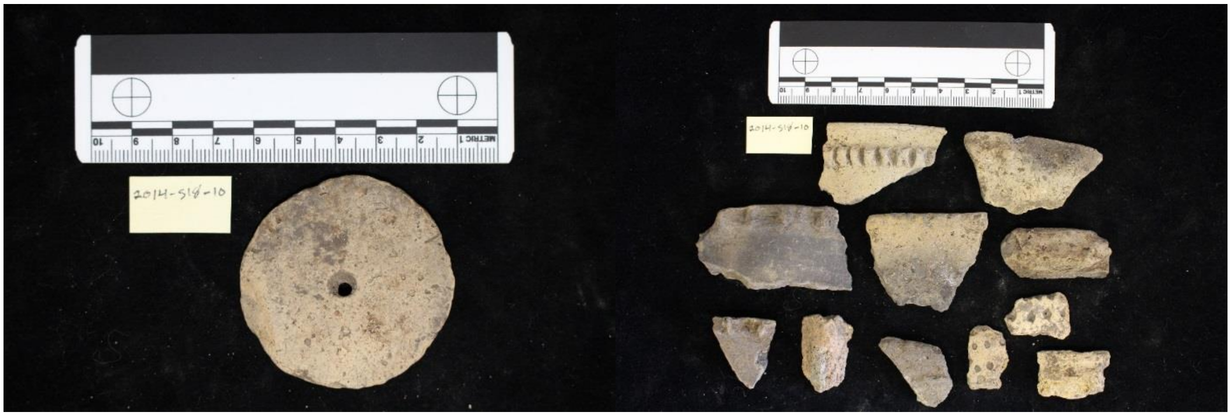

Figure III-45: Left: ceramic disk drilled through center (shell tempered). Right: Notched appliqué strip applied below lip (top left, grog and shell tempered), notched rims (shell tempered), handle attachment (second row, right, shell tempered), nodes applied at top of handle attachment (bottom left, shell tempered), thin applique strip (bottom row, second from left, shell tempered), punctated (bottom right). Excavated from Level 2 of TU4.

Figure III-46: Shell tempered sherd. Punctated. Excavated from Level 3 of TU4 flotation sample.

Figure III-47: Left: Punctated (top 2 rows, shell tempered), incised (bottom left, shell tempered), notched appliqué strip applied below lip exterior (bottom right, grog and shell tempered), red slip (bottom left, shell tempered), handles (bottom row center, shell tempered), handle attachments (third row 2nd and 3rd from right, shell tempered). Right: Sand tempered, cordmarked sherds. Excavated from Level 3 of TU4.

Figure III-48: Left: Shell tempered sherds, punctated (top two rows), noded handle (bottom left), red slipped (bottom). Left: Sand tempered, cordmarked sherds. Excavated from Level 4 of TU4.

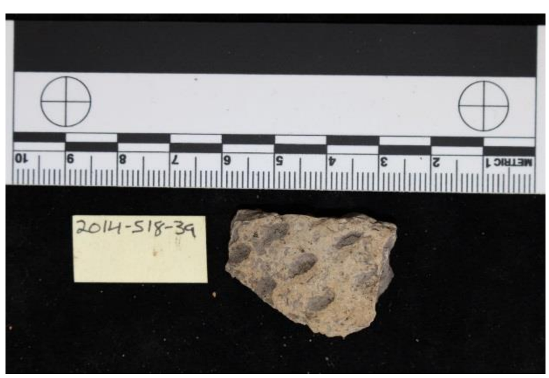

Figure III-49: Shell tempered sherd. Punctated. Excavated from Level 4 of TU4 flotation sample.

Figure III-50: Shell tempered sherds. Left: Notched appliqué strip applied below lip (left), punctated (right). Right: Ceramic pipe fragment. Excavated from Level 5 of TU4.

Figure III-51: Sand tempered, cordmarked sherd. Excavated from Level 5 of TU4.

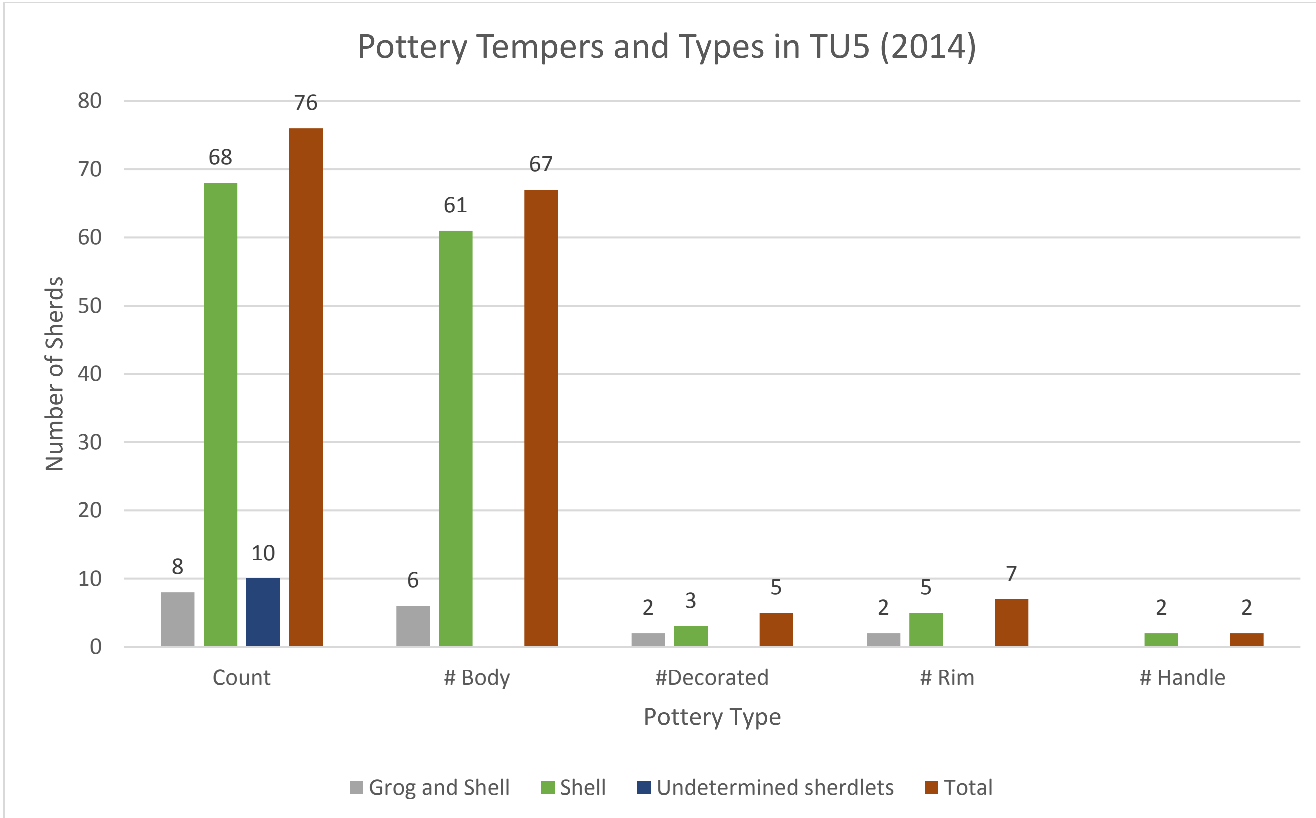

Figure II-52: Temper and Types of sherds in TU5 excavated in 2014.

Table II-7: Pottery sherds excavated from TU5 in 2014 as summarized in Figure II-52.

Accession Number	FSN		specific	material	weight	Count	morphofunctional_type	decorated ceramic	type	general_comment
2014-518	1	Level 1	BODY	Shell Temper	20.9	1	RIM/BODY			
2014-518	4	Level 2	BODY	Shell Temper	44.2	4	RIM/BODY			
2014-518	7	Level 3 flotation sample heavy fraction	BODY	Shell Temper	49.6	3	RIM/BODY			HF sorted for 10 min
2014-518	7	Level 3 flotation sample heavy fraction	SHERD	Shell Temper	2.1	5	SHERDLETS			HF sorted for 10 min
2014-518	8	Level 4	BODY	Shell Temper	1.8	1	RIM/BODY			
2014-518	15	Level 5	BODY	Shell Temper	4.1	3	RIM/BODY			
2014-518	18	Level 5 flotation sample heavy fraction	BODY	Shell Temper	14.4	13	RIM/BODY			HF sorted for 10 min
2014-518	18	Level 5 flotation sample heavy fraction	handle?	Shell Temper	5.7	1	HANDLE			HF sorted for 10 min. Strap handle, broken from body
2014-518	18	Level 5 flotation sample heavy fraction	RIM	Shell Temper	6.8	1	RIM/BODY			HF sorted for 10 min. Rounded lip on outslanting rim (jar?)
2014-518	21	Level 6 E 1/2 Midden	BODY	Grog and Shell Temper	1	1	RIM/BODY			
2014-518	21	Level 6 E 1/2 Midden	BODY	Shell Temper	50.6	11	RIM/BODY			

Table II-7 (cont.)

Accession Number	FSN		specific	material	weight	Count	morphofunctional_type	decorated ceramic	type	general_comment
2014-518	21	Level 6 E 1/2 Midden	RIM	Shell Temper	23	1	RIM/BODY	TRUE	Handle, node	Flat lip on straight rim. Strap handle attached at lip. One node on handle before break
2014-518	22	Level 6 W 1/2 midden	BODY	Grog and Shell Temper	6.3	1	RIM/BODY			
2014-518	30	Level 7	BODY	Grog and Shell Temper	32.7	1	RIM/BODY	TRUE	Punctated	Punctations on part of surface in rows
2014-518	30	Level 7	BODY	Grog and Shell Temper	6.7	1	RIM/BODY			
2014-518	30	Level 7	RIM	Grog and Shell Temper	5.1	1	RIM/BODY	TRUE	Punctated	Rounded lip on outslanting rim. Line of punctations below lip. Clay pushed to left
2014-518	30	Level 7	BODY	Shell Temper	105.8	15	RIM/BODY			
2014-518	30	Level 7	RIM	Shell Temper	13	1	RIM/BODY			Flat lip on straight rim
2014-518	30	Level 7	RIM	Shell Temper	3.9	1	RIM/BODY			Flat lip on outslanting rim
2014-518	30	Level 7	SHERD	Shell Temper	2.3	5	SHERDLETS			
2014-518	37	Level 8	BODY	Grog and Shell Temper	13	2	RIM/BODY			
2014-518	37	Level 8	RIM	Grog and Shell Temper	23.1	1	RIM/BODY			Flat lip on straight rim. Striations form smoothing inside
2014-518	37	Level 8	BODY	Shell Temper	78.7	10	RIM/BODY			

Table II-7 (cont.)

Accession Number	FSN		specific	material	weight	Count	morphofunctional_type	decorated ceramic	type	general_comment
2014-518	37	Level 8	RIM	Shell Temper	90.5	1	RIM/BODY	TRUE	Appliqué, notched	Rounded lip on straight rim. Appliqué strip directly below lip with notches cut perpendicular into it to form stripes
2014-518	37	Level 8	RIM	Shell Temper	15.4	1	RIM/BODY	TRUE	Handle, punctated	Rounded lip on outslanting rim. Strap handle attached below lip. Broken, but would have attached somewhere below neck. Punctation on body, but not neck or above.
2014-518	37	Level 8	SHERD	Shell Temper	3	2	SHERDLETS			

Figure III-52: Shell tempered sherd. Handle attachement with node. Excavated from Level 6 of TU5, east ½ of midden.

Figure III-53: Punctated (left, grog and shell tempered), notched lip exterior (top right, grog and shell tempered), handle attachement (bottom right, shell tempered). Excavated from Level 7 of TU5.

Figure III-54: Shell tempered sherds. Handle attachment (left), notched appliqué strip applied below lip exterior (right).

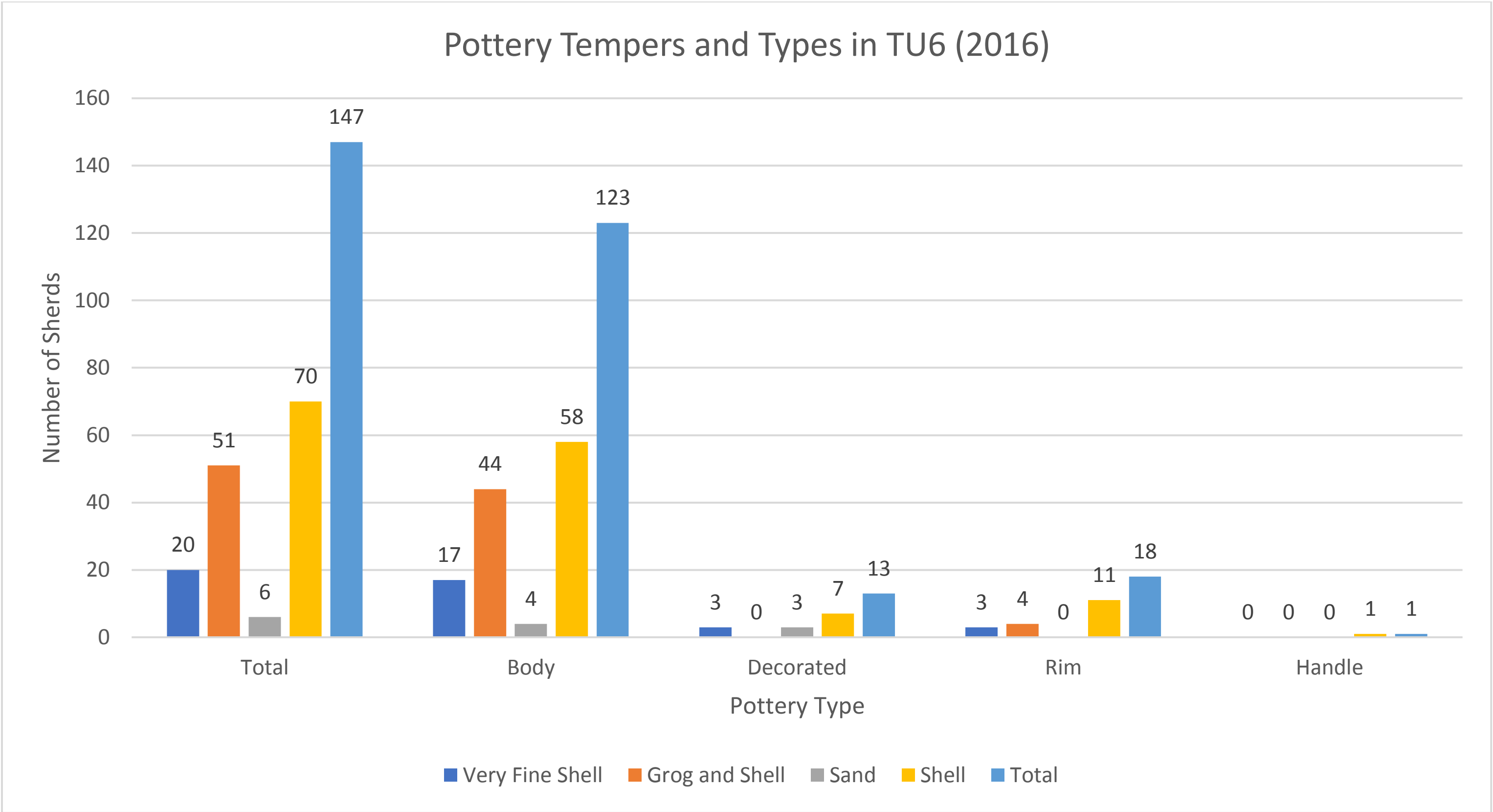

Figure II-55: Temper and Types of sherds in TU6 excavated in 2016.

Table II-8: Pottery sherds excavated from TU6 in 2016 as summarized in Figure II-55.

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated ceramic	type	General comment
2016-503	1	Level 1	BODY	Grog and Shell Temper	44.2	10	RIM/BODY			
2016-503	1	Level 1	RIM	Grog and Shell Temper	7.7	1	RIM/BODY			Rounded lip on outslanting rim.
2016-503	1	Level 1	BODY	Sand Temper	6.7	1	RIM/BODY	TRUE	Cord marked	
2016-503	1	Level 1	BODY	Shell Temper	45.4	15	RIM/BODY			
2016-503	1	Level 1	RIM	Shell Temper	7.6	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	1	Level 1	RIM	Shell Temper	1.3	1	RIM/BODY			Flat lip on straight rim
2016-503	1	Level 1	RIM	Shell Temper	6.7	1	RIM/BODY			Beveled lip on outslanting rim.Lip comes to "point" at top of rim. Beveling is on outside
2016-503	1	Level 1	RIM	Shell Temper	5.1	2	RIM/BODY	TRUE	Appliqué, notched	Rounded lip on outslanting rim. Appliqué strip applied below rim bend and notched vertically. Two refitting pieces
2016-503	1	Level 1	RIM	Shell Temper	3.5	1	RIM/BODY			Flat lip on straight rim
2016-503	1	Level 1	RIM	Shell Temper	16.7	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	1	Level 1	RIM	Shell Temper	1.6	1	RIM/BODY	TRUE	Appliqué, smashed	Rounded lip on outslanting rim. Appliqué strip applied below rim curve and pressed in to form raised square-ish places
2016-503	1	Level 1	SHERD	Shell Temper	24.9	42	SHERDLETS			

Table II-8 (cont.)

Accession Number	FSN		specific	material	weight	Count	morphofunctional_type	decorated ceramic	type	general_comment
2016-503	9	Level 2	SHERD		17.9	19	SHERDLETS			Temper not determined
2016-503	9	Level 2	BODY	Very Fine Shell Temper	84.1	5	RIM/BODY			
2016-503	9	Level 2	BODY	Grog and Shell Temper	138.6	14	RIM/BODY			
2016-503	9	Level 2	BODY	Shell Temper	62.8	4	RIM/BODY			
2016-503	9	Level 2	HANDLE	Shell Temper	6.8	1	RIM/BODY	TRUE	Handle	Strap handle attachment
2016-503	9	Level 2	RIM	Shell Temper	7.6	1	RIM/BODY			Rounded lip on straight rim
2016-503	9	Level 2	RIM	Shell Temper	22.5	1	RIM/BODY	TRUE	Handle, Appliqué	Rounded lip. Wide strap handle attached at lip. Short appliqué strip formed into two nodes at top-center of handle
2016-503	15	Level 3	SHERD		35.1	31	SHERDLETS			Temper not determined
2016-503	15	Level 3	BODY	Very Fine Shell Temper	74.1	10	RIM/BODY			
2016-503	15	Level 3	RIM	Very Fine Shell Temper	4.1	1	RIM/BODY	TRUE	Appliqué, Notched	Rounded lip on outslanting rim. Appliqué strip applied below lip and notched to form raised squares
2016-503	15	Level 3	RIM	Very Fine Shell Temper	1.8	1	RIM/BODY	TRUE	Appliqué, Notched	Flat lip on straight rim. Appliqué strip applied below rim and notched to form raised squares
2016-503	15	Level 3	BODY	Grog and Shell Temper	139.4	15	RIM/BODY			

Table II-8 (cont.)

Accession Number	FSN		specific	material	weight	Count	morphofunctional_type	decorated ceramic	type	general_comment
2016-503	15	Level 3	BODY	Sand Temper	3.9	1	RIM/BODY			
2016-503	15	Level 3	BODY	Sand Temper	5.4	1	RIM/BODY	TRUE	Cord marked	Cord marks on body
2016-503	15	Level 3	BODY	Shell Temper	3.4	1	RIM/BODY			Possibly shaped into a disc
2016-503	15	Level 3	BODY	Shell Temper	81.5	13	RIM/BODY			
2016-503	15	Level 3	BODY	Shell Temper	1.2	1	RIM/BODY	TRUE	Appliqué	Appliqué strip
2016-503	21	Balk wall over hearth	SHERD		5.3	6	SHERDLETS			
2016-503	21	Balk wall over hearth	BODY	Grog and Shell Temper	26.3	4	RIM/BODY			
2016-503	21	Balk wall over hearth	BODY	Shell Temper	1.7	1	RIM/BODY			
2016-503	22	Level 3 flotation sample heavy fraction	BODY	Shell Temper	3.9	1	RIM/BODY	TRUE	Punctated	Hf sorted for ~5 min. Punctations on body of sherd. Sherd is fused to daub
2016-503	22	Level 3 flotation sample heavy fraction	BODY	Shell Temper	7.2	7	RIM/BODY			Hf sorted for ~5 min. Sherds fused to daub
2016-503	22	Level 3 flotation sample heavy fraction	BODY	Shell Temper	8	5	RIM/BODY			Hf sorted for ~5 min
2016-503	28	Feature 6 S 1/2	SHERD		6.9	7	SHERDLETS			HF sorted for ~10 min.
2016-503	28	Feature 6 S 1/2	BODY	Grog and Shell Temper	19.8	3	RIM/BODY			HF sorted for ~10 min.
2016-503	28	Feature 6 S 1/2	BODY	Shell Temper	19.4	4	RIM/BODY			HF sorted for ~10 min.

Table II-8 (cont.)

Accession Number	FSN		specific	material	weight	Count	morphofunctional_type	decorated ceramic	type	general_comment
2016-503	37	Level 4	SHERD		17.6	18	SHERDLETS			
2016-503	37	Level 4	BODY	Very Fine Shell Temper	10.2	2	RIM/BODY			
2016-503	37	Level 4	RIM	Very Fine Shell Temper	3.5	1	RIM/BODY	TRUE	Appliquéd, notched	Flat lip on straight rim. Appliqué strip applied below lip and notched to form raised squares
2016-503	37	Level 4	BODY	Grog and Shell Temper	12.4	1	RIM/BODY			
2016-503	37	Level 4	RIM	Grog and Shell Temper	6.6	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	37	Level 4	RIM	Grog and Shell Temper	6.6	1	RIM/BODY			Rounded lip on straight rim
2016-503	37	Level 4	RIM	Grog and Shell Temper	3.1	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	37	Level 4	BODY	Sand Temper	15.8	3	RIM/BODY	TRUE	Cord marked	Cord marking across surface
2016-503	37	Level 4	BODY	Shell Temper	2	1	RIM/BODY	TRUE	Painted	Red paint on interior (?) surface
2016-503	37	Level 4	BODY	Shell Temper	21.7	5	RIM/BODY			
2016-503	37	Level 4	RIM	Shell Temper	1.5	1	RIM/BODY			Flat lip on straight rim.

Figure III-55: Left: Shell tempered sherds. Notched appliqué strip applied below lip exterior. Right: Sand tempered, cordmarked sherd. Excavated from Level 1 of TU6.

Figure III-56: Shell tempered sherds. Handle attachments. Excavated from Level 2 of TU6.

Figure III-57: Left: Shell tempered sherds. Appliqué strip (left), notched appliqué strip applied below lip exterior (top left), ceramic disk (bottom). Right: Sand tempered, cordmarked sherd. Excavated from Level 3 of TU6.

Figure III-58: Shell tempered pottery. Punctated. Excavated from Level 3 of TU6 flotation sample.

Figure III-59: Left: Sand tempered, cordmarked sherds. Right: Shell tempered pottery. Red slipped (left), notched appliqué strip applied below lip exterior (right). Excavated from Level 4 of TU6.

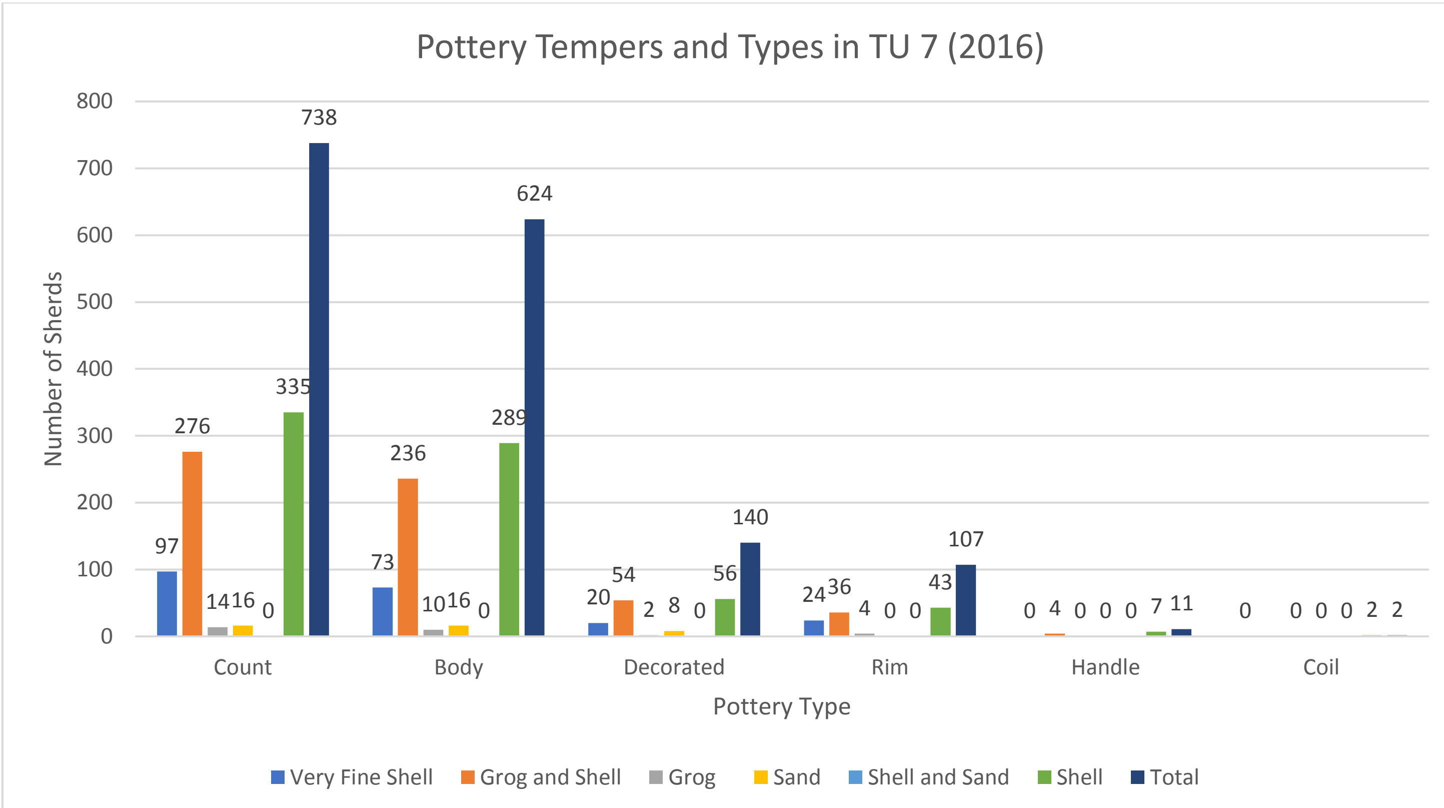

Figure II-60: Temper and Types of sherds in TU7 excavated in 2016.

Table II-9: Pottery sherds excavated from TU7 in 2016 as summarized in Figure II-60.

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2016-503	2	Level 1	BODY	Very Fine Shell Temper	16.4	5	RIM/BODY			
2016-503	2	Level 1	RIM	Very Fine Shell Temper	5.2	1	RIM/BODY			Flat lip on straight rim
2016-503	2	Level 1	RIM	Very Fine Shell Temper	3.3	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	2	Level 1	RIM	Very Fine Shell Temper	7	1	RIM/BODY	TRUE	Notched	Flat lip on outslanting rim. Notches cut into outsite of lip to form squares
2016-503	2	Level 1	RIM	Very Fine Shell Temper	4.4	1	RIM/BODY	TRUE	Appliquéd, Notched	Rounded lip on outslanting rim. Appliqué strip attached at rim and notches cut to form squares
2016-503	2	Level 1	BASE	Grog and Shell Temper	14	1	RIM/BODY			Thick base with demarckated angle into body
2016-503	2	Level 1	BASE	Grog and Shell Temper	11.6	1	RIM/BODY	TRUE	Notched	Flat base with notches around edge. Body extends almost straight out. Plate?
2016-503	2	Level 1	BODY	Grog and Shell Temper	18.1	8	RIM/BODY	TRUE	Punctated	Punctation across body surface
2016-503	2	Level 1	BODY	Grog and Shell Temper	21.3	3	RIM/BODY			
2016-503	2	Level 1	BODY	Grog and Shell Temper	5.2	1	RIM/BODY	TRUE	Red Paint	Red paint on interior and exterior surfaces
2016-503	2	Level 1	BODY	Grog and Shell Temper	334.2	62	RIM/BODY			

Table II-9 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2016-503	2	Level 1	HANDLE	Grog and Shell Temper	3.5	1	HANDLE	TRUE	Handle	Strap handle broken off of vessel and broken
2016-503	2	Level 1	RIM	Grog and Shell Temper	3.5	1	RIM/BODY			Rounded lip on straight rim
2016-503	2	Level 1	RIM	Grog and Shell Temper	2.3	1	RIM/BODY			Flat lip on straight rim
2016-503	2	Level 1	RIM	Grog and Shell Temper	9	1	RIM/BODY			Flat lip on straight rim. Rough exterior of lip, not smoothed before firing
2016-503	2	Level 1	RIM	Grog and Shell Temper	3.1	1	RIM/BODY	TRUE	Incised	Flat lip on straight rim. Incision into outside of lip
2016-503	2	Level 1	RIM	Grog and Shell Temper	10.1	1	RIM/BODY	TRUE	Handle	Rounded lip on straight rim. Handle attachement at lip seems to be strap handle, but is mostly broken
2016-503	2	Level 1	RIM	Grog and Shell Temper	55	1	RIM/BODY			Rounded lip on outstlanting rim
2016-503	2	Level 1	RMBDY	Grog and Shell Temper	3.4	1	RIM/BODY	TRUE	Punctated, Handle	Rounded lip on straight rim. Punctated on body below neck. Strap handle attached at lip and on body just below neck. Neck is undecorated, handle is missing.
2016-503	2	Level 1	BODY	Grog Temper	1.3	1	RIM/BODY	TRUE	Red Paint	Red Paint on interior, exterior broken
2016-503	2	Level 1	BODY	Grog Temper	25.2	7	RIM/BODY			

Table II-9 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2016-503	2	Level 1	RIM	Grog Temper	0.6	1	RIM/BODY			Rounded lip on straight rim
2016-503	2	Level 1	RIM	Grog Temper	3.5	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	2	Level 1	RIM	Grog Temper	2.1	1	RIM/BODY			Flat lip on outslanting rim
2016-503	2	Level 1	BODY	Sand Temper	7	2	RIM/BODY			
2016-503	2	Level 1	BODY	Shell and Sand Temper	6.3	3	RIM/BODY			Sand may be just inclusions in clay
2016-503	2	Level 1	BODY	Shell Temper	0.7	1	RIM/BODY	TRUE	Incising	Six Parallel incised lines on exterior
2016-503	2	Level 1	BODY	Shell Temper	0.9	1	RIM/BODY	TRUE	Incising	Two small incised line on exterior
2016-503	2	Level 1	BODY	Shell Temper	1.6	1	RIM/BODY	TRUE	Incised? Punctated?	Possible incision and punctation on exterior, but may be weathering
2016-503	2	Level 1	BODY	Shell Temper	84.7	21	RIM/BODY			
2016-503	2	Level 1	BODY	Shell Temper	3.6	1	RIM/BODY	TRUE	Punctated	Punctations on body surface
2016-503	2	Level 1	BODY	Shell Temper	1.2	1	RIM/BODY			
2016-503	2	Level 1	RIM	Shell Temper	14.7	1	RIM/BODY			Rolled out, beveled out lip on outslanting rim. Forms triangle at top of rim and slightly overhangs on exterior
2016-503	2	Level 1	RIM	Shell Temper	2.1	1	RIM/BODY			Flat lip on straight rim
2016-503	2	Level 1	RIM	Shell Temper	40.4	1	RIM/BODY	TRUE	Handle	Flat lip on straight rim. Large lug handle extending from lip ~1cm

Table II-9 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2016-503	2	Level 1	RIM	Shell Temper	0.9	1	RIM/BODY			Rounded lip on outslanting rim. Incised? Line just below rim on interior surface, may be unintentional as it isn't continuous
2016-503	2	Level 1	RIM	Shell Temper	1.1	1	RIM/BODY			Flat lip on straight rim
2016-503	2	Level 1	SHERD	Shell Temper	223.7	366	SHERDLETS			
2016-503	2	Level 1	SHERD	Shell Temper	1.6	3	SHERDLETS			
2016-503	6	Level 1 burned tree area	BODY	Very Fine Shell Temper	6.6	7	RIM/BODY			
2016-503	6	Level 1 burned tree area	BODY	Grog and Shell Temper	15	7	RIM/BODY			
2016-503	6	Level 1 burned tree area	BODY	Grog and Shell Temper	5.8	3	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	10	Level 2	SHERD		157	266	SHERDLETS			Temper not determined
2016-503	10	Level 2	SHERD		112	93	SHERDLETS			Temper not determined
2016-503	10	Level 2	BODY	Very Fine Shell Temper	17.5	1	RIM/BODY			Round, bending into neck
2016-503	10	Level 2	BODY	Very Fine Shell Temper	2.1	1	RIM/BODY	TRUE	Appliqué, Notched	Appliqué strip with shallow rounded notches cut into it
2016-503	10	Level 2	BODY	Very Fine Shell Temper	144.4	24	RIM/BODY			
2016-503	10	Level 2	BODY	Very Fine Shell Temper	1	1	RIM/BODY	TRUE	Appliquéd, Punctated	Appliqué circle with small punctations near one edge

Table II-9 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2016-503	10	Level 2	BODY	Very Fine Shell Temper	3.2	1	RIM/BODY	TRUE	Appliqué	Appliqué strip on surface
2016-503	10	Level 2	RIM	Very Fine Shell Temper	2.5	1	RIM/BODY	TRUE	Noded	Rounded lip on straight rim. Node applied ~1 cm below lip
2016-503	10	Level 2	RIM	Very Fine Shell Temper	2.7	1	RIM/BODY			Rounded lip on straight rim
2016-503	10	Level 2	RIM	Very Fine Shell Temper	1.4	1	RIM/BODY	TRUE	Notched	Rounded lip on outslanting rim. Rounded notch into exterior of lip
2016-503	10	Level 2	RIM	Very Fine Shell Temper	19.4	1	RIM/BODY	TRUE	Notched	Flat lip on straight rim. Notches into exterior of lip
2016-503	10	Level 2	RIM	Very Fine Shell Temper	3.8	1	RIM/BODY			Flat lip on straight rim
2016-503	10	Level 2	RIM	Very Fine Shell Temper	32.7	1	RIM/BODY	TRUE	Appliqué, Notched	Flat lip on straight rim. Appliqué strip applied at lip and shallowly notched to form raised areas "pie crust" rim
2016-503	10	Level 2	RIM	Very Fine Shell Temper	9.1	1	RIM/BODY	TRUE	Appliqué, Notched	Flat lip on straight rim. Appliqué strip applied at lip and notched to form raised squares
2016-503	10	Level 2	RMBDY	Very Fine Shell Temper	12.7	1	RIM/BODY			Flat lip on straight rim. Shallow bowl?
2016-503	10	Level 2	BODY	Grog and Shell Temper	515.9	72	RIM/BODY			
2016-503	10	Level 2	BODY	Grog and Shell Temper	1.6	1	RIM/BODY	TRUE	Punctated	Three punctations

Table II-9 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2016-503	10	Level 2	BODY	Grog and Shell Temper	1.1	1	RIM/BODY	TRUE	Appliqué	Thin appliqué strip
2016-503	10	Level 2	BODY	Grog and Shell Temper	6.7	1	RIM/BODY	TRUE	Notched	One row of vertical notches
2016-503	10	Level 2	BODY	Grog and Shell Temper	1.8	1	RIM/BODY	TRUE	Punctated	Punctations on part of surface
2016-503	10	Level 2	BODY	Grog and Shell Temper	45.6	8	RIM/BODY			
2016-503	10	Level 2	BODY	Grog and Shell Temper	3.4	1	RIM/BODY	TRUE	Punctated	Punctations on half of surface
2016-503	10	Level 2	BODY	Grog and Shell Temper	45.8	12	RIM/BODY			
2016-503	10	Level 2	BODY	Grog and Shell Temper	3.1	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	10	Level 2	BODY	Grog and Shell Temper	8.1	1	RIM/BODY	TRUE	Punctated	Punctations across most of surface
2016-503	10	Level 2	BODY	Grog and Shell Temper	5.2	1	RIM/BODY	TRUE	Punctated	Very weathered. Punctations visible on surface
2016-503	10	Level 2	BODY	Grog and Shell Temper	6.4	1	RIM/BODY	TRUE	Punctated, Handle	Punctations across surface, Handle attachment, but handle missing
2016-503	10	Level 2	BODY	Grog and Shell Temper	7.5	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	10	Level 2	BODY	Grog and Shell Temper	3	1	RIM/BODY	TRUE	Punctated	Punctations on areas of surface
2016-503	10	Level 2	BODY	Grog and Shell Temper	6.9	1	RIM/BODY	TRUE	Punctated	Punctations on part of body surface

Table II-9 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2016-503	10	Level 2	BODY	Grog and Shell Temper	5.5	1	RIM/BODY	TRUE	Punctated	Punctations on part of body surface
2016-503	10	Level 2	BODY	Grog and Shell Temper	3.2	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	10	Level 2	BODY	Grog and Shell Temper	1.9	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	10	Level 2	BODY	Grog and Shell Temper	5.4	1	RIM/BODY	TRUE	Punctated, Incised	Punctations next to 3 parallel incised lines
2016-503	10	Level 2	BODY	Grog and Shell Temper	4.7	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	10	Level 2	BODY	Grog and Shell Temper	1.6	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	10	Level 2	BODY	Grog and Shell Temper	13.5	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	10	Level 2	BODY	Grog and Shell Temper	15	1	RIM/BODY	TRUE	Punctated	Two areas of punctations on surface
2016-503	10	Level 2	BODY	Grog and Shell Temper	0.9	1	RIM/BODY	TRUE	Punctated	Punctations across body
2016-503	10	Level 2	HANDLE	Grog and Shell Temper	7.9	1	RIM/BODY	TRUE	Handle	Strap handle
2016-503	10	Level 2	NECK	Grog and Shell Temper	5.2	1	RIM/BODY	TRUE	Notched	Line of vertical notches just below bend of neck
2016-503	10	Level 2	RIM	Grog and Shell Temper	14.1	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	10	Level 2	RIM	Grog and Shell Temper	1.7	1	RIM/BODY	TRUE	Notched	Flat lip on straight rim. Notches cut into outside of lip

Table II-9 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2016-503	10	Level 2	RIM	Grog and Shell Temper	2.5	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	10	Level 2	RIM	Grog and Shell Temper	1.9	1	RIM/BODY			Rolled out and flattened on outslide lip on outslanting rim
2016-503	10	Level 2	RIM	Grog and Shell Temper	7.5	1	RIM/BODY			Rounded lip on straight rim. Exterior spalled
2016-503	10	Level 2	RIM	Grog and Shell Temper	2.3	1	RIM/BODY			Extended flat lip on straight rim
2016-503	10	Level 2	RIM	Grog and Shell Temper	2.5	1	RIM/BODY	TRUE	Appliquéd, Notched	Flat lip on straight rim. Appliqué strip applied ~.3cm below lip and notched to form squares
2016-503	10	Level 2	RIM	Grog and Shell Temper	3.7	1	RIM/BODY			Flat lip on straight rim
2016-503	10	Level 2	RIM	Grog and Shell Temper	2.8	1	RIM/BODY	TRUE	Handle	Rounded, extended lip on outslanting rim. Handle attachment at curve of rim, handle missing
2016-503	10	Level 2	RIM	Grog and Shell Temper	8.2	1	RIM/BODY	TRUE	Nodes	Flat lip on straight rim. Nodes applied in line below lip
2016-503	10	Level 2	RIM	Grog and Shell Temper	2.8	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	10	Level 2	RIM	Grog and Shell Temper	3.1	1	RIM/BODY			Flat lip on straight rim
2016-503	10	Level 2	RIM	Grog and Shell Temper	1.8	1	RIM/BODY			Flat lip on outslanting rim

Table II-9 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2016-503	10	Level 2	RIM	Grog and Shell Temper	2.8	1	RIM/BODY	TRUE	Notched	Rounded lip on outslanting rim. Vertical notches cut into outside of lip
2016-503	10	Level 2	RIM	Grog and Shell Temper	4.3	1	RIM/BODY			Flat lip on straight rim, spalled from inside surface
2016-503	10	Level 2	RIM	Grog and Shell Temper	4.3	1	RIM/BODY			Flat lip on straight rim
2016-503	10	Level 2	RIM	Grog and Shell Temper	9	1	RIM/BODY	TRUE	Handle	Rounded lip on outslanting rim. Handle attachment below lip (small strap or loop handle)
2016-503	10	Level 2	RIM	Grog and Shell Temper	3.6	1	RIM/BODY			Rounded lip on outslanting rim. Exterior spalled off
2016-503	10	Level 2	RMBDY	Grog and Shell Temper	25.3	1	RIM/BODY	TRUE	Notched	Rounded lip on straight rim. Vertical notches on exterior of lip. neck extends to rounded body
2016-503	10	Level 2	RMBDY	Grog and Shell Temper	49	1	RIM/BODY	TRUE	Stepped	Rounded lip on outslanting rim. Two downward steps cut into rim have flat lips. Probably was a shallow bowl
2016-503	10	Level 2	RMBDY	Grog and Shell Temper	89.3	1	RIM/BODY	TRUE	Appliquéd, Notched	Flat lip on straight rim. Thin vertical notches cut into exterior of lip. Appliqué strip applied ~.5cm below lip. Vertical notches cut into strip. Notches in appliqué and lip don't align perfectly

Table II-9 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2016-503	10	Level 2	BODY	Grog Temper	3	1	RIM/BODY	TRUE	punctated	Punctations across surface
2016-503	10	Level 2	BODY	Grog Temper	3.2	1	RIM/BODY			
2016-503	10	Level 2	RIM	Grog Temper	5.1	1	RIM/BODY			Rolled out, rounded lip on outslanting rim. Lip not smoothed into body on exterior, some sand in paste
2016-503	10	Level 2	BODY	Sand Temper	2.3	1	RIM/BODY			
2016-503	10	Level 2	BODY	Sand Temper	5.5	2	RIM/BODY	TRUE	Cord marked	Cord marking on exterior
2016-503	10	Level 2	BODY	Sand Temper	14.1	2	RIM/BODY	TRUE	Cord marked	Cord marks on surface
2016-503	10	Level 2	BODY	Shell Temper	0.6	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	10	Level 2	BODY	Shell Temper	3.6	1	RIM/BODY	TRUE	Punctated	Two punctations visible
2016-503	10	Level 2	BODY	Shell Temper	461	85	RIM/BODY			
2016-503	10	Level 2	BODY	Shell Temper	0.7	1	RIM/BODY	TRUE	Punctated	Punctations across body
2016-503	10	Level 2	BODY	Shell Temper	4.4	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	10	Level 2	BODY	Shell Temper	0.5	1	RIM/BODY	TRUE	Puncated	Punctations across surface
2016-503	10	Level 2	BODY	Shell Temper	1	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	10	Level 2	BODY	Shell Temper	1.5	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	10	Level 2	BODY	Shell Temper	0.6	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	10	Level 2	BODY	Shell Temper	238.7	40	RIM/BODY			
2016-503	10	Level 2	BODY	Shell Temper	2.1	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	10	Level 2	BODY	Shell Temper	10	1	RIM/BODY	TRUE	Punctated	Two parallel rows of punctations

Table II-9 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2016-503	10	Level 2	BODY	Shell Temper	3	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	10	Level 2	BODY	Shell Temper	2.2	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	10	Level 2	BODY	Shell Temper	1.3	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	10	Level 2	NECK	Shell Temper	35.3	2	RIM/BODY	TRUE	Punctated, Handle	2 pieces refit (one body-only) Punctated in triangles on body. Nothing on neck. Handle attachment on top of body just below bend of neck
2016-503	10	Level 2	RIM	Shell Temper	5.6	1	RIM/BODY			Rounded lip on outsloping rim. Edge of rim not smoothed into body on outside
2016-503	10	Level 2	RIM	Shell Temper	3.5	1	RIM/BODY			Flat lip on outsloping rim
2016-503	10	Level 2	RIM	Shell Temper	1.9	1	RIM/BODY			Rounded lip on outslanting rim. Spalled on interior
2016-503	10	Level 2	RIM	Shell Temper	11.7	1	RIM/BODY	TRUE	Handle, Notched	Rounded lip on outslanting rim. Notches cut into lip on exterior. Wide strap handle attached at bend of rim, broken
2016-503	10	Level 2	RIM	Shell Temper	2.8	1	RIM/BODY			Flat lip on outslanting rim. Outside spalled off
2016-503	10	Level 2	RIM	Shell Temper	10.2	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	10	Level 2	RIM	Shell Temper	2.5	1	RIM/BODY			Rounded lip on outsloping rim
2016-503	10	Level 2	RIM	Shell Temper	2.2	1	RIM/BODY			Flat lip on straight rim

Table II-9 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2016-503	10	Level 2	RIM	Shell Temper	1.3	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	10	Level 2	RIM	Shell Temper	6.2	1	RIM/BODY	TRUE	Handle	Rounded lip on outslanting rim. Strap handle attached ~1 cm below lip, broken
2016-503	10	Level 2	RIM	Shell Temper	12.3	1	RIM/BODY			Rounded lip on outsloping rim, bit of neck present
2016-503	10	Level 2	RMBDY	Shell Temper	86.3	1	RIM/BODY			Rounded lip on straight rim
2016-503	10	Level 2	RMBDY	Shell Temper	9.6	1	RIM/BODY	TRUE	Handle, Node	Rounded lip on outslanting rim. Strap handle attached at lip to top of body below neck. Node applied at center top of handle.
2016-503	16	Level 3	SHERD		0.9	4	SHERDLETS			
2016-503	16	Level 3	SHERD		272.5	312	SHERDLETS			Temper not determined
2016-503	16	Level 3	BODY	Very Fine Shell Temper	204.3	23	RIM/BODY			
2016-503	16	Level 3	BODY	Very Fine Shell Temper	0.7	1	RIM/BODY	TRUE	Incised	4 parallel incised lines
2016-503	16	Level 3	BODY	Very Fine Shell Temper	1.5	2	RIM/BODY	TRUE	Paint	Red paint on exterior
2016-503	16	Level 3	BODY	Very Fine Shell Temper	2.2	1	RIM/BODY	TRUE	Incised	4 parallel incised lines
2016-503	16	Level 3	RIM	Very Fine Shell Temper	2.5	1	RIM/BODY			Flat lip on straight rim

Table II-9 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2016-503	16	Level 3	RIM	Very Fine Shell Temper	2.7	1	RIM/BODY	TRUE	Appliqué, Notched	Flat lip on straight rim. Appliqué strip applied ~.5cm below lip and vertical notches cut in shallowly
2016-503	16	Level 3	RIM	Very Fine Shell Temper	6.3	1	RIM/BODY	TRUE	Appliqué, Notched	Flat lip on straight rim. Appliqué strip applied ~.5cm below lip and notched to form raised squares
2016-503	16	Level 3	RIM	Very Fine Shell Temper	2.1	1	RIM/BODY			Rounded lip on straight rim
2016-503	16	Level 3	RIM	Very Fine Shell Temper	9.4	1	RIM/BODY	TRUE	Notched	Rounded lip on straight rim. Possibly notched cut into lip, but weathering may be causing it
2016-503	16	Level 3	RIM	Very Fine Shell Temper	1.9	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	16	Level 3	RIM	Very Fine Shell Temper	1.1	1	RIM/BODY	TRUE	Paint	Rounded lip on outslanting rim. Red paint on interior and exterior.
2016-503	16	Level 3	RIM	Very Fine Shell Temper	7.8	1	RIM/BODY	TRUE	Punctated	Flat lip on straight rim. Punctations pushed to right just below lip
2016-503	16	Level 3	RMBDY	Very Fine Shell Temper	11.4	1	RIM/BODY			Rounded lip on straight rim
2016-503	16	Level 3	BODY	Grog and Shell Temper	4.2	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	16	Level 3	BODY	Grog and Shell Temper	7.6	1	RIM/BODY	TRUE	Effigy	Large raised area likely part of effigy

Table II-9 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2016-503	16	Level 3	BODY	Grog and Shell Temper	3.2	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	16	Level 3	BODY	Grog and Shell Temper	152.3	23	RIM/BODY			
2016-503	16	Level 3	NECK	Grog and Shell Temper	2.9	1	RIM/BODY	TRUE	Punctated	two punctations, one above, one below bend in neck
2016-503	16	Level 3	RIM	Grog and Shell Temper	5.5	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	16	Level 3	RIM	Grog and Shell Temper	2	1	RIM/BODY			Rounded lip on straight rim
2016-503	16	Level 3	RIM	Grog and Shell Temper	1.4	1	RIM/BODY			Rolled out, flat lip on straight rim
2016-503	16	Level 3	RMBDY	Grog and Shell Temper	53.9	1	RIM/BODY			Flat lip on outsloping rim
2016-503	16	Level 3	RMBDY	Grog and Shell Temper	8.8	1	RIM/BODY			Flat lip on straight rim
2016-503	16	Level 3	BODY	Sand Temper	15.2	3	RIM/BODY			
2016-503	16	Level 3	BODY	Sand Temper	14.4	3	RIM/BODY	TRUE	Cord marked	Cord markings on surface
2016-503	16	Level 3	BODY	Shell Temper	3.4	1	RIM/BODY	TRUE	Punctated	Punctations across body
2016-503	16	Level 3	BODY	Shell Temper	2.2	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	16	Level 3	BODY	Shell Temper	5.1	1	RIM/BODY	TRUE	Punctated	5 rows of punctations visible
2016-503	16	Level 3	BODY	Shell Temper	2.6	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	16	Level 3	BODY	Shell Temper	2.7	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	16	Level 3	BODY	Shell Temper	0.9	1	RIM/BODY	TRUE	Punctated	Punctations across surface

Table II-9 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2016-503	16	Level 3	BODY	Shell Temper	4.4	1	RIM/BODY	TRUE	Punctated	3 rows of punctations visible below possibly neck, but broken
2016-503	16	Level 3	BODY	Shell Temper	0.8	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	16	Level 3	BODY	Shell Temper	16.4	1	RIM/BODY	TRUE	Node	Large node applied on body
2016-503	16	Level 3	BODY	Shell Temper	1.7	1	RIM/BODY	TRUE	Appliqué	Appliqué strip on thin body sherd
2016-503	16	Level 3	BODY	Shell Temper	1.1	1	RIM/BODY	TRUE	Incised	4 parallel lines
2016-503	16	Level 3	BODY	Shell Temper	3.3	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	16	Level 3	BODY	Shell Temper	2.1	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	16	Level 3	BODY	Shell Temper	1.3	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	16	Level 3	BODY	Shell Temper	9.4	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	16	Level 3	BODY	Shell Temper	1.8	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	16	Level 3	BODY	Shell Temper	1.6	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	16	Level 3	BODY	Shell Temper	514.5	58	RIM/BODY			
2016-503	16	Level 3	HANDLE	Shell Temper	2.2	1	RIM/BODY	TRUE	Handle, Noded	Strap handle with one node in center of top
2016-503	16	Level 3	NECK	Shell Temper	6.8	1	RIM/BODY	TRUE	Handle	Handle attachement just below bend in neck
2016-503	16	Level 3	NECK	Shell Temper	7.9	1	RIM/BODY	TRUE	Punctated	Punctations across body. Above bend for neck undecorated
2016-503	16	Level 3	NECK	Shell Temper	8.9	1	RIM/BODY	TRUE	Punctated	Punctations on body, undecorated above bend in neck

Table II-9 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2016-503	16	Level 3	RIM	Shell Temper	2.4	1	RIM/BODY			Flat lip on straight rim
2016-503	16	Level 3	RIM	Shell Temper	4.7	1	RIM/BODY			Flat lip on straight rim
2016-503	16	Level 3	RIM	Shell Temper	2.9	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	16	Level 3	RIM	Shell Temper	5.8	1	RIM/BODY	TRUE	Incised	Rounded lip on outslanting rim. 6 parallel, diagonal lines running into lip on one section
2016-503	16	Level 3	RIM	Shell Temper	8	1	RIM/BODY			Flat lip rolled to both sides and not completely smoothed into body
2016-503	16	Level 3	RIM	Shell Temper	3.3	1	RIM/BODY			Flat lip on straight rim
2016-503	16	Level 3	RIM	Shell Temper	6	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	16	Level 3	RIM	Shell Temper	2.4	1	RIM/BODY	TRUE	Punctated	Rounded lip on straight rim. Punctations down into outside of lip, or possibly on top of handle attachement, rest of handle or exterior spalled
2016-503	16	Level 3	RIM	Shell Temper	1.5	1	RIM/BODY			Rounded lip on spalled rim
2016-503	16	Level 3	RIM	Shell Temper	1.2	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	16	Level 3	RIM	Shell Temper	6	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	16	Level 3	RIM	Shell Temper	2.7	1	RIM/BODY			Rolled out, flat lip on spalled rim
2016-503	16	Level 3	RIM	Shell Temper	3.2	1	RIM/BODY			Flat lip on outslanting rim, exterior spalled
2016-503	16	Level 3	RIM	Shell Temper	2.9	1	RIM/BODY			Flat lip on straight rim

Table II-9 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2016-503	16	Level 3	RIM	Shell Temper	1.6	1	RIM/BODY			Flat lip on straight rim
2016-503	16	Level 3	RIM	Shell Temper	2.3	1	RIM/BODY			Rounded lip on straight rim
2016-503	16	Level 3	RMBDY	Shell Temper	6.2	1	RIM/BODY	TRUE	Notched	Flat lip on straight rim. Notches cut into outside of lip
2016-503	16	Level 3	RMBDY	Shell Temper	10.8	1	RIM/BODY	TRUE	Handle	Rounded lip on straight rim. Small strap handle attached at lip and extends 3 cm. Outside of handle spalled
2016-503	16	Level 3	RMBDY	Shell Temper	22.6	1	RIM/BODY			Flat lip on outslanting rim
2016-503	26	Level 4	SHERD		61.7	98	SHERDLETS			Temper not determined
2016-503	26	Level 4	BODY	Very Fine Shell Temper	35.7	6	RIM/BODY			
2016-503	26	Level 4	RIM	Very Fine Shell Temper	2.7	1	RIM/BODY			Rolled out, Rounded lip on outslanting rim
2016-503	26	Level 4	RIM	Very Fine Shell Temper	12.9	1	RIM/BODY	TRUE	Notched	Rounded lip on outslanting rim. Vertical notches cut into outside of lip
2016-503	26	Level 4	RIM	Very Fine Shell Temper	9.4	1	RIM/BODY			Rounded lip on straight rim
2016-503	26	Level 4	BODY	Grog and Shell Temper	224.5	9	RIM/BODY			
2016-503	26	Level 4	BODY	Grog and Shell Temper	1.2	1	RIM/BODY	TRUE	Incised	Parallel incised lines on surface
2016-503	26	Level 4	RIM	Grog and Shell Temper	1.7	1	RIM/BODY			Flat lip on straight rim

Table II-9 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2016-503	26	Level 4	RIM	Grog and Shell Temper	8.1	1	RIM/BODY			Rounded lip on straight rim
2016-503	26	Level 4	RIM	Grog and Shell Temper	7.1	1	RIM/BODY			Rounded lip on straight rim
2016-503	26	Level 4	BODY	Sand Temper	7.3	2	RIM/BODY			
2016-503	26	Level 4	BODY	Shell Temper	4.2	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	26	Level 4	BODY	Shell Temper	12.7	1	RIM/BODY			Plain body sherd possibly formed into disk
2016-503	26	Level 4	BODY	Shell Temper	376.6	35	RIM/BODY			
2016-503	26	Level 4	BODY	Shell Temper	4.5	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	26	Level 4	BODY	Shell Temper	3.2	1	RIM/BODY	TRUE	Punctated	Rough punctations across surface
2016-503	26	Level 4	BODY	Shell Temper	3.2	2	RIM/BODY			
2016-503	26	Level 4	coil	Shell Temper	2.3	2	Coil			coils not formed into pot
2016-503	26	Level 4	RIM	Shell Temper	2	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	26	Level 4	RIM	Shell Temper	3.6	1	RIM/BODY			Rolled out lip on outsloping rim
2016-503	26	Level 4	RIM	Shell Temper	8.9	1	RIM/BODY	TRUE	Cut rim	Flat lip on straight rim. Rim steps up along contour
2016-503	26	Level 4	RIM	Shell Temper	2.1	1	RIM/BODY	TRUE	Punctated	Rounded lip on straight rim. Small round punctations into upper, exterior surface of lip

Table II-9 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated	type	General comment
2016-503	26	Level 4	RIM	Shell Temper	4.8	1	RIM/BODY	TRUE	Handle	Rounded lip on straight rim. Small strap handle attached and broken, another one broken off
2016-503	26	Level 4	RMBDY	Shell Temper	57.5	1	RIM/BODY	TRUE	Appliquéd, Notched	Flat lip on outsloping rim. Appliqué strip below lip is widely notched to form raised squares/rectangles
2016-503	26	Level 4	RMBDY	Shell Temper	20.6	1	RIM/BODY	TRUE	Punctated, Handle	Rounded lip on outsloping rim. Thin vertical punctations across body, but stop at bend for neck. Possible strap handle attachement at lip
2016-503	30	Level 5	SHERD		6.7	9	SHERDLETS			Temper not determined
2016-503	30	Level 5	BODY	Grog and Shell Temper	2.7	1	RIM/BODY			
2016-503	30	Level 5	RIM	Grog and Shell Temper	2.8	1	RIM/BODY	TRUE	Appliquéd, notched	Rounded lip on outslanting rim. Appliqué strip applied just below lip with vertical notches cut in to form raised quares
2016-503	30	Level 5	BODY	Sand Temper	4.3	1	RIM/BODY	TRUE	Cord marked	Cord markings across surface
2016-503	30	Level 5	BODY	Shell Temper	90.3	3	RIM/BODY			

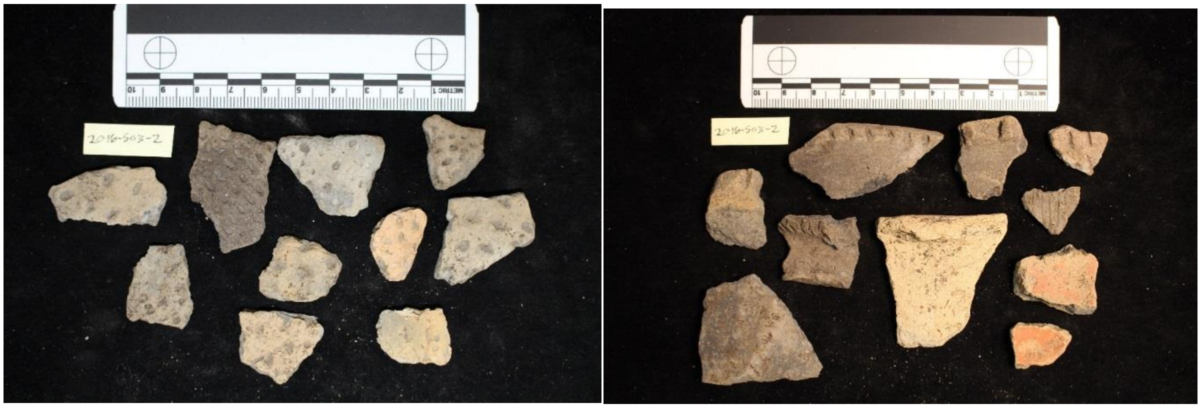

Figure III-61: Left: Punctated (grog and shell and shell tempered). Right: Notched rim exterior (top row, grog and shell tempered), notched appliqué strip applied below lip exterior (grog and shell tempered), handle attachments (center, grog and shell and shell tempered), incised lines (right, 2nd from top, grog and shell tempered), base with notches around edge (bottom left, grog and shell tempered), red slipped (bottom right, grog and shell and shell tempered). Excavated from Level 1 of TU7.

Figure III-62: Grog and shell tempered, punctated sherds. Excavated from Level 1 of TU7 bioturbated area.

Figure III-63: Left: Sand tempered, cordmarked sherds. Right: Shell tempered sherds. Notched appliqué strip applied below lip exterior. Excavated from Level 2 of TU7.

Figure III-64: Left: Stepped rim (center, shell tempered), notched (shell tempered), punctated (far left, shell tempered). Right: thin appliqué strips on exterior (grog and shell tempered). Excavated from Level 2 of TU7.

Figure III-65: Left: Handle attachments and handles (Shell tempered, top left grog and shell tempered). Right: Punctated (shell and grog and shell tempered). Excavated from Level 2 of TU7.

Figure III-66: Grog and shell tempered sherds. Notches on body. Excavated from Level 2 of TU7.

Figure III-67: Left: punctated (shell and grog and shell tempered). Right: appliqué strip (center, shell tempered) and nodes (left and right, shell tempered). Excavated from Level 3 of TU7.

Figure III-68: Left: Red slipped (top, shell tempered), incised (right, shell tempered), handle and handle attachment (bottom left, shell tempered), raised strip (center, part of effigy?, grog and shell tempered). Right: Notched lip exterior (top row, shell tempered), notched appliqué strip applied below lip exterior (shell tempered). Excavated from Level 3 of TU7.

Figure III-69: Sand tempered, cordmarked sherds. Excavated from Level 3 of TU7.

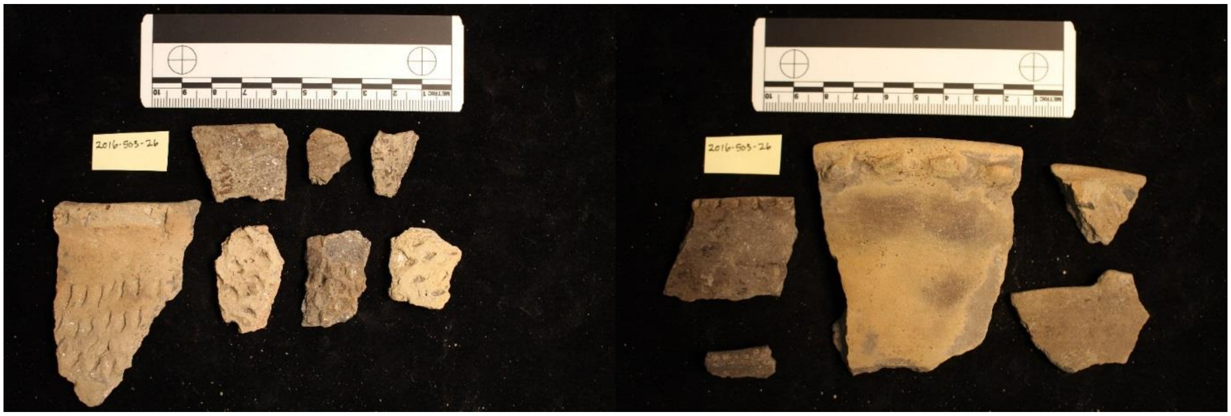

Figure III-70: Shell tempered sherds. Left: Punctated. Right: Notched appliqué strip applied below lip exterior (top row), notches in lip exterior (left below tag), punctations into top of lip (bottom left), stepped rim (bottom right). Excavated from Level 4 of TU7.

Figure III-71: Sand tempered, cordmarked sherd. Excavated from Level 5 of TU7.

Figure III-72: Shell tempered sherd. Notched appliqué strip applied below lip exterior. Excavated from Level 5 of TU7.

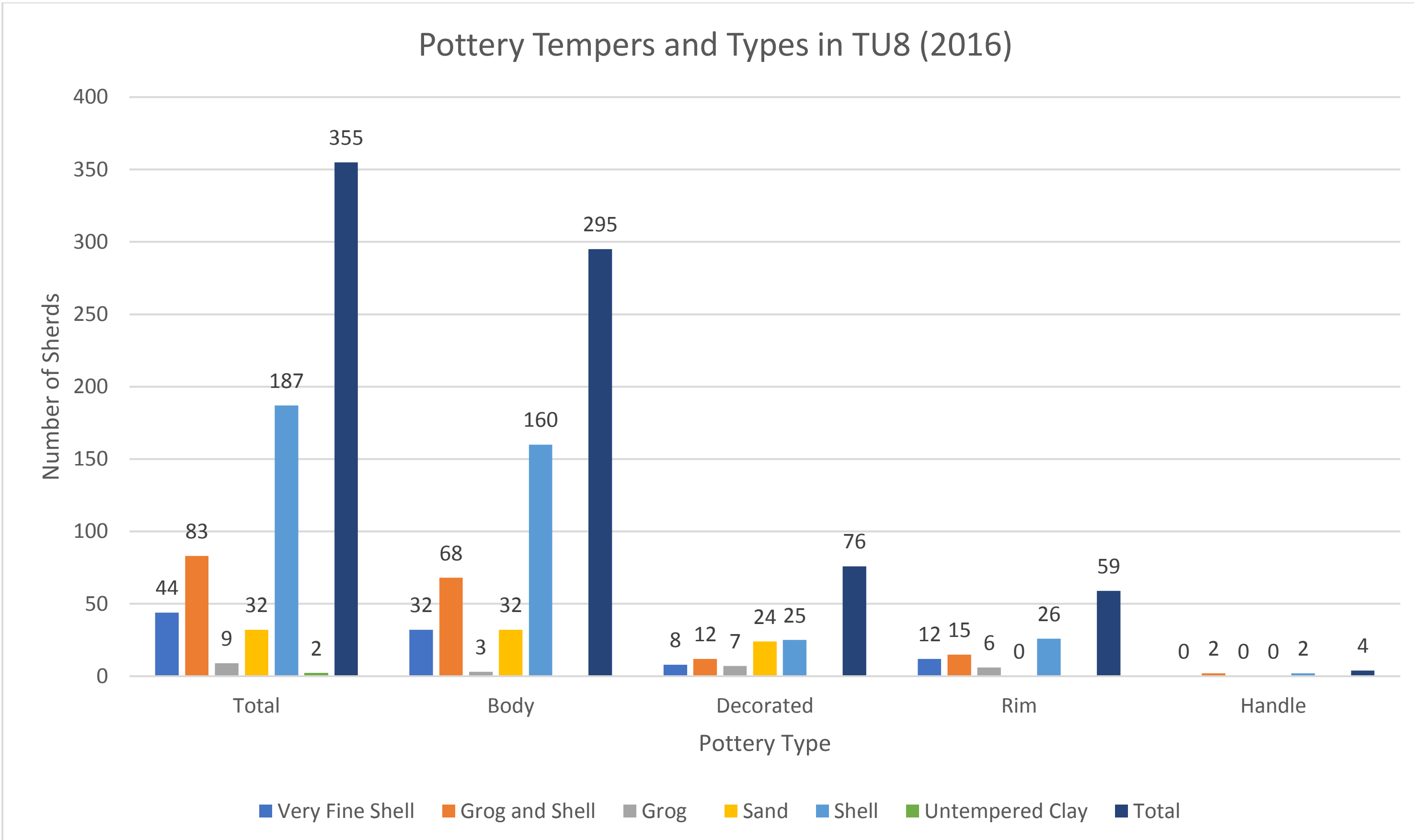

Figure II-73: Temper and Types of sherds in TU8 excavated in 2016.

Table II-10: Pottery sherds excavated from TU8 in 2016 as summarized in Figure II-73.

