MISSISSIPPIAN POLITIES IN THE MIDDLE CUMBERLAND REGION OF TENNESSEE

by

EMILY LYNNE BEAHM

(Under the Direction of David J. Hally)

ABSTRACT

In the Middle Cumberland region of north-central Tennessee, close to fifty mound centers rose and fell between A.D. 1050 and 1450. Although these centers were not all occupied at the same time, their distribution within the region is quite dense. In this dissertation I examine five mound sites located on the eastern edge of the Middle Cumberland region in order to better understand the temporal and political relationships among these closely spaced polities. I conducted a detailed ceramic analysis to further refine the established ceramic chronology for the region and date each site's occupation as specifically as possible. The mound construction and occupation dates, size and complexity of the mound sites in the sample were compared to understand to their sociopolitical relationships. I found that mound sites in the Middle Cumberland region are located at closer proximities than contemporary mound sites documented in northern Georgia. Specific landscape traits such as local resources, symbolically significant features and strategic locations for defense, trade and communication differ between mound centers, and likely affected decisions about polity center locations.

INDEX WORDS: Archaeology, Chiefdoms, Mississippian period, Ceramic analysis, Tennessee, Middle Cumberland region, Chronology, Social identity

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DEDICATION

To my parents Edward and Marcie Beahm.

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CHAPTER 1

INTRODUCTION

In this dissertation, I will examine relationships among Mississippian mound sites in the Middle Cumberland region of north-central Tennessee (Figure 1.1). The Middle Cumberland Culture, as it is termed, has long been recognized as a distinct archaeological culture in part due to its stone-box graves and negative painted ceramics and also because of its dense concentration of mound sites (Figure 1.2) (Ferguson 1972). This concentration of mound sites implies a dense population and numerous contemporary political units. There is a long history of archaeological exploration in the Middle Cumberland region and researchers have worked out a ceramic chronology. However, there is still little understanding of how individual mound sites relate to one another or to the numerous polities (independent sociopolitical units) (Renfrew 1986: 2) that must have existed in the region at any one time.

1.1 Chiefdoms

As traditionally defined, chiefdoms are politically-centralized multi-community polities with emphasis on social ranking and inherited leadership positions (Carnerio 1981). The term chiefdom is a useful and applicable characterization of Mississippian political organization. Researchers in the southeastern United States generally agree that Mississippian societies were organized into chiefdoms (Blitz and Lorenz 2006; Boudreaux 2007; Hilgeman 2000; Wesler 2001).

1.1a Archaeological Visibility

Spatial site clustering, settlement hierarchy, graves displaying ascribed status and construction projects requiring communal labor indicate Mississippian chiefdoms in the archaeological record (Peebles and Kus 1977). In relation to Mississippian societies, Cordell and Milner explain, “There is solid archaeological evidence for access by a few people to disproportionately large amounts of labor and goods, particularly fancy prestige-denoting objects. This evidence is consistent with sixteenth century and later commentaries on social relations within native societies” (1999: 112). Spatial site clustering should be present in societies that unite multiple communities. Ethnographic research supports the assumption that chiefdom capitals are the largest settlement within a polity and logic implies that there should be more residential communities in a polity than administrative centers (Payne 1994:29). Site clusters that include one or more sites with earthen platform mounds and a number of non-mound habitation sites indicate political centralization in Mississippian chiefdoms. The former represent the civic-ceremonial center for the polity where the chief resided and managerial activities related to governance occurred (Smith 1978).

In chiefdoms, differences in grave goods reflect achieved status as well as inherited status. Mississippian burials show status hierarchy and ascribed status by variation in the amount and kinds of grave goods and the interment of children with highly crafted and exotic items. The centralized leadership of a chief would have served to organize and encourage labor-intensive projects such as earth mound and palisade construction.

1.1b Size of Chiefdoms

Chiefs can effectively oversee only a limited number of communities. Johnson (1982) suggests that six is the optimum number of units that can be controlled by one individual or institution. Therefore when a polity exceeds approximately six communities it would be more efficient to have multiple levels of administration.

Archaeologists use the concepts of simple and complex chiefdoms to refer to different levels of administrative hierarchy. In simple chiefdoms the chief directly oversees the towns in the polity whereas in complex chiefdoms a series of sub-chiefs each administer several towns and the primary chief manages the sub-chiefs (Anderson 1994; Steponaitis 1981; Wright 1984). Keeping the number of administrative levels low would reduce the risk that a secondary chief will rebel or split from the polity (Wright 1984). This threat to polity stability associated with multiple levels of administrative hierarchy acts to control chiefdom size in terms of number of towns. Complex chiefdoms have been identified in Mississippian period societies (Anderson 1994; Steponaitis 1986).

There also appears to be limits on the size of the area that chiefs can effectively administer. Several researchers have proposed similar size estimates for chiefdoms (Hally 1993; Helms 1979; Renfrew 1975). Hally (1993; 1996) has argued that most chiefdoms in northern Georgia, and perhaps throughout the Southeast, did not have territories larger than 20 km in radius. The critical factor in determining polity size appears to be the distance one can travel in a day. Spencer has suggested that in pre-industrial societies it would be most efficient for the radius of a chief's territory to equal a half day's travel. At this distance a chief would be able to travel to the edges of his territory and back in one day, thereby possessing somewhat immediate control over the population (Spencer 1991). Not only would this distance allow a chief to efficiently travel across his territory and collect tribute, but it would also allow communities at the edges of the polity to be effectively protected by the chief, and for their members to travel to the administrative center for ceremonies and labor projects.

1.1c Duration of Chiefdoms

All chiefdoms are subject to particular historical factors such as drought, warfare and factional competition that eventually lead to their collapse. The rise and fall of chiefdoms has been documented in the archaeological record and ethnographically throughout the world, including Mesoamerica, Micronesia, Iran, and Western Europe (Champion and Champion 1986, Petersen 1982, Redmond et al. 1999, Wright 1986, Wright and Johnson 1975).

The life span of individual chiefdoms varied considerably. The large complex chiefdoms of Cahokia and Moundville appear to have existed for several hundred years but in general chiefdoms are rather short-lived (Hally 1993; Knight and Steponaitis 1998:14; Pauketat 1998:46; Scarry 1999). Cycling is indicative of the inherent instability of chiefdoms, most of which seem to last only about 50 to 150 years in the southeastern United States (Anderson 1994; Cobb 2003; Hally 1996; 2006). After a chiefdom collapsed, many administrative centers and territories were abandoned. In some cases, new chiefdoms were established in the abandoned territory approximately a hundred years later, as in the case of Etowah (King 2003). In at least one known example, Moundville, the mound center lost most of its residential population after a century, but the site continued to serve as a civic and ritual center (Cobb 2003; Knight and Steponaitis 1998).

1.1d Critiques of Chiefdom Concept

Over the past few decades the chiefdom concept has been criticized by some researchers (Feinman and Neitzel 1984; Pauketat 2007; Spencer 1991; Yoffee 1993; 2004). The main objection to the concept is that it glosses over significant variability in Mississippian societies; some of which have been reviewed above. However, we should keep in mind the function served by the word “chiefdom”. Using the term chiefdom to describe a society is a generalization, as is any typology. Typologies are useful in making sense of a complex world. If the researcher is explicit about what the types do and do not imply there should be no misrepresentation. In some cases it may not be useful to speak of Mississippian societies in terms of chiefdoms.

Pauketat's solution to the chiefdom dilemma is the historical processualism approach of studying variability as a result of historical processes (2007). Acknowledging the variation in chiefdoms, one of the trends in Mississippian research is to focus on the developmental histories of specific sites to get a clearer understanding of the sociopolitical variation in Mississippian societies (Beck 2003; Blitz 2010). The research in this dissertation embraces the call to understand the specific histories of Mississippian communities. However, the end goal of this research is to advance knowledge about the shared characteristics of multi-community political units with inherited leadership positions in general.

1.2 The Meaning of Mounds

Central to this study is the assertion that mound sites served as the capitals of political units. This idea has been used by a great number of Mississippian archaeologists to make sense of settlement patterning and sociopolitical organization (Anderson 1994; Blitz and Lorenz 2006; Hally 2006). In order to make such an association, it is important to understand what evidence is used to support it as well as the variations in Mississippian mounds.

Because of the important religious and political functions served by mounds, it has been argued that all Mississippian chiefdoms had platform mounds. To the extent that this is true, the existence of a chiefdom can be inferred from the presence of a Mississippian platform mound site (Hally 1996; Payne 1994). Early explorers into the Southeast make several mentions of mounds and their uses. Garcilaso, one of the chroniclers in of the DeSoto expedition, states "This Talimeco was a village holding extensive sway; and this house of worship was on a high mound and much revered" (Bourne 1904: 101). Also, "And the chief was on a kind of balcony on a mound at one side of the square, his head covered by a kind of coif like the almaizal, so that his headdress was like a Moor's which gave him an aspect of authority" (Bourne 1904:120). The best-known early description of mound use is that of the Natchez. DuPratz describes platform mounds by explaining "in the evening there is a dance in his [the chief's] hut, which is about thirty feet square, and twenty feet high, and like the temple is built on a mound of earth, about eight feet high, and sixty feet over the surface" (1947[1774]:320). He further describes the mound-top temple structure where the sacred fire was kept along with bones of the ancestors (DuPratz1947[1774]:333-334).

Archaeological evidence of structures is commonly found on Mississippian flat-topped mound summits. This suggests that they commonly served as building platforms (Hally 1996). Buildings on top of platform mounds served a variety of purposes including chiefly residences, mortuary temples, and locations of various religious and political activities (Hudson 1999, Elvas 1993, Swanton 1911). Multiple buildings atop excavated mounds suggest that single mounds likely served some of these functions simultaneously, whereas sites with multiple mounds may have had several mounds with different functions (Lewis and Kneberg 1993[1946], Lindauer and Blitz 1997). For instance, Mound A at Toqua (40MR6) had multiple structures on its summit including one public building and one elite residential structure as well as a second mound (Mound B) that had a mound-top structure in addition to a large number of burials within the mound (Polhemus 1987).

Many platform mounds show evidence of multiple construction stages (Blitz and Livingood 2004; Lindauer and Blitz 1997; Schroedl 1998). In some instances, however, even large platform mounds were constructed in a single stage (with a single summit). This is the case for Angel (12VG1) Mound A (Monaghan and Peebles 2010).

Blitz and Livingood (2004) have made some important observations regarding mound size and site duration. In an examination of 35 excavated mounds located throughout the Southeast, they found that the size of mounds at single mound sites does correlate with the length of time the site was occupied, but the correlation at sites with a small number of mounds is less strong. There is not a correlation between occupation length and size of mounds at sites with a large number of mounds (nine or more) (Blitz and Livingood 2004; Livingood 2010:13). This study not only guides researchers in how to interpret differences in mound size at various sites but also highlights the issue of variation in Mississippian societies. It seems that small chiefdoms were affected by different sociopolitical factors, such as role and authority of the chief and ceremonial conventions regarding mound construction (Livingood 2010:14).

Mississippian mounds had a variety of forms and functions, which had different social and political significance. Some mounds had predominantly mortuary functions. Mississippian conical and loaf-shaped mounds appear to have served mainly as repositories for burials, and are referred to as burial mounds (Pauketat 2004, Knight and Steponaitis 1998). Some platform mounds also contain burials but also have evidence for structures on their summits (like Mound B at Toqua). Burial mounds can be accretional- building up over time, have several distinct levels, or represent a single depositional episode.

It is apparent that equating all mounds with chiefdom capitals is too simplistic. Mound forms differ between and within regions. The sociopolitical significance of burial mounds is not as clear an indicator of a chiefdom capital but is evidence for differential status within the population. Platform mounds are most clearly associated with political capitals; the association between other types of mounds with political capitals is less certain.

1.3 Mound Sites and Chiefdom Spacing

Hally has developed a chiefdom spacing model based on a study of 47 mound sites in northern Georgia and adjacent regions of Alabama and Tennessee (1993; 1996). As discussed above, he assumes that Mississippian sites with platform mounds served as administrative centers for Mississippian chiefdoms. He dates the existence of a chiefdom by dating construction stages and use of platform mounds. By accurately dating mound construction and mound use, Hally was able to document which mound sites in his sample served as chiefdom capital at the same time.

He found that contemporary Mississippian mound sites were either spaced less than 18 km or greater than 31 km apart (Hally 1993; Hally and Langford 1988, Hally et al. 1978, King 2003). Hally concludes that mound sites spaced less than 18 km apart represent primary and secondary administrative centers within a complex chiefdom, whereas those spaced greater than 31 km apart represented the administrative centers of separate chiefdoms.

In an investigation of mid-sixteenth century sites in northeast Alabama, northwestern Georgia, and southeastern Tennessee, Hally, Smith and Lankford (1990) found that individual chiefdoms had a maximum of seven residential sites and that of towns within each polity were distributed at 3 to 5 km intervals along rivers for a maximum distance of 20 km This core residential area was surrounded by a buffer zone of at least 10 km (usually 20-30 km or more) (Hally 1993; Hally et al. 1990). This size would allow chiefs to easily visit all towns in their polity and allow all citizens to visit the capital for ceremonies and other purposes within half a day’s travel. A recent study by Livingood (2012) measuring travel times found that the maximum 20 km radius proposed for polities in Georgia involved six hours of travel.

From his research in northern Georgia, Hally also concludes that polities tend to last around 100 years, after which time populations are dispersed and join other existing polities or form new polities elsewhere (Hally 1996). Abandoned mound sites are frequently reused as administrative centers for new polities after approximately 100 years (Hally 1996).

The objective for a mound site spacing model is to translate the archaeological evidence into a picture of the political landscape being examined. Such a model takes a series of mound site locations and gives them meaning in terms of how Mississippian people were organized politically. Before assuming that it is valid for all Mississippian polities, it is necessary to test the applicability of such a model, which was developed from data in one region, to other regions.

1.4 Thesis

Mound sites in the Middle Cumberland region have a different spatial pattern than documented by Hally in northern Georgia. Middle Cumberland Mississippian mound sites are on average three times closer than sites in northern Georgia (Chamblee et al. 2012). This concentration of mound sites is increased by the fact that Mississippian chiefdoms in the Middle Cumberland region lasted only until A.D. 1450, a full one hundred years less than in northern Georgia. There could be several explanations for the relatively high concentration of Mississippian mound sites recorded in the Middle Cumberland region. It is possible that most mound sites were minor centers in a relatively small number of complex chiefdoms. Alternatively, it is possible that most chiefdoms lasted for only brief periods of time with the result that most were not contemporary. A third possibility is that the high concentration of chiefdoms in the region is due to their small spatial size.

To understand the temporal and political relationships among Middle Cumberland mound sites it is necessary to know which mound sites were contemporary (Schroedl 1998:66), how long each served as an administrative center, the spatial distance between contemporary mound sites, and the size of each polity. As it would not be possible to precisely date the roughly 50 recorded mound sites in the Middle Cumberland region in this dissertation, I examined a subset of five adjacent mound sites located on the eastern edge of the Middle Cumberland region (Figure 1.3). The sample sites are Rutherford Kizer (40SU15), Castalian Springs (40SU14), Sellars (40WI1), Beasley Mounds (40SM43), and Moss Mounds (40SM25).

To understand the temporal and political relationships among Middle Cumberland mound sites in my sample, I attempt to date mound construction and site occupation and determine when each site served as chiefdom capital. I precisely date these five mound sites by developing a more refined ceramic chronology and using a large number of radiocarbon dates. I compare site size, type, number, and size of mounds, and burial elaboration to determine whether some sites may have served as primary and others secondary centers in a complex chiefdom.

To evaluate Hally's mound site spacing model and determine if it could be used to identify individual polities in the Middle Cumberland region, I measured the distance between contemporary mound centers in my sample. The Middle Cumberland mound sites investigated in this dissertation are all spaced within 31 km of a neighboring mound site (Table 1.1). In one case the mound sites are spaced 17 km apart and have the potential to represent a complex chiefdom, conforming to Hally's model. The other pairs of sites are spaced greater than 18 km but less than 31 km apart. In order for the latter sites to conform to the northern Georgia pattern, they would have to have served as polity capitals at different times.

In order to understand why there might be differences in chiefdom spacing between regions, I recorded habitation site clusters around mound centers to estimate polity core area size and buffer zone size. I also explored environmental and social variables in the Middle

Cumberland region that could have been a factor in the spacing and location of Middle Cumberland mound centers. Factors that might influence polity size include agricultural potential of land, the climate of violence, power and influence of a chief, and location of other chiefdoms. These factors varied between regions and through time within the Mississippian world.

1.5 Project Significance

The expansion of urban Nashville by mid-late 1800s heavily impacted the majority of the mound sites in the heart of the Middle Cumberland region. The suburban expansion in the 1960s-1990s rapidly impacted mound centers at a greater distance from Nashville (Arnold/Hayes, Gordontown, Rutherford-Kizer).Therefore, the mound centers that survive with some degree of integrity on the edge of the Middle Cumberland region are the primary ways that museum collections and historical documentation can be placed in a modern scientific context. Although the sites in this study are distant from the heaviest concentration of mound sites in the Middle Cumberland region, their archaeological integrity and the ability to conduct systematic, planned archaeological research on them provides the only opportunity to conduct large-scale, detailed examination of spatial and temporal relationships of sites in the Middle Cumberland region. This research lays the groundwork for additional re-examination of less systematic collections and smaller-scale investigations of the remaining parts of major mound sites that have been large destroyed.

The Castalian Springs project is particularly important in this regard. It is the first long-term research project on a Mississippian site in the region. Prior projects were smaller-scale, shorter-term research programs on state lands (Sellars, Mound Bottom) or larger-scale shorter-term salvage or cultural resource management projects (Rutherford Kizer, Brentwood Library).

The ceramic assemblage from Castalian Springs represents the largest, best-controlled, and dated assemblage to shed light on other smaller scale or salvage projects assemblages.

Mississippian societies throughout the southeast and mid-South shared many characteristics including political organization. There is, however, variation in this broad, general pattern from region to region. In my research, I explore whether Mississippian chiefdoms in northern Georgia and the Middle Cumberland region differed in size, spacing, and duration and the potential sources in variation of these chiefdom characteristics.

By definition, chiefdoms share the characteristics of being politically centralized and consisting of multiple communities within a hierarchically organized society. The research presented here explores whether chiefdoms exhibit certain other regularities in their organization and if these regularities may vary in predictable ways due to regional variations in environmental or social factors, or whether they vary in fundamental and unpredictable ways as a result of chance historical factors.

1.6 Overview of Chapters

Through a detailed examination of five Mississippian mound sites on the eastern edge of the Middle Cumberland region, I construct the history of each site and assess how these sites related to one another temporally and politically. This information will advance our understanding of how chiefdoms related to each other by exploring factors that may have contributed to differences in polity spacing between regions.

In Chapter 2 the physical environment of the Middle Cumberland region is described. The affect on Mississippian occupants of the varied landscape, climate, and other features of the region is discussed. Chapter 3 provides an overview of the Mississippian period in the Middle Cumberland region. Common traits of material culture, architecture and burial patterns and well as settlement systems are reviewed. A detailed description of each site in the study area is presented in Chapter 4, including both early and modern archaeological explorations. I also discuss specific contexts from which ceramic samples used in this investigation were obtained.

In Chapter 5 I give a detailed description of ceramics in the Middle Cumberland region, with particular emphasis on type/variety categories and vessel forms. This chapter explores ceramic variability in the Middle Cumberland region and lays the groundwork for the ceramic chronology described in Chapter 6. In Chapter 6 I review the ceramic evidence used to refine the ceramic chronology for the eastern portion of the Middle Cumberland region. The specific histories for the sites in the sample are discussed in Chapter 7. The differing ceramic style attributes present at the Beasley and Moss mound sites are explored in Chapter 8. In Chapter 9, the previously proposed model of chiefdom spacing is compared to these results from the Middle Cumberland region. I discuss factors that may have contributed to chiefdom spacing and location.

Table 1.1: Direct-Line Distances between Sites in the Sample (km).

	Rutherford Kizer (40SU15)	Castalian Springs (40SU14)	Sellars (40WI01)	Beasley (40SM43)	Moss (40SM25)
Rutherford Kizer		26.6	37.9	47.3	61
Castalian Springs	26.6		26.2	22.2	38.2
Sellars	37.9	26.2		24.2	28.4
Beasley	47.3	22.2	24.2		17
Moss	61	38.2	28.4	17	

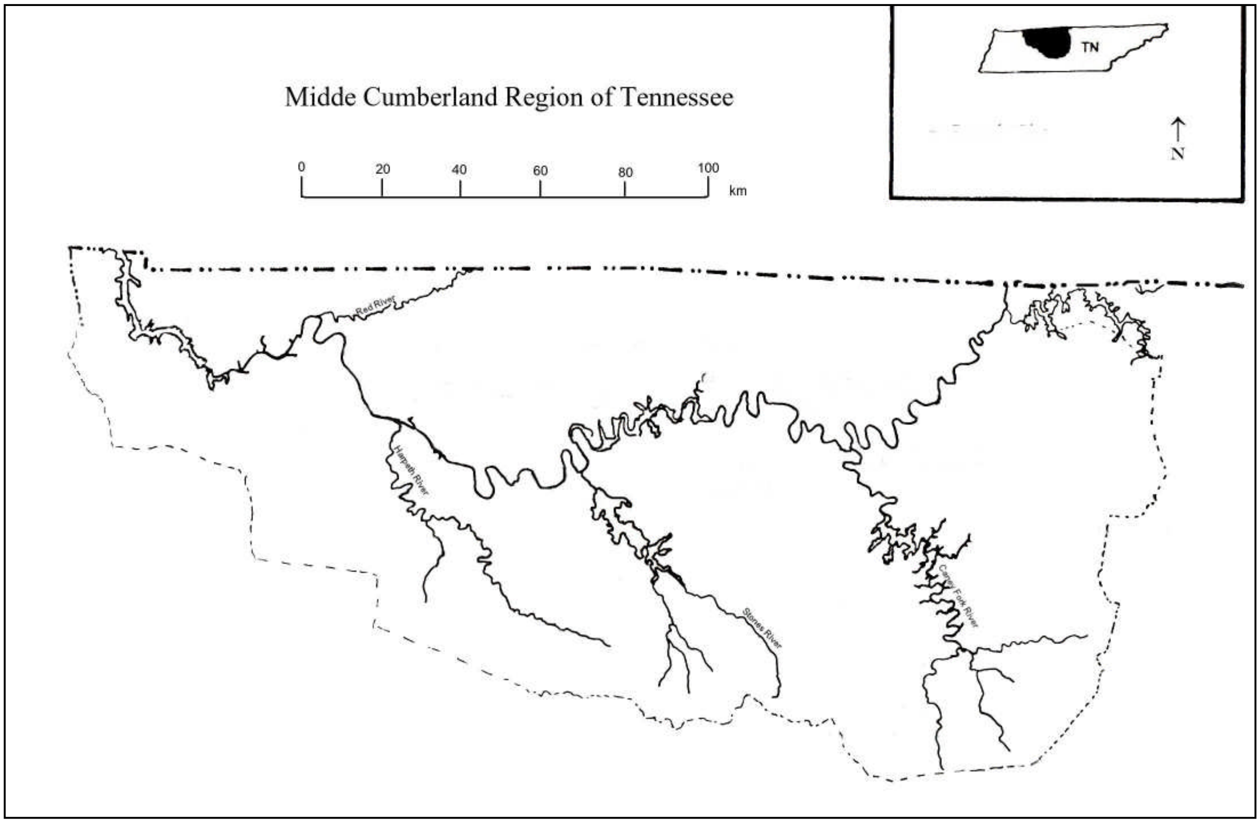

Figure 1.1: Middle Cumberland Region of Tennessee.

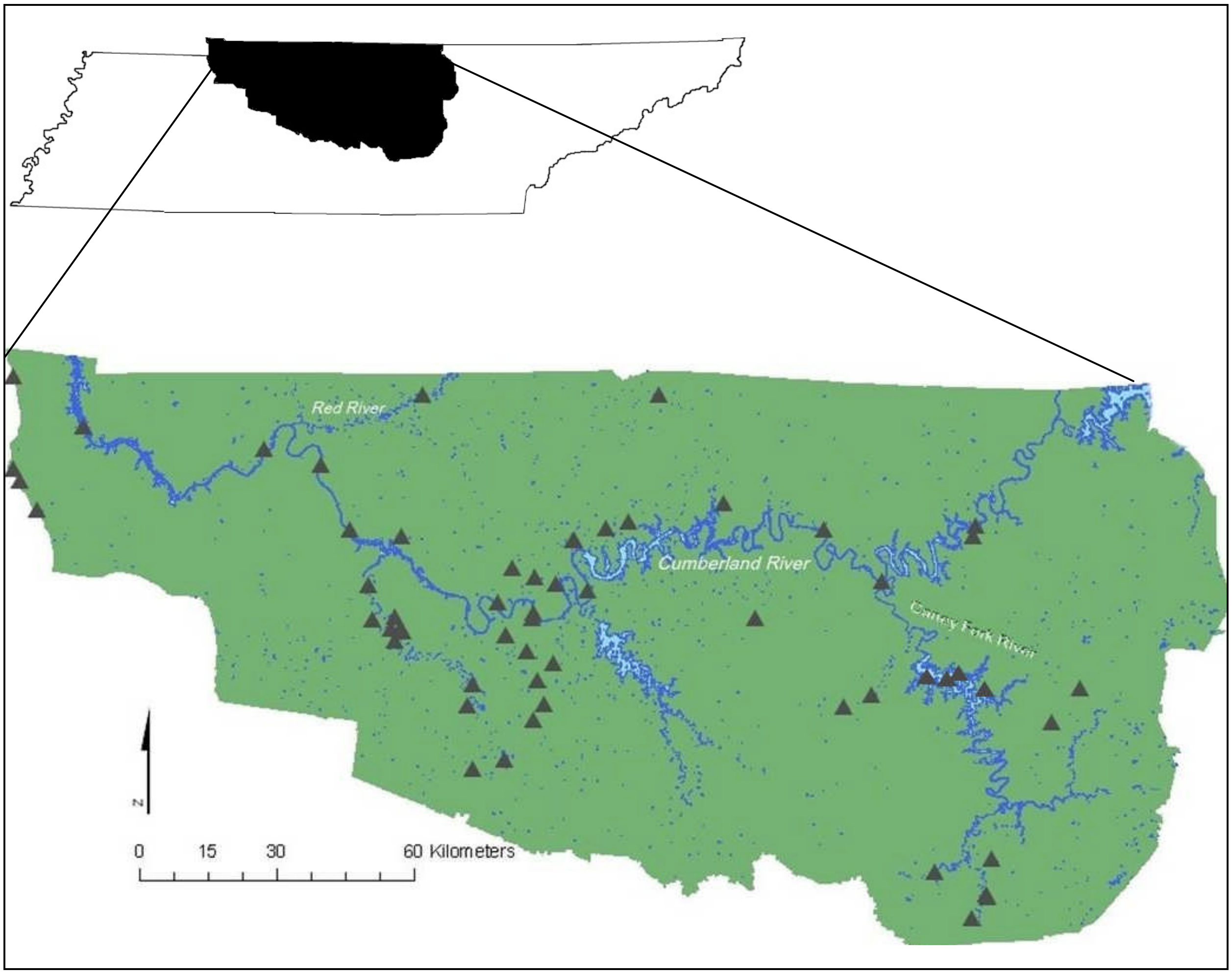

Figure 1.2: Recorded Mississippian Mound Sites in Middle Cumberland Region (data from Tennessee Division of Archaeology Site File Database).

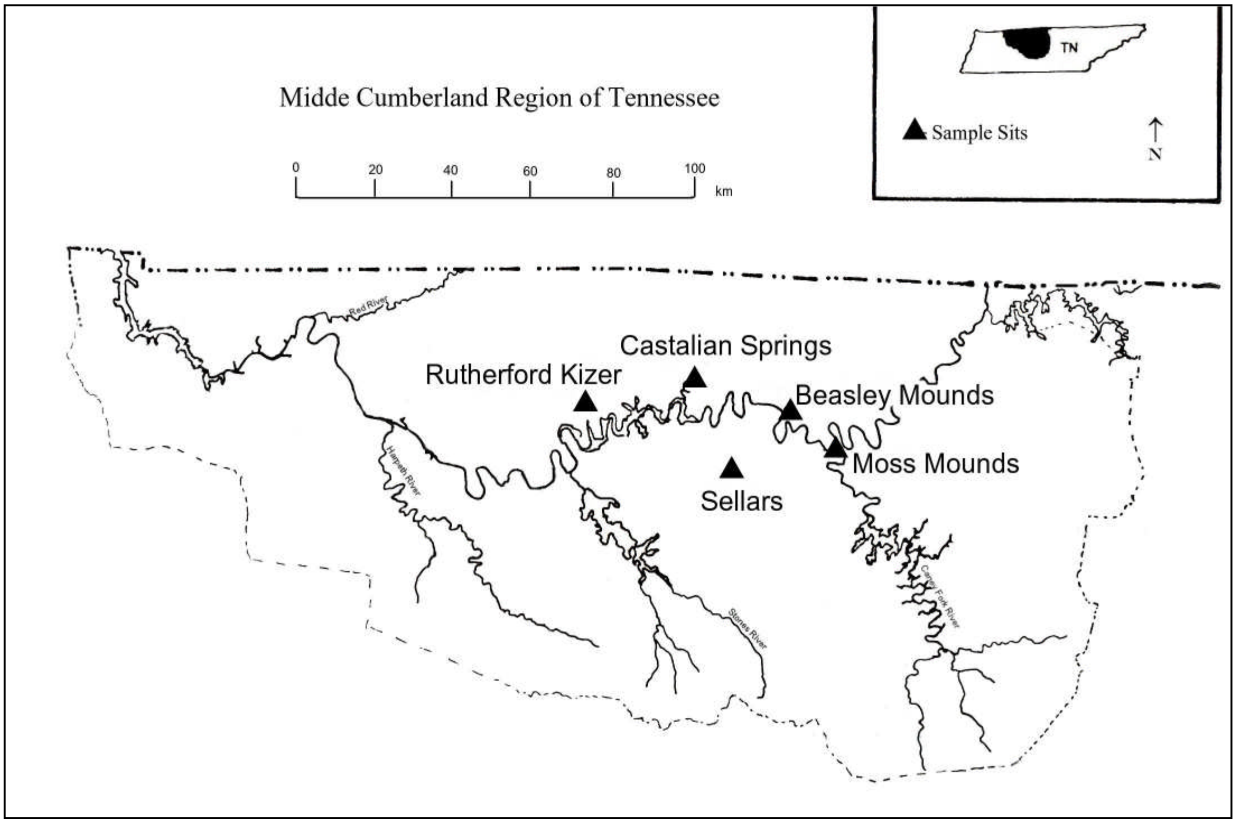

Figure 1.3: Mound Sites in Sample.

CHAPTER 2

MIDDLE CUMBERLAND REGION LANDSCAPE AND ENVIRONMENT

The research questions addressed in this dissertation are concerned with chiefdom location, size, and interaction between chiefdoms. Environment plays a critical role in where people live and how they interact with one another. Therefore, this chapter examines the landscape and environmental features in Middle Cumberland region and explores the ways these environmental characteristics influenced Mississippian settlement locations and interaction.

2.1 Climate

The transition from the Pleistocene to the Holocene around 8000 B.C. is marked by a warming and drying climate with greater seasonal changes (Anderson and Hanson 1988; Delcourt 1979). After the Hypsithermal warm period between 7000-3000 B.C., the climate and flora of Middle Tennessee was relatively similar to current conditions (Anderson and Hanson 1988; Davis 1984:176; Delcourt 1979: 270). There does seem to have been a number of climatic fluctuations at varying scales since 6000 B.C. including some that likely had significant impact on late prehistoric inhabitants (Little 2003; Mayewski et al 2004). A series of droughts in North America documented during the Mississippian period likely negatively impacted Middle Cumberland residents' agricultural way of life (Anderson et al. 1995; Benson et al. 2007; Cook et al. 2007). Droughts occurring between A.D. 1344 and 1353 and between A.D. 1379 and 1388 probably had substantial effects on Middle Cumberland residents (Cook et al. 2007). As Cook et al. (2007:112) suggest, a drought that occurred between A.D. 1449 and 1458 may have been a contributing factor in the depopulation of the Middle Cumberland region as part of the Vacant Quarter phenomenon.

2.2 Physiographic Regions

Tennessee's modern environment is quite diverse. The state is divided into 11 physiographic regions (Figure 2.1). From east to west they are the Blue Ridge Mountains, Ridge and Valley, Cumberland Mountains, Cumberland Plateau, Sequatchie Valley, Eastern Highland Rim, Central Basin, Western Highland Rim, West Tennessee Uplands, Coastal Plains, and Mississippi Floodplain. Table 2.1 shows elevation and climatic data for the physiographic regions of interest in this study. Differences in geology and climate affect soil, vegetation and wildlife, which in turn affected the way prehistoric inhabitants of Middle Tennessee interacted with their environments.

2.2a Cumberland Plateau

The Cumberland Plateau runs roughly north to south, extending from northern Alabama and Georgia to Kentucky and Virginia (Wilson and Stearns 1958). In Tennessee, the Cumberland Plateau physiographic region is 50 to 80 km wide with an average elevation of 610 m AMSL, making it higher in elevation than the adjacent regions (Figure 2.2). Most of the area has a gently rolling topography although large streams create steep gorges, especially in the northern part of the plateau. The eastern edge of the plateau is very steep and only a few gaps permit passage onto the plateau itself, the best known being the Cumberland Gap. The plateau escarpment on the western edge is less abrupt and is more irregular due to several deeply-cut drainages (Griffith et al. 1998; Miller 1974).

The Plateau is composed of sedimentary layers of sandstone, siltstone, shale, and coal (Stearns 1954). Soil is thin, acidic and generally unfertile. Today the land is mostly forested and used for mining, grazing livestock and growing fruit trees (Glenn 1915; Griffith et al 1998).

The Cumberland Plateau has a variety of microenvironments. In small valleys on north and easterly facing slopes, mixed hardwood species include beech, black walnut, red oak, white oak, hemlock and buckeye. Oak, hickory, and several species of pine grow on south and westerly facing slopes, whereas in flood plains willows, sycamores, river beech and sweetgum can be found (United States Department of the Interior [USDI] 2006:400-401). Common animal species in this region include white-tailed deer, raccoon, cottontail, gray squirrel, fox squirrel, mink, ruffled grouse, and woodcock (USDI 2006:401).

There are 55 archaeological sites with Mississippian components recorded on the Plateau in the Tennessee site file database (Tennessee Division of Archaeology Site Survey Files [TDOA]). Sixty-four percent of these are cave or rockshelter sites. These likely served as short term hunting or gathering camps for seasonal exploitation of resources, although it is possible that individual farmsteads were supported by small scale farming (Gremillion et al. 2008). Eighteen of the 20 Mississippian open habitation sites (camp, farmstead, hamlet or non-mound village sites) on the plateau are in floodplains or in small valleys.

Four Mississippian mound sites are documented on the Plateau. Three of these are located on the floodplain or on islands of the Tennessee River, far to the south of the study area. Frogge Mound (40FN180) is located in northern Tennessee, 95 km from the nearest site in the study area (Moss). This plateau mound site is located on the floodplain of the Wolf River.

2.2b Eastern Highland Rim

The Eastern Highland Rim, west of the Plateau, is about 40 km wide with an area of approximately 6500 km² (Luther 1977). The Eastern Highland Rim has nearly level terrain although there are a few major areas of karst topography with sinkholes and caves (Miller 1974). The soil is generally low in fertility and the climate of the Highland Rim is milder than the climate of the Cumberland Plateau (Miller 1974; Smith and Moore 1996a).

The Eastern Highland Rim's vegetation is mostly oak-hickory forest, though yellow poplar is common in some locations (USDI 2006:395). Grasses such as little bluestem and broom sedge, vines and hedges are found in the understory (USDI 2006:395). Native animals common in the region include raccoon, skunk, opossum, cottontail, gray squirrel, fox squirrel, bobwhite quail, and mourning dove (USDI 2006:395). Common fish in this region are carp, largemouth bass, and bluegill (USDI 2006: 395). Today this area is mostly farmland and pasture, the most common crop is hay with some corn, cotton, soybeans and tobacco grown (USDI 2006:395).

Mississippian sites recorded in the Eastern Highland Rim are predominately open habitation sites. Nine Mississippian mound sites are recorded in this physiographic region, all of which are located on the floodplains of tributaries to the Caney Fork River (TDOA) (Figure 2.3). The comparatively small number of mound sites in this physiographic region as compared to the Outer Central Basin is likely due to the generally low soil fertility.

2.2c Central Basin

The Central Basin, also known as the Nashville Basin, lies in the center of the state. It covers an area of 15,280 square kilometers extending from 16 km north of the Cumberland River to Northern Alabama (Edwards et al. 1974; Fenneman 1938; Luther 1977). The Central Basin was formed around the end of the Orodovican Period, or about 430 million years before present (Miller 1974). At that time, the central part of the state was uplifted creating a structural dome called the Nashville Dome, in a process called "Taconic orogeny" (Holland and Patzkowsky 1997:250). This uplift was caused when the eastern edge of North America collided with another land mass. As the dome pushed upward, the limestone layers were cracked as they arched. This cracking allowed for erosion of the already soft and soluble limestone (Luther 1977).

The Central Basin is divided into an Inner and an Outer portion. The Inner Central Basin is relatively smooth in topography (Miller 1974). Bedrock occurs at a shallow depth in the Inner portion of the basin, in some places at or just below ground surface (Springer and Elder 1980). This is the cause for cedar glades, which are present in a large portion of Inner Basin. Plants specially adapted for cedar glade environments include sedges, grasses and Eastern red cedar (Baskin and Baskin 2004; Griffith et al 1998; Harper 1926; Quarterman 1950). Limestone that underlies the inner portion of the basin is low in phosphate, creating low soil fertility. Most of the limited agriculture done in the Inner Basin is located on floodplains or old stream terraces (Springer and Elder 1980).

The Outer Central Basin has steep slopes and narrow valleys with elevations reaching 365 m. Almost all of the Outer Basin is underlain by phosphatic limestone, yielding soils medium to high in phosphorus and correspondingly high fertility (Mooers 1910; Springer and Elder 1980). As described by Mooers, "A marked change…takes place…when the [Eastern Highland] Rim has been crossed and the rich limestone area of the Central Basin is entered" (1910:51). Today, this area is generally used as pasture and for growing hay (Griffith 1998).

The Central Basin is part of the Temperate Deciduous Forest Biome as defined by Shelford (1963). The Central Basin is characterized as an oak-hickory forest, with extensive areas of cedar glades (Griffith 1998). Common animal species for the region include white tailed deer, raccoon, cottontail, gray squirrel, bobwhite quail, and mourning dove (USDI 2006:396).

The majority of recorded mound sites in Middle Tennessee are located in the Outer Basin (Figure 2.3) (TDOA). There are few Mississippian sites located in the Inner Basin. This is likely a result of the generally poor soil fertility and very shallow bedrock which would not support large communities engaged in maize agriculture. The only mound site located in the Inner Basin, Sellars, is on a tributary of the Cumberland.

2.3 The Cumberland River

The Cumberland River originates in Letcher County, Kentucky where the Poor Fork, Clover Fork, and Martins Fork come together. With a total length of 1120 km, it stretches from eastern Kentucky, southwestward into Middle Tennessee, and then veers north back into western Kentucky where it flows into the Ohio River (Figure 2.4) (White et al. 2005:390). The five main tributaries of the Cumberland in Tennessee are the Big South Fork, Caney Fork, Obey River, Harpeth River and Red River (McCague1973; White et al. 2005:391).

The Cumberland River is one of the most impounded rivers in the United States. There are 15 locks and dams along the Cumberland River (McCague1973; White et al. 2005). Although the river is more or less in the original river channel, the shoals and pools that were once common along the river are no longer present and the width of the river was increased beginning around 1820 to make the river navigable for steamboats (McCague 1973; White et al. 2005). The flow of water and water level for most of the river is regulated by the locks and dams along it. This impoundment has also altered the aquatic and floodplain flora and fauna.

The Cumberland River has a high fish and invertebrate diversity (White et al. 2005:394). It has the second highest mussel diversity in North America (Parmalee and Bogan 1998; White et al. 2005:394). There are over 170 fish species in the Cumberland River drainage, with the greatest diversity at the margin of the Plateau and Eastern Highland Rim (White et al. 2005:394). Fish found in the Cumberland River include minnows, shiners, chubs, dances, darters, suckers, sunfishes, and catfishes (White et al. 2005:394). Common turtle species include snapping turtle, stinkpot, mud turtle, common map turtle, midland painted turtle, spiny soft shell turtle and smooth soft shell turtle. Blue herons, coots, mallards and geese are common, as are beaver, muskrat and otter (White et al. 2005:395).

Of the 55 recorded mound sites along the Cumberland River and its tributaries in Tennessee, 13 are located directly on the Cumberland. Eleven mound sites are located on the Caney Fork or its tributaries, whereas 14 are located on the Harpeth River and its tributaries. The remaining mound sites are located on other smaller tributaries of the Cumberland River.

2.4 Salt and Mineral Springs

The Central Basin of Tennessee is a region with karst topography, characterized by sink holes, caves, and springs (Farmer and Williams 2001; Taylor et al 2005). The mineral composition of the spring water varies depending upon the underlying bedrock over which it flows. Common types of minerals found at mineral springs include sodium, calcium, magnesium, chloride and sulfate (Aycock and Haugh 1999:14). Salt derived from spring water would have been a valuable and tradable commodity to be controlled by chiefs in the region.

Very thick sherds from large, shallow pans are found throughout the Eastern Woodlands. This vessel form is largely thought have been used in the manufacture of salt through the evaporation of salt or mineral water. It has been observed that sites located near salt or mineral springs have a higher percentage of pan fragments than sites located some distance from such springs (Brown 1980; Smith and Beahm 2005). The vessel type is also found at sites not located near springs, indicating that it had other uses as well. The open orifice and easy access to contents of pans would function well as a serving vessel (Hally 1986).

Several methods of evaporating salt water have been proposed. The pans may have been heated with a fire to expedite the evaporation process (Brown 1980; Wentowski 1970:47). The large quantity of celts for wood cutting, and hearths found at the Hardman site in Arkansas suggests the boiling method, at least at that particular site (Early 1993:228). Salt production was recorded by a number of early European explorers. For example Diron D'Artagillette records in his journal:

> The habitants use it to make salt, which they make by boiling the water in caldrons till a certain amount has been boiled away, and when this is done, the water crystallizes of itself and forms a fairly good salt [1916:68-69].

It is possible that in some cases these pans were simply left out in the sun and the water evaporated through solar radiation. The large orifice diameter and shallow basin of this vessel form would have allowed for efficient water evaporation. A third option is that evaporation was accelerated through the use of heated rocks. At the Kimmswick site in Missouri, Bushnell (1907) reports finding pans in situ with stones that had been exposed to heat within and around the pans. All of these methods may have been used at difference times and/or in different locations. The level of efficiency of these methods depends on vessel dimensions, water composition, air temperature and humidity (Akridge 2008).

2.5 Environmental Influences on Polity Location

The Middle Cumberland region has one of the densest concentrations of Mississippian mound sites in the southeast (Figure 1.2). In order to understand the social and political aspects of Mississippian polity extent and spacing, it is necessary to understand the environmental influences that would have been at play in the selection of a settlement location. At the most basic level, the abundance of native plants and animals and suitability for agriculture restricted how large a population could be supported in a certain location. Therefore the carrying capacity of a particular environ would limit how large a population could be sustained. In the same way, the amount of land needed to provide sufficient food for a population would affect how large spatially a polity territory would need to be.

Access to suitable agricultural land seems to have been a major consideration when selecting settlement locations as can be seen in the relatively scarce occupation of the Inner Basin, Eastern Highland Rim, and Cumberland Plateau. The shorter growing season, steep slopes and unfertile soil on much of the Plateau would make sustaining a substantial concentrated population difficult. The relatively poor soil fertility and shallow bedrock would have made most the Inner Basin and Eastern Highland Rim unattractive to agricultural populations. Mound and habitation sites in these physiographic regions are located in areas of higher soil fertility and level terrain. The environment of the Outer Basin would have been better suited for agricultural activities with its fertile soil and wider floodplains (Jolley 1982).

It has been suggested that the presence of salt springs around the Nashville Basin enticed animal populations to congregate in the area and also provided a trade good for Mississippian populations (Jolley 1982). Historic Native American trails indicate that Nashville was a center of travel (Myer 1928a). Jolley proposes that this was the case during the Mississippian period (1982). It is reasonable to expect that the flow of people and goods through the area would have encouraged a substantial population to settle in the region and chiefdom political organization to be supported.

The environment of the Middle Cumberland region also played a role in how Mississippian occupants interacted with their neighbors both inter-regionally and intra-regionally. The Cumberland River likely facilitated transportation, trade, and communication along its course. Thus it may be expected that Middle Cumberland residents regularly interacted with polities located along the Cumberland River both upstream in eastern Kentucky and downstream in western Kentucky.

In contrast, rough terrain likely impeded travel between Mississippian polities. The Cumberland Plateau likely acted as an impediment to regular interaction between people on either side. Transportation of trade goods would have been especially challenging over the steep gorges and rugged terrain. The Plateau runs east and southeast of the sample sites (Figure 2.5) and effectively acted as a boundary between people on the eastern edge of the Middle Cumberland region and people in southeastern and eastern Tennessee.

In sum, the environment of Middle Tennessee influenced decisions about where Mississippian people located. The Outer Central Basin has the most agricultural potential in the region, and correspondingly had the largest number of Mississippian mound sites of any physiographic region in the Middle Cumberland. The diversity of riverine resources of the Cumberland River and its tributaries was also attractive to Middle Cumberland Mississippians. In addition, the river increased transportation and communication efficiency which would have been useful in trade and warning of impending attacks. Middle Cumberland Mississippians also chose site locations that were in close proximity to salt and mineral springs, valuable natural resources in the area.

Table 2.1: Modern Environmental Features of Selected Physiographic Regions in Tennessee (from Griffith et al. 1998).

Physiographic Region	Elevation (meters AMSL)	Mean Annual Temperature Jan low/July high (degrees F)	Freeze Free Days	Mean Annual Rainfall (cm)
Cumberland Plateau	365-610	24 / 85	180-200	122-152
Eastern Highland Rim	245-395	25 / 88	190-210	132-142
Outer Basin	150-365	25 / 89	190-210	122-137
Inner Basin	150-275	25 / 90	190-210	122-135

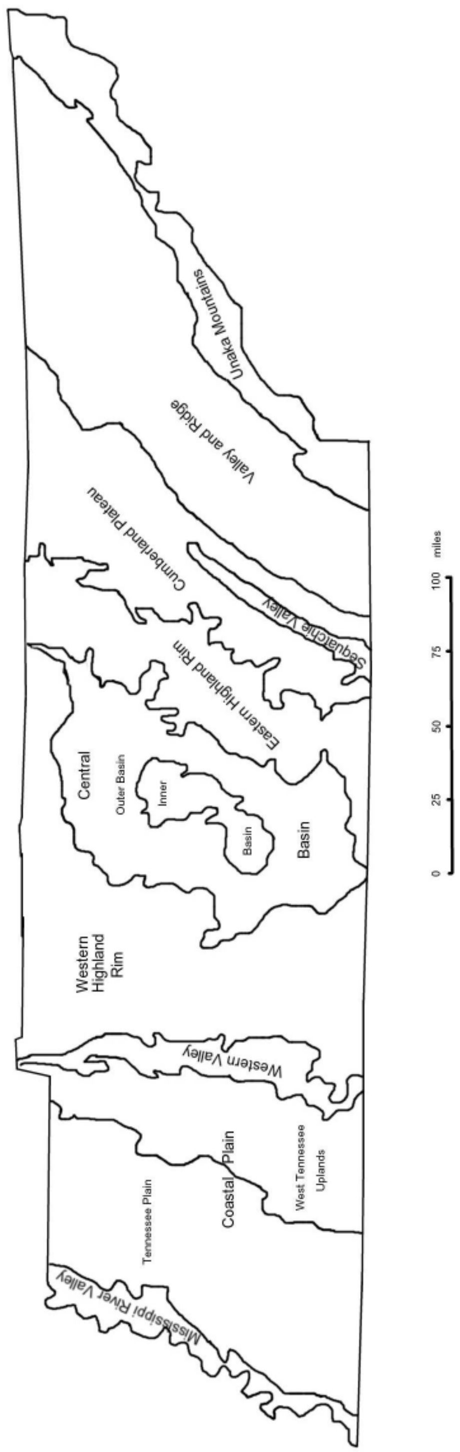

Figure 2.1: Physiographic Regions of Tennessee (adapted from Moore and Smith 2001:Figure 8, pg 15).

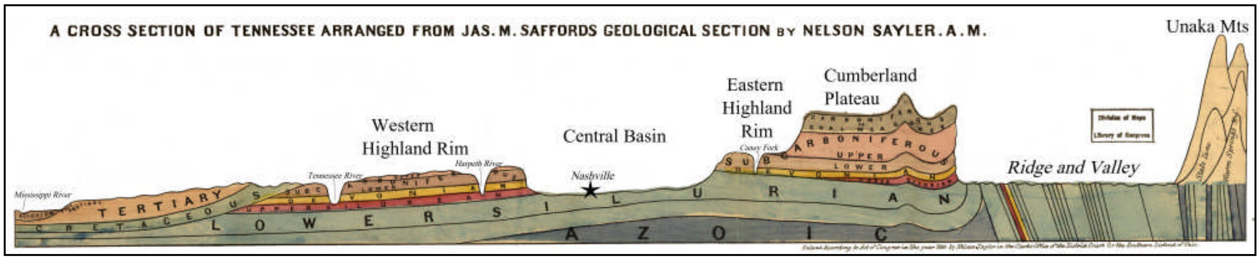

Figure 2.2: Cross Section of Tennessee Showing Elevation Differences (Sayler 1866, Library of Congress).

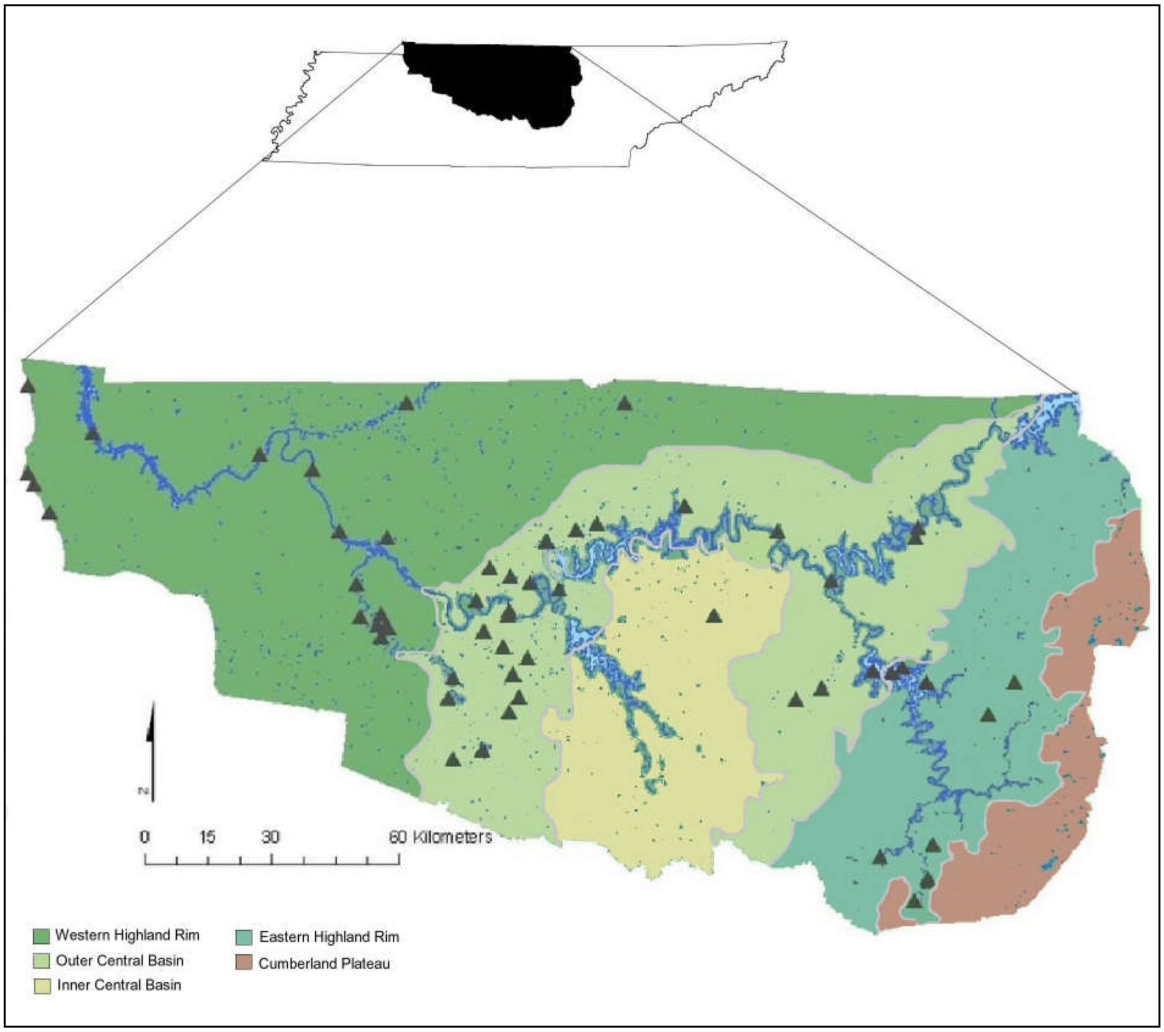

Figure 2.3: Mound Sites in Middle Cumberland Region in Relation to Physiographic Regions. Regions shown: Cumberland Plateau, Eastern Highland Rim, Outer Central Basin, Inner Central Basin, Western Highland Rim.

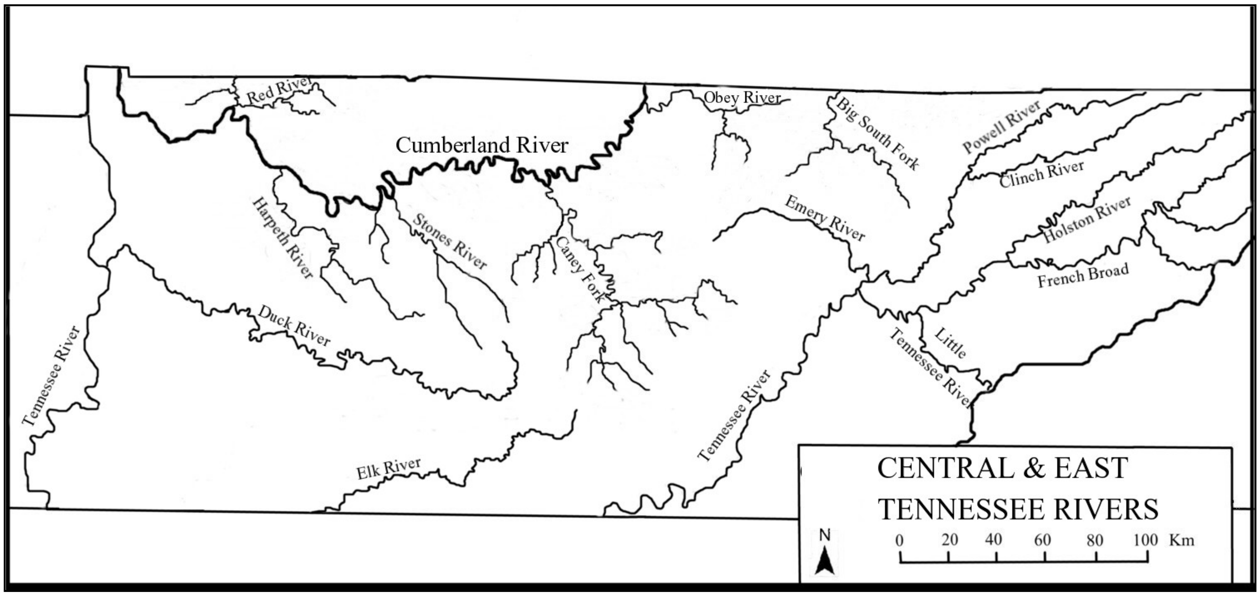

Figure 2.4: Cumberland River in Tennessee.

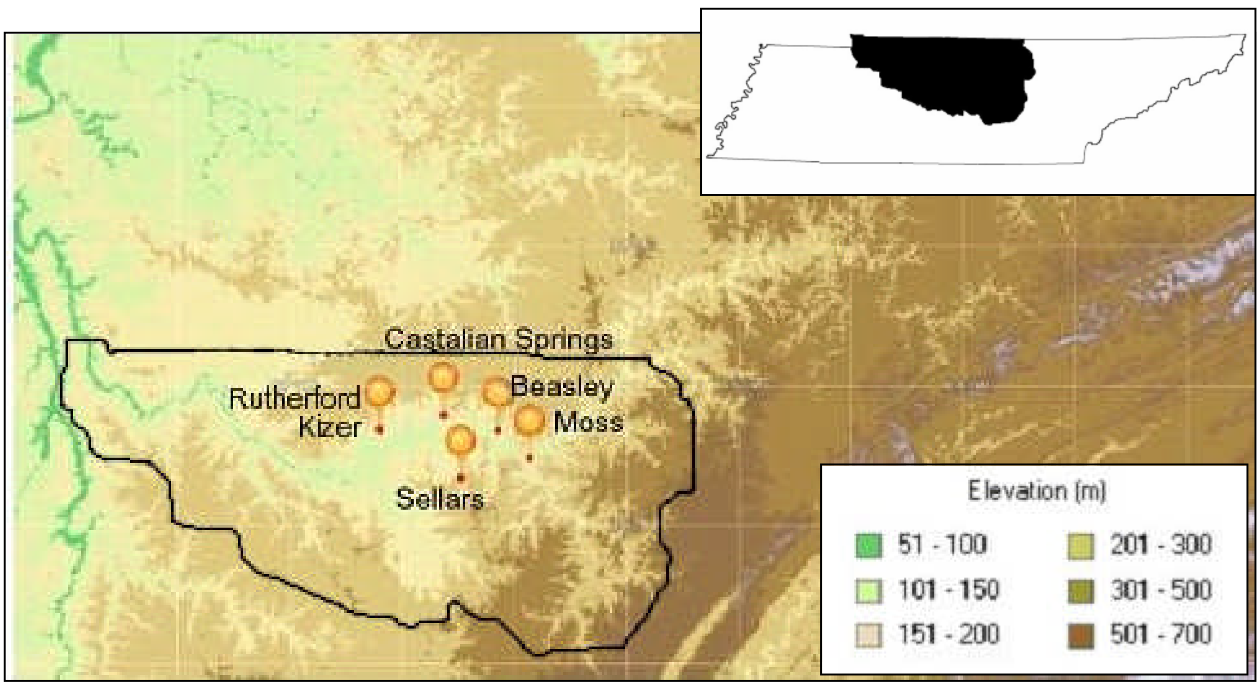

Figure 2.5: Map of Sample Sites Showing Variation in Elevation.

CHAPTER 3

THE NATURE OF MISSISSIPPIAN CULTURE IN THE MIDDLE CUMBERLAND REGION

To a researcher from Middle Tennessee, it seems as though the Middle Cumberland region is often left out in larger discussions of Mississippian cultures. This is not because the region has gone unexamined. Antiquarians since the early 1800s explored and published information on Mississippian sites along the Cumberland and its tributaries in Tennessee. A significant number of modern excavations have taken place at Middle Cumberland Mississippian sites as well. While as of yet there is no published synthesis of Middle Cumberland Mississippian archaeology, Smith's 1992 unpublished dissertation as well as many presented papers, published articles, and research reports provide a clear picture of the nature of Mississippian culture in the Middle Cumberland region.

3.1 Historical Exploration and Documentation of Middle Cumberland Sites

One of the main variables in the research presented here is distance between contemporary mound sites. The five sites examined in detail in this dissertation are recorded in the Tennessee Site File Database. While extensive, this database does not have a record of all Mississippian mound sites that once existed in the Middle Cumberland region. An extensive survey of the area is one way that any additional mound sites in the area could be detected. However this approach is not feasible for the current study. Many Middle Cumberland mound sites are located off the Cumberland River on secondary tributary streams, and many of them have been altered or destroyed by farming practices and development. Time, money, and gaining owner permission limit the area that could be covered by such a survey. An alternative is to examine historical sources dealing with archaeological sites in the area. Several researchers from the late nineteenth and early twentieth century took an interest in the prehistoric inhabitants of the Middle Cumberland region. At that time mounds were more visible and site destruction much less. Although early archaeological explorers did not following today's rigorous scientific methods, the results of these archaeological explorations have the potential to provide important information for researchers today. What follows is a brief overview of individuals who were active in early explorations at Middle Cumberland sites.

3.1a John Haywood and Raph E.W. Earl

John Haywood was born in 1762 in North Carolina, and taught himself law. He served as a Supreme Court judge for both North Carolina, and then for Tennessee when he moved outside of Nashville in the early 1800s (Colyar 1891). Haywood published on law, but he also published two volumes on the history of Tennessee: *The Civil and Political History of the State of Tennessee from the Earliest Settlement up to the Year 1796 including the Boundaries of the State* (1891) and *Natural and Aboriginal History of Tennessee up to the First Settlement therein by the White People in the Year 1768* (1823). Haywood did not conduct fieldwork himself, but he used information from other antiquarians, particularly Ralph E. W. Earl (Haywood 1823:122; Irwin 1998; Kelly 1998).

As Haywood states, "[i]t would be an endless labor to give particular description to all the mounds in Tennessee" (1823:120). However he does describe several mound sites in his *Natural and Aboriginal History* including Mound Bottom/Pack (40CH8/40CH1), McGavock Mound (40DV41), and Cherry Creek Mounds (40WH65) as well as a brief mention of Beasley Mounds (Haywood 1823:169; Myer 1924b). Haywood also published the first description of

Castalian Springs based on the exploration of Earl (Haywood 1823:121-129). This account is particularly important because Earl describes the site as being enclosed by a palisade and bastions, which were not visible to Myer when he visited the site in 1890s.

Ralph E. W. Earl was a portrait painter for Andrew Jackson. He also worked to establish a museum in Nashville (which later became the Tennessee State Museum) and was a founding member of the Tennessee Antiquarian Society, along with Haywood (Stephens 2010:117). He scoured the countryside around Nashville for impressive artifacts to put in this museum (Stephens 2010). Earl is the first to dig at Castalian Springs and his are the first descriptions of the site.

3.1b Joseph Jones

Joseph Jones was trained as a medical doctor and ultimately a professor at the Louisiana University, where many of his letters and notes are held. Jones was a native of Georgia, and for a short time was a professor at the University of Georgia in Athens (Riley 1984:157). He was interested in the Natchez Indians, and explored several mound sites in that vicinity (Jones 1884). Prior to his career in Louisiana, Jones was Nashville’s health officer. It was at this time that he became interested in the prehistory of Tennessee. Jones purchased artifacts from relic hunters, and explored a number of Mississippian sites around Nashville including Traveller’s Rest (40DV11), East Nashville Mounds (40DV4), Old Town (40WM02) and DeGraffenreid (40WM04) (Jones 1876; Miller 1987; Smith 1994). His publication *Explorations of the Aboriginal Remains of Tennessee*, published by the Smithsonian Institution in 1876, provides valuable information on these and other sites in the Nashville area, including sites maps and artifact associations (Jones 1876).

3.1c Gates P. Thruston

Gates P. Thruston was an extensive collector of Tennessee antiquities in the late nineteenth century. He donated his collection to Vanderbilt University, and it was later put on display at the Tennessee State Museum, where it remains today (Smith 1998; Weesner 1981). Most of this collection comes from the Noel Cemetery site (40DV03) in Nashville (Smith 1998; Thruston 1890). Thruston's publication *Antiquities of Tennessee* is not only a catalog of artifacts and associations from the Noel Cemetery, but also provides information on other Middle Cumberland sites, citing the work of Jones and Putnam.

3.1d Frederic Ward Putnam and Edwin Curtiss

Frederic Ward Putnam was the curator of the Peabody Museum of American Archaeology and Ethnology at Harvard University from 1875 to 1909. In 1877, he excavated at five sites in the region; Fort Zollicoffer (40DV32), Travellers Rest, Bosley Farm (40DV426), Brick Church Pike Mound (40DV39), and Sellars (Moore and Smith 2009; Putnam 1878). During this trip, he also made the acquaintance of Edwin Curtiss. Curtiss was a local construction contractor and would go on to conduct archaeological exploration in the region with Putnam's long distance guidance (Moore and Smith 2009:1). Curtiss explored over thirty additional sites in central Tennessee for the Peabody Museum including Rutherford Kizer (Moore and Smith 2009:124-134). After Curtiss' death in 1880, Putnam returned to Middle Tennessee and excavated at the Brentwood Library site (40WM210) and spent a day at another mound site in Williamson county (40WM86) (Moore and Smith 2009).

3.1e William Edward Myer

William Edward Myer was an active avocational archaeologist in Middle Tennessee and Kentucky. He became affiliated with the Smithsonian Institution in 1919. As a result of this affiliation, his unpublished manuscripts and field notes are curated in the Anthropological Archives of the Smithsonian Institution. His unpublished manuscript *Stone Age Man in the Middle South* provides information on archaeological sites from the Upper Cumberland in Kentucky to western Tennessee.

Myer is of particular importance to this research because he conducted excavations at Castalian Springs, including excavation of the burial and platform mounds. In his unpublished notes he gives a detailed description of the site layout and mound dimensions at Beasley. He also briefly describes the excavations at Moss and provides a description of the Rutherford Kizer and Sellars sites (1924a).

Myer's unpublished manuscript *Catalogue of Archaeological Remains in Tennessee* is an effort to inventory all archaeological sites in Tennessee (1924b). In addition to his knowledge of the archaeological resources of the state, Myer solicited information from other Tennesseans who might have had such knowledge. He explains,

> In prosecuting this work we prepared an elaborate questionnaire, with liberal blank spaces for replies… questionnaires were sent to the leading Tennessee educators, local antiquarians, judges and other court officials, and civil engineers employed by the State Highway Department and by the leading railroads in the State[1924b]

Myer published two works in the Bureau of American Ethnology Reports. The first, *Two Prehistoric Villages in Middle Tennessee*, discussed his explorations at the Gordontown (40DV06) and Fewkes (40WM01) sites (1928b). The second publication, *Indian Trails of the Southeast*, is a compilation of historically documented Native American trials in Tennessee and throughout the southeast (1928a). In this publication there is a detailed map of Tennessee with archaeological sites mapped.

For this dissertation research, sites described by Myer in his unpublished notes and on his map of Tennessee from *Two Prehistoric Villages* in and around the research area for this project were matched with known sites when possible. Sites described by Myer that were not recorded in the Tennessee Site File Database were identified and taken into consideration when examining site distributions.

3.2 Mississippian in Middle Tennessee

"Mississippian" is used by archaeologists to mean both a time period (ca A.D. 1000-1500) and a way of life characterized by sedentary maize agriculture, iconographic imagery, shell-tempered pottery, wall trench architecture, and social ranking (Blitz and Lorenz 2006: 3; Welch and Butler 2006:2). Most archaeologists infer political organization in the form of chiefdoms by platform mound construction, settlement hierarchies, and status differentiation based on comparisons with ethnohistorical documentation of early contact southeastern societies and cross cultural comparisons with ethnographically studied chiefdoms.

3.2a Subsistence

In the Southeast, the first evidence of maize is documented in the archaeological record around A.D. 200 (Chapman and Crites 1987). Maize increased in dietary importance during the Mississippian period and resulted in major changes in day to day living and health (Buikstra et al. 1988). Mississippian diet varied substantially from region to region with more or less emphasis on maize and the inclusion of other wild and cultivated plants in addition to hunting (Fritz 1990; Hedman et al. 2002; Scarry 1993; 2003). In a study of Middle Cumberland burials ranging from late Archaic to late Mississippian, Buikstra et al. demonstrate through stable carbon isotope analysis that maize was adopted quickly in the Middle Cumberland region in the Early Mississippian period (Buikstra 1992; Buikstra et al. 1988). They also find evidence of poor health following this transition in Middle Cumberland populations. The late Mississippian burials from the Averbuch site (40DV60) show high percentages of both iron deficiency markers and infection (Eisenberg 1991). The population also shows a high infant mortality rate and low adult survivorship (Buikstra et al. 1988).

Zooarchaeological data from Middle Cumberland sites show that deer was the most common source of meat; while bear and elk were also hunted (Breitburg 1998; Clinton and Peres 2008; Peres 2010). Bear and elk are usually represented by one or more individuals at sites for which there is data (Peres 2010:121). Smaller species such as turkey and eastern box turtle are also well represented in faunal assemblages from Mississippian sites in Middle Tennessee (Peres 2010).

Species present at Middle Cumberland sites live in forest edge and open forests (deer and turkey), forested uplands (bear, box turtle), and aquatic habitats (beaver, softshell turtle, snapping turtle, and fishes) (Peres 2010; Sichler and Moore 2005:206). The forest edge and open forest species were used most often, followed by forested upland species. Forest edge species would also be attracted to areas disturbed by human activities such as agricultural fields and settlement margins. A selective garden hunting strategy was likely practiced at Middle Cumberland Mississippian sites (Clinton and Peres 2008). The low numbers of aquatic species in Middle Cumberland sites may be due in part to sampling strategies, or season use. However data suggest that fish and other riverine resources were not a major part of the Middle Cumberland diet (Clinton and Peres 2008).

3.2b Stone-Box Burial Complex

Stone-box graves are one of the defining characteristics of the Middle Cumberland Mississippian. Although their distribution stretches into Minnesota and Iowa to the north, Pennsylvania to the east and Georgia and Alabama to the south, the occurrence of this type of burials is concentrated in the Cumberland Valley (Brown 1981a; Ferguson 1972; Smith 1992). In a study of stone-box graves, Brown (1981a) divides the grave form into six regional variants. He suggests that this type of grave originated in the Middle Cumberland region and the method spread to the greater Mississippian world; variations in forms being a result of local traditions (1981a:17; Smith 1992:232).

The typical Middle Cumberland stone-box graves are rectangular in form and built to fit the size of the extended individual interred within. Upright stone slabs were placed tightly along the sides of the graves. The slabs were shaped to create a level plane on which the overlapping capstones were placed, creating the box's top (Smith 1992:235). Stone-box grave floors have been found lined with limestone, ceramic sherds, and shell, while some simply have an earthen floor (Dowd 2008:168; Smith 1992:237). They were usually constructed out of limestone slabs, but are also made of shale depending upon material availability. Tabular limestone is quite common throughout the region, and lamellar shale can also be found particularly in the Eastern Highland Rim (Dowd 2008:166-167).

The locations of these graves must have been known to site occupants somehow, because re-use of these graves is not uncommon (Dowd 2008:173; Smith 1992:239). In these cases, skeletal remains of the original interment are pushed to one side of the grave. Multiple burials in a single grave are also found where both interred individuals remain articulated. Human skeletal remains used in ceremonial activities, such as those found at Castalian Springs (Hodge et al. 2010), may have been obtained from stone-box graves.

3.2c Architecture

Two main types of architecture are found in the Middle Cumberland region during the Mississippian period: rectangular wall trench and single post structures. As Smith (1992) points out, the chronological position of these architectural techniques is not clear cut. Two of the earliest Mississippian sites in the region, Spencer (40DV191) and Sogom (40DV68) have single post architecture (Norton and Broster 2004; Spears et al. 2008). Both wall trench and closely spaced single post structures are present at the early Mound Bottom site (40CH8) (O'Brien and Kuttruff 2012; Smith 1992:354). At later Mississippian sites, widely spaced single post structures seem to be more common than wall trench structures, although both occur at the same sites (Averbuch; Smith 1992:354). More precise radiocarbon dating will be necessary to sort out the exact sequence of architecture for this region.

Large circular structures approximately 20 m in diameter were also constructed during the Mississippian period. Near surface geophysical techniques identified a single such structure at both Kincaid in Illinois and Castalian Springs (Dacus 2010; Pursell 2007). The remains of ten individual human crania located within the circular structure at Castalian Springs supports the conclusion that the structure was used for specialized ritual activities (Dacus 2010; Hodge et al. 2010). Similar large circular anomalies have been observed in magnetometer surveys from Mound Bottom, Link Farm (40HS06) and Ames Plantation (40FY07) in Middle and Western Tennessee (Dacus 2010).

3.2d Material Culture

The following brief description of material culture from Middle Cumberland collections is intended merely as an overview. A more detailed report of Middle Cumberland artifacts can be found in Smith 1992 and Moore and Smith 2009. Ceramics are discussed in subsequent chapters.

Lithics. Lithic artifacts found at Middle Cumberland sites can be divided into functional or utilitarian tools for everyday use and ceremonial or ornamental objects. Chipped stone and ground stone implements are included in both categories. Chipped stone projectile points, drills, scrapers, spokeshaves, bifacial knives, chisels and punches are some of the most common chipped stone tools, while celts, hammer stones, metates and grinding stones are the most common groundstone tools. Smith (1992:147) concludes that lithic tool technology is relatively simple, and the majority of tools are manufactured out of modified flakes.

Mississippian projectile points found at Middle Cumberland sites are generally small and triangular in form, usually classified as Madison and Hamilton types, although Sand Mountain, Nodena, and Cahokia Side-Notched have also been found (Smith 1992). Earlier Archaic through Woodland side-notched, corner-notched and stemmed points are common at Mississippian sites and likely represent Mississippian people discovering and using older tools and disturbed earlier deposits.

Ceremonial stone objects are also found at Mississippian sites in the Middle Cumberland region. There is no evidence that these objects were used as tools, but more likely functioned as a status marker of their owner (Marceaux and Dye 2007:168). Spud celts, bell shaped celts and crown maces seem to have been used early on in the Mississippian sequence while crown mace and long Dover swords were used at the peak of the Mississippian in the Middle Cumberland region, around A.D. 1200-1350 (Moore and Smith 2009). Monolithic groundstone axes seem to be restricted to post A.D. 1350 Mississippian contexts. Not only are these objects found in Mississippian graves of high status individuals, but they are depicted in iconographic representations in stone, shell, and copper. The crown mace petroglyph on the cliffs overlooking Mound Bottom is one example. The famous “Dancing Warrior Gorget” depicting a figure wielding a similar crown form mace, excavated by William Edward Myer from Mound 1 at Castalian Springs, is another example of iconographic representation of weapons from the Middle Cumberland region.

Most of the lithic artifacts are made with locally available stone. Ft. Payne and St. Louis chert are the most common chert types used in chipped stone tools, and is locally available in erosional remnants within the Central Basin as well as from outcrops in the Highland Rim (Alexander 2000: 299-302; Moore 2005a:196-197; Moore 2001a:116-117). Dover chert sources are located on the Western Highland Rim (Parish 2009, 2010). This type of chert is found in low quantities at most Middle Cumberland sites. In addition to being used for utilitarian tools, Dover chert was commonly used for making ceremonial objects. Greenstone, Mill Creek chert and Burlington chert are other nonlocal lithic materials occasionally present on Middle Cumberland sites.

Shell. Worked shell was used for both utilitarian and ornamental objects. Mussel shells were sometimes used as hoes. A central hole in these mussel shells indicates that they were attached to a handle for use (Norton and Broster 2004; Smith 1992:204). Shell cups and spoons have been found in burials in the region (Holmes 1883:199; Putnam 1878:335). Some of these are decoratively modified, while others show minimal modifications. Many of the shell artifacts found are non-utilitarian. Shell beads are common grave goods in the region. Carved marine shell gorgets have been found in burial contexts.

Worked Bone/Antler. Bone and antlers modified for tool use are found in low quantities at Middle Cumberland sites. Bone awls and pins and antler flaking tools, are the most commonly found manufactured bone objects (Breitburg 1998:154; 2000:431; Breitburg and Moore 2001a:129-130) Deer or elk astragali ground into cubes are occasionally found (Sichler and

Moore 2005: 206; Smith 1992:200). These could have been used in games of some sort, as they seem to be associated with graves of children (Eisenburg 1989; Lewis 1988; Smith 1992:201).

3.2e Trade

The centralized location of the Middle Cumberland region within the larger Mississippian world made the region well situated for access to a number of nonlocal resources. The most common non-local material at Middle Cumberland sites is marine shell. Six conch shell cups were found at Castalian Springs (Myer 1928b) and four conch shells and one engraved conch shell cup were found at the DeGraffenreid site (Smith and Moore 1999). Shell gorgets were made from imported marine shell, and engraved in the local Nashville and Cox styles (Smith and Beahm 2010a).

Copper, mica, galena, and nonlocal stone such as steatite, greenstone, and pipestone have also been found at Middle Cumberland sites. Copper is usually found in burial contexts either as sheet copper in the form of arrow-shaped "badges" or as a coating for wooden or bone decorative artifacts like earspools or beads (Jones 1876; Moore and Smith 2009:13; Smith 1992:184). Most copper found from the Mississippian period appears to have originated in the Southeast, particularly along the Appalachian Mountains and in northwestern North Carolina (Ehrhardt 2009; Goad 1980).

The main source of mica in the southeast is the Blue Ridge and Piedmont region of North and South Carolina (Benbow et al. 2000). Crafted artifacts made with mica, mica sheets, and small fragments of mica have been found in the Middle Cumberland region, including several examples from Rutherford Kizer, Castalian Springs, and Sellars (Moore and Smith 2009:46; 126).

Galena is a lead mineral found archaeologically as cubes (Chesterman 2004:361). A surficial galena source was documented at one Nashville location in the 1830s (Smith 2013a). It is generally thought that galena was used as a pigment and would have been a valuable trade item (Smith 1992:182). It has been found in burials and other special contexts. One large cube of galena was recovered from Mound 3 excavations at Castalian Springs and Curtiss recovered two cubes of galena from Grave 33 at Rutherford Kizer (Moore and Smith 2009:126).

3.2f Settlement Pattern

Farmsteads. The definition of a farmstead used here is a site with one or two structures that were occupied contemporaneously (Smith and Moore 1996b:55). Due to their small archaeological footprint, this type of site is difficult to detect. However, a number of farmsteads have been excavated in the Middle Cumberland region such as the Coleman site (40WM8) (Broster 1972a; Smith and Moore 1996b), the Fernvale site (40WM51) (Deter-Wolf 2013; Smith and Moore 1996b; TDOA 1988), the Brandywine Pointe site (40DV247) (Moore and Smith 1993; Smith and Moore 1994; 1996b), the Armes Farmstead (40DV444) (Smith and Moore 1995; 1996b), and the Sogom site (Norton and Broster 2004; Norton and Smith 1996; Smith and Moore 1996b).

Hamlets. Previous researchers in the Middle Cumberland region have defined hamlets as sites with several structures plus additional features (Smith and Moore 1996b). Only a few sites of this type have been thoroughly investigated in the Middle Cumberland region. These include the Brick Church Business Park site (40DV301) (Smith and Moore 1996b; Smith et al 1993), the Sandbar Village site (40DV36) (Dowd and Broster 1972; Smith and Moore 1996b; Smith et al. 1993) and the Spencer site (Spears et al. 2008).

Villages. Middle Cumberland villages consist of a habitation area and plaza, often surrounded by a palisade but lacking platform mounds. Cemeteries are usually associated with villages, and occasionally villages have burial mounds. Several villages have been excavated in the Middle Cumberland region. Brentwood Library is a recently excavated example. In this large scale salvage project conducted by the Tennessee Division of Archaeology, 67 structures and two palisade lines were identified at this 6 ha site (Moore 2005a).