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorate	type	General comment
2016-503	3	Level 1	BODY	Very Fine Shell Temper	56.4	15	RIM/BODY			
2016-503	3	Level 1	BODY	Very Fine Shell Temper	1.4	1	RIM/BODY	TRUE	Red Paint	Red paint on interior
2016-503	3	Level 1	RIM	Very Fine Shell Temper	2.9	1	RIM/BODY			Flat lip on outslanting rim
2016-503	3	Level 1	RIM	Very Fine Shell Temper	2.3	1	RIM/BODY			Flat lip on straight rim
2016-503	3	Level 1	RIM	Very Fine Shell Temper	4	1	RIM/BODY	TRUE	Notched	Rounded lip on outslanting rim. Notches on outside of lip, some covered by clay smoothed up from below.
2016-503	3	Level 1	RIM	Very Fine Shell Temper	2.4	1	RIM/BODY			Rolled out flat lip on outslanting rim
2016-503	3	Level 1	RIM	Very Fine Shell Temper	4.9	1	RIM/BODY	TRUE	Notched	Flat lip on outslanting rim. Vertical notches cut into outside of lip
2016-503	3	Level 1	RIM	Very Fine Shell Temper	1.7	1	RIM/BODY	TRUE	Node	Flat lip on straight rim. Node attached below lip. Maybe part of handle?
2016-503	3	Level 1	BODY	Grog and Shell Temper	7.8	1	RIM/BODY	TRUE	Punctated	Punctations across body
2016-503	3	Level 1	BODY	Grog and Shell Temper	3.3	1	RIM/BODY	TRUE	Incised, Punctated	Punctations in one area, incised lines above
2016-503	3	Level 1	BODY	Grog and Shell Temper	230.3	30	RIM/BODY			

Table II-10 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorate	type	General comment
2016-503	3	Level 1	HANDLE	Grog and Shell Temper	1.8	1	RIM/BODY	TRUE	Appliqué	Appliqué strip running down strap handle
2016-503	3	Level 1	NECK	Grog and Shell Temper	9.9	1	RIM/BODY	TRUE	Punctations	Punctations below neck. Clay pushed to left
2016-503	3	Level 1	RIM	Grog and Shell Temper	3.3	1	RIM/BODY			Flat lip on straight rim
2016-503	3	Level 1	RIM	Grog and Shell Temper	5.9	1	RIM/BODY	TRUE	Punctations	Rounded lip on outslanting rim. Punctations just below lip on exterior
2016-503	3	Level 1	RIM	Grog and Shell Temper	8.4	1	RIM/BODY	TRUE	Node	Flat lip on outslanting rim. Node attached below lip
2016-503	3	Level 1	RIM	Grog and Shell Temper	10.3	1	RIM/BODY	TRUE	Punctated	Flat lip on straight rim. Small punctation on exterior surface
2016-503	3	Level 1	RIM	Grog and Shell Temper	2.9	1	RIM/BODY			Possibly a lug handle? Edge is flattened, but a line runs through it. Edge also dips
2016-503	3	Level 1	RIM	Grog and Shell Temper	3	1	RIM/BODY			Rolled out lip on outslanting rim
2016-503	3	Level 1	BODY	Grog Temper	2.8	1	RIM/BODY	TRUE	Engraved	Lines forming triangles with dots inside
2016-503	3	Level 1	HANDLE	Grog Temper	1.3	1	RIM/BODY	TRUE	Appliqué	Appliqué strip running down strap handle. Handle broken from vessel
2016-503	3	Level 1	RIM	Grog Temper	2.6	1	RIM/BODY			Rounded lip on outslanting rim

Table II-10 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorate	type	General comment
2016-503	3	Level 1	RIM	Grog Temper	5.4	1	RIM/BODY	TRUE	Notched	Flat lip on straight rim. Notches on inside of lip
2016-503	3	Level 1	RIM	Grog Temper	10.8	1	RIM/BODY	TRUE	Notched	Rounded lip on straight rim. Notches cut into outside of lip
2016-503	3	Level 1	RIM	Grog Temper	2.8	1	RIM/BODY	TRUE	Notched	Rounded lip on outslanting rim. Vertical notch cut into outside of lip, possibly horizontal notch cut into lip, possibly broken
2016-503	3	Level 1	RIM	Grog Temper	2.4	1	RIM/BODY	TRUE	Notched	Rounded lip on outslanting rim. Vertical notches on outside of lip
2016-503	3	Level 1	BODY	Sand Temper	5.6	2	RIM/BODY			
2016-503	3	Level 1	BODY	Shell Temper	223.5	50	RIM/BODY			
2016-503	3	Level 1	BODY	Shell Temper	10.4	3	RIM/BODY	TRUE	Punctated	Punctations across body
2016-503	3	Level 1	Handle	Shell Temper	0.7	1	RIM/BODY			Narrow strap handle
2016-503	3	Level 1	NECK	Shell Temper	39	1	RIM/BODY	TRUE	Handle	Flat lip on outslanting rim. Broken handle attached belo lip and attaches on body, but that is missing
2016-503	3	Level 1	NECK	Shell Temper	5.8	1	RIM/BODY	TRUE	Punctations, Handle	Punctations below neck. Handle attachment at neck, then broken

Table II-10 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorate	type	General comment
2016-503	3	Level 1	RIM	Shell Temper	5.5	1	RIM/BODY	TRUE	Notched	Rounded lip on straight rim. Notches into outside edge of lip.
2016-503	3	Level 1	RIM	Shell Temper	5	1	RIM/BODY			Flat lip on straight rim. Possible lug handle, broken
2016-503	3	Level 1	RIM	Shell Temper	4.2	1	RIM/BODY			Flat lip on straight rim
2016-503	3	Level 1	RIM	Shell Temper	1.5	1	RIM/BODY	TRUE	Notched	Flat lip on ? Rim (broken inside). Two rows of small vertical notches on exterior, first at lip
2016-503	3	Level 1	RIM	Shell Temper	4.3	1	RIM/BODY	TRUE	Notched, Red Paint	Rounded lip on outslanting rim. Rim is painted red. Notches cut into body ~1cm from lip
2016-503	3	Level 1	RIM	Shell Temper	9.7	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	3	Level 1	RIM	Shell Temper	2.9	1	RIM/BODY	TRUE	Appliqué, Notched	Rounded lip on outslanting rim. Appliqué strip below lip, vertical notches cut into strip
2016-503	3	Level 1	RIM	Shell Temper	1.9	1	RIM/BODY	TRUE	Notched	Flat lip on straight rim. Groove along top of lip. Notches into outside of lip
2016-503	3	Level 1	RIM	Shell Temper	16.6	1	RIM/BODY			Rounded lip on straight rim
2016-503	3	Level 1	RIM	Shell Temper	3.2	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	3	Level 1	SHERD	Shell Temper	104.9	111	SHERDLETS			

Table II-10 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorate	type	General comment
2016-503	3	Level 1	clay	untempered clay	14.3	2	DEBITAGE			Untempered clay, possibly hand formed and accidentally fired
2016-503	11	Level 2	SHERD		123.7	125	SHERDLETS			Temper not determined
2016-503	11	Level 2	BODY	Very Fine Shell Temper	96.5	12	RIM/BODY			
2016-503	11	Level 2	BODY	Very Fine Shell Temper	10.3	1	RIM/BODY	TRUE	Paint	Red paint on interior and exterior
2016-503	11	Level 2	RIM	Very Fine Shell Temper	21.3	1	RIM/BODY			Flat lip on straight rim. Lip pushed in and not completely smoothed to inside surface
2016-503	11	Level 2	RIM	Very Fine Shell Temper	7.8	1	RIM/BODY	TRUE	Notched	Rounded lip on outslanting rim. Vertical notches cut into outside of lip
2016-503	11	Level 2	RIM	Very Fine Shell Temper	10.7	1	RIM/BODY	TRUE	Appliqué, Notched	Flat lip on straight rim. Appliqué strip applied below lip and notched to form raised squares
2016-503	11	Level 2	RIM	Very Fine Shell Temper	7.1	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	11	Level 2	RIM	Very Fine Shell Temper	6.4	1	RIM/BODY	TRUE	Punctated	Flat lip on slightly outslanting rim. Punctations into exterior of lip
2016-503	11	Level 2	RMBDY	Very Fine Shell Temper	36.3	1	RIM/BODY			Rounded lip on outslanting rim. Thickening of body may be neck of rim rider effigy that is broken?

Table II-10 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorate	type	General comment
2016-503	11	Level 2	BASE	Grog and Shell Temper	100	1	RIM/BODY			Thick, flat base
2016-503	11	Level 2	BODY	Grog and Shell Temper	235.8	24	RIM/BODY			
2016-503	11	Level 2	Effigy	Grog and Shell Temper	33.4	1	RIM/BODY	TRUE	Appliqué	Flat lip on rim that forms T-shaped cross section. Rounded appliqué on exterior was likely part of effigy
2016-503	11	Level 2	RIM	Grog and Shell Temper	4.3	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	11	Level 2	RIM	Grog and Shell Temper	1.4	1	RIM/BODY			Flat lip on straight rim
2016-503	11	Level 2	RMBDY	Grog and Shell Temper	33.9	1	RIM/BODY			Rounded lip on outsloping rim
2016-503	11	Level 2	RMBDY	Grog and Shell Temper	56.5	1	RIM/BODY	TRUE	Handle	Flat lip on straight rim. Lip rolled in and not completely smoothed over. Attachment for large strap handle ~1cm below lip
2016-503	11	Level 2	RMBDY	Grog and Shell Temper	27.8	1	RIM/BODY	TRUE	Handle	Rounded lip on straight rim. Lug handle extending from rim
2016-503	11	Level 2	RMBDY	Grog and Shell Temper	7	1	RIM/BODY			Flat lip on straight rim. Rim curves, maybe for rim rider effigy attachement?
2016-503	11	Level 2	RMBDY	Grog and Shell Temper	2.8	1	RIM/BODY			Rounded lip on straight rim. Curve of neck at bottom of sherd

Table II-10 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorate	type	General comment
2016-503	11	Level 2	RMBDY	Grog and Shell Temper	22.9	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	11	Level 2	BODY	Sand Temper	6.9	2	RIM/BODY			
2016-503	11	Level 2	BODY	Shell Temper	562.8	70	RIM/BODY			
2016-503	11	Level 2	BODY	Shell Temper	1.2	1	RIM/BODY	TRUE	Punctated	Line of punctations
2016-503	11	Level 2	BODY	Shell Temper	1.8	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	11	Level 2	BODY	Shell Temper	2	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	11	Level 2	BODY	Shell Temper	2.6	1	RIM/BODY	TRUE	Noded	One node on surface
2016-503	11	Level 2	BODY	Shell Temper	1.5	1	RIM/BODY	TRUE	Appliqué	Appliqué strip broken from body
2016-503	11	Level 2	BODY	Shell Temper	2.4	1	RIM/BODY	TRUE	Punctated	One line of punctations
2016-503	11	Level 2	HANDLE	Shell Temper	1.4	1	RIM/BODY	TRUE	Appliqué	Vertical appliqué strip on thin strap handle broken from vessel
2016-503	11	Level 2	HANDLE	Shell Temper	5.3	1	RIM/BODY			Appliqué strip. Possibly starp hand with most of handle broken off, but area of attachment to body present
2016-503	11	Level 2	RIM	Shell Temper	10	1	RIM/BODY			Flat lip on straight rim
2016-503	11	Level 2	RIM	Shell Temper	12.9	1	RIM/BODY	TRUE	Notched	Rounded lip on outslanting rim. Vertical notches cut into lip
2016-503	11	Level 2	RIM	Shell Temper	4.7	1	RIM/BODY			Rounded lip on outsloping rim
2016-503	11	Level 2	RIM	Shell Temper	2.9	1	RIM/BODY	TRUE	Notched	Rounded lip on outslopint rim. Notches cut into lip

Table II-10 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorate	type	General comment
2016-503	11	Level 2	RMBDY	Shell Temper	10.3	1	RIM/BODY			Flat lip on outsloping rim. Possible handle attachment at lip, but eroded
2016-503	11	Level 2	RMBDY	Shell Temper	26.8	1	RIM/BODY			Rounded lip on straight rim
2016-503	11	Level 2	RMBDY	Shell Temper	65	1	RIM/BODY			Flat lip on oustlanting rim. Lip overhangs exterior slightly
2016-503	11	Level 2	RMBDY	Shell Temper	6.2	1	RIM/BODY	TRUE	Handle	Rounded lip on outslanting rim. Strap handle attache d~.5cm below lip
2016-503	11	Level 2	RMBDY	Shell Temper	19.2	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	11	Level 2	RMBDY	Shell Temper	21.3	1	RIM/BODY	TRUE	Appliqué	Rounded lip on straight rim. Two vertical appliqe strips mostly broken off
2016-503	17	Level 3	SHERD		50.2	57	SHERDLETS			
2016-503	17	Level 3	BODY	Very Fine Shell Temper	15.1	2	RIM/BODY			
2016-503	17	Level 3	BODY	Grog and Shell Temper	6.2	1	RIM/BODY	TRUE	Punctated	Small punctations across surface
2016-503	17	Level 3	BODY	Grog and Shell Temper	97.4	4	RIM/BODY			
2016-503	17	Level 3	BODY	Grog and Shell Temper	6.4	1	RIM/BODY	TRUE	Incised	Possible incised line on exterior

Table II-10 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorate	type	General comment
2016-503	17	Level 3	RIM	Grog and Shell Temper	2	1	RIM/BODY			Rolled out lip on outslanting rim. Not well-smoothed to body on exterior
2016-503	17	Level 3	RIM	Grog Temper	3.9	1	RIM/BODY	TRUE	Notched	Rounded lip on outslanting rim. Notches cut into exterior of lip
2016-503	17	Level 3	BODY	Sand Temper	15	5	RIM/BODY	TRUE	Cord marked	cord markings on surface
2016-503	17	Level 3	BODY	Sand Temper	1.3	1	RIM/BODY			
2016-503	17	Level 3	BODY	Shell Temper	1.9	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	17	Level 3	BODY	Shell Temper	72.2	19	RIM/BODY			
2016-503	17	Level 3	RIM	Shell Temper	2.1	1	RIM/BODY			Flat lip on straight rim
2016-503	17	Level 3	RIM	Shell Temper	17.3	1	RIM/BODY	TRUE	Notched	Flat lip on straight rim. Vertical notches pressed right into outside of lip
2014-518	19	Feature 4	SHERD	Shell Temper	5	14	SHERDLETS			HF sorted for 5 min
2016-503	20	Feature 4	SHERD		0.1	3	SHERDLETS			HF sorted for ~10 min
2016-503	20	Feature 4	BODY	Grog and Shell Temper	4.4	1	RIM/BODY			HF sorted for ~10 min
2016-503	23	Level 4	SHERD		18.1	32	SHERDLETS			Temper not determined
2016-503	23	Level 4	BODY	Very Fine Shell Temper	27.4	1	RIM/BODY			
2016-503	23	Level 4	BODY	Grog and Shell Temper	14.1	1	RIM/BODY			
2016-503	23	Level 4	BODY	Grog Temper	5	1	RIM/BODY			

Table II-10 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorate	type	General comment
2016-503	23	Level 4	BODY	Sand Temper	4.4	3	RIM/BODY			
2016-503	23	Level 4	BODY	Sand Temper	56.4	18	RIM/BODY	TRUE	Cordmarked	cordmarking across surface
2016-503	23	Level 4	BODY	Shell Temper	35.8	8	RIM/BODY			
2016-503	23	Level 4	RIM	Shell Temper	2.1	1	RIM/BODY			Flat lip on straight rim
2016-503	23	Level 4	RIM	Shell Temper	17.3	1	RIM/BODY	TRUE	Appliquéd, Notched	Rounded lip on outslanting rim. Appliqué strip applied below lip with vertical notches cut in to form raised squares
2016-503	23	Level 4	RIM	Shell Temper	14	1	RIM/BODY	TRUE	Appliquéd, Notched	Rounded lip on outslanting rim. Appliqué strip applied below lip with vertical notches cut in to form raised squares
2016-503	29	Level 5	SHERD		2.1	4	SHERDLETS			Temper not determined
2016-503	29	Level 5	BODY	Sand Temper	4	1	RIM/BODY	TRUE	Cord marked	Cord marked across surface

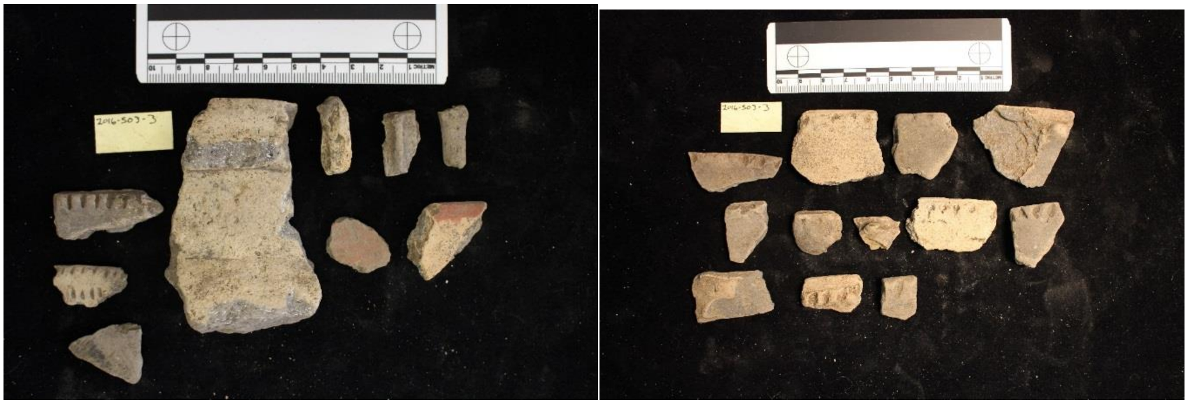

Figure III-74: Left: Notched sherds (left, shell tempered), handle attachment (center, shell tempered), handles (top right, shell and grog and shell tempered), red slipped (bottom right, shell tempered). Right: Notched lip exterior (top two rows, shell and grog and shell tempered), notched appliqué strip applied below rim exterior (shell tempered), node applied below lip exterior (top right, grog and shell tempered). Excavated from Level 1 of TU8.

Figure III-75: Punctated (shell and grog and shell tempered). Excavated from Level 1 of TU8.

Figure III-76: Shell tempered sherds. Left: Handles (bottom left, shell tempered), handle attachments (center and top right, shell and grog and shell tempered), red slipped (right center, shell tempered), puctated (bottom right, shell tempered). Right: Notched lip exterior (shell tempered), notched appliqué strip applied below lip exterior (top right, shell tempered). Excavated from Level 2 of TU8.

Figure III-77: Grog and shell tempered sherd. Appliqué effigy leg (?). Excavated from Level 2 of TU8.

Figure III-78: Notched lip exterior (grog tempered), punctated (bottom center, shell tempered), handle (shell tempered). Excavated from Level 3 of TU8.

Figure III-79: Shell tempered sherds. Notched appliqué strip applied below lip exterior. Excavated from Level 4 of TU8.

Figure III-80: Sand tempered, cordmarked sherd. Excavated from Level 4 of TUR8.

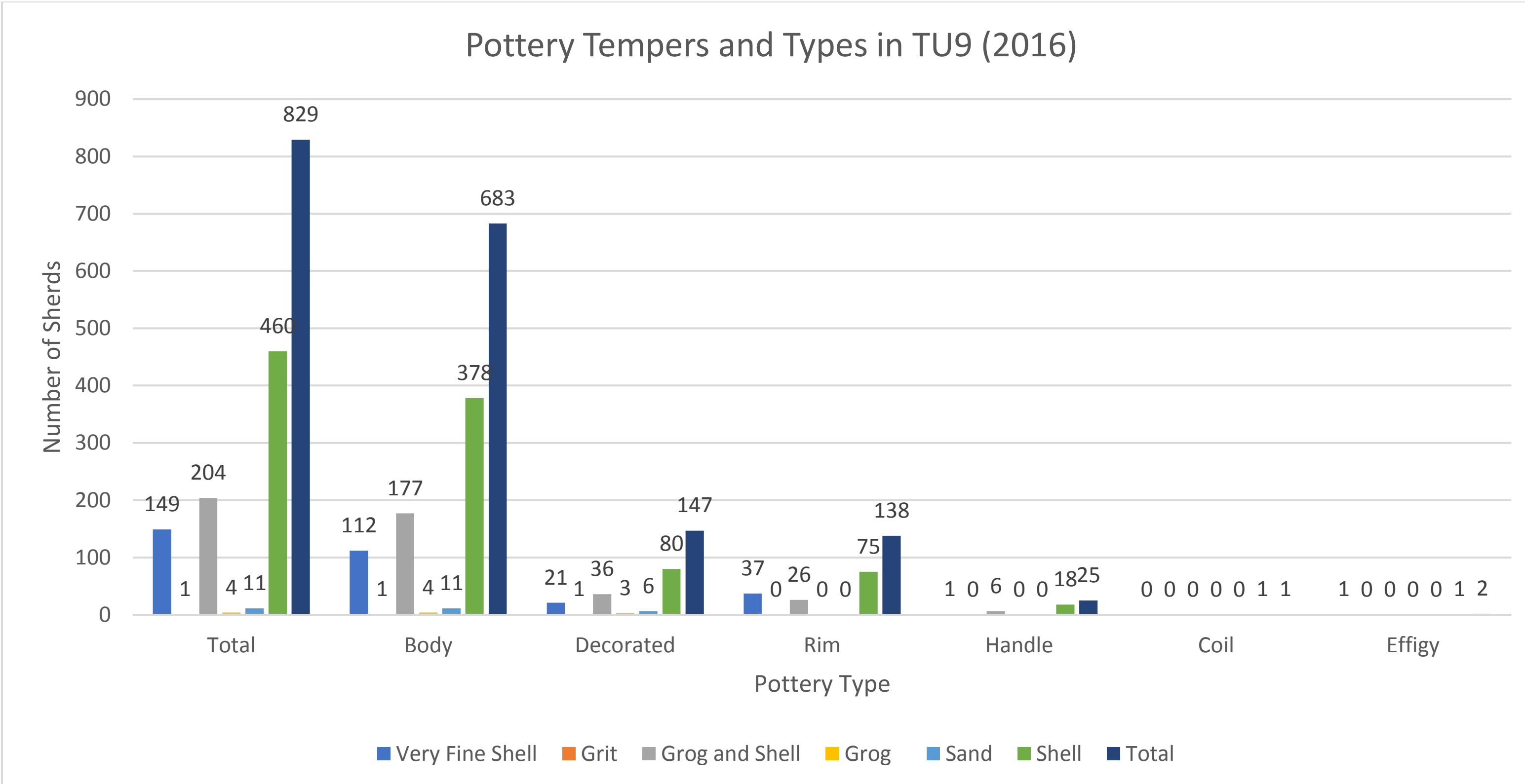

Figure II-81: Temper and Types of sherds in TU9 excavated in 2016.

Table II-11: Pottery sherds excavated from TU9 in 2016 as summarized in Figure II-81.

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated ceramic	type	General comment
2016-503	4	Level 1	SHERD		414.1	475	SHERDLETS			Temper not checked
2016-503	4	Level 1	SHERD		3.3	5	SHERDLETS			Temper not examined
2016-503	4	Level 1	BODY	Clay Temper	1.6	1	RIM/BODY	TRUE	Incised	Thin incised line next to 3 small dots
2016-503	4	Level 1	BODY	Clay Temper	2.5	2	RIM/BODY	TRUE	Punctated	Punctations across surface. 2 pieces refit
2016-503	4	Level 1	BODY	Clay Temper	1.4	1	RIM/BODY	TRUE	Punctated	Punctations on body
2016-503	4	Level 1	BODY	Clay Temper	2.4	1	RIM/BODY	TRUE	Cord marked	Thick cord marks on body
2016-503	4	Level 1	BODY	Clay Temper	4.3	1	RIM/BODY	TRUE	Punctated	Small, needle-like punctations across part of surface
2016-503	4	Level 1	BODY	Clay Temper	3.6	1	RIM/BODY			
2016-503	4	Level 1	BODY	Clay Temper	171.3	23	RIM/BODY			
2016-503	4	Level 1	RIM	Clay Temper	2.9	1	RIM/BODY			Flat lip on straight rim
2016-503	4	Level 1	RIM	Clay Temper	10.7	1	RIM/BODY			Flat lip on straight rim
2016-503	4	Level 1	RIM	Clay Temper	2	1	RIM/BODY			Rounded lip on straight rim
2016-503	4	Level 1	RIM	Clay Temper	3.3	1	RIM/BODY			Rounded lip on outsloping rim
2016-503	4	Level 1	RIM	Clay Temper	1.7	1	RIM/BODY			Rounded lip on straight rim
2016-503	4	Level 1	RIM	Clay Temper	11	1	RIM/BODY	TRUE	Applique, notched	Rounded lip on outslanting rim. Applique strip below rim with vertical notches cut in to form raised squares
2016-503	4	Level 1	RIM	Clay Temper	2.2	1	RIM/BODY			Rounded lip on straight rim
2016-503	4	Level 1	RIM	Clay Temper	1.5	1	RIM/BODY			Flat lip on straight rim, small section of curve of neck
2016-503	4	Level 1	RIM	Clay Temper	1.5	1	RIM/BODY			Flat lip on straight rim
2016-503	4	Level 1	RIM	Clay Temper	27.1	1	RIM/BODY			Flat lip on straight rim
2016-503	4	Level 1	RIM	Clay Temper	3.2	1	RIM/BODY			Rounded lip on straight rim

Table II-11 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated ceramic	type	General comment
2016-503	4	Level 1	RIM	Clay Temper	2.1	1	RIM/BODY	TRUE	Node	Rounded lip on outslanting rim. Node applied below rim
2016-503	4	Level 1	RIM	Clay Temper	5.5	1	RIM/BODY			Rounded lip on straight rim
2016-503	4	Level 1	RIM	Clay Temper	8.3	1	RIM/BODY	TRUE	Applique	Rounded lip on outslanting rim. Applique strip below rim, pinched to form raised squares.
2016-503	4	Level 1	RIM	Clay Temper	3	1	RIM/BODY			Rounded lip on straight rim
2016-503	4	Level 1	RMBDY	Clay Temper	6.9	1	RIM/BODY	TRUE	Applique, Notched	Flat lip on outslanting rim. Applique strip below rim with vertical notches cut in.
2016-503	4	Level 1	RMBDY	Clay Temper	15.9	1	RIM/BODY			Flat, beveled out lip on outsloping rim
2016-503	4	Level 1	RMBDY	Clay Temper	36.4	1	RIM/BODY	TRUE	Applique, Notched	Rounded lip on outslanting rim. Applique strip below lip, notched to form raised squares
2016-503	4	Level 1	BODY	Grog and Shell Temper	405.1	59	RIM/BODY			
2016-503	4	Level 1	BODY	Grog and Shell Temper	3.7	2	RIM/BODY			
2016-503	4	Level 1	BODY	Grog and Shell Temper	2.2	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	4	Level 1	BODY	Grog and Shell Temper	11.8	1	RIM/BODY	TRUE	Punctated	Thin, linear punctations on half of surface, the rest is plain
2016-503	4	Level 1	BODY	Grog and Shell Temper	0.7	1	RIM/BODY	TRUE	Punctated	Small punctations across body surface
2016-503	4	Level 1	BODY	Grog and Shell Temper	1.7	1	RIM/BODY	TRUE	Applique	Applique strip on body
2016-503	4	Level 1	BODY	Grog and Shell Temper	3.3	1	RIM/BODY	TRUE	Punctated	Punctations across surface

Table II-11 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated ceramic	type	General comment
2016-503	4	Level 1	BODY	Grog and Shell Temper	7.4	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	4	Level 1	HANDLE	Grog and Shell Temper	2.4	1	RIM/BODY	TRUE	Handle	Strap handle attachment below lip, no lip present
2016-503	4	Level 1	NECK	Grog and Shell Temper	3.7	1	RIM/BODY			Neck, but no decoration surrounding it
2016-503	4	Level 1	RIM	Grog and Shell Temper	9.3	1	RIM/BODY	TRUE	Applique, notched	Rolled out lip on outslanting rim. Applique strip below rim with notches cut to form squares
2016-503	4	Level 1	RIM	Grog and Shell Temper	1.5	1	RIM/BODY	TRUE	Applique	Rolled out, flat lip on straight rim. Vertical applique strip attached at lip. Possibly mock strap handle?
2016-503	4	Level 1	RIM	Grog and Shell Temper	1.8	1	RIM/BODY			Flat lip on straight rim
2016-503	4	Level 1	RIM	Grog and Shell Temper	3.1	1	RIM/BODY			Flat lip on outslanting rim
2016-503	4	Level 1	RIM	Grog and Shell Temper	1.8	1	RIM/BODY	TRUE	Notched, Handle	Flat lip on straight rim. Vertical notches on outside of lip, strap handle attachment below notches
2016-503	4	Level 1	RIM	Grog and Shell Temper	2.9	1	RIM/BODY			Flat lip on straight rim
2016-503	4	Level 1	RIM	Grog and Shell Temper	2.9	1	RIM/BODY			Flat lip on straight rim
2016-503	4	Level 1	BODY	Grog Temper	2.6	1	RIM/BODY	TRUE	Cord marked	Large, parallel cord marks on body
2016-503	4	Level 1	BODY	Sand Temper	2.9	1	RIM/BODY	TRUE	Cord marked	
2016-503	4	Level 1	BODY	Shell Temper	2.9	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	4	Level 1	BODY	Shell Temper	9.3	1	RIM/BODY	TRUE	Punctated, Handle, applique	Punctation on body, Handle with applique strip attached above punctations. Broken above handle attachment

Table II-11 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated ceramic	type	General comment
2016-503	4	Level 1	BODY	Shell Temper	4	1	RIM/BODY	TRUE	Punctated	Punctations on part of surface
2016-503	4	Level 1	BODY	Shell Temper	2.7	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	4	Level 1	BODY	Shell Temper	1.2	1	RIM/BODY	TRUE	Handle	Strap handle attachment. Handle broken off
2016-503	4	Level 1	BODY	Shell Temper	278.6	57	RIM/BODY			
2016-503	4	Level 1	Effigy	Shell Temper	1.9	1	RIM/BODY	TRUE	Applique	Applique circle. Could be anus or eye of effigy vessel
2016-503	4	Level 1	NECK	Shell Temper	5.1	1	RIM/BODY	TRUE	Handle	Small strap Handle attachment just below curve of neck
2016-503	4	Level 1	NECK	Shell Temper	8.1	1	RIM/BODY	TRUE	Punctated	Curve of neck with on visible punctation just above/below bend.
2016-503	4	Level 1	RIM	Shell Temper	11.1	1	RIM/BODY			Rolled out, rounded lip on slightly outsloping rim
2016-503	4	Level 1	RIM	Shell Temper	6.1	1	RIM/BODY			Flat lip on slightly outsloping rim
2016-503	4	Level 1	RIM	Shell Temper	3.7	1	RIM/BODY			Flat lip on straight rim
2016-503	4	Level 1	RIM	Shell Temper	4.4	1	RIM/BODY			Rounded lip on straight rim
2016-503	4	Level 1	RIM	Shell Temper	4.3	1	RIM/BODY			Rolled out, flat lip on straight rim
2016-503	4	Level 1	RIM	Shell Temper	2.2	1	RIM/BODY			Rounded lip on straight rim
2016-503	4	Level 1	RIM	Shell Temper	1.1	1	RIM/BODY			Flat lip on straight rim
2016-503	4	Level 1	RIM	Shell Temper	4.4	1	RIM/BODY			Flat lip on slightly outsloping rim
2016-503	4	Level 1	RIM	Shell Temper	1.5	1	RIM/BODY			Rounded lip on slightly outsloping rim
2016-503	4	Level 1	RIM	Shell Temper	12.8	1	RIM/BODY	TRUE	Punctated, Handle	Rounded lip on outslanting rim. Small, pushed-left punctations on outside of lip just above strap handle attachment.
2016-503	4	Level 1	RIM	Shell Temper	1.9	1	RIM/BODY	TRUE	Handle	Flat lip on straight rim. Handle attachment below lip

Table II-11 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated ceramic	type	General comment
2016-503	4	Level 1	RIM	Shell Temper	1.4	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	4	Level 1	RIM	Shell Temper	3.3	1	RIM/BODY			Rounded lip on straight rim
2016-503	4	Level 1	RIM	Shell Temper	22.4	1	RIM/BODY			Rounded lip on straight rim
2016-503	4	Level 1	RIM	Shell Temper	3.4	1	RIM/BODY			Rounded lip on straight rim. Pinch pot?
2016-503	4	Level 1	RIM	Shell Temper	4.8	1	RIM/BODY			Flat lip on straight rim
2016-503	4	Level 1	RMBDY	Shell Temper	97.8	1	RIM/BODY			Rolled out flat lip on straight rim
2016-503	4	Level 1	RMBDY	Shell Temper	34.5	1	RIM/BODY			Flat lip on outsloping rim
2016-503	12	Level 2	SHERD		354.9	442	SHERDLETS			
2016-503	12	Level 2	BODY	Clay Temper	373.6	49	RIM/BODY			
2016-503	12	Level 2	BODY	Clay Temper	0.7	1	RIM/BODY	TRUE	Painted	Dark red paint on outside
2016-503	12	Level 2	BODY	Clay Temper	2.6	1	RIM/BODY	TRUE	Noded	One squarish node present. Possibly applique that is notched, but rest is missing
2016-503	12	Level 2	Effigy	Clay Temper	37.2	1	RIM/BODY	TRUE	Fish Effigy	Fish tail extending from body with incised line on top. Applied circle next to tail, probably anus
2016-503	12	Level 2	RIM	Clay Temper	2.7	1	RIM/BODY			Flat lip on straight rim. Exterior of lip not completely smoothed to body
2016-503	12	Level 2	RIM	Clay Temper	2.2	1	RIM/BODY			Flat lip on straight rim
2016-503	12	Level 2	RIM	Clay Temper	2.1	1	RIM/BODY	TRUE	Applique, notched	Rounded lip on outslanting rim. Notched, applique strip applied just below lip
2016-503	12	Level 2	RIM	Clay Temper	4.6	1	RIM/BODY			Flat lip on outslanting rim. Rim very thickened
2016-503	12	Level 2	RIM	Clay Temper	3.9	1	RIM/BODY	TRUE	Punctated	Rolled out lip on outslanting rim. Just below lip, punctations pressed from right to left into clay. Lip is not completely smoothed into exterior
2016-503	12	Level 2	RIM	Clay Temper	1.4	1	RIM/BODY			Flat lip on straight rim

Table II-11 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated ceramic	type	General comment
2016-503	12	Level 2	RIM	Clay Temper	2.1	1	RIM/BODY	TRUE	Notched	Rounded lip on outslanting rim. Diagonal notches cut into outside of lip
2016-503	12	Level 2	RIM	Clay Temper	1	1	RIM/BODY			Rounded lip on straight rim
2016-503	12	Level 2	RIM	Clay Temper	11.5	1	RIM/BODY			Flat lip on straight rim
2016-503	12	Level 2	RMBDY	Clay Temper	8.5	1	RIM/BODY			Flat lip on straight rim
2016-503	12	Level 2	RMBDY	Clay Temper	12.7	1	RIM/BODY	TRUE	Applique, Notched	Flat lip on straight rim. Applique strip applied ~.5cm below lip and deeply notched to form raised squares.
2016-503	12	Level 2	RMBDY	Clay Temper	34.5	1	RIM/BODY	TRUE	Applique, Notched	Rounded lip on outslanting rim. Applique strip ~.5cm below lip, notched to form almost individual square nodes
2016-503	12	Level 2	RMBDY	Clay Temper	28	1	RIM/BODY	TRUE	Handle, Applique, Notched	Flat lip on straight rim. Applique strip applied just below unsmoothed exterior edge of lip with vertical notches cut to form raised squares. Strap handle attachement ~3cm below lip
2016-503	12	Level 2	BODY	Grit Temper	4.4	1	RIM/BODY	TRUE	Cord marked	Cord marking on surface
2016-503	12	Level 2	BODY	Grog and Shell Temper	8.4	1	RIM/BODY	TRUE	Punctated, Handle	Punctations in one area, Possible handle attachement next to punctations
2016-503	12	Level 2	BODY	Grog and Shell Temper	5.3	1	RIM/BODY	TRUE	Punctated	Punctations cross surface
2016-503	12	Level 2	BODY	Grog and Shell Temper	456.7	62	RIM/BODY			
2016-503	12	Level 2	BODY	Grog and Shell Temper	2.7	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	12	Level 2	BODY	Grog and Shell Temper	27.3	1	RIM/BODY	TRUE	Punctations	Two rows of punctations next to blank space

Table II-11 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated ceramic	type	General comment
2016-503	12	Level 2	BODY	Grog and Shell Temper	1.9	1	RIM/BODY	TRUE	Punctated	Punctations across body
2016-503	12	Level 2	BODY	Grog and Shell Temper	2.1	1	RIM/BODY	TRUE	Punctated	Punctations on surface
2016-503	12	Level 2	BODY	Grog and Shell Temper	1.5	1	RIM/BODY	TRUE	Punctated	Tiny punctations in two rows on part of surface
2016-503	12	Level 2	BODY	Grog and Shell Temper	1.6	1	RIM/BODY	TRUE	Punctated	Punctations across body surface
2016-503	12	Level 2	BODY	Grog and Shell Temper	5.1	1	RIM/BODY	TRUE	Incised	Six mostly parallel incised lines
2016-503	12	Level 2	BODY	Grog and Shell Temper	1.5	1	RIM/BODY	TRUE	Punctated	Punctations across body
2016-503	12	Level 2	HANDLE	Grog and Shell Temper	23.4	1	RIM/BODY	TRUE	Handle	Large strap handle
2016-503	12	Level 2	RIM	Grog and Shell Temper	1.6	1	RIM/BODY			Flat lip on outsloping rim
2016-503	12	Level 2	RIM	Grog and Shell Temper	15.3	1	RIM/BODY	TRUE	Applique, Notched	Rounded lip on outslanting rim. Applique strip applied at lip and notched. Lip not smoothed into applique
2016-503	12	Level 2	RIM	Grog and Shell Temper	22.8	1	RIM/BODY			Flat lip on straight rim
2016-503	12	Level 2	RIM	Grog and Shell Temper	3.8	1	RIM/BODY			Flat lip on straigth rim. Lip smoothed to outside and not completely smoothed to body
2016-503	12	Level 2	RIM	Grog and Shell Temper	5.8	1	RIM/BODY			Rounded lip on straight rim
2016-503	12	Level 2	RMBDY	Grog and Shell Temper	13.6	1	RIM/BODY			Rounded lip on outsloping rim

Table II-11 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated ceramic	type	General comment
2016-503	12	Level 2	RMBDY	Grog and Shell Temper	14.5	1	RIM/BODY	TRUE	Handle	Rounded lip on outslanting rim. Bottom of rim not smoothed into interior surface. Strap handle attachment just below lip
2016-503	12	Level 2	RMBDY	Grog and Shell Temper	31.8	1	RIM/BODY			Flat lip on straight rim. Lip not completely smoothed to body on exterior
2016-503	12	Level 2	RMBDY	Grog and Shell Temper	26.5	1	RIM/BODY	TRUE	Handle	Flat lip on outsloping rim. Lip extends as lug handle
2016-503	12	Level 2	RMBDY	Grog and Shell Temper	7.9	1	RIM/BODY	TRUE	Handle	Flat lip on outslanting rim. Strap handle attached from lip to just below bend of rim on body
2016-503	12	Level 2	BODY	Grog Temper	1.9	1	RIM/BODY	TRUE	Cord marked	Cord marking on surface
2016-503	12	Level 2	BODY	Grog Temper	4	1	RIM/BODY	TRUE	Applique?	Wide raised area, possibly applique
2016-503	12	Level 2	BODY	Sand Temper	9.6	2	RIM/BODY	TRUE	Cord marked	One thick and one thin cord marked
2016-503	12	Level 2	BODY	Sand Temper	8.2	2	RIM/BODY			
2016-503	12	Level 2	BODY	Shell Temper	0.8	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	12	Level 2	BODY	Shell Temper	2.4	1	RIM/BODY	TRUE	Applique	Applique strip on surface
2016-503	12	Level 2	BODY	Shell Temper	4.5	1	RIM/BODY	TRUE	Punctated	4 rows of punctations
2016-503	12	Level 2	BODY	Shell Temper	3.1	1	RIM/BODY	TRUE	Punctated	Rows of punctations on surface
2016-503	12	Level 2	BODY	Shell Temper	2.7	1	RIM/BODY	TRUE	Punctated	Punctation across surface
2016-503	12	Level 2	BODY	Shell Temper	0.6	1	RIM/BODY	TRUE	Punctated	Punctations on surface
2016-503	12	Level 2	BODY	Shell Temper	9.9	1	RIM/BODY	TRUE	Punctated	One row of punctations
2016-503	12	Level 2	BODY	Shell Temper	0.4	1	RIM/BODY	TRUE	Punctated	Punctation on surface
2016-503	12	Level 2	BODY	Shell Temper	2.1	1	RIM/BODY	TRUE	Applique?	Applique strips forming 3 sides of square.

Table II-11 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated ceramic	type	General comment
2016-503	12	Level 2	BODY	Shell Temper	1.7	1	RIM/BODY	TRUE	Applique	Applique strip on thin body
2016-503	12	Level 2	BODY	Shell Temper	3.1	1	RIM/BODY	TRUE	Punctated	Punctations on area of body
2016-503	12	Level 2	BODY	Shell Temper	7.3	1	RIM/BODY	TRUE	Applique	Applique strip on body
2016-503	12	Level 2	BODY	Shell Temper	2.1	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	12	Level 2	BODY	Shell Temper	0.8	1	RIM/BODY	TRUE	Noded	One node present
2016-503	12	Level 2	BODY	Shell Temper	9.5	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	12	Level 2	BODY	Shell Temper	4.6	1	RIM/BODY	TRUE	Punctated	Two rows of punctations
2016-503	12	Level 2	BODY	Shell Temper	806.3	129	RIM/BODY			
2016-503	12	Level 2	BODY	Shell Temper	4.6	1	RIM/BODY	TRUE	Punctated	One row of punctations visible
2016-503	12	Level 2	BODY	Shell Temper	3	1	RIM/BODY	TRUE	Incised	Two incised lines on surface
2016-503	12	Level 2	BODY	Shell Temper	1.4	1	RIM/BODY	TRUE	Punctated	Punctations across body
2016-503	12	Level 2	Effigy	Shell Temper	14.2	1	RIM/BODY	TRUE	Human effigy	Human face effigy rim rider. Punctations for eyes and mouth, extended nose, and bilobed hair not on rear
2016-503	12	Level 2	HANDLE	Shell Temper	14	1	RIM/BODY	TRUE	Handle	Wide, thick strap handle
2016-503	12	Level 2	HANDLE	Shell Temper	1.5	1	RIM/BODY	TRUE	Handle, Applique	Vertical applique strip down center of thin strap handle
2016-503	12	Level 2	HANDLE	Shell Temper	5.5	1	RIM/BODY			Rough strap handle?
2016-503	12	Level 2	HANDLE	Shell Temper	10.4	1	RIM/BODY	TRUE	Handle, Noded	Flat lip connecting to wide strap handle. One large node on handle
2016-503	12	Level 2	RIM	Shell Temper	21	1	RIM/BODY	TRUE	Handle	Flat lip on outsloping rim. Lug handle extends from lip. Appears possibly stepped on one side
2016-503	12	Level 2	RIM	Shell Temper	6.1	1	RIM/BODY			Flat lip on outsloping rim

Table II-11 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated ceramic	type	General comment
2016-503	12	Level 2	RIM	Shell Temper	4.4	1	RIM/BODY			Flat lip on straight rim
2016-503	12	Level 2	RIM	Shell Temper	1.5	1	RIM/BODY			Flat lip on straight rim
2016-503	12	Level 2	RIM	Shell Temper	2.2	1	RIM/BODY			Flat lip on spalled rim. Exterior of lip is not completely smoothed to body
2016-503	12	Level 2	RIM	Shell Temper	2	1	RIM/BODY			Rounded lip on outslanting body. Rim is slightly wider than body on both interior and exterior
2016-503	12	Level 2	RIM	Shell Temper	2.6	1	RIM/BODY			Flat lip on outslanting rim
2016-503	12	Level 2	RIM	Shell Temper	4.3	1	RIM/BODY	TRUE	Applique, Punctated	Flat lip on outslanting rim. Applique strip applied at lip ant punctated
2016-503	12	Level 2	RIM	Shell Temper	3.4	1	RIM/BODY			Pinched lip on outslanting rim
2016-503	12	Level 2	RIM	Shell Temper	8.9	1	RIM/BODY	TRUE	Notched	Rounded lip on outslanting rim. Vertical notches cut into outside of lip
2016-503	12	Level 2	RIM	Shell Temper	6.3	1	RIM/BODY			Flat lip on outslanting rim
2016-503	12	Level 2	RIM	Shell Temper	5.7	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	12	Level 2	RIM	Shell Temper	6.7	1	RIM/BODY			Flat lip on spalled interior
2016-503	12	Level 2	RIM	Shell Temper	5.2	1	RIM/BODY			Flat lip on straight rim. Lip is folded and extends past exterior of body
2016-503	12	Level 2	RIM	Shell Temper	2.6	1	RIM/BODY			Flat lip on outslanting rim
2016-503	12	Level 2	RIM	Shell Temper	4.2	1	RIM/BODY			Flat lip on straight rim
2016-503	12	Level 2	RIM	Shell Temper	1.5	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	12	Level 2	RIM	Shell Temper	10.2	1	RIM/BODY			Flat lip on straight rim
2016-503	12	Level 2	RIM	Shell Temper	2.4	1	RIM/BODY			Flat lip on straight rim
2016-503	12	Level 2	RIM	Shell Temper	1.1	1	RIM/BODY			Flat lip on straight rim

Table II-11 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated ceramic	type	General comment
2016-503	12	Level 2	RIM	Shell Temper	4.2	1	RIM/BODY	TRUE	Applique	Rounded lip on outslanting rim. Vertical appliqe strip applied below lip. Lip ont completely smoothed into exterior surface
2016-503	12	Level 2	RIM	Shell Temper	17.6	1	RIM/BODY			Flat lip on straight rim
2016-503	12	Level 2	RIM	Shell Temper	9.9	1	RIM/BODY			Flat lip on outsloping rim
2016-503	12	Level 2	RIM	Shell Temper	14.9	1	RIM/BODY			Flat lip on straight rim
2016-503	12	Level 2	RMBDY	Shell Temper	14.5	1	RIM/BODY	TRUE	Handle, Noded, Punctated	Rounded lip on outslanting rim. Strap handle attached at lip and at base of neck/body. One node on top center of handle. Pody punctated.Neck plain
2016-503	12	Level 2	RMBDY	Shell Temper	2.3	1	RIM/BODY	TRUE	Handle	Flat lip on straight rim. Handle attachement ~1cm below lip
2016-503	12	Level 2	RMBDY	Shell Temper	26.9	1	RIM/BODY			Rounded lip on straight rim
2016-503	12	Level 2	RMBDY	Shell Temper	2	1	RIM/BODY	TRUE	Incised	Rounded lip on outslanting rim. Two parallel incised lines on body
2016-503	12	Level 2	RMBDY	Shell Temper	8	1	RIM/BODY			Flat lip on extended, outslanting rim. Looks like wide rimmed, shallow bowl
2016-503	12	Level 2	RMBDY	Shell Temper	15.9	1	RIM/BODY	TRUE	Applique, Notched	Flat lip on straight rim. Outside of lip overhangs exterior slightly. Applique strip above bend for neck. Vertical notching in strip.
2016-503	12	Level 2	RMBDY	Shell Temper	22.4	1	RIM/BODY			Flat lip on slightly outslanting rim. Lip overhangs exterior slightly
2016-503	12	Level 2	RMBDY	Shell Temper	6.4	1	RIM/BODY	TRUE	Handle	Rounded lip on outslanting rim. Strap handle attachement ~.25cm below lip
2016-503	12	Level 2	RMBDY	Shell Temper	25.1	1	RIM/BODY	TRUE	Node?	Flat lip on straight rim. Rim not fully smoothed into interior surface. One node or part of handle applied on exterior ~1cm below lip

Table II-11 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated ceramic	type	General comment
2016-503	12	Level 2	RMBDY	Shell Temper	11	1	RIM/BODY	TRUE	Handle, Applique, notched	Flat lip on outsloping rim. Strap handle attached ~.5cm below lip. Vertical notches cut into pody just under lip, above hande. Veritical applique strip on handle with horizontal notches cut in.
2016-503	12	Level 2	RMBDY	Shell Temper	46.2	1	RIM/BODY			Flat lip on straight rim. Very thick.
2016-503	13	Level 2 flotation sample heavy fraction	SHERD		10.4	13	SHERDLETS			Temper not determined. Heavy fraction sorted for 10 min
2016-503	13	Level 2 flotation sample heavy fraction	BODY	Clay Temper	8.3	4	RIM/BODY			Heavy fraction sorted for 10 min
2016-503	13	Level 2 flotation sample heavy fraction	BODY	Shell Temper	7.4	2	RIM/BODY			Heavy fraction sorted for 10 min
2016-503	18	Level 3	SHERD		272.7	278	SHERDLETS			Temper not determined
2016-503	18	Level 3	BODY	Clay Temper	207.6	15	RIM/BODY			
2016-503	18	Level 3	Effigy	Clay Temper	19.7	1	Effigy	TRUE	Effigy, Noded	Rounded lip on straight rim. Nodes applied on exterior of lip. Bear effigy head extends from body of bowl below nodes. Round punctations for nose and mouth. No eyes
2016-503	18	Level 3	NECK	Clay Temper	11.3	1	RIM/BODY			Bend of neck
2016-503	18	Level 3	RIM	Clay Temper	1.8	1	RIM/BODY			Rounded lip on straight rim
2016-503	18	Level 3	RIM	Clay Temper	2.7	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	18	Level 3	RIM	Clay Temper	12.1	1	RIM/BODY			Rounded lip on straight rim
2016-503	18	Level 3	RMBDY	Clay Temper	14.4	1	RIM/BODY	TRUE	Notched	Rounded lip on outslanting rim. Vertical notches cut into exterior of lip
2016-503	18	Level 3	BODY	Grog and Shell Temper	1.4	1	RIM/BODY	TRUE	Punctated	One line of small punctations, one line of small notches

Table II-11 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated ceramic	type	General comment
2016-503	18	Level 3	BODY	Grog and Shell Temper	7.2	1	RIM/BODY	TRUE	Paint	Red paint on interior and exterior, white paint on exterior
2016-503	18	Level 3	BODY	Grog and Shell Temper	6.4	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	18	Level 3	BODY	Grog and Shell Temper	2.1	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	18	Level 3	BODY	Grog and Shell Temper	2	1	RIM/BODY	TRUE	Punctated	Punctations in two areas on surface
2016-503	18	Level 3	BODY	Grog and Shell Temper	126.6	15	RIM/BODY			
2016-503	18	Level 3	RIM	Grog and Shell Temper	4.6	1	RIM/BODY	TRUE	Notched	Rounded lip on outslanting rim with circular notches cut into exterior of lip
2016-503	18	Level 3	RIM	Grog and Shell Temper	6.5	1	RIM/BODY	TRUE	Punctated, incised	Rounded lip on outslanting rim. Lind of punctations and horizontal incisions ~.5cm below lip
2016-503	18	Level 3	RIM	Grog and Shell Temper	6.4	1	RIM/BODY	TRUE	Notched	Rounded lip on straight rim. Notches on exterior of lip
2016-503	18	Level 3	RIM	Grog and Shell Temper	2.6	1	RIM/BODY			Flat lip on straight rim
2016-503	18	Level 3	RIM	Grog and Shell Temper	4.2	1	RIM/BODY	TRUE	Notched	Rounded lip on straight rim. Vertical notches cut into exterior edge of lip
2016-503	18	Level 3	RIM	Grog and Shell Temper	3.3	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	18	Level 3	RIM	Grog and Shell Temper	2.9	1	RIM/BODY			Flat lip on straight rim
2016-503	18	Level 3	RMBDY	Grog and Shell Temper	32.9	1	RIM/BODY	TRUE	Handle	Flat lip on straight rim. Lip possibly extending into lug handle

Table II-11 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated ceramic	type	General comment
2016-503	18	Level 3	BODY	Sand Temper	2.8	1	RIM/BODY			
2016-503	18	Level 3	BASE	Shell Temper	67.4	1	RIM/BODY			Flattened area for base
2016-503	18	Level 3	BASE	Shell Temper	7.2	1	RIM/BODY	TRUE	Punctated	Lines of punctations across surface
2016-503	18	Level 3	BODY	Shell Temper	1.3	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	18	Level 3	BODY	Shell Temper	2.2	1	RIM/BODY	TRUE	Punctated	Two lines of punctations
2016-503	18	Level 3	BODY	Shell Temper	1.3	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	18	Level 3	BODY	Shell Temper	8.2	1	RIM/BODY	TRUE	Punctated	Punctations in lines across surface
2016-503	18	Level 3	BODY	Shell Temper	2.9	1	RIM/BODY	TRUE	Punctated	Small, round punctations across surface
2016-503	18	Level 3	BODY	Shell Temper	3.6	1	RIM/BODY	TRUE	Incised	4 parallel incised lines
2016-503	18	Level 3	BODY	Shell Temper	444.1	68	RIM/BODY			
2016-503	18	Level 3	BODY	Shell Temper	1.3	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	18	Level 3	BODY	Shell Temper	3.7	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	18	Level 3	BODY	Shell Temper	1.8	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	18	Level 3	BODY	Shell Temper	1.2	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	18	Level 3	BODY	Shell Temper	1.9	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	18	Level 3	BODY	Shell Temper	5.6	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	18	Level 3	BODY	Shell Temper	0.8	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	18	Level 3	BODY	Shell Temper	2.6	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	18	Level 3	BODY	Shell Temper	3.1	1	RIM/BODY	TRUE	Punctated	One line of round punctations

Table II-11 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated ceramic	type	General comment
2016-503	18	Level 3	HANDLE	Shell Temper	1.2	1	HANDLE	TRUE	Handle	Small strap handle
2016-503	18	Level 3	HANDLE	Shell Temper	5.4	1	HANDLE	TRUE	Handle	Wide strap handle extending from lip
2016-503	18	Level 3	RIM	Shell Temper	4.1	1	RIM/BODY			Flat lip on straight rim
2016-503	18	Level 3	RIM	Shell Temper	11.3	1	RIM/BODY	TRUE	Handle	Flat lip on straight rim. Lip extends to lug handle
2016-503	18	Level 3	RIM	Shell Temper	3.8	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	18	Level 3	RIM	Shell Temper	11.9	1	RIM/BODY			Flat lip on straight rim
2016-503	18	Level 3	RIM	Shell Temper	3.1	1	RIM/BODY			Rounded lip on straight rim
2016-503	18	Level 3	RIM	Shell Temper	2.1	1	RIM/BODY	TRUE	Incised	Rounded lip on outslanting rim. Row of thing horizontal incisions ~1cm below lip
2016-503	18	Level 3	RIM	Shell Temper	13.2	1	RIM/BODY			Flat lip on straight rim
2016-503	18	Level 3	RIM	Shell Temper	1.6	1	RIM/BODY			Flat lip on straight rim
2016-503	18	Level 3	RIM	Shell Temper	4.2	1	RIM/BODY			Flat, extended lip on straight rim
2016-503	18	Level 3	RIM	Shell Temper	1.7	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	18	Level 3	RIM	Shell Temper	13.3	1	RIM/BODY			Flat lip on straight rim. Lip not smoothed to exterior surface
2016-503	18	Level 3	RIM	Shell Temper	9.6	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	18	Level 3	RIM	Shell Temper	9.3	1	RIM/BODY			Flat lip on straight rim
2016-503	18	Level 3	RMBDY	Shell Temper	10.5	1	RIM/BODY	TRUE	Handle	Flat, extended lip on outslanting rim. Strap handle attachement ~.5cm below lip
2016-503	18	Level 3	RMBDY	Shell Temper	20.4	1	RIM/BODY			Rounded lip on outslanting rim
2016-503	18	Level 3	RMBDY	Shell Temper	12	1	RIM/BODY			Flat lip on straight rim

Table II-11 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated ceramic	type	General comment
2016-503	18	Level 3	RMBDY	Shell Temper	3.5	1	RIM/BODY	TRUE	Handle	Flat lip on straight rim. Handle attachement below lip and possible stick scrape between lip and handle
2016-503	24	Level 4	SHERD		88.4	107	SHERDLETS			Temper not determined
2016-503	24	Level 4	BODY	Clay Temper	97.6	11	RIM/BODY			
2016-503	24	Level 4	BODY	Grog and Shell Temper	68.7	13	RIM/BODY			
2016-503	24	Level 4	BODY	Grog Temper	6.6	1	RIM/BODY			
2016-503	24	Level 4	BODY	Sand Temper	23.6	3	RIM/BODY	TRUE	Cord marked	
2016-503	24	Level 4	BODY	Sand Temper	5.3	2	RIM/BODY			
2016-503	24	Level 4	BASE	Shell Temper	11.1	1	RIM/BODY			Flat base
2016-503	24	Level 4	BODY	Shell Temper	1.2	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	24	Level 4	BODY	Shell Temper	467.8	58	RIM/BODY			
2016-503	24	Level 4	BODY	Shell Temper	1.9	1	RIM/BODY	TRUE	Punctated	Two rows of punctations
2016-503	24	Level 4	BODY	Shell Temper	6.1	1	RIM/BODY	TRUE	Handle?	Possible extension for handle
2016-503	24	Level 4	BODY	Shell Temper	2.9	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	24	Level 4	BODY	Shell Temper	9.1	1	RIM/BODY	TRUE	Punctated	Small round punctations into surface, possibly shaped into disk
2016-503	24	Level 4	BODY	Shell Temper	3	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	24	Level 4	BODY	Shell Temper	12.2	1	RIM/BODY	TRUE	Punctated	Punctations across surface
2016-503	24	Level 4	BODY	Shell Temper	1	1	RIM/BODY	TRUE	Punctated	Two rows of small round punctations
2016-503	24	Level 4	BODY	Shell Temper	4.1	1	RIM/BODY	TRUE	Punctated	Rough punctations across surface

Table II-11 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated ceramic	type	General comment
2016-503	24	Level 4	Coil	Shell Temper	1.9	2	Coil			Fired coil
2016-503	24	Level 4	HANDLE	Shell Temper	1.2	1	RIM/BODY	TRUE	Handle, Noded	Strap handle with node near attachement point
2016-503	24	Level 4	NECK	Shell Temper	5.5	1	RIM/BODY	TRUE	Punctated, Handle	Punctated above handle, strap handle attachement on neck just above bend.
2016-503	24	Level 4	RIM	Shell Temper	0.7	1	RIM/BODY			Rounded lip on straight rim
2016-503	24	Level 4	RIM	Shell Temper	6.4	1	RIM/BODY	TRUE	Handle, Notched	Flat lip on straight rim,small notches into exterior of lip. Strap handle attachement ~.5 cm below lip
2016-503	24	Level 4	RIM	Shell Temper	2.5	1	RIM/BODY			Rounded lip on straight rim
2016-503	24	Level 4	RIM	Shell Temper	5.2	1	RIM/BODY	TRUE	Notched	Flat lip on straight rim. Notches into exterior of lip
2016-503	24	Level 4	RIM	Shell Temper	13.8	1	RIM/BODY			Flat lip on straight rim
2016-503	24	Level 4	RIM	Shell Temper	3.3	1	RIM/BODY			Flat lip on straight rim
2016-503	31	Feature 8 N 1/2	BODY	Grog and Shell Temper	1.6	1	RIM/BODY			
2016-503	33	Feature 9 N 1/2	SHERD		0.9	2	SHERDLETS			Temper not determined
2016-503	33	Feature 9 N 1/2	BODY	Grog and Shell Temper	3.6	1	RIM/BODY			
2016-503	33	Feature 9 N 1/2	BODY	Grog and Shell Temper	22.1	1	RIM/BODY	TRUE	Punctated	Punctations across body
2016-503	33	Feature 9 N 1/2	RIM	Grog and Shell Temper	1.8	1	RIM/BODY			Rolled out, flat lip on straight rim
2016-503	33	Feature 9 N 1/2	BODY	Shell Temper	7.8	1	RIM/BODY	TRUE	Cord impressed	looks like a large, twisted cord was wrapped on a paddle and impressed on the surface
2016-503	33	Feature 9 N 1/2	BODY	Shell Temper	6.6	1	RIM/BODY			

Table II-11 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	decorated ceramic	type	General comment
2016-503	34	Feature 9 S 1/2 flotation sample heavy fraction	SHERD		0.1	1	SHERDLETS			HF sorted ~5 min. Temper not determined
2016-503	34	Feature 9 S 1/2 flotation sample heavy fraction	BODY	Shell Temper	19.1	3	RIM/BODY			HF sorted ~5 min
2016-503	36	Feature 10 N 1/2 flotation sample heavy fraction	SHERD		0.01	1	SHERDLETS			HF sorted ~5 min. Temper not determined
2016-503	38	Feature 11 S 1/2	BODY	Shell Temper	10.6	1	RIM/BODY			
2016-503	38	Feature 11 S 1/2	BODY	Shell Temper	1.1	1	RIM/BODY	TRUE	Punctated	Puncation on surface
2016-503	39	Feature 11 N 1/2 flotation sample heavy fraction	SHERD		2.4	2	SHERDLETS			HF sorted for ~5 min. Temper not determined
2016-503	39	Feature 11 N 1/2 flotation sample heavy fraction	BODY	Shell Temper	4.4	1	RIM/BODY			HF sorted for ~5 min
2016-503	39	Feature 11 N 1/2 flotation sample heavy fraction	BODY	Shell Temper	19.9	1	RIM/BODY	TRUE	Notched	HF sorted for ~5 min. One line of vertical notches

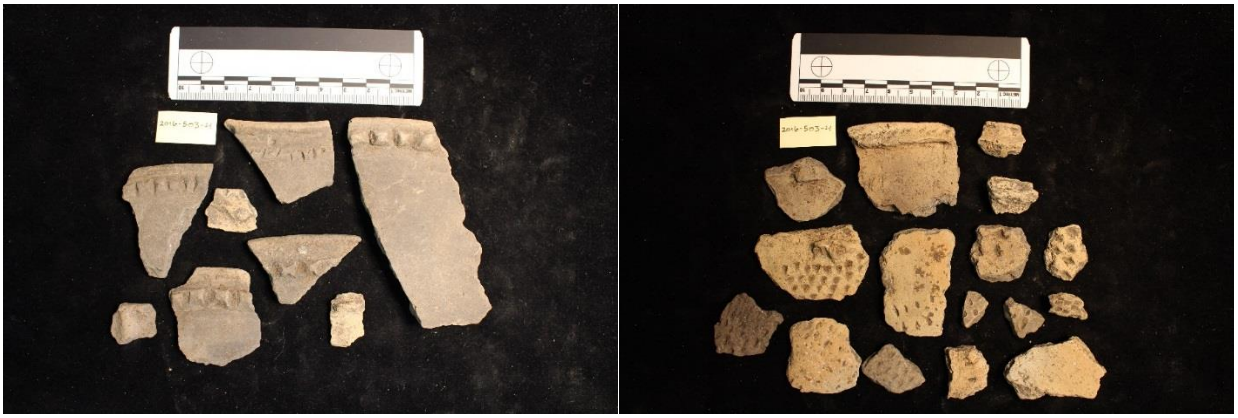

Figure III-82: Left: Notched appliqué strip applied below lip exterior (shell and grog and shell tempered). Right: Handle attachments (top row, shell and grog and shell tempered), punctated (shell and grog and shell tempered), noded (shell tempered). Excavated from Level 1 of TU9.

Figure III-83: Left: Punctated (left, grog and shell tempered), incised (center, shell tempered), circular appliqué (right, shell tempered). Right: Sand tempered, cordmarked sherds. Excavated from Level 1 of TU9.

Figure III-84: Left: Notched appliqué strip applied below lip exterior (top row, shell tempered), noded (2^{nd} row, right, shell tempered), incised (bottom left, shell tempered), handle (bottom right, grog and shell tempered). Right: Punctated (shell and grog and shell tempered). Excavated from Level 2 of TU9.

Figure III-85: Handles and handle attachments (shell and grog and shell tempered). Excavated from Level 2 of TU9.

Figure III-86: Left: Shell tempered sherds. Red slipped (left, shell tempered), human effigy figure (center, shell tempered), fish effigy tail and anus (right, shell tempered). Right: Sand tempered, cordmarked sherds. Excavated from Level 2 of TU9.

Figure III-87: Left: Red slipped (bottom left, grog and shell tempered), notched appliqué strip applied below lip exterior (center, shell tempered), notched lip exterior (top row, shell tempered), incised (bottom center, shell tempered), coil (shell tempered). Right: Punctated (shell and grog and shell tempered). Excavated from Level 3 of TU9.

Figure III-88: Shell tempered sherd. Bear effigy figure with nodes along rim. Excavated from Level 3 of TU9.

Figure III-89: Left: Sand tempered, cordmarked sherds. Right: Shell tempered sherds. Punctated (top, shell tempered), Handle attachments (bottom left, shell tempered), handle (bottom center, shell tempered), coils (bottom right, shell tempered). Excavated from Level 4 of TU9.

Figure III-90: Punctated (left, grog and shell tempered), cord impressed (right, shell tempered). Excavated from the north ½ of Feature 9 of TU9.

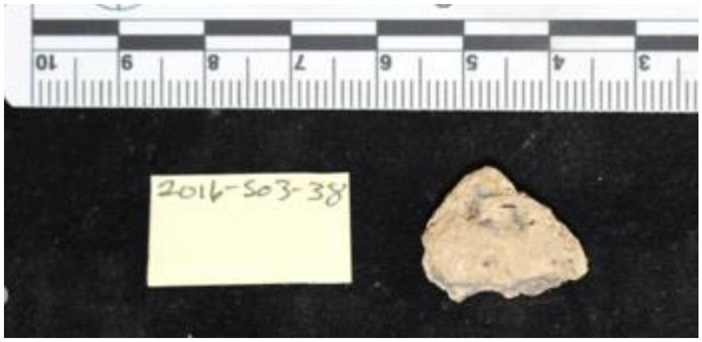

Figure III-91: Shell tempered sherd. Punctated. Excavated from south ½ of Feature 11 of TU9.

Figure III-92: Shell tempered sherd. Notched. Excavated from north ½ of Feature 11 of TU9 flotation sample.

Appendix IV

Whole Vessels

Figure IV-1: Mississippi Plain bowl with notched, applique strip, beveled rim

Figure IV- 2: Mississippi Plain bowl with notching on lip and exterior rim beveling.

Figure IV- 3: Mississippi Plain bowl with applique strip cut into nodes below lip exterior.

Figure IV- 4: Mississippi Plain bowl made out of broken bottle with Walls engraved design of possible snake (?)

Figure IV- 5: Mississippi Plain bowl with notched, applique strip attached below lip and interior beveled rim.

Figure IV- 6: Mississippi Plain bowl with notched, applique strip applied below lip.

Figure IV- 7: Mississippi Plain jar.

Figure IV- 8: Mississippi Plain bowl with notched applique strip applied below lip and interior beveled rim.

Figure IV- 9: Mississippi Plain compound vessel with two notched applique strips, one applied below rim of upper bowl with interior beveled rim.

Figure IV- 10: Mississippi Plain bowl with applique strip cut into nodes below exterior lip, with interior beveled rim.

Figure IV- 11: Mississippi Plain bowl with notched applique strip applied below lip and interior and exterior beveled rim.

Figure IV- 12: Mississippi Plain bowl with notched applique strip applied below lip and interior beveled rim.

Figure IV- 13: Mississippi Plain bowl with wide outslanting rim. Notching on exterior just below lip.

Figure IV- 14: Mississippi Plain bowl with notched applique strip applied below lip.

Figure IV- 15: Mississippi Plain bottle with interior beveled rim.

Figure IV- 16: Mississippi Plain bottle with exterior beveled rim.

Figure IV- 17: Mississippi Plain bottle.

Figure IV- 18: Mississippi Plain bottle.

Figure IV- 19: Mississippi Plain stirrup bottle.

Figure IV- 20: Mississippi Plain jar with notching on exterior of lip and zoned punctations.

Figure IV- 21: Mississippi Plain jar with interior beveled rim.

Figure IV- 22: Mississippi Plain bottle with small strap handles and punctation on neck.

Figure IV- 23: Mississippi Plain carinated bottle with Carson Red on Buff paint with interior beveled rim.

Figure IV- 24: Mississippi Plain bottle with interior beveled rim.

Figure IV- 25: Mississippi Plain bottle.

Figure IV- 26: Bell Plain bottle with Nodena Red and White paint.

Figure IV- 27: Mississippi Plain bottle with Carson Red on Buff paint.

Figure IV- 28: Mississippi Plain carinated bottle with Carson Red on Buff paint and interior beveled rim.

Figure IV- 29: Mississippi Plain bowl with bird effigy figure.

Figure IV- 30: Bell Plain jar with fish effigy and interior beveled rim.

Figure IV- 31: Bell Plain jar with zoned punctations on body and small, noded strap handles attached to neck.

Figure IV- 32: Mississippi Plain bow with cat serpent effigy. Effigy has double forked eye surround and curled tail.

Figure IV- 33: Bell Plain hooded bottle with corn god or cone head effigy.

Figure IV- 34: Bell Plain hooded bottle with possum effigy.

Figure IV- 35: Mississippi Plain bowl with exterior beveled rim and four half circles cut into rim (center).

Figure IV- 36: Mississippi Plain “weeping eye” bottle with interior beveled rim.

Figure IV- 37: Bell Plain bottle.

Figure IV- 38: Mississippi Plain bowl with exterior beveled rim.

Figure IV- 39: Bell Plain jar with fish effigy and interior beveled rim.

Figure IV- 40: Mississippi Plain bottle with interior beveled rim.

Figure IV- 41: Bell Plain bottle with Carson Red on Buff paint.

Figure IV- 42: Mississippi Plain jar with two small strap handles attached at neck.

Figure IV- 43: Mississippi Plain bowl with notched applique strip applied below lip and interior beveled rim.

Figure IV- 44: Mississippi Plain jar with zoned punctations on body, small strap handles attached at neck, interior beveled rim, and exterior notching on rim.

Figure IV- 45: Mississippi Plain carinated bottle with interior beveled rim.

Figure IV- 46: Bell Plain effigy bottle of kneeling woman with pedestal base between her legs on the bottom of the Figure III- and a notched applique strip down her back.

Figure IV- 47: Bell Plain bowl with notched applique strip applied below lip and interior beveled rim.

Figure IV- 48: Bell Plain bottle with barrel-shaped body.

Appendix V

Lithics

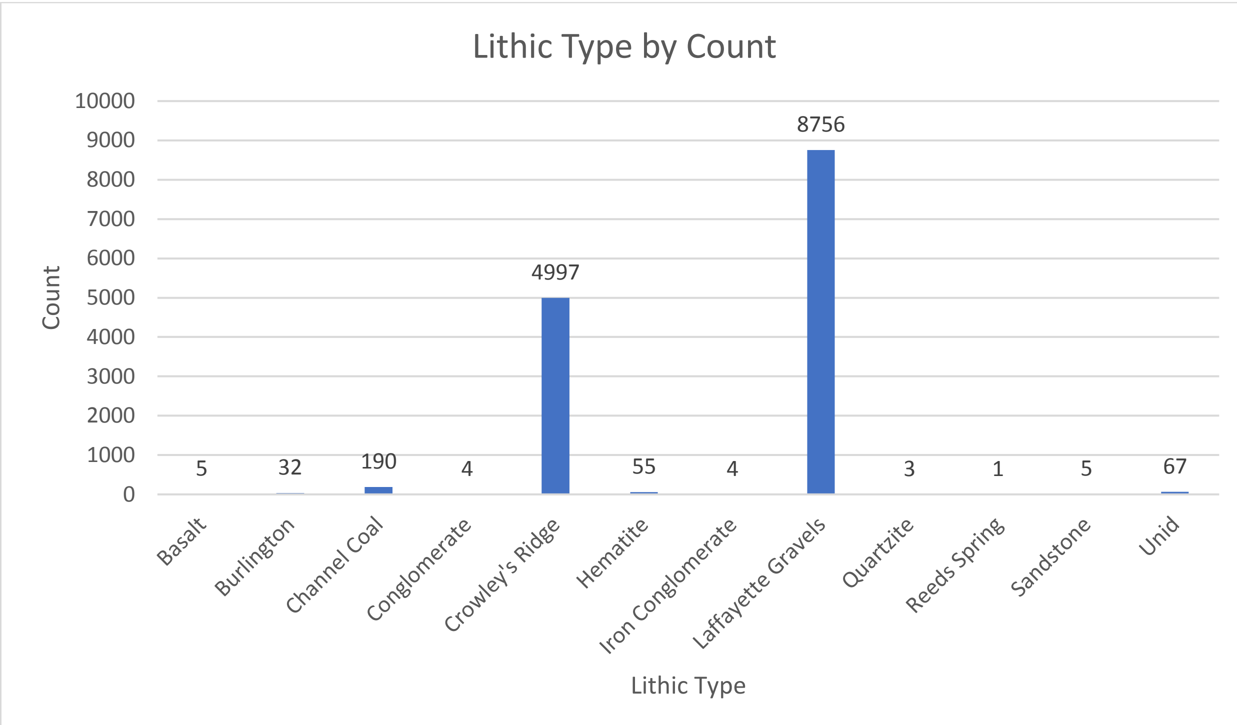

Figure V-1: Counts of types of lithics materials excavated from Manley-Usrey.