Towns with Mounds. Mississippian mound sites in the Middle Cumberland region consist of a platform mound and plaza. Palisades walls have been located at most excavated mound sites. Domestic structures are also found within these sites. Many Middle Cumberland mound sites are known to have additional mounds, some of which are burial mounds, while the function of others has not been determined. Pack (40CH01), Mound Bottom, Old Town, DeGraffenreid, Fewkes, Brick Church Pike, and Castalian Springs are Middle Cumberland mound sites with more than one platform mound (Smith 1993a; Smith and Moore 1996a). Other multi-mound sites in the region may also have had more than one platform mound.

3.2g Settlement System Model

A diachronic model for the settlement system of the Middle Cumberland region has been developed and refined by Smith and Moore (Moore and Smith 2009; Smith 1992; Smith and Miller 2009; Smith and Moore 1994; Spears et al. 2008). The earliest evidence for Mississippian mound sites is on the western side of the region, around A.D. 1000 (Smith and Moore 2010). These mound centers likely represent influence and/or people moving into the region from the north and west. Mound Bottom is one such early Mississippian mound center. Early in the Mississippian period there is also evidence for farmsteads and hamlets in the region (Brandywine Pointe, Sogom, Spencer). These seem to be populations of Late Woodland people gradually becoming more Mississippian-like. Pottery from these small sites show Late Woodland surface treatment (cordmarking) on vessels with shell-tempered paste and possibly sherds with mixed shell and limestone temper. In addition, architecture at these small sites seems to be predominately single post with rounded corners, whereas structures at early mound centers such as Mound Bottom were mostly the traditional Mississippian wall trench, as well as some single post structures. Mound centers show up further east after around A.D. 1100 (Moore and Smith 2009:207). Around A.D. 1200 there are a large number of mound centers occupied and it is suggested that burial mounds become more common at residential sites at this time (Moore and Smith 2009:208).

Sometime after A.D. 1350 populations begin to nucleate into large, palisaded villages and mound construction becomes less frequent. In addition, cemeteries are now used rather than burial mounds and single post construction of structures becomes more common (Moore and Smith 2009:210). Smith suggests that at this time, political organization more resembles that of confederacies than chiefdoms, as there is no longer a clear hierarchy of settlements or mound construction to indicate chiefdom level organization (1992). Pollack sees a similar change in post Angel chiefdom Caborn-Welborn communities in the Lower Ohio Valley (2004). By A.D. 1425 to 1450, there is a major decline in regional population. This has long been recognized as part of the Vacant Quarter phenomenon that encompasses the American Bottom regions, western Kentucky and central Tennessee (Cobb and Butler 2002; Williams 1990).

Figures 1 through 4 show the distribution of radiocarbon dates for Middle Cumberland Mississippian sites by site type. Most of the dates were obtained from Smith’s 2002 comprehensive listing of radiocarbon dates in Tennessee. Although some recent unpublished dates are missing from this plot, it should be representative of dated Mississippian sites in the

Middle Cumberland region. The dates show a sharp drop in the number of sites occupied after A.D. 1450, reflecting the reduction in population of the Vacant Quarter phenomenon (Cobb and Butler 2002; Smith 2010a; Williams 1990). The dates also support the idea that small farmsteads and hamlets were occupied earlier in the Mississippian period while large villages did not appear until later. Although there are also later dates from mound sites, the majority date to A.D. 1350 or earlier.

3.3 Middle Cumberland Mound Sites as Chiefdom Capitals

The central hypothesis of this dissertation is that most Mississippian societies were politically organized as chiefdoms and sites with platform mounds were capitals of these chiefdoms. This relationship between mound sites and chiefdom capitals is the basis to much Mississippian research and the connection between chiefdoms and mounds themselves has been discussed in a previous chapter. Alternative views like that of Boudreaux (2007) suggest that platform mounds are not manifestations of hierarchical political organizations, but rather community-oriented heterarchical constructions. There is variability in Mississippian mound sites including size and number of mounds, but also presence and distribution of nonlocal and highly crafted artifacts, type and location of public structures, and location and form of burials. Therefore, the identification of mound sites as political capitals would be strengthened by additional archaeological data from sites in different regions. The lines of evidence that support the conclusion that platform mound sites in the Middle Cumberland region represent polity capitals are presented below.

3.3a Burials

In many regions, archaeologists use differences in grave goods to identify a ranked society (Peebles and Kus 1977). For the Middle Cumberland region, the majority of graves do not contain artifacts. According to the early archaeological investigators Jones and Myer, only two to five percent of all stone-box graves contain artifacts (Moore 1915:175).

It appears that many mortuary accompaniments reflect age and sex attributes of the individual and achieved status rather than rank or ascribed status (Broster 1988; Smith 1992). Shell beads, earspools, and some ceramic vessels are burials goods which likely represent wealth rather than rank because they are present at small sites as well as mound centers. Artifacts which suggest high ranked individuals include those made out of non-local material and those that are highly crafted and require esoteric knowledge for interpretation such as wooden artifacts covered in copper and/or mica, marine shell gorgets, some negative painted or effigy ceremonial vessels and Dover chert blades and eccentric forms (Smith 1992).

The actual preparation of stone-box graves would have taken some effort, but this burial method is the norm rather than the exception at Middle Cumberland sites. The care with which each individual grave was constructed could, perhaps, give some indication of the esteem with which the buried individual was held in life. For instance, some stone-boxes are constructed without a floor and with a single layer of stone, while others have multiple, well cut cap stones. However, these differences do not point specifically to achieved or ascribed status, but merely differential status.

Grave location also indicates the relative status of an individual (Binford 1971; Smith 1992). Individuals buried in burial mounds and those buried closest to platform mounds likely had higher status in life than those buried in cemeteries or around domestic structures (Smith 1992:256). At Middle Cumberland mound sites, burial mounds and cemeteries suggests that status differentiation existed and that the highest status individuals were located at sites with burial mounds.

3.3b Spatial Site Clustering and Settlement Hierarchy

One aspect of chiefdom political organization is its multi-community nature (Carneiro 1981:37-38). Archaeologically this chiefdoms trait can be seen in groups of contemporary sites clustered together that would have been part of the same polity. There are several issues with identifying spatial site clusters in the Middle Cumberland region. First, a systematic and comprehensive survey of the entire region has not been completed, although several surveys of parts of the region have been conducted (Jolley 1977; 1980; Smith and Heinrich 2000; Willey 1947). Those have been largely focused along the Cumberland and Caney Fork Rivers, and do not cover upland locations. A second problem is that most sites are not dated precisely enough to confirm contemporaneity within an apparent site cluster. Due to the type of information available for most of these sites, it is not possible to determine what sort of activities were taking place at these smaller occupation sites or in most cases how many structures were present. The dense concentration of open habitation sites around Nashville appears as one big mass of sites at least in part because the exact occupation span of these sites has not been determined (Figure 3.5). As far as contemporaneity can be determined with the data available, it is plausible that these smaller sites were part of the chiefdom whose capital was located at the mound sites.

As discussed above, when taken as a whole, there does seem to be a settlement hierarchy in the Middle Cumberland region during the Mississippian period and status differentiation, particularly at mound sites is present. Single household farmsteads, small hamlet communities, larger towns and villages with mounds have all been identified. However, there is also a temporal component to these site types as well. While the hierarchy of contemporary farmsteads, hamlets and mound centers appears to be present throughout most of the Mississippian period in the Middle Cumberland, near the end of the Mississippian occupation of this region smaller sites appear to have been abandoned in favor of concentration of populations at larger palisaded villages. At the same time, mound building becomes much less common. It seems that during the later part of the Mississippian period in the Middle Cumberland region the settlement pattern does not resembles the traditional settlement hierarchy envisioned for societies with chiefdom type organization (Smith 1992).

3.4 Summary

The Middle Cumberland region has a rich history of archaeological exploration extending back into the early nineteenth century. Although early antiquarians did not employ the rigorous documentation techniques used by archaeologists today, their research provides valuable information about Middle Cumberland Mississippian sites that have been subsequently damaged or destroyed. Ralph E.W. Earl, Frederic Ward Putnam, Edwin Curtiss and William Edward Myer described and excavated the mound sites in my sample. They provided valuable information on site layout and composition, mound construction, and artifact associations.

Building on this early work in the region, modern archaeologists in Tennessee have developed a fairly complete picture of Mississippian culture in the Middle Cumberland region. Material culture resembles that found in other regions in the southeast, namely shell-tempered pottery, triangular projectile points, bone awls and pins and rectangular wall trench and single set post architecture. Nonlocal trade material found in the region includes marine shell, copper, mica, galena, and nonlocal stones such as steatite and greenstone. The use of stone-box graves is centered in the Middle Cumberland region and conical burial mounds are commonly found at Mississippian sites. Nashville style triskelle and Cox are engraved shell gorget styles are local to the Middle Cumberland region. Evidence that Middle Cumberland mound sites were the location of chiefdom capitals include high status burials with highly crafted and nonlocal material, high status burial locations in mounds, monumental architecture in the form of platform mounds, and site clusters showing settlement hierarchy.

Middle Cumberland habitation sites include farmsteads, hamlets, villages, and towns with mounds. External influences as well as local development of Woodland inhabitants accounts for the emergence of Mississippian societies in the region. The earliest evidence for Mississippian mound sites is around A.D. 1000 on the western side of the region. By A.D. 1200, there are a large number of mound sites throughout the region. Mound construction becomes less common by A.D. 1350. By A.D. 1450, as part of the Vacant Quarter phenomenon, there is region-wide population dispersal.

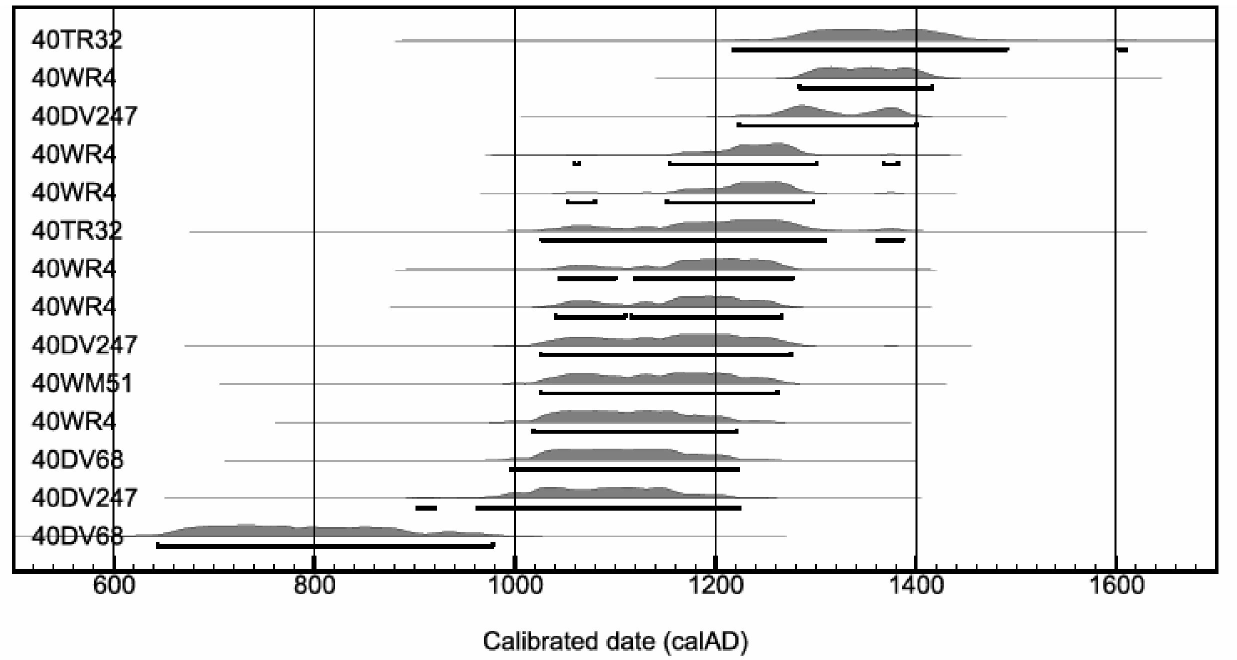

Figure 3.1: Radiocarbon Dates of Middle Cumberland Mississippian Farmsteads (OxCal v4.2.3. Bronk Ramsey (2013); r:5 IntCal13 atmospheric curve (Reimer et al. 2013)) (Smith 2002).

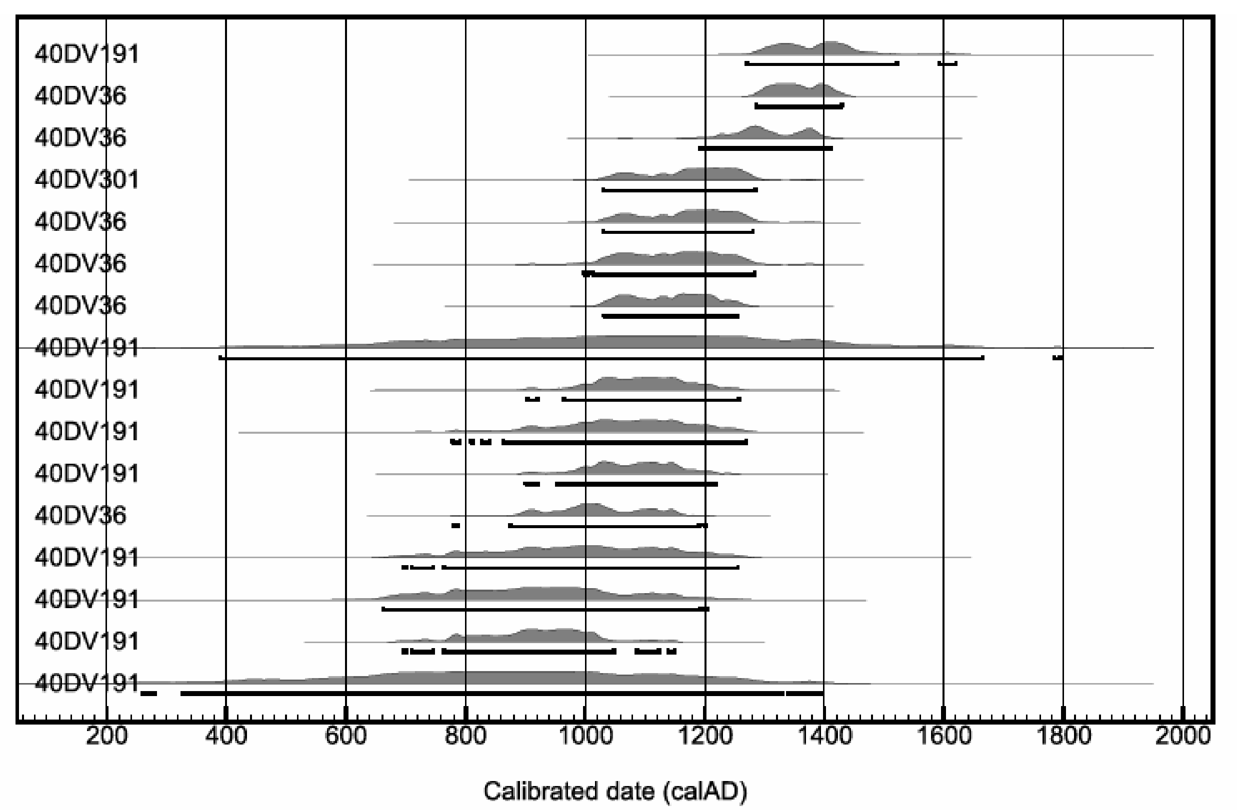

Figure 3.2: Radiocarbon Dates of Middle Cumberland Mississippian Hamlets (OxCal v4.2.3. Bronk Ramsey (2013); r:5 IntCal13 atmospheric curve (Reimer et al. 2013)) (Smith 2002).

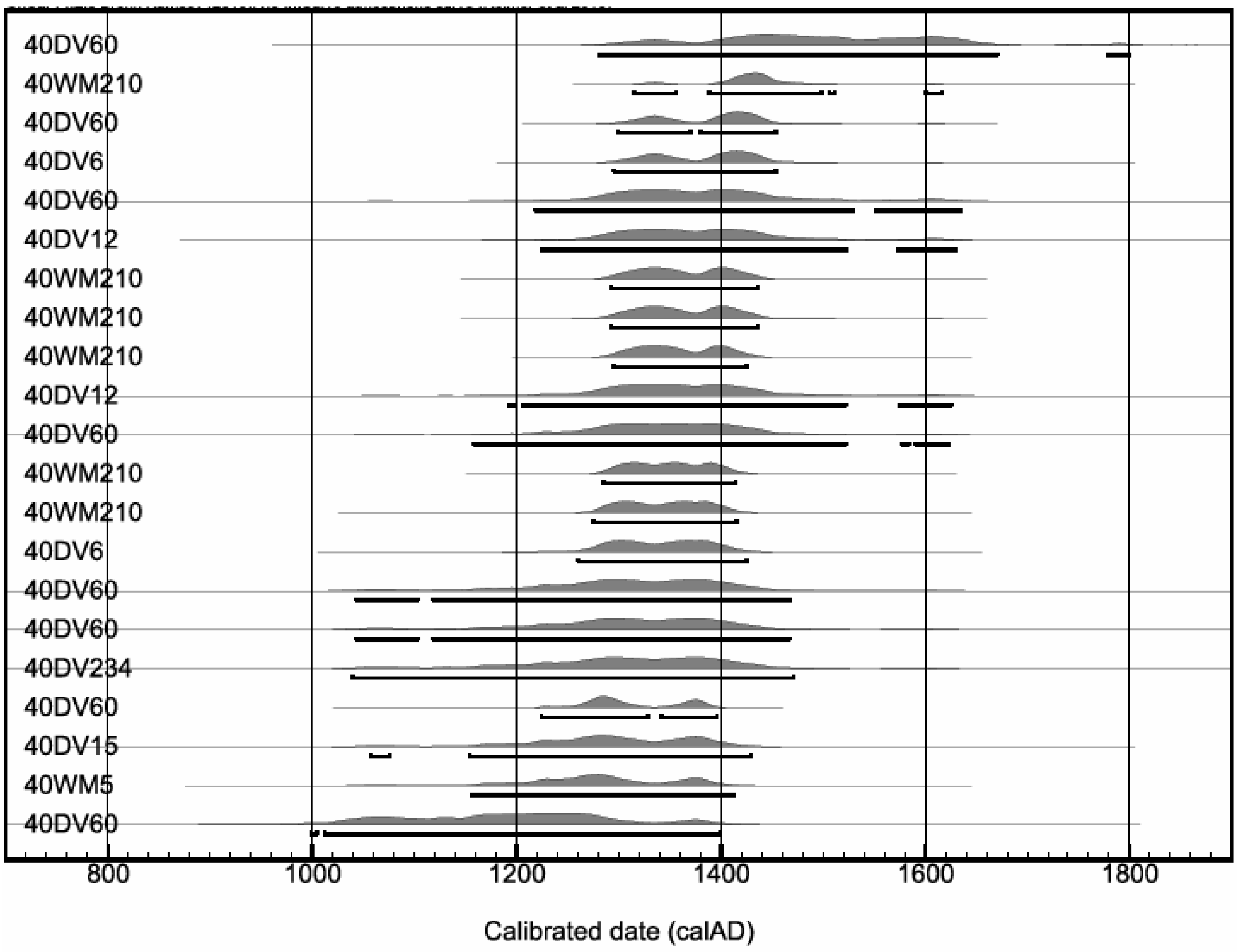

Figure 3.3: Radiocarbon Dates of Middle Cumberland Mississippian Villages (OxCal v4.2.3. Bronk Ramsey (2013); r:5 IntCal13 atmospheric curve (Reimer et al. 2013)) (Moore 2005b; Smith 2002).

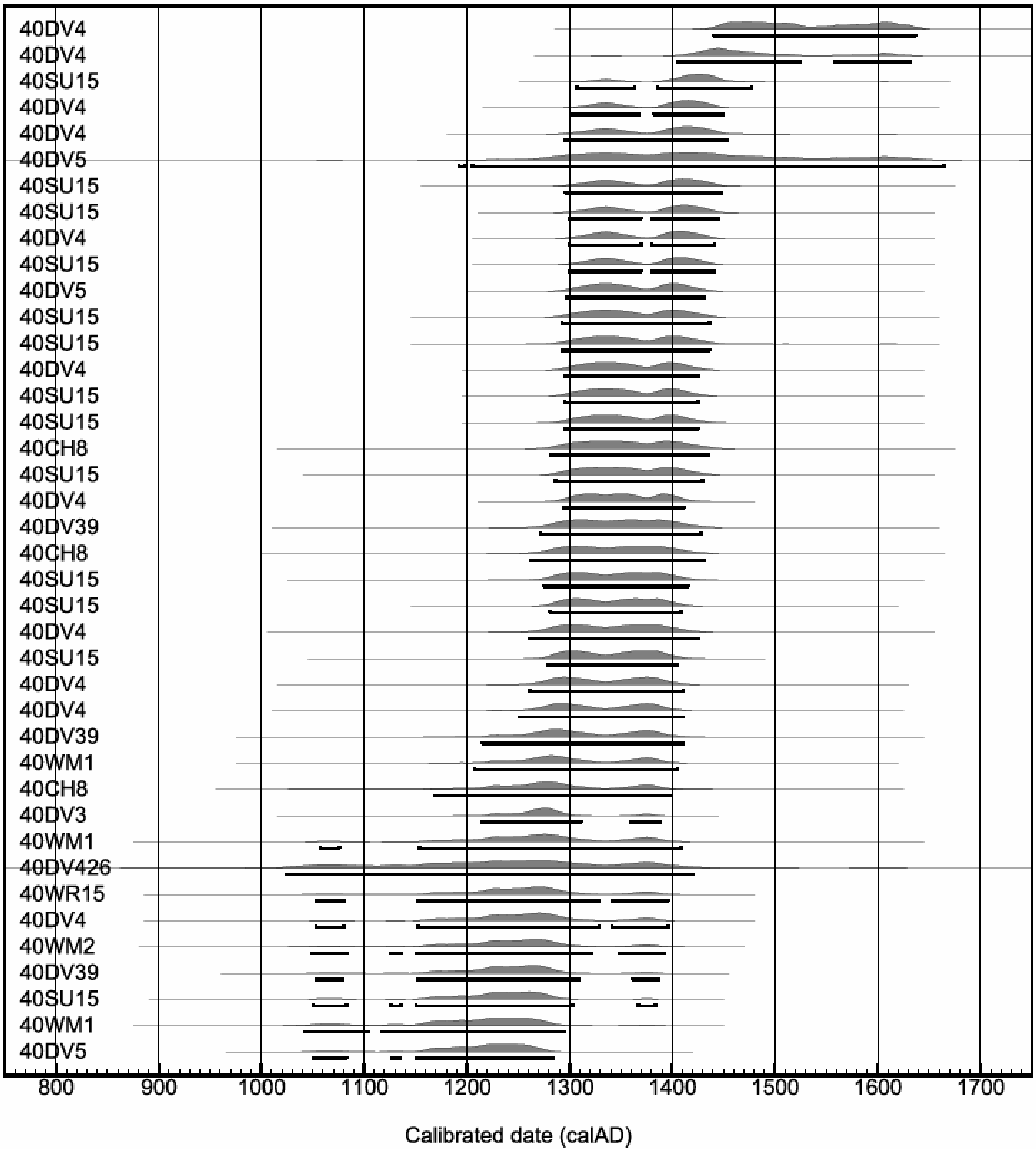

Figure 3.4: Radiocarbon Dates of Middle Cumberland Mississippian Mound Sites (not including Castalian Springs dates)(OxCal v4.2.3. Bronk Ramsey (2013); r:5 IntCal13 atmospheric curve (Reimer et al. 2013)) (Smith 2002).

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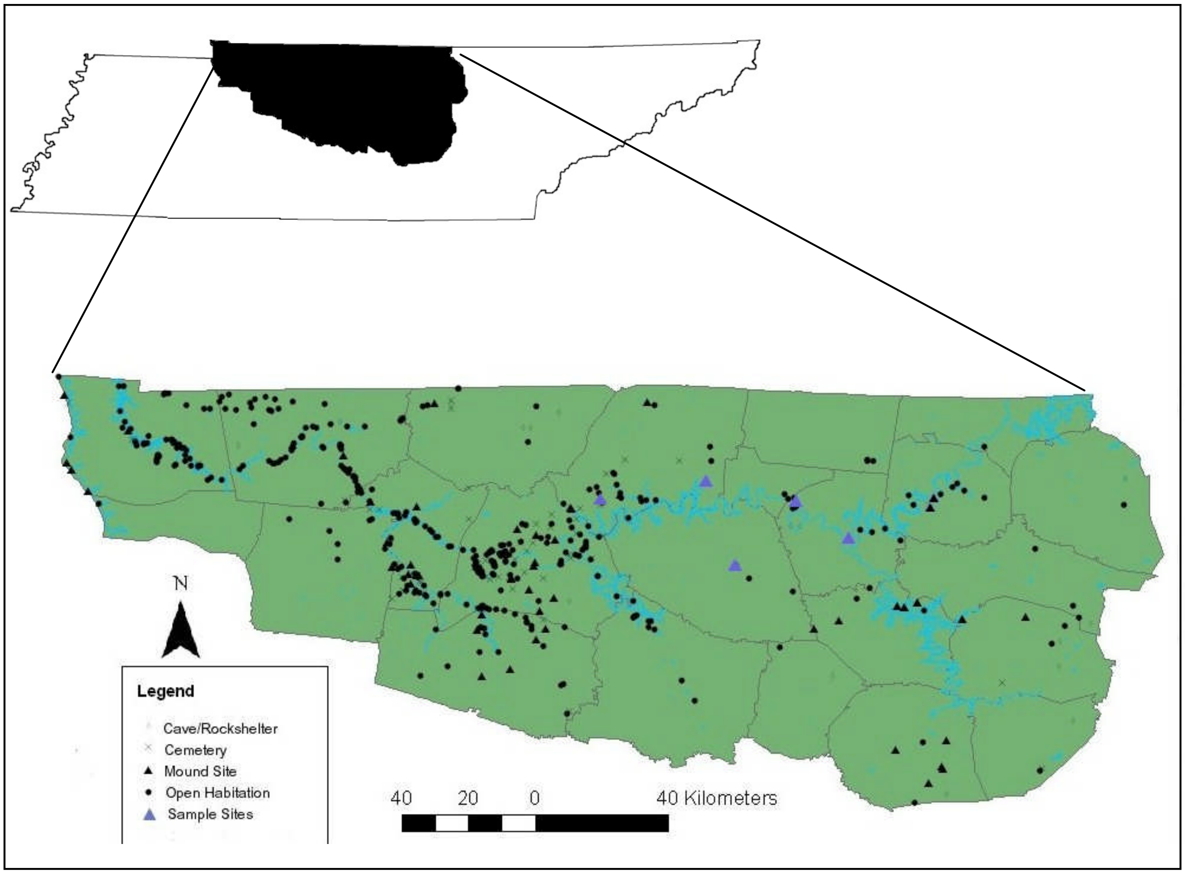

Figure 3.5: Middle Cumberland Mississippian Sites (data from Tennessee Division of Archaeology Site File Database).

CHAPTER 4

SITE INVESTIGATIONS

Five Mississippian mound sites on the eastern edge of the Middle Cumberland region (Figure 1.3) are examined in this dissertation to explore the relationship between Middle Cumberland polities. The results from previous excavations at Rutherford Kizer and Sellars were used in analysis, while original fieldwork was conducted at Castalian Springs, Beasley Mounds and Moss Mounds. Information from early explorations at these sites was also incorporated into the study. The following outlines early and modern excavation at each site and describes specific features and contexts that were used in ceramic analysis for this study.

4.1 Rutherford Kizer (40SU15)

The Rutherford Kizer site is located along Drakes Creek, a tributary on the north side of the Cumberland River. The site consists of a platform mound, four burial mounds and a palisade enclosing approximately 6 ha.

4.1a Early Exploration

Rutherford Kizer was explored by Edwin Curtiss for the Peabody Museum in December of 1878 (Moore and Smith 2001:19; 2009). He produced a sketch map of the site (Moore and Smith 2009: Figure 153) showing the location of the platform mound, a burial mound, house mounds and the palisade with bastions. This map also shows the location a fence line which divides the site, and is still present today. Curtiss focused his excavations on stone-box graves. His field notes indicate that he explored over one hundred graves at the site (Moore and Smith 2001:22). Associated grave goods recovered by Curtiss are included in analysis when appropriate. In his *Antiquities of Tennessee*, Gates P. Thruston describes the Rutherford Kizer site and presents another map of the site (Figure 4.1). He describes the platform mound as twenty-six feet high with steep sides and maps four “low mounds” along with a number of house mounds (1890:32-34).

4.1b Recent Excavations

In 1993, the Tennessee Division of Archaeology was informed that the construction of a subdivision would take place on the Rutherford Kizer site. With the permission of the developer, TDOA archaeologists and volunteers conducted reconnaissance and testing at the site (Moore and Smith 2001). Archaeological information was gathered from the site in various stages. A controlled surface collection was carried out that defined the probable extent of the site. Test excavations were conducted in three strip blocks on the eastern area of the site. Fourteen backhoe trenches were dug in order to locate the palisade trench. The documentation of burials in these test excavations necessitated monitoring further earthmoving activities. Burial removal was conducted in 1994 through 1995 by a private archaeology firm, with recording of non-mortuary features conducted by the TDOA (Figures 4.2 and 4.3). These excavations documented 11 structures, two palisade lines, 61 pit features and 91 burials. Fifteen radiocarbon dates were obtained from the site.

4.1c Contexts Used in Analysis

Feature 20. Feature 20 is located in Strip Block B. It is roughly circular in shape, 2.33 m by 2.46 m in size, and has a depth of 30 cm and a basin shaped profile (Figure 4.4) (Moore 2001b:267). It was located within Structure 1. Moore suggests that Features 20 and 36 post-date this structure as Structure 1 was void of habitation features (2001c:54). Two radiocarbon dates were obtained from this feature (Table 4.1).

Feature 36. Feature 36 is an elongated circular pit, 3.13 m by 2.03 m, with a depth of 33 cm with an irregular shaped base and basin shaped profile (Figure 4.4) (Moore 2001b:281). Located in Strip Bock B, this feature partially overlapped with Feature 20. One radiocarbon date was obtained from this feature (Table 4.1).

Feature 89. Half of Feature 89 was excavated. It is an irregular oval shaped refused filled pit feature measuring 1.96 m by 1.65 m with a depth of 15 cm (Moore 2001b:282).

Feature 101. Feature 101, located in Strip Block B, and measures 4.2 m by 2.9 m (Figure 4.4). The feature was not completely excavated, but has a depth of at least 20 cm. Four posts were recorded at the base of this pit. The profile was basin-shaped, with an undulating base (Moore 2001b:282). The feature may have originated as a borrow pit for obtaining clay with the resulting depression used for refuse disposal over time (Moore 2001b). Two radiocarbon dates were obtained from this feature (Table 4.1).

Feature 110. Feature 110 is an oval shaped postmold 50 cm by 40 cm in size with a depth of 32 cm (Moore 2001b:269). This post was situated as a double-post with Feature 109 in strip block B as part of Structure 1.

Other Features. Feature 194, Feature 359, Feature 360, Feature 361, Feature 392, Feature 425, Feature 587, Feature 588, are refuse filled pits. They were excavated by the private archaeological consultant searching for human remains (Moore 2001b:282). Feature 695 and Feature 863 are large pit features. Moore suggests that they are borrow pits associated with the primary palisade due to the low density of artifacts present in the feature and its location near the palisade (Moore 2001b:289;295). Feature 500 is either a refuse-filled pit or the remnant of a tree (Moore 2001b:286). Feature 799 was assigned to a shell-tempered Matthews Incised *var. Matthews* vessel that was damaged by house construction (Moore 2001b:295). Feature 868 is a postmold associated with a bastion on the west palisade trench (Moore 2001b:279). Feature 880 is a circular refuse filled pit with a basin-shaped profile (Moore 2001b:295). Earthmoving activities destroyed the feature before it could be mapped.

Burial 14 contained the remains of a fetal/newborn. Burial 80 contained two young children with two ceramic vessels from lot 85. Burial 81 is the remains of a mature adult male from lot 85.

4.2 Castalian Springs (40SU14)

Castalian Springs is located on a tributary of the Cumberland River in a 30 ha tract of bottomland, and covers over 8 ha. The site consists of at least four mounds including one burial mound (Mound 1) and two platform mounds (Mounds 2 and 3) (Figure 4.5).

4.2a Early Exploration

The first known exploration at the site was by Ralph E. W. Earl, around 1820. He dug into the offset and main platform portions of Mound 2. He observed 28 layers of ash alternating with yellow “saponaceous and flexible” soil (probably clay) and gray soil (Haywood 1823:125). Earl’s investigation of Castalian Springs is particularly important because he observed a palisade around the site not visible to Myer 70 years later. He describes the palisade as an outer ditch and inner embankment with bastions every 29 m (95 ft). Samuel Stone Bush, a native of Kentucky dug into 106 stone-box graves at Castalian Springs in 1896 (Myer 1924a). Numerous other graves in the cemeteries associated with the site have sustained unrecorded looting.

More professional exploration of the site was conducted by William Edward Myer in 1891, 1893, and the winter of 1916-1917 (Smith and Beahm 2005). His unpublished excavation notes and manuscripts are located at the Smithsonian Institution, and provide a detailed record of mound dimensions, grave locations, depths and associated artifacts. Much of the material excavated by Myer is held at the Museum of the American Indian in Washington D.C. In addition to producing several maps of the Castalian Springs site (Figure 4.6), Myer completely excavated Mound 1, an oval burial mound. This mound contained 92 graves with 104 individuals. Information on grave good associations recorded by Myer from Mound 1 is included in the present analysis when appropriate.

Myer excavated a trench into the offset portion of Mound 2, as well as a trench into the main platform portion (Myer 1924a). He suggests that the offset portion was constructed in two stages. He states:

> When the dome-shaped portion of the mound had reached a height of 14 ½ ft the construction stopped. It remained in this state probably for several years. The ancient surface of the mound at this place was easily identified. The soil at this point showed traces of the humus from vegetation on the then surface of the mound. Underneath this humus stratum could be seen traces of iron oxide, precipitated by means of this layer of humus [1924a].

On the summit of this construction, Myer describes a baked clay altar containing ashes and coal. On top of this at least a meter of additional mound fill was added to the conical portion of the mound. The trench into the platform part of the mound was placed at the junction with the conical portion, and was 2.4 m (8 ft) wide (E-W) and 3.7 m (12 ft) long (N-S). Slabs of limestone were reported in the mound. One and a half meters above ground surface, Myer found evidence of a fire, likely made on a mound summit. Almost another meter of fill was added to the mound at which point horizontal, then upright limestone slabs were covered with earth, resembling stone-box graves, although no evidence of human remains are reported by Myer (although Earl does report human graves in the platform mound).

Myer also explored three other possible mounds during his visits to the site. Mound 5 was found to be a natural landscape feature. Mound 3 (along with Mounds 25 and 42) was described as being "occupied by the dwellings of some principle men of the town" (Myer 1924a). Myer excavated a trench into the mound and only reports finding "several beds of ashes" in addition to general village refuse of ceramics and bone (1924a). This description does not suggest the mound was a platform for a building. However, at the time of Myer's excavations at Castalian Springs, he was not as mindful of architecture as he later became when affiliated with the Smithsonian. Mound 4 contained limestone within its fill, as well as layers of soil and burned earth.

4.2b Recent Excavation

The first modern archaeological work at the site was a waterline replacement monitoring project on the south end of the site in 2005 (Johnson et al. 2005). This consisted of a one meter wide trench extending 450 m along the north side of Highway 25. Sixty-three features including 43 postholes and five wall trench sections were identified during this project. Sixteen floatation samples were taken from selected features, and artifacts were collected upon observation. A shale Cox Mound gorget was recovered from this excavation above intact midden in a disturbed stratum (Johnson et al. 2005:25). Five hundred and twenty-one ceramic sherds were recovered during this project, all of them shell-tempered. Eight of these sherds are fabric impressed, while the remaining sherds are plain.

From 2005 to 2011, Middle Tennessee State University (MTSU) held its summer field school at Castalian Springs (Beahm and Smith 2008a). The goal of this project was to provide a clearer sense of the chronological span of the site occupation, site size and layout of the community. Unless otherwise stated, all soil below the plowzone was screened through quarter inch hardware mesh, and soil samples were taken from features when deemed appropriate in order to recover smaller artifacts and organic remains. A permanent benchmark was set up on the south side of the highway and designated as N1000 E1000. Standard unit size used in this project was 2 m by 2 m, and arbitrary 10 cm levels were typically used when excavating non-feature contexts.

The excavations in 2005 were restricted to an area owned by the Bledsoe's Lick Historical Association on the south side of Highway 25 because the state of Tennessee was still in the process of purchasing the main portion of the site at the start of MTSU's field school (Figure 4.7). Four 2 m square units and two 1 m by 2 m units were excavated in addition to two 50 cm column samples. No evidence of the southern edge of the palisade or any structures were identified in this location and it seems that this location is outside the main residential area of the site. An undisturbed midden and a pit filled with carbonized maize cobs were encountered. It has been noted elsewhere that a large quantity of non-local Dover chert was recovered from this excavation compared to the quantity recovered from other Middle Cumberland sites (Smith and Beahm 2005, Beahm and Smith 2006). While not the focus of this research, this trend seems to be supported by material recovered from subsequent field seasons at the site and may point to the significance of Castalian Springs as a regional center (Beahm and Smith 2008a).

In 2006, MTSU's field school moved to the main, state-owned part of the site (Figure 4.8 and 4.9). A line of three permanent benchmarks were set up on the north side of the highway (N1000 E1000, N1002 E1000, N10004 E1000) to be tied in with the grid on the south side of the highway. In May of 2006, prior to field work, Dr. Gerald Schroedl from the University of Tennessee conducted a gradiometer survey over a 6000 m block. This guided the placement of units during the field season. Twenty-three units were excavated and 37 features identified.

These features include wall trenches and posts belonging to a large, wall trench structure located southeast of Mound 2, designated as Structure 1. Excavation of this structure was continued in 2007 (Figure 4.10).

In 2008, a 50 m long discontinuous trench was placed on the western portion of the site with the goal of locating the western edge of the site's palisade. The offset portion of Mound 2 was also investigated in 2008 and mound construction stages were documented.

In March of 2009, Chet Walker from Archeo-Geophysical Associates collected magnetometer data over the entire lower field of the site; about 25 acres (Figure 4.11). The tiered limestone bedrock geology of this area creates some complications for interpreting the magnetometer data not common in other magnetometer surveys with more homogenous bedrock geology. This survey was used in subsequent seasons for determining locations to excavate in order to better interpret the magnetometer data. In the summer of 2009, 15 2 m by 2 m units were placed on the south-central portion of the site to investigate possible structures seen in the magnetometer data (Figure 4.12). Excavation commenced in 2009 on the location of a distinct circular anomaly seen in the magnetometer data to the southeast of Mound 2 (Figure 4.13). The investigation of this circular anomaly was continued and expanded in 2010.

Excavations in 2011 focused on investigating Mound 3, located to the southwest of Mound 2. Two structures on the last mound summit, as well as evidence of structures from two previous summits and a pre-mound structure and midden were recorded. Excavations of a large midden filled pit, identified in 2008, were also expanded in the summer of 2011.

4.2c Contexts Examined in Analysis

The following is a detailed discussion of specific features used in ceramic analysis and development of the ceramic chronology. These were selected based on their potential to represent single depositional episodes or identifiable depositional sequences as well as features with a substantial ceramic sample. Radiocarbon dated features and mound construction sequences are also discussed.

Feature 4. Feature 4 is a large midden-filled pit located on the south-side of the plaza (Figure 4.10). The pit has a diameter of about 8 m and has a maximum depth of approximately 20 cm. The distribution of cross-mended material throughout the feature fill indicates that the pit was rapidly filled. A large quantity of ceramic sherds and bone was recovered from this feature and one radiocarbon date was obtained Feature 4 (Table 4.2).

Feature 16. Feature 16 is a roughly circular pit measuring 120 cm by 150 cm with a depth of 20 cm with shallow basin shaped profile. It is located to the south and west of Structure 1 and to the east of Feature 4 (Figure 4.10). This pit contained a large amount of limestone, bone, and lithic debitage as well as a sizable ceramic sample. This feature was first identified in unit N1020E966, and continued into the adjacent unit to the east. Overlying this pit in unit N1020E968 was an artifact cluster designated as Feature 18. This cluster included a fabric-impressed pan rim sherd, a limestone disc, mussel shell, turtle shell and other small animal bones was well as four drilled dog canines positioned as if they had been strung together.

Structure 1. MTSU field school examined Structure 1 in 2006 and 2007 (Figures 4.10 and 4.14). Table 4.3 lists the features associated with this structure. This wall trench structure shows evidence of three re-building episodes. The smallest building measured 8 m by 9 m while the largest was 10 m by 12 m. Two large central posts, Feature 9 and Feature 71, were excavated (one in 2006, and one in 2007), and from the placement of these posts there would have been a third to the south of Feature 9. These two large postmolds showed evidence of insertion/extraction ramps. Radiocarbon dates were obtained from these posts (Table 4.2).

Radiocarbon dates were also obtained from an inner wall, second to inner wall and outer wall of Structure 1 (Table 4.2). The lack of domestic debris, the large size of this structure, and its location on the plaza suggests that this building was a public building rather than a domestic structure. The structure was also unusual in having the remains of three infant skeletons within wall trenches (unlike infant burials under interred under house floors, which was a common Mississippian practice) (Beahm and Smith 2008b) Faunal remains recovered from this structure are not typical of domestic refuse and includes uncommon taxa such as dog, fox, skunk, beaver, and several species of turtle (Peres and Ingalls 2008). A small amount of mica and copper were found within the wall trenches of this structure, which also suggests a nondomestic use of this structure.

Feature 51/58 and Features 44 and 67. Feature 51 was encountered just to the east of Structure 1 (Figure 4.10 and 4.14). It is roughly circular in shape and measures approximately 210 cm by 180 cm with a depth of 45 cm. A second feature at the base of Feature 51 was recorded as Feature 58 and has a depth of approximately 5 cm. Feature 44 and 67 were irregularly shaped burned areas extending from Feature 51/58. The current interpretation of this set of features is that they were the remnants of a burned tree, the large circular area of Feature 51 and 58 being the base of the tree, and Feature 44 and 67 being two roots.

Feature 53/91/92/93. On the southwest side of the site a large pit feature was encountered and designated as 53/91 (Figure 4.15). Feature 53/91 had a depth of 14 cm. At a depth of 31cm below ground level, two separate features became visible and were excavated separately; Feature 92 and Feature 93. Feature 92 had a depth of at least 15 cm and continued into the northern and western unit wall. Feature 93 had a maximum depth of 18 cm (Figure 4.16). Feature 91 and 93 were radiocarbon dated (Table 4.2).

Feature 100. On the eastern side of the 2008 excavation trench, Feature 100 was identified around 50 cm below surface (Figure 4.17). It was a large pit measuring around 260 cm by 160 cm with a depth of 48 cm and a basin shaped profile (Figure 4.18 and 4.19). It likely represents a borrow pit outside the palisade, as artifact concentration was found to be quite low on the western side of the excavated trench.

Feature 106. Feature 106 was identified at the western edge of the same excavation trench as Feature 100 (Figure 4.17). It is another large pit feature, likely a borrow pit. It measured about 280 cm by over 200 cm with a depth of 58 cm and a rounded profile (Figure 4.20 and 4.21).

Feature 119. In the units N1108 E740, E742 and E744, excavated in 2008, dark soil accompanied with dense artifact concentration was encountered below the plowzone. Feature 119 was further examined in 2011 with the placement of three units to the north of the original (N1110E740, E742, E744). The entire feature was not excavated, but it measures at least 6 m by 4 m with a depth of 15 to 20 cm (Figure 4.22).

Feature 134. Feature 134 first appeared as a large ash deposit on the west side of the site. This feature is also visible on the 2008 magnetometer data. The feature was bisected to expose the natural stratum, which were very distinct layers of ash, charcoal, and midden rich soil. In addition to several post molds at the base of this large feature, a carbonized maize filled pit was encountered- the fifth such feature excavated at the site. Feature 134 appears to be a series of three pits. Pit 1 was dug into the midden. A large amount of ash was deposited on part of the base of the pit. Then Pit 2 was dug into the fill of Pit 1 and also had an ash deposit at its base and a maximum depth of approximately 30 cm. Pit 3 was dug through part of Pit 2 and Pit 1 with a depth of approximately 25 cm. Finally a post was placed through Pits 1 and 3 (Figure 4.12 and Figure 4.23).

Structures 2, 3, and 4. Eight wall trenches were recorded during the excavation in 2009 (Figure 4.12). These trenches make up parts of three structures each with only a single construction episode observed (Tables 4.4, 4.5 and 4.6). Two (Structure 2 and 4) were likely contemporary structures, as they have the same orientation, and may represent a household cluster. Structure 3 was constructed later, as the trenches overlay and partially obliterated part of a wall trench from Structure 2. A hearth is associated with this later structure as it is located in the estimated center of the building. During our excavations the hearth was bisected and two episodes of hearth use and refurbishment could be documented.

Circular Structure. The 2010 excavations were focused on investigating a large circular anomaly visible in the magnetometer survey conducted by Chet Walker (Dacus 2010). Very few artifacts were recovered from this structure. However, two radiocarbon dates were obtained from the wall trench; one from the east side and one from the west side of the trench (Table 4.2).

This circular wall trench structure appears to has been dismantled and covered over with a mound of soil after its use. At a later time, the central post was dug out, removed and a series of bundles, each containing two skulls were placed in the mound in and around the excavated central post (Dacus 2010, Hodge et al. 2010). The hole from this central post was designated as Feature 233 (Figure 4.24). The artifacts recovered from Feature 233 were not primarily deposited in that location, and the material pre-dates the ceremonial bundle deposition activity. A radiocarbon date was also obtained from Feature 233 (Table 4.2).

Mound 2. In 2008, two units were placed on the conical portion of the northwestern edge of Mound 2, with the hopes of documenting building stages of the mound as well as gathering information on the timing and preservation of the mound construction. A sub-mound midden was identified (Figure 4.25). At least two pre-mound structures could be recognized. One set of postmolds on the east side of the unit may be part of a circular structure curving to the north. A second set of postmolds were also identified to the south of this circular structure, under a mass of charred timbers and cane (Figure 4.26). A midden above these structures was covered by a thin layer of yellow clay representing a possible prepared surface. A small mound of earth was constructed over the yellow clay cap, above the southern set of postmolds. Mound fill of basket loading accumulated for about 60 cm, at which point another set of five outwardly angled postmolds were identified. From the distinct angle of these posts and lack of structural debris at this level, it is unclear whether these postmolds were part of a mound-summit structure or some other construction like a fence to shield the mound-top from view. Mound construction continues to the plow zone. There were few artifacts in these mound units. After it was determined that the mound fill did not contain material, the majority of levels were not screened, although if artifacts were observed they were retained. The largest ceramic sample from these mound units is from the sub-mound midden, consisting of 58 ceramic sherds.

A 2 m by 2 m unit was excavated on top of the platform portion of Mound 2 in the summer of 2010. Demolition debris of a burned, mound summit structure was discovered. A layer of woven cane matting was encountered, underneath which was a hard layer of burnt clay. It is likely that this hard, burned surface was a result of the structure remains smoldering on the ground (Smith personal communication 2010). Very few artifacts were recovered from this unit. However, two radiocarbon dates were obtained from cane and the outer rings of a wooded post from the structural remains (Table 4.2).

Mound 3. Mound 3 was the main focus of 2011 excavations. A 20 m long trench was excavated into the west side of the mound in order to document mound construction stages (Figure 4.27). A pre-mound structure and midden (Feature 305) were documented during these excavations (Figure 4.28) (Table 4.7). Within the trench, a 1 m by 2 m unit was excavated to subsoil clay to document mound stratigraphy (Figure 4.28). Two mound summits were documented in this test unit. A third mound summit was identified in a 4 m by 6 m block on the mound summit. Two mound top structures were documented on this last mound construction stage, which was then covered in a sterile clay cap. A fire pit and large ash deposit was also encountered on the last documented mound summit (Feature 335, 360, and 377), and are proposed to be related to the community's sacred fire. A large number of projectile points were recovered from the top of Mound 3. In addition, special artifacts including a Dover sword fragment and negative painted female effigy bottle fragments were recovered from the last mound deposit. Ten radiocarbon dates were obtained from these excavations (Table 4.2).

Structure 5. Structure 5 is located directly to the west of Mound 3. This structure was identified by three wall trench portions (Figure 4.27). The structure is a little over four meters on one side. A radiocarbon date was obtained from the northeastern wall of Structure 5.

4.3 Sellars (40WI01)

Sellars Farm, historically known as the Lindsley Estate, is located on Spring Creek about 15 km south of the Cumberland River in the inner Central Basin. The 4 ha site was enclosed by a palisade with bastions (Butler 1974; Butler 1981). One large platform mound and a burial mound are present in addition to seven rock mounds located outside the palisade (Figure 4.29). The site was placed on the National Register of Historic Places in 1972 and purchased by the state of Tennessee in 1974.

4.3a Early Exploration

Frederic Ward Putnam worked at the site in the 1870s (Putnam 1878: 339-360). In addition to mapping the site (Moore and Smith 2009: Figure 33), Putnam put a trench through the eastern half of the platform mound (Butler 1974; Moore and Smith 2009). Within this trench he describes four construction stages (Putnam 1878:341-342; Smith and Miller 2009:40). No further work has been done on the mound, and the trench was never filled. Putnam also excavated a burial mound to the southwest of the platform mound, as well as 19 of the 100 "low circular ridges" identified as house remnants (Butler 1974; Moore and Smith 2009:46; Smith and Miller 2009:3942). Material recovered by Putnam and analyzed by Moore and Smith (2009) from Sellars was included in analysis when appropriate. Contexts of these ceramics include both graves from Burial Mound C and graves from house mounds.

4.3b Modern Excavation Analyzed

Brian Butler and Carl Kuttruff conducted archaeological investigations at Sellars in 1974, 1977 and 1981 for the Tennessee Division of Archaeology (Butler 1974, 1981). These excavations explored the palisade that surrounded the site, a small mound, and sections of four structures; two of wall trench construction and two of single set post construction (Moore and Smith 2009:52-53). As noted below, units and features were not all entirely screened, and a one-half inch mesh was used in artifact recovered for some contexts, as opposed to the quarter inch mesh used in modern excavations at Rutherford Kizer, Castalian Springs, Beasley and Moss.

Feature 4. Feature 4 is a large, oval-shaped refuse filled pit excavated by Butler in 1974 (Figure 4.30, Figure 4.31). It is located a little less than 30 m from the north corner of the platform mound in a 5 m square unit. This location was selected because of a noticeable circular area of particularly green grass (Butler 1974). The pit was first encountered 30 cm below ground surface, although Butler suggests that the feature may have originated in the plowzone. Once the horizontal extent of the feature was delineated, all soil within that area below 25 cm was classified as Feature 4 fill.

Feature 4 had a maximum depth of 42 cm and horizontal dimensions of 3.6 m by 5.0 m. This pit contains a large quantity of cultural material including broken rock, bone and ceramics. Half of the feature was screened through one-half inch mesh, while the other was toweled but not screened. An apparently intrusive post, Posthole 2, was recorded at the base of this pit. The only stratigraphy present in the feature was a 5 cm thick layer of lighter clay at the base, apparently a wash layer. This suggests that while the pit may have been left open for a time, the feature was filled very rapidly (Butler 1974). One radiocarbon date was obtained from this feature (Table 4.8).

Feature 6. Feature 6 is located just inside the palisade line to the southwest of Mound A. Feature 6 appears to be a series of five pits within a larger sunken area spanning approximately 5 m with an uneven depth reaching 15 to 20 cm (Figure 4.32, 4.33). One of these pits, Feature 31, is intrusive into Feature 6. Feature 6 is located at the edge of the palisade trench. This led excavators to believe that the palisade predates or is contemporary with Feature 6 (Butler 1974). Feature 6 contained lithic debris, bone, and shell and ceramic sherds. One radiocarbon date was obtained from this feature. However, the large range associated with this date makes it of little use for chronological placement of the feature.

Feature 10. Located inside Structure 1, Feature 10 is a roughly circular pit feature measuring approximately 2 m in diameter with a maximum depth of 21 cm and gradually sloping walls. Feature 10 appears to overlap with the northwestern wall trench of the structure. While the relationship was not entirely clear, Butler (1974) suggests that the Feature 10 pit is later than Structure 1.

Feature 32, Feature 33, Feature 35, Feature 40. Feature 33 is located immediately north of Feature 6, on the southwestern area of the site (Figure 4.34). This feature, a circular pit with sloping walls and a flat base, appears to be intrusive into Feature 40 (Butler 1974). It has a diameter of 1.25 m, and a depth of 25 cm. Charred material was present at the bottom of this feature, and evidence of firing could be seen at the base and sides. This led Butler to conclude that the feature was originally used as a cooking pit, cleaned out, and filled with refuse. The contents of this feature were not screened, but material encountered during excavation was retained. Four buckets of fill were kept for floatation. Material recovered from this feature include limestone, baked clay, carbonized maize and seed fragments, bones, and ceramic sherds.

Feature 40 is a large, irregular, shallow pit intruded by Feature 33 (Figure 4.34). This feature appears to begin at the base of the palisade wall trench. It has a maximum depth of around 12 cm. Butler concludes that Feature 35, located to the east of Feature 40 in unit 9-37, is part of the same irregular pit, separated by the intrusive Feature 33, as they have identical fill (Butler 1974). Together these features are 5 m in extent. An additional small pit feature, Feature 32, is located approximately 25 cm to the east of Feature 35.

Feature 50. Trench 1 was placed to bisect the remnant palisade and ditch on the west side of the palisade line. Feature 50, a large pit feature, was located in this trench. Butler (1981) suggests that this feature predates the palisade.

Structure 1. Structure 1 is a wall trench structure located just to the west of Mound A (Figure 4.35) (Table 4.9). There is very little ceramic material from the trenches and associated material of this structure. A radiocarbon date was obtained from material from the southwestern wall trench of the structure (Table 4.8).

Structure 2. Structure 2 was identified by two portions of wall trench in Trench 2, located on the eastern edge of the site (Table 4.10). A wall trench of this structure extends below the outer palisade embankment, indicating that Structure 2 predates the outer palisade construction (Butler 1981:44). Very few artifacts were recovered related to this structure.

Structures 3 and 4 (Table 4.11 and 4.12). Structures 3 and 4 were identified in 1977. They are located to the east of Mound A in Trench 3, which tested the nature of a possible low mound. Structure 3 is a wall trench structure identified by a single wall trench and two hearths. Structure 4 is a single post structure constructed over Structure 3. No analyzable ceramic material was recovered from features associated with either structure although some ceramics were recovered within the structures. A carbon sample was taken from a hearth associated with the earlier Structure 3 to obtain a radiocarbon date (Table 4.8). Feature 61, a shallow wall trench, curves around the structures and appear to be part of a fence or wall.

Feature 55. Feature 55 is a large basin shaped pit feature identified in Trench 3 excavations. This pit measures greater than 1 m by 87 cm and has a depth of at least 23 cm. The feature was only partially excavated because it extended into the southwestern corner of the unit.

Single Post Structure, Feature 7 and Feature 12 (1981). A single post structure was excavated in 1981 (Table 4.13). It is located approximately 100 m to the south of platform Mound A near the south edge of the site. This structure is larger than a typical domestic Mississippian structure at 8 m on a side (Moore and Smith 2009:53). It is square with rounded corners and has approximately 10-12 posts per wall.

One radiocarbon date was obtained from Postmold 48, a post in the southern wall of this structure. Feature 7 is intruded upon by a line of posts within the 1981's single post structure (Figure 4.36). This pit feature measures 162 cm by 150cm. The dark fill contains a large quantity of material including bone, lithics and pottery as well as mussel shell and sandstone gravers (TDOA, Kutruff unpublished notes). Charcoal samples were taken from the eastern side of this feature and one radiocarbon date was obtained (Table 4.8). The lack of visible stratigraphy in the feature fill suggests that it was filled in one episode. Three postmolds oriented north to south intrude into this feature on the western half (Posthole 36, 37, and 38). Unfortunately all three postmolds contained only three ceramic body sherds in addition to a few animal bones and some mussel shell. Feature 12 is located outside the eastern wall of the single post structure adjacent to Feature 7. Feature 12 also appears to be a relatively large pit feature, approximately 225 cm on one side.

Other Radiocarbon Dates. Additional radiocarbon dates are available from Sellars features which did not contain ceramics used in this analysis. However, these dates are still useful in assessing the site's occupation history.

The outer ditch of a palisade line at Sellars remains visible in some places. A portion of the palisade was excavated on the eastern side of the site in Trench 1 where this ditch is still visible, and on the western side of the site in Trench 2, where the ditch is not visible on the surface (Table 4.14) (Figure 4.29). Another palisade line was identified in Square 9-26, 9-27, 9-36, 9-37 (Table 4.15). This palisade line is made up of a series of wall trenches, and surrounded a smaller portion of the site. A carbon sample was obtained from a wall trench portion of this inner palisade, Feature 39 (Table 4.8).

4.4 Beasley Mounds (40SM43)

The Beasley Mounds site (also known as Dixon Springs) is located at the confluence of Dixon Creek and the Cumberland River (Figure 1.3). The site was placed on the National Register of Historic Places in 2010 (Smith and Beahm 2010c).

4.4a Early Exploration

Myer (National Anthropological Archives [NAA], Washington, D.C., Manuscript [MS] 2570, Myer Notebooks Subject File M-Z) produced an early map of the site showing that the site originally had four mounds along with some artificial ridges, stone-box graves and a spring (Figure 4.37). The site covers approximately 5 ha. Sam Stone Bush investigated the site around 1896 (NAA MS2570). He dug a tunnel into the largest mound, Mound 1. Myer measured the mound to be 54.86m (180 ft) in diameter and 2.44m (8 ft) high and located 85.34m (280 ft) south of Dixon Creek (NAA MS2570). Bush encountered human remains as well as structural debris and general refuse throughout the site.

4.4b Recent Excavation

2008. In March of 2008, a small scale mapping and excavation project was undertaken at Beasley Mounds. A topographic map was made of the site and ten 1 m square test units were placed on the site to verify Mississippian occupation and determine site preservation (Figure 4.38 and 4.39) (Smith and Beahm 2008).

Two test units were placed on the top of Mound 1 in what appeared to be a looter’s pit (Test Units A and F), and two were placed on the northern edge (Test Units B and C) (Figures 4.40 and 4.41). At least two and possibly as many as four mound stages were identified. Figure 4.42 shows the profile of Test Unit B and C, showing mound stratigraphy. Stratum F represents a distinct early mound construction state. Stratum G may represent separate, earlier construction episode. There is some slight distinction between strata E/H and C/D, which may represent separate construction episodes. Stratum B contains a large amount of charcoal and is likely the remains of a burned summit structure. A radiocarbon date was obtained for the mound from Stratum B (Table 4.16). Stratum D, and C/E produced the largest ceramic samples, although with a total of 72 sherds, the total ceramic sample from mound contexts is not very large.

Test Unit D was placed in the area between the mounds in what appeared to be the plaza area. The very few artifacts recovered from this unit and stratigraphy support that this area was the plaza. Test Unit E, placed about 50 m south of the center of Mound 1 contained few ceramics as well. Test Unit G, to the northeast of Mound 1 contained a very dense midden and possible wall trench section at the base. One radiocarbon date was obtained from Test Unit G midden (Table 4.16). Test Unit H, to the east of Mound 1 contained few artifacts as well. Test Unit I contained a moderate amount of cultural material, though few ceramics and a possible postmold at the base. Test Unit J was placed to the north east of the earthworks, and contained few artifacts.

Posthole Testing. In 2011, a series of 45 posthole tests were placed across the site to get additional information on the site's extent and artifact distribution (Figure 4.40) (Beahm 2012). These tests also aided the placement of three additional one by one meter test units. Most of these posthole tests yielded little or no artifacts other than chert debris.

Postholes 15 and 16 encountered limestone slabs. These could either be part of bedrock or tops of stone-box graves. Although speculative, their location near where Mound 3 was recorded by Myer suggests that Mound 3 could have been a burial mound.

Posthole test 41 contained rich, dark soil, several mussel shells and animal bone as well as several pieces of shell-tempered ceramics. Test units K and L were placed in this area of the site, approximately 90 m southwest of Mound 1. Test Unit M was placed adjacent to 2008's Test Unit G midden.

Test Units K and L. A dark midden began to appear at around 15 cm below ground surface. Artifact density increased around 40 cm below ground surface and continued for about 40 cm. One radiocarbon date was obtained from this midden in Test Unit K (Table 4.16).

Test Unit M. Test Unit M was placed to the east of 2008's Test Unit G, where a dense midden was encountered. This midden appeared in Test Unit M at approximately 23 cm below ground surface and continued for a maximum of 35 cm. It seemed to be less dense and not as dark as the midden encountered to the west in Test Unit G or in Test Units K and L. This unit did contain a large quantity of gastropod shells, as well as moderate amount of ceramics.

These small scale excavations accomplished several goals. A moderate artifact sample was obtained from the site (Table 4.17). Site preservation was determined to be fairly good with the earthworks identified by Myer partially detectable in the topographic map. The occupation of the site was placed securely in the Mississippian period and charcoal and ceramics were obtained to more precisely date the site occupation. Mound construction stages were also documented.

4.5 Moss Mounds (40SM25)

Moss Mound is located on an old alluvial terrace at the junction of the Cumberland and Caney Fork rivers (Figure 1.3). The site is estimated to be 4 ha in extent.

4.5a Early Exploration

The site is discussed briefly in Myer's unpublished notes (NAA MS2570). Myer describes the site as having one large oval mound 18.29 m (60 ft) in diameter and 1.83 m (6 ft) high, as well as a smaller burial mound 9.14 m (30 ft) in diameter and .61 (2 ft) in height (Figure 4.43). Charles Peabody put two trenches into the large mound in the spring of 1916. Myer does not give very many details about the result of this testing other than to say that “nothing was found” and no graves were present. He mentions that he and Peabody disagreed about the nature of the mound- Peabody believing that it was a natural rise with Myer asserting that it was a cultural feature. His supporting evidence is that the depth of subsoil is 2.4 m on the mound while it is only 61 to 76 cm in other places on the site. He does refer to “later exploration” of this mound, which encountered charred cane and daub, but it is unclear when or who did this testing.

Peabody also explored the smaller, burial mound. He only encountered one stone-box grave containing the secondary burial of two individuals, whose contents seemed to have been disturbed. Myer reports that “the men on Moss farm” had dug several graves in this mound before his investigations (NAA MS2570).

Robert Jolley submitted a site form to the Tennessee Division of Archaeology in 1977. His surface collection included two shell-tempered plain sherds and several projectile point fragments. At this time he estimated the site to be 305 m by 122 m in extent. Prior to Jolley’s visit to the site, Ervin Smith had recorded the site as Site No. 39 (TDOA). Photos from Smith show that there was a fence to the east of the large mound running approximately north to south and east to west (Figure 4.44). The area within the fence appears to have been planted with corn. Today, the fence is no longer present but the former location of the fence line is still used as a dirt road through the field.

4.5b Modern Excavation

Posthole Tests. In August of 2011, 24 posthole tests were placed across the site to get a better idea of its layout and extent as well as to guide the placement of test units (Figure 4.45) (Beahm 2012). The relatively low density of artifacts from these posthole tests suggest that there was not an extremely high population density occupying the site at any time.

The tests reveal use of the site during multiple time periods including during the Early Archaic, Woodland, and Mississippian period. An Early Archaic endscraper was recovered from Posthole Test I, located 25 m southeast of the main mound. Scrapers are processing tools, which suggests that this could have been the location of a camp site during the Early Archaic period. Posthole Test F, located to the southeast of the large mound contained Woodland period limestone-tempered ceramics.

A total of 15 Mississippian sherds and sherd fragments were recovered from these posthole tests. These were restricted to three posthole tests; A, K, and T. These units are located 25 m north and northeast of the approximate top of the large mound. Of particular interest was the present of a shell-tempered check-stamped and several shell-tempered cordmarked sherds found in Posthole Test K.

Test Unit 1. Test Unit 1 was a 2 m by 2 m unit placed over Posthole Test K (Figure 4.46). This unit was placed there because of the number of ceramics recovered from the posthole test. Twelve features were excavated in Test Unit 1. The features from Test Unit 1 include six small postmolds and four larger postmolds with small insertion ramps (Figure 4.47). There is not a very clear structural pattern to these posts visible in just this one unit, but they appear to represent at least two different building stages or structures, as some are intrusive into a clay layer present at 40 cm, and some originated below that stratum (Figure 4.48). In addition to these recorded features, two postmolds were observed in the wall profiles. Few artifacts were found within these features although a handle fragment was recovered from Feature 4 (Table 4.18).

Test Unit 2. The goal of Test Unit 2 was to verify that the significant rise visible on this site was a platform mound, and if possible document mound construction stages. A secondary goal was to collect charcoal samples for radiocarbon dating and a ceramic sample for analysis. In order to document as many construction stages as possible without having to excavate thorough the entire mound height, a location on the apparent mound flank was selected. This 1 m by 2 m unit is located approximately 10 m to the northeast of the apparent mound summit.

A series of yellow clay deposits in the western end of the unit, closest to the mound summit began about 30 cm below ground surface. Layers of yellow clay continue to be encountered for 20 cm. This suggests that the mound summit was covered over with clay. However these clay layers are discontinuous, perhaps indicating some mound disturbance (Figure 4.49). A clear postmold extending through the clay layers suggests a mound summit structure present on the capped surface (Figure 4.50). A clear postmold was identified and excavated in the southwestern corner of the unit at a depth of 50 cm.

The first goal of verifying that the rise was a man made mound was met. At 70 cm deep below intact clay layers, an oval shaped area of soft dirt containing charcoal, calcined animal bone and small shell-tempered sherds was encountered. Although the original function of this small deposit was not determined, it did provide charcoal for a radiocarbon date (Table 4.19).

Mound fill continued beyond this depth but excavation of this test unit was terminated at 90 cm below ground surface. At this point, the unit continued to be mottled with yellow clay, the eastern section being softer than the western section of the unit. Two auger tests were placed in the unit at 90 cm. One was placed in the southeast corner, and one in the southwest corner. The distinctive orange subsoil was not reached at 120 cm from the southeast corner or 140 cm from the southwest corner

Although excavations from Test Unit 2 verified that the large rise at the site is of anthropogenic origin, they did not reveal clear mound construction stages for this mound (Figure

4.51). A small and largely non-diagnostic ceramic sample of 34 sherds was recovered from Test Unit 2.

4.6 Summary

All sites in the sample were explored during nineteenth and early twentieth century to varying extents. Information available from these early explorations was used in ceramic analysis and the development of the sites' occupation histories. The extent of modern excavations varied between sites in the sample as well, with extensive work conducted at Castalian Springs and Rutherford Kizer, a moderate amount of work at Sellars, and small scale excavations at Beasley and Moss.

Platform mounds from Castalian Springs, Sellars, Beasley and Moss were excavated in historic and modern times. Palisade lines were excavated at Rutherford Kizer and Sellars. Structures, of both wall trench and single post architecture, were excavated at Rutherford Kizer, Castalian Springs, and Sellars. Pit features and midden deposits were excavated from all sites in the sample. In addition to vessels excavated during early site explorations, a total of 38, 925 sherds from modern excavations were used in ceramic analysis. A total of sixty-six radiocarbon dates were obtained from the five sample sites.

Table 4.1: Rutherford Kizer Radiocarbon Dates (Moore 2001c:75; Smith 2002).

				intcal09.14c	
Context	Material	Sample No.	Date BP	Calibrated Ranges from Probability Distribution A.D. (1 sigma)	Calibrated Ranges from Probability Distribution A.D. (2 sigma)
Feature 738 (large hearth, lot 85)	wood	Beta-90627	1320±60	652-723 (0.71) and 739-770 (0.29)	612-828 (0.97) and 838-866 (0.03)
Feature 15 (small refuse filled pit, Strip Block B)	wood	Beta-70876	970±50	1019-1053 (0.34) and 1080-1153 (0.66)	984-1185 (1.00)
Feature 528 (interior palisade bastion post)	wood	Beta-90625	780±60	1192-1196 (0.02) and 1207-1283 (0.98)	1050-1082 (0.03), 1125-1136 (0.01), 1152-1302 (0.94) and 1366-1383 (0.02)
Feature 96 (postmold, Structure 1, Strip Block B)	wood	Beta-70880	640±50	1288-1321 (0.43) and 1349-1391 (0.57)	1279-1405 (1.00)
Feature 20 (large refuse filled pit, Strip Block B)	wood	Beta-70874	630±60	1291-1325 (0.41) and 1344-1394 (0.59)	1276-1415 (1.00)
Feature 36 (large refuse-filled pit, Strip Block B)	wood	Beta-70877	630±50	1292-1323 (0.40) and 1346-1393 (0.60)	1281-1407 (1.00)
Feature 101 (large refuse filled pit, Strip Block B)	wood	Beta-70873	580±50	1309-1360 (0.67) and 1386-1412 (0.33)	1294-1426 (1.00)
Feature 20 (large refuse filled pit, Strip Block B)	wood	Beta-70875	580±50	1309-1360 (0.67) and 1386-1412 (0.33)	1294-1426 (1.00)
Feature 733 (exterior palisade bastion post)	wood	Beta-90024	590±60	1304-1365 (0.71) and 1384-1409 (0.29)	1287-1428 (1.00)
Feature 34 (posthole, Structure 1, Strip Block B)	wood	Beta-70878	570±60	1309-1361 (0.62) and 1386-1418 (0.38)	1293-1436 (1.00)
Feature 708 (interior palisade post)	wood	Beta-90626	570±60	1309-1361 (0.62) and 1386-1418 (0.38)	1293-1436 (1.00)
Feature 101 (large refuse filled pit, Strip Block B)	wood	Beta-70872	550±50	1319-1351 (0.45) and 1390-1428 (0.55)	1299-1370 (0.49) and 1380-1441 (0.51)
Feature 832 (exterior palisade post)	wood	Beta-90025	540±60	1318-1352 (0.39) and 1390-1435 (0.61)	1297-1447 (1.00)
Feature 88 (posthole, Structure 1, Strip Block B)	wood	Beta-70879	540±50	1322-1348 (0.35) and 1392-1433 (0.65)	1300-1368 (0.43) and 1381-1445 (0.57)
Feature 867 (exterior palisade post)	wood	Beta-90023	500±50	1334-1336 (0.01) and 1398-1448 (0.99)	1307-1362 (0.18) and 1385-1475 (0.82)

Table 4.2: Radiocarbon Dates from Castalian Springs.

				intcal09.14c	
Context	Material	Sample No.	Date BP	Calibrated Ranges from Probability Distribution A.D. (1 sigma)	Calibrated Ranges from Probability Distribution A.D. (2 sigma)
2005 unit	wood	UTCAG 08-022 V1	745±70	1212-1300 (0.93) and 1369-1381 (0.07)	1058-1064 (0.00), 1067-1071 (.00), 1155-1331 (0.86) and 1337-1397 (0.14)
Feature 4	wood	UTCAG 08-021 V2	840±70	1055-1076 (0.12) and 1154-1265 (0.88)	1039-1277 (1.00)
Feature 6, Structure 1	wood	UTCAG 08-010 V2	840±70	1055-1076 (0.12) and 1154-1265 (0.88)	1039-1277 (1.00)
Feature 9, Structure 1	wood	UTCAG 08-012 V2	890±70	1044-1098 (0.37), 1119-1142 (0.15) and 1147-1215 (0.48)	1023-1260 (1.00)
Feature 17, Structure 1	wood	UTCAG 08-011 V1	780± 70	1183-1284 (1.00)	1045-1096 (0.06), 1119-1142 (0.02), 1147-1310 (0.88), and 1360-1387 (0.04)
Feature 25, Structure 1	wood	UTCAG 08-013 V1	795±70	1174-1279 (1.00)	1042-1106 (0.10), 1117-1299 (0.89), and 1369-1380 (0.01)
Feature 30, Structure 1	wood	UTCAG 08-014 V1	830±70	1058- 1065 (0.03), 1068-1071 (0.01) and 1155-1272 (0.96)	1040-1112 (0.19) and 1115-1281 (0.81)
Feature 51	wood	UTCAG 08-015 V2	825±70	1060-1061 (0.00) and 1155-1274 (1.00)	1040-1111 (0.18) and 1115-1283 (0.82)
Feature 55, Structure 1	wood	UTCAG 08-016 V1	830±70	1058- 1065 (0.03), 1068-1071 (0.01) and 1155-1272 (0.96)	1040-1112 (0.19) and 1115-1281 (0.81)
Feature 71, Structure 1	wood	UTCAG 08-018 V1	685±70	1264-1320 (0.59) and 1350-1391 (0.41)	1219-1408 (1.00)
Feature 74	maize	UTCAG 08-017 V2	690±70	1261-1320 (0.61) and 1350-1391 (0.39)	1217-1408 (1.00)
Feature 91	wood	UTCAG 08-019 V1	710±70	1227-1233 (0.04), 1239-1248 (0.06), 1251-1311 (0.65), and 1359-1387 (0.25)	1186-1201 (0.02) and 1206-1406 (0.98)
Feature 93	wood	UTCAG 08-020 V2	1000±70	978-1054 (0.54) and 1077-1154 (0.46)	893-1187 (0.99) and 1199-1206 (0.01)
Feature 110, mid Md2	wood	Beta-283149	820±40	1187-1199 (0.15) and 1206-1261 (0.85)	1058-1065 (0.01), 1066-1072 (0.01), and 1155-1277 (0.99)
Feature 125, base Md2		Beta-	560±40	1319-1351 (0.52) and 1390-1419 (0.48)	1301-1367 (0.54) and 1382-1434 (0.46)
Feature 125, base Md2	wood	Beta-283150	610±40	1300-1330 (0.41), 1338-1368 (0.39) and 1381-1397 (0.20)	1301-1434 (1.00)
Feature 134 Pit 1	wood	Beta-325700	700±30	1271-1297 (0.96) and 1374-1376 (0.04)	1262-1309 (0.81) and 1361-1386 (0.19)
Feature 134 Pit 2	wood	Beta-325699	520±30	1406-1433 (1.00)	1324-1345 (0.11) and 1393-1443 (0.89)
Feature 161	maize	Beta-325701	540±30	1329-1340 (0.18) and 1396-1426 (0.82)	1317-1354 (0.30) and 1389-1437 (0.70)
Feature 233	wood	Beta-283152	620±40	1297-1325 (0.38), 1344-1373 (0.40) and 1377-1393 (0.23)	1288-1405 (1.00)

Table 4.2 cont.

				intcal09.14c	
Context	Material	Sample No.	Date BP	Calibrated Ranges from Probability Distribution A.D. (1 sigma)	Calibrated Ranges from Probability Distribution A.D. (2 sigma)
Feature 185	wood	Beta 282037	580±40	1313-1357 (0.67) and 1388-1410 (0.33)	1297-1373 (0.65) and 1377-1422 (0.35)
Feature 195	wood	Beta-283153	700±40	1268-1300 (0.79) and 1368-1381 (0.21)	1229-1231 (0.00), 1240-1247 (0.01), 1251-1321 (0.72) and 1349-1391 (0.27)
Md 2Last summit	wood	Beta-283155	960±40	1023-1051 (0.33), 1081-1126 (0.50) and 1135-1152 (0.17)	996-1006 (0.01) and 1012-1166 (0.99)
Md 2Last summit	cane	Beta-283154	610±40	1300-1330 (0.41), 1338-1368 (0.39) and 1381-1397 (0.20)	1301-1434 (1.00)
Fill inside Mound 3 top structure	wood	Beta 322139	590±30	1313-1357 (0.75) and 1388-1403 (0.25)	1298-1370 (0.71) and 1379-1413 (0.29)
Dover sword in Mound 3	wood	Beta 322137	590±30	1313-1357 (0.75) and 1388-1403 (0.25)	1298-1370 (0.71) and 1379-1413 (0.29)
Deposit at the base of Mound 3	wood	Beta 322142	610±30	1302-1328 (0.40), 1341-1366 (0.40) and 1382-1395 (0.20)	1296-1403 (1.00)
hearth/firepit on last documented stage of Mound 3	wood	Beta 322131	610±30	1302-1328 (0.40), 1341-1366 (0.40) and 1382-1395 (0.20)	1296-1403 (1.00)
Mid mound 3	wood	Beta 322134	620±30	1298-1324 (0.40), 1346-1371 (0.39) and 1379-1393 (0.21)	1292-1399 (1.00)
Female bottle, Top of Mound 3	wood	Beta 322133	670±30	1282-1303 (0.57) and 1365-1383 (0.43)	1275-1319 (0.55) and 1351-1390 (0.45)
Deposit at the base of Mound 3	wood	Beta 322128	670±30	1282-1303 (0.57) and 1365-1383 (0.43)	1275-1319 (0.55) and 1351-1390 (0.45)
Fill inside Mound 3 top structure	wood	Beta 322141	750±30	1252-1283 (1.00)	1222-1286 (1.00)
N1167E792L3- mid Mound 3	wood	Beta 322136	770±30	1227-1233 (0.15), 1239-1248 (0.17) and 1251-1274 (0.68)	1217-1281 (1.00)
Fill inside Mound 3 top structure	wood	Beta-322140	830±30	1186-1200 (0.20) and 1206-1254 (0.80)	1161-1264 (1.00)
Shale gorget Structure 5 wall trench	wood	Beta 322138	540±30	1329-1340 (0.18) and 1396-1426 (0.82)	1317-1354 (0.30) and 1389-1437 (0.70)
Feature 119	wood	Beta 322132	640±30	1292-1314 (0.40) and 1356-1388 (0.60)	1283-1329 (0.43) and 1340-1396 (0.57)
Feature 100	wood	Beta 322129	590±30	1313-1357 (0.75) and 1388-1403 (0.25)	1298-1370 (0.71) and 1379-1413 (0.29)
Feature 106	wood	Beta 322135	670±30	1282-1303 (0.57) and 1365-1383 (0.43)	1275-1319 (0.55) and 1351-1390 (0.45)
Feature 119	wood	Beta 322130	550±30	1326-1343 (0.35) and 1394-1420 (0.65)	1312-1358 (0.42) and 1387-1433 (0.58)

Table 4.3: Castalian Springs Structure 1 Features.

Feature #	Description of Feature
6	Interior-most west wall trench
9	Southern central support post
17/23	Second interior-most west wall trench
20	Second exterior-most west wall trench
22/29/46	Exterior-most north wall trench
25	Second stage post in southern support post
30/48	Interior-most southern wall trench
31/65	Exterior eastern wall trench
32	Southern central interior support post
33/36	Exterior-most western wall trench
37/52	Second exterior most northern wall trench
57	Exterior southern wall trench
59/63/64/66/84	Second interior northern wall trench
60	Ramp on western side of northern interior support post
70	Interior-most northern wall trench
71	Northern interior support post
83	Interior-most eastern wall trench

Table 4.4: Castalian Springs Structure 2 Features.

Feature #	Description
144	Western wall trench
146	Southern wall trench
149	Eastern wall trench

Table 4.5: Castalian Springs Structure 3 Features.

Feature #	Description
132	Central hearth
138	Western wall trench
148/162	Southern wall trench
156	Northern wall trench

Table 4.6: Castalian Springs Structure 4 Features.

Feature #	Description
154	Western wall trench
157	Western wall trench
158	Northern wall trench
159	Structure interior/floor fill

Table 4.7: Castalian Springs Mound 3 Features of Interest.