Table V-1: Lithic materials excavated from Manley-Usrey, summarized in Figure V-1.

Accession Number	material	weight	count	General comment
2016-503		168.6	0	Heavy fraction sorted for 10 min
2016-503		70.8	0	HF sorted ~5 min.
2012-310	Basalt	1.9	1	
2012-310	Basalt	1.1	1	production flaking
2012-310	Basalt	0.8	1	Production flaking
2016-503	Basalt	6.7	1	Possibly broken on bottom. Formed on flake with some retouching on one side and further flaking on the other
2016-503	Basalt	382.6	1	Utilized on all edges and center of bottom
2012-310	Burlington	0.01	1	Production flaking
2012-310	Burlington	5.1	2	
2012-310	Burlington	0.3	1	Production flaking
2012-310	Burlington	1.1	1	
2012-310	Burlington	7.5	3	Production flaking
2012-310	Burlington	1.6	4	Production flaking
2012-310	Burlington	0.8	1	Production flaking
2012-310	Burlington	0.3	1	Production flaking

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2012-310	Burlington	2	2	Production flaking
2012-310	Burlington	1	2	production flaking
2012-310	Burlington	1.7	6	Production flaking
2012-310	Burlington	2.8	1	Possibly broken Nodena preform
2012-310	Burlington	0.7	4	production flaking
2012-310	Burlington	0.2	1	
2012-310	Burlington	0.3	2	production flaking
2012-310	Channel coal	0.2	1	
2012-310	Channel coal	15	100	
2012-310	Channel coal	2	50	
2012-310	Channel coal	0.5	2	
2012-310	Channel coal	0.01	2	
2012-310	Channel coal	0.1	2	
2013-475	Channel coal	0.4	9	Channel coal likely from sand blow
2013-475	Channel coal	0.9	5	Probably from sand blow
2014-518	Channel coal	0.4	1	
2014-518	Channel coal	0.01	1	
2014-518	Channel coal	1.1	5	
2014-518	Channel coal	0.01	1	
2014-518	Channel coal	0.3	1	
2014-518	Channel coal	0.2	2	
2016-503	Channel coal	0.6	2	
2016-503	Channel coal	0.5	2	
2016-503	Channel coal	3.8	3	
2016-503	Channel coal	2.1	1	
2016-503	charcoal	1.5	15	
2013-475	Conglomerate	0.8	1	
2014-518	Conglomerate	12.7	1	
2016-503	conglomerate	64.2	2	Two pieces refit, naturally broken
2016-503	Congomlerate	29.5	1	
2012-310	Crowley's Ridge	0.2	1	Production flaking
2012-310	Crowley's Ridge	54.6	45	Production flaking
2012-310	Crowley's Ridge	13.9	20	Production flaking
2012-310	Crowley's Ridge	2.7	10	Production flaking
2012-310	Crowley's Ridge	25.2	106	Production flaking
2012-310	Crowley's Ridge	0.7	1	Production flaking

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2012-310	Crowley's Ridge	18.4	14	Production flaking. Brown with red cortex
2012-310	Crowley's Ridge	4	2	Brown with red cortex
2012-310	Crowley's Ridge	2.5	4	Brown
2012-310	Crowley's Ridge	2.8	1	Production flaking
2012-310	Crowley's Ridge	0.6	3	production flaking
2012-310	Crowley's Ridge	0.7	6	Production flaking
2012-310	Crowley's Ridge	2.9	1	Nodena general shape, but unfinished, light brown
2012-310	Crowley's Ridge	0.3	1	Drill point
2012-310	Crowley's Ridge	3.1	6	Production flaking
2012-310	Crowley's Ridge	0.3	2	production flaking
2012-310	Crowley's Ridge	0.7	4	production flaking
2012-310	Crowley's Ridge	4.2	5	production flaking
2012-310	Crowley's Ridge	0.1	1	production flaking
2012-310	Crowley's Ridge	0.2	2	Production flaking
2012-310	Crowley's Ridge	7.7	8	production flaking
2012-310	Crowley's Ridge	0.6	1	
2012-310	Crowley's Ridge	0.6	1	Brown with red
2012-310	Crowley's Ridge	0.5	1	
2012-310	Crowley's Ridge	6.9	13	production flaking
2012-310	Crowley's Ridge	0.7	5	Production flaking
2012-310	Crowley's Ridge	0.4	2	Production flaking
2012-310	Crowley's Ridge	1.9	3	production flaking
2012-310	Crowley's Ridge	0.5	3	production flaking
2012-310	Crowley's Ridge	3.2	8	produciton flaking
2012-310	Crowley's Ridge	0.2	1	Production flaking
2012-310	Crowley's Ridge	0.01	2	Production flaking
2012-310	Crowley's Ridge	0.5	2	Production flaking
2012-310	Crowley's Ridge	0.1	1	Production flaking

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2012-310	Crowley's Ridge	5.7	2	Production flaking
2012-310	Crowley's Ridge	2.9	10	production flaking
2012-310	Crowley's Ridge	0.2	1	
2012-310	Crowley's Ridge	8.6	1	
2012-310	Crowley's Ridge	18.6	20	production flaking
2012-310	Crowley's Ridge	0.9	5	production flaking
2012-310	Crowley's Ridge	19.7	2	production flaking
2012-310	Crowley's Ridge	0.4	1	Production flaking
2012-310	Crowley's Ridge	6.5	20	production flaking
2012-310	Crowley's Ridge	3.3	7	production flaking
2012-310	Crowley's Ridge	2.7	1	broken
2012-310	Crowley's Ridge	0.01	1	Production flaking
2012-310	Crowley's Ridge	0.01	1	Production flaking
2012-310	Crowley's Ridge	1.8	3	Brown crowleys ridge
2012-310	Crowley's Ridge	0.01	1	Production flaking
2012-310	Crowley's Ridge	26.4	1	Tested for flakes
2012-310	Crowley's Ridge	1.7	4	Produciton flaking
2012-310	Crowley's Ridge	3.7	10	Production flaking
2012-310	Crowley's Ridge	18.1	20	Production flaking
2012-310	Crowley's Ridge	0.7	1	
2012-310	Crowley's Ridge	1.6	5	Production flaking
2012-310	Crowley's Ridge	0.2	1	
2012-310	Crowley's Ridge	0.4	1	
2012-310	Crowley's Ridge	14.7	2	Brown crowleys ridge
2012-310	Crowley's Ridge	1.5	2	river gravels
2012-310	Crowley's Ridge	34.1	159	Production flaking. Brown crowleys ridge
2012-310	Crowley's Ridge	4	1	Production flaking
2012-310	Crowley's Ridge	0.01	1	Production flaking

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2012-310	Crowley's Ridge	51.8	67	Production flaking. Brown crowleys ridge
2012-310	Crowley's Ridge	4.5	1	
2012-310	Crowley's Ridge	1.7	2	Brown crowleys ridge
2012-310	Crowley's Ridge	0.01	1	Production flaking
2012-310	Crowley's Ridge	28.9	10	Heat treated brown crowleys ridge
2012-310	Crowley's Ridge	0.95	1	
2012-310	Crowley's Ridge	100.3	167	Production flaking. Heat treated brown crowleys ridge
2012-310	Crowley's Ridge	4.4	7	Heat treated brown crowleys ridge
2012-310	Crowley's Ridge	26.7	148	Production flaking. Heat treated brown crowleys ridge
2012-310	Crowley's Ridge	0.6	1	Production flaking
2013-475	Crowley's Ridge	8.8	2	Production flaking
2013-475	Crowley's Ridge	1.2	1	Production flaking
2013-475	Crowley's Ridge	3.2	8	Production flaking
2013-475	Crowley's Ridge	1.1	3	Production flaking
2013-475	Crowley's Ridge	2.4	2	Production flaking
2013-475	Crowley's Ridge	0.5	2	Production flaking
2013-475	Crowley's Ridge	1.4	4	Production flaking
2013-475	Crowley's Ridge	14.4	2	Production flaking
2013-475	Crowley's Ridge	0.3	1	Production flaking
2013-475	Crowley's Ridge	1	1	Production flaking
2013-475	Crowley's Ridge	3.3	5	Production flaking
2013-475	Crowley's Ridge	0.8	4	Production flaking
2013-475	Crowley's Ridge	0.8	1	Production flaking
2013-475	Crowley's Ridge	0.2	2	Production flaking
2013-475	Crowley's Ridge	2	7	Production flaking
2013-475	Crowley's Ridge	0.9	2	Production flaking
2013-475	Crowley's Ridge	10.7	2	Production flaking
2013-475	Crowley's Ridge	1.4	2	Production flaking

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2013-475	Crowley's Ridge	0.2	2	Production flaking
2013-475	Crowley's Ridge	0.8	1	
2013-475	Crowley's Ridge	1.2	2	Production flaking
2013-475	Crowley's Ridge	1.1	2	Production flaking
2013-475	Crowley's Ridge	0.5	1	Production flaking
2014-518	Crowley's Ridge	7.6	9	Production flaking
2014-518	Crowley's Ridge	0.4	1	Shatter
2014-518	Crowley's Ridge	27.5	84	Production flaking
2014-518	Crowley's Ridge	49.7	3	Tested cobbles
2014-518	Crowley's Ridge	27	30	Production flaking
2014-518	Crowley's Ridge	14.3	1	Possible scraper, possible tested cobble
2014-518	Crowley's Ridge	3	1	Broken preform?
2014-518	Crowley's Ridge	3.2	1	Triangular preform knapped on flake. Rounded base.
2014-518	Crowley's Ridge	0.7	1	Tip or base of Nodena
2014-518	Crowley's Ridge	4.8	12	Production flaking
2014-518	Crowley's Ridge	16.5	43	Production flaking
2014-518	Crowley's Ridge	0.01	1	HF sorted for 10 min. Production flaking
2014-518	Crowley's Ridge	2.2	1	Crude biface preforme
2014-518	Crowley's Ridge	1.7	1	Nodena point
2014-518	Crowley's Ridge	0.2	2	Production flaking
2014-518	Crowley's Ridge	16.1	1	Shatter
2014-518	Crowley's Ridge	6.7	16	Production flaking
2014-518	Crowley's Ridge	8	9	Production flaking
2014-518	Crowley's Ridge	34.5	17	Production flaking
2014-518	Crowley's Ridge	0.7	3	Production flaking
2014-518	Crowley's Ridge	33.5	1	Broken, possibly flaked
2014-518	Crowley's Ridge	4.4	11	Production flaking
2014-518	Crowley's Ridge	35.4	41	Production flaking

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2014-518	Crowley's Ridge	0.9	2	HF sorted for 10 min.Production flaking
2014-518	Crowley's Ridge	19.2	81	Production flaking
2014-518	Crowley's Ridge	24.5	36	Production flaking
2014-518	Crowley's Ridge	11.7	1	Shatter
2014-518	Crowley's Ridge	6.1	1	Unmodified pebble
2014-518	Crowley's Ridge	0.2	3	HF sorted for 15 min. Production flaking
2014-518	Crowley's Ridge	0.6	9	HF sorted for 10 min.Production flaking
2014-518	Crowley's Ridge	0.5	2	HF sorted for 15 min. Production flaking
2014-518	Crowley's Ridge	0.5	2	HF sorted for 10 min.Production flaking
2014-518	Crowley's Ridge	5.3	20	Production flaking
2014-518	Crowley's Ridge	12.4	23	Production flaking
2014-518	Crowley's Ridge	18.2	2	Test cobbles
2014-518	Crowley's Ridge	0.3	1	Production flaking
2014-518	Crowley's Ridge	0.7	2	Production flaking
2014-518	Crowley's Ridge	3.7	3	Production flaking
2014-518	Crowley's Ridge	1.9	1	Nodena preform? Mostly one flake, but retouched from both sides
2014-518	Crowley's Ridge	9.8	22	Production flaking
2014-518	Crowley's Ridge	38.7	44	Production flaking
2014-518	Crowley's Ridge	14.9	26	Production flaking
2014-518	Crowley's Ridge	0.5	3	HF sorted for 10 min. Production flaking
2014-518	Crowley's Ridge	0.9	1	
2014-518	Crowley's Ridge	1.2	2	Production flaking
2014-518	Crowley's Ridge	15.5	1	Test cobble
2014-518	Crowley's Ridge	1.7	1	Shatter
2014-518	Crowley's Ridge	2.2	1	Preform?
2014-518	Crowley's Ridge	3.5	1	Nodena preform?
2014-518	Crowley's Ridge	1.9	1	Madison point w/ slightly rounded base
2014-518	Crowley's Ridge	0.2	4	HF sorted for 10 min. Production flaking

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2014-518	Crowley's Ridge	0.01	1	HF sorted for 15 min. Production flaking
2014-518	Crowley's Ridge	2.8	2	HF sorted for 10 min. Production flaking
2014-518	Crowley's Ridge	18.4	61	Production flaking
2014-518	Crowley's Ridge	78.6	1	HF sorted for 10 min. Production flaking
2014-518	Crowley's Ridge	0.01	2	HF sorted for 10 min. Production flaking
2014-518	Crowley's Ridge	3.2	7	Production flaking
2014-518	Crowley's Ridge	1.7	8	Production flaking
2014-518	Crowley's Ridge	0.01	1	HF sorted for ~5 min. Production flaking
2014-518	Crowley's Ridge	1.1	1	Production flaking
2014-518	Crowley's Ridge	2.5	1	Thick Nodena? Preform?
2014-518	Crowley's Ridge	0.01	1	HF sorted for 10 min. Production flaking
2014-518	Crowley's Ridge	0.6	4	HF sorted for 10 min. Production flaking
2014-518	Crowley's Ridge	0.4	2	Production flaking
2014-518	Crowley's Ridge	0.7	3	HF sorted for 10 min. Production flaking
2014-518	Crowley's Ridge	3.1	1	Nodena preform?
2014-518	Crowley's Ridge	0.01	1	HF sorted for 10 min. Shatter
2014-518	Crowley's Ridge	2.3	2	Production flaking
2014-518	Crowley's Ridge	0.2	1	Production flaking
2014-518	Crowley's Ridge	0.01	1	HF sorted for 10 min. Production flaking
2014-518	Crowley's Ridge	0.2	5	HF sorted for 10 min. Production flaking
2014-518	Crowley's Ridge	0.5	3	HF sorted for 10 min. Production flaking
2014-518	Crowley's Ridge	0.8	3	HF sorted for 10 min. Production flaking
2014-518	Crowley's Ridge	0.2	6	HF sorted for 10 min. Production flaking
2014-518	Crowley's Ridge	0.1	4	HF sorted for 10 min. Production flaking
2014-518	Crowley's Ridge	0.9	1	Shatter
2014-518	Crowley's Ridge	3.8	1	Shatter
2014-518	Crowley's Ridge	1.3	2	Production flaking
2014-518	Crowley's Ridge	0.5	1	Production flaking

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2014-518	Crowley's Ridge	2	6	Production flaking
2014-518	Crowley's Ridge	2.1	1	
2014-518	Crowley's Ridge	5.7	11	Production flaking
2014-518	Crowley's Ridge	4.5	14	Prodcution flaking
2014-518	Crowley's Ridge	1.3	1	Nodena made on flake. Only bifacial in a few places
2014-518	Crowley's Ridge	8.1	1	shatter
2014-518	Crowley's Ridge	3.9	15	Production flaking
2014-518	Crowley's Ridge	0.4	1	HF sorted for 10 min, production flaking
2014-518	Crowley's Ridge	3.3	1	Flat, but flaked on both sides. Squarish bottom and broken
2014-518	Crowley's Ridge	4.6	8	Production flaking
2014-518	Crowley's Ridge	9.6	6	Production flaking
2014-518	Crowley's Ridge	1.1	5	Production flaking
2014-518	Crowley's Ridge	1	1	Square bottom, broken
2014-518	Crowley's Ridge	5.3	6	Production flaking
2014-518	Crowley's Ridge	4.7	15	Production flaking
2014-518	Crowley's Ridge	1.8	3	Production flaking
2014-518	Crowley's Ridge	0.1	1	Production flaking
2014-518	Crowley's Ridge	14.6	3	Production flaking
2014-518	Crowley's Ridge	10.1	35	Production flaking
2014-518	Crowley's Ridge	0.6	1	Production flaking
2014-518	Crowley's Ridge	31.4	27	Production flaking
2014-518	Crowley's Ridge	60.9	34	Production flaking
2014-518	Crowley's Ridge	5.1	8	Production flaking
2014-518	Crowley's Ridge	2.8	1	Nodena preform?
2014-518	Crowley's Ridge	1	1	Nodena with flatish bottom. Flaked to be twisted
2014-518	Crowley's Ridge	2.6	1	Nodena shaped, but unremoved chunk near bottom
2014-518	Crowley's Ridge	10.3	2	Production flaking
2014-518	Crowley's Ridge	0.5	2	Production flaking

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2014-518	Crowley's Ridge	1.1	1	Shatter
2014-518	Crowley's Ridge	3.4	9	Production flaking
2014-518	Crowley's Ridge	6.6	2	Production flaking
2014-518	Crowley's Ridge	4.4	1	Production flaking
2014-518	Crowley's Ridge	38.1	1	
2014-518	Crowley's Ridge	31.4	2	Possibly flaked
2014-518	Crowley's Ridge	18.1	1	Shattered
2014-518	Crowley's Ridge	1.2	3	HF sorted for 10 min, production flaking
2014-518	Crowley's Ridge	2.3	18	HF sorted for 10 min, production flaking
2014-518	Crowley's Ridge	0.6	3	Production flaking
2014-518	Crowley's Ridge	0.3	1	HF sorted for 10 min. Production flaking
2014-518	Crowley's Ridge	10.5	10	Production flaking
2014-518	Crowley's Ridge	20.2	14	Production flaking
2014-518	Crowley's Ridge	1.3	4	Production flaking
2014-518	Crowley's Ridge	12.9	1	Test cobble
2014-518	Crowley's Ridge	0.2	1	Shatter
2014-518	Crowley's Ridge	3	1	Broken, possibly ovoid base of large, woodland point
2014-518	Crowley's Ridge	11.4	1	Bifacial around 3/4 of edges, but one side more focused, looks like scraping tool, but not thumbnail scraper
2014-518	Crowley's Ridge	0.01	2	HF sorted ~5 min. Production flaking
2014-518	Crowley's Ridge	7.7	21	Production flaking
2014-518	Crowley's Ridge	1.7	1	Shatter
2014-518	Crowley's Ridge	0.6	1	Production flaking
2014-518	Crowley's Ridge	0.01	1	Production flaking
2014-518	Crowley's Ridge	0.2	1	Production flaking
2014-518	Crowley's Ridge	1.5	1	Production flaking
2014-518	Crowley's Ridge	3.8	3	Production flaking
2014-518	Crowley's Ridge	0.8	1	Production flaking
2014-518	Crowley's Ridge	0.01	1	Production flaking

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2014-518	Crowley's Ridge	1.2	1	Utilized flake, small flakes off of one edge
2014-518	Crowley's Ridge	1.5	1	Nodena point
2014-518	Crowley's Ridge	0.8	4	Production flaking
2014-518	Crowley's Ridge	16.5	1	Test cobble
2014-518	Crowley's Ridge	0.4	1	Broken tip of point
2014-518	Crowley's Ridge	1.2	2	Production flaking, HF sorted for 10 min
2014-518	Crowley's Ridge	0.01	1	Production flaking, HF sorted for 10 min
2014-518	Crowley's Ridge	0.1	2	HF sorted for 15 min, production flaking
2014-518	Crowley's Ridge	0.3	3	HF sorted for 15 min, production flaking
2014-518	Crowley's Ridge	2.7	6	Production flaking
2014-518	Crowley's Ridge	14.4	18	Production flaking
2014-518	Crowley's Ridge	18.9	14	Production flaking
2014-518	Crowley's Ridge	18.2	17	Production flaking
2014-518	Crowley's Ridge	4.3	1	Shatter
2014-518	Crowley's Ridge	0.01	1	HF sorted for 10 min. Production flaking
2014-518	Crowley's Ridge	54.5	1	Test cobble
2014-518	Crowley's Ridge	1.8	1	Base or tip of point, brown
2014-518	Crowley's Ridge	0.9	3	Production flaking
2014-518	Crowley's Ridge	5.4	4	Production flaking
2014-518	Crowley's Ridge	30.9	4	Production flaking
2014-518	Crowley's Ridge	3.1	6	Production flaking
2014-518	Crowley's Ridge	2.3	1	Shatter
2014-518	Crowley's Ridge	0.7	1	Production flaking
2014-518	Crowley's Ridge	16.9	41	Production flaking
2014-518	Crowley's Ridge	0.3	1	Production flaking
2016-503	Crowley's Ridge	1.7	1	Possibly utilized flake, maybe just broken that way
2016-503	Crowley's Ridge	1	1	Shatter
2016-503	Crowley's Ridge	45.3	2	Test Cobble

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2016-503	Crowley's Ridge	2.2	1	Nodena. Tip broken, bulb of percussion still present
2016-503	Crowley's Ridge	30.5	3	Shatter
2016-503	Crowley's Ridge	2.8	1	Preform for Nodena or Madison
2016-503	Crowley's Ridge	1.7	12	Production flaking
2016-503	Crowley's Ridge	1.7	1	Larger point, possibly preform for Madison or Nodena
2016-503	Crowley's Ridge	1.5	1	Broken and maybe preform for Nodena
2016-503	Crowley's Ridge	35.7	83	Production flaking
2016-503	Crowley's Ridge	57.2	37	Production flaking
2016-503	Crowley's Ridge	14.3	2	Shatter
2016-503	Crowley's Ridge	24.6	43	Production flaking
2016-503	Crowley's Ridge	1	1	Madison point
2016-503	Crowley's Ridge	2.2	6	Production flaking
2016-503	Crowley's Ridge	31.4	1	Test cobbles
2016-503	Crowley's Ridge	18.7	15	Production flaking
2016-503	Crowley's Ridge	0.2	1	Shatter (not necessarily from heat)
2016-503	Crowley's Ridge	1.3	6	Production flaking
2016-503	Crowley's Ridge	0.9	4	Production flaking
2016-503	Crowley's Ridge	5	2	Shatter
2016-503	Crowley's Ridge	3	5	Production flaking
2016-503	Crowley's Ridge	15.9	20	Production flaking
2016-503	Crowley's Ridge	14.9	42	Production flaking
2016-503	Crowley's Ridge	70.5	98	Production flaking
2016-503	Crowley's Ridge	6.6	17	Production flaking
2016-503	Crowley's Ridge	17.4	18	Production flaking
2016-503	Crowley's Ridge	0.6	1	Tip of Nodena or Madison
2016-503	Crowley's Ridge	18.3	25	Production flaking
2016-503	Crowley's Ridge	86	1	Core with flakes removed from two sides
2016-503	Crowley's Ridge	6.6	11	Production flaking

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2016-503	Crowley's Ridge	14.3	1	
2016-503	Crowley's Ridge	19	13	Production flaking
2016-503	Crowley's Ridge	38.7	3	Test cobble
2016-503	Crowley's Ridge	8.3	20	Production flaking
2016-503	Crowley's Ridge	53.6	176	Production flaking
2016-503	Crowley's Ridge	75.1	101	Production flaking
2016-503	Crowley's Ridge	36.9	1	
2016-503	Crowley's Ridge	23.3	51	Production flaking
2016-503	Crowley's Ridge	1.1	1	
2016-503	Crowley's Ridge	8.8	14	Production flaking
2016-503	Crowley's Ridge	8.4	9	Production flaking
2016-503	Crowley's Ridge	3.7	6	Production flaking
2016-503	Crowley's Ridge	2.8	1	Production flaking
2016-503	Crowley's Ridge	0.1	1	Production flaking
2016-503	Crowley's Ridge	2.6	1	Base of point. Slightly concave base.
2016-503	Crowley's Ridge	2.1	1	Center of biface. No tip, no base
2016-503	Crowley's Ridge	17.8	2	Flakes removed from various sides
2016-503	Crowley's Ridge	21.5	1	Shatter
2016-503	Crowley's Ridge	33.5	1	Test cobble
2016-503	Crowley's Ridge	0.2	1	Shatter
2016-503	Crowley's Ridge	105.6	140	Production flaking
2016-503	Crowley's Ridge	2	6	Production flaking
2016-503	Crowley's Ridge	0.7	1	Tip of point made on flake. Small flake scars on back to make it a biface
2016-503	Crowley's Ridge	6.4	1	Wide, flattened biface. Broken on both ends
2016-503	Crowley's Ridge	0.1	1	Production flaking
2016-503	Crowley's Ridge	0.3	1	Very tip of thin point
2016-503	Crowley's Ridge	2.3	1	Roughly formed Nodena
2016-503	Crowley's Ridge	1.2	1	Nodena point

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2016-503	Crowley's Ridge	74	4	Shatter
2016-503	Crowley's Ridge	30.9	5	Shatter
2016-503	Crowley's Ridge	5.2	3	Production flaking
2016-503	Crowley's Ridge	2.5	1	Production flaking
2016-503	Crowley's Ridge	9.5	1	Thick preform for point
2016-503	Crowley's Ridge	0.8	2	Production flaking
2016-503	Crowley's Ridge	6.2	4	Production flaking
2016-503	Crowley's Ridge	1.8	2	Production flaking
2016-503	Crowley's Ridge	0.8	2	Production flaking
2016-503	Crowley's Ridge	0.4	2	Production flaking
2016-503	Crowley's Ridge	0.1	1	Production flaking
2016-503	Crowley's Ridge	0.2	1	HF sorted for ~10 min. Production flaking
2016-503	Crowley's Ridge	0.5	2	HF sorted for ~10 min. Production flaking
2016-503	Crowley's Ridge	1	1	Probable Nodena
2016-503	Crowley's Ridge	0.6	2	HF sorted for ~10 min. Production flaking
2016-503	Crowley's Ridge	2.4	1	Convex based Madison
2016-503	Crowley's Ridge	0.01	1	Production flaking
2016-503	Crowley's Ridge	32.9	2	Shatter
2016-503	Crowley's Ridge	49	1	Test cobble
2016-503	Crowley's Ridge	2.2	1	Madison, or possibly larger triangular point
2016-503	Crowley's Ridge	0.2	3	Production flaking
2016-503	Crowley's Ridge	16.4	32	Production flaking
2016-503	Crowley's Ridge	0.1	1	Production flaking
2016-503	Crowley's Ridge	0.9	2	Production flaking
2016-503	Crowley's Ridge	85.8	1	Shatter
2016-503	Crowley's Ridge	3.2	8	Production flaking
2016-503	Crowley's Ridge	4	4	Production flaking
2016-503	Crowley's Ridge	2.8	7	Production flaking

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2016-503	Crowley's Ridge	30.9	141	Production flaking
2016-503	Crowley's Ridge	56	73	Production flaking
2016-503	Crowley's Ridge	49.6	71	Production flaking
2016-503	Crowley's Ridge	13.9	37	Production flaking
2016-503	Crowley's Ridge	18.3	74	Production flaking
2016-503	Crowley's Ridge	0.6	1	Base? Of Nodena
2016-503	Crowley's Ridge	2.4	7	Production flaking
2016-503	Crowley's Ridge	7.6	1	Shatter
2016-503	Crowley's Ridge	16.5	42	Production flaking
2016-503	Crowley's Ridge	1.6	1	Nodena broken during thining and used as point anyway?
2016-503	Crowley's Ridge	30.7	49	Production flaking
2016-503	Crowley's Ridge	25.7	45	Production flaking
2016-503	Crowley's Ridge	3.6	1	Smaller flakes taken off of one side
2016-503	Crowley's Ridge	23.7	2	Flaked chunks
2016-503	Crowley's Ridge	1.4	12	Production flaking. Heavy fraction sorted for 10 min
2016-503	Crowley's Ridge	0.7	1	Production flaking. Heavy fraction sorted for 10 min
2016-503	Crowley's Ridge	0.8	3	Production flaking. Heavy fraction sorted for 10 min
2016-503	Crowley's Ridge	0.01	1	Production flaking. Heavy fraction sorted for 10 min
2016-503	Crowley's Ridge	0.8	1	Tip of Nodena or Madison. Base and body broken
2016-503	Crowley's Ridge	14.2	40	Production flaking
2016-503	Crowley's Ridge	3.3	2	Production flaking
2016-503	Crowley's Ridge	130.6	6	Test cobble
2016-503	Crowley's Ridge	30.3	4	Shatter
2016-503	Crowley's Ridge	0.5	2	Production flaking
2016-503	Crowley's Ridge	0.01	2	HF sorted for ~10 min. Production flaking
2016-503	Crowley's Ridge	12.6	1	
2016-503	Crowley's Ridge	2.6	1	Rough Nodena or preform for Nodena
2016-503	Crowley's Ridge	0.3	1	Production flaking

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2016-503	Crowley's Ridge	2.6	2	Production flaking
2016-503	Crowley's Ridge	5.9	1	Large flake with flake scars on both sides
2016-503	Crowley's Ridge	43.3	161	Production flaking
2016-503	Crowley's Ridge	2.1	8	Production flaking
2016-503	Crowley's Ridge	64.4	93	Production flaking
2016-503	Crowley's Ridge	3	1	Broken, but bifacial
2016-503	Crowley's Ridge	10.3	24	Production flaking
2016-503	Crowley's Ridge	12.4	2	Shatter
2016-503	Crowley's Ridge	0.9	1	Madison
2016-503	Crowley's Ridge	0.7	2	Shatter
2016-503	Crowley's Ridge	30.4	1	
2016-503	Crowley's Ridge	37.8	1	Shatter
2016-503	Crowley's Ridge	0.4	1	Production flaking
2016-503	Crowley's Ridge	1.3	3	Production flaking
2016-503	Crowley's Ridge	7.1	6	Production flaking
2016-503	Crowley's Ridge	2.5	2	Production flaking
2016-503	Crowley's Ridge	25	37	Production flaking
2016-503	Crowley's Ridge	0.7	1	Madison or Nodena point
2016-503	Crowley's Ridge	42.2	77	Production flaking
2016-503	Crowley's Ridge	5.8	1	
2016-503	Crowley's Ridge	0.4	1	Production flaking
2016-503	Crowley's Ridge	36.6	1	
2016-503	Crowley's Ridge	5.5	23	Production flaking
2016-503	Crowley's Ridge	5.7	6	Production flaking
2016-503	Crowley's Ridge	0.2	2	Production flaking
2016-503	Crowley's Ridge	1	8	Production flaking
2016-503	Crowley's Ridge	32.1	28	Production flaking
2016-503	Crowley's Ridge	4.3	14	Production flaking

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2016-503	Crowley's Ridge	0.01	1	HF sorted ~5 min. Production flaking
2016-503	Crowley's Ridge	0.01	1	HF sorted ~5 min. Production flaking
2016-503	Crowley's Ridge	1.2	1	Madison, bottom corner slightly broken
2016-503	Crowley's Ridge	0.3	1	HF sorted ~5 min. Production flaking
2016-503	Crowley's Ridge	7.1	3	Production flaking
2016-503	Crowley's Ridge	0.5	1	HF sorted ~5 min. Production flaking
2016-503	Crowley's Ridge	1.7	4	Production flaking
2016-503	Crowley's Ridge	0.1	1	Production flaking
2016-503	Crowley's Ridge	3.7	1	Thick Nodena or Madison preform
2016-503	Crowley's Ridge	4.2	1	Thick Nodena, one side broken near bottom
2016-503	Crowley's Ridge	1.3	1	Production flaking
2016-503	Crowley's Ridge	0.01	1	Production flaking
2016-503	Crowley's Ridge	1	1	Nodena point
2016-503	Crowley's Ridge	1.3	1	Bifacial on two sides, but broken to be unrecognizable
2016-503	Crowley's Ridge	4.5	1	Rough Nodena? Preform. Thick area in middle maybe couldn't be thinned
2016-503	Crowley's Ridge	3.5	1	Unifacial retouching on both sides of flake
2016-503	Crowley's Ridge	12.4	1	Bifacial flaking of one edge. Scraper?
2016-503	Crowley's Ridge	0.4	1	Nodena
2016-503	Crowley's Ridge	2.8	9	Production flaking
2016-503	Crowley's Ridge	2.2	1	Nodena made on thick flake. Node of percussion present on end
2016-503	Crowley's Ridge	19.9	1	Test cobble
2016-503	Crowley's Ridge	2.1	1	Likely broke before finishing as point part still has cortex
2016-503	Crowley's Ridge	2.8	1	Crude Madison. Tip is almost "hook" shaped. Body is thick. Perhaps unfinished
2016-503	Crowley's Ridge	1	6	Production flaking
2016-503	Crowley's Ridge	6.2	1	Rounded base, top broken, square impurities
2016-503	Crowley's Ridge	0.8	1	Drill, broken down shaft
2016-503	Crowley's Ridge	7.5	12	Production flaking
2016-503	Crowley's Ridge	1.7	1	Crude Nodena. Bulb of percussion on side edge

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2016-503	Crowley's Ridge	0.9	1	Shatter
2016-503	Crowley's Ridge	17.7	2	Shatter
2016-503	Crowley's Ridge	0.7	1	Flake. Retouched on one side along all edges, retouched on some edges on opposite side.
2016-503	Crowley's Ridge	1.2	1	Small piece of base?
2016-503	Crowley's Ridge	1.4	1	Nodena. Tip heat treated red
2016-503	Crowley's Ridge	0.9	1	Crude Madison. Some retouching on edges of one side of flake
2016-503	Crowley's Ridge	36.9	119	Production flaking
2016-503	Crowley's Ridge	50.5	62	Production flaking
2016-503	Crowley's Ridge	94.7	106	Production flaking
2016-503	Crowley's Ridge	4.1	1	Preform for Madison point
2016-503	Crowley's Ridge	2.7	1	Flake retouched on one side
2016-503	Crowley's Ridge	12.1	41	Production flaking
2016-503	Crowley's Ridge	0.9	2	Production flaking
2016-503	Crowley's Ridge	1.7	3	Production flaking
2016-503	Crowley's Ridge	0.7	1	Production flaking
2016-503	Crowley's Ridge	3.2	3	Shatter
2016-503	Crowley's Ridge	0.1	1	Production flaking
2016-503	Crowley's Ridge	23.7	45	Production flaking
2016-503	Crowley's Ridge	47.5	3	Test cobbles
2016-503	Crowley's Ridge	31.7	28	Production flaking
2016-503	Crowley's Ridge	1.7	1	Flake retouched on both sides, top and bottom broken
2016-503	Crowley's Ridge	0.4	1	Nodena point
2016-503	Crowley's Ridge	4.4	1	Long edge is bifacial, other long edge is not worked
2016-503	Crowley's Ridge	55.8	68	Production flaking
2016-503	Crowley's Ridge	0.3	1	Production flaking
2012-310	Hematite	18.7	43	
2012-310	Hematite	0.7	3	
2013-475	Hematite	0.1	1	
2016-503	Hematite	0.8	2	Pieces refit

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2016-503	Hematite	0.2	1	
2016-503	Hematite	0.5	2	
2016-503	Hematite	3.2	1	Hematite chunk
2016-503	Hematite	0.6	2	
2016-503	iron conglomerate	0.5	1	not historic, natural conglomeration
2016-503	iron conglomerate	3.9	3	natural iron conglomerate from soil
2012-310	Laffayette Chert	0.7	1	Production flaking
2012-310	Laffayette gravel	5	14	Production flaking
2012-310	Laffayette gravel	3	1	Broken top and bottom, sharpened on both sides. Preform or broken knife
2012-310	Laffayette gravel	81	89	Production flaking
2012-310	Laffayette gravel	26.5	31	Production flaking
2012-310	Laffayette gravel	59.8	211	Production flaking
2012-310	Laffayette gravel	43.5	145	Production flaking
2012-310	Laffayette gravel	11.5	16	
2012-310	Laffayette gravel	155.3	3	
2012-310	Laffayette gravel	8.8	4	Production flaking
2012-310	Laffayette gravel	23	36	Production flaking
2012-310	Laffayette gravel	3.1	8	
2012-310	Laffayette gravel	3	6	
2012-310	Laffayette gravel	7	11	Production flaking
2012-310	Laffayette gravel	13.4	12	Production flaking
2012-310	Laffayette gravel	9.2	41	Production flaking
2012-310	Laffayette gravel	1.6	9	Production flaking
2012-310	Laffayette gravel	4.9	14	Production flaking
2012-310	Laffayette gravel	1.2	1	Madison
2012-310	Laffayette gravel	8.8	15	Production flaking
2012-310	Laffayette gravel	6.2	33	Production flaking
2012-310	Laffayette gravel	0.3	2	Production flaking
2012-310	Laffayette gravel	10.6	33	Production flaking. Red

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2012-310	Laffayette gravel	4	9	Production flaking. Dark to dark red with dark cortex
2012-310	Laffayette gravel	11.7	42	Production flaking. Dark
2012-310	Laffayette gravel	25.4	26	Production flaking. Light brown to pink with red cortex
2012-310	Laffayette gravel	2.3	16	Production flaking. Light brown to pink
2012-310	Laffayette gravel	0.9	2	Light
2012-310	Laffayette gravel	1.6	1	Light with red cortex
2012-310	Laffayette gravel	9.5	16	
2012-310	Laffayette gravel	2.4	4	Light to white with light cortex
2012-310	Laffayette gravel	1.5	7	Light gray to white
2012-310	Laffayette gravel	46.1	154	Production flaking. Light gray to white
2012-310	Laffayette gravel	3	6	Production flaking. Light with light cortex
2012-310	Laffayette gravel	5	7	
2012-310	Laffayette gravel	20.3	18	Production flaking. Red with dark cortex
2012-310	Laffayette gravel	9.4	1	Orange and Red with light cortex
2012-310	Laffayette gravel	11.5	6	Red with dark cortex
2012-310	Laffayette gravel	0.1	1	Red.
2012-310	Laffayette gravel	9.1	10	Production flaking. Pink with light cortex
2012-310	Laffayette gravel	12.2	34	Production flaking. Pink.
2012-310	Laffayette gravel	0.3	2	Pink
2012-310	Laffayette gravel	1.7	2	Pink with light cortex
2012-310	Laffayette gravel	10	5	Production flaking. Gray.
2012-310	Laffayette gravel	20.8	68	Production flaking. Gray.
2012-310	Laffayette gravel	1.6	3	Gray with light cortex
2012-310	Laffayette gravel	9.4	3	Dark gray
2012-310	Laffayette gravel	2.9	1	Brown with light cortex
2012-310	Laffayette gravel	17.2	30	Production flaking. Brown with light cortex
2012-310	Laffayette gravel	0.5	1	Production flaking. Light with quartz crystals on edge
2012-310	Laffayette gravel	1.4	1	Middle of point body, red

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2012-310	Laffayette gravel	0.5	1	Looks like a flake, but cortex is across entire surface
2012-310	Laffayette gravel	0.8	4	Production flaking
2012-310	Laffayette gravel	0.8	1	Tip of Nodena
2012-310	Laffayette gravel	0.01	1	
2012-310	Laffayette gravel	9.8	28	Production flaking
2012-310	Laffayette gravel	1.8	7	Production flaking
2012-310	Laffayette gravel	3.2	10	Production flaking
2012-310	Laffayette gravel	0.9	2	
2012-310	Laffayette gravel	0.8	1	Production flaking
2012-310	Laffayette gravel	2	32	Sorted from HF for ~15 min
2012-310	Laffayette gravel	19.5	108	Sorted from HF for ~60 min
2012-310	Laffayette gravel	0.4	2	Dark to dark red with dark cortex
2012-310	Laffayette gravel	1	1	retouched flake, white and light brown
2012-310	Laffayette gravel	4.8	9	Dark to dark red
2012-310	Laffayette gravel	3.7	1	Nodena preform (?), red and black
2012-310	Laffayette gravel	2	1	Nodena preform (?), red and white
2012-310	Laffayette gravel	0.3	1	Nodena tip, dark gray
2012-310	Laffayette gravel	1.4	1	Nodena, white and light brown
2012-310	Laffayette gravel	1.9	1	Madison base, white, pink and black
2012-310	Laffayette gravel	1.7	1	Nodena, gray/brown
2012-310	Laffayette gravel	6.5	20	Production flaking. Gray, white, pink
2012-310	Laffayette gravel	16.6	10	Production flaking. White, pink, gray
2012-310	Laffayette gravel	3.5	2	Red, White, and Black
2012-310	Laffayette gravel	0.5	2	Gray
2012-310	Laffayette gravel	44.8	3	White to gray
2012-310	Laffayette gravel	0.2	2	Production flaking
2012-310	Laffayette gravel	0.01	1	Production flaking
2013-475	Laffayette gravel	0.5	1	Production flaking

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2013-475	Laffayette gravel	4.9	1	
2013-475	Laffayette gravel	5.2	1	Shatter
2013-475	Laffayette gravel	1.6	5	Production flaking
2013-475	Laffayette gravel	1.3	2	
2013-475	Laffayette gravel	3.2	1	Shatter
2013-475	Laffayette gravel	0.6	3	Production flaking
2013-475	Laffayette gravel	25.4	3	
2013-475	Laffayette gravel	10.8	9	Production flaking
2013-475	Laffayette gravel	0.2	1	Production flaking
2013-475	Laffayette gravel	1.8	1	Production flaking
2013-475	Laffayette gravel	1.7	6	Production flaking
2013-475	Laffayette gravel	3.2	10	Production flaking
2013-475	Laffayette gravel	9	5	Production flaking
2013-475	Laffayette gravel	3.5	7	Production flaking
2013-475	Laffayette gravel	1.2	1	Production flaking
2013-475	Laffayette gravel	2.8	1	
2013-475	Laffayette gravel	1.3	2	Production flaking
2013-475	Laffayette gravel	1.1	5	Production flaking
2013-475	Laffayette gravel	2.7	6	Production flaking
2013-475	Laffayette gravel	1.2	1	Base present, maybe flat-based nodena
2013-475	Laffayette gravel	0.9	3	
2013-475	Laffayette gravel	0.7	2	Production flaking
2013-475	Laffayette gravel	0.2	2	Production flaking
2013-475	Laffayette gravel	2.1	2	Shatter
2013-475	Laffayette gravel	0.8	1	Production flaking
2013-475	Laffayette gravel	3.4	1	Production flaking
2013-475	Laffayette gravel	12.7	14	Likely gravel from former road to house
2013-475	Laffayette gravel	0.9	4	Production flaking

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2013-475	Laffayette gravel	1.4	7	Production flaking
2013-475	Laffayette gravel	1.1	3	Production flaking
2013-475	Laffayette gravel	4.1	7	Production flaking
2013-475	Laffayette gravel	6.5	5	Production flaking
2013-475	Laffayette gravel	0.8	2	Production flaking
2013-475	Laffayette gravel	6.9	5	Production flaking
2013-475	Laffayette gravel	93	111	Likely gravel from former road to house
2013-475	Laffayette gravel	6.7	6	Production flaking
2013-475	Laffayette gravel	1.6	7	Production flaking
2013-475	Laffayette gravel	0.4	1	
2014-518	Laffayette gravel	1.9	1	Nodena point, black/dark gray
2014-518	Laffayette gravel	1.6	2	Shatter
2014-518	Laffayette gravel	15.1	44	Production flaking
2014-518	Laffayette gravel	66.1	60	Production flaking
2014-518	Laffayette gravel	0.8	1	Production flaking
2014-518	Laffayette gravel	3.1	1	Madison preform, Equilateral triangle, White and off-white
2014-518	Laffayette gravel	15.9	30	Production flaking
2014-518	Laffayette gravel	4.1	1	Tip of probable woodland point, Dark gray with specks of white and red
2014-518	Laffayette gravel	22.4	69	Production flaking
2014-518	Laffayette gravel	0.3	1	Production flaking
2014-518	Laffayette gravel	8.3	1	Shatter
2014-518	Laffayette gravel	1.8	1	Shatter
2014-518	Laffayette gravel	2.5	2	
2014-518	Laffayette gravel	3.1	1	Burin created on broken edge of woodland point
2014-518	Laffayette gravel	8.6	12	Production flaking
2014-518	Laffayette gravel	0.01	1	HF sorted for 10 min.Production flaking
2014-518	Laffayette gravel	0.2	3	HF sorted for 10 min.Production flaking
2014-518	Laffayette gravel	0.7	3	Production flaking

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2014-518	Laffayette gravel	0.2	2	Production flaking
2014-518	Laffayette gravel	0.1	1	HF sorted ~5 min. Production flaking
2014-518	Laffayette gravel	0.1	4	HF sorted ~5 min. Production flaking
2014-518	Laffayette gravel	2.3	1	Rough Madison point with very tip broken off
2014-518	Laffayette gravel	2.4	1	Madison point
2014-518	Laffayette gravel	1.4	1	Madison, shorter than usual
2014-518	Laffayette gravel	0.2	1	Shatter
2014-518	Laffayette gravel	1	1	Shatter
2014-518	Laffayette gravel	4.6	2	Shatter
2014-518	Laffayette gravel	0.8	2	Production flaking
2014-518	Laffayette gravel	11.5	40	Production flaking
2014-518	Laffayette gravel	3.8	15	Production flaking
2014-518	Laffayette gravel	25.5	31	Production flaking
2014-518	Laffayette gravel	17.5	31	Production flaking
2014-518	Laffayette gravel	1.4	1	Nodena preform or large nodena
2014-518	Laffayette gravel	30.7	60	Production flaking
2014-518	Laffayette gravel	0.5	1	Broken tip/base of point
2014-518	Laffayette gravel	8.3	9	Production flaking
2014-518	Laffayette gravel	0.6	12	HF sorted for 15 min, production flaking
2014-518	Laffayette gravel	0.5	3	Production flaking
2014-518	Laffayette gravel	0.8	1	Production flaking
2014-518	Laffayette gravel	1.6	8	Production flaking, HF sorted for 10 min
2014-518	Laffayette gravel	2.7	10	Production flaking
2014-518	Laffayette gravel	12.3	14	Production flaking
2014-518	Laffayette gravel	2.6	6	Production flaking
2014-518	Laffayette gravel	1.8	1	Drill, flaked on 4 sides
2014-518	Laffayette gravel	17.2	18	Production flaking
2014-518	Laffayette gravel	1.2	1	

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2014-518	Laffayette gravel	9.2	29	Production flaking
2014-518	Laffayette gravel	12.5	17	Production flaking
2014-518	Laffayette gravel	10.3	6	Production flaking
2014-518	Laffayette gravel	44.3	17	Production flaking
2014-518	Laffayette gravel	6	1	Shatter
2014-518	Laffayette gravel	6.4	2	Production flaking
2014-518	Laffayette gravel	6.1	19	Production flaking
2014-518	Laffayette gravel	47.7	3	Shatter
2014-518	Laffayette gravel	4.8	4	Shatter
2014-518	Laffayette gravel	0.2	1	Production flaking
2014-518	Laffayette gravel	0.01	1	Production flaking
2014-518	Laffayette gravel	0.1	2	HF sorted for 10 min
2014-518	Laffayette gravel	0.3	17	HF sorted for 10 min, tiny flakes
2014-518	Laffayette gravel	0.4	1	HF sorted for 10 min
2014-518	Laffayette gravel	17.1	19	Production flaking
2014-518	Laffayette gravel	0.9	8	HF sorted for 10 min, production flaking
2014-518	Laffayette gravel	32.1	1	Possible shatter
2014-518	Laffayette gravel	7	2	Shatter
2014-518	Laffayette gravel	14	1	Broken biface with 3 pot-lidding scars on one edge
2014-518	Laffayette gravel	1.6	1	Nodena point, more oval shaped than usual, pink, gray, and tan
2014-518	Laffayette gravel	117.3	3	
2014-518	Laffayette gravel	3.5	5	
2014-518	Laffayette gravel	6.4	5	Production flaking
2014-518	Laffayette gravel	0.01	2	HF sorted for 10 min, production flaking
2014-518	Laffayette gravel	56	37	Production flaking
2014-518	Laffayette gravel	0.01	1	HF sorted for 10 min, production flaking
2014-518	Laffayette gravel	5.6	15	HF sorted for 10 min, production flaking
2014-518	Laffayette gravel	77.1	2	shatter

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2014-518	Laffayette gravel	5.9	1	Woodland point? Broken through center and at tip
2014-518	Laffayette gravel	1.9	1	Nodena preform?, broken
2014-518	Laffayette gravel	1.7	3	Production flaking
2014-518	Laffayette gravel	0.9	2	HF sorted for 10 min
2014-518	Laffayette gravel	1.4	1	Drill, white/off-white
2014-518	Laffayette gravel	0.5	9	HF sorted for 5 min
2014-518	Laffayette gravel	2.4	1	Shatter
2014-518	Laffayette gravel	15.1	32	Production flaking
2014-518	Laffayette gravel	10.1	11	Production flaking
2014-518	Laffayette gravel	13.1	24	Production flaking
2014-518	Laffayette gravel	32.9	31	Production flaking
2014-518	Laffayette gravel	0.01	1	Hf, totally sorted, very tiny
2014-518	Laffayette gravel	1.7	1	Shatter, pot lidding
2014-518	Laffayette gravel	0.01	1	HF, totally sorted, very tiny
2014-518	Laffayette gravel	4.5	1	Production flaking
2014-518	Laffayette gravel	2.9	1	Broken, but possible point preform, flaked on both sides
2014-518	Laffayette gravel	0.01	1	Production flaking, HF sorted for 10 min
2014-518	Laffayette gravel	0.1	1	Production flaking, HF sorted for 10 min
2014-518	Laffayette gravel	0.9	1	Production flaking
2014-518	Laffayette gravel	6.6	2	HF sorted for 15 min, production flaking
2014-518	Laffayette gravel	0.1	4	HF sorted for 10 min.Production flaking
2014-518	Laffayette gravel	0.3	1	Possible drill, only point, base broken off
2014-518	Laffayette gravel	62.8	149	Production flaking
2014-518	Laffayette gravel	55.2	71	Production flaking
2014-518	Laffayette gravel	0.2	1	
2014-518	Laffayette gravel	2.3	8	Production flaking
2014-518	Laffayette gravel	10	14	Production flaking
2014-518	Laffayette gravel	12.9	12	Production flaking

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2014-518	Laffayette gravel	1.7	1	Shatter
2014-518	Laffayette gravel	1.6	6	Production flaking
2014-518	Laffayette gravel	1.1	12	HF sorted for 15 min, production flaking
2014-518	Laffayette gravel	3.8	9	Production flaking
2014-518	Laffayette gravel	5.4	8	Production flaking
2014-518	Laffayette gravel	2.2	3	Production flaking
2014-518	Laffayette gravel	1.6	6	Production flaking
2014-518	Laffayette gravel	2.5	1	Shatter
2014-518	Laffayette gravel	0.01	1	HF, totally sorted, very tiny
2014-518	Laffayette gravel	10.4	25	Production flaking
2014-518	Laffayette gravel	5.2	5	Production flaking
2014-518	Laffayette gravel	0.01	4	HF sorted for 10 min. Production flaking
2014-518	Laffayette gravel	0.2	9	HF sorted for 10 min. Production flaking
2014-518	Laffayette gravel	0.01	1	HF sorted for 10 min. Production flaking
2014-518	Laffayette gravel	7.6	1	HF sorted for 10 min
2014-518	Laffayette gravel	0.8	1	HF sorted for 10 min
2014-518	Laffayette gravel	0.01	1	HF sorted for 10 min. Production flaking
2014-518	Laffayette gravel	0.1	6	HF sorted for 10 min. Production flaking
2014-518	Laffayette gravel	6.6	1	
2014-518	Laffayette gravel	2.7	1	Shatter
2014-518	Laffayette gravel	1.7	6	Production flaking
2014-518	Laffayette gravel	0.5	1	Shatter
2014-518	Laffayette gravel	0.6	1	Production flaking
2014-518	Laffayette gravel	3	8	Production flaking
2014-518	Laffayette gravel	4	1	Nodena preform? Or large woodland point
2014-518	Laffayette gravel	1.5	1	Drill
2014-518	Laffayette gravel	5.9	1	Production flaking
2014-518	Laffayette gravel	1.2	1	Shatter

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2014-518	Laffayette gravel	2	1	Production flaking, shatter at top
2014-518	Laffayette gravel	0.7	3	HF sorted for 10 min. Production flaking
2014-518	Laffayette gravel	2.3	7	HF sorted for 10 min. Production flaking
2014-518	Laffayette gravel	1.5	1	
2014-518	Laffayette gravel	0.01	1	Production flaking
2014-518	Laffayette gravel	1.2	3	Shatter
2014-518	Laffayette gravel	15.6	13	Shatter
2014-518	Laffayette gravel	26.2	1	Tested cobble
2014-518	Laffayette gravel	5.3	1	Broken core for flaking?
2014-518	Laffayette gravel	0.5	1	Retouched flake
2014-518	Laffayette gravel	1.2	1	Possible triangular preform
2014-518	Laffayette gravel	6.4	1	Thick, drill-shaped biface
2014-518	Laffayette gravel	2.9	1	Roundish shaped preform? Bulb of percussion present on end
2014-518	Laffayette gravel	0.8	1	Tip or base of Nodena, very tip broken.
2014-518	Laffayette gravel	1.7	1	Nodena with flat bottom
2014-518	Laffayette gravel	0.3	2	Production flaking
2014-518	Laffayette gravel	2.2	1	Drill preform?
2014-518	Laffayette gravel	0.5	1	
2014-518	Laffayette gravel	12.4	33	Production flaking
2014-518	Laffayette gravel	30	26	Production flaking
2014-518	Laffayette gravel	5.5	7	Production flaking
2014-518	Laffayette gravel	11	33	Production flaking
2014-518	Laffayette gravel	1.3	4	
2014-518	Laffayette gravel	2.4	1	Shatter
2014-518	Laffayette gravel	76.6	5	Shatter
2014-518	Laffayette gravel	0.2	1	Production flaking
2014-518	Laffayette gravel	0.2	1	Production flaking
2014-518	Laffayette gravel	5.7	1	Biface, but maybe just a thin core?

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2014-518	Laffayette gravel	0.6	4	HF sorted for 10 min. Production flaking
2014-518	Laffayette gravel	2.6	1	Nodena preform?
2014-518	Laffayette gravel	48.1	121	Production flaking
2014-518	Laffayette gravel	89.7	107	Production flaking
2014-518	Laffayette gravel	41.4	25	Production flaking
2014-518	Laffayette gravel	4.2	5	
2014-518	Laffayette gravel	49.6	1	Test cobble and possibly fire cracked
2014-518	Laffayette gravel	15.5	1	Shatter/ Test cobble
2014-518	Laffayette gravel	7.4	4	Shatter
2014-518	Laffayette gravel	3.9	4	Production flaking
2014-518	Laffayette gravel	1.3	1	Flake, utilized on both sides
2014-518	Laffayette gravel	1.4	2	Production flaking
2014-518	Laffayette gravel	2.6	1	Nodena? Preform
2014-518	Laffayette gravel	1.4	1	Broken on tip and base
2014-518	Laffayette gravel	1.1	1	Broken. Probable triangular point
2014-518	Laffayette gravel	1.8	1	Madison point
2014-518	Laffayette gravel	0.01	1	HF sorted for 10 min
2014-518	Laffayette gravel	1.2	17	HF sorted for 10 min. Production flaking
2014-518	Laffayette gravel	2.1	3	HF sorted for 10 min. Production flaking
2014-518	Laffayette gravel	0.7	2	HF sorted for 10 min. Production flaking
2014-518	Laffayette gravel	3.1	11	HF sorted for 10 min. Production flaking
2014-518	Laffayette gravel	5.7	3	Shatter
2014-518	Laffayette gravel	3.1	3	Production flaking
2014-518	Laffayette gravel	28.4	79	Production flaking
2014-518	Laffayette gravel	0.1	1	Production flaking
2014-518	Laffayette gravel	1.2	1	Production flaking
2014-518	Laffayette gravel	1.1	3	Production flaking
2014-518	Laffayette gravel	0.4	2	Production flaking

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2014-518	Laffayette gravel	0.7	5	HF sorted for 10 min. Production flaking
2014-518	Laffayette gravel	1.4	16	HF sorted for 10 min. Production flaking
2014-518	Laffayette gravel	0.9	12	HF sorted for 10 min. Production flaking
2014-518	Laffayette gravel	0.5	1	HF sorted for 10 min
2014-518	Laffayette gravel	4.7	6	Production flaking
2014-518	Laffayette gravel	1.6	2	Production flaking
2014-518	Laffayette gravel	4.7	1	HF sorted for 10 min
2014-518	Laffayette gravel	3	6	Production flaking
2014-518	Laffayette gravel	9.9	1	Test cobble
2014-518	Laffayette gravel	9.2	2	Shatter
2014-518	Laffayette gravel	1.5	1	Broken at both ends
2014-518	Laffayette gravel	4.6	1	
2014-518	Laffayette gravel	1	3	Production flaking
2014-518	Laffayette gravel	0.9	1	Production flaking
2014-518	Laffayette gravel	12.8	6	Production flaking
2014-518	Laffayette gravel	3.9	3	Production flaking
2014-518	Laffayette gravel	0.9	2	HF sorted for 10 min. Shatter
2014-518	Laffayette gravel	6.4	8	Production flaking
2014-518	Laffayette gravel	0.4	2	Production flaking
2014-518	Laffayette gravel	51.3	68	Production flaking
2014-518	Laffayette gravel	8.1	17	Production flaking
2014-518	Laffayette gravel	40.8	113	Production flaking
2014-518	Laffayette gravel	3.1	1	Crude Nodena preform
2014-518	Laffayette gravel	4.2	1	Broken, Preform for long point?
2014-518	Laffayette gravel	0.1	5	HF sort for 10 min. Production flaking
2014-518	Laffayette gravel	2.6	7	Production flaking
2014-518	Laffayette gravel	0.5	8	HF sorted for 10 min. Production flaking
2014-518	Laffayette gravel	37.8	30	Production flaking

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2014-518	Laffayette gravel	5.9	3	Shatter
2014-518	Laffayette gravel	20.9	1	
2014-518	Laffayette gravel	62.3	1	Possible hammerstone
2014-518	Laffayette gravel	5.5	12	Production flaking
2014-518	Laffayette gravel	0.2	1	Production flaking
2014-518	Laffayette gravel	0.01	1	Production flaking
2014-518	Laffayette gravel	58.4	7	Shatter
2014-518	Laffayette gravel	0.2	1	Production flaking
2014-518	Laffayette gravel	13.1	9	Production flaking
2014-518	Laffayette gravel	13.8	29	Production flaking
2014-518	Laffayette gravel	10.7	26	Production flaking
2014-518	Laffayette gravel	50.8	1	Big flake with one edge with unifacial flaking for scraper? Another edge heat treated and may flaked twice
2014-518	Laffayette gravel	0.3	6	HF sorted for 15 min. Production flaking
2014-518	Laffayette gravel	0.4	3	HF sorted for 15 min. Production flaking
2014-518	Laffayette gravel	0.2	10	HF sort for 10 min. Production flaking
2014-518	Laffayette gravel	23	7	Shatter from heat
2014-518	Laffayette gravel	32.1	9	Unmodified pebbles
2014-518	Laffayette gravel	8.8	1	Production flaking
2014-518	Laffayette gravel	6.3	2	Production flaking
2014-518	Laffayette gravel	15.1	1	Shatter
2014-518	Laffayette gravel	2.1	1	Shatter
2014-518	Laffayette gravel	0.1	5	HF sorted for 15 min. Production flaking
2014-518	Laffayette gravel	23.6	63	Production flaking
2014-518	Laffayette gravel	0.1	4	HF sorted for 10 min. Production flaking
2014-518	Laffayette gravel	29.8	1	Broken, flaked a few times
2014-518	Laffayette gravel	0.4	1	
2014-518	Laffayette gravel	5.1	1	
2014-518	Laffayette gravel	29.1	1	

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2014-518	Laffayette gravel	3.9	5	Shatter
2014-518	Laffayette gravel	21.4	62	Production flaking
2014-518	Laffayette gravel	1	14	HF sorted for 10 min.Production flaking
2014-518	Laffayette gravel	2.1	18	HF sorted for 10 min.Production flaking
2014-518	Laffayette gravel	46.6	75	Production flaking
2014-518	Laffayette gravel	23.3	25	Production flaking
2014-518	Laffayette gravel	33.5	101	Production flaking
2014-518	Laffayette gravel	1	3	
2014-518	Laffayette gravel	3.5	3	
2014-518	Laffayette gravel	0.5	8	HF sorted for 10 min.Production flaking
2016-503	Laffayette gravel	0.2	1	Shatter
2016-503	Laffayette gravel	8.5	16	Production flaking
2016-503	Laffayette gravel	3	1	Test Cobble
2016-503	Laffayette gravel	1.4	2	Production flaking
2016-503	Laffayette gravel	9.9	2	Shatter
2016-503	Laffayette gravel	0.01	1	Pot lid
2016-503	Laffayette gravel	9.5	13	Production flaking
2016-503	Laffayette gravel	4.3	3	Shatter
2016-503	Laffayette gravel	4.6	21	Production flaking
2016-503	Laffayette gravel	0.2	1	Shatter
2016-503	Laffayette gravel	1.9	1	Both top and bottom broken. Nodena preform?
2016-503	Laffayette gravel	1.3	1	Madison with base missing. All is pink, but tip is red (heat treated)
2016-503	Laffayette gravel	1.2	1	Tip or base of Nodena point
2016-503	Laffayette gravel	2.2	1	Nodena-ish. Base is percussion node. Body is off center
2016-503	Laffayette gravel	2.4	1	Drill. Broken down shaft
2016-503	Laffayette gravel	68.8	124	Production flaking
2016-503	Laffayette gravel	90.6	110	Production flaking
2016-503	Laffayette gravel	39.7	39	Production flaking

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2016-503	Laffayette gravel	43.6	102	Production flaking
2016-503	Laffayette gravel	27.6	5	Shatter
2016-503	Laffayette gravel	0.9	1	Madison base
2016-503	Laffayette gravel	0.9	1	Drill, possibly broken while thinning as there is a large outcrop partway up the shaft
2016-503	Laffayette gravel	1.6	1	Nodena or Madison, most is broken
2016-503	Laffayette gravel	0.4	1	Very tip of point
2016-503	Laffayette gravel	1.4	1	Nodena. Very base slightly broken.
2016-503	Laffayette gravel	7.2	1	Test Cobble
2016-503	Laffayette gravel	1.4	1	Nodena base?
2016-503	Laffayette gravel	2.8	1	Likely broken before it could be thinned. Base is flat, but unworked.
2016-503	Laffayette gravel	3.2	1	Nodena preform? Long and thin
2016-503	Laffayette gravel	5	1	Drill, but looks like a bigger point preform that split down the middle and the edges were worked to form a drill
2016-503	Laffayette gravel	2.4	1	Base or tip of Nodena
2016-503	Laffayette gravel	34.4	4	Test cobbles
2016-503	Laffayette gravel	79.2	225	Production flaking
2016-503	Laffayette gravel	1.2	1	Nodena
2016-503	Laffayette gravel	13.5	1	Conglomerate
2016-503	Laffayette gravel	0.5	3	Production flaking
2016-503	Laffayette gravel	0.6	1	Production flaking
2016-503	Laffayette gravel	1.8	1	Crude Nodena
2016-503	Laffayette gravel	1	1	Production flaking
2016-503	Laffayette gravel	8.1	1	Rough preform
2016-503	Laffayette gravel	1.8	1	Rough Madison with tip broken
2016-503	Laffayette gravel	1.6	1	base or tip of Nodena preform? Or tip of Madison preform
2016-503	Laffayette gravel	1.5	1	Base? Of preform of Nodena? Or of large Woodland point
2016-503	Laffayette gravel	0.8	1	Shatter
2016-503	Laffayette gravel	12	2	Shatter
2016-503	Laffayette gravel	0.1	1	Very tip of point

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2016-503	Laffayette gravel	1.2	1	Tip of Nodena
2016-503	Laffayette gravel	1	1	Nodena-ish with rounded bottom. Broken on side
2016-503	Laffayette gravel	1.7	1	
2016-503	Laffayette gravel	4.2	1	Test cobble
2016-503	Laffayette gravel	150.6	153	Production flaking
2016-503	Laffayette gravel	3.4	2	Shatter
2016-503	Laffayette gravel	0.6	2	
2016-503	Laffayette gravel	3	2	Shatter
2016-503	Laffayette gravel	2.3	1	
2016-503	Laffayette gravel	0.2	3	Production flaking
2016-503	Laffayette gravel	21.1	11	Shatter
2016-503	Laffayette gravel	1.5	1	Flake retouched along one edge
2016-503	Laffayette gravel	1.7	1	Bifacial edge on concave side
2016-503	Laffayette gravel	11.5	1	unmodified stone
2016-503	Laffayette gravel	3.6	1	conglomerate
2016-503	Laffayette gravel	110.6	3	unmodified stones
2016-503	Laffayette gravel	105.3	186	Production flaking
2016-503	Laffayette gravel	3.2	1	One edge is retouched. Scraper?
2016-503	Laffayette gravel	107.7	50	Production flaking
2016-503	Laffayette gravel	10.6	5	Shatter
2016-503	Laffayette gravel	4.9	2	Production flaking
2016-503	Laffayette gravel	0.2	4	HF sorted ~5 min. Production flaking
2016-503	Laffayette gravel	1	1	Likely Nodena point
2016-503	Laffayette gravel	0.7	1	Small point, broken on both ends
2016-503	Laffayette gravel	1.4	1	Likely Madison point
2016-503	Laffayette gravel	1	1	Flake, possibly retouched on one edge
2016-503	Laffayette gravel	0.7	1	
2016-503	Laffayette gravel	1.5	1	Madison

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2016-503	Laffayette gravel	3.4	1	Thumbnail scraper
2016-503	Laffayette gravel	0.01	1	Production flaking
2016-503	Laffayette gravel	21.5	1	
2016-503	Laffayette gravel	0.01	1	Production flaking
2016-503	Laffayette gravel	0.8	1	Nodena
2016-503	Laffayette gravel	14.5	1	Scraper? Very thick, but thinned to sharp edge
2016-503	Laffayette gravel	3.9	1	Rough Madison preform
2016-503	Laffayette gravel	3.1	1	Thick Nodena point
2016-503	Laffayette gravel	0.9	2	Production flaking
2016-503	Laffayette gravel	0.6	2	Production flaking
2016-503	Laffayette gravel	8.9	32	Production flaking
2016-503	Laffayette gravel	0.2	2	Production flaking
2016-503	Laffayette gravel	3	2	Production flaking
2016-503	Laffayette gravel	0.2	1	Production flaking
2016-503	Laffayette gravel	0.1	1	Production flaking
2016-503	Laffayette gravel	80.2	81	Production flaking
2016-503	Laffayette gravel	2.2	1	Nodena?
2016-503	Laffayette gravel	17.8	1	Test cobble
2016-503	Laffayette gravel	54.3	1	Broken through
2016-503	Laffayette gravel	0.7	2	Shatter
2016-503	Laffayette gravel	1	2	Shatter
2016-503	Laffayette gravel	0.01	1	HF sorted ~5 min. Production flaking
2016-503	Laffayette gravel	9.2	21	Production flaking
2016-503	Laffayette gravel	0.01	2	HF sorted ~5 min. Production flaking
2016-503	Laffayette gravel	11.7	15	Production flaking
2016-503	Laffayette gravel	5.5	24	Production flaking
2016-503	Laffayette gravel	29.5	74	Production flaking
2016-503	Laffayette gravel	0.1	1	Production flaking

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2016-503	Laffayette gravel	0.8	2	Production flaking
2016-503	Laffayette gravel	0.7	6	Production flaking
2016-503	Laffayette gravel	4.6	1	shatter
2016-503	Laffayette gravel	11.9	1	Test cobble
2016-503	Laffayette gravel	31	61	Production flaking
2016-503	Laffayette gravel	0.6	1	production flaking
2016-503	Laffayette gravel	0.9	2	Shatter
2016-503	Laffayette gravel	0.6	2	Shatter
2016-503	Laffayette gravel	0.6	2	
2016-503	Laffayette gravel	1.5	2	Production flaking
2016-503	Laffayette gravel	3.9	5	Production flaking
2016-503	Laffayette gravel	5.6	8	Production flaking
2016-503	Laffayette gravel	3.6	20	Production flaking
2016-503	Laffayette gravel	1.3	2	Production flaking
2016-503	Laffayette gravel	13	11	Production flaking
2016-503	Laffayette gravel	1.7	1	Biface along one long edge of a flake
2016-503	Laffayette gravel	16.8	1	shatter
2016-503	Laffayette gravel	10.6	1	test cobble
2016-503	Laffayette gravel	0.01	1	Production flaking
2016-503	Laffayette gravel	0.5	1	Production flaking
2016-503	Laffayette gravel	1.4	5	Production flaking
2016-503	Laffayette gravel	18.7	1	Test cobble
2016-503	Laffayette gravel	0.9	2	Production flaking
2016-503	Laffayette gravel	0.2	1	Production flaking
2016-503	Laffayette gravel	49.5	55	Production flaking
2016-503	Laffayette gravel	77.6	219	Production flaking
2016-503	Laffayette gravel	84.7	6	Test cobble
2016-503	Laffayette gravel	8.7	8	Shatter

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2016-503	Laffayette gravel	1.7	2	HF sorted for ~10 min. Shatter
2016-503	Laffayette gravel	0.3	5	HF sorted for ~10 min. Production flaking
2016-503	Laffayette gravel	0.9	4	HF sorted for ~10 min. Production flaking
2016-503	Laffayette gravel	1.2	3	HF sorted for ~10 min. Production flaking
2016-503	Laffayette gravel	0.4	7	HF sorted for ~10 min. Production flaking
2016-503	Laffayette gravel	61.5	18	Shatter
2016-503	Laffayette gravel	5.6	13	Production flaking
2016-503	Laffayette gravel	26.4	10	
2016-503	Laffayette gravel	42.3	2	Shatter
2016-503	Laffayette gravel	0.3	1	Production flaking
2016-503	Laffayette gravel	0.8	2	Production flaking
2016-503	Laffayette gravel	0.2	2	Production flaking
2016-503	Laffayette gravel	46.2	40	Production flaking
2016-503	Laffayette gravel	81.8	118	Production flaking
2016-503	Laffayette gravel	15.5	1	Rock with one edge crudely sharpened bifacially
2016-503	Laffayette gravel	61.6	170	Production flaking
2016-503	Laffayette gravel	0.2	1	Production flaking
2016-503	Laffayette gravel	1.4	6	Production flaking
2016-503	Laffayette gravel	16.8	3	Shatter
2016-503	Laffayette gravel	1.3	1	Madison. Heat treated at base, very tip broken
2016-503	Laffayette gravel	4.4	1	Possibly preform of Nodena, possibly flake with just one resharpened edge
2016-503	Laffayette gravel	86.8	1	Flakes from multiple sides
2016-503	Laffayette gravel	12.1	1	
2016-503	Laffayette gravel	0.9	1	
2016-503	Laffayette gravel	3.3	1	Base of large point?
2016-503	Laffayette gravel	1.7	1	Preform for small point
2016-503	Laffayette gravel	2.8	1	Drill or preform for drill? Broken, but long and skinny
2016-503	Laffayette gravel	124	116	Production flaking

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2016-503	Laffayette gravel	4.9	1	Test cobble
2016-503	Laffayette gravel	5.7	2	Production flaking
2016-503	Laffayette gravel	0.6	1	Tip of Nodena
2016-503	Laffayette gravel	75.9	10	Shatter
2016-503	Laffayette gravel	2.9	2	Shatter
2016-503	Laffayette gravel	0.9	1	Tip of Madison or Nodena
2016-503	Laffayette gravel	11.6	15	Production flaking
2016-503	Laffayette gravel	0.01	3	HF sorted for ~5 min. Production flaking
2016-503	Laffayette gravel	56.6	137	Production flaking
2016-503	Laffayette gravel	4	1	Shatter. Heavy fraction sorted for 10 min
2016-503	Laffayette gravel	32.7	70	Production flaking
2016-503	Laffayette gravel	0.7	2	
2016-503	Laffayette gravel	0.2	1	Production flaking
2016-503	Laffayette gravel	16.1	1	Shatter
2016-503	Laffayette gravel	56.8	185	Production flaking
2016-503	Laffayette gravel	3.6	1	Conglomerate
2016-503	Laffayette gravel	68	175	Production flaking
2016-503	Laffayette gravel	9.8	2	Production flaking
2016-503	Laffayette gravel	33.8	35	Production flaking
2016-503	Laffayette gravel	0.8	3	
2016-503	Laffayette gravel	33.8	9	Shatter
2016-503	Laffayette gravel	95.6	3	Shatter
2016-503	Laffayette gravel	15.9	1	Flakes taken from around one side
2016-503	Laffayette gravel	197.4	1	
2016-503	Laffayette gravel	136.4	1	
2016-503	Laffayette gravel	26.8	28	Production flaking
2016-503	Laffayette gravel	0.4	1	Production flaking
2016-503	Laffayette gravel	0.01	1	Production flaking

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2016-503	Laffayette gravel	0.1	1	Production flaking
2016-503	Laffayette gravel	3.4	1	Two edges bifacial. Maybe a scraper, maybe a preform for a smaller point
2016-503	Laffayette gravel	8.5	4	
2016-503	Laffayette gravel	1.2	4	Production flaking
2016-503	Laffayette gravel	68.6	14	Shatter
2016-503	Laffayette gravel	12.8	15	Production flaking
2016-503	Laffayette gravel	1.2	1	Nodena
2016-503	Laffayette gravel	0.6	1	Production flaking
2016-503	Laffayette gravel	8.2	16	Production flaking
2016-503	Laffayette gravel	6.7	25	Production flaking
2016-503	Laffayette gravel	0.1	1	Production flaking
2016-503	Laffayette gravel	82	1	Test cobble
2016-503	Laffayette gravel	5.7	1	Core
2016-503	Laffayette gravel	0.1	1	Production flaking
2016-503	Laffayette gravel	173.3	6	Shatter
2016-503	Laffayette gravel	0.3	1	Production flaking
2016-503	Laffayette gravel	0.6	1	Small point
2016-503	Laffayette gravel	0.6	2	Production flaking
2016-503	Laffayette gravel	23.8	53	Production flaking
2016-503	Laffayette gravel	57.6	65	Production flaking
2016-503	Laffayette gravel	27	23	Production flaking
2016-503	Laffayette gravel	41.3	34	Production flaking
2016-503	Laffayette gravel	28	71	Production flaking
2016-503	Laffayette gravel	1.2	2	Production flaking
2016-503	Laffayette gravel	21.5	45	Production flaking
2016-503	Laffayette gravel	1	3	Production flaking
2016-503	Laffayette gravel	1.2	1	Shatter
2016-503	Laffayette gravel	4.4	5	Production flaking

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2016-503	Laffayette gravel	4.9	5	Production flaking
2016-503	Laffayette gravel	2.9	1	Preform for Nodena or Madison?
2016-503	Laffayette gravel	35.1	1	
2016-503	Laffayette gravel	0.6	1	Small section of Nodena or Madison
2016-503	Laffayette gravel	1.9	1	Rough Madison or possibly broken at base
2016-503	Laffayette gravel	1.4	1	Base of Madison
2016-503	Laffayette gravel	2.4	3	Production flaking
2016-503	Laffayette gravel	2.1	1	Madison with rounded bottom
2016-503	Laffayette gravel	1.4	4	Production flaking
2016-503	Laffayette gravel	34.9	29	Production flaking
2016-503	Laffayette gravel	0.4	3	Hf sorted for ~5 min. Production flaking
2016-503	Laffayette gravel	0.7	2	Shatter
2016-503	Laffayette gravel	20.3	7	Fire cracked shatter
2016-503	Laffayette gravel	3.1	37	Hf sorted for ~5 min. Shatter from one rock
2016-503	Laffayette gravel	16.6	58	Production flaking
2016-503	Laffayette gravel	46.1	53	Production flaking
2016-503	Laffayette gravel	2.1	1	Possibly retouched along one edge
2016-503	Laffayette gravel	2.7	1	Base of large Woodland point or preform of smaller point. Mostly broken
2016-503	Laffayette gravel	5.2	1	Large woodland point or preform
2016-503	Laffayette gravel	8.7	3	Shatter
2016-503	Laffayette gravel	3.6	1	Shatter
2016-503	Laffayette gravel	39.5	60	Production flaking
2016-503	Laffayette gravel	2.8	1	Crude point or preform for smaller point
2016-503	Laffayette gravel	1.6	1	Production flaking
2016-503	Laffayette gravel	2.4	1	Madison, fairly thick. Maybe not finished?
2016-503	Laffayette gravel	77.9	6	Shatter
2016-503	Laffayette gravel	5.8	17	Production flaking
2016-503	Laffayette gravel	2.8	10	Production flaking

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2016-503	Laffayette gravel	1.1	1	Tip of Nodena? Thinned/broken just above break
2016-503	Laffayette gravel	4.8	12	Production flaking
2016-503	Laffayette gravel	2.1	4	Production flaking
2016-503	Laffayette gravel	10.3	3	Production flaking
2016-503	Laffayette gravel	0.8	1	Broken base or tip of point (if tip is it preform)
2016-503	Laffayette gravel	1.7	1	Nodena point
2016-503	Laffayette gravel	26.4	11	
2016-503	Laffayette gravel	1	1	Shatter
2016-503	Laffayette gravel	3.4	1	Long Nodena. Heated on one end, some cortex present on other end
2016-503	Laffayette gravel	4.8	6	Production flaking
2016-503	Laffayette gravel	118	155	Production flaking
2016-503	Laffayette gravel	52.4	148	Production flaking
2016-503	Laffayette gravel	0.8	1	Base of Nodena
2016-503	Laffayette gravel	0.01	1	Hf sorted for ~5 min. Shatter
2016-503	Laffayette gravel	0.4	1	Base or tip of point
2016-503	Laffayette gravel	0.2	2	Hf sorted for ~5 min, Production flaking
2016-503	Laffayette gravel	0.7	1	Base or tip of point
2016-503	Laffayette gravel	13.7	8	Shatter
2016-503	Laffayette gravel	0.6	1	
2016-503	Laffayette gravel	2.3	1	Shatter (not necessarily from heat)
2016-503	Laffayette gravel	3.3	1	Production flaking
2016-503	Laffayette gravel	2.2	1	Whole drill
2016-503	Laffayette gravel	1.1	1	Very tip broken of Madison point
2016-503	Laffayette gravel	11.2	1	Shatter
2016-503	Laffayette gravel	1.9	1	Rough Nodena, broken
2016-503	Laffayette gravel	2.4	1	Shatter
2016-503	Laffayette gravel	2.8	1	Nodena. Very tip broken
2016-503	Laffayette gravel	6.2	1	Production flaking

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2016-503	Laffayette gravel	1.6	6	Production flaking. Heavy fraction sorted for 10 min
2016-503	Laffayette gravel	0.5	10	Production flaking. Heavy fraction sorted for 10 min
2016-503	Laffayette gravel	46.1	3	Test cobble?
2016-503	Laffayette gravel	60.5	4	Test cobble?
2016-503	Laffayette gravel	14.7	8	Shatter
2016-503	Laffayette gravel	19.2	2	Shatter
2016-503	Laffayette gravel	20.3	78	Production flaking
2016-503	Laffayette gravel	0.7	3	Production flaking. Heavy fraction sorted for 10 min
2016-503	Laffayette gravel	0.01	1	HF sorted for ~10 min
2016-503	Laffayette gravel	4.2	5	Production flaking
2016-503	Laffayette gravel	0.3	2	Production flaking
2016-503	Laffayette gravel	0.5	1	
2016-503	Laffayette gravel	0.9	4	Production flaking
2016-503	Laffayette gravel	5.1	3	Shatter
2016-503	Laffayette gravel	18.1	1	
2016-503	Laffayette gravel	0.2	1	Heavy fraction sorted for 10 min
2016-503	Laffayette gravel	0.2	3	HF sorted for ~10 min. Production flaking
2016-503	Laffayette gravel	0.01	1	HF sorted for ~10 min. Production flaking
2016-503	Laffayette gravel	1.4	20	Production flaking. Heavy fraction sorted for 10 min
2016-503	Laffayette gravel	1.2	1	Preform for arrow point. Bulb of percussion still present
2016-503	Laffayette gravel	0.7	7	HF sorted for ~10 min. Shatte
2016-503	Laffayette gravel	1.3	1	Flake possibly retouched along one edge
2016-503	Laffayette gravel	26	68	Production flaking
2012-310	Laffayette Gravels	2.6	3	
2012-310	Laffayette Gravels	2.3	5	Production flaking
2012-310	Quartzite	0.6	2	
2013-475	Quartzite	12.1	1	Possibly sharpened along edge
2016-503	Reeds Spring	17.8	1	Ground smooth at tip, flak marks at base from hammering. Heat treatment and spalling on side from fire (probably house burning down.