Feature #	Description
303	Cluster of baked clay and ash, 10 m from approximate center of mound and 30 cm deep, above Feature 305
305	Large pit with dark fill and ash deposit below mound construction- Pre Mound 3
306	Firepit on edge of Feature 305 below mound construction
308/310	Southeastern wall trench of Structure 5, directly west of the Mound
309/312	Northeastern wall trench of Structure 5, directly west of the Mound
320	Structure 5 house basin
331	Medium brown soil above Feature 335 ash deposit
335/360	Large ash deposit with dense concentration of charcoal
340	Clay cap below plowzone near approximate center of mound
351	Shallow area of lighter soil above northwestern wall trench of southern structure on last documented mound stage
362	Dark deposit on top of ash deposit (Feature 335/360)
377	Hearth below Feature 335 within northern structure on last documented mound stage

Table 4.8: Radiocarbon Dates from Sellars (Butler 1981; Smith 2002).

				intcal09.14c	
Context	Material	Sample No.	Date BP	Calibrated Ranges from Probability Distribution A.D. (1 sigma)	Calibrated Ranges from Probability Distribution A.D. (2 sigma)
Feature 39 (74), early village palisade	wood	UGa-948	1545±110	410-618 (1.00)	252-669 (1.00)
PM 48 (81)	wood	UGa-4551	1160±100	772-985 (1.00)	660-1032 (1.00)
Feature 6 (74), refuse filled pits associated with early palisade	wood	UGa-947	975±235	784-787(0.005), 825-841(0.02), and 862-1269 (0.97)	634-1420 (1.00)
Feature 7 (81)	wood	UGa-4553	965±55	1019-1055(0.32) and 1076-1154 (0.68)	986-1191 (0.99) and 1196-1207 (0.01)
Feature 2 (74), wall trench of Structure 1	wood	UGa-944	900±110	1029-1218 (1.00)	897-921 (0.02) and 943-1289 (0.98)
Feature 22 (74), post trench of main village palisade	wood	UGa-946	800±65	1178-1276 (1.00)	1043-1103 (0.09), 1118-1143 (0.03) and 1146-1295 (0.87)
Feature 67(77), hearth	wood	UGa-4552	730±80	1215-1310 ((0.83) and 1360-1386 (0.17)	1058-1073 (0.01) and 1154-1409 (0.99)
Feature 4 (74), large refuse filled pit	wood	UGa-945	705±65	1253-1315 (0.69) and 1355-1388 (0.31)	1212-1404 (1.00)

Table 4.9: Sellars Structure 1 Features (1974) (TDOA notes).

Feature #	Description of Feature
1	Northwest wall trench
2	Southwest wall trench
3	Small pit feature just south of Feature 25, located in the center of Structure 1, disturbed by rodent burrow
10	Pit feature, intrusive into northeastern wall trench (Feature 20)
11	Pit feature, intrusive into northeastern wall trench (Feature 20)
17	Small fire basin outside of the northeastern wall trench, almost square and filled with ash
18	Small pit features outside of the northeastern wall trench
19	Southeastern wall trench of structure, intruded upon by Feature 3, on northeastern end, there is a right angle part of entrance way
20	Northeastern wall trench, pits Features10, 11, and 24 appear intrusive into this feature
21	Small trench forming the northern side of entrance into structure (with Feature19)
23	Large shallow pit, intrusive onto southern corner of Structure 1 (Feature 19)
24	Pit feature, intrusive into northeastern wall trench (Feature 20)
25	Small pit, just north of Feature 3, in center of structure, disturbed by rodent burrows
26	Basin-like expansion of Feature 2 wall trench at southern corner of structure
Post 1	Located in the western corner of the structure in space between the two wall trenches
Post 4	Located in the east-central interior of the structure
Post 13	Double postmold outside structure on northeastern side
Post 14	Located in the south-central interior of the structure
Post 15	Associated with Feature 20 northeastern wall trench
Post 16	Associated with Feature 20 northeastern wall trench
Post 19	Located in entranceway between Feature 21 and angular portion of Feature 19
Post 20	Located outside north of structure, either intrusive into or intruded by Feature 11

Table 4.10: Sellars Structure 2 Features (1974) (TDOA notes).

Feature #	Description of Feature
37	Stone box grave on exterior of structure
41	Southern wall trench, contains five identified postmolds
42	Small portion of eastern wall trench
Post 31	Westernmost postmold in Feature 41
Post 32	Second from west postmold in Feature 41
Post 33	Third from west postmold in Feature 41
Post 34	Second from east postmold in Feature 41
Post 35	Easternmost identified postmold in Feature 41

Table 4.11: Sellars Structure 3 Features (1977) (TDOA notes).

Feature #	Description of Feature
64	Southwestern wall trench
65	Central hearth
67	Central hearth
Post 56	Western central support post
Post 69	Southern central support post
Post 70	Eastern central support post

Table 4.12: Sellars Structure 4 Features (1977) (TDOA notes).

Feature #	Description of Feature
Post 66	Large postmold within line of unnamed posts of Structure 4

Table 4.13: Sellars Single Post Structure Features (1981) (TDOA notes).

Feature #	Description of Feature
2	Large postmold
4	Shallow pit in southwestern corner of structure
5	Shallow pit in southwestern corner of structure
6	Feature in southwestern corner of structure
7	Pit feature intruded upon by Posts 36, 37, and 38, likely predates structure
8	Large postmold near center of structure
9	Large postmold near center of structure
12	Pit feature located outside the eastern wall of structure
Post 49-54, 57-62	Posts making up east wall of structure
Post 39-42, 44-48	Post making up south wall of structure
Post 9, 11-17, 19, 20, 22	Posts making up west wall of structure
Post 2	Post in interior of structure, north side
Post 33, 34	Post in interior of structure, northeast side
Post 36, 37, 38	Posts in interior of structure, likely intrusive into Feature 7 pit
Post 55, 67	Post in interior of structure, east side
Post 68	Post in interior of structure near center

Table 4.14: Outer Palisade Features in Trenches 1 and 2.

Feature #	Description of Feature
22	Palisade wall trench identified on west side of site
45	Outer palisade ditch identified on west side of site
49	Wall trench, possible palisade trench earlier than Feature 22, on west side of site
50	Large pit feature, appears to predate Feature 22 palisade trench, identified on west side of site
51	Pit feature located on the interior of palisade line on west side of site, intrusive into Feature 52
52	Pit feature located on the interior of palisade line on west side of site, intruded into by Feature 51
54	Base of outer palisade embankment on east side of site

Table 4.15: Features in Inner Palisade Excavation Unit (9-27 and 9-36, 1974) (TDOA notes).

Feature #	Description of Feature
Feature 34, 36, 38, 39, 43, 44, 45, 46	Sections of wall trench making up palisade
Feature 7	Small pit feature located on outside of palisade line, not directly associated with palisade
Feature 8	Small pit feature located on outside of palisade line, not directly associated with palisade
Feature 30	Pit feature located on interior of palisade line, not directly associated with palisade
Feature 47	Pit feature intrude on by Feature 44 wall trench section
Post 37-40	Postmolds in Feature 45 wall trench section
Post 41, 42	Postmolds in Feature 43 wall trench section
Post 23	Postmold in Feature 34 wall trench section
Post 25, 26	Postmold in Feature 36 wall trench section
Post 43, 44	Postmold in Feature 38 wall trench section
Post 45- 50	Postmolds in Feature 39 wall trench section
Post 51, 52	Postmolds in Feature 47 wall trench section
Post 24	Postmold on exterior of palisade line
Post 28	Large postmold on exterior of palisade line
Post 29	Large postmold on interior of palisade line
Post 30	Large postmold on exterior of palisade line
Post 36	Large postmold on exterior of palisade line

Table 4.16: Radiocarbon Dates from Beasley.

				intcal09.14c	
Context	Material	Sample No.	Date BP	Calibrated Ranges from Probability Distribution A.D. (1 sigma)	Calibrated Ranges from Probability Distribution A.D. (2 sigma)
Mound Construction Stage	wood	UTCAG 08-023 V1	730 ±70	1219-1303 (0.88) and 1366-1383 (0.12)	1163-1332 (0.81) and 1337-1398 (0.19)
Test Unit G	wood	Beta-323839	660±30	1285-1306 (0.49) and 1363-1385 (0.51)	1278-1322 (0.50) and 1347-1392 (0.50)
Test Unit K	wood	Beta-323840	710±30	1269-1293 (1.00)	1256-1307 (0.88) and 1362-1385 (0.12)

Table 4.17: Non-Ceramic Artifacts Recovered from Beasley Test Units.

	TU A	TU B/C	TU D	TU E	TU F	TU G	TU H	TU I	TU J	TU K	TU L	TU M
LITHICS												
Chipped Stone												
Flakes, blank	51	439	53	103	126	148	50	164	83	608	671	176
Flakes, secondary	8	101	8	36	28	59	10	45	32	255	255	120
Flakes, primary	3	22	1	2	10	10	5	9	5	40	42	24
Flakes, blank; Dover						2					1	
Dover Shatter, blocky debris										1		
Biface and biface fragments		1		2				1	2	4	5	2
PPKs and PPK fragments		4			1	1				4	2	2
scraper										1	1	
microblade								1				
modified flake		1						0		1	2	2
Core and Core fragments	2	9		4	2	7		3	1	3	1	1
Test cobble					1					1		2
shatter, blocky debris	46	340	40	50	134	104	43	153	48	1092	846	280
Ground Stone												
abrader							1				1	1
adze												1
hammer stone								1		1		
smoothed sandstone										3	4	6
FAUNA												
bone fragments (gm)	10.9	135.8		5.8	71.3	319.3		25.6	0.8	1309.13	868.89	468.2
burnt bone fragments (gm)	1.2	5.4		1.7	3.4	13.0		1.1		35.13	48.47	25.1
calcined bone fragments (gm)		5.6			5.2	3.7		0.9		26.5	12.29	9.6
gastropods (gm)	1.1	1.8			13.2	2240.6	0.2	0.4		2688.48	366.89	4157.96
mussel shell (gm)	0.6	5.0			40.8	654.3				3378.34	3530.38	1572.28
BULK												
Rocks, misc (gm)	390.6	2130.3	699.3	267.7	1279.7	307	1140	802.5	104.5	908.7	643.83	718.56
Limestone (gm)	105.3	958	53.8	350.7	139.8	172.9	480	353.5	56.5	1173.06	1024.13	878.44

Table 4.17 cont.

	TU A	TU B/C	TU D	TU E	TU F	TU G	TU H	TU I	TU J	TU K	TU L	TU M
Sandstone (gm)	25.3	106.9	9.4	31.8	20.3	115.8	10.6	65.5	19.2		9.72	70.5
Shale (gm)	0.2	8.1	0.4		13.4	9.8		13.6		52.38	0.26	18.41
unid mineral										2	1	
baked/bunt clay (gm)	12.2		2.6	7.6	150.5	67.1	1.2	5.9	12.5	178.2	180.58	230.39
carbonized flora (gm)	0.5				0.3							
cannel coal (gm)			1.1			0.4						
Charcoal (gm)	27.8	3601.63	0.6		127	106.4		0.7	1.6	2.54		0.14
crystalline rock											2	1
HISTORIC												
nails	2									2		
screw	1											
metal, unid	1											
clear, flat glass	1											

Table 4.18: Non-Ceramic Artifacts Recovered from Moss.

	Test Unit 1										Test Unit 2									
	L1&2	L3	L4	L5	L6	L7	F1	F3	F4	F5	L1&2	L3	L4	L5	L6	L7	L8	L9	F13	F15
LITHICS																				
Flakes, blank	162	164	136	93	35	26	5		2	1	39	65	50	10	5	7	5	10		1
Flakes, secondary	55	43	62	66	7	6	2	1	2		14	30	19	9	1	2	2	5		1
Flakes, primary	15	3	9	11	3	1					4	4	1					2		
Shatter, blocky debris	129	184	187	110	27	28	2		1	1	48	52	33	7	3	4	6	4		2
Dover, flake, blank											1									
Core and Core fragments		1		1																
Test cobble		2		1																
Biface and fragments	1		1	1																
PPKs and fragments	2	2												1						
microdrill				2																
modified flake		1	2									1								
abrader	1																			
scraper			1																	
smoothed stone				1											1					
FAUNA (gm)																				
bone fragments				3													3.52	3.76		94.35

Table 4.18 cont.

	Test Unit 1								Test Unit 2									
	L1&2	L3	L4	L5	L6	L7	F3	F5	L1&2	L3	L4	L5	L6	L7	L8	L9	F13	F15
calcined bone			8	12					0.27		0.97	1.33			0.11			
mussel shell				0.96									2.15					
BULK (gm)																		
Rocks, misc	594.18	208.2	336.4	173.7	99.12	6.83	4.5	13.1	87.4	114.3	63.2	4.48	4.33	6.6	5.08	22.9		17.2
Limestone	47.13	75.37	189.5	289.2		9.5			27.2	12.43	7.15			23.15				
Sandstone	21.56		136.5			18.5			81.3	114.9	68.3			25.32		25		
shale												2						
gray mineral	2.96																	
red ochre?	1.7	2.93	0.19															
baked/bunt clay	55.36	73.37	454.2	270.4	19.09	17.4		0.3	7.25	18.78	4.21	2.69	1.1	0.39	1.13	3.44		11.68
carbonized flora	16		26.69															
crystalline rock		0.29																
charcoal	0.33	2.24	24.88	261.6	29.84	72.6	6.2	1.45			10.1	32.9	104.9	185.5	80.9	82.7	1.4	258.9
silica froth										0.55								
HISTORIC																		
flat, clear glass									1									

Table 4.19: Radiocarbon Date from Moss.

Context	Material	Sample No.	Date BP	Calibrated Ranges from Probability Distribution A.D. (1 sigma)	Calibrated Ranges from Probability Distribution A.D. (2 sigma)
Feature 15	wood	Beta-330625	760 ±30	1228-1232(0.05), 1241-1247(0.13), and 1251-1279(0.82)	1220-1283(1.00)

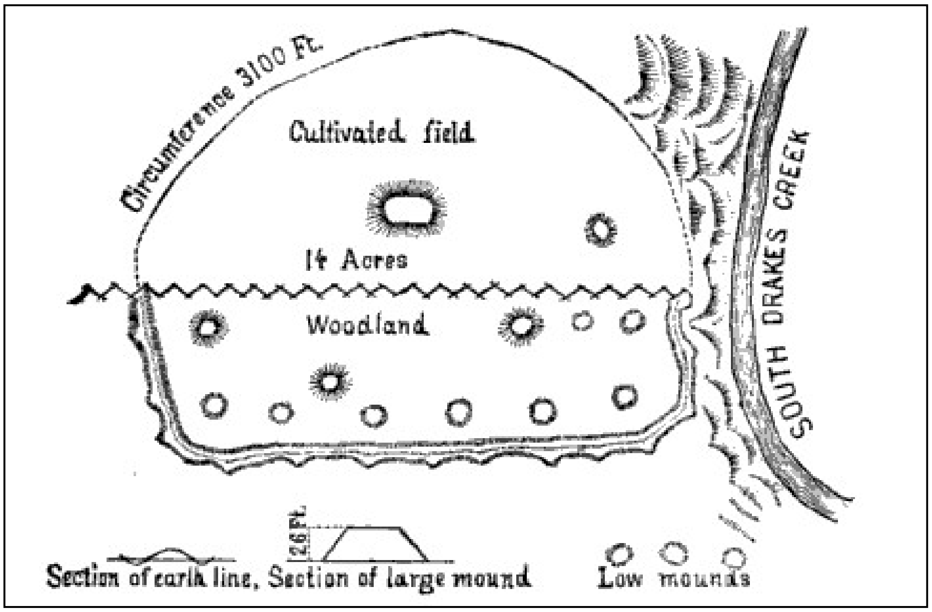

Figure 4.1: Historic Map of Rutherford Kizer (Thruston 1897:33).

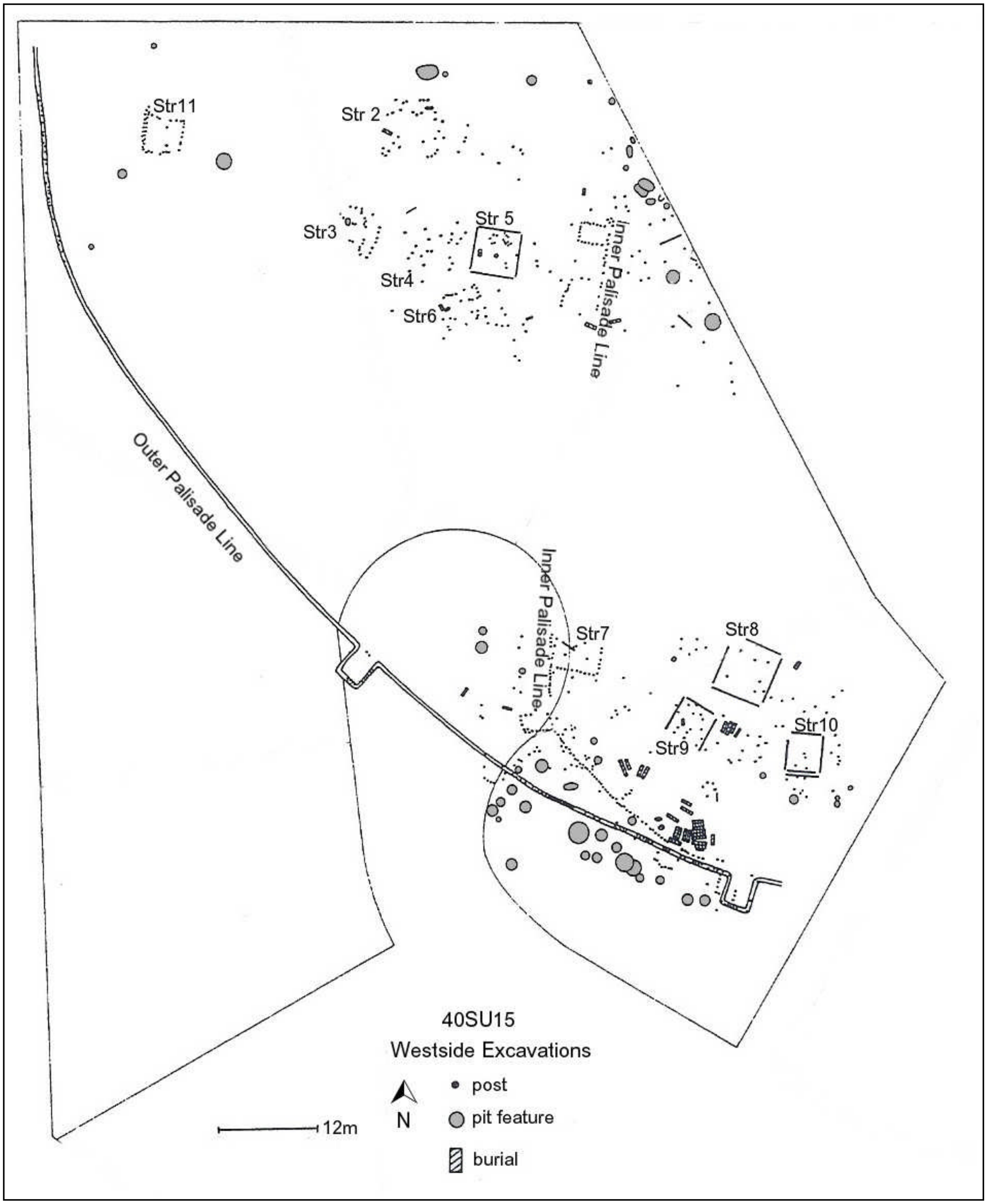

Figure 4.2: Rutherford Kizer Westside Excavations (modified from Moore and Smith 2001:46).

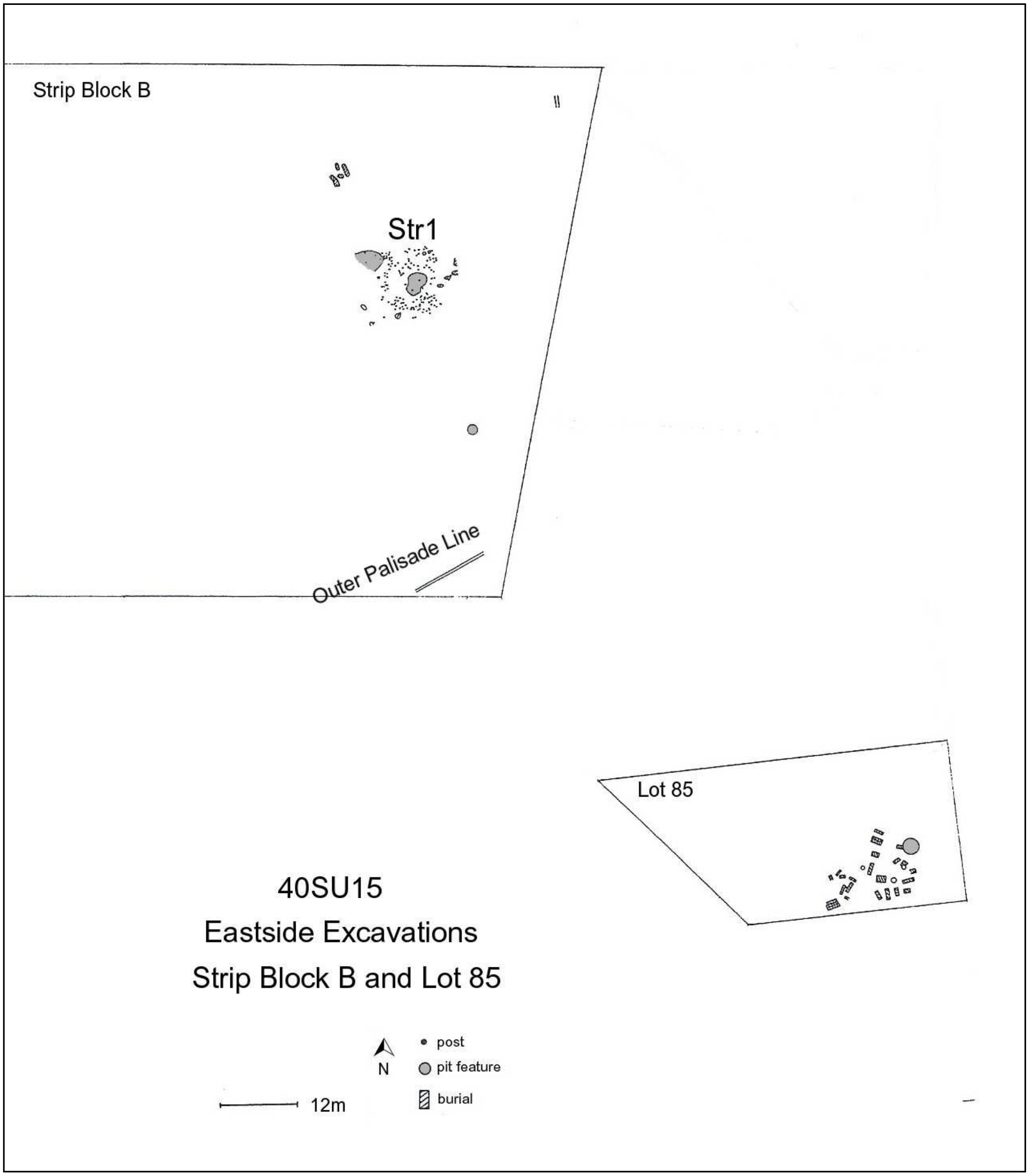

Figure 4.3: Rutherford Kizer Eastside Excavations (modified from Moore and Smith 2001:47).

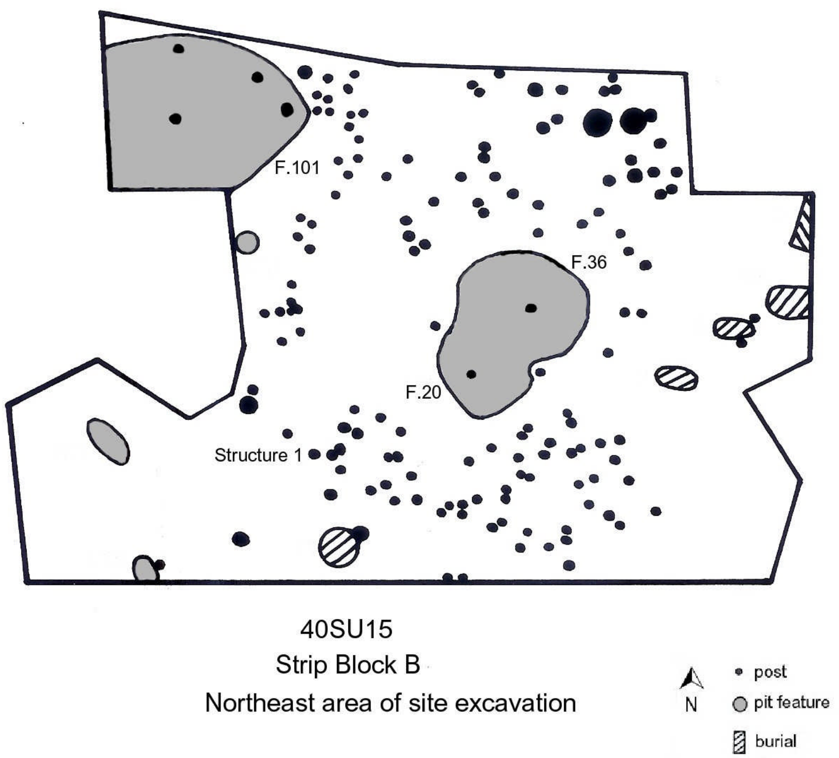

Figure 4.4: Rutherford Kizer Excavations of Strip Block B. Structure 1 area showing Features 20, 36, and 101 (modified from Moore and Smith 2001:34).

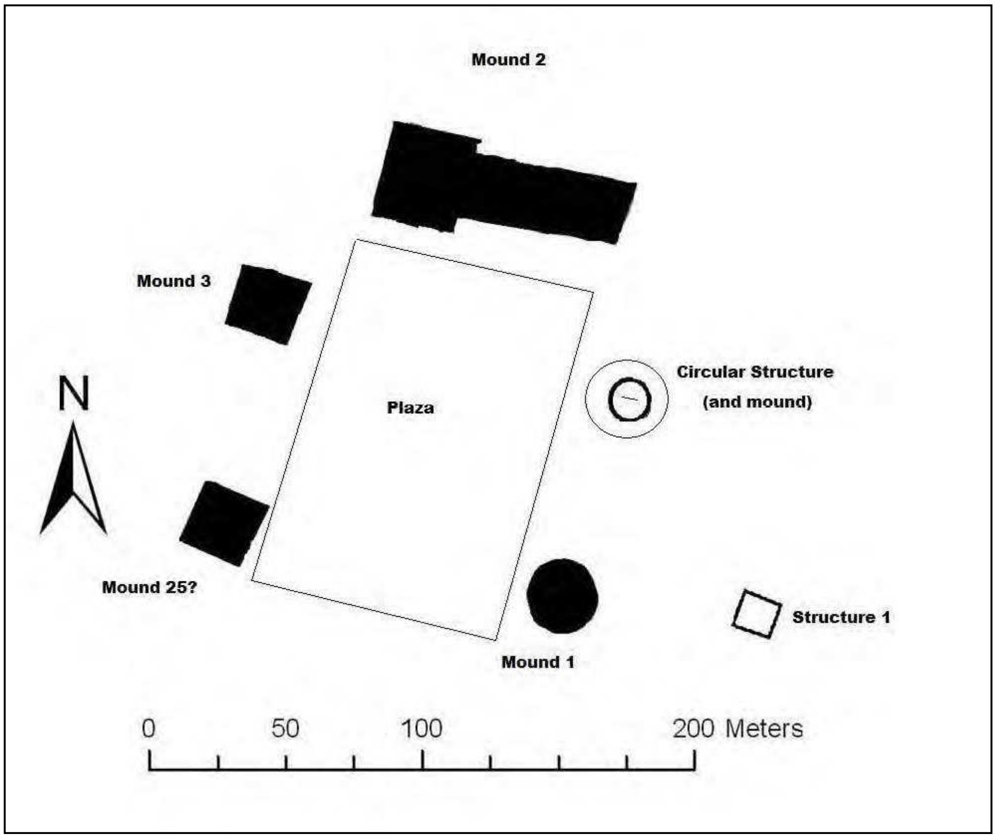

Figure 4.5: Map of Castalian Springs. Shows placement of mounds and major structures (Smith and Beahm 2010b).

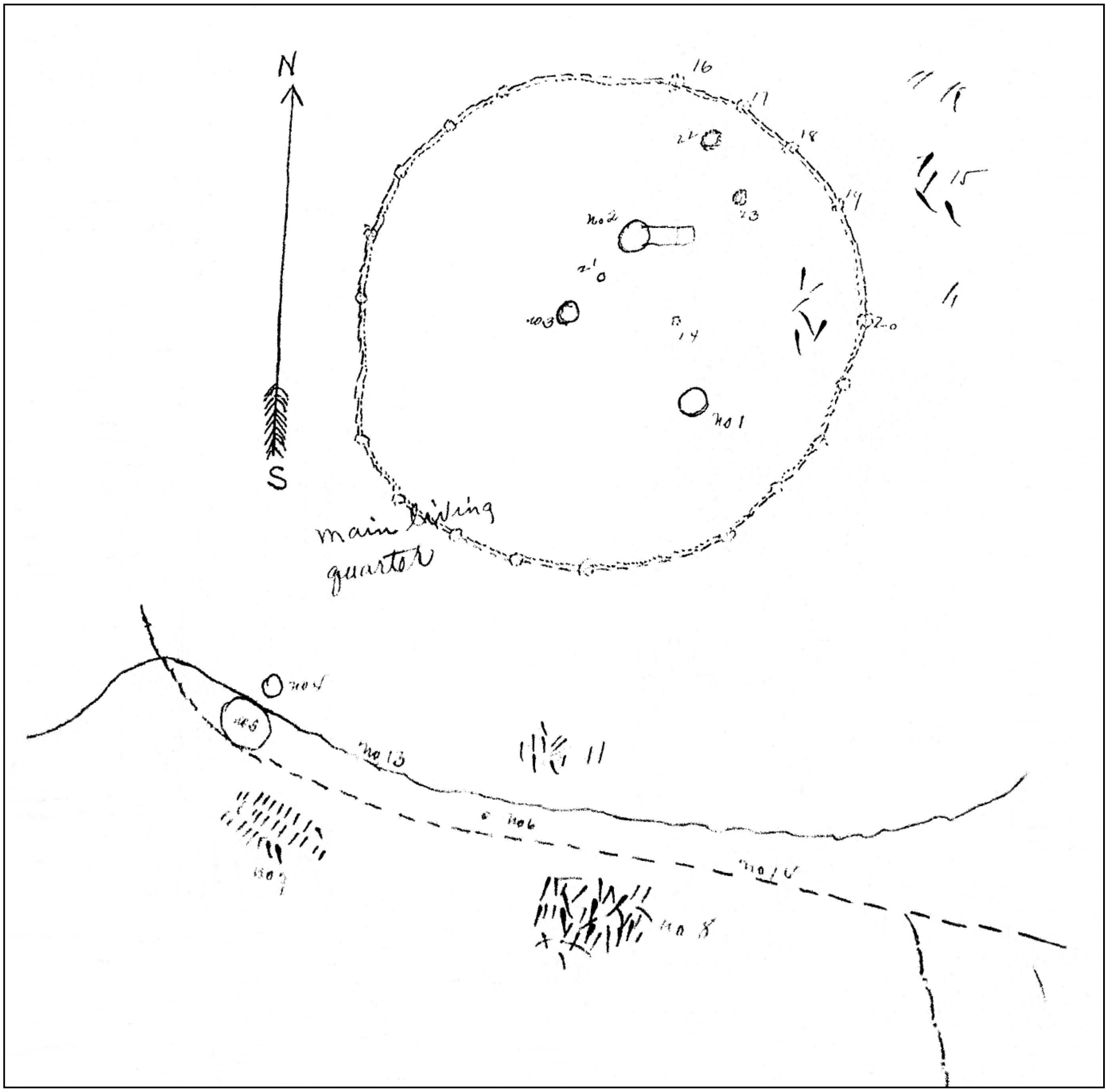

Figure 4.6: William Edward Myer's Map of Castalian Springs. Shows palisade, Mound 1 (burial mound), Mound 2 (platform with offset mound) and Mound 3 (platform mound) (NAA MS2570 Department of Anthropology, Smithsonian Institution).

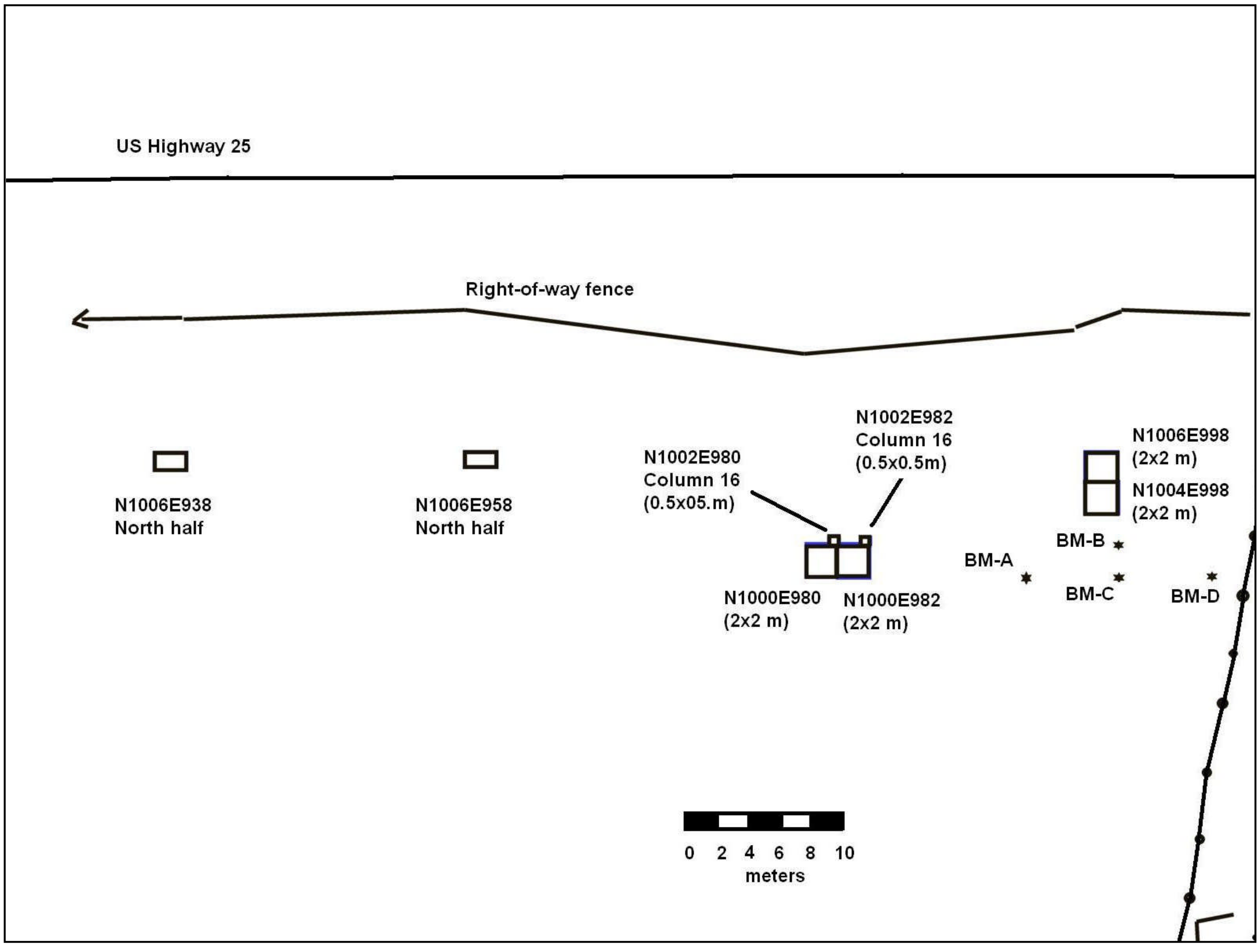

Figure 4.7: Castalian Springs 2005 Excavation Units. Located on south-side of highway, outside of palisade.

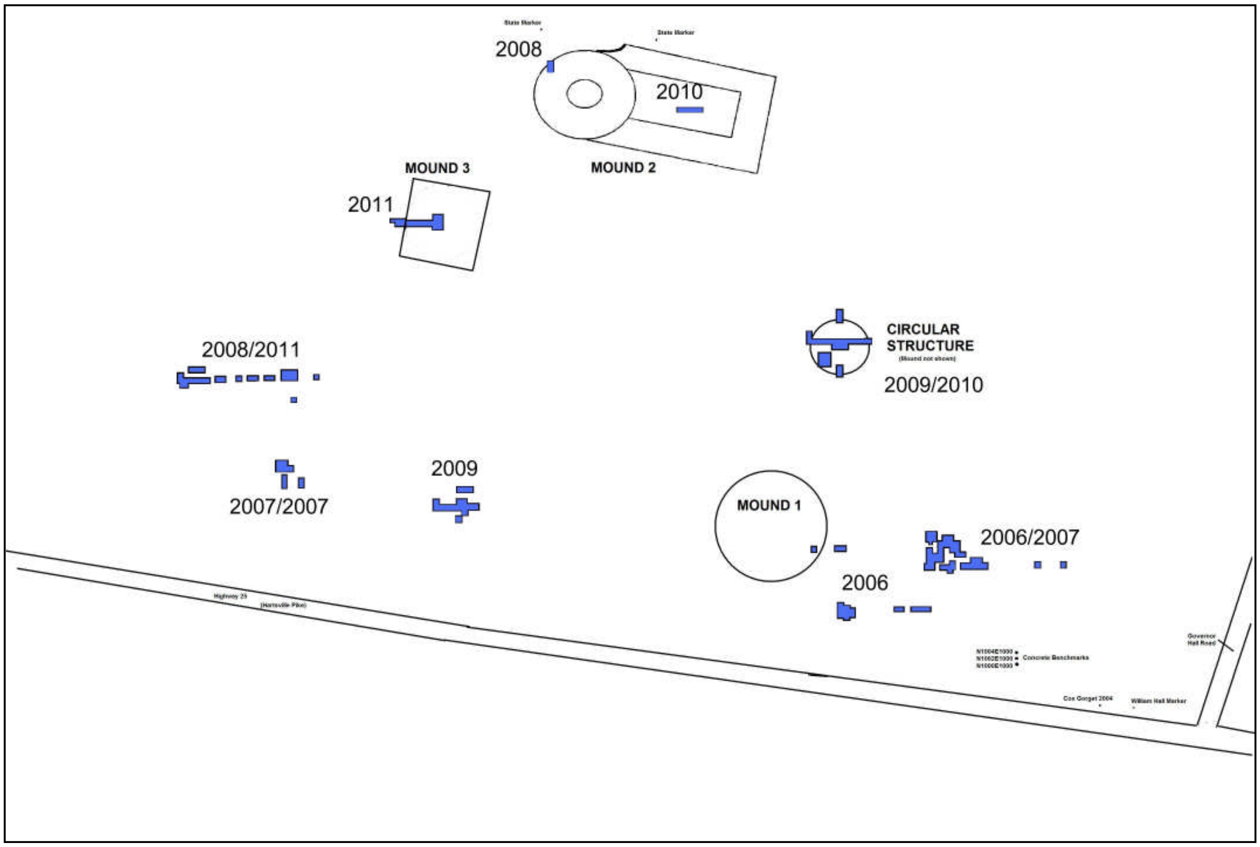

Figure 4.8: 2006-2011 Castalian Springs Excavation Units.

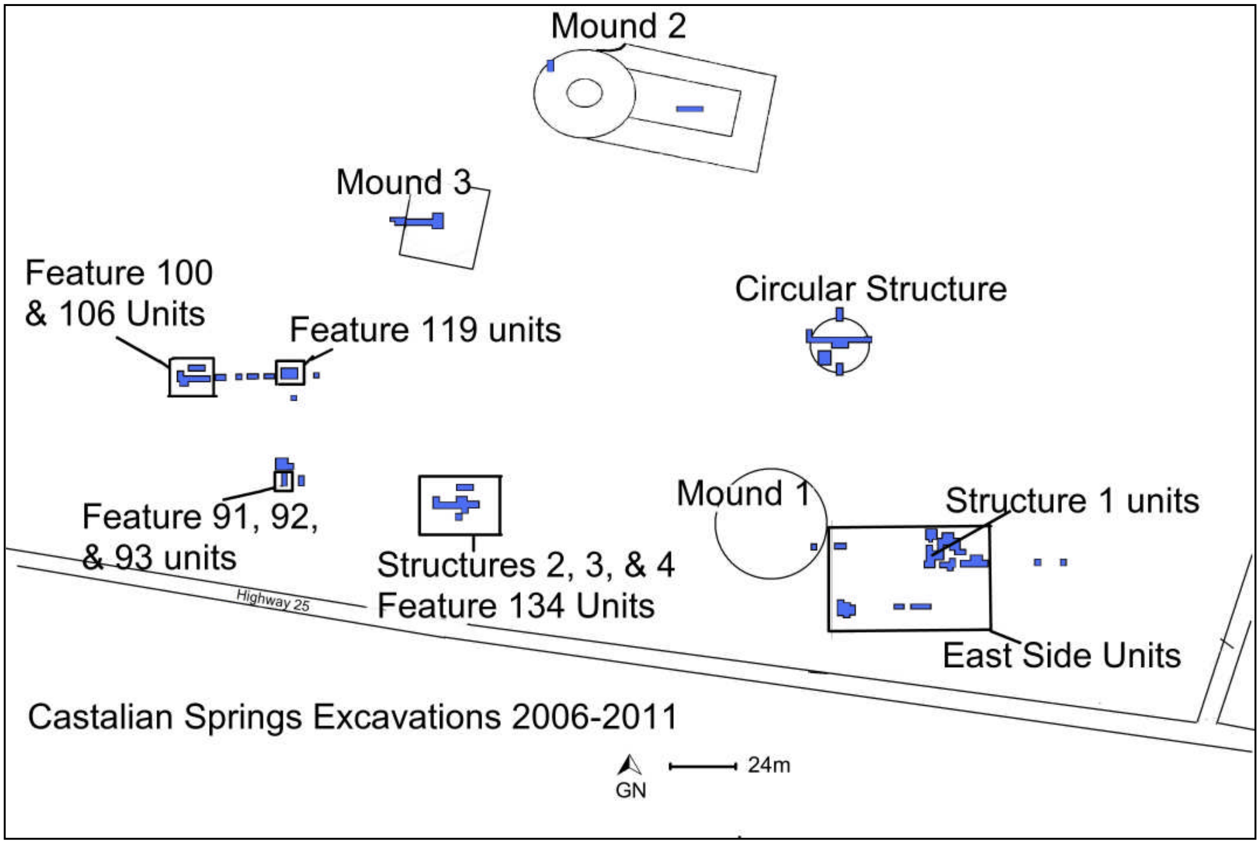

Figure 4.9: Castalian Springs Location of Detailed Maps.

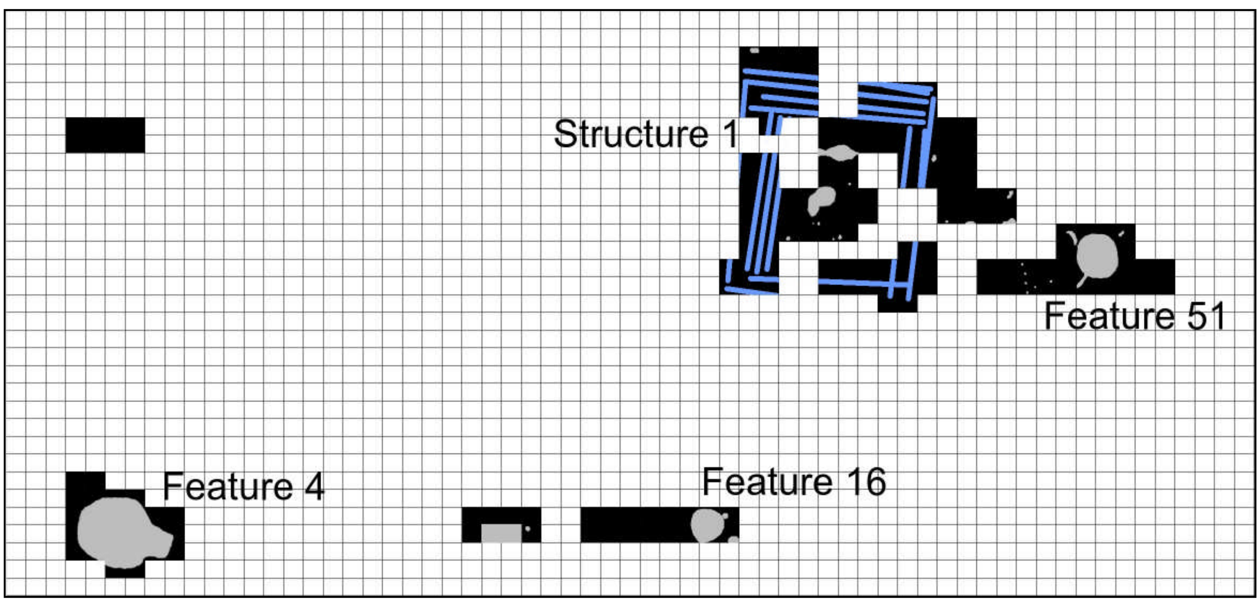

Figure 4.10: Castalian Springs Eastside Units. Including Features 4, 16, 51, and Structure 1.

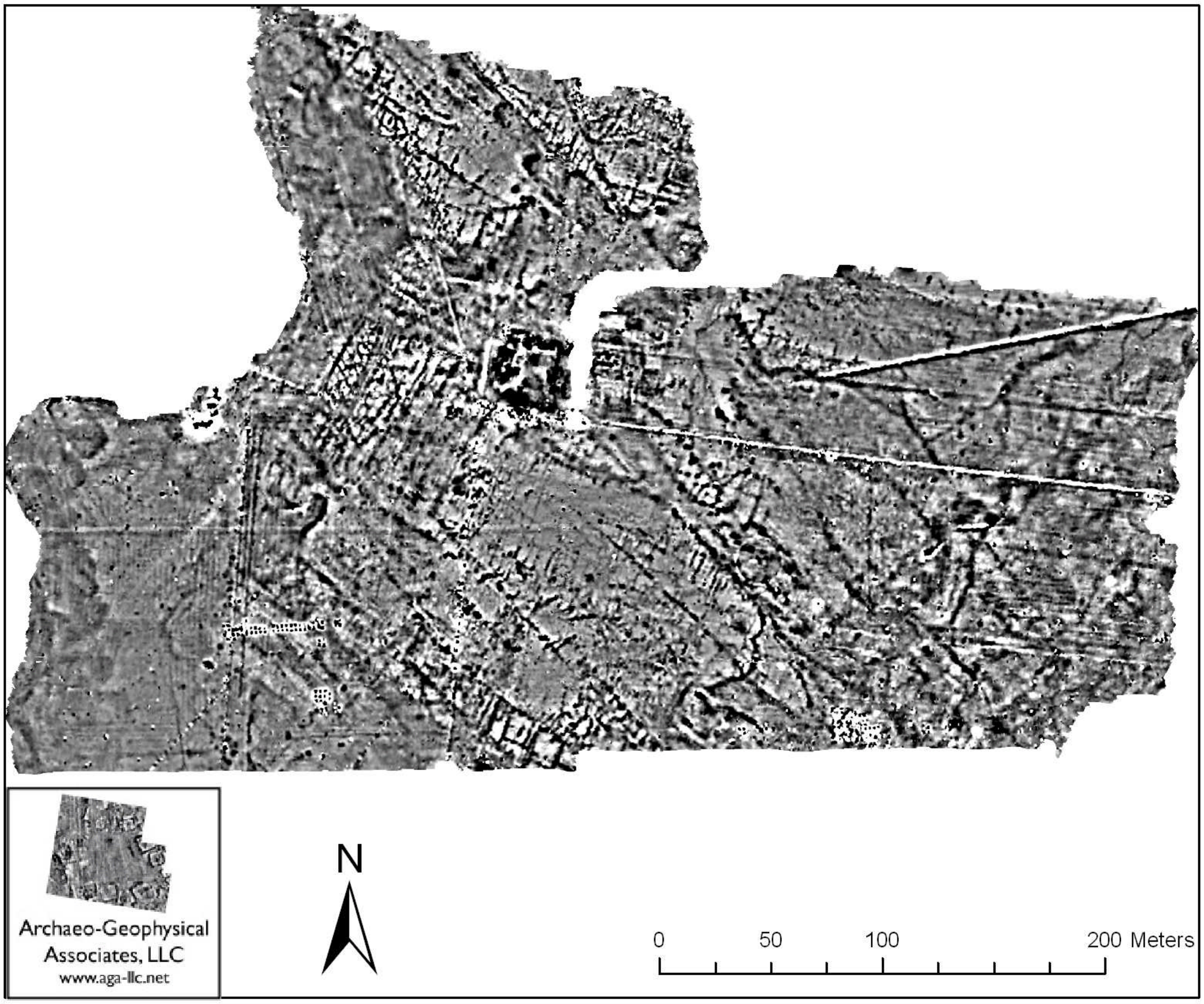

Figure 4.11: Castalian Springs Magnetometer Data (image courtesy of Chet Walker).

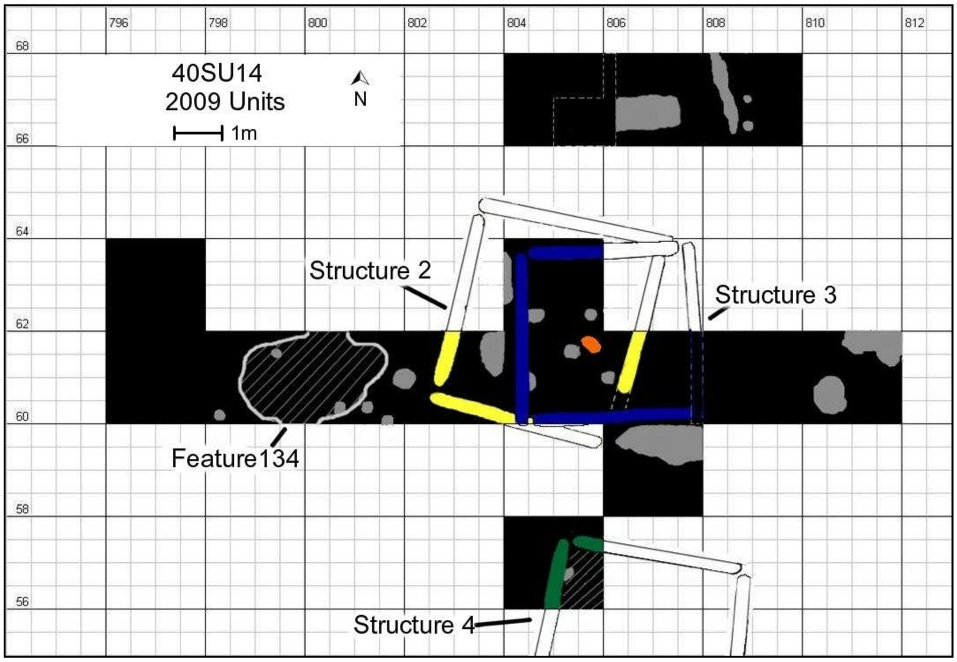

Figure 4.12: Castalian Springs Structure 2, 3, 4 and Feature 134 Excavation Units. Yellow wall trenches are part of Structure 2, Blue wall trenches are part of Structure 3, and Green wall trenches are part of Structure 4.

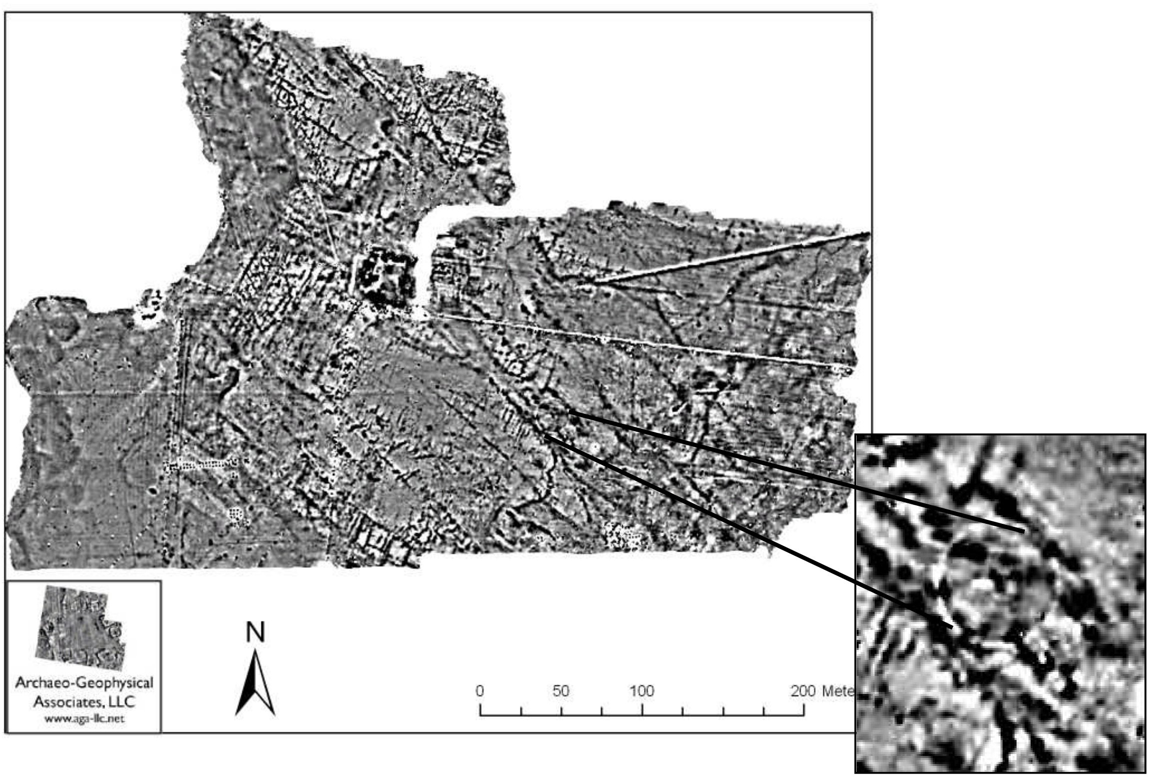

Figure 4.13: Castalian Springs Magnetometer Data Highlighting Circular Anomaly (image courtesy of Chet Walker).

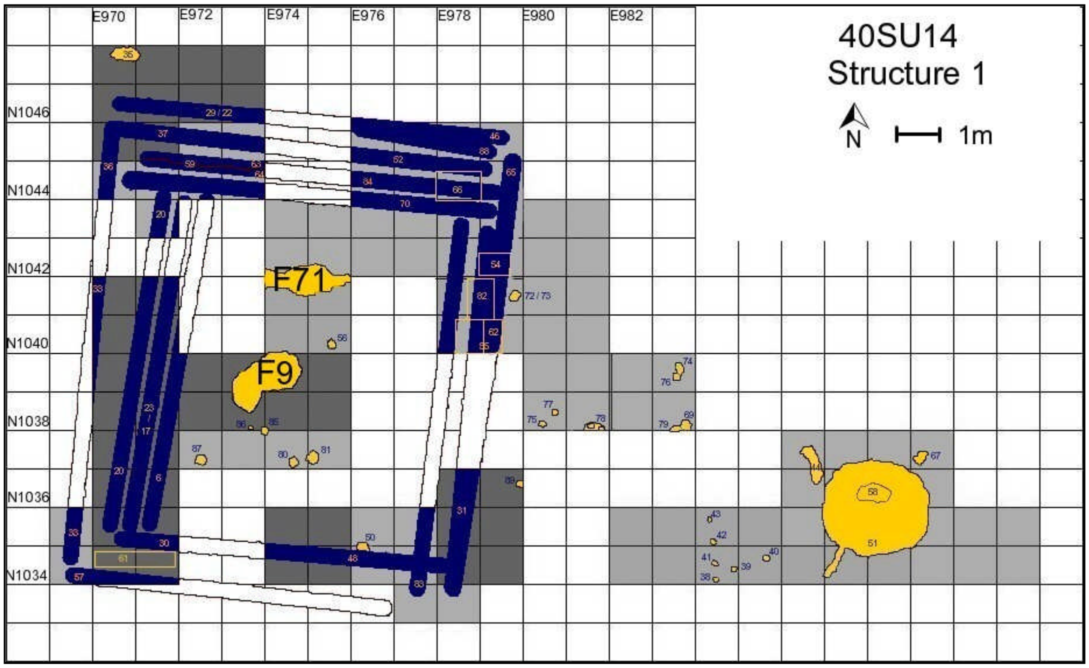

Figure 4.14: Castalian Springs 2006-2007 Structure 1 Excavations. Central posts Feature 9 and 71 labeled.

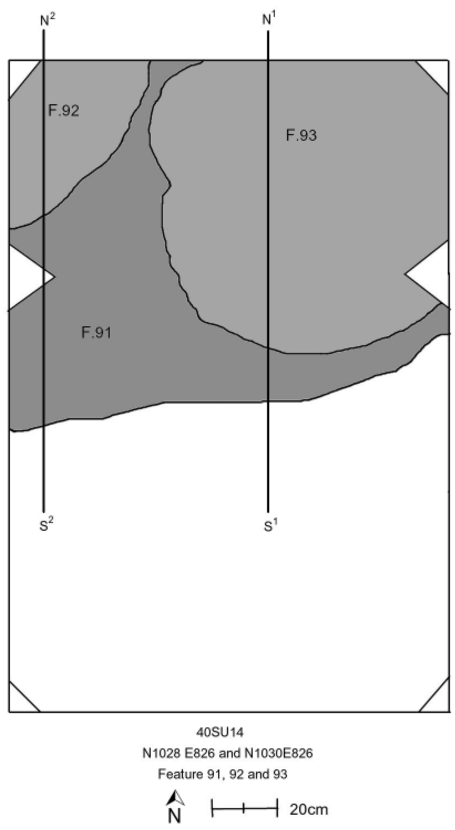

Figure 4.15: Castalian Springs, Feature 91, 92 and 93. Shows location of profiles in Figure 4.16.

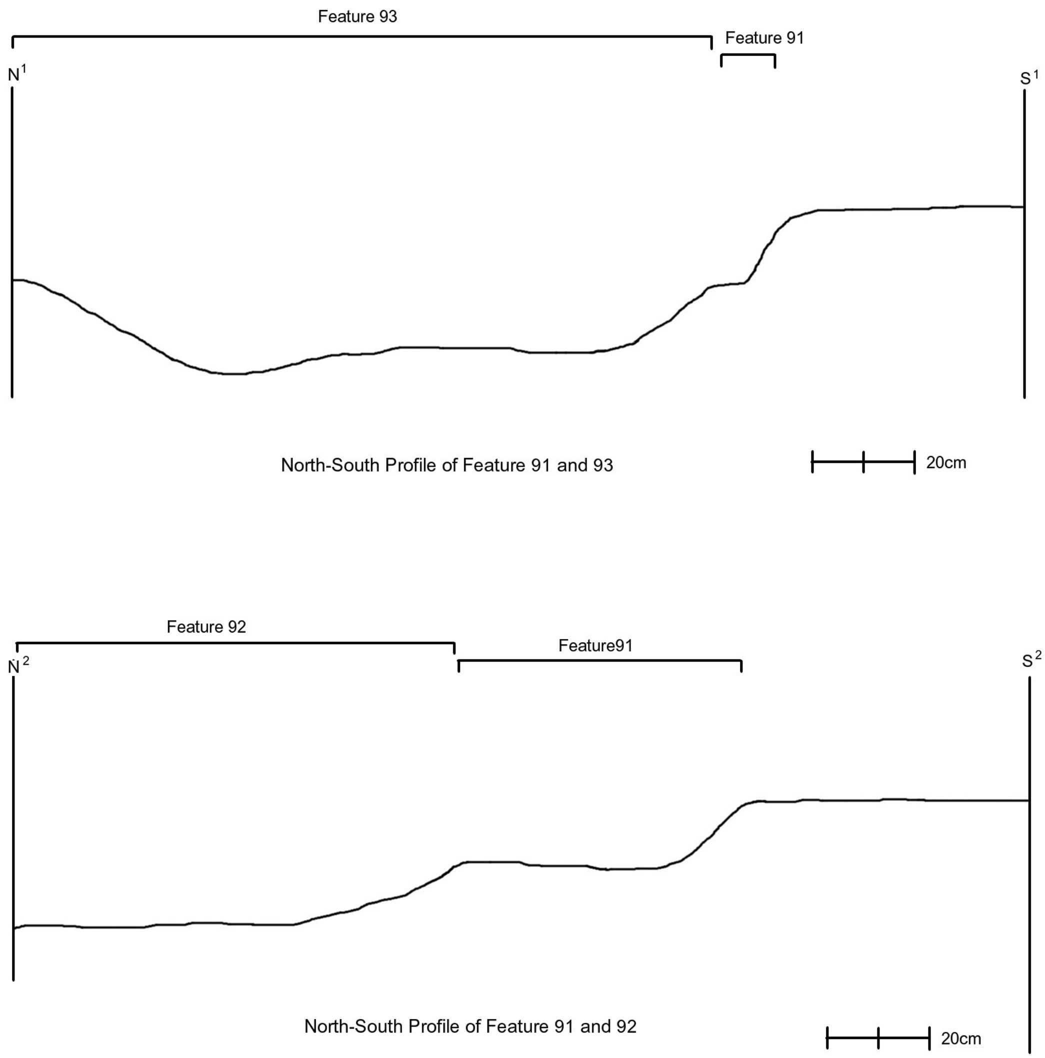

Figure 4.16: Profiles of Feature 91, 92, and 93.

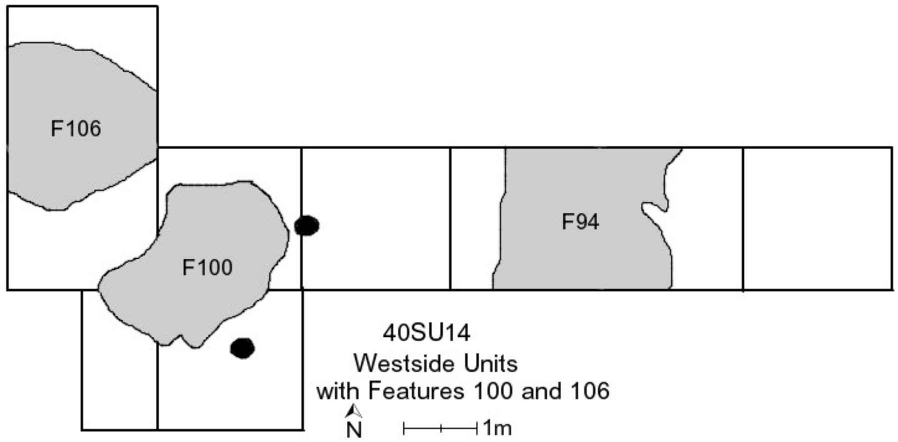

Figure 4.17: Castalian Springs Feature 94, 100, and 106.

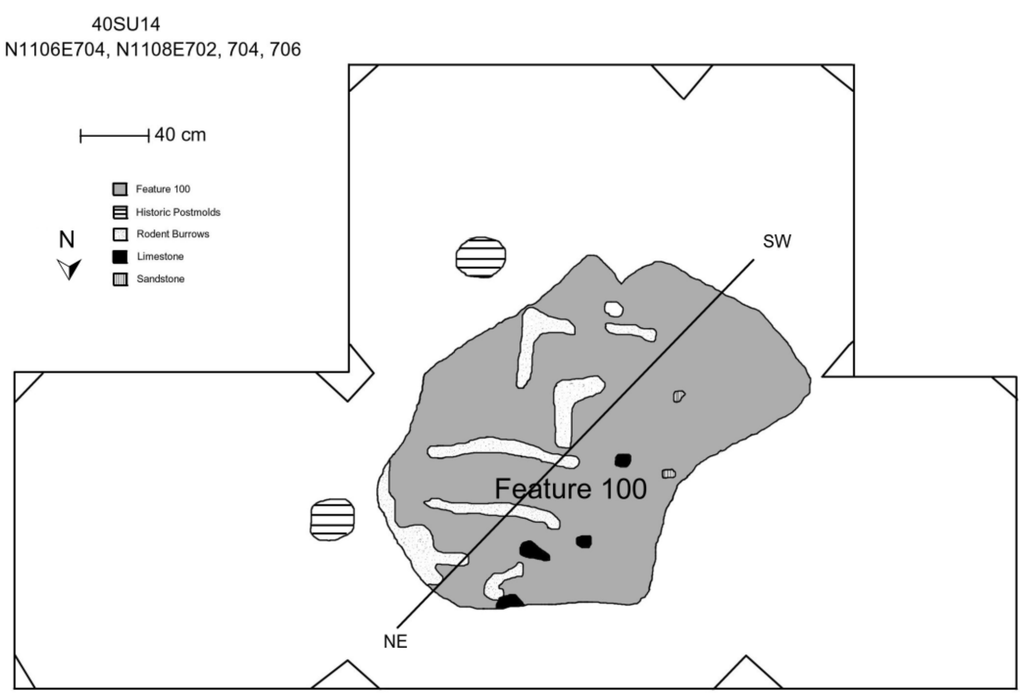

Figure 4.18: Castalian Springs Feature 100. Showing location of profile.

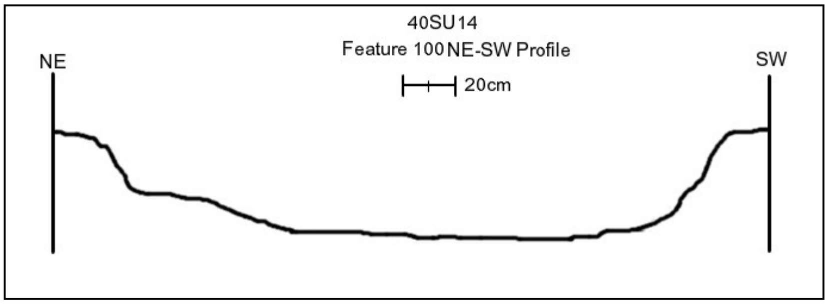

Figure 4.19: NE-SW Profile of Feature 100.

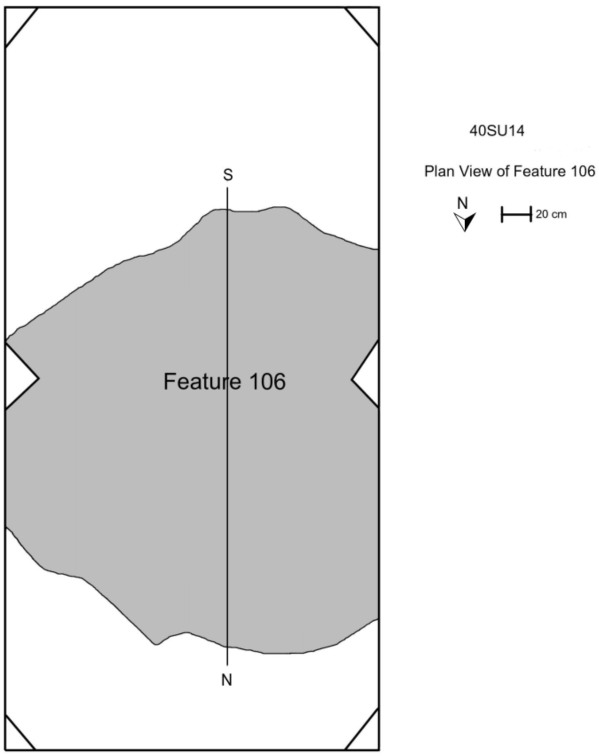

Figure 4.20: Castalian Springs Feature 106.

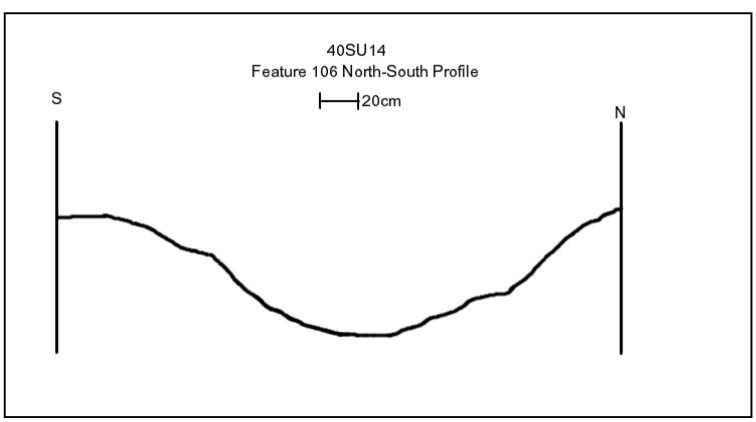

Figure 4.21: North-South Profile of Feature 106.

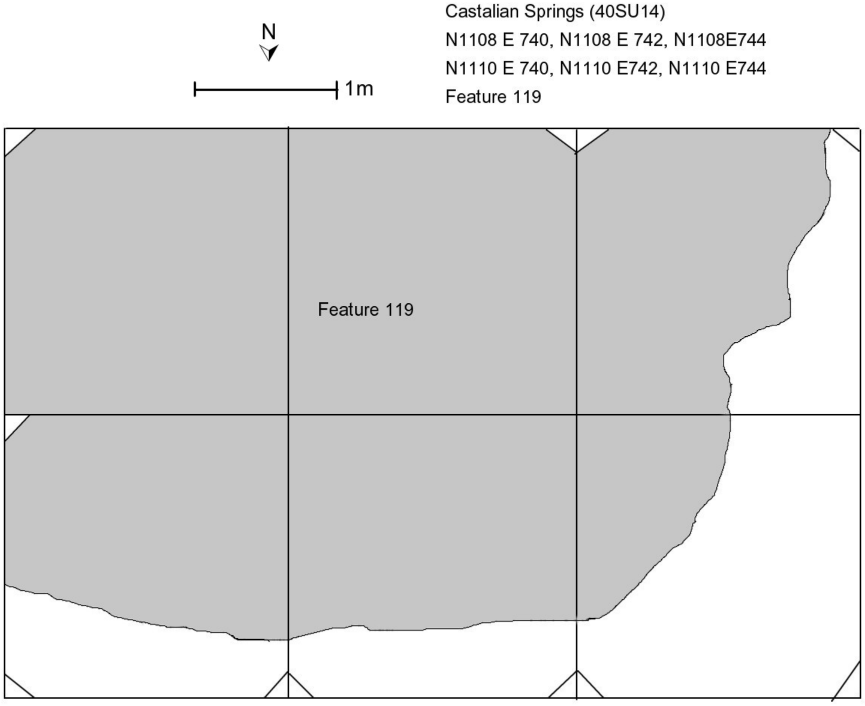

Figure 4.22: Castalian Springs Feature 119.

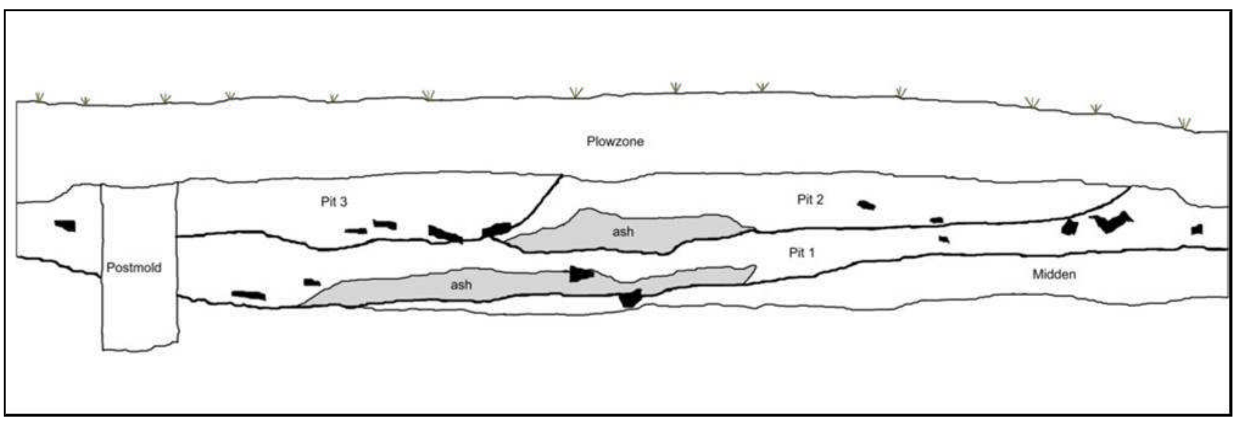

Figure 4.23: Castalian Springs Feature 134 South Wall Profile.

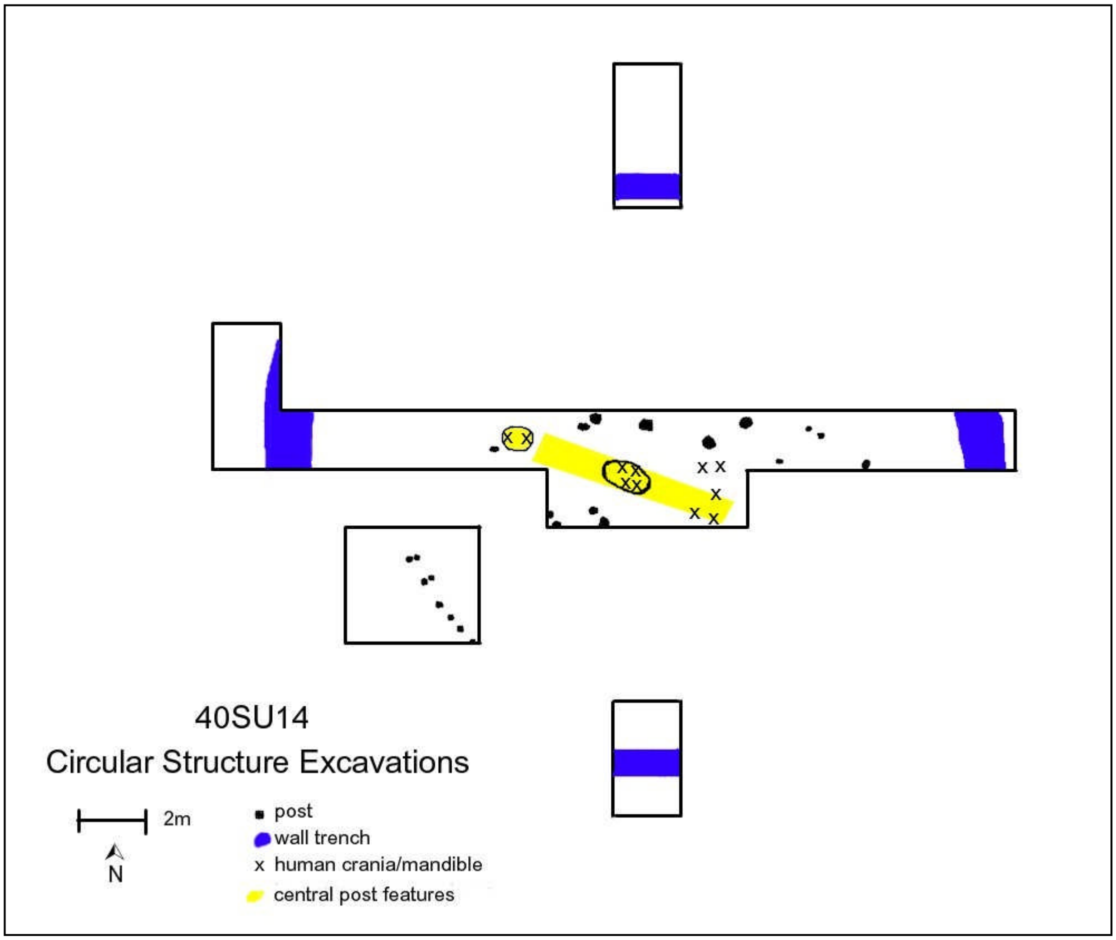

Figure 4.24: Castalian Springs 2010 Excavations of Circular Structure.

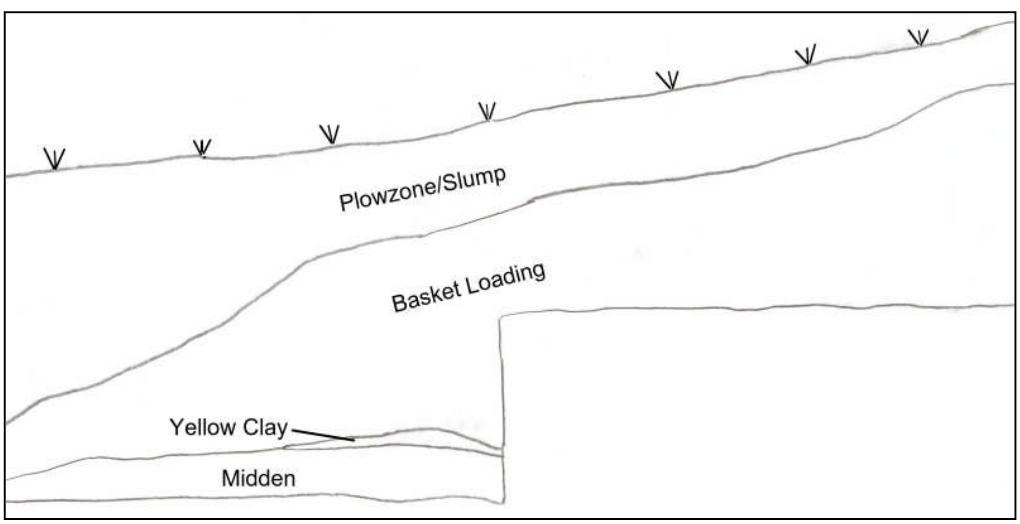

Figure 4.25: Simplified Profile of 2008 Mound 2 Excavations at Castalian Springs.

Figure 4.26: Castalian Springs Mound 2 (N1234E838 Level 14).

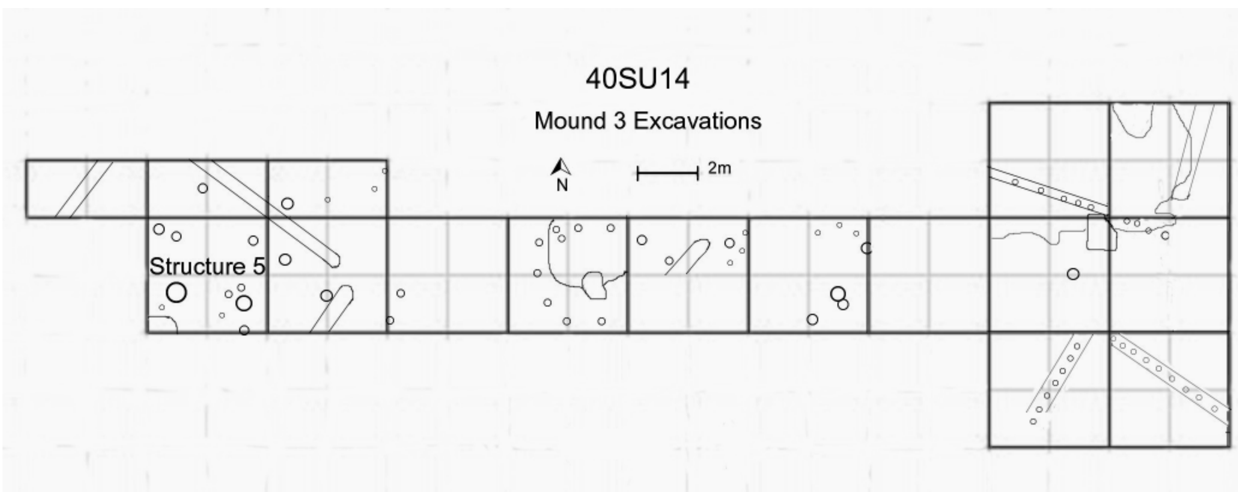

Figure 4.27: Castalian Springs 2011 Mound 3 Excavations.