Table V-1 (cont.)

Accession Number	material	weight	count	General comment
2012-310	Sandstone	91.3	1	Unutilized
2014-518	Sandstone	4.5	1	
2016-503	Sandstone	22.9	1	
2016-503	Sandstone	59.8	1	Possibly broken discoidal, possibly just broken natural rock
2016-503	Sandstone	82.1	1	Possibly shaped, but likely natural
2012-310	Unid lithic material	0.1	1	production flaking
2012-310	Unid lithic material	0.4	1	
2012-310	Unid lithic material	5.1	5	river gravels
2012-310	Unid lithic material	3.5	1	Quartzite
2012-310	Unid lithic material	0.8	1	Penter's Brecciated (?)
2012-310	Unid lithic material	4	1	Broken and abandoned (rough break)
2012-310	Unid lithic material	13.5	1	Penter's Brecciated (?), cracked and unused

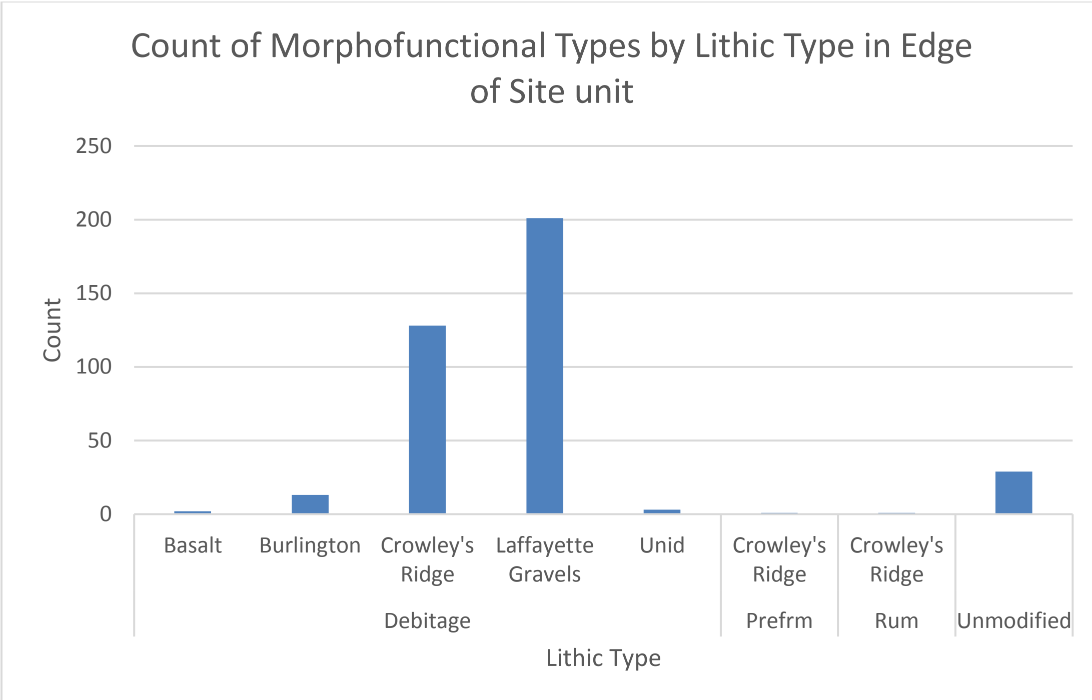

Figure V-2: Count of morphofunctional type by type of lithic excavated from Test Unit 1 in 2014. Prefrm = Preform, Rum = Retouched, utilized, modified

Table V-2: Lithic artifacts excavated from Edge of Site Unit in 2012 as summarized in Figure V-2.

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	General comment	Length	Width	Thickness	Fire cracked	Heat treated	cortex
2012-310	1	Level 1	DEB	Basalt	1.9	1	DEBITAGE							
2012-310	1	Level 1	DEB	Burlington	2.8	1	DEBITAGE	Possibly broken Nodena preform						
2012-310	1	Level 1	DEB	Crowley's Ridge	0.95	1	DEBITAGE							
2012-310	2	Level 2	DEB	Burlington	0.2	1	DEBITAGE							
2012-310	2	Level 2	DEB	Crowley's Ridge	0.5	1	DEBITAGE							TRUE
2012-310	2	Level 2	DEB	Crowley's Ridge	1.9	3	DEBITAGE	production flaking					TRUE	TRUE
2012-310	2	Level 2	FLA	Basalt	1.1	1	DEBITAGE	production flaking						
2012-310	2	Level 2	FLA	Burlington	0.3	2	DEBITAGE	production flaking						TRUE
2012-310	2	Level 2	FLA	Burlington	0.7	4	DEBITAGE	production flaking						
2012-310	2	Level 2	FLA	Burlington	1	2	DEBITAGE	production flaking						TRUE
2012-310	2	Level 2	FLA	Crowley's Ridge	0.5	3	DEBITAGE	production flaking						
2012-310	2	Level 2	FLA	Crowley's Ridge	2.9	10	DEBITAGE	production flaking					TRUE	
2012-310	2	Level 2	FLA	Crowley's Ridge	6.9	13	DEBITAGE	production flaking					TRUE	TRUE
2012-310	2	Level 2	FLA	Crowley's Ridge	3.2	8	DEBITAGE	produciton flaking						TRUE
2012-310	2	Level 2	FLA	Laffayette gravel	5	14	DEBITAGE	Production flaking						
2012-310	2	Level 2	FLA	Laffayette gravel	8.8	4	DEBITAGE	Production flaking						TRUE
2012-310	2	Level 2	FLA	Laffayette gravel	0.3	2	DEBITAGE	Production flaking					TRUE	TRUE
2012-310	2	Level 2	FLA	Unid lithic material	0.1	1	DEBITAGE	production flaking					TRUE	TRUE

Table V-2 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	General comment	Length	Width	Thickness	Fire cracked	Heat treated	cortex
2012-310	2	Level 2	PEBL	Channel coal	0.01	2								TRUE
2012-310	2	Level 2	PEBL	Crowley's Ridge	1.5	2		river gravels						TRUE
2012-310	2	Level 2	PEBL	Quartzite	0.6	2								TRUE
2012-310	2	Level 2	PEBL	Unid lithic material	0.4	1								TRUE
2012-310	2	Level 2	PEBL	Unid lithic material	5.1	5		river gravels						TRUE
2012-310	3	Level 3	DEB	Crowley's Ridge	0.1	1	DEBITAGE	production flaking					TRUE	
2012-310	3	Level 3	DEB	Crowley's Ridge	0.3	2	DEBITAGE	production flaking						TRUE
2012-310	3	Level 3	FLA	Crowley's Ridge	0.6	3	DEBITAGE	production flaking					TRUE	
2012-310	3	Level 3	FLA	Crowley's Ridge	7.7	8	DEBITAGE	production flaking					TRUE	TRUE
2012-310	3	Level 3	FLA	Crowley's Ridge	4.2	5	DEBITAGE	production flaking						TRUE
2012-310	3	Level 3	FLA	Crowley's Ridge	0.7	4	DEBITAGE	production flaking						
2012-310	3	Level 3	FLA	Laffayette gravel	4.9	14	DEBITAGE	Production flaking						
2012-310	3	Level 3	FLA	Laffayette gravel	1.6	9	DEBITAGE	Production flaking					TRUE	
2012-310	3	Level 3	FLA	Laffayette gravel	13.4	12	DEBITAGE	Production flaking					TRUE	TRUE
2012-310	3	Level 3	FLA	Laffayette gravel	7	11	DEBITAGE	Production flaking						TRUE
2012-310	3	Level 3	PEBL	Channel coal	0.1	2								
2012-310	3	Level 3	PEBL	Laffayette gravel	3	6	DEBITAGE							TRUE
2012-310	3	Level 3	UNIF	Crowley's Ridge	0.6	1	RUM						TRUE	

Table V-2 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	General comment	Length	Width	Thickness	Fire cracked	Heat treated	cortex
2012-310	4	Level 4	BIF	Crowley's Ridge	2.7	1	PREFRM	broken						
2012-310	4	Level 4	COBL	Laffayette gravel	155.3	3	DEBITAGE							TRUE
2012-310	4	Level 4	DEB	Crowley's Ridge	19.7	2	DEBITAGE	production flaking						TRUE
2012-310	4	Level 4	DEB	Crowley's Ridge	8.6	1	DEBITAGE						TRUE	TRUE
2012-310	4	Level 4	FLA	Crowley's Ridge	0.9	5	DEBITAGE	production flaking					TRUE	
2012-310	4	Level 4	FLA	Crowley's Ridge	6.5	20	DEBITAGE	production flaking						
2012-310	4	Level 4	FLA	Crowley's Ridge	3.3	7	DEBITAGE	production flaking						TRUE
2012-310	4	Level 4	FLA	Crowley's Ridge	18.6	20	DEBITAGE	production flaking					TRUE	TRUE
2012-310	4	Level 4	FLA	Laffayette gravel	23	36	DEBITAGE	Production flaking					TRUE	TRUE
2012-310	4	Level 4	FLA	Laffayette gravel	8.8	15	DEBITAGE	Production flaking						TRUE
2012-310	4	Level 4	FLA	Laffayette gravel	6.2	33	DEBITAGE	Production flaking					TRUE	
2012-310	4	Level 4	FLA	Laffayette gravel	9.2	41	DEBITAGE	Production flaking						
2012-310	4	Level 4	PEBL	Channel coal	0.2	1								
2012-310	4	Level 4	PEBL	Laffayette gravel	3.1	8	DEBITAGE							
2012-310	7	Feature 1	FLA	Crowley's Ridge	0.4	1	DEBITAGE	Production flaking						
2012-310	8	Feature 2	FLA	Crowley's Ridge	0.2	1	DEBITAGE						TRUE	
2012-310	9	Feature 3	COBL	Unid lithic material	13.5	1	DEBITAGE	Penter's Brecciated (?), cracked and unused						TRUE
2012-310	9	Feature 3	FLA	Burlington	0.8	1	DEBITAGE	Production flaking						

Table V-2 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	Count	Morphofunctional type	General comment	Length	Width	Thickness	Fire cracked	Heat treated	cortex
2012-310	9	Feature 3	FLA	Burlington	0.3	1	DEBITAGE	Production flaking						TRUE
2012-310	9	Feature 3	FLA	Crowley's Ridge	0.01	1	DEBITAGE	Production flaking						
2012-310	9	Feature 3	FLA	Crowley's Ridge	0.1	1	DEBITAGE	Production flaking						TRUE
2012-310	9	Feature 3	FLA	Crowley's Ridge	0.4	2	DEBITAGE	Production flaking					TRUE	TRUE
2012-310	9	Feature 3	FLA	Crowley's Ridge	0.2	1	DEBITAGE	Production flaking					TRUE	
2012-310	9	Feature 3	PEBL	Burlington	1.1	1								
2012-310	9	Feature 3	PEBL	Crowley's Ridge	0.4	1								TRUE
2012-310	11	Feature 3 N 1/2	DEB	Crowley's Ridge	4.5	1	DEBITAGE						TRUE	
2012-310	11	Feature 3 N 1/2	FLA	Crowley's Ridge	0.6	1	DEBITAGE	Production flaking					TRUE	TRUE
2012-310	12	Feature 3 S 1/2	DEB	Sandstone	91.3	1	DEBITAGE	Unutilized						TRUE
2012-310	12	Feature 3 S 1/2	DEB	Unid lithic material	0.8	1	DEBITAGE	Penter's Brecciated (?)						
2012-310	12	Feature 3 S 1/2	FLA	Burlington	0.01	1	DEBITAGE	Production flaking						
2012-310	12	Feature 3 S 1/2	FLA	Crowley's Ridge	4	1	DEBITAGE	Production flaking					TRUE	TRUE
2012-310	12	Feature 3 S 1/2	FLA	Crowley's Ridge	0.01	1	DEBITAGE	Production flaking						
2012-310	12	Feature 3 S 1/2	PEBL	Crowley's Ridge	0.2	1								TRUE

Figure V-3: Crowley's Ridge Retouched, Utilized, Modified flake. Excavated from Level 1 of Edge of Site unit.

Figure V-4: Crowley's Ridge preform. Excavated from Level 4 of Edge of Site unit.

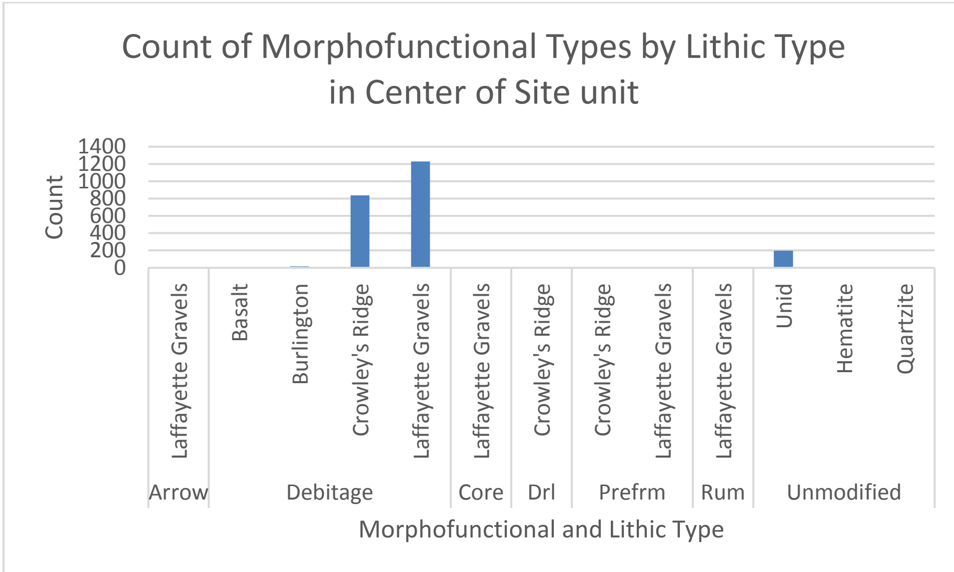

Figure V-5: Count of morphofunctional type by type of lithic excavated from Test Unit 1 in 2014. Drl = Drill, Prefrm = Preform, Rum = Retouched, utilized, modified

Table V-3: Lithic artifacts excavated from Center of Site unit in 2012 as summarized in Figure V-5.

Accession Number	FSN	Provenience	Specific	Material	Weight	Count	Morphofunctional Type	General Comment	Length	Width	Thickness	Fire Cracked	Heat Treated	Cortex
2012-310	13	Plow zone	FLA	Basalt	0.8	1	DEBITAGE	Production flaking						
2012-310	13	Plow zone	FLA	Burlington	2	2	DEBITAGE	Production flaking						
2012-310	13	Plow zone	FLA	Crowley's Ridge	0.01	2	DEBITAGE	Production flaking						
2012-310	13	Plow zone	FLA	Crowley's Ridge	0.5	2	DEBITAGE	Production flaking					TRUE	
2012-310	13	Plow zone	FLA	Crowley's Ridge	0.01	1	DEBITAGE	Production flaking					TRUE	TRUE
2012-310	13	Plow zone	FLA	Crowley's Ridge	5.7	2	DEBITAGE	Production flaking					TRUE	TRUE
2012-310	13	Plow zone	FLA	Unid lithic material	4	1	DEBITAGE	Broken and abandoned (rough break)						TRUE
2012-310	14	Level 1	COBL	Crowley's Ridge	26.4	1	DEBITAGE	Tested for flakes						
2012-310	14	Level 1	DEB	Crowley's Ridge	0.7	1	DEBITAGE						TRUE	
2012-310	14	Level 1	FLA	Burlington	1.7	6	DEBITAGE	Production flaking						
2012-310	14	Level 1	FLA	Burlington	7.5	3	DEBITAGE	Production flaking					TRUE	TRUE
2012-310	14	Level 1	FLA	Burlington	1.6	4	DEBITAGE	Production flaking					TRUE	
2012-310	14	Level 1	FLA	Crowley's Ridge	1.7	4	DEBITAGE	Produciton flaking						
2012-310	14	Level 1	FLA	Crowley's Ridge	3.7	10	DEBITAGE	Production flaking						
2012-310	14	Level 1	FLA	Crowley's Ridge	1.6	5	DEBITAGE	Production flaking					TRUE	
2012-310	14	Level 1	FLA	Crowley's Ridge	18.1	20	DEBITAGE	Production flaking					TRUE	TRUE
2012-310	14	Level 1	FLA	Laffayette Chert	0.7	1	DEBITAGE	Production flaking						
2012-310	14	Level 1	FLA	Laffayette Gravels	2.3	5	DEBITAGE	Production flaking						

Table V-3 (cont.)

Accession Number	FSN	Provenience	Specific	Material	Weight	Count	Morphofunctional Type	General Comment	Length	Width	Thickness	Fire Cracked	Heat Treated	Cortex
2012-310	14	Level 1	PEBL	Burlington	5.1	2	DEBITAGE							
2012-310	14	Level 1	PEBL	Channel coal	15	100								
2012-310	14	Level 1	PEBL	Laffayette Gravels	2.6	3								
2012-310	15	Level 2	FLA	Crowley's Ridge	0.01	1	DEBITAGE	Production flaking						
2012-310	15	Level 2	FLA	Crowley's Ridge	0.01	1	DEBITAGE	Production flaking					TRUE	
2012-310	15	Level 2	PEBL	Channel coal	2	50								
2012-310	16	Level 3	FLA	Burlington	0.3	1	DEBITAGE	Production flaking						
2012-310	16	Level 3	FLA	Crowley's Ridge	0.7	1	DEBITAGE	Production flaking					TRUE	
2012-310	16	Level 3	FLA	Crowley's Ridge	0.2	1	DEBITAGE	Production flaking					TRUE	TRUE
2012-310	16	Level 3	PEBL	Channel coal	0.5	2								
2012-310	17	Level 4	BIF	Crowley's Ridge	2.9	1	PREFRM	Nodena general shape, but unfinished, light brown	3.39	1.77	0.66			TRUE
2012-310	17	Level 4	BIF	Crowley's Ridge	0.3	1	DRAWL	Drill point		0.69	0.4			
2012-310	17	Level 4	BIF	Laffayette gravel	1.7	1	ARROW	Nodena, gray/brown	2.61	1.61	0.52			
2012-310	17	Level 4	BIF	Laffayette gravel	1.4	1	ARROW	Nodena, white and light brown		1.47	0.53			
2012-310	17	Level 4	BIF	Laffayette gravel	0.3	1	ARROW	Nodena tip, dark gray			0.27			

Table V-3 (cont.)

Accession Number	FSN	Provenience	Specific	Material	Weight	Count	Morphofunctional Type	General Comment	Length	Width	Thickness	Fire Cracked	Heat Treated	Cortex
2012-310	17	Level 4	BIF	Laffayette gravel	2	1	PREFRM	Nodena preform (?), red and white		1.95	0.64			
2012-310	17	Level 4	BIF	Laffayette gravel	3.7	1	PREFRM	Nodena preform (?), red and black		2.64	0.77			
2012-310	17	Level 4	BIF	Laffayette gravel	1.4	1	ARROW	Middle of point body, red		1.67	0.48			
2012-310	17	Level 4	BIF	Laffayette gravel	1.9	1	ARROW	Madison base, white, pink and black		2.01	0.61			
2012-310	17	Level 4	CORE	Crowley's Ridge	14.7	2	DEBITAGE	Brown crowleys ridge						TRUE
2012-310	17	Level 4	CORE	Laffayette gravel	44.8	3	DEBITAGE	White to gray						
2012-310	17	Level 4	DEB	Crowley's Ridge	4.4	7	DEBITAGE	Heat treated brown crowleys ridge					TRUE	
2012-310	17	Level 4	DEB	Crowley's Ridge	1.8	3	DEBITAGE	Brown crowleys ridge						TRUE
2012-310	17	Level 4	DEB	Crowley's Ridge	28.9	10	DEBITAGE	Heat treated brown crowleys ridge					TRUE	TRUE
2012-310	17	Level 4	DEB	Crowley's Ridge	1.7	2	DEBITAGE	Brown crowleys ridge						
2012-310	17	Level 4	DEB	Crowley's Ridge	4	2	DEBITAGE	Brown with red cortex					TRUE	TRUE

Table V-3 (cont.)

Accession Number	FSN	Provenience	Specific	Material	Weight	Count	Morphofunctional Type	General Comment	Length	Width	Thickness	Fire Cracked	Heat Treated	Cortex
2012-310	17	Level 4	DEB	Laffayette gravel	0.1	1	DEBITAGE	Red.						
2012-310	17	Level 4	DEB	Laffayette gravel	11.5	6	DEBITAGE	Red with dark cortex						TRUE
2012-310	17	Level 4	DEB	Laffayette gravel	0.9	2	DEBITAGE	Light						
2012-310	17	Level 4	DEB	Laffayette gravel	1.6	1	DEBITAGE	Light with red cortex						TRUE
2012-310	17	Level 4	DEB	Laffayette gravel	4.8	9	DEBITAGE	Dark to dark red						
2012-310	17	Level 4	DEB	Laffayette gravel	9.4	1	DEBITAGE	Orange and Red with light cortex						TRUE
2012-310	17	Level 4	DEB	Laffayette gravel	2.4	4	DEBITAGE	Light to white with light cortex						TRUE
2012-310	17	Level 4	DEB	Laffayette gravel	1.5	7	DEBITAGE	Light gray to white						
2012-310	17	Level 4	DEB	Laffayette gravel	3.5	2	DEBITAGE	Red, White, and Black						TRUE
2012-310	17	Level 4	DEB	Laffayette gravel	0.4	2	DEBITAGE	Dark to dark red with dark cortex						TRUE
2012-310	17	Level 4	DEB	Laffayette gravel	1.7	2	DEBITAGE	Pink with light cortex						TRUE
2012-310	17	Level 4	DEB	Laffayette gravel	2.9	1	DEBITAGE	Brown with light cortex						
2012-310	17	Level 4	DEB	Laffayette gravel	0.3	2	DEBITAGE	Pink						
2012-310	17	Level 4	DEB	Laffayette gravel	9.4	3	DEBITAGE	Dark gray						
2012-310	17	Level 4	DEB	Laffayette gravel	0.5	2	DEBITAGE	Gray						

Table V-3 (cont.)

Accession Number	FSN	Provenience	Specific	Material	Weight	Count	Morphofunctional Type	General Comment	Length	Width	Thickness	Fire Cracked	Heat Treated	Cortex
2012-310	17	Level 4	DEB	Laffayette gravel	1.6	3	DEBITAGE	Gray with light cortex						TRUE
2012-310	17	Level 4	FLA	Crowley's Ridge	51.8	67	DEBITAGE	Production flaking. Brown crowleys ridge						TRUE
2012-310	17	Level 4	FLA	Crowley's Ridge	100.3	167	DEBITAGE	Production flaking. Heat treated brown crowleys ridge					TRUE	TRUE
2012-310	17	Level 4	FLA	Crowley's Ridge	34.1	159	DEBITAGE	Production flaking. Brown crowleys ridge						
2012-310	17	Level 4	FLA	Crowley's Ridge	26.7	148	DEBITAGE	Production flaking. Heat treated brown crowleys ridge					TRUE	
2012-310	17	Level 4	FLA	Crowley's Ridge	18.4	14	DEBITAGE	Production flaking. Brown with red cortex					TRUE	TRUE
2012-310	17	Level 4	FLA	Crowley's Ridge	0.6	1	DEBITAGE	Brown with red					TRUE	
2012-310	17	Level 4	FLA	Crowley's Ridge	2.5	4	DEBITAGE	Brown						
2012-310	17	Level 4	FLA	Laffayette gravel	10.6	33	DEBITAGE	Production flaking. Red						

Table V-3 (cont.)

Accession Number	FSN	Provenience	Specific	Material	Weight	Count	Morphofunctional Type	General Comment	Length	Width	Thickness	Fire Cracked	Heat Treated	Cortex
2012-310	17	Level 4	FLA	Laffayette gravel	0.5	1	DEBITAGE	Production flaking. Light with quartz crystals on edge						
2012-310	17	Level 4	FLA	Laffayette gravel	20.3	18	DEBITAGE	Production flaking. Red with dark cortex						TRUE
2012-310	17	Level 4	FLA	Laffayette gravel	3	6	DEBITAGE	Production flaking. Light with light cortex						TRUE
2012-310	17	Level 4	FLA	Laffayette gravel	10	5	DEBITAGE	Production flaking. Gray.						TRUE
2012-310	17	Level 4	FLA	Laffayette gravel	17.2	30	DEBITAGE	Production flaking. Brown with light cortex						TRUE
2012-310	17	Level 4	FLA	Laffayette gravel	9.1	10	DEBITAGE	Production flaking. Pink with light cortex						TRUE
2012-310	17	Level 4	FLA	Laffayette gravel	20.8	68	DEBITAGE	Production flaking. Gray.						
2012-310	17	Level 4	FLA	Laffayette gravel	16.6	10	DEBITAGE	Production flaking. White, pink, gray						TRUE
2012-310	17	Level 4	FLA	Laffayette gravel	0.01	1	DEBITAGE	Production flaking						

Table V-3 (cont.)

Accession Number	FSN	Provenience	Specific	Material	Weight	Count	Morphofunctional Type	General Comment	Length	Width	Thickness	Fire Cracked	Heat Treated	Cortex
2012-310	17	Level 4	FLA	Laffayette gravel	12.2	34	DEBITAGE	Production flaking. Pink.						
2012-310	17	Level 4	FLA	Laffayette gravel	6.5	20	DEBITAGE	Production flaking. Gray, white, pink						
2012-310	17	Level 4	FLA	Laffayette gravel	46.1	154	DEBITAGE	Production flaking. Light gray to white						
2012-310	17	Level 4	FLA	Laffayette gravel	4	9	DEBITAGE	Production flaking. Dark to dark red with dark cortex						TRUE
2012-310	17	Level 4	FLA	Laffayette gravel	11.7	42	DEBITAGE	Production flaking. Dark						
2012-310	17	Level 4	FLA	Laffayette gravel	25.4	26	DEBITAGE	Production flaking. Light brown to pink with red cortex						TRUE
2012-310	17	Level 4	FLA	Laffayette gravel	2.3	16	DEBITAGE	Production flaking. Light brown to pink						
2012-310	17	Level 4	PEBL	Hematite	18.7	43								TRUE
2012-310	17	Level 4	PEBL	Laffayette gravel	9.5	16	DEBITAGE							TRUE
2012-310	17	Level 4	PEBL	Unid lithic material	3.5	1	DEBITAGE	Quartzite						TRUE

Tab;e V-3 (cont.)

Accession Number	FSN	Provenience	Specific	Material	Weight	Count	Morphofunctional Type	General Comment	Length	Width	Thickness	Fire Cracked	Heat Treated	Cortex
2012-310	17	Level 4	UNIF	Laffayette gravel	1	1	FLAKE	retouched flake, white and light brown		1.57	0.38			
2012-310	18	Level 4 flotation sample		Laffayette gravel	19.5	108	DEBITAGE	Sorted from HF for ~60 min						
2012-310	20	Level 4 flotaiton sample		Laffayette gravel	2	32	DEBITAGE	Sorted from HF for ~15 min						
2012-310	21	Level 5	BIF	Laffayette gravel	3	1	PREFRM	Broken top and bottom, sharpened on both sides. Preform or broken knife					TRUE	
2012-310	21	Level 5	BIF	Laffayette gravel	1.2	1	ARROW	Madison						
2012-310	21	Level 5	DEB	Laffayette gravel	0.9	2	DEBITAGE							
2012-310	21	Level 5	FLA	Crowley's Ridge	25.2	106	DEBITAGE	Production flaking						
2012-310	21	Level 5	FLA	Crowley's Ridge	2.7	10	DEBITAGE	Production flaking					TRUE	
2012-310	21	Level 5	FLA	Crowley's Ridge	54.6	45	DEBITAGE	Production flaking						TRUE
2012-310	21	Level 5	FLA	Crowley's Ridge	13.9	20	DEBITAGE	Production flaking					TRUE	TRUE
2012-310	21	Level 5	FLA	Laffayette gravel	81	89	DEBITAGE	Production flaking					TRUE	TRUE
2012-310	21	Level 5	FLA	Laffayette gravel	43.5	145	DEBITAGE	Production flaking					TRUE	
2012-310	21	Level 5	FLA	Laffayette gravel	26.5	31	DEBITAGE	Production flaking						TRUE

Table V-3 (cont.)

Accession Number	FSN	Provenience	Specific	Material	Weight	Count	Morphofunctional Type	General Comment	Length	Width	Thickness	Fire Cracked	Heat Treated	Cortex
2012-310	21	Level 5	FLA	Laffayette gravel	59.8	211	DEBITAGE	Production flaking						
2012-310	21	Level 5	FLA	Laffayette gravel	0.8	1	DEBITAGE	Production flaking						
2012-310	21	Level 5	PEBL	Hematite	0.7	3	DEBITAGE							
2012-310	21	Level 5	PEBL	Laffayette gravel	11.5	16	DEBITAGE							
2012-310	22	Level 6	BIF	Laffayette gravel	0.8	1	ARROW	Tip of Nodena						
2012-310	22	Level 6	DEB	Laffayette gravel	0.01	1	DEBITAGE							
2012-310	22	Level 6	FLA	Crowley's Ridge	0.7	6	DEBITAGE	Production flaking						
2012-310	22	Level 6	FLA	Crowley's Ridge	3.1	6	DEBITAGE	Production flaking						TRUE
2012-310	22	Level 6	FLA	Crowley's Ridge	0.7	5	DEBITAGE	Production flaking					TRUE	
2012-310	22	Level 6	FLA	Crowley's Ridge	0.2	2	DEBITAGE	Production flaking					TRUE	TRUE
2012-310	22	Level 6	FLA	Laffayette gravel	9.8	28	DEBITAGE	Production flaking						
2012-310	22	Level 6	FLA	Laffayette gravel	3.2	10	DEBITAGE	Production flaking					TRUE	TRUE
2012-310	22	Level 6	FLA	Laffayette gravel	1.8	7	DEBITAGE	Production flaking					TRUE	
2012-310	22	Level 6	PEBL	Laffayette gravel	5	7	DEBITAGE							
2012-310	27	Level 7	FLA	Crowley's Ridge	2.8	1	DEBITAGE	Production flaking						TRUE
2012-310	27	Level 7	FLA	Laffayette gravel	0.8	4	DEBITAGE	Production flaking						
2012-310	28	Feature 4	PEBL	Laffayette gravel	0.5	1	DEBITAGE	Looks like a flake, but cortex is across entire surface						
2012-310	29	Feature 5	FLA	Laffayette gravel	0.2	2	DEBITAGE	Production flaking						

Figure V-6: Diagnostic lithic artifacts from Level 4. Crude Nodena, Nodena preform, Nodena, base of Madison, drill point, point tip, crude Nodena, center of point, center of point, preform. Excavated from Level 4 of Center of Site unit.

Figure V-7: Madison point and preform. Excavated from Level 5 of Center of Site unit.

Figure V-8: Broken Nodena. Excavated from Level 6 of Center of Site unit.

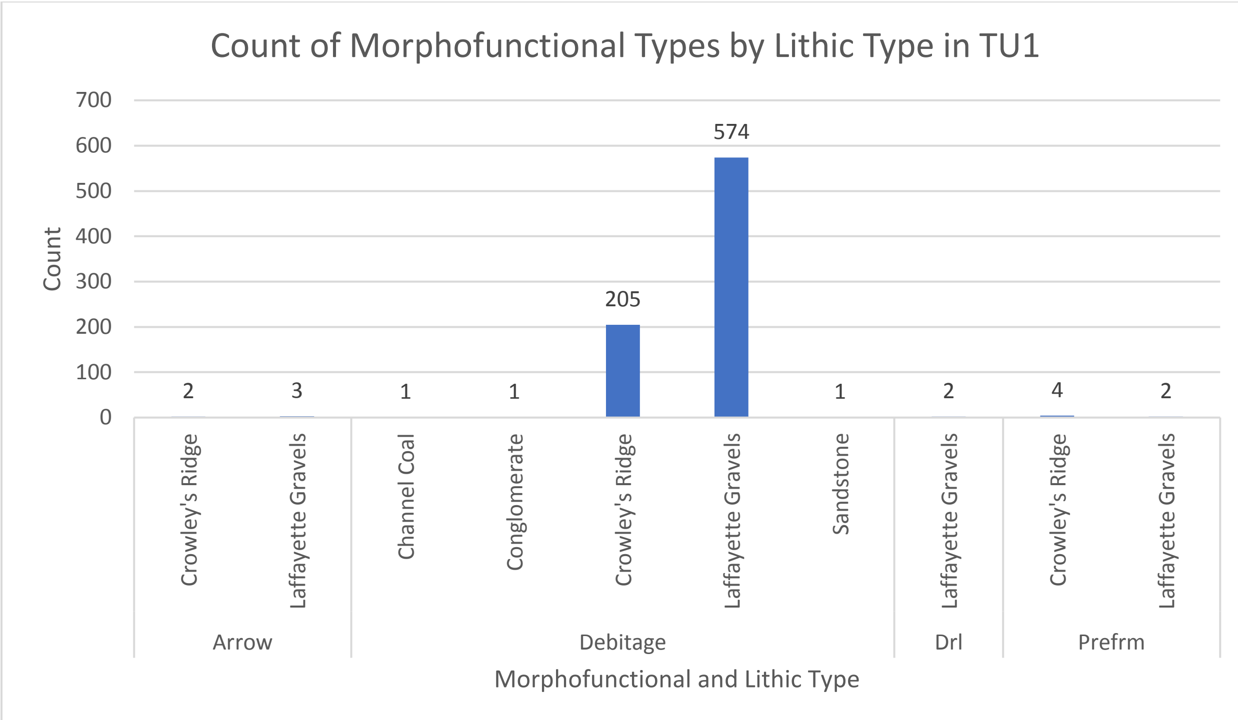

Figure V-9: Count of morphofunctional type by type of lithic excavated from Test Unit 1 in 2014. Drl = Drill, Prefrm = Preform

Table V-4: Lithic artifacts excavated from TU1 as summarized in Figure V-9.

Accession Number	FSN	Provenience	specific	material	weight (g)	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat Treated	Cortex
2014-518	3	Level 1 hand picked	FLA	Crowley's Ridge	6.6	2	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	3	Level 1 hand picked	FLA	Crowley's Ridge	4.4	1	DEBITAGE	Production flaking						TRUE
2014-518	3	Level 1 hand picked	FLA	Laffayette gravel	4.5	1	DEBITAGE	Production flaking						TRUE
2014-518	3	Level 1 hand picked	COBL	Crowley's Ridge	38.1	1	DEBITAGE							TRUE
2014-518	3	Level 1 hand picked	COBL	Laffayette gravel	32.1	1	DEBITAGE	Possible shatter					TRUE	TRUE
2014-518	3	Level 1 hand picked	FCR	Laffayette gravel	7	2	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2014-518	3	Level 1 hand picked	BIF	Laffayette gravel	14	1	PREFRM	Broken biface with 3 pot-lidding scars on one edge				TRUE	TRUE	TRUE
2014-518	3	Level 1 hand picked	BIF	Laffayette gravel	1.6	1	ARROW	Nodena point, more oval shaped than usual, pink, gray, and tan	2.89	1.5	0.33		TRUE	
2014-518	5	Level 2	FLA	Crowley's Ridge	10.1	35	DEBITAGE	Production flaking						
2014-518	5	Level 2	UNIF	Crowley's Ridge	0.6	1	DEBITAGE	Production flaking						
2014-518	5	Level 2	FLA	Crowley's Ridge	31.4	27	DEBITAGE	Production flaking						TRUE

Table V-4 (cont.)

Accession Number	FSN	Provenience	specific	material	weight (g)	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat Treated	Cortex
2014-518	5	Level 2	FLA	Crowley's Ridge	60.9	34	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	5	Level 2	FLA	Crowley's Ridge	5.1	8	DEBITAGE	Production flaking					TRUE	
2014-518	5	Level 2	BIF	Crowley's Ridge	2.8	1	PREFRM	Nodena preform?		1.93	0.65			TRUE
2014-518	5	Level 2	BIF	Laffayette gravel	2.4	1	ARROW	Madison point	3.81	1.81	0.54			
2014-518	5	Level 2	BIF	Crowley's Ridge	1	1	ARROW	Nodena with flatish bottom. Flaked to be twisted	2.81	1.19	0.34		TRUE	
2014-518	5	Level 2	BIF	Laffayette gravel	1.4	1	ARROW	Madison, shorter than usual	2.22	1.72	0.46		TRUE	
2014-518	5	Level 2	BIF	Laffayette gravel	1.8	1	DRL	Drill, flaked on 4 sides	4.17	0.81	0.59			
2014-518	5	Level 2	BIF	Laffayette gravel	1.4	1	PREFRM	Nodena preform or large nodena	0	1.68	0.39		TRUE	
2014-518	5	Level 2	BIF	Crowley's Ridge	2.6	1	PREFRM	Nodena shaped, but unremoved chunk near bottom	3.44	1.53	0.84			
2014-518	5	Level 2	FLA	Laffayette gravel	30.7	60	DEBITAGE	Production flaking					TRUE	
2014-518	5	Level 2	FLA	Laffayette gravel	55.2	71	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	5	Level 2	FLA	Laffayette gravel	62.8	149	DEBITAGE	Production flaking						
2014-518	5	Level 2	FLA	Laffayette gravel	56	37	DEBITAGE	Production flaking						TRUE

Table V-4 (cont.)

Accession Number	FSN	Provenience	specific	material	weight (g)	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat Treated	Cortex
2014-518	5	Level 2	PEBL	Laffayette gravel	1.2	1	DEBITAGE							TRUE
2014-518	5	Level 2	COBL	Laffayette gravel	6	1	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2014-518	5	Level 2	COBL	Laffayette gravel	117.3	3	DEBITAGE							TRUE
2014-518	5	Level 2	PEBL	Laffayette gravel	3.5	5	DEBITAGE							TRUE
2014-518	5	Level 2	COBL	Crowley's Ridge	31.4	2	DEBITAGE	Possibly flaked						TRUE
2014-518	5	Level 2	COBL	Crowley's Ridge	18.1	1	DEBITAGE	Shattered				TRUE	TRUE	TRUE
2014-518	6	Level 2 flotation sample heavy fraction	PEBL	Laffayette gravel	0.9	2	DEBITAGE	HF sorted for 10 min						TRUE
2014-518	6	Level 2 flotation sample heavy fraction	FLA	Crowley's Ridge	1.2	3	DEBITAGE	HF sorted for 10 min, production flaking						TRUE
2014-518	6	Level 2 flotation sample heavy fraction	FLA	Laffayette gravel	0.01	2	DEBITAGE	HF sorted for 10 min, production flaking						TRUE
2014-518	6	Level 2 flotation sample heavy fraction	FLA	Crowley's Ridge	2.3	18	DEBITAGE	HF sorted for 10 min, production flaking						
2014-518	6	Level 2 flotation sample heavy fraction	FLA	Laffayette gravel	0.9	8	DEBITAGE	HF sorted for 10 min, production flaking						

Table V-4 (cont.)

Accession Number	FSN	Provenience	specific	material	weight (g)	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat Treated	Cortex
2014-518	6	Level 2 flotation sample heavy fraction	FLA	Laffayette gravel	0.01	1	DEBITAGE	HF sorted for 10 min, production flaking					TRUE	TRUE
2014-518	6	Level 2 flotation sample heavy fraction	FLA	Crowley's Ridge	0.4	1	DEBITAGE	HF sorted for 10 min, production flaking					TRUE	TRUE
2014-518	6	Level 2 flotation sample heavy fraction	FLA	Laffayette gravel	5.6	15	DEBITAGE	HF sorted for 10 min, production flaking					TRUE	TRUE
2014-518	11	Level 3	CHNK	Laffayette gravel	77.1	2	DEBITAGE	shatter				TRUE	TRUE	TRUE
2014-518	11	Level 3	CHNK	Crowley's Ridge	8.1	1	DEBITAGE	shatter				TRUE	TRUE	TRUE
2014-518	11	Level 3	FLA	Crowley's Ridge	10.3	2	DEBITAGE	Production flaking						
2014-518	11	Level 3	FLA	Laffayette gravel	1.7	3	DEBITAGE	Production flaking						
2014-518	11	Level 3	FLA	Crowley's Ridge	1.3	2	DEBITAGE	Production flaking						TRUE
2014-518	11	Level 3	FLA	Laffayette gravel	6.4	2	DEBITAGE	Production flaking					TRUE	
2014-518	11	Level 3	FLA	Crowley's Ridge	0.5	1	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	11	Level 3	FLA	Laffayette gravel	6.4	5	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	11	Level 3	PEBL	Crowley's Ridge	2.1	1	DEBITAGE							
2014-518	11	Level 3	UNMOD	Conglomerate	12.7	1	DEBITAGE							
2014-518	11	Level 3	Unid	Sandstone	4.5	1	DEBITAGE							
2014-518	11	Level 3	FLA	Laffayette gravel	9.2	29	DEBITAGE	Production flaking						

Table V-4 (cont.)

Accession Number	FSN	Provenience	specific	material	weight (g)	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat Treated	Cortex
2014-518	11	Level 3	FLA	Laffayette gravel	17.1	19	DEBITAGE	Production flaking						TRUE
2014-518	11	Level 3	FLA	Crowley's Ridge	1.8	3	DEBITAGE	Production flaking						TRUE
2014-518	11	Level 3	FLA	Crowley's Ridge	5.7	11	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	11	Level 3	FLA	Crowley's Ridge	4.5	14	DEBITAGE	Prodcution flaking						
2014-518	11	Level 3	FLA	Laffayette gravel	6.1	19	DEBITAGE	Production flaking					TRUE	
2014-518	11	Level 3	FLA	Laffayette gravel	17.2	18	DEBITAGE	Production flaking						TRUE
2014-518	11	Level 3		Laffayette gravel	4.8	4	DEBITAGE	Shatter				TRUE		
2014-518	11	Level 3	BIF	Crowley's Ridge	1.3	1	ARROW	Nodena made on flake. Only bifacial in a few places		1.37	0.28		TRUE	TRUE
2014-518	11	Level 3	FLA	Laffayette gravel	0.2	1	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	11	Level 3		Laffayette gravel	0.01	1	DEBITAGE	Production flaking						
2014-518	12	Level 3 flotation sample heavy fraction	PEBL	Laffayette gravel	0.1	2	DEBITAGE	HF sorted for 10 min						
2014-518	12	Level 3 flotation sample heavy fraction	FLA	Laffayette gravel	0.3	17	DEBITAGE	HF sorted for 10 min, tiny flakes						
2014-518	19	Level 4 flotation sample heavy fraction	FLA	Laffayette gravel	0.5	9	DEBITAGE	HF sorted for 5 min						

Table V-4 (cont.)

Accession Number	FSN	Provenience	specific	material	weight (g)	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat Treated	Cortex
2014-518	20	Level 4	FLA	Crowley's Ridge	0.1	1	DEBITAGE	Production flaking					TRUE	
2014-518	20	Level 4	FLA	Crowley's Ridge	3.9	15	DEBITAGE	Production flaking						
2014-518	20	Level 4		Crowley's Ridge	0.9	1	DEBITAGE	Shatter				TRUE		
2014-518	20	Level 4	BIF	Crowley's Ridge	3.3	1	PREFRM	Flat, but flaked on both sides. Squarish bottom and broken						
2014-518	20	Level 4	FLA	Crowley's Ridge	4.6	8	DEBITAGE	Production flaking						TRUE
2014-518	20	Level 4	FLA	Crowley's Ridge	9.6	6	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	20	Level 4	PEBL	Laffayette gravel	0.2	1	DEBITAGE							TRUE
2014-518	20	Level 4	FLA	Laffayette gravel	2.3	8	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	20	Level 4	FLA	Laffayette gravel	12.9	12	DEBITAGE	Production flaking						TRUE
2014-518	20	Level 4	FLA	Laffayette gravel	10.4	25	DEBITAGE	Production flaking						
2014-518	20	Level 4	FLA	Laffayette gravel	1.6	6	DEBITAGE	Production flaking					TRUE	
2014-518	20	Level 4	BIF	Laffayette gravel	0.3	1	DRL	Possible drill, only point, base broken off		0.86	0.31			
2014-518	31	Level 5	PEBL	Channel coal	0.4	1	DEBITAGE							
2014-518	31	Level 5	FLA	Laffayette gravel	3.8	9	DEBITAGE	Production flaking						
2014-518	31	Level 5	FLA	Laffayette gravel	5.4	8	DEBITAGE	Production flaking						TRUE
2014-518	31	Level 5	FLA	Laffayette gravel	2.2	3	DEBITAGE	Production flaking					TRUE	TRUE

Table V-4 (cont.)

Accession Number	FSN	Provenience	specific	material	weight (g)	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat Treated	Cortex
2014-518	31	Level 5	FLA	Laffayette gravel	1.6	6	DEBITAGE	Production flaking					TRUE	
2014-518	31	Level 5	FLA	Crowley's Ridge	1.1	5	DEBITAGE	Production flaking						
2014-518	31	Level 5	BIF	Crowley's Ridge	1	1	PREFRM	Square bottom, broken					TRUE	TRUE
2014-518	31	Level 5	CHNK	Laffayette gravel	2.5	1	DEBITAGE	Shatter				TRUE	TRUE	
2014-518	34	Level 5 flotation sample heavy fraction	FLA	Laffayette gravel	0.01	1	DEBITAGE	HF, totally sorted, very tiny						
2014-518	42	Level 6 flotation sample heavy fraction	FLA	Laffayette gravel	0.01	1	DEBITAGE	HF, totally sorted, very tiny						
2014-518	42	Level 6 flotation sample heavy fraction	FLA	Laffayette gravel	0.01	1	DEBITAGE	Hf, totally sorted, very tiny					TRUE	
2014-518	45	Level 6	CHNK	Laffayette gravel	1.7	1	DEBITAGE	Shatter						TRUE
2014-518	45	Level 6	CHNK	Laffayette gravel	2.4	1	DEBITAGE	Shatter					TRUE	TRUE

Figure V-10: Heat treated Nodena. Handpicked from Level 1 of TU1.

Figure V-11: Two Madison points, two broken preforms, Nodena, a drill, heat treated broken preform. Excavated from Level 2 of TU1.

Figure V-12: Nodena. Excavated from Level 3 of TU1.

Figure V-13: Drill (?) point. Excavated from Level 4 of TU1.

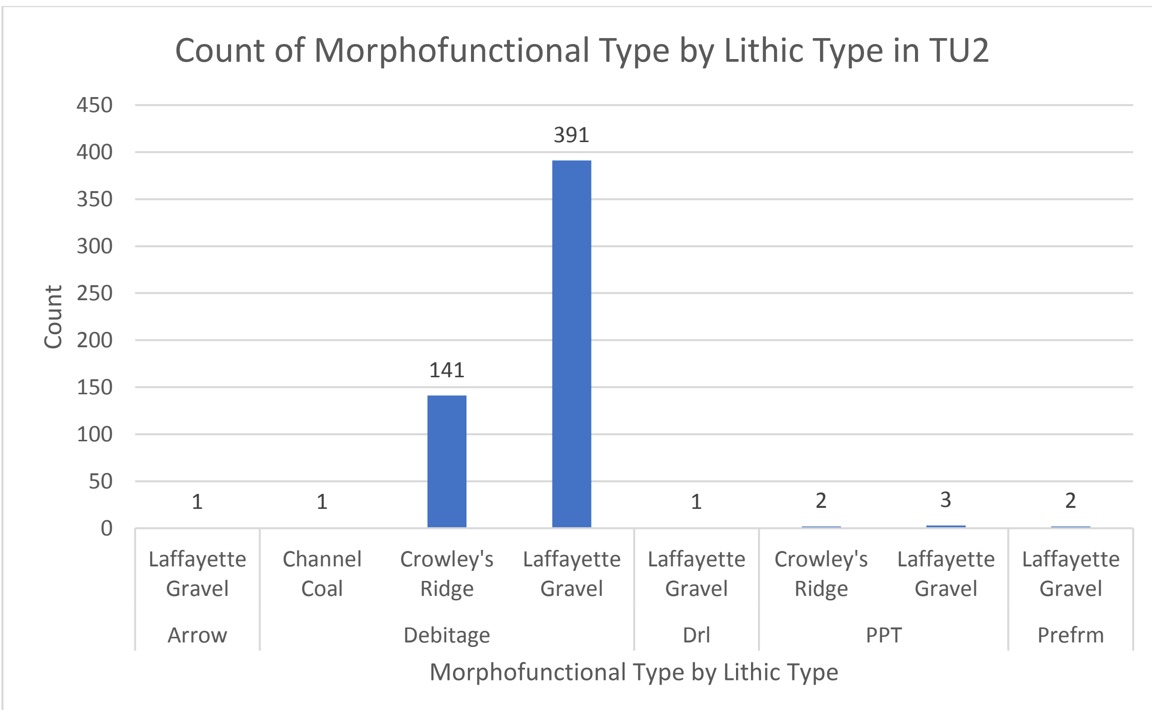

Figure V-14: Count of morphofunctional type by type of lithic excavated from Test Unit 2 in 2014. Drl = Drill, PPT= Projectile point, Prefrm = Preform

Table V-5: Lithic artifacts excavated from TU2 as summarized in Figure V-14.

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	general comment	Length (cm)	Width (cm)	Thickness (cm)	fire cracked	heat treated	cortex
2014-518	32	Level 6	FLA	Laffayette gravel	15.1	32	DEBITAGE	Production flaking						
2014-518	32	Level 6	FLA	Laffayette gravel	10.1	11	DEBITAGE	Production flaking						TRUE
2014-518	32	Level 6	FLA	Laffayette gravel	13.1	24	DEBITAGE	Production flaking					TRUE	
2014-518	32	Level 6	FLA	Laffayette gravel	32.9	31	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	32	Level 6	FLA	Crowley's Ridge	5.3	6	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	32	Level 6	FLA	Crowley's Ridge	4.7	15	DEBITAGE	Production flaking						
2014-518	32	Level 6	FLA	Crowley's Ridge	10.5	10	DEBITAGE	Production flaking						TRUE
2014-518	32	Level 6	CHNK	Crowley's Ridge	3.8	1	DEBITAGE	Shatter						
2014-518	32	Level 6	CHNK	Crowley's Ridge	1.1	1	DEBITAGE	Shatter						TRUE
2014-518	32	Level 6	CHNK	Laffayette gravel	1.7	1	DEBITAGE	Shatter, pot lidding				TRUE	TRUE	TRUE
2014-518	32	Level 6	BIF	Laffayette gravel	1.4	1	DRL	Drill, white/off-white	3.6	0.87	0.45			
2014-518	32	Level 6	BIF	Laffayette gravel	0.5	1	PPT	Broken tip/base of point						
2014-518	32	Level 6	BIF	Laffayette gravel	2.9	1	PREFRM	Broken, but possible point preform, flaked on both sides					TRUE	
2014-518	32	Level 6	BIF	Crowley's Ridge	0.4	1	PPT	Broken tip of point						
2014-518	32	Level 6	FLA	Laffayette gravel	0.9	1	DEBITAGE	Production flaking					TRUE	TRUE

Table V-5 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	general comment	Length (cm)	Width (cm)	Thickness (cm)	fire cracked	heat treated	cortex
2014-518	43	Level 7 flotation sample heavy fraction	FLA	Laffayette gravel	6.6	2	DEBITAGE	HF sorted for 15 min, production flaking					TRUE	TRUE
2014-518	43	Level 7 flotation sample heavy fraction	FLA	Laffayette gravel	1.1	12	DEBITAGE	HF sorted for 15 min, production flaking					TRUE	
2014-518	43	Level 7 flotation sample heavy fraction	FLA	Laffayette gravel	0.6	12	DEBITAGE	HF sorted for 15 min, production flaking						
2014-518	43	Level 7 flotation sample heavy fraction	FLA	Crowley's Ridge	0.1	2	DEBITAGE	HF sorted for 15 min, production flaking						
2014-518	43	Level 7 flotation sample heavy fraction	FLA	Crowley's Ridge	0.3	3	DEBITAGE	HF sorted for 15 min, production flaking					TRUE	
2014-518	44	Level 7	FLA	Laffayette gravel	15.1	44	DEBITAGE	Production flaking					TRUE	
2014-518	44	Level 7	FLA	Laffayette gravel	66.1	60	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	44	Level 7	FLA	Laffayette gravel	15.9	30	DEBITAGE	Production flaking						TRUE
2014-518	44	Level 7	FLA	Laffayette gravel	22.4	69	DEBITAGE	Production flaking						
2014-518	44	Level 7	FLA	Crowley's Ridge	2.7	6	DEBITAGE	Production flaking					TRUE	
2014-518	44	Level 7	FLA	Crowley's Ridge	14.4	18	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	44	Level 7	FLA	Crowley's Ridge	18.9	14	DEBITAGE	Production flaking						TRUE

Table V-5 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	general comment	Length (cm)	Width (cm)	Thickness (cm)	fire cracked	heat treated	cortex
2014-518	44	Level 7	FLA	Crowley's Ridge	16.9	41	DEBITAGE	Production flaking						
2014-518	44	Level 7	PEBL	Channel coal	0.01	1	DEBITAGE							
2014-518	44	Level 7	PEBL	Laffayette gravel	2.5	2	DEBITAGE						TRUE	TRUE
2014-518	44	Level 7	CHNK	Laffayette gravel	1.8	1	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2014-518	44	Level 7	CHNK	Crowley's Ridge	4.3	1	DEBITAGE	Shatter						TRUE
2014-518	44	Level 7	CHNK	Crowley's Ridge	16.5	1	DEBITAGE	Test cobble					TRUE	TRUE
2014-518	44	Level 7	CHNK	Crowley's Ridge	54.5	1	DEBITAGE	Test cobble						TRUE
2014-518	44	Level 7	BIF	Laffayette gravel	1.9	1	ARROW	Nodena point, black/dark gray	2.94	1.42	0.43			
2014-518	44	Level 7	BIF	Crowley's Ridge	1.8	1	PPT	Base or tip of point, brown		1.81	0.385			
2014-518	44	Level 7	BIF	Laffayette gravel	4.1	1	PPT	Tip of probable woodland point, Dark gray with specks of white and red		2.31	0.52			
2014-518	44	Level 7	BIF	Laffayette gravel	3.1	1	PPT	Burin created on broken edge of woodland point	2.92	1.81	0.7			

Table V-5 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	general comment	Length (cm)	Width (cm)	Thickness (cm)	fire cracked	heat treated	cortex
2014-518	44	Level 7	BIF	Laffayette gravel	3.1	1	PREFRM	Madison preform, Equilateral triangle, White and off-white	2.89	2.42	0.65			
2014-518	44	Level 7	FLA	Laffayette gravel	0.8	1	DEBITAGE	Production flaking						TRUE
2014-518	57	Level 8	FLA	Crowley's Ridge	0.9	3	DEBITAGE	Production flaking					TRUE	
2014-518	57	Level 8	FLA	Crowley's Ridge	5.4	4	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	57	Level 8	FLA	Crowley's Ridge	30.9	4	DEBITAGE	Production flaking						TRUE
2014-518	57	Level 8	FLA	Crowley's Ridge	3.1	6	DEBITAGE	Production flaking						
2014-518	57	Level 8	CHNK	Crowley's Ridge	2.3	1	DEBITAGE	Shatter						
2014-518	57	Level 8	CHNK	Laffayette gravel	1.6	2	DEBITAGE	Shatter						
2014-518	57	Level 8	FLA	Laffayette gravel	3.8	15	DEBITAGE	Production flaking						
2014-518	57	Level 8	FLA	Laffayette gravel	2.6	6	DEBITAGE	Production flaking						TRUE
2014-518	57	Level 8	FLA	Laffayette gravel	12.3	14	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	57	Level 8	FLA	Laffayette gravel	2.7	10	DEBITAGE	Production flaking					TRUE	
2014-518	58	Level 8 flotation sample heavy fraction	PEBL	Laffayette gravel	0.4	1	DEBITAGE	HF sorted for 10 min						
2014-518	58	Level 8 flotation sample heavy fraction	FLA	Crowley's Ridge	1.2	2	DEBITAGE	Production flaking, HF sorted for 10 min						

Table V-5 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	general comment	Length (cm)	Width (cm)	Thickness (cm)	fire cracked	heat treated	cortex
2014-518	58	Level 8 flotation sample heavy fraction	FLA	Crowley's Ridge	0.01	1	DEBITAGE	Production flaking, HF sorted for 10 min					TRUE	
2014-518	58	Level 8 flotation sample heavy fraction	FLA	Laffayette gravel	0.01	1	DEBITAGE	Production flaking, HF sorted for 10 min						
2014-518	58	Level 8 flotation sample heavy fraction	FLA	Laffayette gravel	0.1	1	DEBITAGE	Production flaking, HF sorted for 10 min					TRUE	TRUE
2014-518	58	Level 8 flotation sample heavy fraction	FLA	Laffayette gravel	1.6	8	DEBITAGE	Production flaking, HF sorted for 10 min					TRUE	

Figure V-15: Preform, point tips, and drill. Excavated from Level 6 of TU2.

Figure V-16: Madison, Burin, Nodena, and 2 broken preforms. Excavated from Level 7 of TU2.

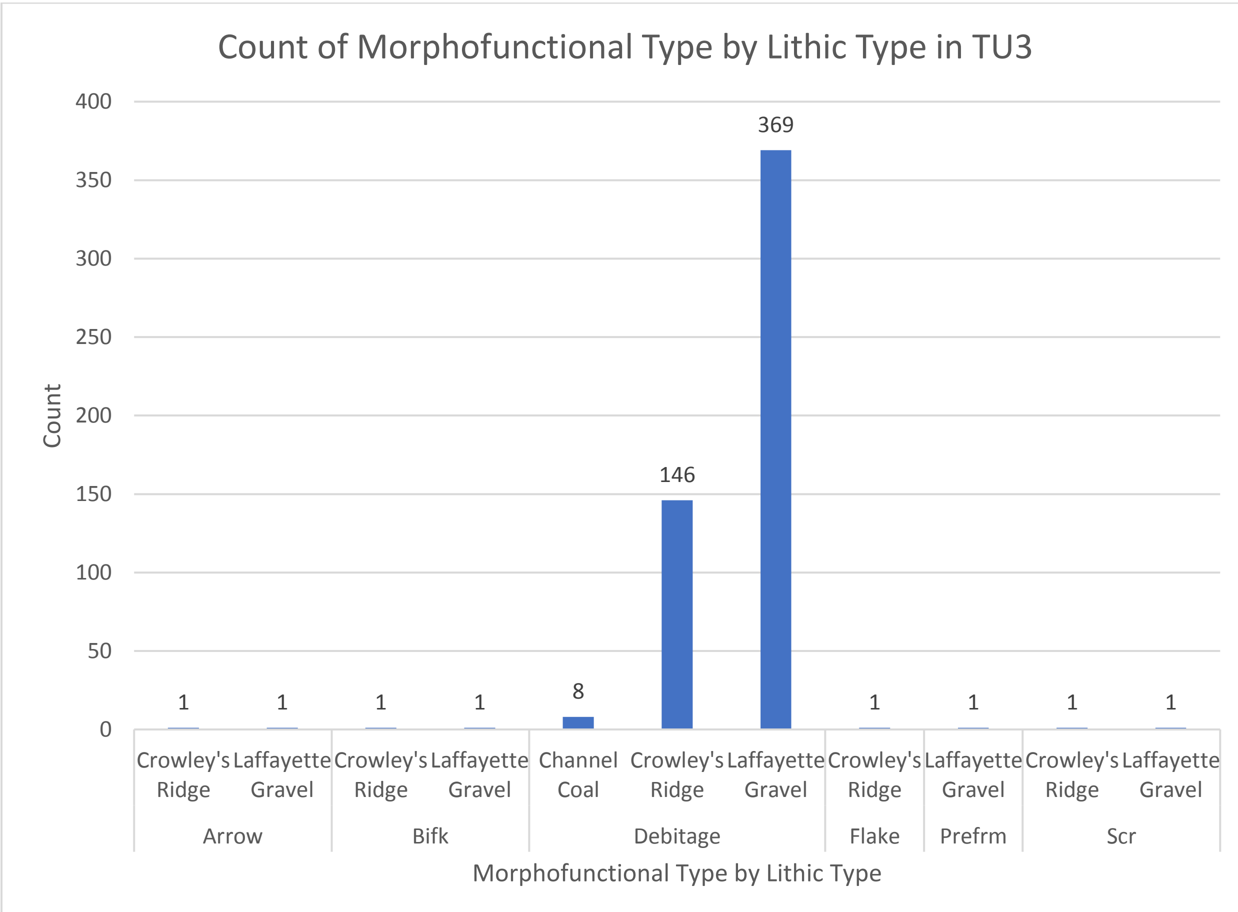

Figure V-17: Count of morphofunctional type by type of lithic excavated from Test Unit 3 in 2014. Bifk = Biface/knife/preform, Prefrm = Preform, Scr = Scraper

Table V-6: Lithic artifacts excavated from TU3 as summarized in Figure V-17.