Figure 4.28: Castalian Springs Mound 3 Stratigraphy. North Wall of N1167E786. Note: Feature 355 on right is a post in profile.

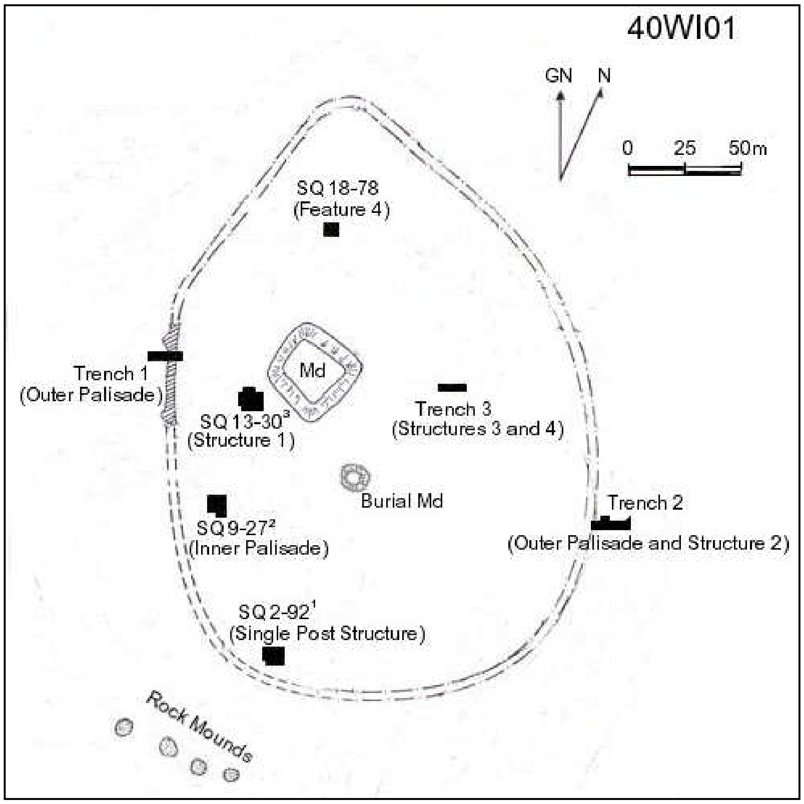

Figure 4.29: Map of Sellars. Shows excavation units from 1974, 1977, and 1981(modified from Butler 1981 and Putnam 1878).

[1] Square 2-92 also includes units 2-91 NE, 2-91 NW, 2-93 NW, 2-93 SW, 2-82 NE, 2-82 NW, 2-83 NW, 6-1 SE, 6-2 SE, 6-2 SW, 6-3 SW.

[2] Square 9-27 also includes units 9-36, 9-37, and 9-26 NE.

[3] Square 13-30 also includes units 13-20 NW, 13-40 SE, 14-21, 14-31 SW, 14-11 NE and 14-11 NW.

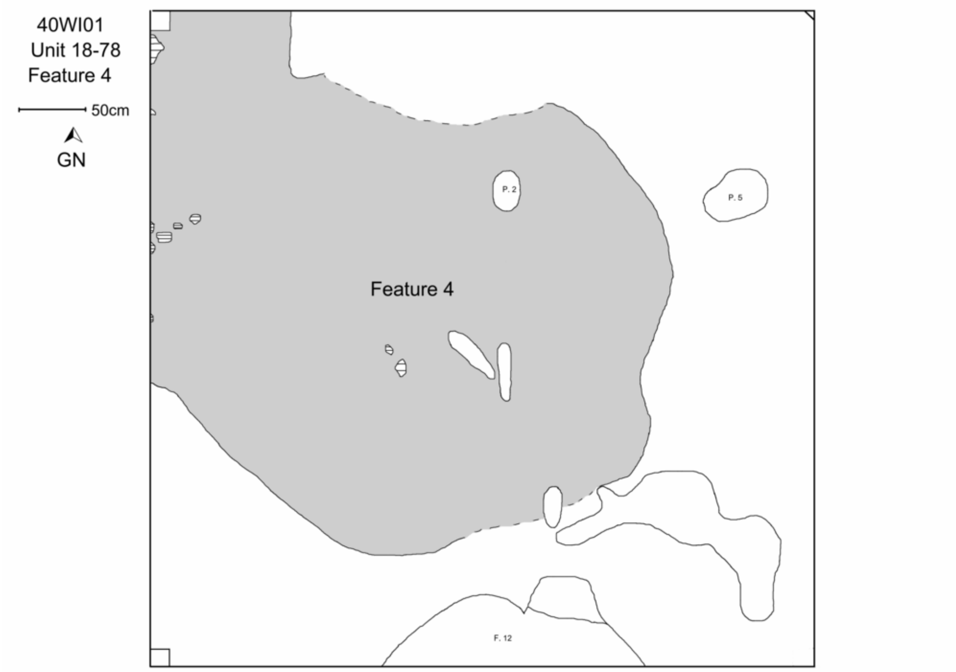

Figure 4.30: Sellars 1974 Unit 18-78. Feature 4 highlighted in gray.

Figure 4.31: Sellars 1974 Photograph of Feature 4 Excavations (Tennessee Division of Archaeology).

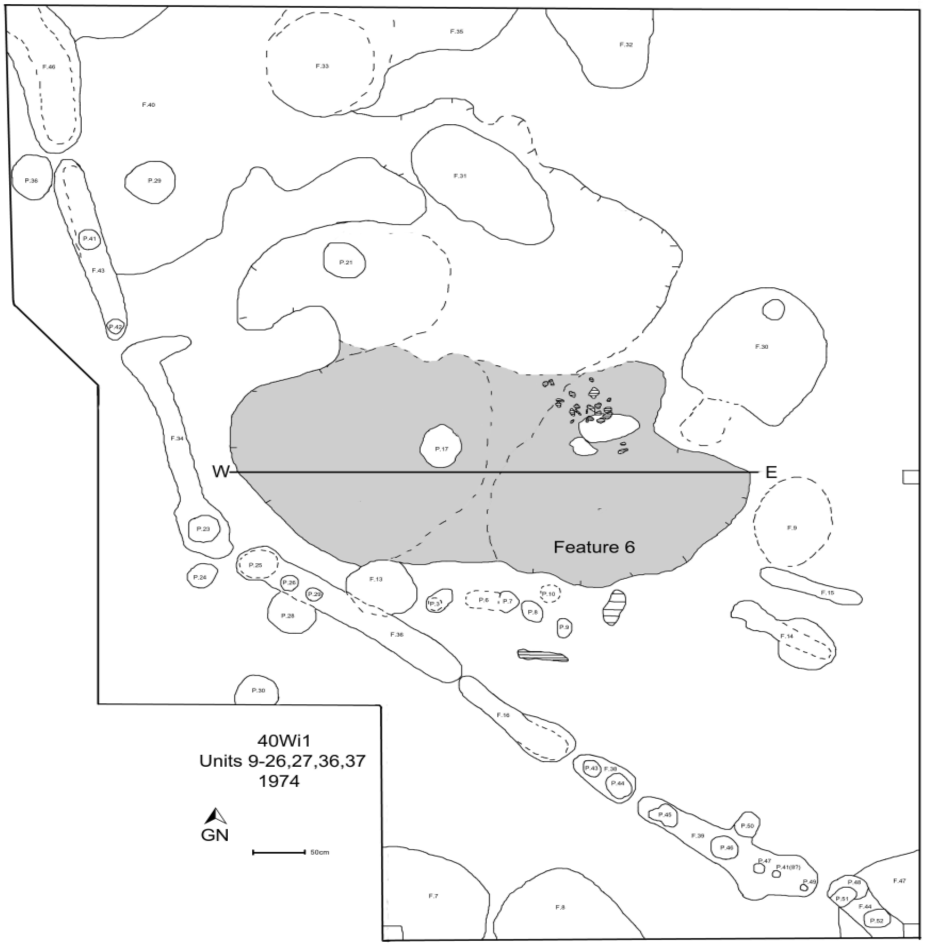

Figure 4.32: Sellars Feature 6. Units 9-26, 9-27, 9-36, 9-37. Feature 6 highlighted in gray. Note discontinuous palisade wall trench (modified from Butler 1981).

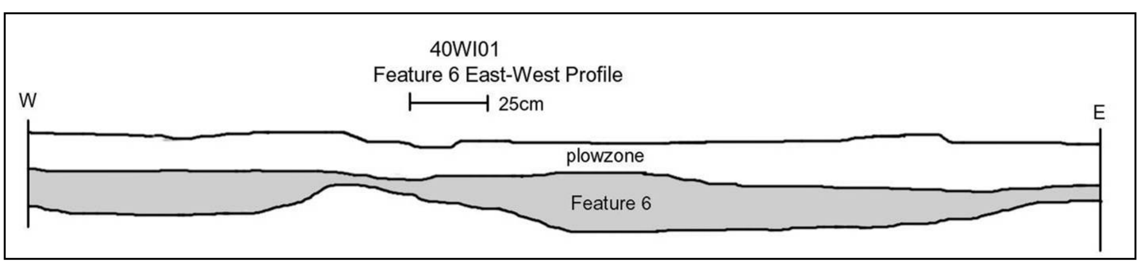

Figure 4.33: Sellars Feature 6 East-West Profile.

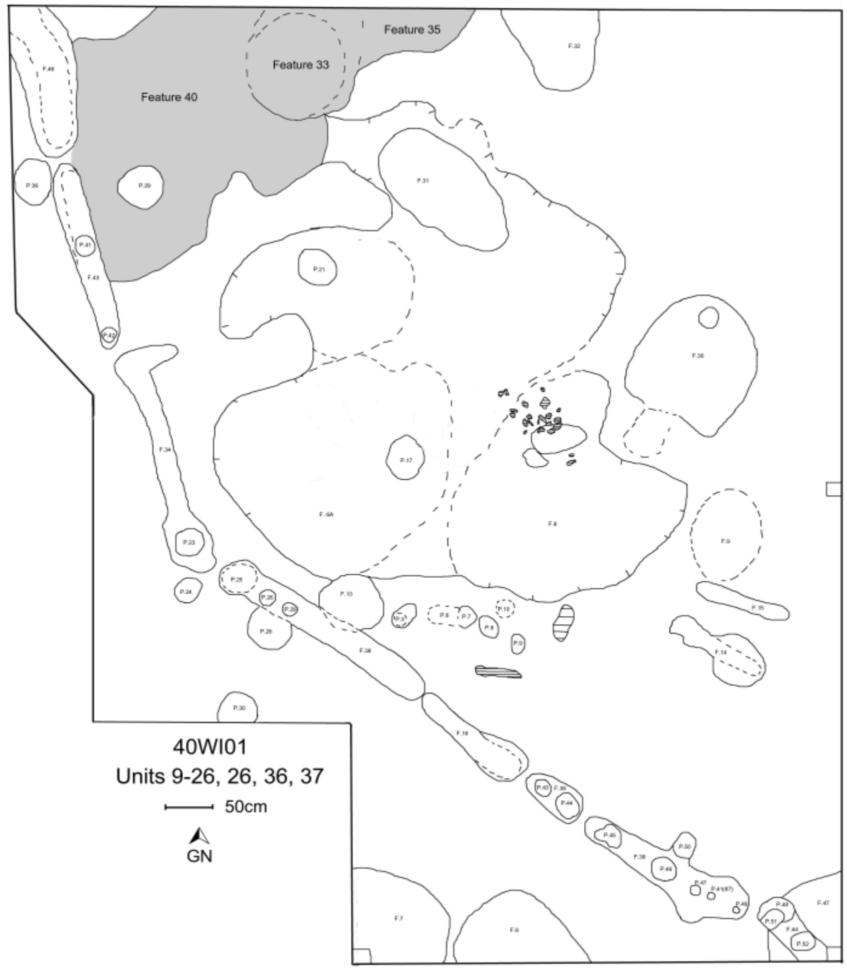

Figure 4.34: Sellars Feature 33, 36, and 40. Units 9-26, 9-27, 9-36, 9-37. Features highlighted in gray (modified from Butler 1981).

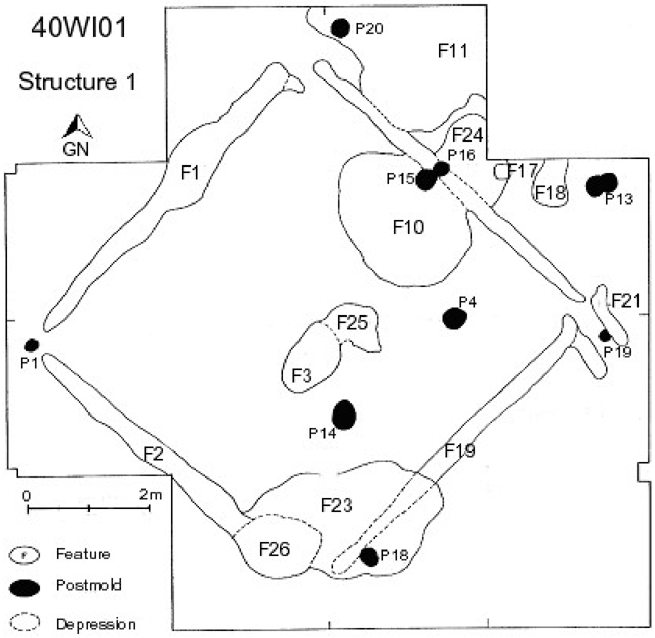

Figure 4.35: Sellars Structure 1 Excavations (modified from Butler 1981).

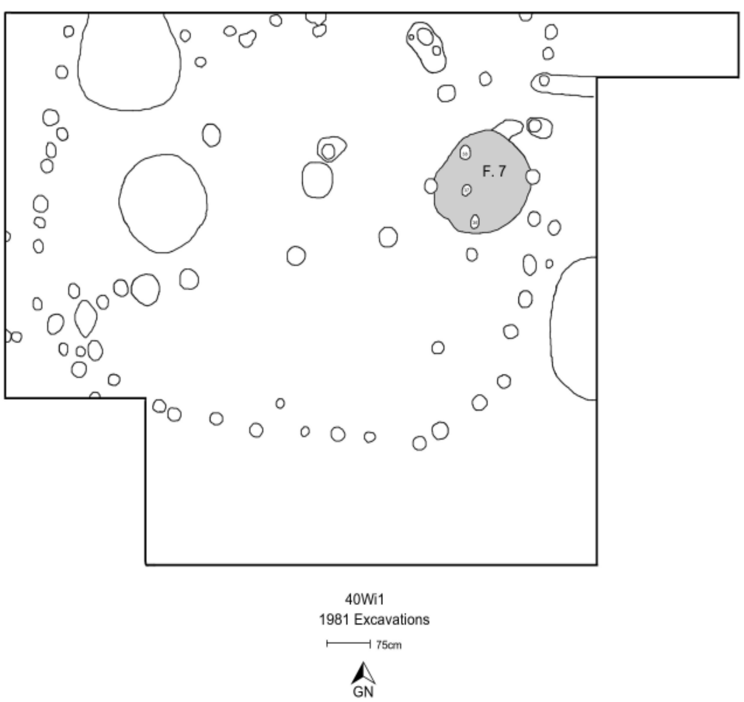

Figure 4.36: Sellars Single Post Structure Excavations and Feature 7. Feature highlighted in gray (Tennessee Division of Archaeology).

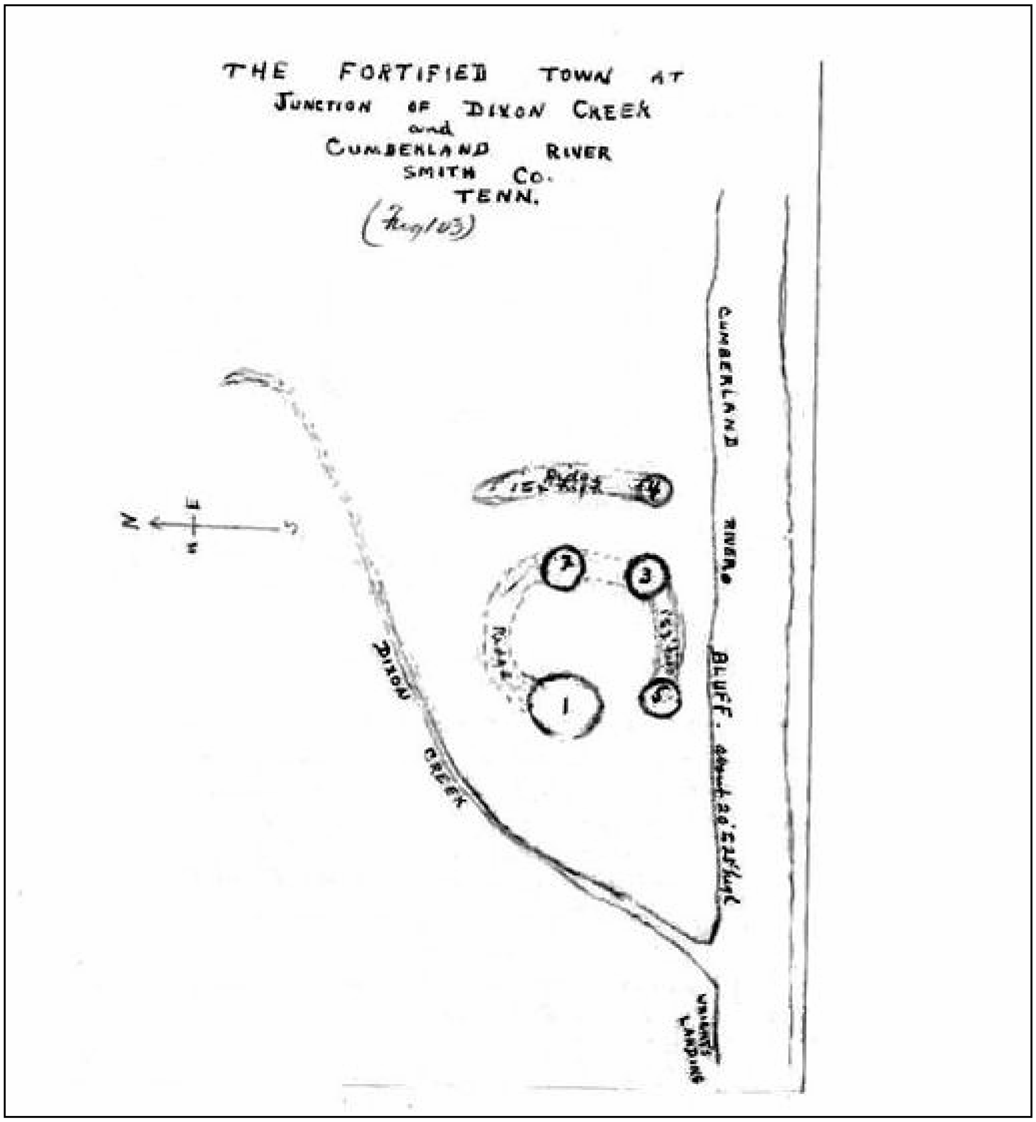

Figure 4.37: William Edward Myer's Map of Beasley (NAA MS2570 Department of Anthropology, Smithsonian Institution).

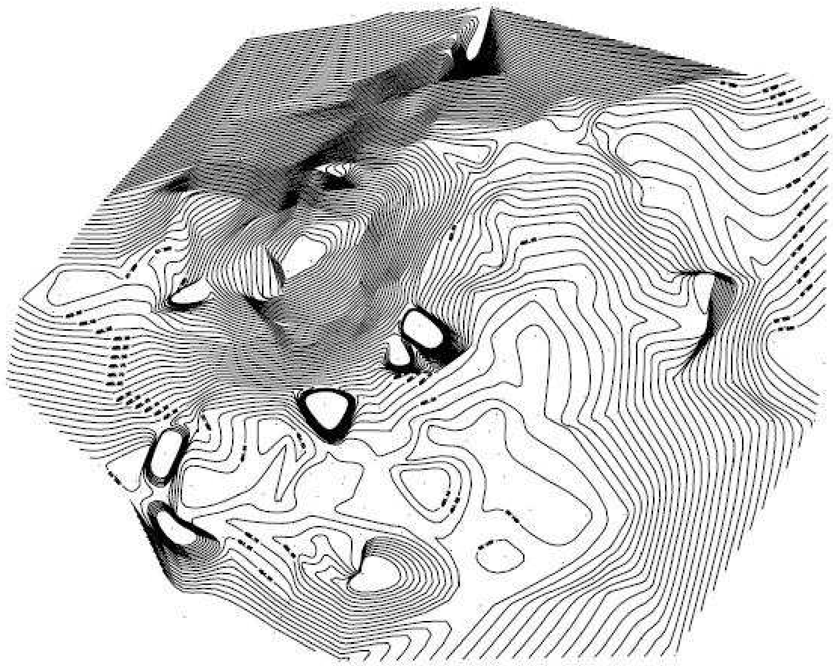

Figure 4.38: Topographic Map of Beasley Mounds (Smith and Beahm 2008).

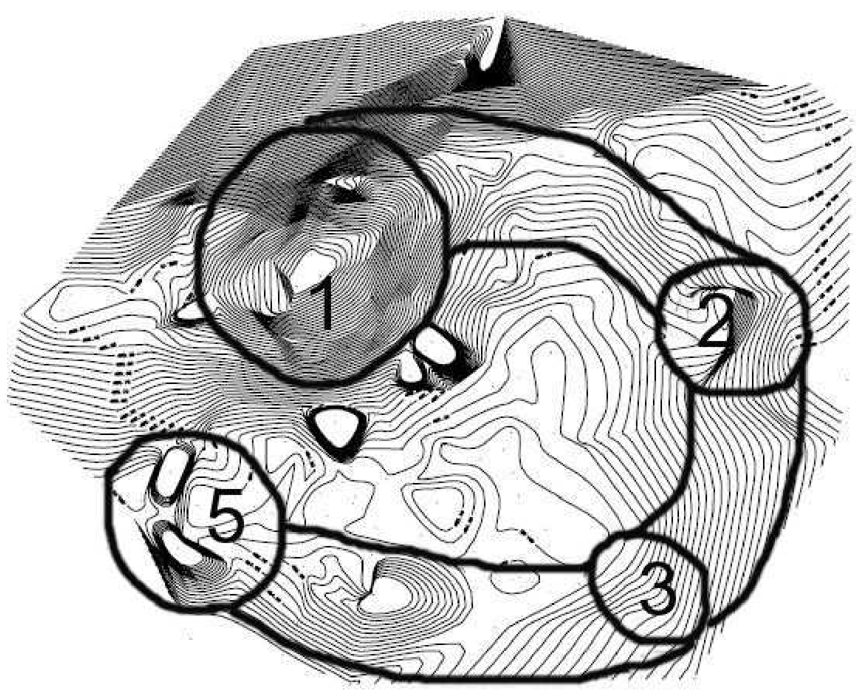

Figure 4.39: Beasley Topographic Map with Location of Mounds Identified by Myer.

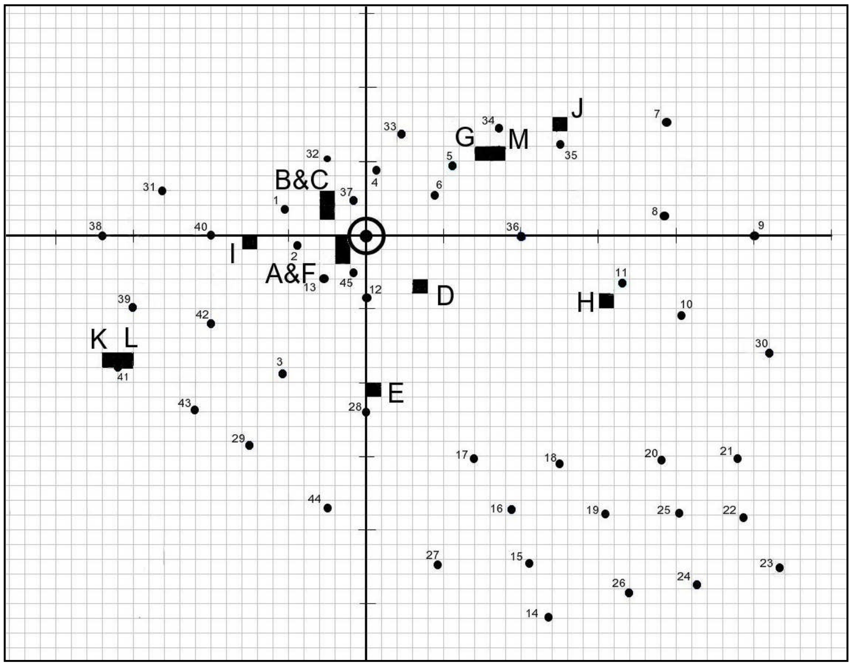

Figure 4.40: Beasley Locations of Test Units and Posthole Tests. The central bull's eye is the benchmark on top of Mound 1.

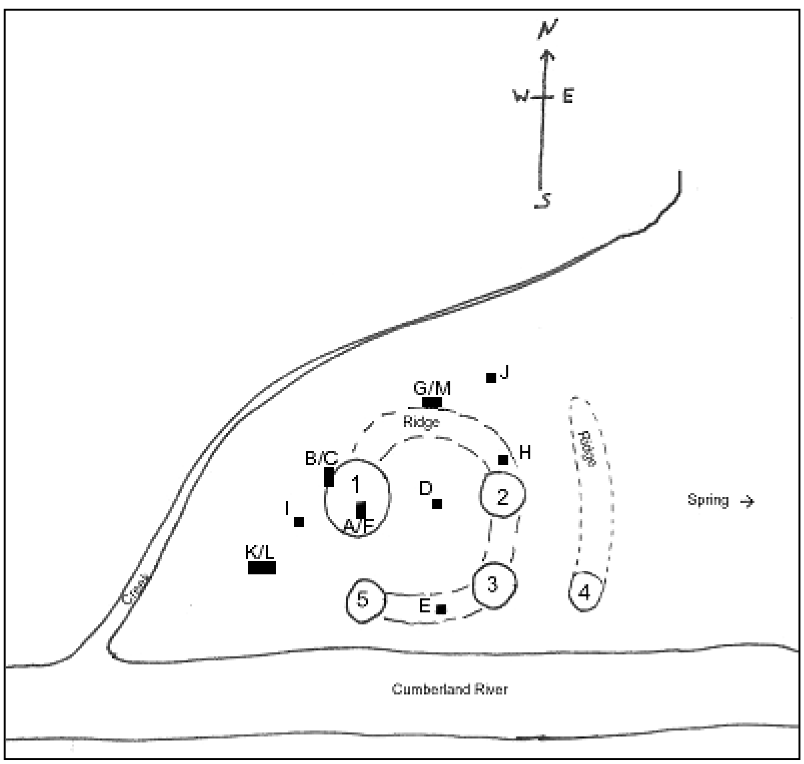

Figure 4.41: Approximate Location of Test Units in Relation to Mounds Identified by Myer (modified from NAA MS2570 Department of Anthropology, Smithsonian Institution).

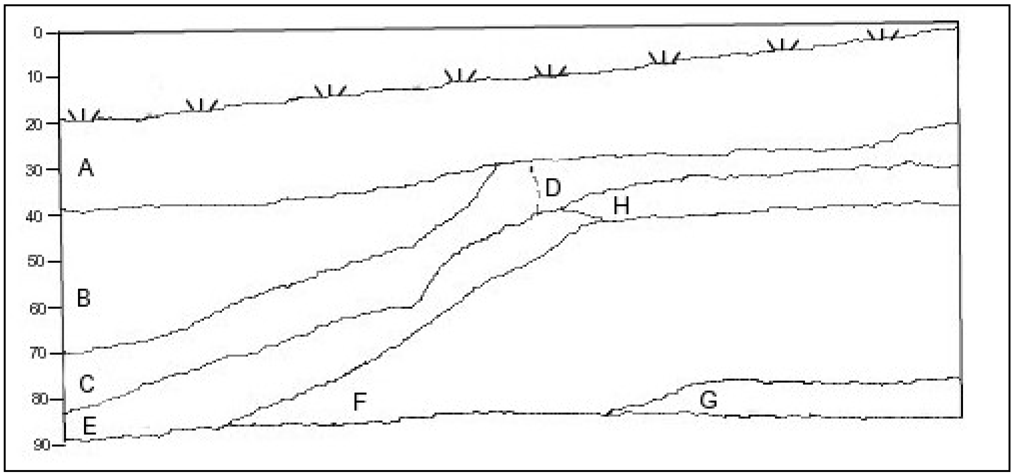

Figure 4.42: Beasley Mounds Mound 1East Wall Profile. Test Units B and C showing mound construction stages.

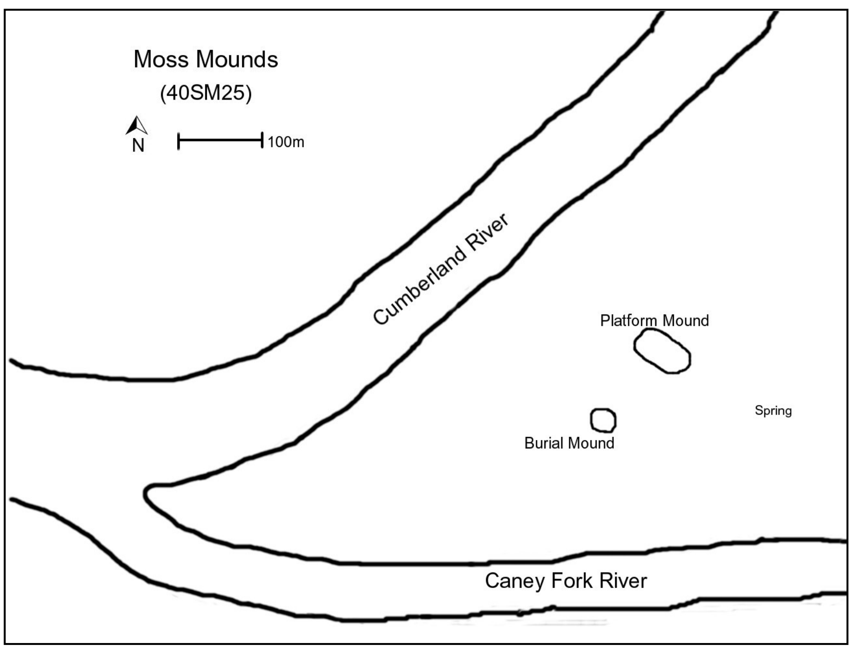

Figure 4.43: Map of Moss Mounds.

Figure 4.44: Photo of Moss Platform Mound by Ervin Smith. View looking west (Tennessee Division of Archaeology).

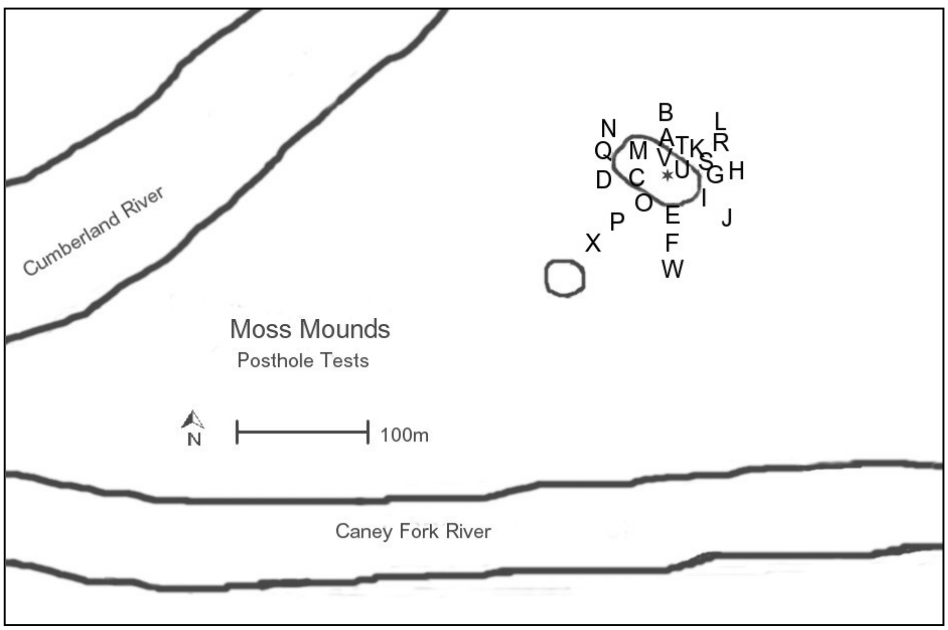

Figure 4.45: Location of Moss Posthole Tests.

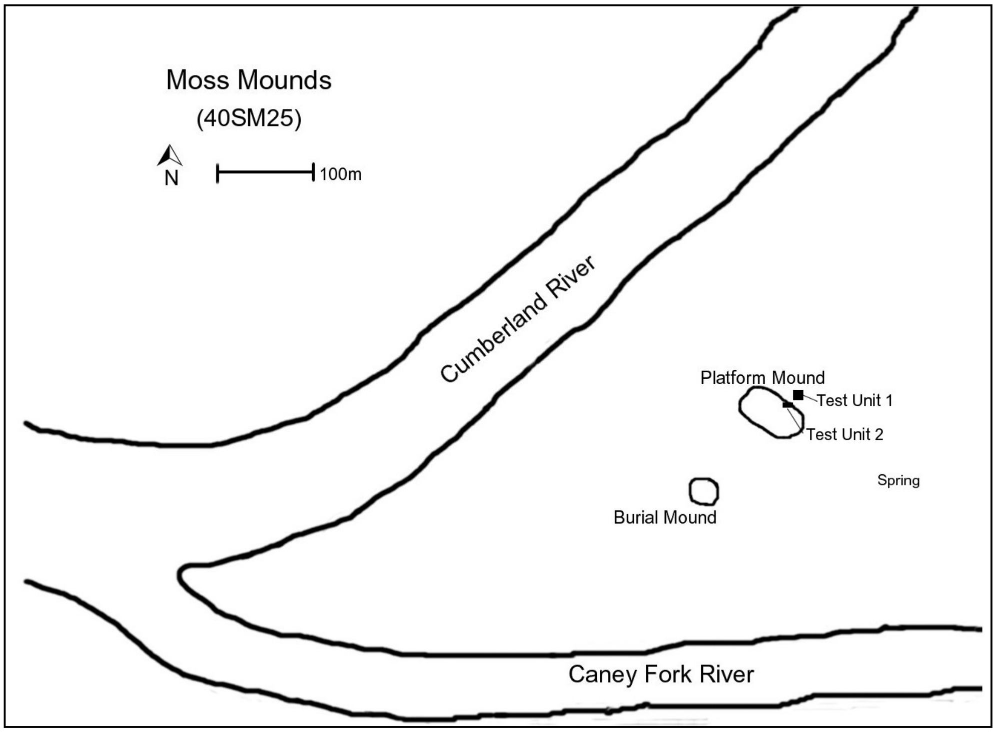

Figure 4.46: Location of Moss Test Units.

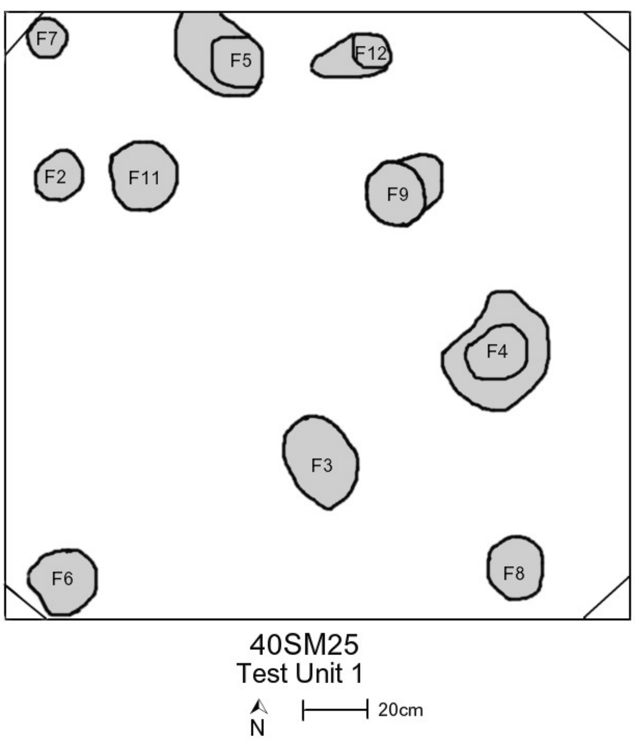

Figure 4.47: Plainview of Moss Test Unit 1.

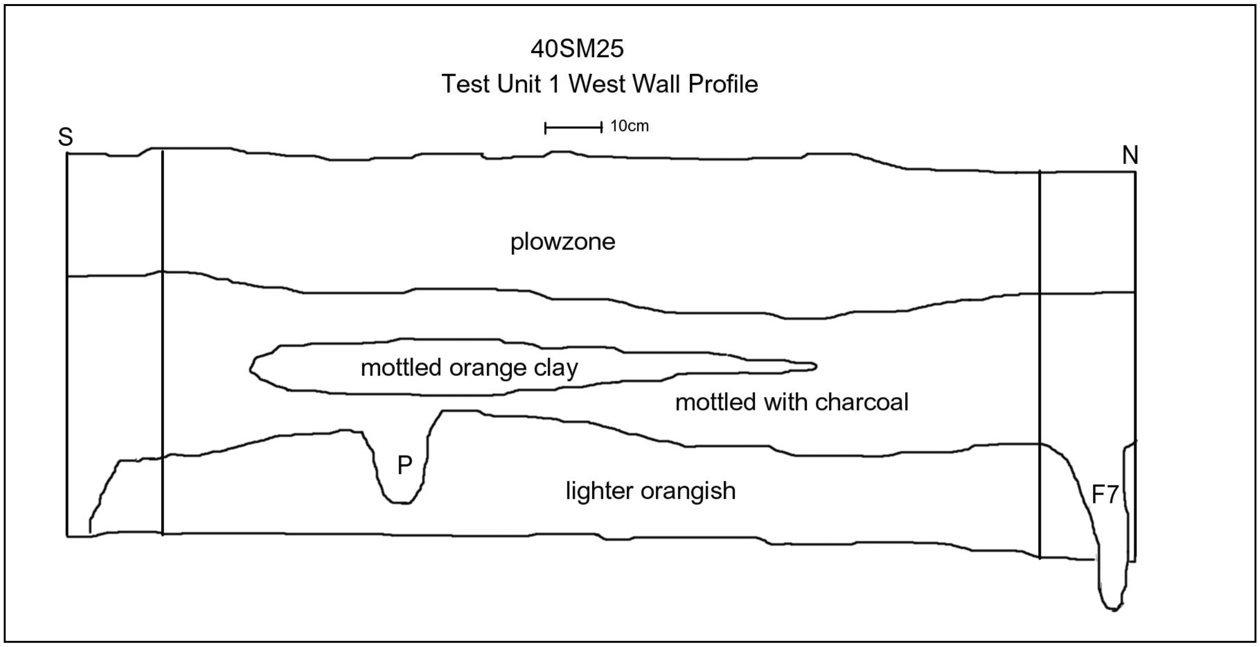

Figure 4.48: Moss Test Unit 1 West Wall Profile. Note postmolds Feature 7 and "P".