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2014-518	13	Level 4	FLA	Crowley's Ridge	0.7	1	DEBITAGE	Production flaking						
2014-518	13	Level 4	FLA	Crowley's Ridge	0.6	1	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	13	Level 4	FLA	Laffayette gravel	0.8	1	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	13	Level 4	FLA	Laffayette gravel	0.5	3	DEBITAGE	Production flaking					TRUE	
2014-518	13	Level 4	FLA	Laffayette gravel	0.8	2	DEBITAGE	Production flaking						TRUE
2014-518	13	Level 4	FLA	Laffayette gravel	8.3	9	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	13	Level 4	CHNK	Laffayette gravel	8.3	1	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2014-518	13	Level 4	PEBL	Channel coal	1.1	5	DEBITAGE							
2014-518	16	Level 5	FLA	Crowley's Ridge	7.7	21	DEBITAGE	Production flaking						
2014-518	16	Level 5	FLA	Crowley's Ridge	18.2	17	DEBITAGE	Production flaking						TRUE
2014-518	16	Level 5	FLA	Crowley's Ridge	20.2	14	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	16	Level 5	FLA	Crowley's Ridge	1.3	4	DEBITAGE	Production flaking					TRUE	
2014-518	16	Level 5	FLA	Laffayette gravel	17.5	31	DEBITAGE	Production flaking					TRUE	
2014-518	16	Level 5	FLA	Laffayette gravel	25.5	31	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	16	Level 5	FLA	Laffayette gravel	8.6	12	DEBITAGE	Production flaking						TRUE
2014-518	16	Level 5	FLA	Laffayette gravel	11.5	40	DEBITAGE	Production flaking						
2014-518	16	Level 5	PEBL	Crowley's Ridge	12.9	1	DEBITAGE	Test cobble						TRUE
2014-518	16	Level 5	CHNK	Laffayette gravel	4.6	2	DEBITAGE	Shatter				TRUE	TRUE	
2014-518	16	Level 5	CHNK	Laffayette gravel	1	1	DEBITAGE	Shatter				TRUE	TRUE	TRUE

Table V-6 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2014-518	16	Level 5	CHNK	Laffayette gravel	0.2	1	DEBITAGE	Shatter						
2014-518	16	Level 5	CHNK	Crowley's Ridge	0.2	1	DEBITAGE	Shatter						
2014-518	16	Level 5	BIF	Crowley's Ridge	3	1	BIFK	Broken, possibly ovoid base of large, woodland point		2.26	0.67		TRUE	
2014-518	16	Level 5	BIF	Crowley's Ridge	11.4	1	SCR	Bifacial around 3/4 of edges, but one side more focused, looks like scraping tool, but not thumbnail scraper	4.22	2.22	1.09			TRUE
2014-518	16	Level 5	BIF	Laffayette gravel	2.3	1	ARROW	Rough Madison point with very tip broken off		1.8	0.49		TRUE	TRUE
2014-518	16	Level 5	PEBL	Channel coal	0.3	1	DEBITAGE							
2014-518	16	Level 5	FLA	Crowley's Ridge	0.8	4	DEBITAGE	Production flaking						
2014-518	16	Level 5	FLA	Laffayette gravel	0.2	2	DEBITAGE	Production flaking					TRUE	
2014-518	16	Level 5	FLA	Laffayette gravel	0.3	1	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	16	Level 5	FLA	Laffayette gravel	0.7	3	DEBITAGE	Production flaking						
2014-518	16	Level 5	CHNK	Crowley's Ridge	1.7	1	DEBITAGE	Shatter						TRUE
2014-518	16	Level 5	PEBL	Channel coal	0.2	2	DEBITAGE							

Table V-6 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2014-518	26	Level 6 flotation sample heavy fraction	FLA	Laffayette gravel	0.1	5	DEBITAGE	HF sorted for 15 min. Production flaking						
2014-518	26	Level 6 flotation sample heavy fraction	FLA	Crowley's Ridge	0.01	1	DEBITAGE	HF sorted for 15 min. Production flaking						
2014-518	26	Level 6 flotation sample heavy fraction	FLA	Crowley's Ridge	0.5	2	DEBITAGE	HF sorted for 15 min. Production flaking					TRUE	TRUE
2014-518	26	Level 6 flotation sample heavy fraction	FLA	Crowley's Ridge	0.2	3	DEBITAGE	HF sorted for 15 min. Production flaking					TRUE	
2014-518	26	Level 6 flotation sample heavy fraction	FLA	Laffayette gravel	0.4	3	DEBITAGE	HF sorted for 15 min. Production flaking					TRUE	TRUE
2014-518	26	Level 6 flotation sample heavy fraction	FLA	Laffayette gravel	0.3	6	DEBITAGE	HF sorted for 15 min. Production flaking					TRUE	
2014-518	27	Level 6	FLA	Laffayette gravel	13.8	29	DEBITAGE	Production flaking						
2014-518	27	Level 6	FLA	Laffayette gravel	13.1	9	DEBITAGE	Production flaking						TRUE
2014-518	27	Level 6	FLA	Laffayette gravel	37.8	30	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	27	Level 6	FLA	Laffayette gravel	10.7	26	DEBITAGE	Production flaking					TRUE	
2014-518	27	Level 6	FLA	Crowley's Ridge	6.7	16	DEBITAGE	Production flaking						

Table V-6 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2014-518	27	Level 6	FLA	Crowley's Ridge	8	9	DEBITAGE	Production flaking						TRUE
2014-518	27	Level 6	FLA	Crowley's Ridge	34.5	17	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	27	Level 6	FLA	Crowley's Ridge	0.7	3	DEBITAGE	Production flaking					TRUE	
2014-518	27	Level 6	UTIL	Laffayette gravel	50.8	1	SCR	Big flake with one edge with unifacial flaking for scraper? Another edge heat treated and may flaked twice					TRUE	TRUE
2014-518	27	Level 6	COBL	Crowley's Ridge	33.5	1	DEBITAGE	Broken, possibly flaked						TRUE
2014-518	27	Level 6	COBL	Laffayette gravel	29.8	1	DEBITAGE	Broken, flaked a few times						TRUE
2014-518	27	Level 6	CHNK	Laffayette gravel	23	7	DEBITAGE	Shatter from heat				TRUE	TRUE	TRUE
2014-518	27	Level 6	FLA	Laffayette gravel	0.2	1	DEBITAGE	Production flaking						
2014-518	35	Level 7 flotation sample heavy fraction	FLA	Crowley's Ridge	0.3	1	DEBITAGE	HF sorted for 10 min. Production flaking					TRUE	TRUE
2014-518	35	Level 7 flotation sample heavy fraction	FLA	Laffayette gravel	0.2	3	DEBITAGE	HF sorted for 10 min Production flaking						

Table V-6 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2014-518	35	Level 7 flotation sample heavy fraction	FLA	Laffayette gravel	0.01	1	DEBITAGE	HF sorted for 10 min Production flaking					TRUE	TRUE
2014-518	35	Level 7 flotation sample heavy fraction	FLA	Laffayette gravel	0.1	4	DEBITAGE	HF sorted for 10 min Production flaking					TRUE	
2014-518	36	Level 7	FLA	Crowley's Ridge	0.01	1	DEBITAGE	Production flaking						
2014-518	36	Level 7	FLA	Crowley's Ridge	0.2	1	DEBITAGE	Production flaking					TRUE	
2014-518	36	Level 7	FLA	Laffayette gravel	0.4	2	DEBITAGE	Production flaking					TRUE	
2014-518	36	Level 7	FLA	Laffayette gravel	0.01	1	DEBITAGE	Production flaking						
2014-518	36	Level 7	FLA	Crowley's Ridge	0.6	3	DEBITAGE	Production flaking					TRUE	
2014-518	36	Level 7	FLA	Crowley's Ridge	0.5	2	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	36	Level 7	FLA	Crowley's Ridge	14.6	3	DEBITAGE	Production flaking						TRUE
2014-518	36	Level 7	FLA	Crowley's Ridge	3.4	9	DEBITAGE	Production flaking						
2014-518	36	Level 7	FLA	Laffayette gravel	10	14	DEBITAGE	Production flaking					TRUE	
2014-518	36	Level 7	FLA	Laffayette gravel	44.3	17	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	36	Level 7	FLA	Laffayette gravel	10.3	6	DEBITAGE	Production flaking						TRUE
2014-518	36	Level 7	FLA	Laffayette gravel	12.5	17	DEBITAGE	Production flaking						
2014-518	36	Level 7	CHNK	Laffayette gravel	47.7	3	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2014-518	36	Level 7	BIF	Laffayette gravel	1.9	1	PREFRM	Nodena preform?, broken		1.89	0.54		TRUE	TRUE

Table V-6 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2014-518	36	Level 7	BIF	Laffayette gravel	5.9	1	BIFK	Woodland point? Broken through center and at tip		2.54	0.55		TRUE	
2014-518	50	Level 8	FLA	Laffayette gravel	5.5	12	DEBITAGE	Production flaking					TRUE	
2014-518	50	Level 8	FLA	Laffayette gravel	6.4	8	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	50	Level 8	FLA	Laffayette gravel	2.6	7	DEBITAGE	Production flaking						
2014-518	50	Level 8	FLA	Crowley's Ridge	1.5	1	DEBITAGE	Production flaking					TRUE	
2014-518	50	Level 8	FLA	Crowley's Ridge	3.8	3	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	50	Level 8	FLA	Crowley's Ridge	0.8	1	DEBITAGE	Production flaking						TRUE
2014-518	50	Level 8	FLA	Crowley's Ridge	0.01	1	DEBITAGE	Production flaking						
2014-518	50	Level 8	UTIL	Crowley's Ridge	1.2	1	FLAKE	Utilized flake, small flakes off of one edge						TRUE
2014-518	52	Level 8 flotation sample heavy fraction	FLA	Laffayette gravel	0.1	4	DEBITAGE	HF sorted ~5 min. Production flaking					TRUE	
2014-518	52	Level 8 flotation sample heavy fraction	FLA	Laffayette gravel	0.1	1	DEBITAGE	HF sorted ~5 min. Production flaking						
2014-518	52	Level 8 flotation sample heavy fraction	FLA	Crowley's Ridge	0.01	2	DEBITAGE	HF sorted ~5 min. Production flaking						

Table V-6 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2014-518	53	Level 8 flotation sample heavy fraction from window over "hearth"	FLA	Laffayette gravel	0.2	10	DEBITAGE	HF sort for 10 min. Production flaking					TRUE	
2014-518	53	Level 8 flotation sample heavy fraction from window over "hearth"	FLA	Laffayette gravel	0.1	5	DEBITAGE	HF sort for 10 min. Production flaking						
2014-518	59	Feature 2 S 1/2	BIF	Crowley's Ridge	1.5	1	ARROW	Nodena point	2.81	1.26	0.43		TRUE	
2014-518	60	Feature 2 N 1/2 flotation sample heavy fraction	FLA	Laffayette gravel	0.5	8	DEBITAGE	HF sorted for 10 min. Production flaking					TRUE	
2014-518	60	Feature 2 N 1/2 flotation sample heavy fraction	FLA	Laffayette gravel	0.1	4	DEBITAGE	HF sorted for 10 min. Production flaking						
2014-518	60	Feature 2 N 1/2 flotation sample heavy fraction	FLA	Crowley's Ridge	0.01	1	DEBITAGE	HF sorted for 10 min. Production flaking					TRUE	

Figure V-18: Scraper, Madison, and preform. Excavated from Level 5 of TU3.

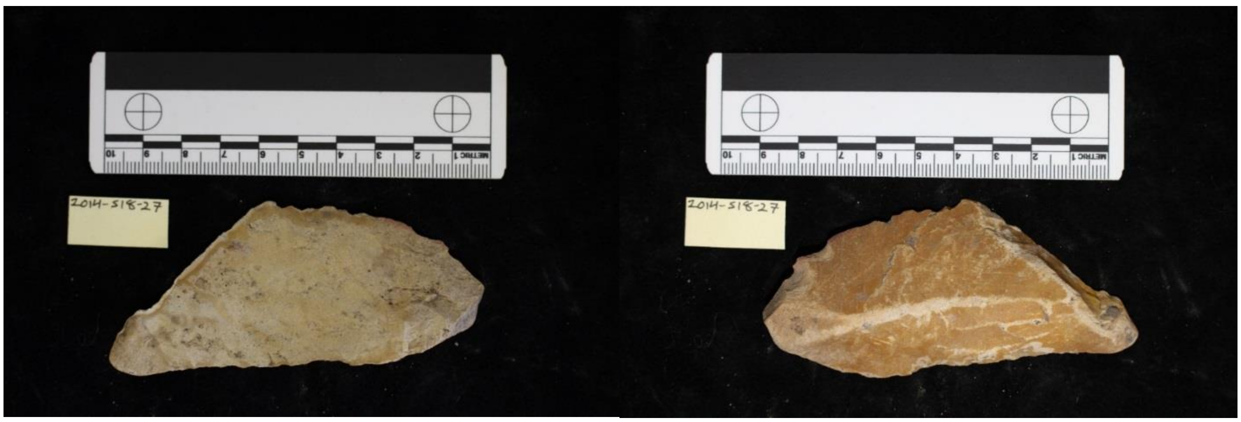

Figure V-19: Scraper. Both sides of same lithic artifact. Excavated from Level 6 of TU3.

Figure V-20: Woodland point and broken Nodena. Excavated from Level 7 of TU3.

Figure V-21: Utilized flake of Crowley's Ridge chert. Excavated from Level 8 of TU3.

Figure V-22: Crowley's Ridge Nodena point. Excavated from south ½ of Feature 2 of TU3.

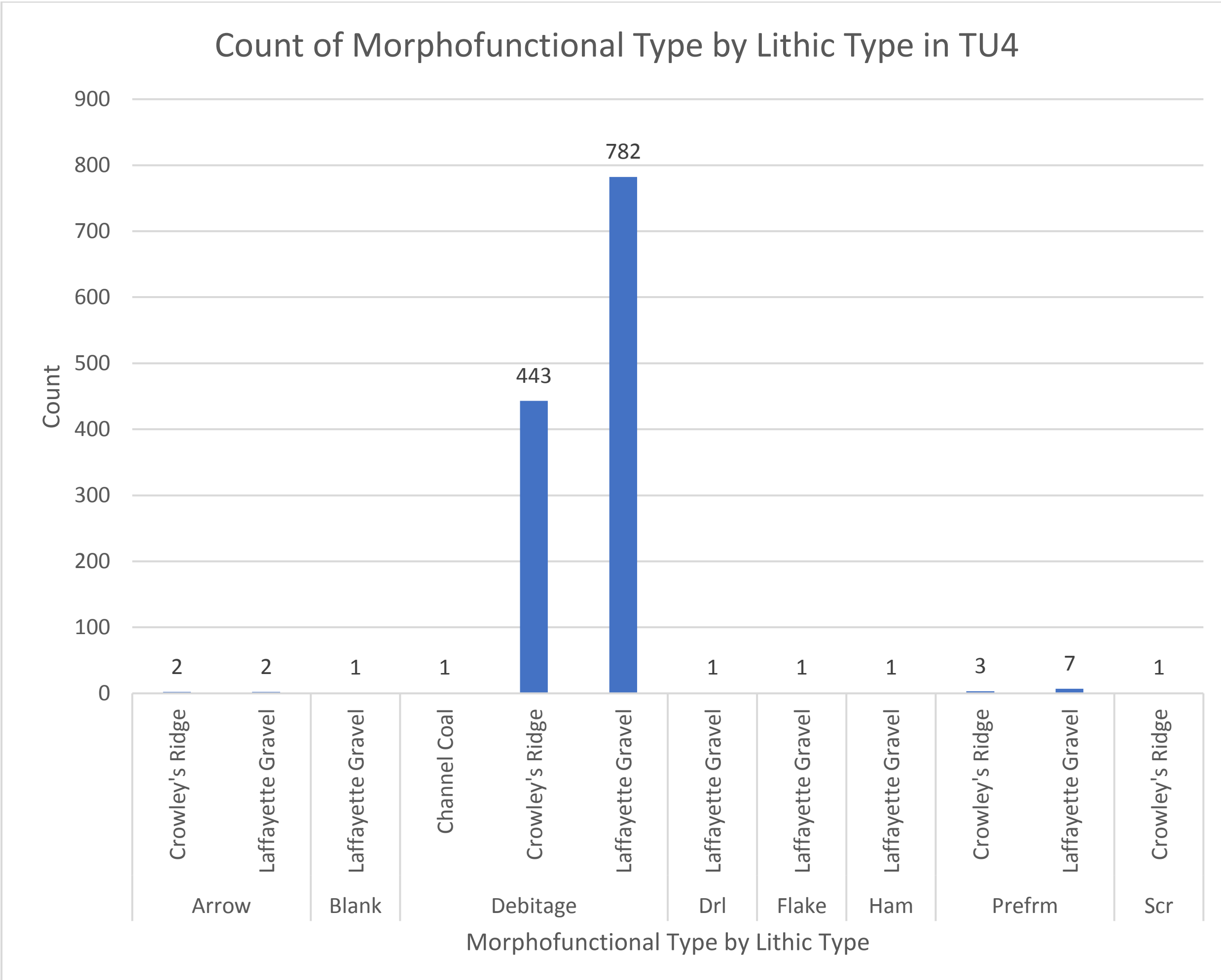

Figure V-23: Count of morphofunctional type by type of lithic excavated from Test Unit 4 in 2014. Drl = Drill, Ham = Hammerstone, Prefrm = Preform, Scr = Scraper

Table V-7: Lithic artifacts excavated from TU4 as summarized in Figure V-23.

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2014-518	2	Level 1 hand picked	FLA	Laffayette gravel	8.8	1	DEBITAGE	Production flaking						TRUE
2014-518	2	Level 1 hand picked	FLA	Laffayette gravel	6.3	2	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	2	Level 1 hand picked	CHNK	Laffayette gravel	15.1	1	DEBITAGE	Shatter					TRUE	TRUE
2014-518	2	Level 1 hand picked	CHNK	Laffayette gravel	2.1	1	DEBITAGE	Shatter					TRUE	
2014-518	10	Level 2	FLA	Crowley's Ridge	4.4	11	DEBITAGE	Production flaking					TRUE	
2014-518	10	Level 2	FLA	Crowley's Ridge	35.4	41	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	10	Level 2	FLA	Crowley's Ridge	12.4	23	DEBITAGE	Production flaking						TRUE
2014-518	10	Level 2	FLA	Crowley's Ridge	19.2	81	DEBITAGE	Production flaking						
2014-518	10	Level 2	FLA	Laffayette gravel	23.6	63	DEBITAGE	Production flaking					TRUE	
2014-518	10	Level 2	FLA	Laffayette gravel	51.3	68	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	10	Level 2	FLA	Laffayette gravel	8.1	17	DEBITAGE	Production flaking						TRUE
2014-518	10	Level 2	FLA	Laffayette gravel	40.8	113	DEBITAGE	Production flaking						
2014-518	10	Level 2	BIF	Laffayette gravel	3.1	1	PREFRM	Crude Nodena preform	3.42	1.93	0.65		TRUE	TRUE
2014-518	10	Level 2	BIF	Laffayette gravel	4.2	1	PREFRM	Broken, Preform for long point?		1.98	0.83		TRUE	TRUE
2014-518	10	Level 2	CHNK	Laffayette gravel	58.4	7	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2014-518	10	Level 2	CHNK	Crowley's Ridge	16.1	1	DEBITAGE	Shatter					TRUE	TRUE
2014-518	10	Level 2	CHNK	Crowley's Ridge	11.7	1	DEBITAGE	Shatter						TRUE
2014-518	10	Level 2	CHNK	Laffayette gravel	5.9	3	DEBITAGE	Shatter						TRUE

Table V-7 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2014-518	10	Level 2	PEBL	Laffayette gravel	32.1	9	DEBITAGE	Unmodified pebbles						TRUE
2014-518	10	Level 2	PEBL	Crowley's Ridge	6.1	1	DEBITAGE	Unmodified pebble						TRUE
2014-518	10	Level 2	COBL	Laffayette gravel	20.9	1	DEBITAGE							TRUE
2014-518	10	Level 2	COBL	Laffayette gravel	62.3	1	HAM	Possible hammerstone						TRUE
2014-518	10	Level 2	FLA	Laffayette gravel	0.2	1	DEBITAGE	Production flaking						
2014-518	10	Level 2	PEBL	Laffayette gravel	0.4	1	DEBITAGE							TRUE
2014-518	23	Level 3 flotation sample heavy fraction	FLA	Crowley's Ridge	0.6	9	DEBITAGE	HF sorted for 10 min Production flaking						
2014-518	23	Level 3 flotation sample heavy fraction	FLA	Crowley's Ridge	0.9	2	DEBITAGE	HF sorted for 10 min Production flaking						TRUE
2014-518	23	Level 3 flotation sample heavy fraction	FLA	Crowley's Ridge	0.5	2	DEBITAGE	HF sorted for 10 min. Production flaking					TRUE	TRUE
2014-518	23	Level 3 flotation sample heavy fraction	FLA	Laffayette gravel	0.5	8	DEBITAGE	HF sorted for 10 min. Production flaking					TRUE	TRUE
2014-518	23	Level 3 flotation sample heavy fraction	FLA	Laffayette gravel	2.1	18	DEBITAGE	HF sorted for 10 min. Production flaking					TRUE	

Table V-7 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2014-518	23	Level 3 flotation sample heavy fraction	FLA	Laffayette gravel	1	14	DEBITAGE	HF sorted for 10 min. Production flaking						
2014-518	24	Level 3	COBL	Laffayette gravel	29.1	1	DEBITAGE							
2014-518	24	Level 3	PEBL	Laffayette gravel	5.1	1	DEBITAGE							
2014-518	24	Level 3	FLA	Crowley's Ridge	5.3	20	DEBITAGE	Production flaking					TRUE	
2014-518	24	Level 3	FLA	Crowley's Ridge	24.5	36	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	24	Level 3	FLA	Crowley's Ridge	27	30	DEBITAGE	Production flaking						TRUE
2014-518	24	Level 3	FLA	Crowley's Ridge	27.5	84	DEBITAGE	Production flaking						
2014-518	24	Level 3	FLA	Laffayette gravel	21.4	62	DEBITAGE	Production flaking					TRUE	
2014-518	24	Level 3	FLA	Laffayette gravel	46.6	75	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	24	Level 3	FLA	Laffayette gravel	23.3	25	DEBITAGE	Production flaking						TRUE
2014-518	24	Level 3	FLA	Laffayette gravel	33.5	101	DEBITAGE	Production flaking						
2014-518	24	Level 3	CHNK	Laffayette gravel	3.5	3	DEBITAGE					TRUE	TRUE	TRUE
2014-518	24	Level 3	CHNK	Laffayette gravel	1	3	DEBITAGE					TRUE	TRUE	
2014-518	24	Level 3	CHNK	Laffayette gravel	3.9	5	DEBITAGE	Shatter						
2014-518	24	Level 3	CHNK	Laffayette gravel	2.7	1	DEBITAGE	Shatter						TRUE
2014-518	24	Level 3	CHNK	Crowley's Ridge	0.4	1	DEBITAGE	Shatter						TRUE
2014-518	24	Level 3	CHNK	Laffayette gravel	1.2	3	DEBITAGE	Shatter					TRUE	
2014-518	24	Level 3	CHNK	Laffayette gravel	15.6	13	DEBITAGE	Shatter					TRUE	TRUE

Table V-7 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2014-518	24	Level 3	COBL	Crowley's Ridge	49.7	3	DEBITAGE	Tested cobbles						TRUE
2014-518	24	Level 3	COBL	Laffayette gravel	26.2	1	DEBITAGE	Tested cobble						TRUE
2014-518	24	Level 3	BIF	Crowley's Ridge	14.3	1	SCR?	Possible scraper, possible tested cobble					TRUE	TRUE
2014-518	24	Level 3	UNIF	Crowley's Ridge	3	1	PREFRM?	Broken preform?					TRUE	TRUE
2014-518	24	Level 3	CORE	Laffayette gravel	5.3	1	BLANK	Broken core for flaking?						
2014-518	24	Level 3	FLA	Laffayette gravel	0.5	1	FLAKE	Retouched flake		1.07	0.25		TRUE	TRUE
2014-518	24	Level 3	BIF	Laffayette gravel	1.2	1	PREFRM	Possible triangular preform		2.08	0.43		TRUE	
2014-518	24	Level 3	BIF	Crowley's Ridge	3.2	1	PREFRM	Triangular preform knapped on flake. Rounded base.	3.16	2.66	0.49			
2014-518	24	Level 3	BIF	Laffayette gravel	6.4	1	PREFRM	Thick, drill-shaped biface		1.89	1.17		TRUE	TRUE
2014-518	24	Level 3	BIF	Laffayette gravel	2.9	1	PREFRM	Roundish shaped preform? Bulb of percussion present on end	2.56	1.98	0.58		TRUE	
2014-518	24	Level 3	BIF	Crowley's Ridge	0.7	1	ARROW	Tip or base of Nodena		1.4	0.26			
2014-518	24	Level 3	BIF	Laffayette gravel	0.8	1	ARROW	Tip or base of Nodena, very tip broken.		1.28	0.29		TRUE	
2014-518	24	Level 3	FLA	Laffayette gravel	0.2	1	DEBITAGE	Production flaking						

Table V-7 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2014-518	24	Level 3	FLA	Laffayette gravel	0.3	2	DEBITAGE	Production flaking						
2014-518	24	Level 3	FLA	Laffayette gravel	0.01	1	DEBITAGE	Production flaking					TRUE	
2014-518	24	Level 3	PEBL	Laffayette gravel	0.5	1	DEBITAGE							
2014-518	38	Level 4	FLA	Crowley's Ridge	0.2	2	DEBITAGE	Production flaking					TRUE	
2014-518	38	Level 4	FLA	Crowley's Ridge	4.8	12	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	38	Level 4	FLA	Crowley's Ridge	7.6	9	DEBITAGE	Production flaking						TRUE
2014-518	38	Level 4	FLA	Crowley's Ridge	16.5	43	DEBITAGE	Production flaking						
2014-518	38	Level 4	FLA	Laffayette gravel	12.4	33	DEBITAGE	Production flaking					TRUE	
2014-518	38	Level 4	FLA	Laffayette gravel	30	26	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	38	Level 4	FLA	Laffayette gravel	5.5	7	DEBITAGE	Production flaking						TRUE
2014-518	38	Level 4	FLA	Laffayette gravel	11	33	DEBITAGE	Production flaking						
2014-518	38	Level 4	PEBL	Laffayette gravel	1.3	4	DEBITAGE							TRUE
2014-518	38	Level 4	CHNK	Laffayette gravel	2.4	1	DEBITAGE	Shatter						
2014-518	38	Level 4	CHNK	Laffayette gravel	76.6	5	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2014-518	38	Level 4	CHNK	Laffayette gravel	0.5	1	DEBITAGE	Shatter				TRUE	TRUE	
2014-518	38	Level 4	BIF	Crowley's Ridge	2.2	1	PREFRM	Crude biface preform						TRUE
2014-518	38	Level 4	BIF	Laffayette gravel	2.2	1	PREFRM	Drill preform?					TRUE	
2014-518	38	Level 4	BIF	Laffayette gravel	1.7	1	ARROW	Nodena with flat bottom	3.22	1.31	0.37			
2014-518	38	Level 4	BIF	Crowley's Ridge	1.7	1	ARROW	Nodena point	3.73	1.25	0.54			

Table V-7 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2014-518	39	Level 4 flotation sample heavy fraction	FLA	Laffayette gravel	0.01	4	DEBITAGE	HF sorted for 10 min. Production flaking						
2014-518	39	Level 4 flotation sample heavy fraction	FLA	Laffayette gravel	0.2	9	DEBITAGE	HF sorted for 10 min. Production flaking					TRUE	
2014-518	39	Level 4 flotation sample heavy fraction	FLA	Laffayette gravel	0.01	1	DEBITAGE	HF sorted for 10 min. Production flaking					TRUE	TRUE
2014-518	39	Level 4 flotation sample heavy fraction	FLA	Crowley's Ridge	0.2	6	DEBITAGE	HF sorted for 10 min. Production flaking						
2014-518	47	Level 5 flotation sample heavy fraction	CHNK	Laffayette gravel	7.6	1	DEBITAGE	HF sorted for 10 min				TRUE	TRUE	TRUE
2014-518	47	Level 5 flotation sample heavy fraction	CHNK	Laffayette gravel	0.8	1	DEBITAGE	HF sorted for 10 min						
2014-518	47	Level 5 flotation sample heavy fraction	FLA	Crowley's Ridge	0.01	2	DEBITAGE	HF sorted for 10 min. Production flaking						

Table V-7 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2014-518	47	Level 5 flotation sample heavy fraction	FLA	Laffayette gravel	0.01	1	DEBITAGE	HF sorted for 10 min. Production flaking						
2014-518	47	Level 5 flotation sample heavy fraction	FLA	Laffayette gravel	0.1	6	DEBITAGE	HF sorted for 10 min. Production flaking					TRUE	
2014-518	48	Level 5	PEBL	Laffayette gravel	6.6	1	DEBITAGE							TRUE
2014-518	48	Level 5	CHNK	Laffayette gravel	1.5	1	DEBITAGE					TRUE	TRUE	
2014-518	48	Level 5	PEBL	Channel coal	0.01	1	DEBITAGE							
2014-518	48	Level 5	FLA	Laffayette gravel	1.7	6	DEBITAGE	Production flaking					TRUE	
2014-518	48	Level 5	FLA	Laffayette gravel	5.2	5	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	48	Level 5	FLA	Laffayette gravel	0.6	1	DEBITAGE	Production flaking						TRUE
2014-518	48	Level 5	FLA	Laffayette gravel	3	8	DEBITAGE	Production flaking						
2014-518	48	Level 5	FLA	Crowley's Ridge	0.3	1	DEBITAGE	Production flaking					TRUE	
2014-518	48	Level 5	FLA	Crowley's Ridge	3.2	7	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	48	Level 5	FLA	Crowley's Ridge	2	6	DEBITAGE	Production flaking						TRUE
2014-518	48	Level 5	FLA	Crowley's Ridge	1.7	8	DEBITAGE	Production flaking						
2014-518	48	Level 5	FLA	Laffayette gravel	4	1	PREFRM	Nodena preform? Or large woodland point		2.19	0.58			TRUE
2014-518	48	Level 5	FLA	Laffayette gravel	1.5	1	DRL	Drill		1.19	0.61		TRUE	

Table V-7 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2014-518	56	Feature 1 flotation sample, heavy fraction	FLA	Crowley's Ridge	0.01	1	DEBITAGE	HF sorted for ~5 min. Production flaking						

Figure V-24: Scraper (?), preform, drill (?) preform, base of point, crude Nodena, broken Nodena, blank, 3 partial Nodenas. Excavated from Level 3 of TU4.

Figure V-25: Two Nodenas (one flat based), drill preform, preform with cortex. Excavated from Level 4 of TU4.

Figure V-26: Preform and drill. Excavated from Level 5 of TU4.

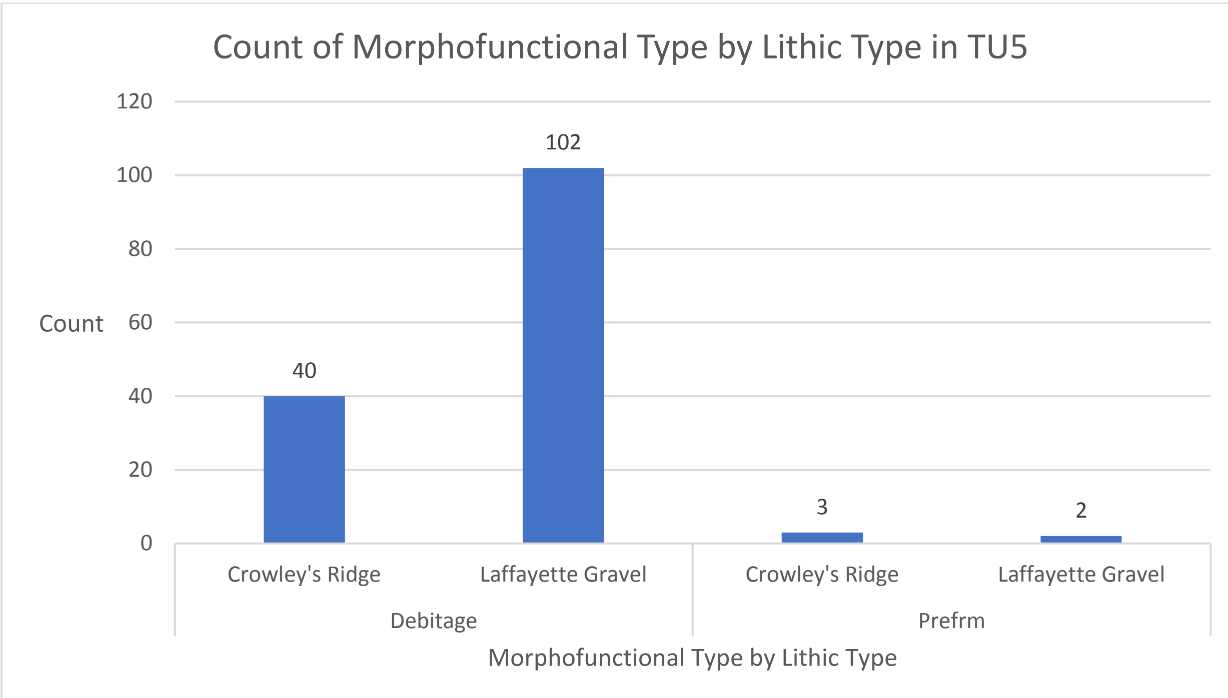

Figure V-27: Count of morphofunctional type by type of lithic excavated from Test Unit 5 in 2014. Prefrm = Preform

Table V-8: Lithic artifacts excavated from TU5 as summarized in Figure V-27.

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2014-518	1	Level 1 hand picked	FLA	Laffayette gravel	5.9	1	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	1	Level 1 hand picked	CHNK	Laffayette gravel	1.2	1	DEBITAGE	Shatter						TRUE
2014-518	4	Level 2 hand picked	FLA	Crowley's Ridge	1.1	1	DEBITAGE	Production flaking						
2014-518	4	Level 2 hand picked	FLA	Laffayette gravel	2	1	DEBITAGE	Production flaking, shatter at top					TRUE	TRUE
2014-518	4	Level 2 hand picked	BIF	Crowley's Ridge	2.5	1	PREFRM	Thick Nodena? Preform?		1.34	0.67			TRUE
2014-518	7	Level 3 flotation sample heavy fraction	FLA	Crowley's Ridge	0.01	1	DEBITAGE	HF sorted for 10 min. Production flaking						TRUE
2014-518	7	Level 3 flotation sample heavy fraction	FLA	Crowley's Ridge	0.6	4	DEBITAGE	HF sorted for 10 min. Production flaking						
2014-518	7	Level 3 flotation sample heavy fraction	FLA	Crowley's Ridge	0.1	4	DEBITAGE	HF sorted for 10 min. Production flaking					TRUE	
2014-518	7	Level 3 flotation sample heavy fraction	FLA	Crowley's Ridge	0.7	3	DEBITAGE	HF sorted for 10 min. Production flaking					TRUE	TRUE

Table V-8 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2014-518	7	Level 3 flotation sample heavy fraction	FLA	Laffayette gravel	0.7	3	DEBITAGE	HF sorted for 10 min. Production flaking					TRUE	TRUE
2014-518	7	Level 3 flotation sample heavy fraction	FLA	Laffayette gravel	2.3	7	DEBITAGE	HF sorted for 10 min. Production flaking					TRUE	
2014-518	7	Level 3 flotation sample heavy fraction	FLA	Laffayette gravel	0.6	4	DEBITAGE	HF sorted for 10 min. Production flaking						
2014-518	7	Level 3 flotation sample heavy fraction	CORE	Crowley's Ridge	78.6	1	DEBITAGE	HF sorted for 10 min. Production flaking						TRUE
2014-518	7	Level 3 flotation sample heavy fraction	PEBL	Laffayette gravel	4.7	1	DEBITAGE	HF sorted for 10 min						TRUE
2014-518	7	Level 3 flotation sample heavy fraction	CHNK	Crowley's Ridge	0.01	1	DEBITAGE	HF sorted for 10 min. Shatter						
2014-518	8	Level 4 hand picked	FLA	Crowley's Ridge	2.3	2	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	8	Level 4 hand picked	FLA	Crowley's Ridge	0.2	1	DEBITAGE	Production flaking					TRUE	
2014-518	8	Level 4 hand picked	FLA	Laffayette gravel	0.2	1	DEBITAGE	Production flaking						

Table V-8 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2014-518	8	Level 4 hand picked	FLA	Laffayette gravel	0.1	1	DEBITAGE	Production flaking					TRUE	
2014-518	15	Level 5	FLA	Laffayette gravel	1.2	1	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	15	Level 5	FLA	Laffayette gravel	1.1	3	DEBITAGE	Production flaking					TRUE	
2014-518	15	Level 5	FLA	Laffayette gravel	0.4	2	DEBITAGE	Production flaking						TRUE
2014-518	18	Level 5 flotation sample heavy fraction	FLA	Crowley's Ridge	0.01	1	DEBITAGE	HF sorted for 10 min. Production flaking					TRUE	
2014-518	18	Level 5 flotation sample heavy fraction	FLA	Crowley's Ridge	0.2	5	DEBITAGE	HF sorted for 10 min. Production flaking						
2014-518	18	Level 5 flotation sample heavy fraction	FLA	Crowley's Ridge	0.5	3	DEBITAGE	HF sorted for 10 min. Production flaking						TRUE
2014-518	18	Level 5 flotation sample heavy fraction	FLA	Crowley's Ridge	0.8	3	DEBITAGE	HF sorted for 10 min. Production flaking					TRUE	TRUE
2014-518	18	Level 5 flotation sample heavy fraction	FLA	Laffayette gravel	0.7	5	DEBITAGE	HF sorted for 10 min. Production flaking					TRUE	TRUE
2014-518	18	Level 5 flotation sample heavy fraction	FLA	Laffayette gravel	1.4	16	DEBITAGE	HF sorted for 10 min. Production flaking					TRUE	

Table V-8 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2014-518	18	Level 5 flotation sample heavy fraction	FLA	Laffayette gravel	0.9	12	DEBITAGE	HF sorted for 10 min. Production flaking						
2014-518	18	Level 5 flotation sample heavy fraction	PEBL	Laffayette gravel	0.5	1	DEBITAGE	HF sorted for 10 min						
2014-518	18	Level 5 flotation sample heavy fraction	CHNK	Laffayette gravel	0.9	2	DEBITAGE	HF sorted for 10 min. Shatter				TRUE	TRUE	TRUE
2014-518	21	Level 6 East 1/2 of midden	FLA	Crowley's Ridge	1.2	2	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	21	Level 6 East 1/2 of midden	FLA	Laffayette gravel	1.6	2	DEBITAGE	Production flaking						
2014-518	21	Level 6 East 1/2 of midden	FLA	Laffayette gravel	3.1	3	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	21	Level 6 East 1/2 of midden	FLA	Laffayette gravel	3	6	DEBITAGE	Production flaking					TRUE	
2014-518	21	Level 6 East 1/2 of midden	COBL	Laffayette gravel	9.9	1	DEBITAGE	Test cobble					TRUE	TRUE
2014-518	21	Level 6 East 1/2 of midden	CHNK	Laffayette gravel	9.2	2	DEBITAGE	Shatter					TRUE	
2014-518	22	Level 6 West half of midden	BIF	Crowley's Ridge	3.1	1	PREFRM	Nodena preform?		2.16	0.51		TRUE	
2014-518	22	Level 6 West half of midden	BIF	Laffayette gravel	1.5	1	PREFRM	Broken at both ends		1.81	0.66		TRUE	

Table V-8 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2014-518	30	Level 7 hand picked	PEBL	Laffayette gravel	4.6	1	DEBITAGE							TRUE
2014-518	30	Level 7 hand picked	FLA	Crowley's Ridge	0.4	2	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	30	Level 7 hand picked	FLA	Crowley's Ridge	0.3	1	DEBITAGE	Production flaking						
2014-518	30	Level 7 hand picked	FLA	Crowley's Ridge	0.7	2	DEBITAGE	Production flaking						TRUE
2014-518	30	Level 7 hand picked	FLA	Laffayette gravel	1	3	DEBITAGE	Production flaking						
2014-518	30	Level 7 hand picked	FLA	Laffayette gravel	0.9	1	DEBITAGE	Production flaking					TRUE	
2014-518	30	Level 7 hand picked	FLA	Laffayette gravel	12.8	6	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	30	Level 7 hand picked	FLA	Laffayette gravel	3.9	3	DEBITAGE	Production flaking						TRUE
2014-518	37	Level 8	FLA	Laffayette gravel	1.4	2	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	37	Level 8	FLA	Laffayette gravel	3.9	4	DEBITAGE	Production flaking						
2014-518	37	Level 8	FLA	Laffayette gravel	4.7	6	DEBITAGE	Production flaking					TRUE	
2014-518	37	Level 8	FLA	Crowley's Ridge	3.7	3	DEBITAGE	Production flaking					TRUE	TRUE
2014-518	37	Level 8	BIF	Crowley's Ridge	1.9	1	PREFRM	Nodena preform? Mostly one flake, but retouched from both sides		1.51	0.39		TRUE	

Table V-8 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2014-518	37	Level 8	BIF	Laffayette gravel	2.6	1	PREFRM	Nodena preform?		1.62	0.53			

Figure V-28: Nodena preform. Handpicked from Level 2 of TU5.

Figure V-29: Preforms. Excavated from Level 6, west half of midden of TU5.

Figure V-30: Nodena preforms. Excavated from Level 8 of TU5.

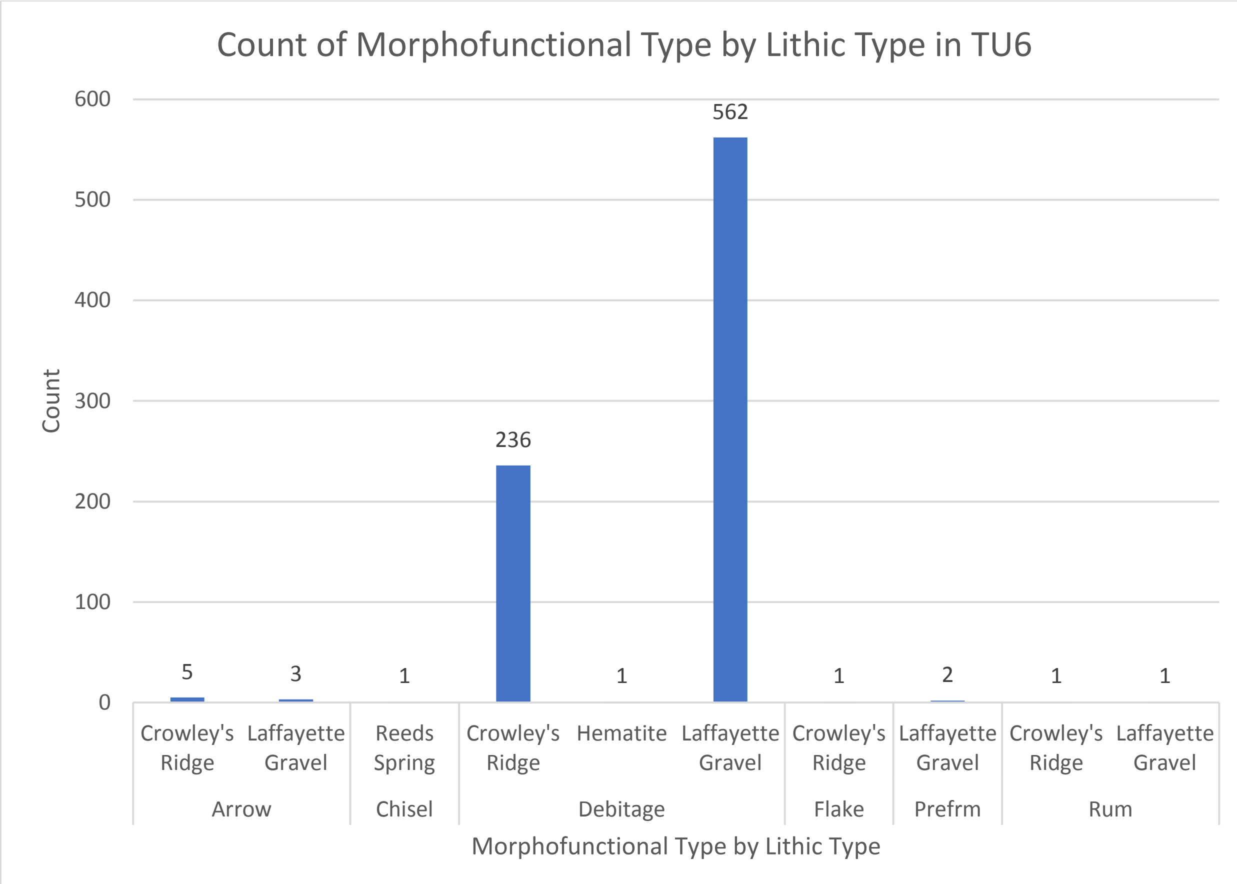

Figure V-31: Count of morphofunctional type by type of lithic excavated from Test Unit 6 in 2016. Prefrm = Preform, Rum = Retouched/utilized/modified

Table V-9: Lithic artifacts excavated from TU6 as summarized in Figure V-31.

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	1	Level 1	BIF	Crowley's Ridge	0.6	1	ARROW	Base? Of Nodena		1.29	0.34		TRUE	
2016-503	1	Level 1	BIF	Crowley's Ridge	0.8	1	ARROW	Tip of Nodena or Madison. Base and body broken		1.17	0.28		TRUE	
2016-503	1	Level 1	BIF	Crowley's Ridge	1.6	1	ARROW	Nodena broken during thining and used as point anyway?	2.5	1.37	0.57			
2016-503	1	Level 1	BIF	Laffayette gravel	0.7	1	PREFRM	Base or tip of point		1.18	0.45			
2016-503	1	Level 1	BIF	Laffayette gravel	0.8	1	ARROW	Base of Nodena		1.3	0.43			
2016-503	1	Level 1	BIF	Laffayette gravel	0.4	1	ARROW	Base or tip of point		1.19	0.34		TRUE	
2016-503	1	Level 1	BIF	Laffayette gravel	5.2	1	PREFRM	Large woodland point or preform		2.38	0.9			
2016-503	1	Level 1	CHNK	Crowley's Ridge	23.7	2	DEBITAGE	Flaked chunks						TRUE
2016-503	1	Level 1	CHNK	Laffayette gravel	0.7	2	DEBITAGE	Shatter						
2016-503	1	Level 1	FCR	Laffayette gravel	20.3	7	DEBITAGE	Fire cracked shatter				TRUE	TRUE	TRUE
2016-503	1	Level 1	FLA	Crowley's Ridge	8.3	20	DEBITAGE	Production flaking					TRUE	
2016-503	1	Level 1	FLA	Crowley's Ridge	16.4	32	DEBITAGE	Production flaking						
2016-503	1	Level 1	FLA	Crowley's Ridge	25	37	DEBITAGE	Production flaking					TRUE	TRUE

Table V-9 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	1	Level 1	FLA	Crowley's Ridge	19	13	DEBITAGE	Production flaking						TRUE
2016-503	1	Level 1	FLA	Laffayette gravel	26.8	28	DEBITAGE	Production flaking						TRUE
2016-503	1	Level 1	FLA	Laffayette gravel	57.6	65	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	1	Level 1	FLA	Laffayette gravel	2.1	1	RUM	Possibly retouched along one edge						
2016-503	1	Level 1	FLA	Laffayette gravel	16.6	58	DEBITAGE	Production flaking						
2016-503	1	Level 1	FLA	Laffayette gravel	28	71	DEBITAGE	Production flaking					TRUE	
2016-503	1	Level 1	UNIF	Crowley's Ridge	3.6	1	FLAKE	Smaller flakes taken off of one side						
2016-503	9	Level 2	BIF	Crowley's Ridge	0.7	1	ARROW	Madison or Nodena point		1.34	0.33			
2016-503	9	Level 2	BIF	Reeds Spring	17.8	1	Chisel	Ground smooth at tip, flak marks at base from hammering. Heat treatment and spalling on side from fire (probably house burning down.	6.74	1.87	1.02	TRUE	TRUE	
2016-503	9	Level 2	FCR	Crowley's Ridge	12.4	2	DEBITAGE	Shatter				TRUE	TRUE	TRUE

Table V-9 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	9	Level 2	FCR	Laffayette gravel	42.3	2	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2016-503	9	Level 2	FLA	Crowley's Ridge	7.1	6	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	9	Level 2	FLA	Crowley's Ridge	1.3	3	DEBITAGE	Production flaking						TRUE
2016-503	9	Level 2	FLA	Crowley's Ridge	2.5	2	DEBITAGE	Production flaking					TRUE	
2016-503	9	Level 2	FLA	Crowley's Ridge	0.4	1	DEBITAGE	Production flaking						
2016-503	9	Level 2	FLA	Laffayette gravel	5.6	8	DEBITAGE	Production flaking					TRUE	
2016-503	9	Level 2	FLA	Laffayette gravel	3.9	5	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	9	Level 2	FLA	Laffayette gravel	1.5	2	DEBITAGE	Production flaking						TRUE
2016-503	9	Level 2	FLA	Laffayette gravel	5.6	13	DEBITAGE	Production flaking						
2016-503	9	Level 2	UNIF	Crowley's Ridge	0.9	1	ARROW	Crude Madison. Some retouching on edges of one side of flake	2.37	1.53	0.26		TRUE	
2016-503	15	Level 3	COBL	conglomerate	64.2	2	DEBITAGE	Two pieces refit, naturally broken						
2016-503	15	Level 3	DEB	Crowley's Ridge	7.6	1	DEBITAGE	Shatter						TRUE
2016-503	15	Level 3	DEB	Laffayette gravel	2.4	1	DEBITAGE	Shatter					TRUE	TRUE
2016-503	15	Level 3	FCR	Crowley's Ridge	85.8	1	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2016-503	15	Level 3	FCR	Laffayette gravel	77.9	6	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2016-503	15	Level 3	FCR	Laffayette gravel	5.1	3	DEBITAGE	Shatter				TRUE	TRUE	

Table V-9 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	15	Level 3	FLA	Crowley's Ridge	15.9	20	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	15	Level 3	FLA	Crowley's Ridge	1.7	1	RUM	Possibly utilized flake, maybe just broken that way					TRUE	
2016-503	15	Level 3	FLA	Crowley's Ridge	3	5	DEBITAGE	Production flaking						TRUE
2016-503	15	Level 3	FLA	Crowley's Ridge	0.9	4	DEBITAGE	Production flaking						
2016-503	15	Level 3	FLA	Crowley's Ridge	2.4	7	DEBITAGE	Production flaking					TRUE	
2016-503	15	Level 3	FLA	Laffayette gravel	5.8	17	DEBITAGE	Production flaking						
2016-503	15	Level 3	FLA	Laffayette gravel	4.2	5	DEBITAGE	Production flaking						TRUE
2016-503	15	Level 3	FLA	Laffayette gravel	46.1	53	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	15	Level 3	FLA	Laffayette gravel	26	68	DEBITAGE	Production flaking					TRUE	
2016-503	15	Level 3	PEBL	Laffayette gravel	0.5	1	DEBITAGE						TRUE	TRUE
2016-503	21	Level 1 of southwest Balk wall over hearth	FLA	Crowley's Ridge	0.8	2	DEBITAGE	Production flaking					TRUE	
2016-503	21	Level 1 of southwest Balk wall over hearth	FLA	Crowley's Ridge	1.8	2	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	21	Level 1 of southwest Balk wall over hearth	FLA	Laffayette gravel	1.6	1	DEBITAGE	Production flaking						TRUE
2016-503	21	Level 1 of southwest Balk wall over hearth	FLA	Laffayette gravel	4.8	6	DEBITAGE	Production flaking					TRUE	TRUE

Table V-9 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	21	Level 1 of southwest Balk wall over hearth	FLA	Laffayette gravel	0.9	4	DEBITAGE	Production flaking					TRUE	
2016-503	21	Level 1 of southwest Balk wall over hearth	FLA	Laffayette gravel	1.4	4	DEBITAGE	Production flaking						
2016-503	22	Level 3 flotation sample heavy fraction	FCR	Laffayette gravel	3.1	37	DEBITAGE	Hf sorted for ~5 min. Shatter from one rock				TRUE	TRUE	
2016-503	22	Level 3 flotation sample heavy fraction	FCR	Laffayette gravel	0.01	1	DEBITAGE	Hf sorted for ~5 min. Shatter				TRUE		TRUE
2016-503	22	Level 3 flotation sample heavy fraction	FLA	Laffayette gravel	0.4	3	DEBITAGE	Hf sorted for ~5 min. Production flaking						
2016-503	22	Level 3 flotation sample heavy fraction	FLA	Laffayette gravel	0.2	2	DEBITAGE	Hf sorted for ~5 min, Production flaking					TRUE	
2016-503	27	Remaining Balk wall above hearth	FLA	Crowley's Ridge	2.6	2	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	27	Remaining Balk wall above hearth	FLA	Crowley's Ridge	0.3	1	DEBITAGE	Production flaking						

Table V-9 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	27	Remaining Balk wall above hearth	FLA	Laffayette gravel	0.2	2	DEBITAGE	Production flaking					TRUE	
2016-503	27	Remaining Balk wall above hearth	FLA	Laffayette gravel	1.4	6	DEBITAGE	Production flaking						
2016-503	27	Remaining Balk wall above hearth	FLA	Laffayette gravel	0.3	1	DEBITAGE	Production flaking						TRUE
2016-503	27	Remaining Balk wall above hearth	FLA	Laffayette gravel	0.8	2	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	28	Feature 6 S 1/2	FCR	Laffayette gravel	1.7	2	DEBITAGE	HF sorted for ~10 min. Shatter				TRUE	TRUE	
2016-503	28	Feature 6 S 1/2	FLA	Crowley's Ridge	0.01	2	DEBITAGE	HF sorted for ~10 min. Production flaking						
2016-503	28	Feature 6 S 1/2	FLA	Laffayette gravel	0.3	5	DEBITAGE	HF sorted for ~10 min. Production flaking						
2016-503	28	Feature 6 S 1/2	FLA	Laffayette gravel	0.9	4	DEBITAGE	HF sorted for ~10 min. Production flaking						TRUE
2016-503	28	Feature 6 S 1/2	FLA	Laffayette gravel	1.2	3	DEBITAGE	HF sorted for ~10 min. Production flaking					TRUE	TRUE

Table V-9 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	28	Feature 6 S 1/2	FLA	Laffayette gravel	0.4	7	DEBITAGE	HF sorted for ~10 min. Production flaking					TRUE	
2016-503	37	Level 4	BIF	Laffayette gravel	2.2	1	ARROW	Nodena?		1.75	0.54		TRUE	
2016-503	37	Level 4	COBL	Laffayette gravel	0.7	2	DEBITAGE	Shatter						
2016-503	37	Level 4	COBL	Laffayette gravel	17.8	1	DEBITAGE	Test cobble						TRUE
2016-503	37	Level 4	COBL	Laffayette gravel	54.3	1	DEBITAGE	Broken through						
2016-503	37	Level 4	CORE	Crowley's Ridge	36.6	1	DEBITAGE							TRUE
2016-503	37	Level 4	FCR	Laffayette gravel	1	2	DEBITAGE	Shatter				TRUE	TRUE	
2016-503	37	Level 4	FLA	Crowley's Ridge	32.1	28	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	37	Level 4	FLA	Crowley's Ridge	5.7	6	DEBITAGE	Production flaking						TRUE
2016-503	37	Level 4	FLA	Crowley's Ridge	4.3	14	DEBITAGE	Production flaking					TRUE	
2016-503	37	Level 4	FLA	Crowley's Ridge	5.5	23	DEBITAGE	Production flaking						
2016-503	37	Level 4	FLA	Laffayette gravel	9.2	21	DEBITAGE	Production flaking						
2016-503	37	Level 4	FLA	Laffayette gravel	3	2	DEBITAGE	Production flaking						TRUE
2016-503	37	Level 4	FLA	Laffayette gravel	11.7	15	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	37	Level 4	FLA	Laffayette gravel	5.5	24	DEBITAGE	Production flaking					TRUE	
2016-503	37	Level 4	PEBL	Hematite	0.2	1	DEBITAGE							

Figure V-32: Preform, broken Nodena, Nodena, broken Nodena, 2 preforms, 2 broken Nodenas, broken Nodena or Madison. Excavated from Level 1 of TU6.

Figure V-33: Chisel (both sides pictured), broken Madison or Nodena, and crude Madison. Excavated from Level 2 of TU6.

Figure V-34: Retouched, utilized, modified flake. Excavated from Level 3 of TU6.

Figure V-35: Hematite and broken Nodena. Excavated from Level 4 of TU6.

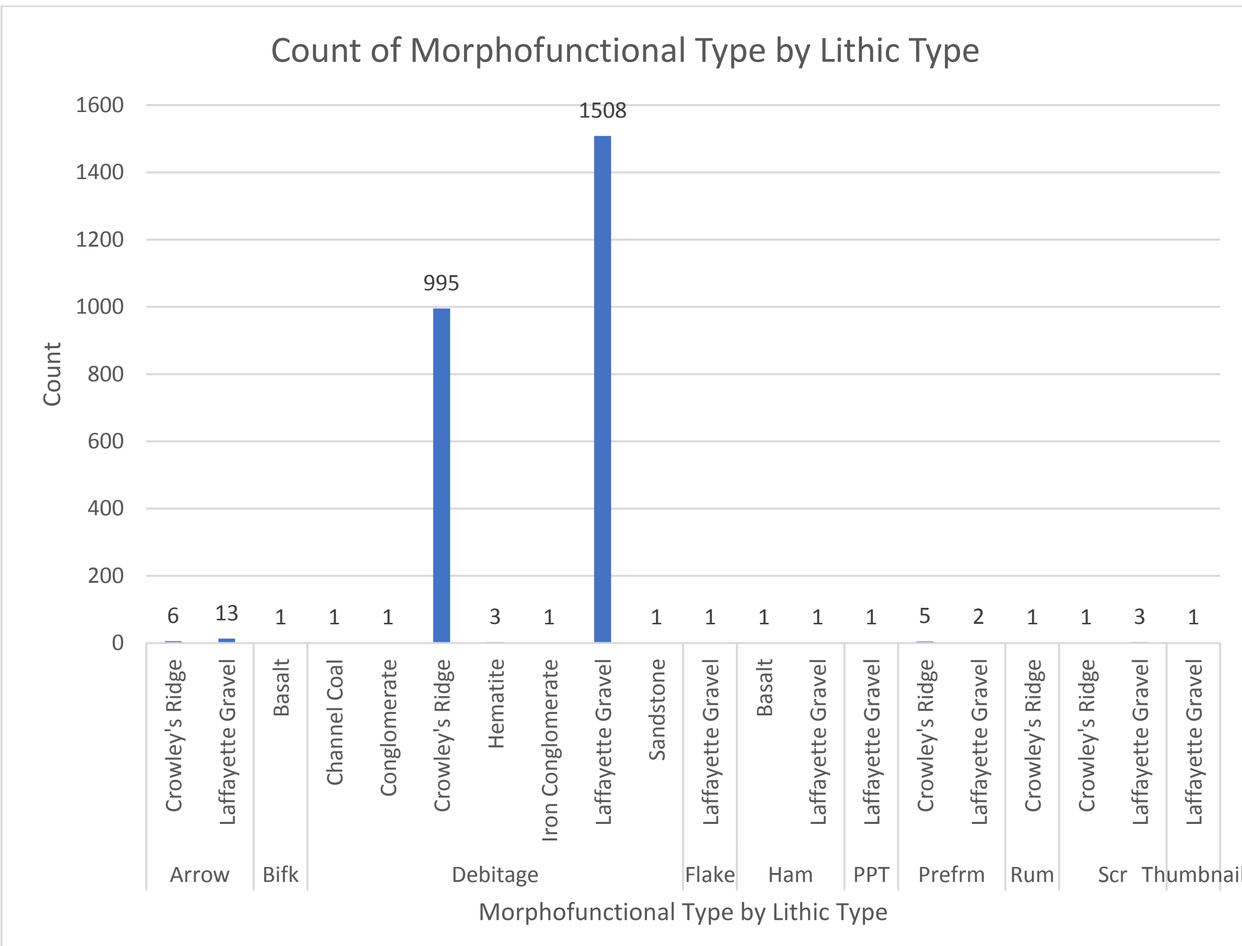

Figure V-36: Count of morphofunctional type by type of lithic excavated from Test Unit 7 in 2016. Bifk = Biface/knife/preform, Ham = Hammerstone, PPT = Projectile point, Prefrm = Preform, Scr = Scraper

Table V-10: Lithic artifacts excavated from TU7 as summarized in Figure V-36.

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	2	Level 1	BIF	Crowley's Ridge	0.7	1	ARROW	Tip of point made on flake. Small flake scars on back to make it a biface		1.55	0.32			
2016-503	2	Level 1	BIF	Laffayette gravel	1.1	1	ARROW	Tip of Nodena? Thinned/broken just above break		1.19	0.47			
2016-503	2	Level 1	BIF	Laffayette gravel	0.8	1	PPT	Broken base or tip of point (if tip is it preform)		1.22	0.6		TRUE	
2016-503	2	Level 1	BIF	Laffayette gravel	2.4	1	ARROW	Madison, fairly thick. Maybe not finished?	3.16	1.44	0.69		TRUE	
2016-503	2	Level 1	BIF	Laffayette gravel	1.7	1	ARROW	Nodena point	3.35	1.44	0.31			
2016-503	2	Level 1	CHNK	Congomlerate	29.5	1	DEBITAGE							
2016-503	2	Level 1	CHNK	Crowley's Ridge	0.2	1	DEBITAGE	Shatter (not necessarily from heat)						
2016-503	2	Level 1	CHNK	Laffayette gravel	2.3	1	DEBITAGE	Shatter (not necessarily from heat)					TRUE	TRUE
2016-503	2	Level 1	CHNK	Laffayette gravel	8.7	3	DEBITAGE	Shatter						
2016-503	2	Level 1	COBL	Crowley's Ridge	31.4	1	DEBITAGE	Test cobbles						TRUE
2016-503	2	Level 1	CORE	Laffayette gravel	18.1	1	DEBITAGE							TRUE
2016-503	2	Level 1	FCR	Crowley's Ridge	5	2	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2016-503	2	Level 1	FCR	Laffayette gravel	13.7	8	DEBITAGE	Shatter				TRUE	TRUE	

Table V-10 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	2	Level 1	FLA	Crowley's Ridge	30.9	141	DEBITAGE	Production flaking						
2016-503	2	Level 1	FLA	Crowley's Ridge	13.9	37	DEBITAGE	Production flaking					TRUE	
2016-503	2	Level 1	FLA	Crowley's Ridge	49.6	71	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	2	Level 1	FLA	Crowley's Ridge	0.9	2	DEBITAGE	Production flaking						
2016-503	2	Level 1	FLA	Crowley's Ridge	0.1	1	DEBITAGE	Production flaking					TRUE	
2016-503	2	Level 1	FLA	Crowley's Ridge	56	73	DEBITAGE	Production flaking						TRUE
2016-503	2	Level 1	FLA	Laffayette gravel	0.3	2	DEBITAGE	Production flaking					TRUE	
2016-503	2	Level 1	FLA	Laffayette gravel	52.4	148	DEBITAGE	Production flaking					TRUE	
2016-503	2	Level 1	FLA	Laffayette gravel	118	155	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	2	Level 1	FLA	Laffayette gravel	49.5	55	DEBITAGE	Production flaking						TRUE
2016-503	2	Level 1	FLA	Laffayette gravel	56.8	185	DEBITAGE	Production flaking						
2016-503	2	Level 1	FLA	Laffayette gravel	0.2	1	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	2	Level 1	FLA	Laffayette gravel	0.6	1	DEBITAGE	production flaking						TRUE
2016-503	2	Level 1	PEBL	Laffayette gravel	26.4	11	DEBITAGE							
2016-503	6	Level 1 tree stump	COBL	Laffayette gravel	18.7	1	DEBITAGE	Test cobble						
2016-503	6	Level 1 tree stump	FLA	Crowley's Ridge	0.9	2	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	6	Level 1 tree stump	FLA	Crowley's Ridge	1.7	3	DEBITAGE	Production flaking						TRUE
2016-503	6	Level 1 tree stump	FLA	Crowley's Ridge	0.7	1	DEBITAGE	Production flaking						
2016-503	6	Level 1 tree stump	FLA	Laffayette gravel	0.01	1	FAUNA	Production flaking						

Table V-10 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	6	Level 1 tree stump	FLA	Laffayette gravel	1.4	5	DEBITAGE	Production flaking						
2016-503	6	Level 1 tree stump	FLA	Laffayette gravel	0.5	1	DEBITAGE	Production flaking					TRUE	
2016-503	6	Level 1 tree stump	PEBL	Hematite	3.2	1	DEBITAGE	Hematite chunk						
2016-503	10	Level 2	BIF	Crowley's Ridge	4.5	1	PREFRM	Rough Nodena? Preform. Thick area in middle maybe couldn't be thinned	3.37	1.8	0.77			
2016-503	10	Level 2	BIF	Crowley's Ridge	4.2	1	PREFRM	Thick Nodena, one side broken near bottom	4.02	1.82	0.84			
2016-503	10	Level 2	BIF	Crowley's Ridge	3.7	1	PREFRM	Thick Nodena or Madison preform		1.8	0.82			TRUE
2016-503	10	Level 2	BIF	Crowley's Ridge	1.3	1	DEBITAGE	Bifacial on two sides, but broken to be unrecognizable					TRUE	TRUE
2016-503	10	Level 2	BIF	Crowley's Ridge	12.4	1	SCR	Bifacial flaking of one edge. Scraper?					TRUE	TRUE
2016-503	10	Level 2	BIF	Crowley's Ridge	1.2	1	ARROW	Madison, bottom corner slightly broken	2.14	1.65	0.39			
2016-503	10	Level 2	BIF	Crowley's Ridge	3	1	PREFRM	Broken, but bifacial						TRUE
2016-503	10	Level 2	BIF	Crowley's Ridge	1	1	ARROW	Nodena point		1.72	0.38		TRUE	

Table V-10 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	10	Level 2	BIF	Crowley's Ridge	2.2	1	ARROW	Nodena made on thick flake. Node of percussion present on end		1.4	0.47		TRUE	TRUE
2016-503	10	Level 2	BIF	Laffayette gravel	3.1	1	ARROW	Thick Nodena point		1.35	0.69			
2016-503	10	Level 2	BIF	Laffayette gravel	3.9	1	PREFRM	Rough Madison preform	3.74	1.98	0.7			
2016-503	10	Level 2	BIF	Laffayette gravel	14.5	1	SCR	Scraper? Very thick, but thinned to sharp edge	3.76	2.46	1.63			TRUE
2016-503	10	Level 2	BIF	Laffayette gravel	0.8	1	ARROW	Nodena		1.43	0.42			
2016-503	10	Level 2	BIF	Laffayette gravel	1.5	1	ARROW	Madison		1.86	0.37		TRUE	
2016-503	10	Level 2	BIF	Laffayette gravel	1.4	1	ARROW	Likely Madison point		1.48	0.47		TRUE	
2016-503	10	Level 2	BIF	Laffayette gravel	0.7	1	ARROW	Small point, broken on both ends		1.51	0.4			
2016-503	10	Level 2	BIF	Laffayette gravel	3.4	1	THUMBNAIL	Thumbnail scraper	2.54	2.09	0.63			
2016-503	10	Level 2	BIF	Laffayette gravel	1	1	ARROW	Likely Nodena point		1.26	0.36		TRUE	
2016-503	10	Level 2	CHNK	Channel coal	2.1	1	DEBITAGE							
2016-503	10	Level 2	CHNK	iron conglomerate	0.5	1	DEBITAGE	not historic, natural conglomeration						
2016-503	10	Level 2	COBL	Crowley's Ridge	130.6	6	DEBITAGE	Test cobble						TRUE
2016-503	10	Level 2	COBL	Laffayette gravel	84.7	6	DEBITAGE	Test cobble						TRUE
2016-503	10	Level 2	COBL	Laffayette gravel	11.9	1	DEBITAGE	Test cobble					TRUE	TRUE

Table V-10 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	10	Level 2	DEB	Laffayette gravel	4.6	1	DEBITAGE	shatter						TRUE
2016-503	10	Level 2	FCR	Crowley's Ridge	30.3	4	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2016-503	10	Level 2	FCR	Laffayette gravel	8.7	8	DEBITAGE	Shatter				TRUE	TRUE	
2016-503	10	Level 2	FCR	Laffayette gravel	61.5	18	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2016-503	10	Level 2	FLA	Crowley's Ridge	1	8	DEBITAGE	Production flaking						
2016-503	10	Level 2	FLA	Crowley's Ridge	0.2	2	DEBITAGE	Production flaking					TRUE	
2016-503	10	Level 2	FLA	Crowley's Ridge	14.2	40	DEBITAGE	Production flaking					TRUE	
2016-503	10	Level 2	FLA	Crowley's Ridge	64.4	93	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	10	Level 2	FLA	Crowley's Ridge	42.2	77	DEBITAGE	Production flaking						TRUE
2016-503	10	Level 2	FLA	Crowley's Ridge	3.5	1	RUM	Unifacial retouching on both sides of flake	2.89	1.97	0.63		TRUE	TRUE
2016-503	10	Level 2	FLA	Crowley's Ridge	43.3	161	DEBITAGE	Production flaking						
2016-503	10	Level 2	FLA	Laffayette gravel	0.7	6	DEBITAGE	Production flaking						
2016-503	10	Level 2	FLA	Laffayette gravel	0.1	1	DEBITAGE	Production flaking						TRUE
2016-503	10	Level 2	FLA	Laffayette gravel	1	1	FLAKE	Flake, possibly retouched on one edge						TRUE
2016-503	10	Level 2	FLA	Laffayette gravel	77.6	219	DEBITAGE	Production flaking						
2016-503	10	Level 2	FLA	Laffayette gravel	0.8	2	DEBITAGE	Production flaking						TRUE
2016-503	10	Level 2	FLA	Laffayette gravel	46.2	40	DEBITAGE	Production flaking						TRUE

Table V-10 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	10	Level 2	FLA	Laffayette gravel	81.8	118	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	10	Level 2	FLA	Laffayette gravel	61.6	170	DEBITAGE	Production flaking					TRUE	
2016-503	10	Level 2	PEBL	Crowley's Ridge	12.6	1	DEBITAGE							TRUE
2016-503	10	Level 2	PEBL	Laffayette gravel	26.4	10	DEBITAGE							TRUE
2016-503	10	Level 2	UTIL	Basalt	382.6	1	HAM	Utilized on all edges and center of bottom						
2016-503	16	Level 3	BIF	Basalt	6.7	1	BIFK	Possibly broken on bottom. Formed on flake with some retouching on one side and further flaking on the other	3.95	2.41	0.68			
2016-503	16	Level 3	BIF	Crowley's Ridge	9.5	1	PREFRM	Thick preform for point	4.19	2.54	1.22		TRUE	TRUE
2016-503	16	Level 3	BIF	Crowley's Ridge	2.2	1	ARROW	Madison, or possibly larger triangular point		1.91	0.43		TRUE	
2016-503	16	Level 3	BIF	Laffayette gravel	1.7	1	PREFRM	Preform for small point		1.83	0.48		TRUE	
2016-503	16	Level 3	BIF	Laffayette gravel	1.2	1	ARROW	Nodena		1.47	0.44			
2016-503	16	Level 3	BIF	Laffayette gravel	1.4	1	ARROW	Base of Madison		1.69	0.5		TRUE	TRUE
2016-503	16	Level 3	BIF	Laffayette gravel	0.6	1	ARROW	Small point		1.34	0.34		TRUE	

Table V-10 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	16	Level 3	BIF	Laffayette gravel	1.9	1	ARROW	Rough Madison or possibly broken at base	2.78	1.31	0.62		TRUE	TRUE
2016-503	16	Level 3	COBL	Crowley's Ridge	74	4	DEBITAGE	Shatter						TRUE
2016-503	16	Level 3	COBL	Laffayette gravel	16.8	3	DEBITAGE	Shatter						TRUE
2016-503	16	Level 3	COBL	Laffayette gravel	136.4	1	DEBITAGE							TRUE
2016-503	16	Level 3	COBL	Laffayette gravel	197.4	1	HAM							TRUE
2016-503	16	Level 3	CORE	Laffayette gravel	86.8	1	DEBITAGE	Flakes from multiple sides						TRUE
2016-503	16	Level 3	FCR	Crowley's Ridge	30.9	5	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2016-503	16	Level 3	FCR	Laffayette gravel	75.9	10	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2016-503	16	Level 3	FCR	Laffayette gravel	2.9	2	DEBITAGE	Shatter				TRUE	TRUE	
2016-503	16	Level 3	FLA	Crowley's Ridge	18.3	74	DEBITAGE	Production flaking						
2016-503	16	Level 3	FLA	Crowley's Ridge	0.4	2	DEBITAGE	Production flaking					TRUE	
2016-503	16	Level 3	FLA	Crowley's Ridge	0.1	1	DEBITAGE	Production flaking						
2016-503	16	Level 3	FLA	Crowley's Ridge	0.01	1	DEBITAGE	Production flaking						
2016-503	16	Level 3	FLA	Crowley's Ridge	16.5	42	DEBITAGE	Production flaking					TRUE	
2016-503	16	Level 3	FLA	Crowley's Ridge	30.7	49	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	16	Level 3	FLA	Crowley's Ridge	25.7	45	DEBITAGE	Production flaking						TRUE
2016-503	16	Level 3	FLA	Laffayette gravel	0.1	1	DEBITAGE	Production flaking						
2016-503	16	Level 3	FLA	Laffayette gravel	39.5	60	DEBITAGE	Production flaking					TRUE	TRUE

Table V-10 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	16	Level 3	FLA	Laffayette gravel	32.7	70	DEBITAGE	Production flaking						
2016-503	16	Level 3	FLA	Laffayette gravel	11.6	15	DEBITAGE	Production flaking						TRUE
2016-503	16	Level 3	FLA	Laffayette gravel	0.3	1	DEBITAGE	Production flaking						TRUE
2016-503	16	Level 3	FLA	Laffayette gravel	0.1	1	DEBITAGE	Production flaking						
2016-503	16	Level 3	FLA	Laffayette gravel	0.01	1	DEBITAGE	Production flaking					TRUE	
2016-503	16	Level 3	FLA	Laffayette gravel	0.6	1	DEBITAGE	Production flaking						
2016-503	16	Level 3	FLA	Laffayette gravel	20.3	78	DEBITAGE	Production flaking					TRUE	
2016-503	16	Level 3	PEBL	Laffayette gravel	0.8	3	DEBITAGE						TRUE	
2016-503	16	Level 3	PEBL	Laffayette gravel	0.7	2	DEBITAGE							TRUE
2016-503	16	Level 3	ped	Hematite	0.8	2	DEBITAGE	Pieces refit						TRUE
2016-503	26	Level 4	BIF	Crowley's Ridge	0.9	1	ARROW	Madison		1.47	0.38		TRUE	
2016-503	26	Level 4	BIF	Laffayette gravel	15.5	1	SCR	Rock with one edge crudely sharpened bifacially	4.27		0.5		TRUE	TRUE
2016-503	26	Level 4	BIF	Laffayette gravel	1.7	1	SCR	Biface along one long edge of a flake	2.97	1.53	0.32		TRUE	TRUE
2016-503	26	Level 4	CORE	Crowley's Ridge	30.4	1	DEBITAGE							TRUE
2016-503	26	Level 4	FCR	Crowley's Ridge	0.7	2	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2016-503	26	Level 4	FCR	Crowley's Ridge	37.8	1	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2016-503	26	Level 4	FCR	Laffayette gravel	0.9	2	DEBITAGE	Shatter				TRUE	TRUE	

Table V-10 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	26	Level 4	FCR	Laffayette gravel	0.6	2	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2016-503	26	Level 4	FLA	Crowley's Ridge	7.5	12	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	26	Level 4	FLA	Crowley's Ridge	5.9	1	DEBITAGE	Large flake with flake scars on both sides						TRUE
2016-503	26	Level 4	FLA	Crowley's Ridge	1	6	DEBITAGE	Production flaking					TRUE	
2016-503	26	Level 4	FLA	Crowley's Ridge	2.1	8	DEBITAGE	Production flaking						TRUE
2016-503	26	Level 4	FLA	Crowley's Ridge	2.8	9	DEBITAGE	Production flaking						
2016-503	26	Level 4	FLA	Laffayette gravel	8.9	32	DEBITAGE	Production flaking					TRUE	
2016-503	26	Level 4	FLA	Laffayette gravel	0.2	3	DEBITAGE	Production flaking						TRUE
2016-503	26	Level 4	FLA	Laffayette gravel	13	11	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	26	Level 4	FLA	Laffayette gravel	3.6	20	DEBITAGE	Production flaking						
2016-503	26	Level 4	PEBL	Laffayette gravel	0.6	2	DEBITAGE							TRUE
2016-503	30	Level 5	COBL	Sandstone	22.9	1	DEBITAGE							
2016-503	30	Level 5	FLA	Crowley's Ridge	0.01	1	DEBITAGE	Production flaking					TRUE	
2016-503	30	Level 5	FLA	Crowley's Ridge	1.3	1	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	30	Level 5	FLA	Crowley's Ridge	0.1	1	DEBITAGE	Production flaking						
2016-503	30	Level 5	FLA	Laffayette gravel	0.2	2	DEBITAGE	Production flaking						
2016-503	30	Level 5	FLA	Laffayette gravel	0.01	1	DEBITAGE	Production flaking					TRUE	
2016-503	30	Level 5	FLA	Laffayette gravel	4.9	2	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	30	Level 5	FLA	Laffayette gravel	0.01	1	DEBITAGE	Production flaking						TRUE

Table V-10 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	30	Level 5	PEBL	Crowley's Ridge	5.8	1	DEBITAGE							TRUE
2016-503	30	Level 5	PEBL	Laffayette gravel	0.7	1	DEBITAGE							TRUE

Figure V-37: Nodena, Madison, 3 broken point tips. Excavated from Level 1 of TU7.

Figure V-38: Scraper, 4 Preforms, 3 Nodena points in center, 2 preforms, Madison second from right on bottom row, white Thumbnail scraper on left in second row. Remaining are tips or bases of Nodenas or Madisons. Excavated from Level 2 of TU7.

Figure V-39: Preform, large Madison, broken Nodena, large preform, preform, base of Madison, 2 broken points. Excavated from Level 3 of TU7.

Figure V-40: Scraper, base of Madison, and scraper. Excavated from Level 4 of TU7.

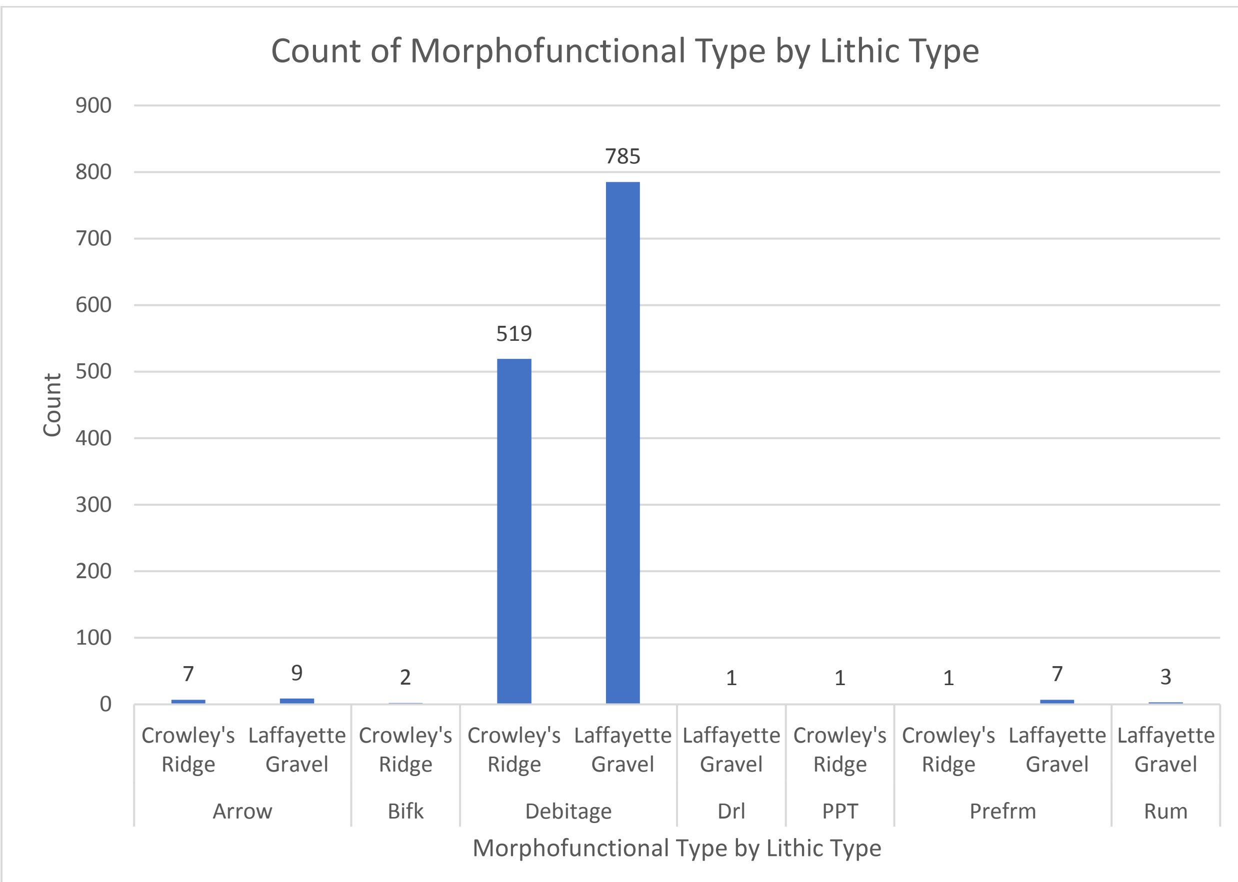

Figure V-41: Count of morphofunctional type by type of lithic excavated from Test Unit 8 in 2016. Bifk = Biface/knife/preform, Drl = Drill, PPT = Projectile point, Prefrm = Preform, Rum = Retouched/utilized/modified

Table V-11: Lithic artifacts excavated from TU8 as summarized in Figure V-41.

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	3	Level 1	BIF	Crowley's Ridge	1	1	ARROW	Madison point	2.63	1.32	0.35		TRUE	
2016-503	3	Level 1	BIF	Crowley's Ridge	2.6	1	BIFK	Base of point. Slightly concave base.		2.3	0.5			
2016-503	3	Level 1	BIF	Crowley's Ridge	2.1	1	BIFK	Center of biface. No tip, no base		1.66	0.57			
2016-503	3	Level 1	BIF	Laffayette gravel	1.7	1	RUM	Bifacial edge on concave side						
2016-503	3	Level 1	BIF	Laffayette gravel	1	1	ARROW	Nodena-ish with rounded bottom. Broken on side	2.57	1.26	0.41			
2016-503	3	Level 1	BIF	Laffayette gravel	1.2	1	ARROW	Tip of Nodena		1.55	0.36			
2016-503	3	Level 1	BIF	Laffayette gravel	0.1	1	ARROW	Very tip of point		0.91	0.2		TRUE	
2016-503	3	Level 1	BIF	Laffayette gravel	1.6	1	PREFRM	base or tip of Nodena preform? Or tip of Madison preform		1.73	0.53		TRUE	
2016-503	3	Level 1	BIF	Laffayette gravel	1.8	1	ARROW	Rough Madison with tip broken		1.47	0.54		TRUE	TRUE
2016-503	3	Level 1	BIF	Laffayette gravel	2.4	1	PREFRM	Base or tip of Nodena		1.74	0.55		TRUE	
2016-503	3	Level 1	BIF	Laffayette gravel	8.1	1	PREFRM	Rough preform		2.58	0.85		TRUE	TRUE
2016-503	3	Level 1	BIF	Laffayette gravel	3.2	1	RUM	One edge is retouched. Scraper?					TRUE	
2016-503	3	Level 1	BIF	Laffayette gravel	1.5	1	PREFRM	Base? Of preform of Nodena? Or of large Woodland point		1.86	0.54			
2016-503	3	Level 1	COBL	Crowley's Ridge	45.3	2	DEBITAGE	Test Cobble						TRUE
2016-503	3	Level 1	COBL	Crowley's Ridge	1	1	DEBITAGE	Shatter						

Table V-11 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	3	Level 1	COBL	Laffayette gravel	7.2	1	DEBITAGE	Test Cobble						TRUE
2016-503	3	Level 1	COBL	Laffayette gravel	4.3	3	DEBITAGE	Shatter						TRUE
2016-503	3	Level 1	COBL	Laffayette gravel	13.5	1	DEBITAGE	Conglomerate						
2016-503	3	Level 1	COBL	Laffayette gravel	3	1	DEBITAGE	Test Cobble						TRUE
2016-503	3	Level 1	COBL	Laffayette gravel	9.9	2	DEBITAGE	Shatter						
2016-503	3	Level 1	CORE	Crowley's Ridge	1.1	1	DEBITAGE						TRUE	TRUE
2016-503	3	Level 1	CORE	Crowley's Ridge	14.3	1	DEBITAGE						TRUE	TRUE
2016-503	3	Level 1	CORE	Laffayette gravel	1.7	1	DEBITAGE						TRUE	TRUE
2016-503	3	Level 1	CORE	Laffayette gravel	2.3	1	DEBITAGE							
2016-503	3	Level 1	FCR	Crowley's Ridge	30.5	3	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2016-503	3	Level 1	FCR	Laffayette gravel	27.6	5	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2016-503	3	Level 1	FCR	Laffayette gravel	0.2	1	DEBITAGE	Shatter				TRUE	TRUE	
2016-503	3	Level 1	FLA	Crowley's Ridge	0.1	1	DEBITAGE	Production flaking						
2016-503	3	Level 1	FLA	Crowley's Ridge	24.6	43	DEBITAGE	Production flaking					TRUE	
2016-503	3	Level 1	FLA	Crowley's Ridge	70.5	98	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	3	Level 1	FLA	Crowley's Ridge	57.2	37	DEBITAGE	Production flaking						TRUE
2016-503	3	Level 1	FLA	Crowley's Ridge	35.7	83	DEBITAGE	Production flaking						
2016-503	3	Level 1	FLA	Crowley's Ridge	2.8	1	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	3	Level 1	FLA	Laffayette gravel	0.5	3	DEBITAGE	Production flaking						

Table V-11 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	3	Level 1	FLA	Laffayette gravel	0.6	1	DEBITAGE	Production flaking					TRUE	
2016-503	3	Level 1	FLA	Laffayette gravel	1	1	DEBITAGE	Production flaking						TRUE
2016-503	3	Level 1	FLA	Laffayette gravel	68.8	124	DEBITAGE	Production flaking					TRUE	
2016-503	3	Level 1	FLA	Laffayette gravel	4.9	5	DEBITAGE	Production flaking						TRUE
2016-503	3	Level 1	FLA	Laffayette gravel	39.7	39	DEBITAGE	Production flaking						TRUE
2016-503	3	Level 1	FLA	Laffayette gravel	0.6	2	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	3	Level 1	FLA	Laffayette gravel	43.6	102	DEBITAGE	Production flaking						
2016-503	3	Level 1	FLA	Laffayette gravel	90.6	110	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	3	Level 1	FLA	Laffayette gravel	1.2	2	DEBITAGE	Production flaking						
2016-503	11	Level 2	BIF	Crowley's Ridge	2.2	1	ARROW	Nodena. Tip broken, bulb of percussion still present		1.73	0.35			
2016-503	11	Level 2	BIF	Crowley's Ridge	0.3	1	ARROW	Very tip of thin point			0.25			
2016-503	11	Level 2	BIF	Crowley's Ridge	2.3	1	ARROW	Roughly formed Nodena		1.55	0.5		TRUE	TRUE
2016-503	11	Level 2	BIF	Crowley's Ridge	6.4	1	PREFRM	Wide, flattened biface. Broken on both ends					TRUE	TRUE
2016-503	11	Level 2	BIF	Crowley's Ridge	1	1	ARROW	Probable Nodena		1.31	0.37			
2016-503	11	Level 2	BIF	Crowley's Ridge	2.4	1	ARROW	Convex based Madison	4.13	2.01	0.3			

Table V-11 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	11	Level 2	BIF	Crowley's Ridge	1.7	1	PPT	Larger point, possibly preform for Madison or Nodena		1.91	0.48			
2016-503	11	Level 2	BIF	Laffayette gravel	1.2	1	PREFRM	Preform for arrow point. Bulb of percussion still present		1.41	0.46		TRUE	TRUE
2016-503	11	Level 2	BIF	Laffayette gravel	2.2	1	DRL	Whole drill	5.39	0.74	0.52			
2016-503	11	Level 2	BIF	Laffayette gravel	2.8	1	ARROW	Nodena. Very tip broken		1.81	0.4			
2016-503	11	Level 2	BIF	Laffayette gravel	1.1	1	ARROW	Very tip broken of Madison point	2.2	1.56	0.36			
2016-503	11	Level 2	BIF	Laffayette gravel	3.4	1	ARROW	Long Nodena. Heated on one end, some cortex present on other end	5.11	1.41	0.61		TRUE	TRUE
2016-503	11	Level 2	BIF	Laffayette gravel	2.7	1	PREFRM	Base of large Woodland point or preform of smaller point. Mostly broken					TRUE	
2016-503	11	Level 2	BIF	Laffayette gravel	2.8	1	PREFRM	Crude point or preform for smaller point		2.08	0.77			
2016-503	11	Level 2	BIF	Laffayette gravel	1.9	1	ARROW	Rough Nodena, broken		1.7	0.57		TRUE	TRUE
2016-503	11	Level 2	CHNK	Laffayette gravel	60.5	4	DEBITAGE	Test cobble?					TRUE	TRUE

Table V-11 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	11	Level 2	CHNK	Laffayette gravel	19.2	2	DEBITAGE	Shatter						TRUE
2016-503	11	Level 2	CHNK	Laffayette gravel	46.1	3	DEBITAGE	Test cobble?						TRUE
2016-503	11	Level 2	COBL	Laffayette gravel	16.1	1	DEBITAGE	Shatter						TRUE
2016-503	11	Level 2	CORE	Crowley's Ridge	86	1	DEBITAGE	Core with flakes removed from two sides					TRUE	TRUE
2016-503	11	Level 2	FCR	Laffayette gravel	14.7	8	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2016-503	11	Level 2	FLA	Crowley's Ridge	10.3	24	DEBITAGE	Production flaking					TRUE	
2016-503	11	Level 2	FLA	Crowley's Ridge	14.9	42	DEBITAGE	Production flaking						
2016-503	11	Level 2	FLA	Crowley's Ridge	55.8	68	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	11	Level 2	FLA	Crowley's Ridge	31.7	28	DEBITAGE	Production flaking						TRUE
2016-503	11	Level 2	FLA	Laffayette gravel	2.4	3	DEBITAGE	Production flaking						TRUE
2016-503	11	Level 2	FLA	Laffayette gravel	29.5	74	DEBITAGE	Production flaking						
2016-503	11	Level 2	FLA	Laffayette gravel	34.9	29	DEBITAGE	Production flaking						TRUE
2016-503	11	Level 2	FLA	Laffayette gravel	80.2	81	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	11	Level 2	FLA	Laffayette gravel	31	61	DEBITAGE	Production flaking					TRUE	
2016-503	11	Level 2	PEBL	Laffayette gravel	0.6	1	DEBITAGE							
2016-503	11	Level 2	PEBL	Laffayette gravel	3.6	1	DEBITAGE	Conglomerate						
2016-503	11	Level 2	UNIF	Laffayette gravel	1.3	1	RUM	Flake possibly retouched along one edge					TRUE	

Table V-11 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	17	Level 3	BIF	Laffayette gravel	2.1	1	ARROW	Madison with rounded bottom	3.03	1.65	0.44			
2016-503	17	Level 3	COBL	Laffayette gravel	35.1	1	DEBITAGE							
2016-503	17	Level 3	FCR	Laffayette gravel	1.2	1	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2016-503	17	Level 3	FLA	Crowley's Ridge	3.7	6	DEBITAGE	Production flaking					TRUE	
2016-503	17	Level 3	FLA	Crowley's Ridge	6.6	17	DEBITAGE	Production flaking						
2016-503	17	Level 3	FLA	Crowley's Ridge	8.4	9	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	17	Level 3	FLA	Crowley's Ridge	8.8	14	DEBITAGE	Production flaking						TRUE
2016-503	17	Level 3	FLA	Laffayette gravel	6.7	25	DEBITAGE	Production flaking					TRUE	
2016-503	17	Level 3	FLA	Laffayette gravel	8.2	16	DEBITAGE	Production flaking						
2016-503	17	Level 3	FLA	Laffayette gravel	12.8	15	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	17	Level 3	FLA	Laffayette gravel	4.4	5	DEBITAGE	Production flaking						TRUE
2016-503	19	Feature 4	FCR	Laffayette gravel	21.5	1	DEBITAGE					TRUE	TRUE	TRUE
2016-503	20	Feature 4 flotation sample heavy fraction	FCR	Laffayette gravel	0.7	7	DEBITAGE	HF sorted for ~10 min. Shatte				TRUE	TRUE	TRUE
2016-503	20	Feature 4 flotation sample heavy fraction	FLA	Crowley's Ridge	0.5	2	DEBITAGE	HF sorted for ~10 min. Production flaking					TRUE	
2016-503	20	Feature 4 flotation sample heavy fraction	FLA	Crowley's Ridge	0.2	1	DEBITAGE	HF sorted for ~10 min. Production flaking						

Table V-11 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	20	Feature 4 flotation sample heavy fraction	FLA	Crowley's Ridge	0.6	2	DEBITAGE	HF sorted for ~10 min. Production flaking					TRUE	
2016-503	20	Feature 4 flotation sample heavy fraction	FLA	Laffayette gravel	0.01	1	DEBITAGE	HF sorted for ~10 min. Production flaking					TRUE	
2016-503	20	Feature 4 flotation sample heavy fraction	FLA	Laffayette gravel	0.2	3	DEBITAGE	HF sorted for ~10 min. Production flaking					TRUE	TRUE
2016-503	20	Feature 4 flotation sample heavy fraction	PEBL	Laffayette gravel	0.01	1	DEBITAGE	HF sorted for ~10 min						
2016-503	23	Level 4	COBL	Crowley's Ridge	0.2	1	DEBITAGE	Shatter						TRUE
2016-503	23	Level 4	COBL	Laffayette gravel	3.6	1	DEBITAGE	Shatter					TRUE	
2016-503	23	Level 4	COBL	Laffayette gravel	1	1	DEBITAGE	Shatter						TRUE
2016-503	23	Level 4	FLA	Crowley's Ridge	4	4	DEBITAGE	Production flaking						TRUE
2016-503	23	Level 4	FLA	Crowley's Ridge	3.2	8	DEBITAGE	Production flaking						
2016-503	23	Level 4	FLA	Crowley's Ridge	2.8	7	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	23	Level 4	FLA	Crowley's Ridge	0.2	3	DEBITAGE	Production flaking					TRUE	
2016-503	23	Level 4	FLA	Laffayette gravel	4.8	12	DEBITAGE	Production flaking						
2016-503	23	Level 4	FLA	Laffayette gravel	2.1	4	DEBITAGE	Production flaking						TRUE
2016-503	23	Level 4	FLA	Laffayette gravel	10.3	3	DEBITAGE	Production flaking					TRUE	TRUE

Table V-11 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	23	Level 4	FLA	Laffayette gravel	2.8	10	DEBITAGE	Production flaking					TRUE	
2016-503	29	Level 5	BIF	Crowley's Ridge	0.4	1	ARROW	Nodena		1.1	0.33			
2016-503	29	Level 5	FLA	Crowley's Ridge	1.7	4	DEBITAGE	Production flaking						
2016-503	29	Level 5	FLA	Crowley's Ridge	7.1	3	DEBITAGE	Production flaking						TRUE
2016-503	29	Level 5	FLA	Crowley's Ridge	3.3	2	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	29	Level 5	FLA	Crowley's Ridge	0.5	2	DEBITAGE	Production flaking					TRUE	
2016-503	29	Level 5	FLA	Laffayette gravel	0.9	2	DEBITAGE	Production flaking						
2016-503	29	Level 5	FLA	Laffayette gravel	1.3	2	DEBITAGE	Production flaking					TRUE	
2016-503	29	Level 5	FLA	Laffayette gravel	0.6	2	DEBITAGE	Production flaking						TRUE

Figure V-42: Madison, Nodena, 2 bases of Madisons, 5 broken points, 2 preforms, biface, retouched, utilized, or modified flake. Excavated from Level 3 of TU8.

Figure V-43: Drill, Nodena, convex based Madison, drill, crude Nodena, broken point, 2 broken points, broken point, preform, 3 broken points. Excavated from Level 2 of TU8.

Figure V-44: Madison. Excavated from Level 3 of TU8.

Figure V-45: Tip or base of Nodena. Excavated from Level 5 of TU8.

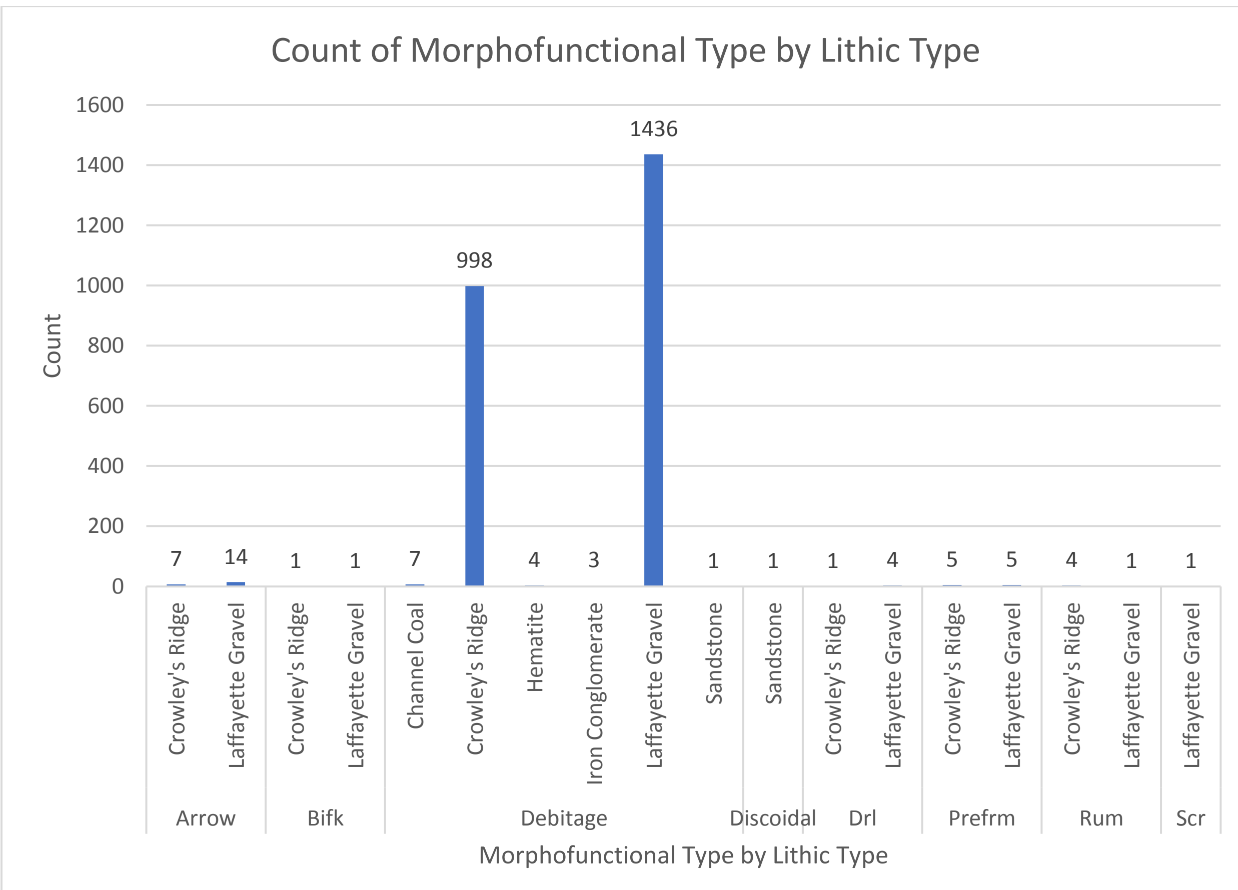

Figure V-46: Count of morphofunctional type by type of lithic excavated from Test Unit 9 in 2016. Bifk = Biface/Knife/Preform, Drl = Drill, Prefrm = Preform, Rum = Retouched/utilized/modified, Scr = Scraper

Table V-12: Lithic artifacts excavated from TU9 as summarized in Figure V-46.

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	4	Level 1		Channel coal	0.6	2	DEBITAGE							
2016-503	4	Level 1	BIF	Crowley's Ridge	2.1	1	PREFRM	Likely broke before finishing as point part still has cortex		1.88	0.43		TRUE	TRUE
2016-503	4	Level 1	BIF	Crowley's Ridge	2.8	1	ARROW	Crude Madison. Tip is almost "hook" shaped. Body is thick. Perhaps unfinished	3.26	1.7	0.56			TRUE
2016-503	4	Level 1	BIF	Crowley's Ridge	0.8	1	DRL	Drill, broken down shaft		0.63	0.46		TRUE	
2016-503	4	Level 1	BIF	Crowley's Ridge	6.2	1	PREFRM	Rounded base, top broken, square impurities		2.53	0.71			
2016-503	4	Level 1	BIF	Crowley's Ridge	1.7	1	ARROW	Crude Nodena. Bulb of percussion on side edge	2.84	1.56	0.41		TRUE	
2016-503	4	Level 1	BIF	Crowley's Ridge	1.4	1	ARROW	Nodena. Tip heat treated red	3.44	1.11	0.36		TRUE	

Table V-12 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	4	Level 1	BIF	Crowley's Ridge	4.4	1	RUM	Long edge is bifacial, other long edge is not worked	4.61	1.68	0.68		TRUE	TRUE
2016-503	4	Level 1	BIF	Laffayette gravel	0.9	1	ARROW	Madison base		1.38	0.3			
2016-503	4	Level 1	BIF	Laffayette gravel	1.4	1	ARROW	Nodena base?		1.32	0.47			
2016-503	4	Level 1	BIF	Laffayette gravel	2.8	1	PREFRM	Likely broken before it could be thinned. Base is flat, but unworked.		1.96	0.77		TRUE	TRUE
2016-503	4	Level 1	BIF	Laffayette gravel	1.4	1	ARROW	Nodena. Very base slightly broken.	2.95	1.44	0.35			
2016-503	4	Level 1	BIF	Laffayette gravel	2.2	1	ARROW	Nodena-ish. Base is percussion node. Body is off center	3.2	1.59	0.45			
2016-503	4	Level 1	BIF	Laffayette gravel	0.4	1	ARROW	Very tip of point		1.07	0.5			
2016-503	4	Level 1	BIF	Laffayette gravel	2.4	1	DRL	Drill. Broken down shaft		1.16	0.58			

Table V-12 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	4	Level 1	BIF	Laffayette gravel	0.9	1	DRL	Drill, possibly broken while thinning as there is a large outcrop partway up the shaft		0.63	0.36			
2016-503	4	Level 1	BIF	Laffayette gravel	5	1	DRL	Drill, but looks like a bigger point preform that split down the middle and the edges were worked to form a drill	4.08	1.25	1.03			
2016-503	4	Level 1	BIF	Laffayette gravel	1.3	1	ARROW	Madison with base missing. All is pink, but tip is red (heat treated)		1.48	0.39		TRUE	
2016-503	4	Level 1	BIF	Laffayette gravel	1.6	1	ARROW	Nodena or Madison, most is broken		1.57	0.49		TRUE	
2016-503	4	Level 1	BIF	Laffayette gravel	1.2	1	ARROW	Tip or base of Nodena point		1.54	0.45		TRUE	

Table V-12 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	4	Level 1	BIF	Laffayette gravel	1.9	1	PREFRM	Both top and bottom broken. Nodena preform?		1.75	0.5		TRUE	
2016-503	4	Level 1	BIF	Laffayette gravel	3.2	1	PREFRM	Nodena preform? Long and thin		2.03	0.57			
2016-503	4	Level 1	CHARC	charcoal	1.5	15	charcoal							
2016-503	4	Level 1	CHNK	Crowley's Ridge	3.2	3	DEBITAGE	Shatter						TRUE
2016-503	4	Level 1	CHNK	Laffayette gravel	3.4	2	DEBITAGE	Shatter						
2016-503	4	Level 1	CHNK	Laffayette gravel	3	2	DEBITAGE	Shatter						TRUE
2016-503	4	Level 1	COBL	Crowley's Ridge	47.5	3	DEBITAGE	Test cobbles						TRUE
2016-503	4	Level 1	COBL	Laffayette gravel	110.6	3	DEBITAGE	unmodified stones						TRUE
2016-503	4	Level 1	COBL	Laffayette gravel	4.2	1	DEBITAGE	Test cobble					TRUE	TRUE
2016-503	4	Level 1	COBL	Laffayette gravel	34.4	4	DEBITAGE	Test cobbles						TRUE
2016-503	4	Level 1	FCR	Crowley's Ridge	14.3	2	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2016-503	4	Level 1	FCR	Laffayette gravel	10.6	5	DEBITAGE	Shatter				TRUE	TRUE	
2016-503	4	Level 1	FCR	Laffayette gravel	21.1	11	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2016-503	4	Level 1	FLA	Crowley's Ridge	23.3	51	DEBITAGE	Production flaking					TRUE	
2016-503	4	Level 1	FLA	Crowley's Ridge	105.6	140	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	4	Level 1	FLA	Crowley's Ridge	75.1	101	DEBITAGE	Production flaking						TRUE

Table V-12 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	4	Level 1	FLA	Crowley's Ridge	1.7	1	RUM	Flake retouched on both sides, top and bottom broken		1.62	0.36			TRUE
2016-503	4	Level 1	FLA	Crowley's Ridge	53.6	176	DEBITAGE	Production flaking						
2016-503	4	Level 1	FLA	Crowley's Ridge	2.7	1	RUM	Flake retouched on one side		1.91	0.65			TRUE
2016-503	4	Level 1	FLA	Laffayette gravel	0.2	1	DEBITAGE	Production flaking						
2016-503	4	Level 1	FLA	Laffayette gravel	150.6	153	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	4	Level 1	FLA	Laffayette gravel	79.2	225	DEBITAGE	Production flaking					TRUE	
2016-503	4	Level 1	FLA	Laffayette gravel	0.2	1	DEBITAGE	Production flaking						
2016-503	4	Level 1	FLA	Laffayette gravel	1.5	1	RUM	Flake retouched along one edge		2.29	0.37		TRUE	
2016-503	4	Level 1	FLA	Laffayette gravel	105.3	186	DEBITAGE	Production flaking						
2016-503	4	Level 1	FLA	Laffayette gravel	107.7	50	DEBITAGE	Production flaking						TRUE
2016-503	4	Level 1	FLA	Laffayette gravel	0.9	2	DEBITAGE	Production flaking						
2016-503	4	Level 1	Iron conglom	iron conglomerate	3.9	3	DEBITAGE	natural iron conglomerate from soil						
2016-503	4	Level 1	PEBL	Laffayette gravel	11.5	1	DEBITAGE	unmodified stone					TRUE	TRUE
2016-503	4	Level 1	PEBL	Laffayette gravel	3.6	1	DEBITAGE	conglomerate						TRUE

Table V-12 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	12	Level 2	BIF	Crowley's Ridge	1.5	1	ARROW	Broken and maybe preform for Nodena		1.61	0.39		TRUE	TRUE
2016-503	12	Level 2	BIF	Crowley's Ridge	2.8	1	PREFRM	Preform for Nodena or Madison		2.19	0.64		TRUE	
2016-503	12	Level 2	BIF	Crowley's Ridge	0.6	1	ARROW	Tip of Nodena or Madison		1.47	0.38			
2016-503	12	Level 2	BIF	Crowley's Ridge	1.2	1	BIFK	Small piece of base?						
2016-503	12	Level 2	BIF	Crowley's Ridge	2.6	1	PREFRM	Rough Nodena or preform for Nodena		1.43	0.59		TRUE	
2016-503	12	Level 2	BIF	Crowley's Ridge	1.2	1	ARROW	Nodena point		1.47	0.44			
2016-503	12	Level 2	BIF	Crowley's Ridge	0.7	1	RUM	Flake. Retouched on one side along all edges, retouched on some edges on opposite side.	2.1	1.33	0.22			
2016-503	12	Level 2	BIF	Laffayette gravel	1.3	1	ARROW	Madison. Heat treated at base, very tip broken	2.61	1.51	0.4		TRUE	
2016-503	12	Level 2	BIF	Laffayette gravel	3.4	1	SCR	Two edges bifacial. Maybe a scraper, maybe a preform for a smaller point		1.9	0.71		TRUE	TRUE

Table V-12 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	12	Level 2	BIF	Laffayette gravel	0.6	1	ARROW	Small section of Nodena or Madison		1.45	0.39		TRUE	
2016-503	12	Level 2	BIF	Laffayette gravel	2.9	1	PREFRM	Preform for Nodena or Madison?		1.93	0.51			
2016-503	12	Level 2	BIF	Laffayette gravel	0.9	1	ARROW	Tip of Madison or Nodena		1.46	0.34			
2016-503	12	Level 2	BIF	Laffayette gravel	0.6	1	ARROW	Tip of Nodena		1.14	0.3		TRUE	
2016-503	12	Level 2	BIF	Laffayette gravel	4.4	1	PREFRM	Possibly preform of Nodena, possibly flake with just one resharpened edge	4.28	2.16	0.69		TRUE	
2016-503	12	Level 2	BIF	Laffayette gravel	3.3	1	BIFK	Base of large point?		2.13	0.59			
2016-503	12	Level 2	BIF	Laffayette gravel	2.8	1	DRL	Drill or preform for drill? Broken, but long and skinny		1.14	0.72			
2016-503	12	Level 2	COBL	Channel coal	3.8	3	DEBITAGE							
2016-503	12	Level 2	COBL	Crowley's Ridge	32.9	2	DEBITAGE	Shatter						TRUE
2016-503	12	Level 2	COBL	Crowley's Ridge	49	1	DEBITAGE	Test cobble						TRUE
2016-503	12	Level 2	COBL	Crowley's Ridge	38.7	3	DEBITAGE	Test cobble					TRUE	TRUE
2016-503	12	Level 2	COBL	Laffayette gravel	82	1	DEBITAGE	Test cobble						TRUE
2016-503	12	Level 2	COBL	Laffayette gravel	173.3	6	DEBITAGE	Shatter						TRUE

Table V-12 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	12	Level 2	CORE	Laffayette gravel	5.7	1	DEBITAGE	Core						TRUE
2016-503	12	Level 2	DEB		4.8	2	DEBITAGE	Natural iron conglomerate						
2016-503	12	Level 2	FCR	Laffayette gravel	68.6	14	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2016-503	12	Level 2	FLA	Crowley's Ridge	2.5	1	DEBITAGE	Production flaking						TRUE
2016-503	12	Level 2	FLA	Crowley's Ridge	5.2	3	DEBITAGE	Production flaking					TRUE	
2016-503	12	Level 2	FLA	Crowley's Ridge	6.2	4	DEBITAGE	Production flaking						
2016-503	12	Level 2	FLA	Crowley's Ridge	0.8	2	DEBITAGE	Production flaking						TRUE
2016-503	12	Level 2	FLA	Crowley's Ridge	2	6	DEBITAGE	Production flaking						
2016-503	12	Level 2	FLA	Crowley's Ridge	0.1	1	DEBITAGE	Production flaking					TRUE	
2016-503	12	Level 2	FLA	Crowley's Ridge	36.9	119	DEBITAGE	Production flaking						
2016-503	12	Level 2	FLA	Crowley's Ridge	23.7	45	DEBITAGE	Production flaking					TRUE	
2016-503	12	Level 2	FLA	Crowley's Ridge	94.7	106	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	12	Level 2	FLA	Crowley's Ridge	50.5	62	DEBITAGE	Production flaking						TRUE
2016-503	12	Level 2	FLA	Laffayette gravel	0.1	1	DEBITAGE	Production flaking					TRUE	
2016-503	12	Level 2	FLA	Laffayette gravel	124	116	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	12	Level 2	FLA	Laffayette gravel	1.2	4	DEBITAGE	Production flaking						
2016-503	12	Level 2	FLA	Laffayette gravel	1	3	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	12	Level 2	FLA	Laffayette gravel	33.8	35	DEBITAGE	Production flaking						TRUE
2016-503	12	Level 2	FLA	Laffayette gravel	5.7	2	DEBITAGE	Production flaking					TRUE	TRUE

Table V-12 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	12	Level 2	FLA	Laffayette gravel	9.8	2	DEBITAGE	Production flaking						TRUE
2016-503	12	Level 2	FLA	Laffayette gravel	0.4	1	DEBITAGE	Production flaking						
2016-503	12	Level 2	FLA	Laffayette gravel	68	175	DEBITAGE	Production flaking						
2016-503	12	Level 2	FLA	Laffayette gravel	56.6	137	DEBITAGE	Production flaking					TRUE	
2016-503	12	Level 2	PEBL	Laffayette gravel	8.5	4	DEBITAGE							TRUE
2016-503	13	Level 2 flotation sample heavy fraction			168.6	0	WS/DS DEBRIS	Heavy fraction sorted for 10 min						
2016-503	13	Level 2 flotaiton sample heavy fraction	FCR	Laffayette gravel	4	1	DEBITAGE	Shatter. Heavy fraction sorted for 10 min				TRUE	TRUE	TRUE
2016-503	13	Level 2 flotaiton sample heavy fraction	FLA	Crowley's Ridge	1.4	12	DEBITAGE	Production flaking. Heavy fraction sorted for 10 min						
2016-503	13	Level 2 flotaiton sample heavy fraction	FLA	Crowley's Ridge	0.01	1	DEBITAGE	Production flaking. Heavy fraction sorted for 10 min					TRUE	
2016-503	13	Level 2 flotaiton sample heavy fraction	FLA	Crowley's Ridge	0.8	3	DEBITAGE	Production flaking. Heavy fraction sorted for 10 min					TRUE	TRUE

Table V-12 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	13	Level 2 flotaiton sample heavy fraction	FLA	Crowley's Ridge	0.7	1	DEBITAGE	Production flaking. Heavy fraction sorted for 10 min						TRUE
2016-503	13	Level 2 flotaiton sample heavy fraction	FLA	Laffayette gravel	0.5	10	DEBITAGE	Production flaking. Heavy fraction sorted for 10 min					TRUE	
2016-503	13	Level 2 flotaiton sample heavy fraction	FLA	Laffayette gravel	1.6	6	DEBITAGE	Production flaking. Heavy fraction sorted for 10 min					TRUE	TRUE
2016-503	13	Level 2 flotaiton sample heavy fraction	FLA	Laffayette gravel	0.7	3	DEBITAGE	Production flaking. Heavy fraction sorted for 10 min						TRUE
2016-503	13	Level 2 flotaiton sample heavy fraction	FLA	Laffayette gravel	1.4	20	DEBITAGE	Production flaking. Heavy fraction sorted for 10 min						
2016-503	13	Level 2 flotaiton sample heavy fraction	PEBL	Laffayette gravel	0.2	1	DEBITAGE	Heavy fraction sorted for 10 min						TRUE

Table V-12 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	18	Level 3		Sandstone	59.8	1	DISCOIDAL	Possibly broken discoidal, possibly just broken natural rock					TRUE	
2016-503	18	Level 3	BIF	Crowley's Ridge	4.1	1	PREFRM	Preform for Madison point	3.37	2.41	0.79		TRUE	TRUE
2016-503	18	Level 3	BIF	Crowley's Ridge	0.4	1	ARROW	Nodena point		1.39	0.32			
2016-503	18	Level 3	BODY	Crowley's Ridge	19.9	1	DEBITAGE	Test cobble						TRUE
2016-503	18	Level 3	cl	Laffayette gravel	6.2	1	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	18	Level 3	COBL	Crowley's Ridge	36.9	1	DEBITAGE							TRUE
2016-503	18	Level 3	COBL	Laffayette gravel	12.1	1	DEBITAGE						TRUE	TRUE
2016-503	18	Level 3	COBL	Laffayette gravel	4.9	1	DEBITAGE	Test cobble						TRUE
2016-503	18	Level 3	CORE	Laffayette gravel	15.9	1	DEBITAGE	Flakes taken from around one side					TRUE	TRUE
2016-503	18	Level 3	DEB	Crowley's Ridge	0.9	1	DEBITAGE	Shatter						TRUE
2016-503	18	Level 3	DEB	Laffayette gravel	95.6	3	DEBITAGE	Shatter						TRUE
2016-503	18	Level 3	FCR	Crowley's Ridge	17.7	2	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2016-503	18	Level 3	FCR	Laffayette gravel	11.2	1	DEBITAGE	Shatter						
2016-503	18	Level 3	FCR	Laffayette gravel	33.8	9	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2016-503	18	Level 3	FLA	Crowley's Ridge	17.4	18	DEBITAGE	Production flaking						TRUE
2016-503	18	Level 3	FLA	Crowley's Ridge	0.1	1	DEBITAGE	Production flaking					TRUE	
2016-503	18	Level 3	FLA	Crowley's Ridge	18.3	25	DEBITAGE	Production flaking					TRUE	TRUE

Table V-12 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	18	Level 3	FLA	Crowley's Ridge	12.1	41	DEBITAGE	Production flaking						
2016-503	18	Level 3	FLA	Crowley's Ridge	6.6	11	DEBITAGE	Production flaking					TRUE	
2016-503	18	Level 3	FLA	Crowley's Ridge	0.3	1	DEBITAGE	Production flaking						
2016-503	18	Level 3	FLA	Laffayette gravel	3.3	1	DEBITAGE	Production flaking						TRUE
2016-503	18	Level 3	FLA	Laffayette gravel	23.8	53	DEBITAGE	Production flaking						
2016-503	18	Level 3	FLA	Laffayette gravel	27	23	DEBITAGE	Production flaking						TRUE
2016-503	18	Level 3	FLA	Laffayette gravel	41.3	34	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	18	Level 3	FLA	Laffayette gravel	21.5	45	DEBITAGE	Production flaking					TRUE	
2016-503	18	Level 3	PEBL	Hematite	0.6	2	DEBITAGE							
2016-503	18	Level 3	PEBL	Laffayette gravel	0.9	1	DEBITAGE							TRUE
2016-503	24	Level 4	BIF	Laffayette gravel	1.8	1	ARROW	Crude Nodena	2.9	1.33	0.59		TRUE	
2016-503	24	Level 4	BIF	Laffayette gravel	1.2	1	ARROW	Nodena		1.56	0.42		TRUE	
2016-503	24	Level 4	COBL	Crowley's Ridge	33.5	1	DEBITAGE	Test cobble						TRUE
2016-503	24	Level 4	COBL	Laffayette gravel	0.2	1	DEBITAGE	Shatter						
2016-503	24	Level 4	COBL	Laffayette gravel	12	2	DEBITAGE	Shatter						TRUE
2016-503	24	Level 4	COBL	Sandstone	82.1	1	DEBITAGE	Possibly shaped, but likely natural					TRUE	
2016-503	24	Level 4	CORE	Crowley's Ridge	17.8	2	DEBITAGE	Flakes removed from various sides						TRUE
2016-503	24	Level 4	FCR	Crowley's Ridge	21.5	1	DEBITAGE	Shatter				TRUE	TRUE	TRUE

Table V-12 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	24	Level 4	FCR	Laffayette gravel	0.8	1	DEBITAGE	Shatter				TRUE	TRUE	TRUE
2016-503	24	Level 4	FCR	Laffayette gravel	0.01	1	DEBITAGE	Pot lid				TRUE	TRUE	TRUE
2016-503	24	Level 4	FLA	Crowley's Ridge	2.2	6	DEBITAGE	Production flaking						TRUE
2016-503	24	Level 4	FLA	Crowley's Ridge	18.7	15	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	24	Level 4	FLA	Crowley's Ridge	1.3	6	DEBITAGE	Production flaking					TRUE	
2016-503	24	Level 4	FLA	Crowley's Ridge	1.7	12	DEBITAGE	Production flaking						
2016-503	24	Level 4	FLA	Laffayette gravel	1.4	2	DEBITAGE	Production flaking						TRUE
2016-503	24	Level 4	FLA	Laffayette gravel	9.5	13	DEBITAGE	Production flaking					TRUE	TRUE
2016-503	24	Level 4	FLA	Laffayette gravel	4.6	21	DEBITAGE	Production flaking					TRUE	
2016-503	24	Level 4	FLA	Laffayette gravel	8.5	16	DEBITAGE	Production flaking						
2016-503	24	Level 4	PEBL	Channel coal	0.5	2	DEBITAGE							
2016-503	24	Level 4	PEBL	Hematite	0.5	2	DEBITAGE							TRUE
2016-503	24	Level 4	PEBL	Laffayette gravel	0.6	2	DEBITAGE							TRUE
2016-503	34	Feature 9 S 1/2 flotation sample heavy fraction			70.8	0	WS/DS DEBRIS	HF sorted ~5 min.						
2016-503	34	Feature 9 S 1/2 flotation sample heavy fraction	FLA	Crowley's Ridge	0.01	1	DEBITAGE	HF sorted ~5 min. Production flaking						TRUE

Table V-12 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	34	Feature 9 S 1/2 flotation sample heavy fraction	FLA	Crowley's Ridge	0.5	1	DEBITAGE	HF sorted ~5 min. Production flaking					TRUE	
2016-503	34	Feature 9 S 1/2 flotation sample heavy fraction	FLA	Crowley's Ridge	0.01	1	DEBITAGE	HF sorted ~5 min. Production flaking						
2016-503	34	Feature 9 S 1/2 flotation sample heavy fraction	FLA	Crowley's Ridge	0.3	1	DEBITAGE	HF sorted ~5 min. Production flaking					TRUE	TRUE
2016-503	34	Feature 9 S 1/2 flotation sample heavy fraction	FLA	Laffayette gravel	0.01	1	DEBITAGE	HF sorted ~5 min. Production flaking						
2016-503	34	Feature 9 S 1/2 flotation sample heavy fraction	FLA	Laffayette gravel	0.2	4	DEBITAGE	HF sorted ~5 min. Production flaking					TRUE	
2016-503	36	Feature 10 N 1/2 flotation sample heavy fraction	FLA	Laffayette gravel	0.01	2	DEBITAGE	HF sorted ~5 min. Production flaking						
2016-503	38	Feature 11 S 1/2	FLA	Crowley's Ridge	0.4	1	DEBITAGE	Production flaking						
2016-503	38	Feature 11 S 1/2	FLA	Laffayette gravel	0.1	1	DEBITAGE	Production flaking					TRUE	
2016-503	38	Feature 11 S 1/2	FLA	Laffayette gravel	0.2	1	DEBITAGE	Production flaking						

Table V-12 (cont.)

Accession Number	FSN	Provenience	specific	material	weight	count	Morphofunctional type	General comment	Length (cm)	Width (cm)	Thickness (cm)	Fire cracked	Heat treated	cortex
2016-503	39	Feature 11 N 1/2 flotation sample heavy fraction	FLA	Laffayette gravel	0.01	3	DEBITAGE	HF sorted for ~5 min. Production flaking					TRUE	

Figure V-47: Madison, 2 Nodenas, 2 broken points, drill, preform, 9 broken points, drill (right side center), 4 broken points, RUM flake, drill. Excavated from Level 1 of TU9.

Figure V-48: Madison, 3 preforms, broken point, RUM flake, broken point, preform or scraper, 4 broken points, 4 broken preforms. Excavated from Level 2 of TU9.

Figure V-49: Madiosn preform, base of Nodena. Excavated from Level 3 of TU9.

Figure V-50: Base of Nodena, crude Nodena. Excavated from Level 4 of TU9.

Appendix VI

Faunal

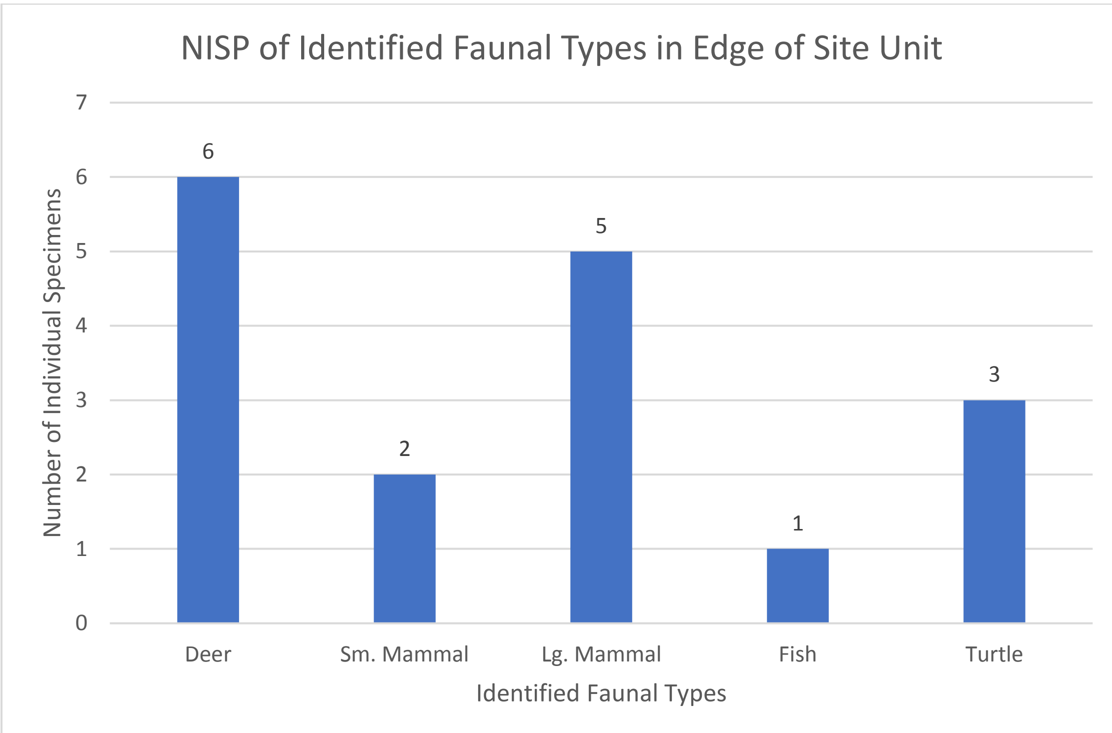

Figure VI-1: NISP of identified fauna from Initial test unit on east edge of site in 2012.

Table VI-1: Faunal materials from Edge of Site Unit. Identified specimens are summarized in Figure VI-1.

Accession Number	FSN	Provenience	species	element	weight	count	distal/ proximal	General comment
2012-310	2	Level 2		fish scale	0.01	1		burned scale w/small break on body
2012-310	4	Level 4	Deer	Partial vertebral body and arch	2.7	1		
2012-310	4	Level 4	Deer	L Trapezoid-magnum	2	1		
2012-310	4	Level 4	Lg. Mammal	Unid	5.5	1		Burned, skull frag?
2012-310	4	Level 4	Unid	Very fragmentary	13.4	123		
2012-310	4	Level 4	Unid	Very fragmentary	0.5	3		burned
2012-310	9	Feature 3	Deer	L Metatarsal	12.7	1	distal	Epiphysis and not much of shaft
2012-310	9	Feature 3	Deer	Humerus	19.6	1	distal	Broken distal end with part of trochlea and olecranon fossa present
2012-310	9	Feature 3	Deer	Femur	14.2	1	distal	Broken condyle and very end of shaft
2012-310	9	Feature 3	Deer	atlas	68.9	1		Cut marks on arch just under point for spine
2012-310	9	Feature 3	Large Mammal	Shaft	3.3	3		Unid shaft frags from medium to large mammal
2012-310	12	Feature 3 S 1/2	Large Mammal	tooth	0.2	1		Enamel of side of deer (likely) tooth
2012-310	12	Feature 3 S 1/2	Small Mammal	Shaft	0.1	2		
2012-310	12	Feature 3 S 1/2	Turtle	Caripace	4.9	3		

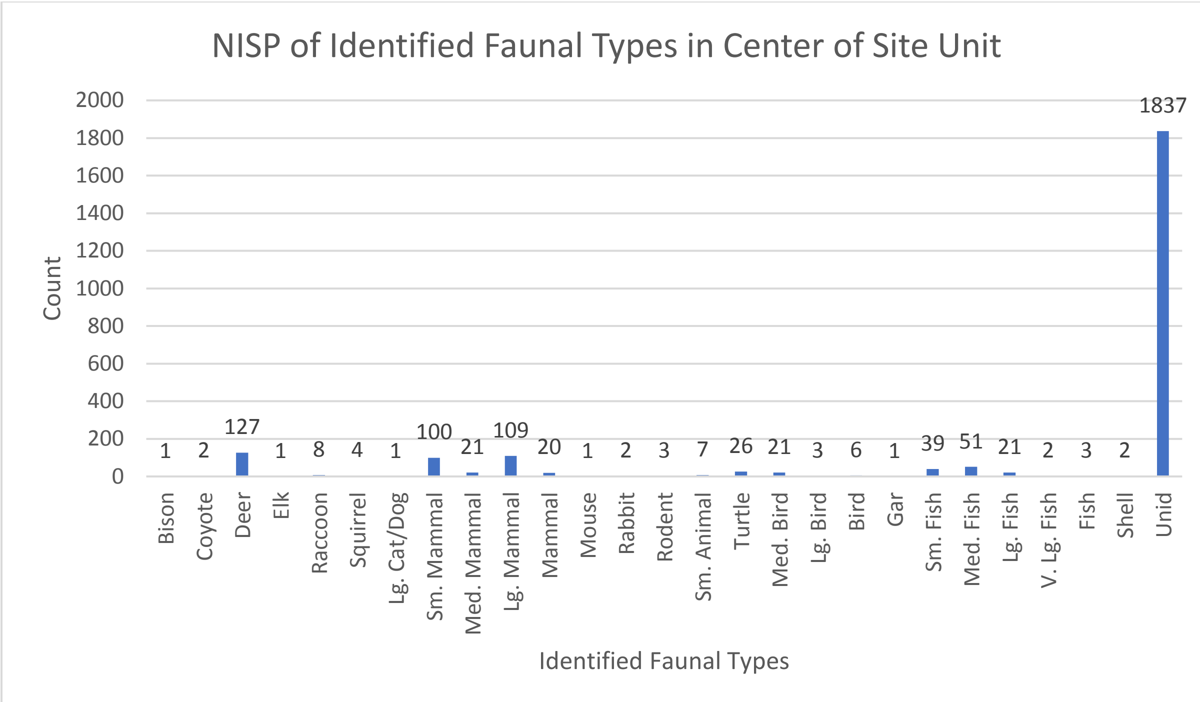

Figure VI-2: NISP of identified fauna from Initial test unit in center of site in 2012.

Table VI-2: Faunal materials from Edge of Site Unit. Identified specimens are summarized in Figure VI-2.

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2012-310	14	Level 1	Unid	Unid	0.1	1		Burned whitish gray
2012-310	17	Level 4	Bird	Unid	0.01	1		
2012-310	17	Level 4	Bison	Molar	46.6	1	distal	Well worn, compared to museum collection bison
2012-310	17	Level 4	Deer	Astrag	10.3	1		90% complete
2012-310	17	Level 4	Deer	Premolar	3	3	distal	Crown 95% complete, roots fragmentary
2012-310	17	Level 4	Deer	3rd Phalanx	9.5	2		1 complete, 1 unfused proximal epiphisis
2012-310	17	Level 4	Deer	Incisor 2	0.5	3		Crown complete, root complete
2012-310	17	Level 4	Deer	Carpal	0.6	2		Whole
2012-310	17	Level 4	Deer	Metapodial	22.4	1	distal	Distal shaft and epiphysis.
2012-310	17	Level 4	Deer	Metapodial	62.7	14	medial	Shaft Fragments
2012-310	17	Level 4	Deer	Radius	38.2	1	distal	Ulna unfused, broken mid-shaft
2012-310	17	Level 4	Deer	2nd Phalanx	15.6	4		2 complete, 2 partial
2012-310	17	Level 4	Deer	Mandible	1.6	1		10% of mandible with recesses for tooth roots visible
2012-310	17	Level 4	Deer	Molar	2.7	3	distal	Crown 95% complete, roots fragmentary
2012-310	17	Level 4	Deer	Sesamoid	1.2	2		complete
2012-310	17	Level 4	Deer	Tarsal	2	1		complete
2012-310	17	Level 4	Deer	Antler	0.6	1		Tip of antler tine
2012-310	17	Level 4	Deer	Tarsal	8.3	1		second and fourth tarsals (fused), complete
2012-310	17	Level 4	Deer	Calcanaeus	17.1	1	proximal	60% present, distal end broken
2012-310	17	Level 4	Deer	1st Phalanx	5.9	4		3 95% complete, 1 partial (20%)
2012-310	17	Level 4	Deer	Tibia	7.2	1	distal	Broken lengthwise and near distal epiphysis. Burned white

Table VI-2 (cont.)

2012-310	17	Level 4	Deer	Metacarpal	11.5	1	proximal	Proximal epiphysis with small part of shaft
Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2012-310	17	Level 4	Deer	Incisor 1	0.8	2		Crown 90% complete, root 95% complete
2012-310	17	Level 4	Deer	Metapodial	3	1	distal	Unfused distal epiphysis
2012-310	17	Level 4	Deer (?)	Long bone	12.1	2		Unid epiphyses
2012-310	17	Level 4	Deer (?)	Carpal	0.4	2		Whole small carpals
2012-310	17	Level 4	Deer (?)	Long bone	53.3	14	medial	Large long bone shaft fragments
2012-310	17	Level 4	Deer (?)	Rib	2.7	3		Probable deer ribs. Two with shaft and one with unfused proximal epiphysis
2012-310	17	Level 4	Deer (?)	1st Phalanx	1	3		1st phalanx of dew claw
2012-310	17	Level 4	Deer (?)	Skull (?)	5.8	1		Probable skull fragment (~10%)
2012-310	17	Level 4	Deer (?)	Vert	7.1	2		Probable arch of vert
2012-310	17	Level 4	Deer (?)	Inominate	5.8	1		Fragmentary (~20% present)
2012-310	17	Level 4	Deer (?)	Metapodial	1.2	1		Burned
2012-310	17	Level 4	Large cat	Tibia	4.3	1	distal	Distal epiphysis looks very cat-like, but could maybe be coyote
2012-310	17	Level 4	Lg. Bird	Long Bone	2.2	3		Shaft frags
2012-310	17	Level 4	Lg. Fish	Vert	3.1	14		Vert bodies
2012-310	17	Level 4	Lg. Mammal	Long Bone	43.4	40		
2012-310	17	Level 4	Lg. Mammal	Unid	3.5	3		
2012-310	17	Level 4	Med Mammal	Rib	2.5	7		Shaft frags
2012-310	17	Level 4	Med. Bird	Long Bone	0.7	4		Shaft frags
2012-310	17	Level 4	Med. Bird	Unid	2.7	11		Shaft frags
2012-310	17	Level 4	Med. Bird	Humerus	0.01	1	distal	Distal epiphysis only
2012-310	17	Level 4	Med. Bird	Humerus	1.3	1		Distal epiphysis and shaft (90% complete)
2012-310	17	Level 4	Med. Bird	Carpometacarpus	1.6	3		Various fragments
2012-310	17	Level 4	Med. Bird	Rib	0.01	1		Proximal frag

Table VI-2 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2012-310	17	Level 4	Med. Fish	Vert	2.6	24		Vert bodies
2012-310	17	Level 4	Med. Mammal	Vert	0.1	1		Partial vert body
2012-310	17	Level 4	Med. Mammal	Vert	0.2	1		Unfused Epiphysial plate
2012-310	17	Level 4	Mouse (?)	Mandible/Tooth	0.01	1		Broken right mandible with one molar.
2012-310	17	Level 4	Prob Deer	Tooth	1.5	11	distal	Enamel likely from deer tooth due to size and shape
2012-310	17	Level 4	Prob Deer	Tooth	0.6	2	proximal	Root with small amount of enamal
2012-310	17	Level 4	Prob Deer	Prob Incisor	0.01	1	proximal	Root with small amount of enamal
2012-310	17	Level 4	Prob Deer	Prob Molar	0.4	1	distal	Crown 25% complete, root abscent
2012-310	17	Level 4	Prob Deer	Prob Premolar	1.1	3	distal	Crown 30% complete, partial root
2012-310	17	Level 4	Rabbit (?)	Humerus	0.2	1	distal	Distal epiphysis of probable rabbit
2012-310	17	Level 4	Racoon	Molar (Maxillary)	0.3	1		Crown present and unworn, roots broken
2012-310	17	Level 4	Racoon	Molar (Mandibular)	0.8	3		Crown and root present. Occlusal surface worn
2012-310	17	Level 4	Rodent	Incisor	0.2	1	distal	Red/Orange enamel of likely beaver incisor
2012-310	17	Level 4	Rodent	Incisor	0.01	1		Partial tooth
2012-310	17	Level 4	Shell	Shell	1.4	1		Shell frag in deteriorating condition
2012-310	17	Level 4	Sm. Fish	Vert	0.3	6		Vert bodies
2012-310	17	Level 4	Sm. Fish	Vert	0.5	10		Vert bodies
2012-310	17	Level 4	Sm. Mammal	Ulna	0.2	1	distal	Burned. Distal epiphysis and part of shaft
2012-310	17	Level 4	Sm. Mammal	Scapula	0.01	1		Articular surface and part of spine
2012-310	17	Level 4	Sm. Mammal	Phalange	0.01	1		Burned, Distal 1/2
2012-310	17	Level 4	Sm. Mammal	Phalanges	1.3	9		Whole
2012-310	17	Level 4	Sm. Mammal	Long Bone	2	10		Unid long bone shaft

Table VI-2 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2012-310	17	Level 4	Sm. Mammal	Long Bone	1.5	10		Fragmented and unfused long bones
2012-310	17	Level 4	Sm. Mammal	Phalanges	0.5	3		Whole phalanges
2012-310	17	Level 4	Sm. Mammal	Tibia	0.4	3	distal	Distal epiphysis and part of shaft
2012-310	17	Level 4	Sm. Mammal	Phalanges	0.7	4		Whole phalanges
2012-310	17	Level 4	Sm. Mammal	Calcaneus	0.3	2		Whole
2012-310	17	Level 4	Sm. Mammal	Ulna	0.3	1	proximal	Broken epiphysis and part of shaft
2012-310	17	Level 4	Sm. Mammal	Innominate	0.5	2		Partial acetabulum extending to part of pubis or ischium
2012-310	17	Level 4	Sm. Mammal	Long bone	0.2	3		Partial shaft and Unfused end
2012-310	17	Level 4	Sm. Mammal	Unid	0.5	3		
2012-310	17	Level 4	Sm. Mammal	Vert	4	10		Vert bodies and arches
2012-310	17	Level 4	Sm. Mammal	Inominate	0.01	1		Partial Inominate
2012-310	17	Level 4	Sm. Mammale	Metapodial	0.01	1		Complete
2012-310	17	Level 4	Squirrel (?)	Mandible/Teeth	0.2	1		Part of mandible with 3 worn teeth
2012-310	17	Level 4	squirrel (?)	Mandible/Incisor	0.3	1		Part of mandible with incisor extending into the bone
2012-310	17	Level 4	Squirrel (?)	Ulna	0.2	1	proximal	Proximal epiphysis and part of shaft
2012-310	17	Level 4	Turtle	Carapace	0.1	2		1% present
2012-310	17	Level 4	Turtle	Plastron	0.6	3		1% present
2012-310	17	Level 4	Turtle	Carapace	1.3	6		
2012-310	17	Level 4	Unid	Unid	19.2	117		Burned
2012-310	17	Level 4	Unid	Tooth	0.2	1	distal	Enamel
2012-310	17	Level 4	Unid	Tooth	0.5	2	distal	Enamel
2012-310	17	Level 4	Unid	Tooth	0.01	2	distal	Enamel
2012-310	17	Level 4	Unid	Unid	0.7	3		
2012-310	17	Level 4	Unid	Unid	0.6	2		
2012-310	17	Level 4	Unid	Carpals	0.3	2		Complete
2012-310	17	Level 4	Unid	Rib	3.8	7		Partial shaft
2012-310	17	Level 4	Unid	Long Bone	40.3	116		

Table VI-2 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2012-310	17	Level 4	Unid	Unid	124.2	877		
2012-310	17	Level 4	Unid	Tibia	0.01	1		Unfused distal end, otherwise complete
2012-310	17	Level 4	Unid	Unid	1.1	1	distal	Unid distal epiphysis of metapodial or phalanx
2012-310	17	Level 4	Unid	Long Bone	4.9	13		Burned
2012-310	17	Level 4	Unid	Skull	2	1		~10%
2012-310	17	Level 4	Unid	Phalanges	0.7	2	proximal	Proximal epiphysis and small part of shaft
2012-310	17	Level 4	Unid	Rib	0.01	1		Burned, partial shaft
2012-310	18	Level 4 flotation sample heavy fraction			14.6	351		Sorted from HF for ~60 min
2012-310	20	Level 4 flotation sample heavy fraction			5.5	63		Sorted from HF for ~15 min
2012-310	21	Level 5	Bird	Rib	0.1	2		Frag
2012-310	21	Level 5	Bird	Tarsometatarsus	0.2	1		Distal epiphysis and partial shaft
2012-310	21	Level 5	Bird	Tibiotarsus	0.6	2		Distal epiphysis and part of shaft
2012-310	21	Level 5	Deer	Metapodial	6.3	3	distal	Unfused distal epiphysis
2012-310	21	Level 5	Deer	Molar	4.5	2		Roots mostly broken, enamel intact
2012-310	21	Level 5	Deer	2nd Phalanx	1.7	1		Missing unfused proximal epiphysis
2012-310	21	Level 5	Deer	3rd Phalanx	8.8	1		Complete, possible cut mark on back of distal epiphisys
2012-310	21	Level 5	Deer	1st Phalanx	8.4	3		Complete
2012-310	21	Level 5	Deer	Antler	0.4	1		Antler tine
2012-310	21	Level 5	Deer	Carpal	0.9	1		
2012-310	21	Level 5	Deer	Max Premolar	1.2	1		No root, only enamel
2012-310	21	Level 5	Deer (?)	Incisor	0.4	1		Probable deer incisor. Part of enamel broken, most of root present

Table VI-2 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2012-310	21	Level 5	Deer (?)	Rib	2.5	2		Mid shaft frags, deer sized
2012-310	21	Level 5	Deer (?)	Skull	17.9	6		Skull frags from probable deer
2012-310	21	Level 5	Deer (?)	Phalanx	0.8	1	proximal	Unfused proximal epiphysis
2012-310	21	Level 5	Deer (?)	1st Phalanx	0.8	1	proximal	Unfused Proximal epiphysis
2012-310	21	Level 5	Deer (?)	Metapodial	3.4	2	medial	Medial shaft frags
2012-310	21	Level 5	Elk	Atlas	66.6	1		Two cut marks on superior of right articular surface and possibly more across superior surface in the middle of the body
2012-310	21	Level 5	Fish	Scale	0.01	1		
2012-310	21	Level 5	Fish	Spine	0.01	1		Row of small spikes on hollow bone shaft
2012-310	21	Level 5	Gar	Mandible/Maxilla	0.2	1		Small piece with many small holes for teeth
2012-310	21	Level 5	Lg. Fish	Vert	1.2	7		Vert bodies
2012-310	21	Level 5	Lg. Mammal	Long bone	69.2	60		Shaft frag
2012-310	21	Level 5	Lg. Mammal	Tooth	1	3		Probably deer molars or premolars, broken pieces of side enamel
2012-310	21	Level 5	Lg. Mammal	Rib (?)	1.3	1		Proximal end of shaft, most of epiphysis missing
2012-310	21	Level 5	Lg. Mammal	Humerus (?)	5.5	1		Distal end of shaft, no epiphysis
2012-310	21	Level 5	Mammal	Long bone	2.8	9		Burned, shaft frag
2012-310	21	Level 5	Mammal	Skull	3.4	10		Small skull frags
2012-310	21	Level 5	Mammal	Canine	0.3	1		Canine root
2012-310	21	Level 5	Med. Fish	Vert	3.3	23		Vert bodies
2012-310	21	Level 5	Med. Mammal	Long Bone	0.3	1		Broken shaft with part of epiphysis

Table VI-2 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2012-310	21	Level 5	Med. Mammal	Radius	0.5	1	proximal	Burned, Proximal epiphysis and part of shaft (~50% complete)
2012-310	21	Level 5	Med. Mammal	Long Bone	0.1	2		Shaft frags
2012-310	21	Level 5	Med. Mammal	Ulna	2.3	1	proximal	Very eroded proximal end and part of shaft
2012-310	21	Level 5	Med. Mammal	Rib	0	3		Shaft Frags
2012-310	21	Level 5	Med. Mammal	Vert	0.4	1		Vert body
2012-310	21	Level 5	Med. Mammal	Proximal Rib	0.4	1	proximal	Proximal epiphysis with ~50% shaft
2012-310	21	Level 5	Med. Mammal	Long bone	2.3	4		Shaft frag
2012-310	21	Level 5	Med. Mammal	Rib	0.5	3		Mid shaft frags, med. Size
2012-310	21	Level 5	Med. Mammal	Femur	0.7	1	distal	Unfused distal epiphysis
2012-310	21	Level 5	Med. Mammal	Distal Rib	0.5	1	distal	Distal epiphysis with ~50% shaft
2012-310	21	Level 5	Med. Unid	Unid	1.7	4		
2012-310	21	Level 5	Rabbit (?)	Mandible/Incisor	0.7	1		Front of mandible with incisor
2012-310	21	Level 5	Raccoon	Man Molar	0.3	1		Worn
2012-310	21	Level 5	Raccoon	Max Molar	0.8	3		2 very worn, 1 almost unworn
2012-310	21	Level 5	Rodent	Incisor	0.1	1		Rodent tooth, enamel breaking away
2012-310	21	Level 5	Shell	Shell	2.3	1		Shell, has valve, but is in bad shape
2012-310	21	Level 5	Sm. Fish	Vert	1.9	23		Vert bodies
2012-310	21	Level 5	Sm. Mammal	Vert	0.01	1		Vert body
2012-310	21	Level 5	Sm. Mammal	Phalanges	0.7	5		
2012-310	21	Level 5	Sm. Mammal	Innominate	0.3	1		
2012-310	21	Level 5	sm. Mammal	Mandible	0.01	1		Midsection of mandible with no teeth present
2012-310	21	Level 5	Sm. Mammal	Phalanges	0.01	1		Burned
2012-310	21	Level 5	Sm. Mammal	Innominate	0.01	1		Part of acetabulem

Table VI-2 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2012-310	21	Level 5	Sm. Mammal	Ulna	0.01	1	proximal	Proxmal shaft and broken epiphysis
2012-310	21	Level 5	Sm. Mammal	Long Bone	0.1	2		Shaft frags
2012-310	21	Level 5	Sm. Mammal	Vert	2.9	14		Various sizes of sm. Mammal vert
2012-310	21	Level 5	Sm. Mammal	Phalanx	0.01	1		
2012-310	21	Level 5	Sm. Mammal	1st Phalanx	0.1	1		Complete
2012-310	21	Level 5	Sm. Mammal	Skull	0.01	1		Temporal and zygomatic arch
2012-310	21	Level 5	Sm. Mammal	Femur	0.01	1	proximal	Proximal epiphysis and part of shaft
2012-310	21	Level 5	Sm. Mammal	Phalanx	0.01	1		
2012-310	21	Level 5	SM. Unid	Unid	1	7		
2012-310	21	Level 5	Squirrel	Ulna	0.1	1	proximal	Proximal shaft and epiphysis (~50% complete)
2012-310	21	Level 5	Turtle	Plastron	0.01	1		
2012-310	21	Level 5	Turtle	Carapace	0.8	3		Broken along natural fissures
2012-310	21	Level 5	Turtle	Plastron	0.9	7		
2012-310	21	Level 5	Turtle	Plastron	0.5	3		
2012-310	21	Level 5	Turtle	Plastron	1.2	1		
2012-310	21	Level 5	Unid	Unid	4.3	19		
2012-310	21	Level 5	Unid	Long Bone	8	42		
2012-310	21	Level 5	Unid	Unid	65.8	397		
2012-310	21	Level 5	Unid	Long bone	7.7	1		Shaft with part of epiphysis very degraged and possibly gnawed or extremely weathered
2012-310	21	Level 5	Unid	Unid	2.1	6		
2012-310	21	Level 5	Unid	Mandible	3.4	3		Frags of mandible with area for roots visible
2012-310	21	Level 5	Unid	Unid	32	136		Burned
2012-310	21	Level 5	Xlg. Fish	Vert	2.5	1		Vert body
2012-310	21	Level 5	Xlg. Fish	Vert	1.3	1		Burned, vert body
2012-310	22	Level 6	Deer	Long bone	2.4	2		Shaft frags
2012-310	22	Level 6	Deer	Tooth	0.3	1		Tooth frag

Table VI-2 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2012-310	22	Level 6	Fish	Scale	0.01	1		
2012-310	22	Level 6	Med. Fish	Vert	0.1	2		
2012-310	22	Level 6	Rodent	Incisor	0.2	1		Long rodent incisor
2012-310	22	Level 6	Sm. Mammal	Phalange	0.01	1		
2012-310	22	Level 6	Sm. Mammal	Long bone	0.01	1		Shaft and part of epiphysis
2012-310	22	Level 6	Sm. Mammal	Tibia	0.7	1	distal	Distal end of tibia
2012-310	22	Level 6	Unid	Tooth	0.01	1		Enamel frag
2012-310	22	Level 6	Unid	Unid	3.8	20		Burned
2012-310	22	Level 6	Unid	Unid	11	54		
2012-310	27	Level 7	Coyote (?)	Premolar	0.5	2		1 tooth broken in half. Looks very similar to coyote specimen
2012-310	27	Level 7	FLA		1.2	2		Production flaking
2012-310	27	Level 7	FLA		0.3	2		Production flaking
2012-310	27	Level 7	Med. Fish	Vert	0.3	2		
2012-310	27	Level 7	Unid	Unid	2.5	3		
2012-310	29	Feature 5	Deer	Radius	21.7	1		Possible too big for deer. Elk?
2012-310	29	Feature 5	Lg. Mammal	Long Bone	4.9	1		Long bone shaft frag
2012-310	29	Feature 5	Unid	Unid	0.1	2		Burned
2012-310	29	Feature 5	Unid	Unid	0.2	4		

Figure VI-3: Bison tooth excavated from Level 4 of Center of Site unit.

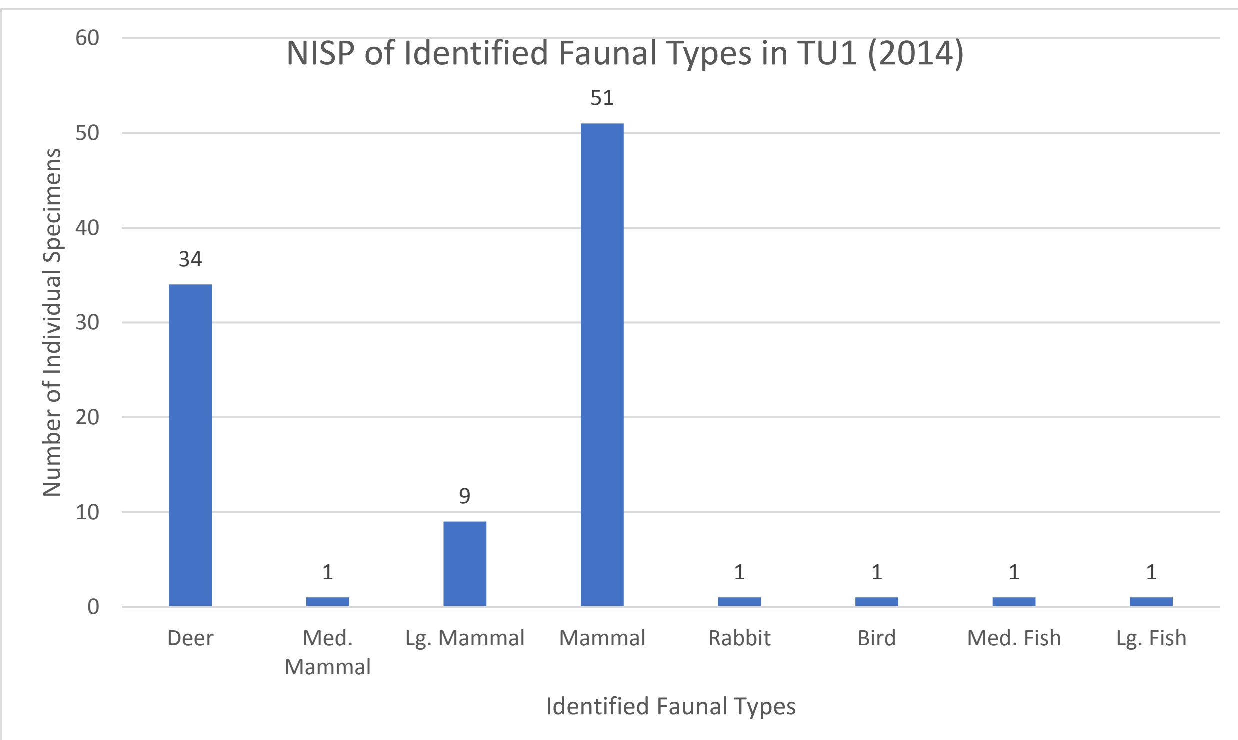

Figure VI-4: Identified fauna from Excavation unit 1 in 2014.

Table VI-3: Faunal materials from TU1. Identified specimens are summarized in Figure VI-4.

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2014-518	5	Level 2	Deer	Premolar	2.7	2		broken roots
2014-518	5	Level 2	Deer	Scapula	8.2	2		Frags of scapula
2014-518	5	Level 2	Deer	1st Phalanx	6.6	2		one mostly whole, one proximal end
2014-518	5	Level 2	Deer	Antler	18.2	2		Broken antlers
2014-518	5	Level 2	Deer	tibia	20.4	1		Shaft frag
2014-518	5	Level 2	Deer	Metapodial	18.1	1		shaft frag
2014-518	5	Level 2	Deer	Molar	7.2	3		Molars with broken roots
2014-518	5	Level 2	Deer	Capitate	1.7	1		
2014-518	5	Level 2	Deer	2nd Phalanx	3.4	2		
2014-518	5	Level 2	Deer?	Tooth	1.2	3		broken teeth, likely deer
2014-518	5	Level 2	Deer?	Humerus	3.2	1		Distal articular surface
2014-518	5	Level 2	Mammal	Long bone	44.4	13		shaft frags
2014-518	5	Level 2	med Fish	vert	0.01	1		
2014-518	5	Level 2	Unid	Unid	35.7	99		
2014-518	5	Level 2	Unid	Unid	7.4	28		Burned
2014-518	6	Level 2 flotation sample heavy fraction	Lg. Mammal	long bone	4	2		HF sorted for 10 min
2014-518	6	Level 2 flotation sample heavy fraction	Unid	Unid	2.3	35		HF sorted for 10 min
2014-518	11	Level 3	Bird	long bone	0.01	1		
2014-518	11	Level 3	Deer	Mandible	9.8	1		Epiphysis
2014-518	11	Level 3	Deer	Molar	3.3	1		Partially broken tooth
2014-518	11	Level 3	Deer	Long bone	3.9	2		
2014-518	11	Level 3	Deer	Metacarpal	17.1	1	distal	Possible cut marks on posterior
2014-518	11	Level 3	Deer	1st phalange	4.1	1	distal	Broken through shaft
2014-518	11	Level 3	Deer	Antler	30.4	1		Antler at skull attachment
2014-518	11	Level 3	Rabbit	Mandible and teeth	2.2	1		Mid section of mandible with molars and premolars
2014-518	11	Level 3	Unid	unid	0.1	1		Burned gray
2014-518	11	Level 3	Unid	unid	7.6	21		Burned black to white
2014-518	11	Level 3	Unid	unid	18.7	41		

Table VI-3 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2014-518	12	Level 3 flotation sample heavy fraction	Unid	unid	0.1	20		HF sorted for 10 min
2014-518	19	Level 4 flotation sample heavy fraction	Unid	unid	0.01	8		Hf sorted for 5 min
2014-518	20	Level 4	Deer	tooth	1.3	3		Enamel
2014-518	20	Level 4	Lg. Mammal	Unid (skull?)	1.6	1		
2014-518	20	Level 4	Lg. Mammal	Long bone	12.2	5		
2014-518	20	Level 4	Mammal	unid	12.4	38		
2014-518	20	Level 4	Med Mammal	Radius	1.5	1	proximal	Proximal epiphysis and half of shaft
2014-518	20	Level 4	Unid	unid	2.4	11		Burned black and white
2014-518	31	Level 5	Deer	Tibia	32.5	1	distal	Distal epiphysis and 1/3 of shaft
2014-518	31	Level 5	Deer	metapodial	1.5	1	distal	Distal epiphysis and part of shaft
2014-518	31	Level 5	Deer	metapodial	1.2	1	proximal	Proximal epiphysis
2014-518	31	Level 5	Unid	unid	2.4	22		Unid small frags
2014-518	34	Level 5 flotation sample heavy fraction	Unid	unid	0.01	3		HF, totally sorted, very tiny
2014-518	42	Level 6 flotation sample heavy fraction	Unid	unid	0.01	6		HF, totally sorted, very tiny
2014-518	45	Level 6	Deer	Podial	2.7	1		
2014-518	45	Level 6	Lg. fish	Vert	0.2	1		vert body, broken
2014-518	45	Level 6	Lg. Mammal	long bone	0.8	1		

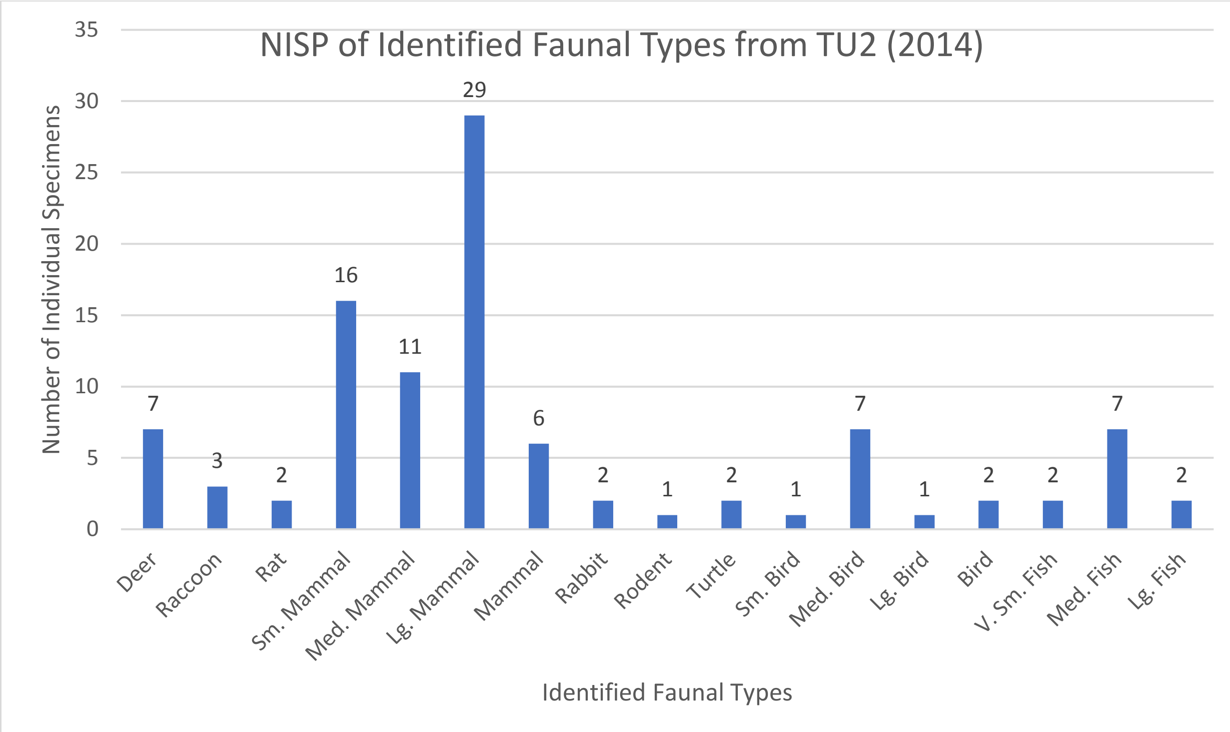

Figure VI-5: Identified fauna from Excavation unit 2 in 2014.

Table VI-4: Faunal materials from TU2. Identified specimens are summarized in Figure VI-5.

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2014-518	32	Level 6	Deer	Calcaneus	18.7	1	distal	Possible cut marks. Proximal end broken
2014-518	32	Level 6	Lg. Bird	Vert	0.8	1		Vert body
2014-518	32	Level 6	Lg. Fish	Vert	0.3	1		Broken through body
2014-518	32	Level 6	Lg. Mammal	Metapodial	1.1	1	distal	condyle
2014-518	32	Level 6	Lg. Mammal	Long Bone	13.2	8		Long bone shaft frags
2014-518	32	Level 6	Mammal	rib	0.6	1		rib frag
2014-518	32	Level 6	Med. Bird	Vert	1	5		Vert bodies
2014-518	32	Level 6	Med. Fish	Vert	1.3	5		Vert bodies
2014-518	32	Level 6	Rabbit (?)	Mandible and teeth	0.4	1		Premolars and madible frag
2014-518	32	Level 6	Sm. Mammal	Inomminate	2.4	4		Acetabulum and parts extending
2014-518	32	Level 6	Sm. Mammal	Femur (?)	0.3	1	distal	possibly femur, epiphysis broken
2014-518	32	Level 6	Sm. Mammal	Inomminate (?)	1.9	2		possibly inomminate
2014-518	32	Level 6	Sm. Mammal	Humerus	0.6	1	distal	distal epiphysis and shaft
2014-518	32	Level 6	Sm. Mammal	Long bone	0.4	1		Shaft

Table VI-4 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2014-518	32	Level 6	Sm. Mammal	Femur	0.8	1	proximal	Femoral head, rest of epiphysis broken
2014-518	32	Level 6	Unid	Unid	0.1	1		
2014-518	32	Level 6	Unid	Unid	16.9	41		
2014-518	32	Level 6	Unid	Unid	0.2	2		burned white/gray
2014-518	43	Level 7 flotation sample heavy fraction	Deer	Phalanx	0.7	1	distal	HF sorted for 15 min, Epiphysis, shaft broken.
2014-518	43	Level 7 flotation sample heavy fraction	Rodent	Canine	0.01	1		HF sorted for 15 min
2014-518	43	Level 7 flotation sample heavy fraction	Sm. Mammal	Radius(?)	0.01	1	distal	HF sorted for 15 min
2014-518	43	Level 7 flotation sample heavy fraction	Sm. Mammal	Vert	0.01	1		HF sorted for 15 min, Vertebral arch
2014-518	43	Level 7 flotation sample heavy fraction	Sm. Mammal	3rd phalanx	0.01	1		HF sorted for 15 min
2014-518	43	Level 7 flotation sample heavy fraction	Unid	Unid	2	48		HF sorted for 15 min
2014-518	43	Level 7 flotation sample heavy fraction	V. Sm. Fish	vert	0.01	2		HF sorted for 15 min
2014-518	44	Level 7	Bird	Long bone	0.2	1		Shaft frag with dirt inside
2014-518	44	Level 7	Bird	Carpometacarpus	0.4	1	proximal	Proximal epiphysis and partial shaft
2014-518	44	Level 7	Deer	Podials	2.1	1		2 different podials
2014-518	44	Level 7	Deer	Incisor	0.01	1		Whole tooth
2014-518	44	Level 7	Deer	3rd Phalanx	2.4	1		whole
2014-518	44	Level 7	Deer	Metapodial	2	1		Shaft frag
2014-518	44	Level 7	Lg. Fish	Vert	0.2	1		1/2 of vert body
2014-518	44	Level 7	Lg. Mammal	Skull	0.9	1		Small skull frag
2014-518	44	Level 7	Lg. Mammal	Sacrum?	2.6	1		Unfused, flattened vert with wings

Table VI-4 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2014-518	44	Level 7	Lg. Mammal	Occipital condyle	1.7	1		Small piece, but condyle seems likely
2014-518	44	Level 7	Lg. Mammal	Long Bone	33.2	17		Long bone frags
2014-518	44	Level 7	Mammal	Tibia?	0.2	1	proximal	Unfused proximal end, broken mid shaft
2014-518	44	Level 7	Mammal	Femur	0.7	1	distal	Broken mid shaft. Distal end fused, but broken
2014-518	44	Level 7	Mammal	Caudal	0.1	2		Worn on ends
2014-518	44	Level 7	Mammal	Long vone	0.1	1		Shaft frag
2014-518	44	Level 7	Med. Bird	Vert	0.9	2		Vert bodies
2014-518	44	Level 7	Med. Fish	Vert	0.01	1		Burned
2014-518	44	Level 7	Med. Mammal	Long Bone	3.4	9		Long bone frags
2014-518	44	Level 7	Med. Mammal	Scapula (?)	0.2	1		Epiphysis, rest of bone broken off
2014-518	44	Level 7	Med. Mammal	Femur	0.1	1	distal	Distal end, no shaft
2014-518	44	Level 7	Mouse?	Mandible	0.2	2		Front of mandible with canine and premolar, broken at ramus
2014-518	44	Level 7	Rabbit	Mandible	0.4	1		Mid mandible with premolar and molar
2014-518	44	Level 7	Raccoon?	Phalanx	0.01	1		whole
2014-518	44	Level 7	Raccoon?	Metapodial?	0.2	2	proximal	Small for raccoon, but similar shape at proximal end
2014-518	44	Level 7	Rat?	Femur	0.1	1		Whole (Flying squirrel size, but more robust)
2014-518	44	Level 7	Rat?	Femur	0.01	1		Proximal epiphysis broken, distal end unfused
2014-518	44	Level 7	Sm. Mammal	Rib	0.1	1		shaft frag
2014-518	44	Level 7	Turtle	Plastron	0.8	2		
2014-518	44	Level 7	Unid	unid	1.5	1		
2014-518	44	Level 7	Unid	Unid	21.7	99		
2014-518	44	Level 7	Unid	Unid	1.7	11		Burned
2014-518	57	Level 8	Deer	Antler	3.5	1		Antler tine, cut off around base of tine at proximal end
2014-518	57	Level 8	Unid	Unid	4.8	13		
2014-518	58	Level 8 flotation sample heavy fraction	Med. Fish	Vert	0.01	1		HF sorted for 10 min
2014-518	58	Level 8 flotation sample heavy fraction	Sm. Bird	Vert	0.01	1		HF sorted for 10 min

Table VI-4 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2014-518	58	Level 8 flotation sample heavy fraction	Sm. Mammal	Long bone	0.01	2		HF sorted for 10 min
2014-518	58	Level 8 flotation sample heavy fraction	Unid	unid	1.2	37		HF sorted for 10 min

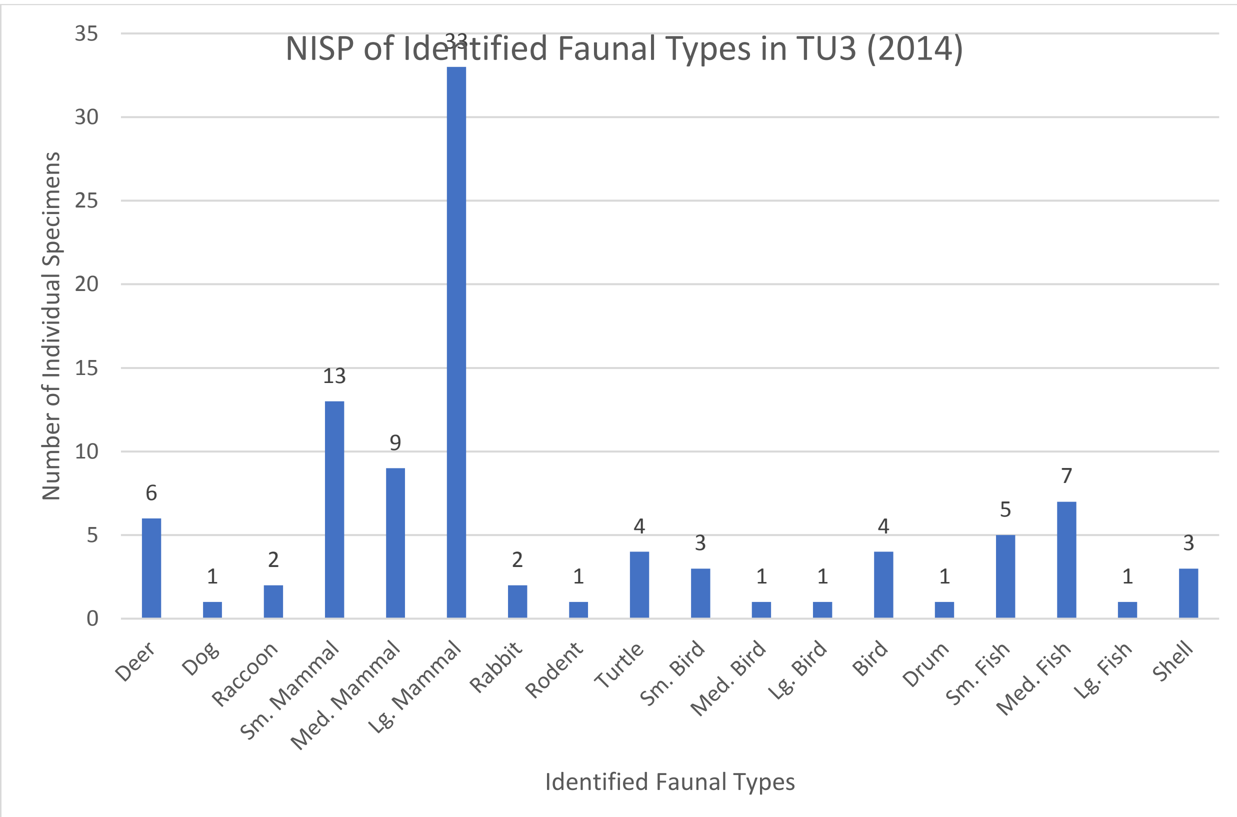

Figure VI-6: Identified fauna from Test Unit 3 in 2014.

Table VI-5: Faunal materials from TU3. Identified specimens are summarized in Figure VI-6.

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2014-518	13	Level 4	Med. Fish	Vert	0.01	1		vert body
2014-518	13	Level 4	Turtle	plastron	0.5	1		
2014-518	13	Level 4	Unid	unid	2.8	5		Some burned black or white
2014-518	16	Level 5	Bird	Long bone	0.5	2		Long bone frags
2014-518	16	Level 5	Deer	Phalanx	1.8	1	distal	Burned white
2014-518	16	Level 5	Deer?	Phalanx	0.4	1	distal	Epiphysis, shaft broken off
2014-518	16	Level 5	Drum	Maxilla	0.5	1		No teeth, but multiple tooth cavities present
2014-518	16	Level 5	Lg. Mammal	Hum or Fem	6.1	1	distal	Frag of distal epiphysis
2014-518	16	Level 5	Lg. Mammal	Vert?	4.5	2		vert frags?
2014-518	16	Level 5	Lg. Mammal	rib	0.4	1		
2014-518	16	Level 5	Lg. Mammal	Long bone	17.9	22		Long bone frags
2014-518	16	Level 5	Lg. Mammal	Caudal vert	0.2	1		
2014-518	16	Level 5	Med. Bird	Vert	0.5	1		
2014-518	16	Level 5	Med. Fish	Vert	0.3	2		Vert bodies
2014-518	16	Level 5	Med. Mammal	podial	0.4	1		
2014-518	16	Level 5	Raccoon	phalanx	0.01	1		
2014-518	16	Level 5	Sm. Mammal	Femur	0.2	1		Possible rat? Same as in FSN 44 (more robust than flying squirrel
2014-518	16	Level 5	Sm. Mammal	Femur	0.2	1	distal	
2014-518	16	Level 5	Sm. Mammal	Long bone	0.3	1		Unfused end
2014-518	16	Level 5	Turtle	carapace	0.4	1		
2014-518	16	Level 5	Turtle	plastron	0.8	1		
2014-518	16	Level 5	Unid	Unid	2.8	15		
2014-518	16	Level 5	Unid	unid	4.3	15		Burned white
2014-518	16	Level 5	Unid	unid	1.1	2		Burned black
2014-518	16	Level 5	Unid	unid	9.6	35		
2014-518	16	Level 5	Unid	unid	4.1	1		
2014-518	16	Level 5	Unid	unid	0.01	1		
2014-518	26	Level 6 flotation sample heavy fraction	Med. Fish	Vert	0.01	1		HF sorted for 15 min

Table VI-5 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2014-518	26	Level 6 flotation sample heavy fraction	Med. Mammal	Long bone	1.1	1		HF sorted for 15 min. Shaft frag
2014-518	26	Level 6 flotation sample heavy fraction	Sm. Fish	Vert	0.01	2		HF sorted for 15 min
2014-518	26	Level 6 flotation sample heavy fraction	Sm. Mammal	Long bone	0.01	1	distal	HF sorted for 15 min. Burned white
2014-518	26	Level 6 flotation sample heavy fraction	Sm. Mammal	Vert	0.01	1		HF sorted for 15 min
2014-518	26	Level 6 flotation sample heavy fraction	Sm. Mammal	Mandible	0.01	1		HF sorted for 15 min. Broken mandible with partial canine
2014-518	26	Level 6 flotation sample heavy fraction	Sm. Mammal	Humerus	0.01	1		HF sorted for 15 min
2014-518	26	Level 6 flotation sample heavy fraction	Unid	Unid	0.9	45		HF sorted for 15 min
2014-518	27	Level 6	Bird	Unid	0.2	2		
2014-518	27	Level 6	Deer	3rd Phalange	5.6	3		One partial epiphysis only
2014-518	27	Level 6	Deer	Calcaneaus	7.4	1		Parallel cut marks on shaft
2014-518	27	Level 6	Lg. Mammal	Innominate?	1.7	1		Burned white
2014-518	27	Level 6	Lg. Mammal	Long bone?	2.2	1		Burned black and burnished with lengthwise striations on surface
2014-518	27	Level 6	Lg. Mammal	Long bone	16.2	4		
2014-518	27	Level 6	Med. Fish	Vert	0.2	2		
2014-518	27	Level 6	Med. Mammal	Long bone	1.4	3		Shaft frag
2014-518	27	Level 6	Med. Mammal	2nd Phalanx	1.5	1		Burned white/gray
2014-518	27	Level 6	Med. Mammal	3rd Phalange	0.5	1		

Table VI-5 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2014-518	27	Level 6	Med. Mammal	Inomminate?	1.1	1		Broken and burned
2014-518	27	Level 6	Rabbit	Femur	0.7	1	distal	Distal epiphysis and part of shaft
2014-518	27	Level 6	Rabbit	Scapula	0.8	1	proximal	Epiphysis and part of shaft, most broken
2014-518	27	Level 6	Shell	shell	0	0		Crushed shell, crumbled as collected
2014-518	27	Level 6	Unid	unid	1.1	1		
2014-518	27	Level 6	Unid	unid	0.2	2		
2014-518	27	Level 6	Unid	unid	4	8		Burned
2014-518	27	Level 6	Unid	unid	10.7	33		
2014-518	27	Level 6	Unid	unid	0.6	1		Burned
2014-518	35	Level 7 flotation sample heavy fraction	Unid	Unid	0.4	37		HF sorted for 10 min. Frags, most burned white or bue
2014-518	36	Level 7	>2 toed mamm	Phalanx	0.5	1	distal	Burned gray, similar to dog, but not a match
2014-518	36	Level 7	Deer	Astragalus	14.5	1		Shovel scraped
2014-518	36	Level 7	Deer	Metapodial	3.6	2		Shaft frags
2014-518	36	Level 7	Dog	Metapodial	3.2	1	proximal	Matches dog in ref collection
2014-518	36	Level 7	Med. Fish	vert	0.01	1		
2014-518	36	Level 7	Shell		4.2	2		Very broken
2014-518	36	Level 7	Unid	unid	9.5	34		Frags, some burned
2014-518	36	Level 7	Unid	Long bone	8	6		shaft frags
2014-518	50	Level 8	Lg. Bird	Vert	0.8	1		
2014-518	50	Level 8	Lg. Fish	Vert	0.6	1		Vert body
2014-518	50	Level 8	Med. Mammal	Long bone	2.6	1		Shaft frag
2014-518	50	Level 8	Sm. Mammal	Long bone	0.6	3		Shaft frags
2014-518	50	Level 8	Turtle	Plastron	0.1	1		
2014-518	50	Level 8	Unid	Unid	0.1	1		Burned white
2014-518	50	Level 8	Unid	Unid	3.4	10		
2014-518	52	Level 8 flotation sample heavy fraction	Sm. Mammal	Femur	0.01	1	proximal	HF sorted ~5 min. Burned gray
2014-518	52	Level 8 flotation sample heavy fraction	Unid	Unid	0.01	2		HF sorted ~5 min

Table VI-5 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2014-518	53	Window over "hearth" flotation sample heavy fraction	Bird	Tarsometatarsus	0.01	1	distal	HF sort for 10 min
2014-518	53	Window over "hearth" flotation sample heavy fraction	Lg. Fish	Vert	0.01	1		HF sort for 10 min. Vert body, broken
2014-518	53	Window over "hearth" flotation sample heavy fraction	Sm. Fish	Vert	0.01	2		HF sort for 10 min
2014-518	53	Window over "hearth" flotation sample heavy fraction	Sm. Mammal	Phalanx	0.01	1		HF sort for 10 min
2014-518	53	Window over "hearth" flotation sample heavy fraction	Unid	Unid	0.5	32		HF sort for 10 min
2014-518	59	Feature 2 S 1/2	Unid	Unid	0.01	1		
2014-518	60	Feature 2 N 1/2 flotation sample heavy fraction	Raccoon	Premolar	0.01	1		HF sorted for 10 min. Broken in two, but pieces refit
2014-518	60	Feature 2 N 1/2 flotation sample heavy fraction	Sm. Bird	Vert	0.01	3		HF sorted for 10 min
2014-518	60	Feature 2 N 1/2 flotation sample heavy fraction	Sm. Fish	Vert	0.01	3		HF sorted for 10 min
2014-518	60	Feature 2 N 1/2 flotation sample heavy fraction	Sm. Mammal	long bone	0.01	1		HF sorted for 10 min

Table VI-5 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2014-518	60	Feature 2 N 1/2 flotation sample heavy fraction	Sm. Mammal	Femur (?)	0.01	1	distal	HF sorted for 10 min. Unfused epiphysis.
2014-518	60	Feature 2 N 1/2 flotation sample heavy fraction	Sm. Rodent	Molar	0.01	1		HF sorted for 10 min
2014-518	60	Feature 2 N 1/2 flotation sample heavy fraction	Unid	Enamel	0.01	1		HF sorted for 10 min
2014-518	60	Feature 2 N 1/2 flotation sample heavy fraction	Unid	unid	1	43		HF sorted for 10 min

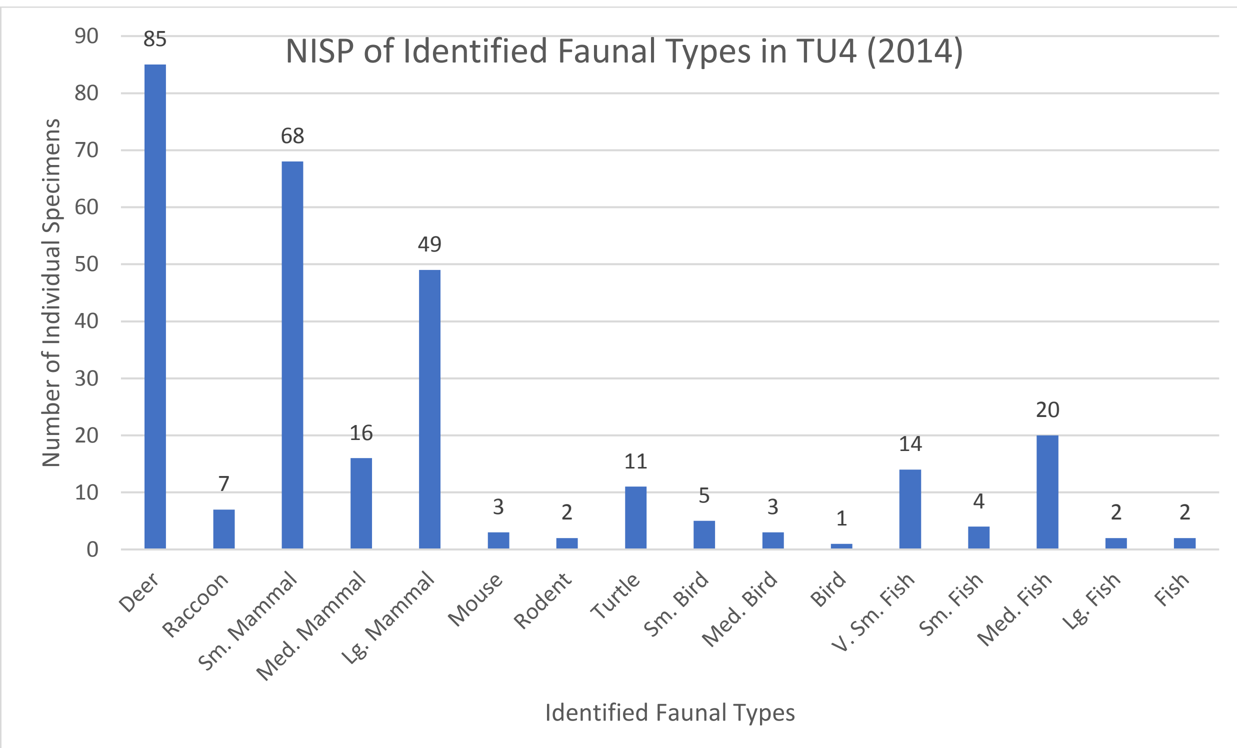

Figure VI-7: Identified fauna from Excavation unit 4 in 2014.

Table VI-6: Faunal materials from TU4. Identified specimens are summarized in Figure VI-7.

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2014-518	10	Level 2	Deer	Premolar	0.5	1		Adult deer, worn
2014-518	10	Level 2	Deer	Premolar	1.1	1		Juvenile deer
2014-518	10	Level 2	Deer	Molar	9.9	9		Molar frags
2014-518	10	Level 2	Deer	Astragalus	14.5	1		Possible cut mark
2014-518	10	Level 2	Deer	Mandible with teeth	5.1	1		Broken mandible with non-erupted molar
2014-518	10	Level 2	Lg. Fish	Vert	0.4	1		
2014-518	10	Level 2	Lg. Mammal	Phalanx	0.7	1	distal	
2014-518	10	Level 2	Lg. Mammal	Podials	5	4		2 lunates, 2 larger frags
2014-518	10	Level 2	Lg. Mammal	Long Bone	21	13		Long bone frags
2014-518	10	Level 2	Lg. Mammal	Mandible	1.2	1		One side of broken mandible
2014-518	10	Level 2	Lg. Rodent	Canine	1.6	1		
2014-518	10	Level 2	Med. Bird	Vert	0.7	3		Vert frags
2014-518	10	Level 2	Med. Fish	Vert	0.6	5		
2014-518	10	Level 2	Med. Mammal	Mandible	2	2		Broken mandibles with roots, but no occlusal surfaces
2014-518	10	Level 2	Raccoon	Mandibular Molar	0.1	1		
2014-518	10	Level 2	Raccoon	Maxillary Molar	0.1	1		
2014-518	10	Level 2	Sm. Mammal	Ulna	0.5	1	proximal	Proximal end, but broken along length
2014-518	10	Level 2	Sm. Mammal	Premolar?	0.01	1		Seems raccoon-like, but doesn't match raccoon in collection
2014-518	10	Level 2	Sm. Mammal	Long bone	1.6	8		Long bone frags
2014-518	10	Level 2	Sm. Mammal	Humerus?	1.3	1	distal	Mostly broken
2014-518	10	Level 2	Turtle	Carapace	0.8	1		
2014-518	10	Level 2	Unid	Unid	58.4	188		
2014-518	10	Level 2	Unid	unid	0.2	1		
2014-518	10	Level 2	Unid	unid	0.8	1		Bone point, broken at cut end, but hollow. Could have been arrow point
2014-518	23	Level 3 flotation sample heavy fraction	Bird?	Tarsometatarsus?	0.01	1		HF sorted for 10 min. Not shaped quite right, but maybe broken with regrowth?
2014-518	23	Level 3 flotation sample heavy fraction	Deer	Molar	3.2	1		HF sorted for 10 min.

Table VI-6 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2014-518	23	Level 3 flotation sample heavy fraction	Deer?	Antler/Bone	5.2	1		Billet for knapping. HF sorted for 10 min.
2014-518	23	Level 3 flotation sample heavy fraction	Lg. Mammal	Tooth	0.3	2		HF sorted for 10 min.
2014-518	23	Level 3 flotation sample heavy fraction	Lg. Mammal	Long bone	10.5	3		HF sorted for 10 min.
2014-518	23	Level 3 flotation sample heavy fraction	Med. Fish	Vert	0.5	5		HF sorted for 10 min.
2014-518	23	Level 3 flotation sample heavy fraction	Med. Mammal	Long bone	1.4	3		HF sorted for 10 min.
2014-518	23	Level 3 flotation sample heavy fraction	Sm. Bird	Vert	0.1	1		HF sorted for 10 min.
2014-518	23	Level 3 flotation sample heavy fraction	Sm. Fish	Vert	0.01	2		HF sorted for 10 min.
2014-518	23	Level 3 flotation sample heavy fraction	Sm. Mammal	Long bone	0.1	6		HF sorted for 10 min.
2014-518	23	Level 3 flotation sample heavy fraction	Tiny Fish	Vert	0.01	6		HF sorted for 10 min.
2014-518	23	Level 3 flotation sample heavy fraction	Unid	unid	3.5	39		HF sorted for 10 min.
2014-518	24	Level 3	Deer	Calcaneus	40.4	2		One R, one L, one with 2 cut marks on articular surface
2014-518	24	Level 3	Deer	Mandibular Molar	7.1	2		
2014-518	24	Level 3	Deer	Vert	4.9	2		Vertebral arches

Table VI-6 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2014-518	24	Level 3	Deer	Metatarsal?	3.5	1	proximal	Part of proximal epiphysis
2014-518	24	Level 3	Deer	3rd Phalanx	2.2	2		Broken
2014-518	24	Level 3	Deer	Maxilary Molar	7.2	2		
2014-518	24	Level 3	Deer	1st Phalanx	5.3	1		cut by shovel, possible cut mark on posterior
2014-518	24	Level 3	Deer	2nd Phalanx	2	2	distal	Broken
2014-518	24	Level 3	Deer	Long bone	47	10		
2014-518	24	Level 3	Deer	Vert plate	0.3	1		Unfused body plate
2014-518	24	Level 3	Deer	Molar	0.9	1		
2014-518	24	Level 3	Deer	Metacarpal	18	1	proximal	Proximal epiphysis and part of shaft
2014-518	24	Level 3	Deer	Metapodial	15.4	1	distal	Half of distal epiphysis and part of shaft
2014-518	24	Level 3	Deer	Astragalus	8.9	1		
2014-518	24	Level 3	Deer	Caudal Vert	0.3	1		
2014-518	24	Level 3	Med. Fish	Vert	1.2	10		vert bodies
2014-518	24	Level 3	Med. Mammal	Long bone	1.9	4		
2014-518	24	Level 3	Raccoon?	Phalange	0.3	1		broken, weathered
2014-518	24	Level 3	Raccoon?	Metapodial	0.3	1		
2014-518	24	Level 3	Rodent	Canine	0.1	1		
2014-518	24	Level 3	Sm. Bird	Vert	0.4	3		
2014-518	24	Level 3	Sm. Mammal	Long bone	0.8	5		
2014-518	24	Level 3	Sm. Mammal	Humerus	0.3	2	distal	Distal epiphysis
2014-518	24	Level 3	Sm. Mammal	Calcanues	0.01	1		
2014-518	24	Level 3	Turtle	Scapula?	2.1	1		Broken
2014-518	24	Level 3	Turtle	Plastron	0.3	2		
2014-518	24	Level 3	Turtle	Carapace	0.2	1		
2014-518	24	Level 3	Unid	unid	0.4	2		
2014-518	24	Level 3	Unid	Enamel	0.01	1		
2014-518	24	Level 3	Unid	Long bone	44.8	93		long bone frags
2014-518	24	Level 3	Unid	unid	0.5	4		
2014-518	24	Level 3	Unid	Rib	3.4	9		
2014-518	24	Level 3	Unid	Vert	0.4	3		
2014-518	24	Level 3	Unid	Skull	3.5	11		
2014-518	24	Level 3	Unid	Enamel	1.3	8		
2014-518	24	Level 3	Unid	unid	37	130		
2014-518	38	Level 4	Deer	antler tine	2.9	1		

Table VI-6 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2014-518	38	Level 4	Deer	Molar	1.1	1		
2014-518	38	Level 4	Deer	Radius	28.3	2	proximal	One left, one right, epiphysis and part of shaft
2014-518	38	Level 4	Deer	2nd Phalanx	4.7	1		
2014-518	38	Level 4	Deer	1st Phalanx?	3.5	1		very weathered
2014-518	38	Level 4	Deer	Podial	8.9	1		
2014-518	38	Level 4	Deer	Long bone	14.5	1		long bone shaft
2014-518	38	Level 4	Deer	Metapodial	26.8	2	distal	Distal epiphysis and small part of shaft
2014-518	38	Level 4	Deer	rib	6.3	1	proximal	
2014-518	38	Level 4	Lg. Mammal	Long bone	22.1	12		
2014-518	38	Level 4	Med. Mammal	ri	0.3	1		shaft frag
2014-518	38	Level 4	Med. Mammal	Long bone	3	6		
2014-518	38	Level 4	Raccoon	Molar	0.3	1		very worn
2014-518	38	Level 4	Turtle	carapace	2.5	3		
2014-518	38	Level 4	Turtle		0.6	1		
2014-518	38	Level 4	Unid	unid	19.1	56		
2014-518	39	Level 4 flotation sample heavy fraction	Fish	parasphenoid	0.1	1		HF sorted for 10 min
2014-518	39	Level 4 flotation sample heavy fraction	Lg. Fish	vert	0.5	1		HF sorted for 10 min
2014-518	39	Level 4 flotation sample heavy fraction	Lg. Mammal	unid	1.1	1		HF sorted for 10 min
2014-518	39	Level 4 flotation sample heavy fraction	Raccoon	premolar	0.01	1		HF sorted for 10 min. Deciduous?
2014-518	39	Level 4 flotation sample heavy fraction	Sm. Bird	vert	0.1	1		HF sorted for 10 min
2014-518	39	Level 4 flotation sample heavy fraction	Sm. Mammal	caudal vert	0.01	2		HF sorted for 10 min

Table VI-6 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2014-518	39	Level 4 flotation sample heavy fraction	Tiny Fish	vert	0.1	3		HF sorted for 10 min
2014-518	39	Level 4 flotation sample heavy fraction	Turtle	Carapace	0.4	2		HF sorted for 10 min
2014-518	39	Level 4 flotation sample heavy fraction	Unid	unid	0.9	39		HF sorted for 10 min
2014-518	47	Level 5 flotation sample heavy fraction	Deer	Tibia	20.7	2	distal	HF sorted for 10 min. Unfused epiphysis refits
2014-518	47	Level 5 flotation sample heavy fraction	Lg. Mammal	unid	1.5	2		HF sorted for 10 min
2014-518	47	Level 5 flotation sample heavy fraction	mouse?	humerus	0.01	1		HF sorted for 10 min. Unfused proximal end
2014-518	47	Level 5 flotation sample heavy fraction	mouse?	long bone	0.01	2		HF sorted for 10 min
2014-518	47	Level 5 flotation sample heavy fraction	Raccoon?	phalange	0.1	1		HF sorted for 10 min
2014-518	47	Level 5 flotation sample heavy fraction	Sm. Fish	vert	0.01	2		HF sorted for 10 min
2014-518	47	Level 5 flotation sample heavy fraction	sm. Mammal	phalange	0.01	1		HF sorted for 10 min
2014-518	47	Level 5 flotation sample heavy fraction	sm. Mammal	canine	0.01	1		HF sorted for 10 min

Table VI-6 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2014-518	47	Level 5 flotation sample heavy fraction	sm. Mammal	long bone	0.1	8		HF sorted for 10 min
2014-518	47	Level 5 flotation sample heavy fraction	Tiny fish	vert	0.01	5		HF sorted for 10 min
2014-518	47	Level 5 flotation sample heavy fraction	Unid	unid	0.4	20		HF sorted for 10 min
2014-518	48	Level 5	Deer	Premolar	3.8	3		
2014-518	48	Level 5	Deer	long bone	14.4	1		shaft frag
2014-518	48	Level 5	Deer	skull	1.5	1		skull frag
2014-518	48	Level 5	Deer	podial	6.1	1		
2014-518	48	Level 5	Deer	vert	3.2	2		vert frags
2014-518	48	Level 5	Deer	Vert	22.6	19		Unfused vert body and part of arch
2014-518	48	Level 5	Lg. Mammal	tooth	0.5	2		
2014-518	48	Level 5	Lg. Mammal	Metapodial	1.4	1	distal	epiphysis frag
2014-518	48	Level 5	Lg. Mammal	long bone	11.5	6		
2014-518	48	Level 5	Lg. Mammal	Caudal vert?	1	1		
2014-518	48	Level 5	Unid	unid	11.7	35		
2014-518	56	Feature 1 flotation sample heavy fraction	Fish	parasphenoid	0.1	1		HF sorted for ~5 min
2014-518	56	Feature 1 flotation sample heavy fraction	Sm. Mammal	molar	0.01	1		HF sorted for ~5 min
2014-518	56	Feature 1 flotation sample heavy fraction	Sm. Mammal	unid	0.3	30		HF sorted for ~5 min

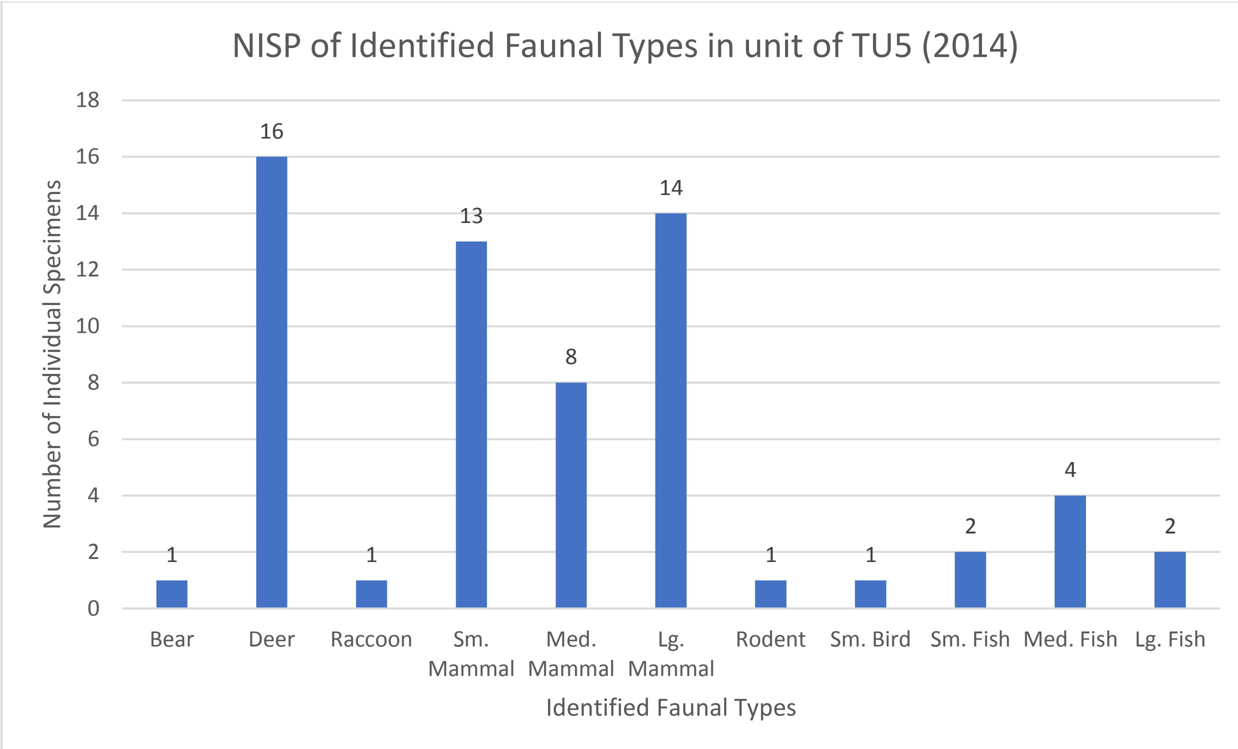

Figure VI-8: Identified fauna from Test unit 5 in 2014.

Table VI-7: Faunal materials from TU5. Identified specimens are summarized in Figure VI-8.

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2014-518	7	Level 3 flotation sample heavy fraction	Med. Fish	vert	0.01	1		HF sorted for 10 min
2014-518	7	Level 3 flotation sample heavy fraction	Sm. Fish	vert	0.01	2		HF sorted for 10 min
2014-518	7	Level 3 flotation sample heavy fraction	Sm. Mammal	Calcaneous	0.01	1		HF sorted for 10 min
2014-518	7	Level 3 flotation sample heavy fraction	Sm. Mammal	Mandible w/ molar	0.01	1		HF sorted for 10 min. Not rodent
2014-518	7	Level 3 flotation sample heavy fraction	Unid	unid	0.9	25		HF sorted for 10 min
2014-518	15	Level 5	Med. Mammal	Femur	0.4	1	proximal	
2014-518	18	Level 5 flotation sample heavy fraction	Med. Mammal	Long bone	4	7		HF sorted for 10 min
2014-518	18	Level 5 flotation sample heavy fraction	Sm. Mammal	Mandible	0.01	1		HF sorted for 10 min. Mandible with incisor
2014-518	18	Level 5 flotation sample heavy fraction	Sm. Mammal	Metapodial	0.01	2		HF sorted for 10 min
2014-518	18	Level 5 flotation sample heavy fraction	Sm. Mammal	Canine	0.01	2		HF sorted for 10 min
2014-518	18	Level 5 flotation sample heavy fraction	Unid	enamel	0.1	2		HF sorted for 10 min
2014-518	18	Level 5 flotation sample heavy fraction	Unid	unid	1	21		HF sorted for 10 min
2014-518	30	Level 7 E 1/2 Midden	Lg. Mammal	long bone	7.8	4		
2014-518	30	Level 7 E 1/2 Midden	Unid	unid	1.3	4		
2014-518	37	Level 8	Deer	Podial	3.5	1		
2014-518	37	Level 8	Unid	unid	3.8	6		

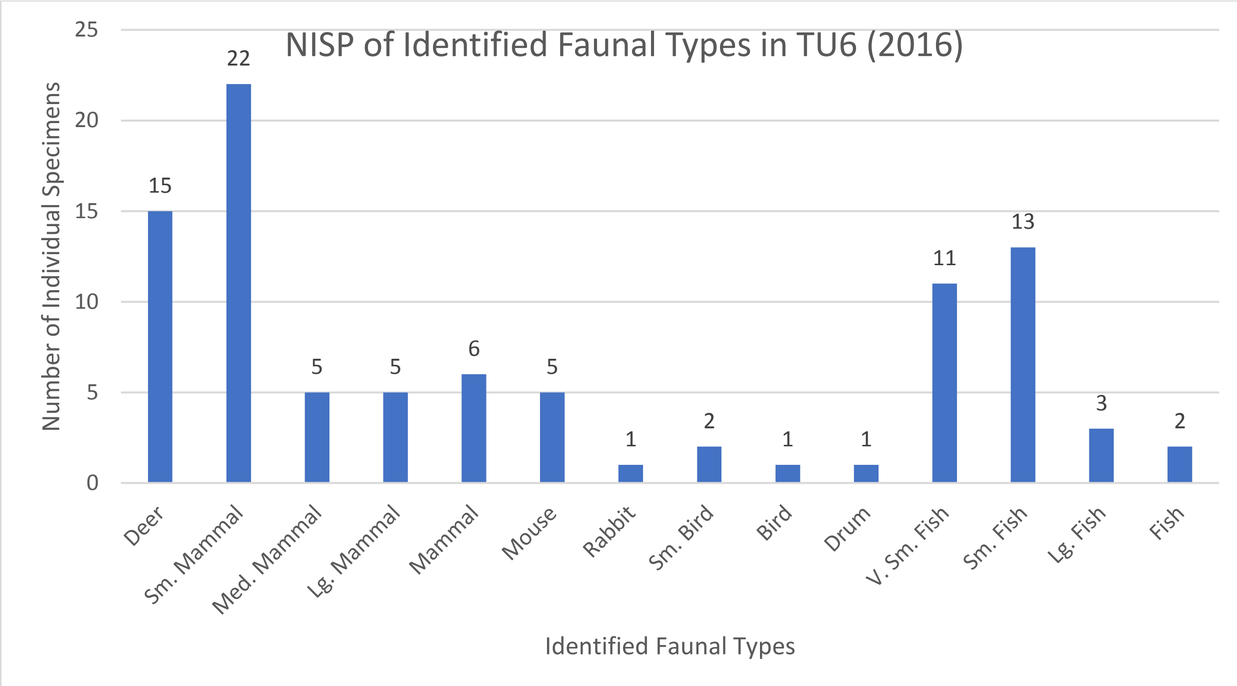

Figure VI-9: Identified fauna from Test unit 6 in 2016.

Table VI-8: Faunal materials from TU6. Identified specimens are summarized in Figure VI-9.

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2016-503	1	Level 1	Deer	Enamel	0.2	1		
2016-503	1	Level 1	Lg. Mammal	Rib	0.5	1		Frag
2016-503	1	Level 1	Lg. Mammal	long bone	6	3		
2016-503	1	Level 1	Mammal	rib	0.6	1	proximal	Bigger than raccoon, seems small for deer
2016-503	1	Level 1	Rabbit?	Calcaneous	0.3	1		Similar to cottontail rabbit specimen
2016-503	1	Level 1	Sm. Mammal	long bone	0.2	1		shaft frag
2016-503	1	Level 1	Unid	unid	4.1	17		
2016-503	1	Level 1	Unid	long bone	8.8	18		
2016-503	9	Level 2	bird	long bone	0.2	1		shaft frag, burned
2016-503	9	Level 2	deer?	antler	3.9	1		burned white
2016-503	9	Level 2	Unid	unid	4.9	12		burned white
2016-503	9	Level 2	Unid	unid	4.1	7		
2016-503	15	Level 3	bird	long bone	0.01	1		Burned
2016-503	15	Level 3	Deer	antler	1.7	1		Broken antler tine point. Cut on bottom and hollowed.

Table VI-8 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2016-503	15	Level 3	Deer	antler	1.1	1		Burned. Antler tine point. Cut at bottomm partially smoothed.
2016-503	15	Level 3	Deer	molar	0.4	1		broken
2016-503	15	Level 3	Deer	Astragalus	26.3	2		Burned
2016-503	15	Level 3	Deer	1st phalanx	6.5	1		Burned
2016-503	15	Level 3	Deer	Thoracic vert	45.7	1		Burned. Backed into hard packed floor.
2016-503	15	Level 3	Deer	antler	1.1	1		Burned. Broken antler tine point. Very smooth and shiney
2016-503	15	Level 3	Lg. Mammal	long bone	6.1	1		Burned shaft frag
2016-503	15	Level 3	Lg. Mammal	podial	2	1		Burned
2016-503	15	Level 3	Sm. Mammal	long bone	1.2	2		One burned, one unburned
2016-503	15	Level 3	Unid	long bone	3.1	5		Some burned, some unburned shaft frags
2016-503	15	Level 3	Unid	unid	11.5	38		Some burned, some unburned
2016-503	21	Balk wall over hearth	Unid	long bone	3.4	1		
2016-503	22	North 1/2 of hearth flotation sample heavy fraction	Med. Mammal	unid	0.9	1		Hf sorted for ~5 min
2016-503	22	North 1/2 of hearth flotation sample heavy fraction	Mouse	Mandible	0.01	2		Hf sorted for ~5 min. Both sides of mandible. No teeth
2016-503	22	North 1/2 of hearth flotation sample heavy fraction	Mouse	long bone	0.01	3		Hf sorted for ~5 min. Shaft frags
2016-503	22	North 1/2 of hearth flotation sample heavy fraction	Sm. Fish	vert	0.01	1		Hf sorted for ~5 min. Vert body
2016-503	22	North 1/2 of hearth flotation sample heavy fraction	Unid	unid	3.2	32		Hf sorted for ~5 min
2016-503	27	Balk wall over hearth	Unid	unid	6.6	12		burned black and white
2016-503	28	Feature 6 S 1/2 flotation sample heavy fraction	Drum	Maxilla	0.01	1		HF sorted for ~10 min.
2016-503	28	Feature 6 S 1/2 flotation sample heavy fraction	Fish	Parasphenoid	0.01	1		HF sorted for ~10 min.
2016-503	28	Feature 6 S 1/2 flotation sample heavy fraction	Fish	Jaw	0.3	1		HF sorted for ~10 min. Jaw with fine pointed teeth

Table VI-8 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2016-503	28	Feature 6 S 1/2 flotation sample heavy fraction	Lg. Fish	vert	0.2	1		HF sorted for ~10 min.
2016-503	28	Feature 6 S 1/2 flotation sample heavy fraction	Med. Mammal	long bone	1.4	1		HF sorted for ~10 min. Burned
2016-503	28	Feature 6 S 1/2 flotation sample heavy fraction	SM. Bird	vert	0.01	2		HF sorted for ~10 min.
2016-503	28	Feature 6 S 1/2 flotation sample heavy fraction	Sm. Fish	vert	0.3	12		HF sorted for ~10 min.
2016-503	28	Feature 6 S 1/2 flotation sample heavy fraction	Sm. Mammal	Innominate	0.01	1		HF sorted for ~10 min.
2016-503	28	Feature 6 S 1/2 flotation sample heavy fraction	Sm. Mammal	long bone	0.3	11		HF sorted for ~10 min. Long bone frags
2016-503	28	Feature 6 S 1/2 flotation sample heavy fraction	Sm. Mammal	Mandible	0.1	3		HF sorted for ~10 min. Two match, one burned
2016-503	28	Feature 6 S 1/2 flotation sample heavy fraction	Sm. Mammal	Femur	0.01	3		HF sorted for ~10 min.
2016-503	28	Feature 6 S 1/2 flotation sample heavy fraction	Sm. Mammal	canine	0.01	3		HF sorted for ~10 min.
2016-503	28	Feature 6 S 1/2 flotation sample heavy fraction	Unid	unid	0.5	2		HF sorted for ~10 min.
2016-503	28	Feature 6 S 1/2 flotation sample heavy fraction	Unid	unid	1.4	17		HF sorted for ~10 min.
2016-503	28	Feature 6 S 1/2 flotation sample heavy fraction	V. Sm. Fish	vert	0.01	11		HF sorted for ~10 min.
2016-503	37	Level 4	Deer	vert	16.9	11		Body (unfused), and part of arch. Small frags as well
2016-503	37	Level 4	Deer?	metapodial	0.5	1	distal	distal epiphisys frag
2016-503	37	Level 4	Deer?	flat bone	5.9	1		
2016-503	37	Level 4	lg. Fish	vert	0.4	2		
2016-503	37	Level 4	Lg. Mammal	unid	2.1	1		
2016-503	37	Level 4	Mammal	long bone	6.5	5		shaft frags
2016-503	37	Level 4	Med. Mammal	long bone	0.8	3		
2016-503	37	Level 4	Unid	unid	7.7	30		

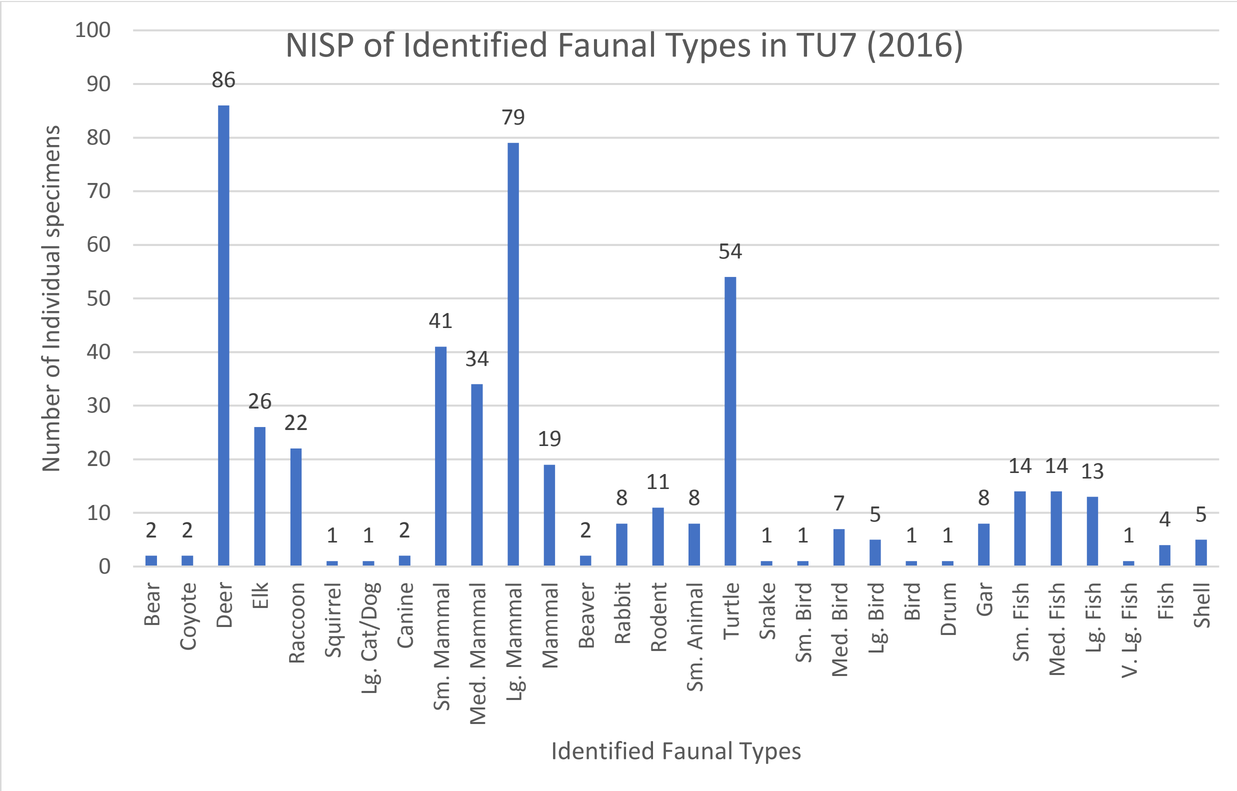

Figure VI-10: Identified fauna from Excavation unit 7 in 2016.

Table VI-9: Faunal materials from TU7. Identified specimens are summarized in Figure VI-10.

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2016-503	2	Level 1	Beaver	Molar	1	1		Mandibular molar?
2016-503	2	Level 1	Bird	long bone	0.1	1		shaft frag, burned
2016-503	2	Level 1	Canine	Phalange	0.1	1		Coyote size
2016-503	2	Level 1	Deer	Calcaneous	13.6	1	distal	Proximal end broken and further shovel shaved
2016-503	2	Level 1	Deer	Metacarpal	28	1	proximal	Epiphysis and part of shaft
2016-503	2	Level 1	Deer	Metapodial	21.7	1		Shaft
2016-503	2	Level 1	Deer	1st Phalanx	6.1	1		
2016-503	2	Level 1	Deer	1st Phalanx	3.8	1		Cut mark on anterior of distal end and two on posterior of proximal end. Hole into marrow likely post deposition
2016-503	2	Level 1	Deer	Astragalus	4	1		Broken (~1/4 present), burned white
2016-503	2	Level 1	Deer	Antler	1.9	2		Antler tine points
2016-503	2	Level 1	Deer	tooth	0.2	1		

Table VI-9 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2016-503	2	Level 1	Deer	Molar/Premolar	3.7	8		frags
2016-503	2	Level 1	Deer	Metapodial	3.4	1	distal	One side of distal epiphysis
2016-503	2	Level 1	Deer?	Mandibular condyle	2.9	2		Correct size for deer, but no specimen to compare
2016-503	2	Level 1	Deer?	Tooth	0.3	1		Burned white, enamel broken off
2016-503	2	Level 1	Drum	tooth	0.1	1		
2016-503	2	Level 1	Fish	parasphenoid	0.2	1		
2016-503	2	Level 1	Lg. Bird	vert	2.7	2		
2016-503	2	Level 1	Lg. Cat/Dog	Metapodial	1.9	1		Large metapodial from 4/5 phalange mammal, burned black
2016-503	2	Level 1	Lg. Fish	vert	0.5	1		
2016-503	2	Level 1	Lg. Mammal	Podial	1.1	1		broken
2016-503	2	Level 1	Lg. Mammal	Metapodial	4.2	3		Shaft frags
2016-503	2	Level 1	Lg. Mammal	Podials	5.1	1		Various and some broken
2016-503	2	Level 1	Lg. Mammal	Long bone	46.8	17		long bone frags
2016-503	2	Level 1	Mammal	unid	10.4	7		
2016-503	2	Level 1	Mammal	unid	5.1	10		Burned
2016-503	2	Level 1	Med. Bird	vert	0.1	1		
2016-503	2	Level 1	Med. Bird	Vert	0.1	1		
2016-503	2	Level 1	Med. Fish	vert	1.2	10		
2016-503	2	Level 1	Med. Mammal	Maxilla	1.3	1		embedded tooth broken
2016-503	2	Level 1	Med. Mammal	rib	0.1	1	distal	frag
2016-503	2	Level 1	Med. Mammal	rib	0.8	1		shaft frag, burned
2016-503	2	Level 1	Med. Rodent	Mandible/Incisor	0.3	1		Incisor in broken mandible
2016-503	2	Level 1	Rabbit?	Scapula	0.2	1	proximal	Ephiphysis and part of blade, but most broken
2016-503	2	Level 1	Rabbit?	Innominate	0.6	1		acetabulum, slightly bigger than cottontail specimen
2016-503	2	Level 1	Raccoon	Innominate	0.8	1		acetabulum
2016-503	2	Level 1	Raccoon	Mandible/teeth	3.5	3		two pieces refit and molar fits in at break
2016-503	2	Level 1	Raccoon	Teeth	0.4	6		Broken
2016-503	2	Level 1	Raccoon?	Phalanx	0.01	1		

Table VI-9 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2016-503	2	Level 1	Raccoon?	Canine	0.3	1		Upper canine? Broken point
2016-503	2	Level 1	Sm. Fish	vert	0.01	3		
2016-503	2	Level 1	Sm. Mammal	Femur	0.2	1	proximal	Unfused proximal end and shaft
2016-503	2	Level 1	SM. Mammal	Femur	0.1	1		Distal end unfused and missing
2016-503	2	Level 1	Sm. Mammal	unid	1.1	6		
2016-503	2	Level 1	Sm. Mammal	long bone	1.5	2		shaft frags, burned
2016-503	2	Level 1	Snake?	vert	0.1	1		
2016-503	2	Level 1	Turtle	Carapace	11.2	7		
2016-503	2	Level 1	Turtle	Plastron	1.8	5		
2016-503	2	Level 1	Unid	long bone	29.1	74		shaft frags
2016-503	2	Level 1	Unid	long bone	4.3	9		shat frags, burned
2016-503	2	Level 1	Unid	vert	0.9	4		
2016-503	2	Level 1	Unid	unid	15.6	69		burned
2016-503	2	Level 1	Unid	unid	49.9	328		
2016-503	2	Level 1	Unid	unid	0.4	2		same bone, might be identifiable, but couldn't figure it out
2016-503	2	Level 1	Unid	epiphysis	0.4	1		Unfused epiphyseal plate, broken, burned
2016-503	2	Level 1	Unid	vert	0.4	2		Vert frags
2016-503	2	Level 1	Unid	unid	2.6	17		
2016-503	6	Level 1 tree root area	Lg. Bird	Vert	1.4	1		vert body, burned
2016-503	6	Level 1 tree root area	Lg. Mammal	vert	1.2	1		vert body broken down length
2016-503	6	Level 1 tree root area	Mammal	vert	0.3	1		aticular facet
2016-503	6	Level 1 tree root area	Sm. Mammal	long bone	0.4	1	distal	broken shaft and epiphysis
2016-503	6	Level 1 tree root area	Turtle	Carapace	0.9	1		burned
2016-503	6	Level 1 tree root area	Unid	unid	36.9	82		mostly burned
2016-503	6	Level 1 tree root area	Unid	mandible	1.9	2		mandible frags, burned
2016-503	10	Level 2	Bear	Metacarpal 4	3.6	1		whole, possible cut marks on proximal end
2016-503	10	Level 2	Bear?	Metapodial	1.2	1	distal	distal end, similar to previous bear specimen
2016-503	10	Level 2	Coyote	molar	2.6	1		Partially worn
2016-503	10	Level 2	Coyote?	Canine	0.7	1		
2016-503	10	Level 2	Deer	Molar/Premolar	18.8	18		Tooth Frags
2016-503	10	Level 2	Deer	Incisor	0.2	1		

Table VI-9 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2016-503	10	Level 2	Deer	Metacarpal	9	1	proximal	Epiphysis and part of shaft
2016-503	10	Level 2	Deer	Metapodial	33.1	1		Shaft frags
2016-503	10	Level 2	Deer	Tooth/Bone	4	1		Molar in Maxilla?
2016-503	10	Level 2	Deer	antler	0.6	1		Antler tine
2016-503	10	Level 2	Deer	Metapodial	9.9	3	distal	Unfused epiphysis
2016-503	10	Level 2	Deer	Metapodial	4.6	1	proximal	broken epiphysis
2016-503	10	Level 2	Deer	3rd Phalanx	6.8	3		
2016-503	10	Level 2	Deer	Metacarpal	7.8	1	proximal	Broken epiphysis and shaft
2016-503	10	Level 2	Deer	rib	6.1	1		
2016-503	10	Level 2	Deer	Vert	4.9	1		Spinous process
2016-503	10	Level 2	Deer	Antler	8.8	1		Circular cut at bottom, broken at top
2016-503	10	Level 2	Deer	Astragalous	37.1	3		one burned black, one burned white
2016-503	10	Level 2	Deer	1st Phalanx	7.1	1		
2016-503	10	Level 2	Deer	Podials	30.3	6		Various podial bones
2016-503	10	Level 2	deer?	podial	0.2	1		
2016-503	10	Level 2	Deer?	deciduous premolar?	0.6	1		Looks like deer enamel, but small
2016-503	10	Level 2	Deer?	2nd Phalanx	0.5	1	proximal	Unfused epiphysial plate
2016-503	10	Level 2	Fish	unid	0.1	1		
2016-503	10	Level 2	fish	unid	0.4	2		
2016-503	10	Level 2	Gar?	vert	0.8	3		
2016-503	10	Level 2	Gar?	scale	0.3	3		
2016-503	10	Level 2	Gar?	scale	0.2	2		
2016-503	10	Level 2	Lg. Bird	long bone	0.7	1		
2016-503	10	Level 2	Lg. Fish	Vert	1.7	6		
2016-503	10	Level 2	Lg. Mammal	long bone	5.3	1		
2016-503	10	Level 2	Lg. Mammal	long bone	69.7	20		shaft frags
2016-503	10	Level 2	Lg. Mammal	Calcaneus	14.1	1		burned
2016-503	10	Level 2	Lg. Mammal	Skull?	3.4	1		
2016-503	10	Level 2	Med Mammal	long bone	12.7	9		shaft frags, some burned
2016-503	10	Level 2	Med. Bird	long bone	0.4	2		
2016-503	10	Level 2	Med. Bird	vert	0.7	2		
2016-503	10	Level 2	Med. Fish	Vert	0.4	3		

Table VI-9 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2016-503	10	Level 2	Med. Mammal	Innominate	0.4	1		Acetabulum
2016-503	10	Level 2	Med. Mammal	Scapula	1.3	1	proximal	
2016-503	10	Level 2	Med. Mammal	rib	0.5	1		
2016-503	10	Level 2	Med. Mammal	podial	0.1	1		
2016-503	10	Level 2	Med. Mammal	Femur	1.4	2	distal	
2016-503	10	Level 2	Med. Mammal	unid	5.2	7		
2016-503	10	Level 2	Med. Mammal	vert	2.1	2		
2016-503	10	Level 2	Med. Mammal	rib	1.8	2		one burned
2016-503	10	Level 2	Med. Mammal	podial	0.1	1		
2016-503	10	Level 2	Med. Mammal	Ulna	1	2	proximal	
2016-503	10	Level 2	Rabbit	Manidble	0.5	1		two teeth present
2016-503	10	Level 2	Rabbit	Maxilla	1.5	1		1st three teeth present
2016-503	10	Level 2	Rabbit?	Mandible	0.6	1		
2016-503	10	Level 2	Raccoon	Mandible/Teeth	2	1		Partial mandible with one broken tooth (two pieces refit)
2016-503	10	Level 2	Raccoon	Mandible	6.1	1		
2016-503	10	Level 2	Raccoon	Premolar	0.01	1		
2016-503	10	Level 2	Raccoon	Molar	1	3		Worn
2016-503	10	Level 2	Raccoon	Premolar	0.4	1		
2016-503	10	Level 2	Raccoon	Mandible/Teeth	0.4	1		Partial mandible
2016-503	10	Level 2	Raccoon?	Sacrum	1.2	1		Raccoon sized
2016-503	10	Level 2	Rodent	tooth	0.01	1		
2016-503	10	Level 2	Rodent	tooth	0.01	1		
2016-503	10	Level 2	Rodent?	maxilla with tooth	0.01	1		Incisor? Emerging from maxilla?
2016-503	10	Level 2	Shell		3.6	0		weighed in bag
2016-503	10	Level 2	Sm. Fish	vert	0.9	10		
2016-503	10	Level 2	Sm. Mammal	long bone	1.5	13		
2016-503	10	Level 2	Sm. Mammal	Femur	0.01	1		
2016-503	10	Level 2	Sm. Mammal	Scapula	0.1	1	proximal	
2016-503	10	Level 2	Sm. Mammal	Tibia	0.3	1	proximal	
2016-503	10	Level 2	Sm. Mammal	tooth	0.01	1		

Table VI-9 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2016-503	10	Level 2	Sm. Mammal	rib	0.3	4		
2016-503	10	Level 2	Sm. Mammal	vert	0.8	1		
2016-503	10	Level 2	Squirrel?	Mandible/Teeth	0.8	1		
2016-503	10	Level 2	Turtle	carapace	10.5	10		
2016-503	10	Level 2	Turtle	plastron	19.4	21		
2016-503	10	Level 2	Unid	vert	0.9	5		
2016-503	10	Level 2	Unid	unid	2.3	2		
2016-503	10	Level 2	Unid	caudal vert?	0.5	2		
2016-503	10	Level 2	Unid	unid	0.7	12		frags
2016-503	10	Level 2	Unid	enamel	0.6	3		
2016-503	10	Level 2	Unid	innominate?	6.4	1		curvy frag
2016-503	10	Level 2	Unid	enamel	0.8	5		
2016-503	10	Level 2	Unid	unid	193.6	554		frags
2016-503	10	Level 2	Unid	flat bone	1	1		
2016-503	10	Level 2	Unid	enamel	0.7	5		enamel frags
2016-503	10	Level 2	Unid	unid	4.8	4		
2016-503	16	Level 3	Beaver	canine	0.9	1		Tooth frag
2016-503	16	Level 3	canine	maxilla	0.4	1		two molars present and small part of skull
2016-503	16	Level 3	Deer	Tibia	18.8	1	distal	Distal epiphysis and bit of shaft
2016-503	16	Level 3	Deer	vert	8.2	1		fusing body plates
2016-503	16	Level 3	Deer	vert	16	1		unfused body plates
2016-503	16	Level 3	Deer	metapodial	5.9	1	proximal	shaft and part of proximal epiphysis
2016-503	16	Level 3	Deer	metapodial	1.6	1	distal	Possibly unfused distal epiphysis
2016-503	16	Level 3	Deer	an	11	2		
2016-503	16	Level 3	Deer	metapodial	15.1	2		shaft frags
2016-503	16	Level 3	Deer	Calcaneus	1.9	1	proximal	unfused epiphysis
2016-503	16	Level 3	Deer	2nd phalanx	2.1	1	distal	broken proximal ephiphysis
2016-503	16	Level 3	Deer	1st phalanx	4	1	distal	broken proximal epiphysis
2016-503	16	Level 3	Deer	antler	1.4	1		Antler point
2016-503	16	Level 3	Deer	1st phalanx	6.6	1		
2016-503	16	Level 3	Deer	rib	3.4	1		shaft frag
2016-503	16	Level 3	Elk?	Antler	60.6	1		Large antler with skull attachement
2016-503	16	Level 3	Elk?	Humerus	39.2	1	proximal	Proximal epiphysis
2016-503	16	Level 3	Elk?	Scapula	47	1		Articulation with part of wing present
2016-503	16	Level 3	Lg. Bird?	long bone	14.6	1		Shaft frag filled with dirt

Table VI-9 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2016-503	16	Level 3	Lg. Fish	mandible	1.6	4		no teeth present
2016-503	16	Level 3	Lg. Fish	vert	0.6	2		vert body
2016-503	16	Level 3	Lg. Mammal	unid	27.4	11		
2016-503	16	Level 3	Lg. Mammal	long bone	35.5	10		shaft frags
2016-503	16	Level 3	Lg. Mammal	Tooth	3.6	4		Tooth frags, likely deer
2016-503	16	Level 3	Lg. Mammal	vert	3	3		
2016-503	16	Level 3	Lg. Rabbit	Mandible	2.6	1		5 molars present, front and back broken
2016-503	16	Level 3	Med. Animal	unid	6.9	13		
2016-503	16	Level 3	med. Bird	carpometacarpus	0.6	1		
2016-503	16	Level 3	Med. Mammal	tibia	1	1		distal end and most of shaft
2016-503	16	Level 3	Med. Mammal	Mandible	1.2	1		mid mandible with root of one tooth
2016-503	16	Level 3	Med. Mammal	phalange	0.01	1		
2016-503	16	Level 3	Med. Mammal	skull	2.4	2		skull frags
2016-503	16	Level 3	Med. Mammal	vert	0.3	1		
2016-503	16	Level 3	Med. Mammal	Femur	0.6	1		Distal epiphysis
2016-503	16	Level 3	Med. Mammal	Ulna	0.5	1		proximal end
2016-503	16	Level 3	Rabbit?	Femur	0.9	1		proximal end
2016-503	16	Level 3	Rabbit?	Innominate	1.8	1		
2016-503	16	Level 3	Rodent	canine	0.4	3		Tooth frags
2016-503	16	Level 3	Rodent	tooth	0.4	3		Tooth frags
2016-503	16	Level 3	Rodent	Mandible	0.5	1		One canine, Broken behind 2nd tooth space
2016-503	16	Level 3	shell	shell	1.8	4		shell frags
2016-503	16	Level 3	Sm Mammal	mandible	0.7	1		No teeth present
2016-503	16	Level 3	Sm. Animal	unid	0.9	8		
2016-503	16	Level 3	sm. Fish	vert	0.01	1		vert body
2016-503	16	Level 3	Sm. Mammal	radius	0.3	1		
2016-503	16	Level 3	Sm. Mammal	humerus	0.5	1	distal	Broken of proximal epiphysis
2016-503	16	Level 3	Sm. Mammal	Ulna	0.3	1		Proximal end
2016-503	16	Level 3	Sm. Mammal	ulna	0.01	1		proximal epiphysis
2016-503	16	Level 3	Turtle	carapace	3.6	7		
2016-503	16	Level 3	Turtle	plastron	0.7	2		

Table VI-9 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2016-503	16	Level 3	Unid	rib	2	1		shaft frag
2016-503	16	Level 3	Unid	unid	11.8	28		
2016-503	16	Level 3	Unid	Antler	7	2		Antler frag
2016-503	16	Level 3	Unid	unid	0.01	1		
2016-503	16	Level 3	Unid	unid	111.7	430		
2016-503	16	Level 3	Unid	tooth	0.1	1		enamel frag
2016-503	16	Level 3	Unid	scapula	0.3	1		proximal epiphysis
2016-503	16	Level 3	Unid	unid	1.4	2		
2016-503	16	Level 3	VLg. Fish	vert	1.1	1		vert body
2016-503	26	Level 4	Deer	Calcaneus	17.4	1		
2016-503	26	Level 4	Deer/Elk?	Axis	33.7	1		
2016-503	26	Level 4	Elk	Skull	334.2	23		23 countable pieces and many tiny frags of one skull
2016-503	26	Level 4	Lg. Mammal	skull	6.5	1		skull frag
2016-503	26	Level 4	Lg. Mammal	podial	5.7	3		
2016-503	26	Level 4	Lg. Mammal	long bone	13.4	1		shaft frags
2016-503	26	Level 4	Med. Fish	vert	0.1	1		vert body
2016-503	26	Level 4	Med. Mammal	Maxilla	0.8	1		Tooth holes, no teeth
2016-503	26	Level 4	Med. Mammal	rid	0.8	1		
2016-503	26	Level 4	Raccoon	Maxilla	2.6	1		Maxilla with three molars, partially worn
2016-503	26	Level 4	Sm. Bird	vert	0.01	1		
2016-503	26	Level 4	Sm. Mammal	long bone	0.7	1		
2016-503	26	Level 4	Sm. Mammal	Maxilla	0.2	1		Maxilla with three molars, very worn
2016-503	26	Level 4	Sm. Mammal	Mandible	0.1	1		Mandible with one molar
2016-503	26	Level 4	Turtle	Carapace	0.01	1		
2016-503	26	Level 4	Unid	metapodial	2.6	1		shaft frag
2016-503	26	Level 4	Unid	unid	20.5	95		
2016-503	30	Level 5	Deer	Calcaneus	21.7	1		
2016-503	30	Level 5	mammal	Mandible	1.2	1		Mandible with one broken tooth
2016-503	30	Level 5	Med. Mammal	long bone	1	1		
2016-503	30	Level 5	Unid	unid	2.1	10		

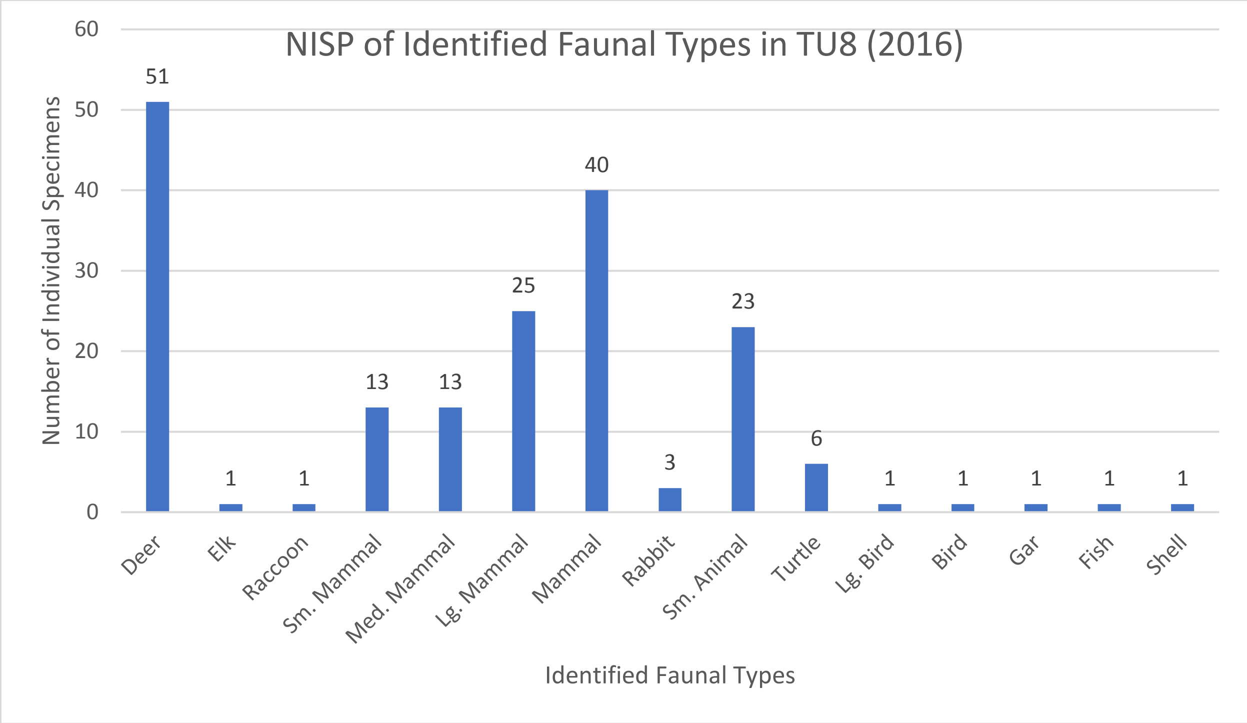

Figure VI-11: Identified fauna from Test unit 8 in 2016.

Table VI-10: Faunal materials from TU8. Identified specimens are summarized in Figure VI-11.

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2016-503	3	Level 1	Bird	Carpometacarpus ?	0.2	1		Shaft frag
2016-503	3	Level 1	Deer	2nd Phalange	7.3	2		One with possible cut mark on posterior
2016-503	3	Level 1	Deer	Molar	0.4	1		Very worn
2016-503	3	Level 1	Deer	long bone	27.7	12		shaft frags
2016-503	3	Level 1	Deer	Mandible	6.7	1		Frag. Processes broken, just ramus present
2016-503	3	Level 1	Deer	Ulna	14.6	1	proximal	Possible cut marks on posterior of olecrenon process. Broken below trochlear notch
2016-503	3	Level 1	Deer	Antler Tine	2.1	3		Antler tine points
2016-503	3	Level 1	Deer	vert	8.8	1		Transvers Process
2016-503	3	Level 1	Deer	Molar	1.7	2		Molar frags
2016-503	3	Level 1	Deer	3rd Mandibular Molar	4.2	1		3 pieces refit
2016-503	3	Level 1	Deer	2nd Phalange	1.3	1		Broken lengthwise
2016-503	3	Level 1	Deer	1st Phalange	5	1		
2016-503	3	Level 1	Deer	podials	6.3	2		Different podials
2016-503	3	Level 1	Deer	Metapodial	21.4	5		Shaft frags

Table VI-10 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2016-503	3	Level 1	Deer	Molar	5.6	1		
2016-503	3	Level 1	Deer?	Vert	4.1	1		Spinous process
2016-503	3	Level 1	Fish	Scale	0.01	1		
2016-503	3	Level 1	Mammal	metapodial	12.1	5		shaft frags
2016-503	3	Level 1	Mammal	Caudal Vert	0.01	1		
2016-503	3	Level 1	Mammal	Long bone	21.5	34		Shaft frags
2016-503	3	Level 1	Med. Mammal	ulna	0.9	1	proximal	Broken through shaft and part of epiphysis broken
2016-503	3	Level 1	Med. Mammal	Mandible	2.1	1		No teeth present
2016-503	3	Level 1	Med. Mammal	rib	1.5	1	proximal	Broken/worn epiphysis, shaft broken
2016-503	3	Level 1	Med. Mammal	rib	1.3	1		Shaft frag
2016-503	3	Level 1	Med. Mammal	radius	1.1	1	proximal	Broken through shaft
2016-503	3	Level 1	Med. Mammal	unid	2	1		Epiphysis broken, broken through shaft, burned
2016-503	3	Level 1	Med. Mammal	Phalange	0.2	1	distal	broken through shaft
2016-503	3	Level 1	Med. Mammal	rib	1.6	1	distal	Broken shaft, worn epiphysis
2016-503	3	Level 1	Med. Mammal	Tibia	0.6	1	distal	broken through shaft
2016-503	3	Level 1	Med-Sm. Mamm	Canine	1.3	2		2 non identical canines from small to medium cat or dog
2016-503	3	Level 1	Rabbit	Mandible	2.7	1		Left side, 4 teeth present, broken behind 4th tooth
2016-503	3	Level 1	Raccoon	Premolar	0.01	1		2 pieces refit
2016-503	3	Level 1	Sm. Mammal	Tibia	0.2	1	distal	Distal epiphysis and broken through shaft
2016-503	3	Level 1	Sm. Mammal	rib	0.01	1		shaft frag
2016-503	3	Level 1	Sm. Mammal	Metapodial	0.1	1	distal	broken through shaft
2016-503	3	Level 1	Small animal	unid	3.7	23		frags

Table VI-10 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2016-503	3	Level 1	Turtle	Carapace	2.4	1		
2016-503	3	Level 1	Turtle	Plastron	2.1	3		
2016-503	3	Level 1	Unid	unid	38.6	119		frags, some burned
2016-503	3	Level 1	Unid	unid	1.1	1		Billet
2016-503	3	Level 1	Unid	unid	5.2	8		
2016-503	3	Level 1	Unid	vert	0.2	1		vert body
2016-503	3	Level 1	Unid	long bone	1	1		Bone point made on broken long bone shaft frag
2016-503	3	Level 1	Unid	enamel	0.01	1		
2016-503	11	Level 2	Deer	1st phalanx	5	1		
2016-503	11	Level 2	Deer	molar	10.1	4		
2016-503	11	Level 2	Deer	incisor	0.3	1		
2016-503	11	Level 2	Deer	Metatarsal	6.9	1	proximal	1/2 of proximal epiphysis
2016-503	11	Level 2	Deer	podial	0.4	1		
2016-503	11	Level 2	Deer	1st phalanx?	1.1	1	proximal	1/2 of proximal epiphysis
2016-503	11	Level 2	Deer	astragalus	12	1		Possible cut marks
2016-503	11	Level 2	Deer	3rd phalanx	1.3	1		
2016-503	11	Level 2	Deer	3rd phalanx	2.9	1		
2016-503	11	Level 2	Deer?	rib	3.8	1		shaft frags
2016-503	11	Level 2	Elk	atlas	52.5	1		
2016-503	11	Level 2	Gar	scale	0.01	1		
2016-503	11	Level 2	Lg. Bird	claw	0.7	1		Curved, sharp claw. Eagle? Lg. Owl?
2016-503	11	Level 2	Lg. Mammal	metapodial	15.2	5		Shaft frag
2016-503	11	Level 2	Lg. Mammal	long bone	35.3	7		
2016-503	11	Level 2	Lg. Mammal	long bone	4.4	1		Epiphysis frag
2016-503	11	Level 2	Lg. Mammal	long bone	10.2	1		Epiphysis frag with probe hole
2016-503	11	Level 2	Lg. Mammal	Mandible	14.6	1		Large deer or elk with tooth and bone loss in mandible. All teeth broken off.
2016-503	11	Level 2	Rabbit?	Humerus	0.4	1	distal	Epiphysis, shaft broken
2016-503	11	Level 2	Rabbit?	Femur	1.4	1	proximal	Epiphysis slightly broken and part of shaft
2016-503	11	Level 2	Shell	shell	12.9	0		Shell weighed in bag

Table VI-10 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2016-503	11	Level 2	Sm. Mammal	Ulna	0.3	1	proximal	
2016-503	11	Level 2	Sm. Mammal	Femur	0.1	1	proximal	
2016-503	11	Level 2	Sm. Mammal	Ulna	0.2	1	proximal	
2016-503	11	Level 2	Sm. Mammal	rib	0.2	1		frag w/ part of proximal end
2016-503	11	Level 2	sm. Mammal	long bone	0.7	1		shaft frag
2016-503	11	Level 2	turtle	carapace	8.6	2		
2016-503	11	Level 2	Unid	skull	10.1	5		
2016-503	11	Level 2	Unid	unid	53.1	115		
2016-503	11	Level 2	Unid	unid	1.7	4		
2016-503	11	Level 2	Unid	unid	0.2	1		
2016-503	17	Level 3	Deer	3rd phalanx	1.3	1		
2016-503	17	Level 3	Deer	Metacarpal	17.4	1	proximal	Proximal epiphysis
2016-503	17	Level 3	Sm. Mammal	Femur	0.01	1		
2016-503	17	Level 3	Unid	uind	0.8	4		
2016-503	17	Level 3	Unid	unid	6.9	30		
2016-503	17	Level 3	Unid	long bone	7.1	4		shaft frags
2016-503	17	Level 3	Unid	flat bone	1.7	1		
2016-503	19	Feature 4	Elk?	Calcaneus?	8.4	1	proximal	Proximal end broken as well as distal end
2016-503	20	Feature 4 flotation sample heavy fraction	SM. Mammal	unid	0.1	2		HF sorted for ~10 min
2016-503	20	Feature 4 flotation sample heavy fraction	Unid	unid	0.7	14		HF sorted for ~10 min
2016-503	23	Level 4	Deer	Calcaneus	14	1		distal
2016-503	23	Level 4	Lg. Mammal	unid	12.5	10		
2016-503	23	Level 4	Sm. Mammal	unid	0.01	2		
2016-503	23	Level 4	Unid	unid	5.4	41		
2016-503	29	Level 5	Med. Mammal	long bone	1.7	2		
2016-503	29	Level 5	Unid	unid	0.6	2		

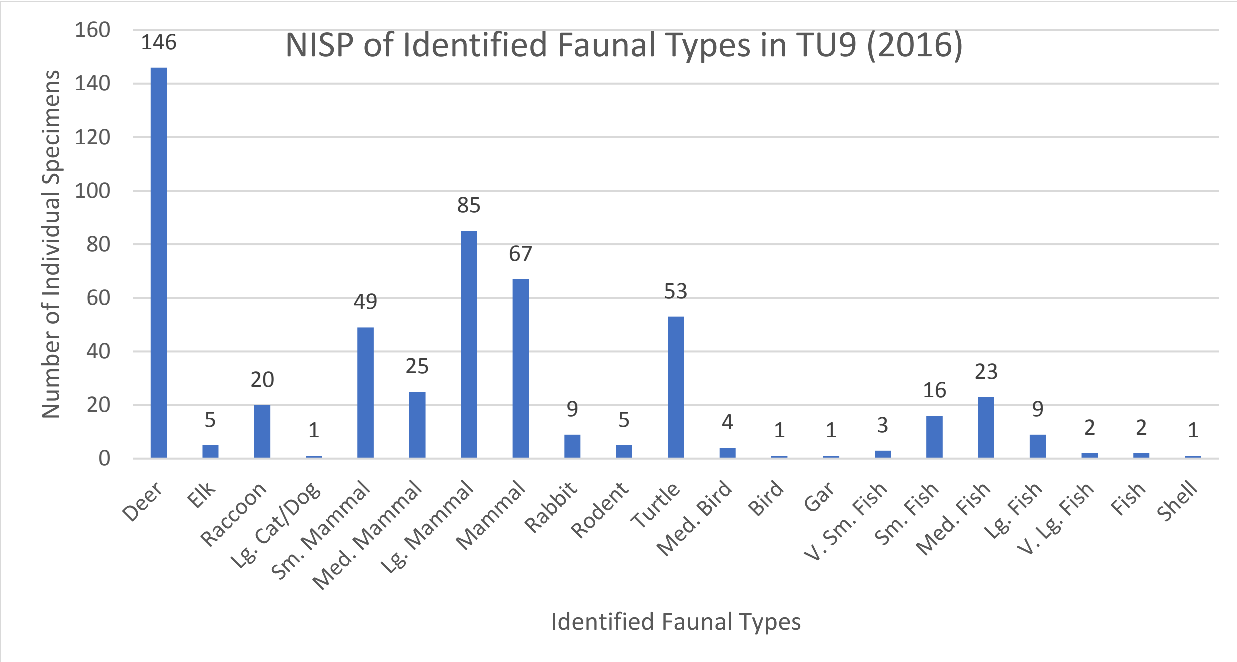

Figure VI-12: Identified fauna from Test unit 9 in 2016.

Table VI-11: Faunal materials from TU9. Identified specimens are summarized in Figure VI-12.

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2016-503	4	Level 1	bird?	vert	0.2	1		1/2 of vert body
2016-503	4	Level 1	Deer	3rd Phalange	4.7	2		one whole, one broken lengthwise
2016-503	4	Level 1	Deer	Incisor	1.1	3		
2016-503	4	Level 1	Deer	enamel	1.4	6		Tooth frags
2016-503	4	Level 1	Deer	antler	0.9	1		Antler tine point
2016-503	4	Level 1	Deer	3rd phalange	1.7	1		
2016-503	4	Level 1	Deer	antler	2.1	1		antler frags
2016-503	4	Level 1	Deer	Astragalus	32.8	2		Both with cut marks
2016-503	4	Level 1	Deer	enamel	0.5	1		
2016-503	4	Level 1	Deer	enamel	0.2	2		
2016-503	4	Level 1	Deer	Ulna	16.9	1	proximal	Olecranon process broken, broken below trochlear notch
2016-503	4	Level 1	Deer	Molar	10.8	3		
2016-503	4	Level 1	Deer	Podials	5.7	3		
2016-503	4	Level 1	Deer	2nd phalange	0.6	1	proximal	Unfused epiphysial plate of proximal end
2016-503	4	Level 1	Deer	1st phlanage	37.1	7		one shovel cut, but refits, 3 with cut marks, 1 (non cut) with distal end broken
2016-503	4	Level 1	Deer	phalange	3.2	2	distal	distal ends of 1st or 2nd phalange

Table VI-11 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2016-503	4	Level 1	Deer	2nd Phalange	5.7	1		
2016-503	4	Level 1	Deer	Metapodial	3.3	1	distal	Unfused distal epiphysis
2016-503	4	Level 1	Deer	Metacarpal	6.5	1	proximal	Half of proximal epiphysis and part of shaft
2016-503	4	Level 1	Deer	Caudal Vert	0.3	1		
2016-503	4	Level 1	Deer	Radius	7.9	1		distal part of shaft where ulna attaches
2016-503	4	Level 1	Deer	Metapodial	30.7	7		shaft frags
2016-503	4	Level 1	Deer?	Rib	0.8	1	proximal	Proximal epiphysis
2016-503	4	Level 1	Deer?	Metapodial?	10.7	3		Partial proximal epiphyses
2016-503	4	Level 1	deer?	vert	0.3	1		unfused epiphysial plate
2016-503	4	Level 1	deer?	3rd phalange	0.3	1		very small for deer
2016-503	4	Level 1	deer?	vert	1	1		Articular facet
2016-503	4	Level 1	Deer?	Vert	2	1		Transverse process
2016-503	4	Level 1	Lg. cat/dog	canine	0.4	1		Root of tooth with small amount of enamel
2016-503	4	Level 1	Lg. Mammal	long bone	142	44		frags
2016-503	4	Level 1	Lg. Mammal	rib?	2.9	2		shaft frag
2016-503	4	Level 1	Mammal	rib?	0.8	1		
2016-503	4	Level 1	Mammal	Metapodial	4.7	4		smaller shaft frags
2016-503	4	Level 1	Mammal	unid	12.7	3		
2016-503	4	Level 1	Med. Bird	long bone	1.1	1		shaft
2016-503	4	Level 1	Med. Fish	vert	0.6	5		vert body
2016-503	4	Level 1	Med. Mammal	Femur	0.2	1	proximal	Femoral head
2016-503	4	Level 1	Med. Mammal	long bone	2	3		shaft frags
2016-503	4	Level 1	Med. Mammal	long bone	2.6	1		shaft
2016-503	4	Level 1	Med. Mammal	Innominate	0.7	1		
2016-503	4	Level 1	Rabbit	Tibia	1.4	1	distal	Broken through shaft and epiphysis
2016-503	4	Level 1	Rabbit	Humerus	0.2	1	distal	Broken shaft
2016-503	4	Level 1	Rabbit	ulna	0.2	1	proximal	Proximal end and part of shaft
2016-503	4	Level 1	Rabbit?	Mandible	0.7	1		Very fragmentary, but rodent tooth about the size of rabbit
2016-503	4	Level 1	Raccoon	Humerus	1	1	distal	Broken shaft and epiphysis
2016-503	4	Level 1	Raccoon	Mandible	3.6	1		2 teeth present, front of mandible and ramus missing

Table VI-11 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2016-503	4	Level 1	Raccoon?	tooth	0.01	1		Broken, but looks like premolar
2016-503	4	Level 1	Rodent	Canine	0.6	2		Rodent canine, but unidentifiable to species
2016-503	4	Level 1	Sm. Fish	vert	0.4	5		vert body
2016-503	4	Level 1	Sm. Mammal	rib	0.01	1		
2016-503	4	Level 1	Sm. Mammal	unid	1.2	5		
2016-503	4	Level 1	Sm. Mammal	femur	0.1	1	proximal	
2016-503	4	Level 1	Sm. Mammal	Scapula	0.1	1		
2016-503	4	Level 1	Sm. Mammal	unid	0.3	1		
2016-503	4	Level 1	sm. Mammal	long bone	0.1	2		shaft
2016-503	4	Level 1	Turtle	carapace	9.5	7		
2016-503	4	Level 1	Turtle	plastron	1	3		
2016-503	4	Level 1	Turtle	Plastron	5.3	8		
2016-503	4	Level 1	Unid	long bone	7.3	2		
2016-503	4	Level 1	Unid	unid	19.9	45		burned
2016-503	4	Level 1	Unid	unid	172.9	482		
2016-503	4	Level 1	Unid	2nd phalange	0.9	1		lg. dog or cat size, but unusual proximal epiphysis
2016-503	4	Level 1	Unid	skull	2.9	6		frags
2016-503	4	Level 1	V. Lg. Fish	vert	0.6	1		vert body
2016-503	12	Level 2	Deer	Calcaneous	31.7	2		One whole, one missing proximal end
2016-503	12	Level 2	Deer	Molar	10.1	4		2 whole, 2 partial
2016-503	12	Level 2	Deer	antler	4.4	1		
2016-503	12	Level 2	Deer	caudal vert	0.9	1		
2016-503	12	Level 2	Deer	Metapodial	6.3	2	distal	Unfused distal epiphyses
2016-503	12	Level 2	Deer	Incisor	0.6	2		
2016-503	12	Level 2	Deer	premolar	0.5	2		pieces refit
2016-503	12	Level 2	Deer	Mandible	5	1		Ascending ramus
2016-503	12	Level 2	Deer	Phalanx	2.9	1	distal	broken through shaft
2016-503	12	Level 2	Deer	2nd Phalanx	10.8	3		
2016-503	12	Level 2	Deer	1st Phalanx	16.6	3		
2016-503	12	Level 2	Deer	Calcaneous	4	2	proximal	Unfused proximal epiphyses
2016-503	12	Level 2	Deer	anter	1.4	1		antler tine point
2016-503	12	Level 2	Deer	Astragalous	11.3	1		Possible cut marks on one edge

Table VI-11 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2016-503	12	Level 2	Deer	Metapodial	55	8		Shaft frags
2016-503	12	Level 2	Deer	Mandible	36.1	2		Two pieces refit, all adult teeht, teeth somewhat worn
2016-503	12	Level 2	Deer	Podials	15.6	9		various podials
2016-503	12	Level 2	Deer?	Sacrum	3.9	1		First vert of sacrum, about deer sized
2016-503	12	Level 2	Fish	spine	0.9	1		Spines on one side of long bone, seen before, can't identify now
2016-503	12	Level 2	Fish	parasphenoid	0.7	1		
2016-503	12	Level 2	Gar	scale	0.01	1		
2016-503	12	Level 2	Lg. Fish	vert	1.8	7		vert bodies
2016-503	12	Level 2	Lg. Mammal	rib	13.8	5		shaft frags
2016-503	12	Level 2	Lg. Mammal	skull frag?	9.3	1		Possible basal skull frag
2016-503	12	Level 2	Lg. Mammal	Femur	51.7	1	distal	Unfused distal epiphysis, probable femur
2016-503	12	Level 2	Lg. Mammal	humerus?	7.8	1		Broken epiphysis
2016-503	12	Level 2	Lg. Mammal	long bone	65.8	12		shaft frags
2016-503	12	Level 2	Lg. Mammal	unid	5.1	2		
2016-503	12	Level 2	Mammal	unid	8.8	19		
2016-503	12	Level 2	Mammal	long bone	57.1	40		shaft frags
2016-503	12	Level 2	Med. Bird	vert	0.8	1		
2016-503	12	Level 2	Med. Bird	tarsometatarsus	0.4	1	distal	distal epiphysis
2016-503	12	Level 2	Med. Fish	vert	1.6	8		vert bodies
2016-503	12	Level 2	Med. Mammal	vert	1	1		
2016-503	12	Level 2	Med. Mammal	Metapodial	0.01	1		
2016-503	12	Level 2	Med. Mammal	ulna	0.7	1	proximal	
2016-503	12	Level 2	Raccon	teeth	0.1	3		
2016-503	12	Level 2	Raccoon	Femur	1	1	distal	Distal epiphysis, broken
2016-503	12	Level 2	Raccoon	premolar	0.4	2		
2016-503	12	Level 2	Raccoon	Mandible	1.9	1		Teeth missing
2016-503	12	Level 2	Racoon	Molar	0.3	1		
2016-503	12	Level 2	Rodent	mandible	0.2	1		
2016-503	12	Level 2	shell	shell	15.3	1		One large piece and many frags
2016-503	12	Level 2	Sm. Fish	vert	0.6	6		vert bodies
2016-503	12	Level 2	Sm. Mammal	rib	0.01	1		

Table V-11 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2016-503	12	Level 2	Sm. Mammal	long bone	14.4	16		shaft frags
2016-503	12	Level 2	SM. Mammal	rib	0.3	2		shaft frags
2016-503	12	Level 2	Sm. Mammal	Innominate	0.5	1		acetabulum
2016-503	12	Level 2	Sm. Mammal	ulna	0.2	1	proximal	
2016-503	12	Level 2	Sm. Mammal	humerus	0.5	1	distal	
2016-503	12	Level 2	Sm. Mammal	flat bone	0.8	1		
2016-503	12	Level 2	Turtle	Plastron	8	13		
2016-503	12	Level 2	Turtle	carapace	7.8	10		
2016-503	12	Level 2	Unid	Mandible	3.7	1		Larger than Raccoon, smaller teeth. Back of mandible with no teeth
2016-503	12	Level 2	Unid	Mandible	1.3	1		Larger than raccoon, smaller teeth. Mid manbidle with broken teeth
2016-503	12	Level 2	Unid	enamel	0.01	1		
2016-503	12	Level 2	Unid	vert	0.2	1		broken vert body
2016-503	12	Level 2	Unid	unid	122	355		
2016-503	12	Level 2	Unid	skull	17.5	9		
2016-503	12	Level 2	VLg. Fish	vert	0.6	1		vert body
2016-503	13	Level 2 flotation sample heavy fraction	Deer	3rd phalanx	1.4	1		Heavy fraction sorted for 10 min
2016-503	13	Level 2 flotation sample heavy fraction	Deer	podial	0.2	1		Heavy fraction sorted for 10 min
2016-503	13	Level 2 flotation sample heavy fraction	rodent	tooth	0.01	1		Heavy fraction sorted for 10 min
2016-503	13	Level 2 flotation sample heavy fraction	Sm. Mammal	vert	0.01	1		Heavy fraction sorted for 10 min
2016-503	13	Level 2 flotation sample heavy fraction	Unid	long bone	6.9	5		Heavy fraction sorted for 10 min

Table VI-11 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2016-503	13	Level 2 flotation sample heavy fraction	Unid	unid	1.7	37		Heavy fraction sorted for 10 min
2016-503	13	Level 2 flotation sample heavy fraction	V.Sm. Fish	vert	0.01	2		Heavy fraction sorted for 10 min
2016-503	18	Level 3	Deer	teeth	1	4		2 pieces refit
2016-503	18	Level 3	Deer	podial	0.7	1		
2016-503	18	Level 3	Deer	antler	4.8	2		
2016-503	18	Level 3	Deer	Metapodial	8.1	2	distal	distal epiphysis
2016-503	18	Level 3	Deer	podial	0.5	1		
2016-503	18	Level 3	Deer	Atlas	14.1	1		
2016-503	18	Level 3	Deer	vert	1.9	2		unfused vert body epiphysial plates
2016-503	18	Level 3	Deer	metapodial	10.6	3		shaft frags
2016-503	18	Level 3	Deer	podial	7.7	1		
2016-503	18	Level 3	Deer	2nd phalanx	8.6	2		
2016-503	18	Level 3	Deer	metatarsal	21.7	1	proximal	Proximal epiphysis and part of shaft
2016-503	18	Level 3	Deer	1st phalanx	8.7	1		
2016-503	18	Level 3	Deer	vert	11.6	2		vert arches
2016-503	18	Level 3	Deer	Calcaneus	18	1		
2016-503	18	Level 3	Deer	Mandible	17.7	1		Corner of mandible with no teeth present
2016-503	18	Level 3	Lg. Fish	vert	1	2		vert body
2016-503	18	Level 3	Lg. Mammal	unid	22.6	1		unid innominate or scapula
2016-503	18	Level 3	Lg. mammal	long bone	53.9	13		shaft frags
2016-503	18	Level 3	Med. Fish	vert	1.3	7		vert body
2016-503	18	Level 3	Med. Mammal	vert	1	1		Unfused
2016-503	18	Level 3	Med. Mammal	vert	0.3	1		vert body
2016-503	18	Level 3	Med. Mammal	astragalus	0.5	1		
2016-503	18	Level 3	Med. Mammal	unid	2.6	8		
2016-503	18	Level 3	Med. Mammal	humerus	1	2	distal	distal epiphysis and shaft
2016-503	18	Level 3	Med. Mammal	Ulna	0.7	1	proximal	Proximal epiphysis
2016-503	18	Level 3	Rabbit	Scapula	0.3	1		
2016-503	18	Level 3	Rabbit?	Mandible	2.4	2		Mid-mandible with some teeth present

Table VI-11 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2016-503	18	Level 3	Raccoon?	femur	0.9	1	proximal	Proximal epiphysis
2016-503	18	Level 3	Raccoon?	long bone	7.6	3		
2016-503	18	Level 3	Raccoon?	astragalus?	0.3	1		
2016-503	18	Level 3	Raccoon?	tibia	1	2	proximal	proximal epiphysis
2016-503	18	Level 3	Raccoon?	tibia	3.8	1		racconish size
2016-503	18	Level 3	Raccoon?	long bone	5.6	1		shaft frag, raccon size
2016-503	18	Level 3	Rodent	tooth	0.1	1		
2016-503	18	Level 3	Sm. Fish	vert	0.3	3		vert body
2016-503	18	Level 3	Sm. Mammal	long bone	0.9	4		
2016-503	18	Level 3	Sm. Mammal	long bone	0.01	2		shaft frag
2016-503	18	Level 3	Turtle	plastron	10.3	4		
2016-503	18	Level 3	Turtle	Coracoid	1.6	1		
2016-503	18	Level 3	Turtle	Carapace	3.7	5		
2016-503	18	Level 3	turtle?	coracoid	1.1	1		
2016-503	18	Level 3	Unid	unid	3.2	4		
2016-503	18	Level 3	Unid	vert	0.01	1		broken vert body
2016-503	18	Level 3	Unid	unid	84.3	266		frags
2016-503	18	Level 3	Unid	unid	2.3	1		
2016-503	24	Level 4	Deer	Radius	19.8	1	proximal	proximal epiphysis and part of shaft
2016-503	24	Level 4	Deer	podial	5.9	2		
2016-503	24	Level 4	Deer	1st Phalanx	22	3		One burned
2016-503	24	Level 4	Deer	Metapodial	35.7	2	distal	Distal epiphysis and part of shaft
2016-503	24	Level 4	Deer	Skull	102.1	8		Skull and small frags
2016-503	24	Level 4	Elk	Antler	36.8	2		Two pieces refit. Attachment to skull
2016-503	24	Level 4	Elk?	Mandible	15.1	2		Two pieces possibly refit, teeth worn, seems big for deer, likely elk
2016-503	24	Level 4	Elk?	Antler	6.5	1		Cut off at bottom with some cut marks just above cut
2016-503	24	Level 4	Lg. Mammal	long bone	14.8	3		Shaft frag
2016-503	24	Level 4	Med. Bird	vert	0.4	1		vert body
2016-503	24	Level 4	Med. Fish	vert	0.4	2		vert body
2016-503	24	Level 4	Med. Mammal	vert	5.4	2		
2016-503	24	Level 4	Rabbit?	Scapula	0.3	1		Epiphysis and part of wing
2016-503	24	Level 4	Rabbit?	Femur	1.4	1	distal	Distal epiphysis
2016-503	24	Level 4	Sm. Fish	vert	0.2	2		vert body

Table VI-11 (cont.)

Accession Number	FSN	Provenience	species	element	weight	count	Distal/ proximal	General comment
2016-503	24	Level 4	Sm. Mammal	long bone	0.6	5		
2016-503	24	Level 4	Sm. Mammal	vert	0.01	1		
2016-503	24	Level 4	Turtle	carapace	0.5	1		
2016-503	24	Level 4	Unid	unid	31.2	132		
2016-503	24	Level 4	Unid	skull	7.1	5		skull frags
2016-503	32	Feature 8 S 1/2 flotation sample heavy fraction	Unid	unid	0.01	4		HF sorted for ~5 min
2016-503	33	Feature 9 N 1/2	Unid	unid	0.1	2		
2016-503	34	Feature 9 S 1/2 flotation sample heavy fraction	Unid	unid	0.4	14		HF sorted ~5 min
2016-503	34	Feature 9 S 1/2 flotation sample heavy fraction	V. Sm. Fish	vert	0.01	1		HF sorted ~5 min
2016-503	36	Feature 10 N 1/2 flotation sample heavy fraction	Sm. Mammal	long bone	0.01	1		HF sorted ~5 min.
2016-503	36	Feature 10 N 1/2 flotation sample heavy fraction	Unid	unid	0.01	4		HF sorted ~5 min.
2016-503	38	Feature 11 S 1/2	Unid	unid	0.5	1		burned
2016-503	39	Feature 11 N 1/2 flotation sample heavy fraction	Deer	Antler	15	1		HF sorted for ~5 min. Antler tine
2016-503	39	Feature 11 N 1/2 flotation sample heavy fraction	Med. Fish	vert	0.1	1		HF sorted for ~5 min. vert body
2016-503	39	Feature 11 N 1/2 flotation sample heavy fraction	Sm. Mammal	vert	0.01	1		HF sorted for ~5 min
2016-503	39	Feature 11 N 1/2 flotation sample heavy fraction	Unid	unid	0.7	25		HF sorted for ~5 min

Appendix VII

Dates

Table VII-1: Dates and provenience data of the sites in Figures 8-2, 8-3, and 8-4.

Site Name	Raw	Calibrated Mean	1 sigma	2 sigma	Sample	Provenience	Period	Reference
Manley-Usrey	230±30	1737	1646-1669, 1781-1798, 1946-1950	1532-1537, 1636-1682, 1736-1805, 1935-1950	Nut shell	Excavation unit 3, NW corner, 55-65 cmbs, Flotation sample	Late Mississippi	Rathgaber 2015
Manley-Usrey	270±30	1632	1526-1556, 1632-1663	1515-1597, 1617-1668, 1782-1797, 1948-1950	Nut shell	Excavation unit 4, NE corner, 45-55 cmbs, flotation sample	Late Mississippi	Rathgaber 2015
Manley-Usrey	310±30	1562	1521-1578, 1582-1591, 1620-1642	1487-1604, 1608-1649	Cane	Excavation Unit 8	Late Mississippi	
Manley-Usrey	1460±50				Midden surface	Under sand blow	Late Mississippi	OSL Dating
Beck	450±60	1456	1409-1493, 1602-1614	1325-1344, 1394-1528, 1551-1634			Late Mississippi	AMASDA site files 2019
Chucalissa	930±200	1077	898-924, 945-1274	689-750, 760-1333, 1337-1398	charcoal	Unit 3, below floor of house 12	Initial Mississippi	Crane and Griffin 1959
Chucalissa	510±200	1444	1280-1529, 1541-1635	1053-1079, 1152-1707, 1719-1826, 1832-1885, 1913-1950	charcoal	Unit 3, above floor of house 12	Initial Mississippi	Crane and Griffin 1959
Chucalissa	510±200	1444	1280-1529, 1541-1635	1053-1079, 1152-1707, 1719-1826, 1832-1885, 1913-1950	charcoal	Unit 3, floor of house 3	Late Mississippi	Crane and Griffin 1959
Chucalissa	350±200	1588	1408-1683, 1734-1806, 1929-1950	1302-1367, 1382-1950	charcoal	Unit 3, profile of house 3	Late Mississippi	Crane and Griffin 1959
Chucalissa	360±150	1581	1402-1683, 1735-1805, 1931-1950	1299-1370, 1379-1898, 1901-1950	charcoal	Unit 3, postmold	Late Mississippi	Crane and Griffin 1959

Table VII-1 (cont.)

Site Name	Raw	Calibrated Mean	1 sigma	2 sigma	Sample	Provenience	Period	Reference
Chucalissa	540±90	1416	1264-1527, 1553-1633	1035-1694, 1727-1812, 1864-1865, 1919-1950	charcoal	Unit 6, wall trench of house 6	Late Mississippi	Lumb and McNutt 1988
Graves Lake	280±60	1591	1499-1502, 1512-1601, 1616-1666, 1784-1795	1454-1682, 1737-1757, 1761-1804, 1936-1950		3 m SE of burial 1	Late Mississippi	Mainfort and Moore 1998
Graves Lake	520±60	1404	1323-1347, 1393-1443	1297-1466	charcoal	house 1, post	Mississippi	Mainfort and Moore 1998
Graves Lake	480±50	1430	1406-1454	1316-1355, 1389-1499, 1505-1511, 1601-1616	charcoal	house 1, post?	Late Mississippi	Mainfort and Moore 1998
Graves Lake	390±70	1521	1442-1522, 1573-1628	1422-1645	charcoal	house 2, PM 7	Late Mississippi	Mainfort and Moore 1998
Graves Lake	500±70	1418	1318-1352, 1390-1458	1293-1520, 1592-1619	charcoal	house 2, PM48	Late Mississippi	Mainfort and Moore 1998
Graves Lake	320±50	1560	1498-1503, 1511-1601, 1616-1642	1455-1654	charcoal	house 3, PM18	Late Mississippi	Mainfort and Moore 1998
Graves Lake	310±50	1564	1499-1503, 1512-1601, 1616-1646	1457-1662	charcoal	house 3, PM 17	Late Mississippi	Mainfort and Moore 1998
Hazel	500±80	1419	1313-1358, 1388-1468	1290-1523, 1572-1630		Trench 5, Level VII, Hazel 897B	Late Mississippi	Zinke 1975
Hazel	600±90	1352	1297-1374, 1376-1408	1229-1230, 1246-1456		Trench 5, Level VII, Hazel 897A	Late Mississippi	Zinke 1975
Hazel	370±70	1539	1451-1523, 1559-1563, 1570-1631	1429-1652		Trench 5, Level VII, Hazel 972	Late Mississippi	Zinke 1975
Hazel	370±180	1571	1334-1336, 1398-1681, 1739-1744, 1763-1802, 1938-1950	1299-1370, 1379-1891, 1908-1950		Trench 5, Level VII, Hazel 868	Late Mississippi	Zinke 1975
Hazel	410±70	1505	1431-1521, 1576-1584, 1590-1623	1413-1642		1 m west burial 460, 54 cm deep	Late Mississippi	Zinke 1975

Table VII-1 (cont.)

Site Name	Raw	Calibrated Mean	1 sigma	2 sigma	Sample	Provenience	Period	Reference
Hazel	490±70	1425	1320-1349, 1391-1470	1298-1373, 1377-1522, 1575-1626		Hazel 1052-473, 94 cm deep	Late Mississippi	Zinke 1975
Hazel	840±80	1178	1051-1081, 1152-1267	1030-1281		Hazel 950, Trench 5, Level V	Middle Mississippi	Zinke 1975
Hazel	860±70	1166	1050-1082, 1127-1135, 1151-1254	1033-1268		Hazel 933 B Trench 5 Level II	Early Mississippi	Zinke 1975
Hazel	660±70	1331	1277-1323, 1346-1393	1228-1231, 1245-1419		Hazel 933A Trench 5, Level II	Early Mississippi	Zinke 1975
Hazel	420±60	1488	1427-1516, 1595-1618	1412-1531, 1538-1635		Hazel 933C, Trench 5 Level II	Early Mississippi	Zinke 1975
Hazel	690±70	1305	1261-1319, 1351-1391	1216-1410		Hazel 1039, Burial 490, Burial cluster 7	Middle Mississippi	Zinke 1975
Hazel	470±70	1442	1328-1341, 1395-1492, 1602-1613	1306-1363, 1385-1528, 1552-1633		Hazel 446C, Burial cluster 10	Middle Mississippi	Zinke 1975
Hazel	690±70	1305	1260-1319, 1351-1391	1216-1410		Hazel 445H, Burial cluster 10	Middle Mississippi	Zinke 1975
Chickasawba	370±40	1524	1453-1521, 1577-1583, 1591-1622	1446-1530, 1539-1635		Base of Feature 2 at 105 cmbs	Late Mississippi	Childs et al 2016
Chickasawba	430±40	1766	1649-1681, 1739-1745, 1762-1802, 1937-1950	1530-1538, 1635-1696, 1725-1814, 1836-1877, 1917-1950	Bone found with Walls Engraved Var. Pemiscot Figure III-	with Walls engraved sherd	Late Mississippi - Protohistoric	Childs et al 2016
Chickasawba	250±60	1653	1521-1578, 1582-1591, 1621-1680, 1740-1741, 1763-1801, 1938-1950	1468-1695, 1726-1813, 1837-1843, 1852-1868, 1874-1875, 1918-1950	charcoal	Upper floor	Late Mississippi - Protohistoric	Childs et al 2016
Chickasawba	370±60	1517	1485-1528, 1551-1634	1454-1644	charcoal	Middle floor	Late Mississippi - Protohistoric	Childs et al 2016

Table VII-1 (cont.)

Site Name	Raw	Calibrated Mean	1 sigma	2 sigma	Sample	Provenience	Period	Reference
Chickasawba	290±50	1554	1485-1528, 1551-1634	1454-1644	charcoal	Lower floor	Late Mississippi - Protohistoric	Childs et al 2016
Chickasawba	370±40	1524	1453-1521, 1577-1583, 1591-1622	1446-1530, 1539-1635	charcoal	Unit 2	Late Mississippi - Protohistoric	Childs et al 2016
Upper Nodena	420±40	1468	1433-1491, 1603-1611	1420-1523, 1572-1630	Maize cob fragmgen	C 29-31	Late Mississippi	Mainfort 2010
Upper Nodena	490±40	1426	1413-1443	1324-1345, 1393-1465	Maize cob fragment	FSN 73-432-123	Late Mississippi	Mainfort 2010
Upper Nodena	370±40	1524	1453-1521, 1577-1583, 1591-1622	1446-1530, 1539-1635	Maize Kernel	FSN 73-432-118	Late Mississippi - Protohistoric	Mainfort 2010
Upper Nodena	460±40	1439	1419-1453	1401-1496, 1601-1615	Maize cob fragment	FSN 73-432-139	Late Mississippi - Protohistoric	Mainfort 2010
Upper Nodena	440±40	1451	1425-1473	1410-1519, 1593-1619	Maize cob fragment	FSN 73-432-139	Late Mississippi	Mainfort 2010
Upper Nodena	290±50	1574	1515-1597, 1617-1658	1461-1669, 1781-1798, 1945-1950		Trench 1, 1 cm below sand blow	Late Mississippi - Protohistoric	Tuttle et al. 2000
Upper Nodena	280±50	1585	1517-1594, 1618-1664, 1789-1791	1465-1677, 1765-1772, 1776-1800, 1940-1950		Trench 1, 45 cm below sand blow	Late Mississippi - Protohistoric	Tuttle et al. 2000

Table VII-1 (cont.)

Site Name	Raw	Calibrated Mean	1 sigma	2 sigma	Sample	Provenience	Period	Reference
Upper Nodena	230±50	1733	1533-1536, 1636-1682, 1736-1805, 1935-1950	1500-1501, 1513-1600, 1617-1697, 1725-1815, 1835-1877, 1917-1950		Trench 2, Root cast into sand blow	Late Mississippi - Protohistoric	Tuttle et al. 2000
Upper Nodena	350±40	1551	1476-1524, 1559-1564, 1568-1631	1456-1637		Trench 2, 9 cm below sand blow	Late Mississippi - Protohistoric	Tuttle et al. 2000
Upper Nodena	340±30	1559	1490-1525, 1556-1603, 1610-1632	1470-1639		Trench 2, 3 cm below sand blow	Late Mississippi - Protohistoric	Tuttle et al. 2000
Parkin	840±80	1178	1051-1081, 1152-1267	1030-1281	charcoal	Locus 2, Roof fall, Fea. 92B F.S. 1005, Structure 10	Mississippi	AMASDA 2019
Parkin	460±80	1456	1331-1338, 1397-1517, 1594-1618	1311-1359, 1387-1638		Locus 2, Fea.92C, Structure 10, FS1005	Late Mississippi - Protohistoric	AMASDA 2019
Parkin	350±60	1549	1470-1526, 1556-1632	1444-1648		Locus 4, Fea. 102, Structure 11, FS 956	Late Mississippi - Protohistoric	AMASDA 2019
Parkin	300±60	1572	1496-1507, 1511-1601, 1616-1651	1448-1675, 1777-1799, 1941-1950		Locus 4, Structure 11, FS 948, RC 92	Late Mississippi - Protohistoric	AMASDA 2019
Parkin	490±60	1387	1318-1352, 1390-1435	1297-1447		Locus 2, Fea. 92, Struxture 10, FS 1017	Late Mississippi	AMASDA 2019
Parkin	330±50	1557	1494-1532, 1537-1602, 1614-1636	1455-1648	charcoal	Locus 4, PPM 2, FS 975, Structure 11	Late Mississippi - Protohistoric	AMASDA 2019

Table VII-1 (cont.)

Site Name	Raw	Calibrated Mean	1 sigma	2 sigma	Sample	Provenience	Period	Reference
Parkin	690±60	1304	1264-1314, 1356-1388	1224-1237, 1241-1400		Locus 4, Below burial 25, FS 968, Structure 11	Mississippi	AMASDA 2019
Parkin	840±81	1178	1051-1081, 1152-1267	1030-1281	charcoal	Locus 2, Roof fall, Fea. 92B, F.S. 1005 Struture 10	Mississippi	AMASDA 2019
Parkin	180±70	1775	1653-1696, 1726-1814, 1837-1844, 1850-1876, 1917-1950	1528-1551, 1634-1950	charcoal	Locus 4, PPM4, Strucxture 7, FS-768 Wood post	Late Mississippi - Protohistoric	AMASDA 2019
Parkin	280±90	1618	1474-1670, 1780-1798, 1944-1950	1441-1698, 1722-1817, 1833-1879, 1916-1950	thatch	Locus 3, Fea.64, Structure 5	Late Mississippi - Protohistoric	AMASDA 2019
Parkin	620±60	1347	1295-1328, 1341-1395	1278-1417	thatch	Locus 3, Fea. 3, Strucxture 5	Mississippi	AMASDA 2019
Parkin	300±70	1578	1490-1603, 1611-1654	1444-1681, 1738-1755, 1762-1803, 1937-1950		Locus 4, Fea. 43, Adjacent to structure 7, FS744	Late Mississippi - Protohistoric	AMASDA 2019
Parkin	330±50	1557	1494-1532, 1537-1602, 1614-1636	1455-1648		Locus 4, Pit, Fea.46, FS 744	Late Mississippi - Protohistoric	AMASDA 2019
Parkin	610±100	1349	1291-1408	1212-1476	charcoal	Locus 4, Roof fall, Structure 11, FS 792	Mississippi	AMASDA 2019
Parkin	980±70	1072	994-1058, 1075-1154	899-922, 948-1214	charcoal	Locus 2, Roof fall, FS1005, Fea. 92, Structure 10	Mississippi	AMASDA 2019
Parkin	290±60	1580	1497-1506, 1511-1601, 1616-1661	1450-1680, 1740-1741, 1763-1801, 1938-1950		Mound 1: Looters pit 66-30-202	Late Mississippi - Protohistoric	AMASDA 2019
Parkin	750±50	1259	1224-1237, 1241-1285	1169-1178, 1180-1303, 1365-1383	Wood	Locus 1, Fea. 18, FS183, Wood post	Mississippi	AMASDA 2019
Parkin	630±60	1346	1291-1325, 1344-1394	1275-1415	Wood	Locus 1, Wood post, PPM1, Structure 4	Mississippi	AMASDA 2019

Table VII-1 (cont.)

Site Name	Raw	Calibrated Mean	1 sigma	2 sigma	Sample	Provenience	Period	Reference
Parkin	180±60	1777	1654-1694, 1726-1813, 1839-1841, 1854-1867, 1918-1950	1643-1895, 1903-1950		Locus 1, Smdge pit/ fea.2, Structure 4	Late Mississippi - Protohistoric	AMASDA 2019
Parkin	460±80	1456	1331-1338, 1397-1517, 1594-1618	1311-1359, 1387-1638		Fea. 92C, F.S. 1005, Structure10	Mississippi	AMASDA 2019
Kochtitzky Ditch	520±30	1415	1405-1433	1324-1345, 1393-1443	Block D-E Extended	Structure 2, West wall timber	Late Mississippi	Buchner et al 2003
Kochtitzky Ditch	680±70	1314	1267-1320, 1350-1391	1222-1409		Phase 2 Feas.9, Phase 3 Block D	Mississippi	Buchner et al 2003
Kochtitzky Ditch	810±40	1226	1194-1196, 1206-1265	1161-1276	Charcoal and sherd concentration	Unit C6, 40-50 cm level	Mississippi	Buchner et al 2003
Kochtitzky Ditch	820±30	1223	1194-1196, 1206-1259	1166-1264	Large trash pit w/ various ceramic types	Block B, Feature 154	Mississippi	Buchner et al 2003
Kochtitzky Ditch	710±30	1281	1269-1292	1257-1305, 1364-1384	Palisade/compound wall trench section	Block A-B, Feature 267	Mississippi	Buchner et al 2003
Kochtitzky Ditch	750±50	1259	1224-1237, 1241-1285	1169-1178, 1180-1303, 1365-1383	Structure 1	Unit A4, 10-20 cm level	Mississippi	Buchner et al 2003

Appendix VIII
Burial Permit

ARKANSAS HISTORIC PRESERVATION PROGRAM

ARKANSAS ACT 753 OF 1991
EXCAVATION AUTHORIZATION

To investigate, excavate, remove, and analyze human skeletal burial remains and burial furniture as authorized in Section 7 of Arkansas Act 753 of 1991, "an act to prohibit the desecration of human skeletal burial remains in unregistered cemeteries; to prohibit trade or commercial display for human skeletal burial remains or associated burial furniture; and for other purposes."

AHPP Tracking: 95379

1. Authorization issued to:
Michelle Megan Rathgaber

2. Under application dated:
March 24, 2016

3. Name, address and official status of person in charge, :

Michelle Megan Rathgaber
2475 N. Hatch Avenue
Fayetteville, Arkansas 72701

4. On lands described as follows:

NAD 83 3 984 846N 777 305 E, approximate centerpoint for 3MS106, Manley-Usrey Site

5. Activity Authorized:

Excavation/collection and analysis of human remains.

6. For period: one year from issuance of permit

7. Special conditions: **Must** issue report on activities that fall within permit within valid permid period. Use AHPP tracking number 95379 in report.

8. Museum or other scientific institution in which the human remains or burial furniture collected will be deposited for analysis, preservation, or permanent curation:

NA – remains will be reburied as per consultation with Quapaw Tribe of Oklahoma

9. Signature and title of AHPP approving official:

Bob Scoggin, Section 106 Program Manager

10. Date:

March 24, 2016

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A Division of the Department of Arkansas Heritage

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