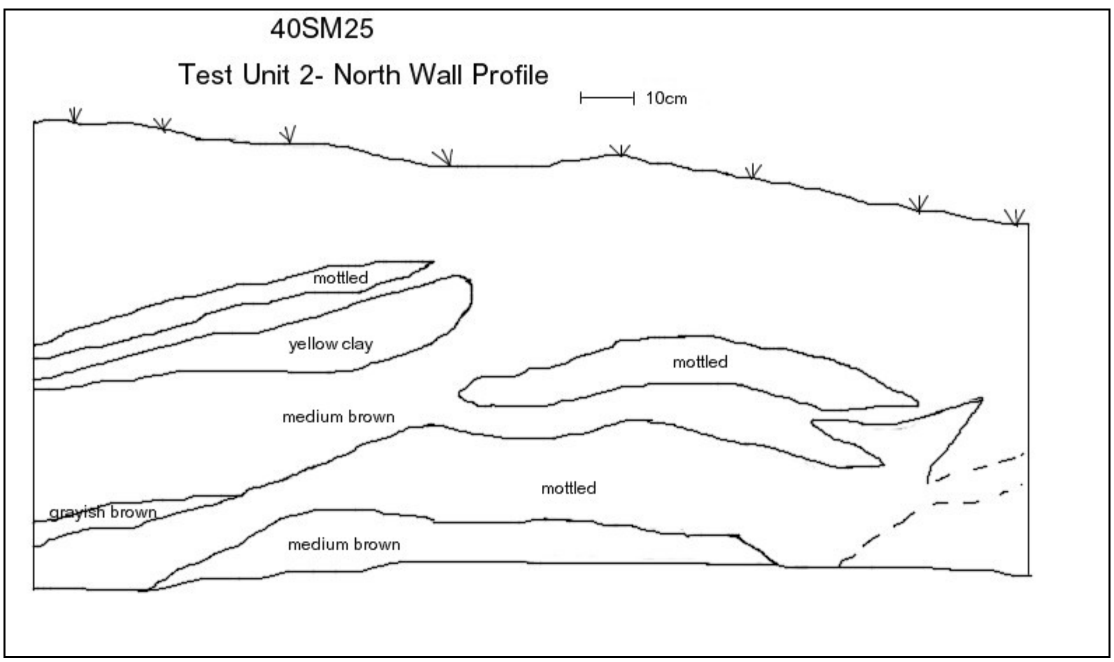

Figure 4.49: Moss Test Unit 2 North Wall Profile.

Figure 4.50: Moss Test Unit 2. Western section with yellow clay at 55cm, east section of unit at 60cm. Feature 14 post prior to excavation is visible in southwestern corner of unit.

Figure 4.51: Moss Test Unit 2 West Wall (looking towards the mound summit).

CHAPTER 5

CERAMIC DESCRIPTION

In this chapter ceramics documented from the five sample sites are described. This includes previously defined types and varieties as well as secondary shape attributes. Vessel forms are described and identify shape classes are identified when possible. Orifice diameter distributions are used to identify size classes of jar shape classes and standard bowls and closed handle forms are defined. This description lays the groundwork for the ceramic analysis discussed in Chapter 6. This chapter also makes clear that while the majority of Middle Cumberland Mississippian ceramics are shell-tempered plain, there is variability within ceramic assemblages that may be chronologically significant.

5.1 Ceramic Types and Varieties

The ceramic type/variety designations traditionally used in the Middle Cumberland region were employed as a starting point for ceramic analysis. The two main attributes that determine a ceramic type and variety are ceramic temper and surface treatment. Most types are associated with a particular vessel form, such as Kimmswick Fabric Impressed pans and Mound Place Incised bowls, thus providing some information about vessel form, but others cross-cut vessel forms.

There are some limitations to using type/variety categorization. For the ceramic types which have surface treatment on only part of the vessel, those sherds that do not show that treatment are counted as plain (Moore and Smith 2009:211). In addition, some attributes, such as shell temper size, may vary along a continuum between two or more types or varieties. In such cases, the categorization of types or varieties may be somewhat subjective. Finally, the types and varieties constructed by researchers, and the differences between them may have had little meaning to the people who made and used the pottery. The following is a description of the types and varieties of ceramics found in the Middle Cumberland region and at the sites analyzed in this study.

5.1a Mississippi Plain

Mississippi Plain is characterized by its relatively coarse shell tempering (Figure 5.1). This type is identified either by observing the shell temper itself or by linear holes that are left in the paste as the shell tempering is leached out of the sherds (Figure 5.2). Ceramics are identified as Mississippi Plain if the shell temper is predominately larger than 1 mm in size. In some cases shell tempering exceeds 5 mm in width. Mississippi Plain paste ranges from poorly to well compacted. Large utilitarian storage and cooking vessels are almost always made with Mississippi Plain paste. Steponaitis (1983:36-45) found that ceramic vessels tempered with coarse shell are more resistant to thermal shock than vessels tempered with fine shell. Therefore cooking jars are commonly made with Mississippi Plain paste and temper. The type also occurs in bowl, plate, bottle, and pan forms.

5.1b Bell Plain

Bell Plain is characterized by generally fine (less than 1 mm) shell tempering and well compacted paste. Surfaces of Bell Plain vessels are usually well smoothed and often smudged and burnished on the exterior (Figure 5.3). Vessels with fine shell tempering are more resistant to mechanical stress than ceramics with more coarse temper (Steponaitis 1983:36-45). It is logical, therefore, that Bell Plain vessels were used for serving rather than cooking. Bell Plain vessels forms include jars, bottles, bowls, and plates.

5.1c Kimmswick Fabric Impressed

Kimmswick Fabric Impressed ceramics are defined as shell-tempered pans with an imprint of cloth on the exterior surface (Figure 5.4). The temper is almost always large in size, in some cases reaching 10 mm in width. Sherd thickness for this type range from 4 mm to 25 mm; 10 to 20 mm being the most common range of pan thickness. The frequency of this type varies between Middle Cumberland ceramic assemblages, and range from less than one to over eight percent (Moore and Smith 1996c; 2005; Smith 1992, 1993a; Trubitt 1998; Walling et al. 2000).

5.1d Matthews Incised, *var. Matthews*

Matthews Incised, *var. Matthews* is characterized by incised arches on the shoulder of shell-tempered jars. Paste is typically well compacted, and temper ranges from fine to relatively coarse shell. Vessel forms are gradual neck and distinct neck jars with direct or incurvate rims. Vessel sizes range from small to large, but most are small to medium. Closed handles are present on some specimens, with the lower arch point situated below the lower handle attachment.

This design consists of a series of incised arches around the neck of the jar. Three subvarieties of *var. Matthews* are identified by archaeologists in the Middle Cumberland region based on the number of incised lines and the angle of incising. (Figure 5.5) (Smith 1993a; Walling 2000). Arches executed with a single incised line is designated Subvariety A (Figure 5.6). Subvariety B consists of arches formed with two or more incised lines (Figure 5.7) (Smith 1992; Smith and Moore 2001; Walling et al. 2000). Arches in Subvariety C are executed with an angled incision either from above or below the incised line, resulting in an incision that is broad and asymmetrical in cross section (Figure 5.8).

Var. Matthews incised jars typically have four or six evenly spaced arches around the vessel shoulder. When the ceramic collection is fragmentary, the number of arches on a jar is difficult or impossible to determine. Whole or large jar fragments from historic explorations in the Peabody and Smithsonian from Sellars and Rutherford Kizer have six arches around the vessel shoulder (Moore and Smith 2009:46, 126). The basic arch shape for *var.* Matthews designs is rounded at the top of the arch closest to the orifice and pointed at the bottom point of the arch. The sharpness of the bottom point varies from very distinct to uneven and rounded (see Figures 5.6 and 5.7).

5.1e Matthews Incised, *var. Manly*

Less common than *var. Matthews* is Matthews Incised, *var. Manly*. This design is similar in shape to *var. Matthews* with punctations forming arches around the neck of a jar. Jar forms and paste characteristics are comparable to those of *var. Matthews. Var. Manly* has been divided into two subvarieties by previous researchers (Smith 1992:80; Walling 2000). Subvariety A consists of punctations only (Figure 5.9). The arches of subvariety A consist of one or more parallel lines of punctations. Subvariety B consists of punctations along with a continuous incised line to create parallel arches.

5.1f Beckwith Incised

The design on Beckwith Incised jars is a series of rectangular guilloches around the vessel neck (Figure 5.10) (Thruston 1890: Figure 47). The jar forms and paste characteristics are comparable to those of Matthews Incised jars. Beckwith Incised jars often have strap handles and/or modeled frog effigy features (Moore and Smith 2009: 218).

5.1g McKee Island Cordmarked

The McKee Island Cordmarked ceramic type is characterized as shell-tempered jars with impressions of parallel or overlapping lines of cordage (Figure 5.11). Paste ranges from poorly to well compacted. Shell temper size is generally larger than 1 mm in this type. The impressed cord appears to mainly be oriented with the long axis perpendicular to the orifice. From the examples in the sample, the width of the cordage used in this type is generally less than 2 mm in width.

McKee Island Cordmarked (Webb and Wilder 1951) is not common in most Middle Cumberland ceramic assemblages (Wesler 2001). The type is not common in the collections from Castalian Springs, Rutherford Kizer, or Sellars. The high percentage of shell-tempered cordmarked sherds from Beasley (7.6 percent) and Moss (6.0 percent) will be discussed in more detail in Chapter 8.

5.1h Wolf Creek Check-Stamped

The Wolf Creek Check-Stamped ceramic type is defined as shell-tempered vessels with a griddle-like impression of squares, rectangles or diamonds (Figure 5.12). Paste is moderately compacted. The shell temper is generally moderate to coarse in size. This type appears to be restricted to jar forms, although with the limited sample size it is possible that it occurs on other forms as well. Only a few check-stamped sherds were recovered from Rutherford Kizer and Castalian Springs, and none were identified from Sellars. However shell-tempered check-stamped ceramics are a well represented minority type at Beasley and Moss.

The check-stamping at Beasley and Moss was executed in two general ways. Two check-stamped sherds from Beasley have well formed diamond shaped checks with clear and relatively even spaces between the checks. The long side of the diamond is vertically oriented and has a length of approximately 5 to 6.5 mm. These sherds also show a smooth band between the check-stamping and the lip. The majority of check-stamping is not crisply executed. The checks range from square to roundish, generally with irregular spaces between checks. At Beasley, the checks range in size from 3.0 to 10.5 mm on a side. The Moss measurable checks are of similar size ranging from 4.5 to 9.5 mm on a side. Some checks resemble rectangles rather than squares, even on the same sherd with square shaped checks. This irregularity is likely due, in part, to over-stamping.

5.1i Red Filmed

The criteria for assigning named types to red filmed ceramics are not well defined and inconsistent (Cogswell and O'Brien 1998; Hilgeman 2000:43-44; Wesler 2001:65; Williams 1954). Therefore in this dissertation, these ceramics will simply be referred as red filmed. A few examples of red filming on shell-tempered sherds were identified from the assemblages examined. The red filming ranges in color from orangish to brick-red. Red filming is applied to vessels made with either coarse shell temper or fine shell temper. (Figure 5.13). The one example of a red filmed sherd from Castalian Springs is tempered with coarse shell as well as some grog and inclusions of grit. The examples from Sellars are tempered with coarse shell whereas the examples from Beasley are on both fine and coarse shell-tempered sherds. The examples of red filming on fine shell-tempered sherds appear to be restricted to the exterior on sherds. The red filming on coarse shell-tempered sherds is on the exterior at least in some cases, and in others it is not possible to determine if the filming is on the interior or the exterior side of the sherd.

5.1j Angel Negative Painted

The Angel Negative Painted ceramic type is defined as fine shell-tempered plate with negative painting on the inner rim surface (Hilgeman 2000). At the Angel type site in Indiana, the most common variety, Angel, has negative painting on a red-slipped surface (Hilgeman 2000:46). Negative painted plates are very common at the Angel site in southern Indiana, where Hilgeman reports almost 4000 sherds (Hilgeman 2000:36).

Twenty-three negative painted plate sherds or vessels have been identified from the Middle Cumberland region, 14 of those from Castalian Springs, and two from Sellars (Smith and

Beahm 2012a). The negative painted plates from the Middle Cumberland sample sites have a dark brown to black negative design on un-slipped paste that ranges in color from light buff to orange. Fringed and striped lines, dots, and an equal armed cross in circle are the motifs that occur on the negative painted plates from Castalian Springs and Sellars (Figures 5.14 and 5.15) (Smith and Beahm 2012a). One possible example of an Angel Negative Painted *var. Grimm* was recovered from Castalian Springs (Figure 5.16) (Smith personal communication 2013). Hilgeman defines this variety is defined as having black on buff negative painting highlighted with red slip (2000:46).

5.1k O'Byam Incised

The O'Byam Incised type is defined by Hilgeman as a shell-tempered plate form with incising on the interior of the plate rim (2000:48). Patterns of this incising are triangular, and varieties of O'Byam Incised reflect different methods of executing a triangular shape. O'Byam Incised, *var. Adams* includes zigzag or chevron line segments, while *var. O'Byam* is incised with line-filled triangles (Hilgeman 2000: Figures 3.5-3.8). Interiorly incised plates are rare in the Nashville Basin, but a few examples have been identified in the Middle Cumberland region (Smith et al. 2004). These examples have been mainly identified as O'Byam Incised, *var. Stewart* after the types present in the Lower Cumberland and Ohio River valley where this plate modification is more common. One example of *var. Adams* was identified from Castalian Springs.

5.1l Nashville Negative Painted

The Nashville Negative Painted ceramic type is defined as shell-tempered bottles with negative painting (Phillips 1970:139-141; Phillips et al 1951: 173-177; Hilgeman 2000:66; Smith and Beahm 2012a). Negative painted bottles generally have fine and light colored paste or light colored slip to provide a background to the black or dark brown design. Carafe neck bottles and hooded bottles are more commonly negative painted than cylindrical neck bottles.

The most common negative painted design on Nashville Negative Painted bottles is the sun circle combined with an equal-armed cross (Figure 5.17). Effigy bottles are also painted with sun circles or are painted so as to complement the effigy form. Human effigy hooded bottles are generally negative painted to mimic a decorated textile in the form of a shawl (Sharp et al. 2011).

In the Middle Cumberland region, bottles are more commonly negative painted than plates. Unfortunately negative painting does not preserve well. Therefore the number of recorded negative painted bottles is likely under representative of the bottles that were originally negative painted.

5.1m Mound Place Incised

The Mound Place Incised type is defined as a shell-tempered bowl with multiple parallel incised lines around the rim (Figure 5.18) (Phillips et al.1951:147). Two examples of Mound Place Incised bowls were identified from Castalian Springs, two from Sellars and two from Rutherford Kizer (Moore and Smith 2001: Figure 63). Mound Place Incised bowls have been found from the Central Basin in Arkansas and Missouri, the Mississippi River Valley, Ohio River Valley throughout the Mississippian period (Hilgeman 2000:80, Morse and Morse1998:240, Phillips et al. 1951:147, Wesler 2001:63). This type of incising is referred to as Carthage Incised *var. Akron* in the Moundville area (Steponaitis 1983:335).

In addition, a serpent-like crested bird rim rider was recovered from Castalian Springs which has two parallel lines across the neck, and likely represents a third Mound Place example from Castalian Springs. Rim rider effigies attached to Mound Place bowls in the Middle Cumberland are typically human heads (Thruston 1890: Figure 50). There are examples of serpent effigy bowls with parallel incised lines from eastern Arkansas, Missouri, and Mississippi (Holmes 1903: PLXX; Moore 1996 [1905]; Phillips et al. 1951: Figure 101). In addition, the well know crested bird "water serpent" stone bowl found by C.B. Moore at Moundville also exhibits parallel lines around the rim in a similar manner (Moore 1996 [1905]:Figure 167).

5.1n Notched Rim Bowls

Notched rim bowls, also called Mississippi Plain or Bell Plain, *var. Noel*, are defined as shell-tempered bowls with a notched appliqué rip strip below the vessel lip (Moore and Smith 2009:213). The rim strip is a strip of paste applied below the vessel lip that has had notches cut out of it to form a row of flattened pyramid shaped nodes (Figure 5.19). Shell temper for this type ranges from very fine to moderately coarse. The exterior is usually well smoothed and often burnished. This type usually occurs on standard bowl forms, although there are some examples of outslanting wall and "ogee" shaped bowls with notched rims from the Middle Cumberland region (Acc# PM 78-6-10/14257, PM 82-35-10/27338, PM 82-35-10/31991) (Moore and Smith 2009: Figure 85; Figure 257; Thruston 1890:Figure 61).

Bowls with notched rims are widespread throughout the Mississippian Southeast and are found at sites in the Black Warrior River Valley, Central Mississippi Valley, Ohio River Valley, Upper Tennessee Valley and northern Georgia (Lewis and Kneberg 1993:100; Morse and Morse 1998; Pollack 2008; Pollack et al. 2002; Steponaitis 1983; Wood 2009). Outside the Middle Cumberland region this bowl modification may also be called a "beaded rim" or "filleted" rim.

5.1o Non Shell and Mixed Shell Temper

The vast majority of the ceramics used in this study are shell-tempered- typical of Mississippian assemblages. However, a small percentage of ceramics with non-shell temper and mixed tempers were identified from the sample site assemblages. Limestone-tempered sherds with plain exterior and with cordmarked exteriors were identified from the sample site assemblages. A small number of sherds tempered with quartz with both plain and cordmarked exterior surfaces, grog, and sand/grit temper were also identified from the sample site assemblages. Nineteen of the sand-tempered sherds recovered from the sample sites are complicated stamped, suggesting a nonlocal manufacture.

There are also a small number of sherds from Castalian Springs, Sellars, and Beasley that have both shell and other material present in the paste. Shell and limestone tempering is the most common combination, while shell and grog as well as shell and grit is also documented. Shell and limestone-tempered sherds have both plain and cordmarked exterior surfaces.

5.2 Vessel Forms

The following is a description of Middle Cumberland vessel forms. Basic vessel forms identified by researcher in the Middle Cumberland region are jars, bottles, bowls, plates, and pans. Shape classes within these general forms have also been identified by researchers in the region. Size classes were identified for shape classes with enough examples from the assemblages analyzed for this study.

The analysis of vessel form in this research focuses on small variations, and secondary shape characteristics of the jar, bowl, plate and bottle forms. Unlike some ceramic analyses, few whole vessels are available for analysis from the sample sites. Therefore it was not possible to analyze characteristics of vessel bases or vessel height ratios. The following descriptions use the critical points in a vessel profile and vessel proportions defined by Rice (2005) and Steponaitis (1983).

5.2a Jars

Jars are the most common vessel form in the assemblages examined (Table 5.1). They fulfilled a number of functions in a Mississippian household from cooking to storage of food and water (Hally 1986). The presence of sooting on the exterior of many jars in the sample verifies their use over a fire (Figure 5.1). Closed handles and lugs on jars would have aided moving vessels, suspending over a fire and affixing lids for storage use.

Mississippian jars in the Middle Cumberland region have globular bodies and restricted necks (Smith 1992, Steponaitis 1983, Hilgeman 2000). They often have a pair of closed handles or lug handles. Most are tempered with coarse shell (>1 mm) (Table5.2). Jars with coarse shell temper were made in a range of sizes, but jars with fine shell temper were not made in large sizes. The average jar orifice diameter in collections from the sample sites is 22.8 cm. The average orifice diameter of fine shell-tempered jars (15.7 cm) is smaller than the average orifice diameter for coarse shell-tempered jars (23.3 cm).

Middle Cumberland jars predominantly have plain, smoothed exteriors. Cordmarking is rare. Incising is the most common surface treatment. Even so, Smith estimates that only around one percent of the typical Middle Cumberland ceramic assemblage is incised (1992:137). The frequency of jars with incising depends on the archaeological contexts in which they occur. Burials are much more likely to contain incised jars than village refuse deposits.

Jars commonly exhibit a slight thickening of the wall just below the lip on the exterior. This area is often just thickened, but can also be folded or rolled, with varying levels of smoothing from well smoothed to very distinctive. The width of this thickened or folded area from Castalian Springs, Sellars and Beasley ranges from 1.2 mm to 15.6 mm.

Shape Classes. For this study, shape classes were based on the distinctiveness of the neck/shoulder junction (Figure 5.20). A total of 342 sherds were assigned to a shape class (Table 5.3). Jar shape classes were further divided into size classes based on the orifice diameter of the rim sherds examined.

Gradual Neck jars are the most common jar shape class, making up 70 percent of the total jar sherds assigned to a shape class. These jars have a rounded and gradual neck/shoulder junction (Figures 5.21 and 5.22). The average neck length for Gradual Neck jars is 30.0 mm. Lugs occur most often on Gradual Neck jars (Table 5.4). Closed handles are also found on Gradual Neck jars.

Three size classes were identified based on orifice diameter distribution (Table 5.5, Figure 5.23). The orifice diameter of the small size class ranges from 7 to 21 cm. The medium size class orifice diameters ranges from 22 to 38 cm, and the orifice diameter of the large size class ranges from 40 to 46 cm. The difference in neck lengths for these three size classes is very significant, which supports the identification of these size classes (Table 5.6). The lip thickness between the small and medium size classes is fairly significant, although the difference between the medium and large is not, likely due to the relatively small number of examples in the large size class (Table 5.7).

The Distinct Neck jar is the second shape class identified. These vessels show a clear change in angle at the junction of the jar shoulder and neck (Figures 5.24 and 5.25). This junction is often more distinct on the interior of the vessel than the exterior. A total of 71 jar rims, or 21 percent of the total classified jars were categorized into this shape class (Table 5.3). The average neck length for Distinct Neck jars from all three sites is 28.1 mm. Closed handles are most often found on Distinct Neck jars while lugs rarely occur (Table 5.4).

Three size classes were identified based on orifice diameter distribution (Figure 5.26). The small size class includes jars with an orifice diameter of 7 to 19 cm. The orifice diameter of the medium size class ranges from 22 to 28 cm and the large size class has an orifice diameter range of 33 to 37 cm (Table 5.8). The difference in neck lengths between the small and medium size class is very significant which supports the identification of these as size classes (Table 5.9). The difference between the medium and large size class is not very significant, which is likely due to the small number of large jars. Similarly, the lip thickness between the small and medium class is very significant while the difference in lip thickness between the medium and large size class is not (Table 5.10).

The Wide Mouth jar shape class is made up of jars with outward angled rims with a distinct shoulder/neck junction (Figures 5.27 and 5.28). A total of 21 rims were assigned the Wide Mouth jar shape class (Table 5.3). Jars in this shape class are all fairly small, all being less than 28 cm in orifice diameter with an average of 13.4 cm. This shape class has one size class ranging from 6 to 28 cm, with orifices less than 15 cm being most common (Figure 5.29). The average neck length for wide mouth jars is 17.2 cm. This average neck length for this shape class is shorter than the small size class of both Gradual Neck jars and Distinct Neck jars.

Rim Angles

Rim Angle. The angle of jar rims varies within the Distinct Neck and Gradual Neck shape classes. By definition, the Wide Mouth Jar shape class includes only jars with excurvate rims. Jar rims are either oriented vertically (direct rims), away from the orifice (excurvate rim) or towards the orifice (incurvate rim) (Figure 5.30).

Direct jar rims are vertically oriented. They are the most common jar rim orientation. The 508 direct rim sherds comprise 77 percent of all categorized jar rims. From the sample sites, jars with direct rims range in orifice diameter from 7 to 46 cm with an average of 22.1 cm. Direct rims occur on 69 percent of Gradual Neck jars and 31 percent of Distinct Neck jars from Castalian Springs, Sellars and Beasley. Lugs and closed handles are often found on jars with direct rims (Table 5.11).

Jars with incurvate rims have rims that are inward sloping. A total of 89 jar rims from all sites in the sample were categorized as having an incurvate rim. Jars with this rim orientation have gradual neck/shoulder junctions. The average orifice diameter of jars from the sample sites with incurvate rims is 24.7 cm, larger than jars with both direct and excurvate rims. Incurvate rims occur with lugs, but no examples with handles are recorded from the sample sites (Table 5.11).

Excurvate rims angle away from the jar's orifice. A total of 60 jars were identified as having excurvate rims. Excurvate rims occur on 35 percent of Distinct and 65 percent of Gradual neck jars from Castalian Springs, Sellars and Beasley. The average orifice diameter of jars with excurvate rims from the sample sites is 19.71 cm. Distinct Neck jars with excurvate rims are smaller, with an average orifice diameter of 13.37 cm, than Gradual Neck jars (average of 23.73 cm). Closed handles are often found on jars with excurvate rims (Table 5.11).

5.2b Handles

Handles are attached to the lip of jars. They helped in transport and in affixing a lid to the top of the vessel. There are two broad categories of handles: closed handles and lug handles.

Closed Handles. Closed handles consist of a strip of paste connecting the jar lip to the jar shoulder. Closed handles are present mainly on jars with direct rims and on gradual neck jars with excurvate rims. Eighty-two handles (80%) from Castalian Springs, Sellars, Beasley and Moss are coarse shell-tempered; 18 of the handles (18%) are fine shell-tempered; and two are tempered with limestone. The average orifice diameter for jars with handles is 16.2 cm. Handled jars in the Middle Cumberland region have two handles affixed to opposite sides of the vessel (Smith and Miller 2009:38). There are some examples of small jars from burials in the region that have both two handles and two small lugs.

The range of variation in handle form from the Middle Cumberland region is on a continuum from those having a round cross-section to those with a wide, flat cross-section. Therefore, classification based on handle form will be somewhat arbitrary. Hilgeman (2000:129) classifies handles from the Angel site in Indiana based on the ratio of handle thickness to handle width (2000:129, 131). From roundest to flattest they are: loop (1.00-.75 width to thickness ratio), narrow intermediate (.74-.57 width to thickness ratio), wide intermediate (.56-.39 width to thickness ratio), and strap (.38-.10 width to thickness ratio). This classification scheme is used in the analysis of handles in the study presented in this dissertation (Table 5.12).

Handles are sometimes modified along the top with rounded or flattened horns (Figure 5.31). The handle body is sometimes modified with nodes as well (Figure 5.32). Handles may also have grooves or incising vertically down the handle body (Figure 5.31 and 5.33).

Lug Handles. Open handles or lugs are affixed to jar lips and resemble an elongated tab (Figure 5.34) Lugs are flat on the top and becoming thinner farther away from the vessel wall. Lug shapes are generally categorized as either single or bifurcate (Figure 5.35). Lug shapes and profiles vary within these general shape categories, and were divided into more specific shapes for this research (Figures 5.36, 5.37, and 5.38). Lug handles are present mainly on jars with direct and incurvate rims. The average orifice diameter of jars with lug handles in the sample site collection is 30.1 cm, larger than the average jar orifice diameter (22.8 cm) (and considerably larger than the average jar with closed handles at 16.2 cm).

5.2c Peaked Rims

Jars with peaked, or scalloped rims are commonly found at East Tennessee sites along the Tennessee River and in the Norris Basin and in northwestern Georgia, but have also been recovered from Middle Cumberland sites (Lewis et al. 1995:99-100, 363,411,490,552; Moore and Smith 2009:Figure 77, Figure 124; Wauchope 1966: Figure 216, 222, 231;Webb 1938:270). With this type of jar rim modification, the rim is drawn up into a number of rounded peaks, usually four or six (Figures 5.39 and 5.40). These peaks are commonly positioned over handles or nodes; the latter being longer horizontally than vertically. This rim modification appears to be restricted to distinct neck jars with direct and excurvate rims and wide mouth jars. Three examples of peaked rim jars were recovered from the sample sites.

5.2d Bottles

Bottles have a globular body and a relatively tall, vertical neck. There are several examples negative painted (Nashville Negative Painted), incised, and effigy bottles. Due to the small size of most of the bottle rims in the samples examined, neck length could not be measured and size classes were not identified (Table 5.13).

Carafe Neck Bottles. Carafe neck bottles have tall narrow necks that are “biconcave” (Figure 5.41) (Steponaitis 1983, Smith 1992, Hilgeman 2000). The biconcavity is not always well pronounced, but the orifice diameter of these bottles is on average smaller than cylindrical neck bottles. Carafe neck bottles also have a longer neck. The majority of carafe neck bottles in the samples examined (7) have flattened lips (85%). Carafe neck bottles in the sample site collections have orifice diameters that range from 3 to 5 cm with an average of 3.8 cm. Carafe neck bottles are tempered with both coarse and fine shell temper (Table 5.14).

Cylindrical Neck Bottles. Cylindrical neck bottles have straight sided necks that are relatively short and relatively large orifice diameters (Figure 5.41). A total of six rims were identified as cylindrical neck bottles from the collections examined. Orifice diameter ranges from 8.5 to 18 cm with an average of 12.1 cm. Half of the cylindrical neck bottles had flattened lips, and half had rounded lips. The examples of cylindrical neck bottles from the sample sites are tempered with coarse shell (Table 5.15).

Hooded Bottles. The orifice of hooded bottles is located on the side of the neck, the top being covered by the "hood" (Figure 5.41). The lip of the orifice is folded outward, creating a thickened area around the opening. Approximately half of hooded bottles in the sample have flattened lips (46%), and half (54%) rounded lips. Orifice diameters of hooded bottles from the sample sites range from 2.5 to 9.0 cm with an average of 4.7 cm. Hooded bottles are tempered with either coarse or fine shell temper (Table 5.16).

There are two types of hooded bottles; blank faced and full figure effigy. Blank face hooded bottles have some modeling at the top and/or sides of the orifice, but do not depict a readily identifiable effigy form. Full figure effigy hooded bottles depict anthropomorphic or animal forms opposite the orifice and continuing down to the body of the bottle.

The variation in modeling on blank faced hooded bottles is intriguing, and may have chronological or symbolic significance. It has been suggested elsewhere that these forms are simplified representations of the full figure effigy bottle (Goldstein 2012; Moore and Smith 2009:216). It is difficult to determine the chronological significance of these blank faced bottles with the available sherd sample because most collections from features have only single examples large enough to see the overall shape. No two examples of hooded bottle shapes are exactly alike. Nine hooded bottle rims were large enough to see the modeling. Four general hooded bottle shape classes in the sample collections were identified.

There is one example of shape class A (Figure 5.42). This example, from Sellars, depicts two flattened nodes on the bottle's hood. No other hooded bottles have been recorded from Sellars from either modern or historical excavations.

There are three examples of shape class B from Castalian Springs (Feature 112, Feature 305, and N1060E796 Level 2). Shape class B consists of a double pointed node at the top of the hood, and a double node or saddle shaped adornment on the sides of the hood (Figure 5.43). Goldstein (2012) categorizes this shape as Type 1 Style B. The orifice diameters of this type of hooded bottle range in size from the very small 2.5 cm to the very large 45 cm in diameter. Another example of this form was recovered by Powell from Bosley Farm (Acc#32013).

Four examples of shape class C hooded bottles were identified from Castalian Springs. The overall form of this class of hooded bottle is triangular, with a single peak at the top of the hood, and a single protuberance at each side (Figure 5.44). Goldstein (2012) characterizes this shape class as Type 1 Shape F. The examples within this shape class vary in the distinctiveness and height of the peaks, but have relatively similar orifice diameters, ranging from 3 to 4 cm. Another example of this hood shape with tri-stirrup handles was recovered from a stone-box grave by Curtiss in his excavation at Rutherford Kizer (Moore and Smith 2009:127 Figure 155).

There are two examples of shape class D from Castalian Springs. The side adornments for both of these were not present, but each has a graduated node on the top of the hood (Figure 5.45). Goldstein (2012) categorizes this shape class as Type 1 Style D. A fragment with this type of top adornment was recovered from Putnam's 1877 excavations between graves at Bowling

Farm (Moore and Smith 2009:364) and another from Powel's excavations at Bosley Farm (Acc#32120).

Incised Bottles. Incised bottles are not very common in the Middle Cumberland region. Incised hooded bottles were found during Peabody expeditions at Gordontown and Gray's Farm (40WM11) (Moore and Smith 2009:56,105; Figures 53 and 116). The design for both of these examples resembles Matthews Incised *var. Matthews*. One incised bottle was identified from the collections examined here. A short necked bottle with grog temper that has an incised design similar to Matthews Incised *var. Matthews* was recovered from Castalian Springs Feature 100 (Figure 5.46). Two incised carafe neck bottles were recovered from Averbuch. The incising on both differs somewhat from Matthews Incised in that while there are upper arches, they do not meet at a lower point.

Another form of incising on bottles is a distinctive line around the base the bottle's neck. This is present on one example of an incurving cylindrical neck bottle from Sellars Feature 18 and on a hooded bottled from Castalian Springs Feature 4. The Bosley Farm collection also includes one example of a cylindrical neck bottle with an incised line around the neck and one hooded bottle with two incised lines around the base of the neck (Acc#32120) (Figure 5.47). The Gordontown incised hooded bottle also appears to have an incised line below the neck in addition to the arch design.

Lobed bottles occur on both carafe neck and effigy hooded bottles. There are several examples of lobed bottles from historic explorations in the Middle Cumberland region. One of these is from the burial mound at Sellars, one from Noel Cemetery, two from Gray's Farm, and one from the Brentwood Library site (Moore and Smith 2009:46, 77, 105,178). Two examples were also recorded from Bosley Farm (Acc#32017, 32018). The number of lobes on these bottles ranges from three to five with four lobes being most common.

5.2e Bowls

Bowls are relatively shallow vessel that lack neck constriction. In the sample, some bowls are adorned with effigy elements. Some have notched rim appliqué strips and some are incised. Nodes and tabs are also secondary shape features. While the majority of bowls in the assemblages examined are tempered with coarse shell, fine shell-tempered bowls are well represented (Table 5.17). Three bowl shape classes were identified from the sites in this study; standard, restricted rim, and outslanting wall (Figure 5.48) (Table 5.18).

Standard Bowl. A standard bowl is in the shape of approximately half a sphere. This is the most common shape of bowl present in these samples. Notched rim appliqué strips are sometimes applied to this class of bowl.

A total of 83 standard bowls were identified from Rutherford Kizer (Smith and Moore 2001:169). Their orifice diameters were not available to include in this analysis. Orifice diameters of standard bowls in the Castalian Springs and Sellars assemblages range from 5 to 30 cm and there are not obvious size classes in the distribution of orifice diameters for both sites combined. Castalian Spring and Sellars each appear to have two standard bowl size classes, but they differ in orifice diameter between the two sites (Figure 5.49 and 5.50). For Castalian Springs, the small size class ranges from 5 to 9 cm with an average of 7.3 cm. The large size class ranges from 12 to 24 cm with an average of 17.6 cm, with an outlier at 30 cm. From Sellars, the small size class ranges from 9 to 18 cm with an average of 13.8 cm. The large size class ranges from 20 to 30 cm with an average of 25.2 cm.

Restricted Rim Bowl. Restricted rim bowls have an orifice that is significantly smaller than the maximum diameter of the vessel (Smith and Moore 2001:171). Orifice diameters for restricted rim bowl rims from Castalian Springs and Sellars range from 4 to 18 cm with an average of 8.8. There are no obvious size classes in the orifice diameter distribution. Ten examples of restricted rim bowls were recovered from Rutherford Kizer.

Outslanting Bowl. In this shape class, the walls of the vessel slant outward. The angle of the rim from the vertical is similar to or less than that of a plate rim, therefore unless there is a break in the vessel wall profile where the rim and body join, it is often difficult to distinguish between plates and outslanting wall bowls. This shape class was not positively identified at Castalian Springs, but inferred from one example of a scalloped rim. Five examples were identified from modern Sellars assemblage with an average orifice diameter of 24.6 cm. An additional five outslanting wall bowls from Sellars were documented in the Peabody collection (Moore and Smith 2009:365-367). A total of 14 examples of outslanting wall bowls were identified from modern excavations at Rutherford Kizer (Smith and Moore 2001:169).

5.2f Plates

Plates are unrestricted vessels with a distinct rim and a body. Some researchers call these vessels “flared rim bowls” or “excurvate rim bowls” (Smith and Moore 2001, Steponaitis 1983, Trubitt 1998). In areas such as the lower Ohio Valley (Hilgeman 2000), the break between the rim and body appears sharp and distinct, whereas at Middle Cumberland sites to the west of the sample area such as at the Gordontown site, the break appears more rounded but still discernable (Smith and Moore 2001:175). On the eastern edge of the Middle Cumberland region in the study area, the break between the rim and body can be either distinct or more rounded (Figure 5.51). In some cases the interior break between the rim and body is distinct while the rim and body margin on the exterior is very rounded. From Castalian Springs, half of the plate rim-body margins are distinct on the interior and half are rounded on the interior. Plates with rounded exterior rim-body margins (76.7%) are more common than those with distinct exterior rim-body margins (23.3%).

As discussed above, surface treatments for plates in the Middle Cumberland region are rare, but include both negative painting and incising around the interior of the plate rim (Angel Negative Painted and O'Byam Incised). Plates in the assemblages examined have both coarse and fine shell temper. A few examples were also made with a mix of shell and limestone temper (Table 5.19).

Shape Classes. Hilgeman (2000) identifies short rim, standard, and deep rim plates in her collections from the Angel site in Indiana. Short rim plates are characterized by short, horizontal or nearly horizontal rims and deep bodies that comprise more than two-thirds of the vessel height (Hilgeman 2000:37). Standard plates have longer, more steeply angled rims that comprise approximately half the total vessel height (Hilgeman 2000:40). Deep rim plates have very long rims and very shallow bodies (Hilgeman 2000:40). The collections examined for the research presented here contains many examples of Hilgeman's short rim plates and standard plate, and only one resembling the deep rim plate (2000:40).

A histogram of plate rim widths (Figure 5.52) reveals a tri-modal distribution of plate rim length. Short rim plate rims in the study collections range from 10 to 25 mm in length (Figures 5.53 and 5.54). Rims angle for this shape class range from horizontal (90 degrees) to 40 degrees. All lip forms in this shape class are rounded. The larger two peaks in Figure 5.52 indicate that the standard plate was manufactured in two size classes. Plates with rims ranging in length from 28 to 48 cm are classified as short standard rim plates (Figures 5.55 and 5.56). Rim angle ranges from 70 to 25 degrees. Lip forms for this shape class include rounded, rounded to a point, flattened, and beveled. Long Standard Rim plates have rims that range from 51 to 63 cm in length with an outlier at 98.25 cm (Figures 5.57 and 5.58). Rim angle ranges from 70 to 30 degrees. Lip forms include flattened, rounded, and beveled. Each of these three shape classes contains examples of plates with distinct and gradual rim/body junctions and examples with coarse and fine shell temper.

5.2g Pans

Pans are large shallow vessels that have rounded or flattened bottoms. Pan walls are thick and angled outward. Pans are usually thickened and have lips that may be rounded, flattened on top, or drawn into a ridge (Figure 5.59). Exterior surfaces are commonly impressed with fabric, although plain pans are also present in the sample. It has been suggested that pits were dug to help mold these large vessels, and lined with cloth, which was used to pull the vessel out of the pit (Brown 1980: Figure 6). Clay lined pits, similar in size to pans, have been excavated in association with mussel shell and unbaked clay supporting this manufacturing technique (Drooker 1992).

With the exception of two pans tempered with both shell and limestone and one tempered with sand, all pans in the sample are coarse shell-tempered. Due to the very large size and irregular nature of pans, orifice diameter cannot be accurately measured from most sherds. The diameters that could be measured are likely those vessels with the smallest size. Measured pan diameters from the sample sites range from 16 cm to over 50 cm, and are generally over 30 cm (Smith and Moore 2001:149).

5.2h Effigy Vessels

Effigy vessels are formed to represent animals, supernatural creatures, human figures, and objects with particular importance. Rim rider effigies are simply modeled pieces affixed to a vessel lip. In the case of structural effigies, the vessel wall itself is modeled to create a figure. There are many different effigy forms found in the Middle Cumberland region. Those recovered from the sample sites are discussed below (Table 5.20).

Owl Bowls and Bottles. Owl effigy forms are found as both rim riders on bowls, and hooded bottles. The head is almost always depicted with ear tufts at the top (Figure 5.60). Owl rim rider heads are often hollow and filled with seeds or pellets to make a rattling sound when the bowl is shaken (Davis 2011).

Owl effigy hooded bottles are found both with globular bodies and with modeled owl-shaped vessel bodies, including legs and a tail. One complete example from Rutherford Kizer has a globular body negative painted with an equal armed cross within a sun circle (Moore and Smith 2001 cover).

Ducks and Crested Bird Bowls. Duck effigy forms are found on bowls as rim riders. Execution of duck head rim riders ranges from quite naturalistic to cartoonish. The head may face either toward the interior of the vessel or away from the orifice. There is usually part of the duck’s curved neck continuing a short way down the vessel wall. A flattened lug tail is located on the opposite side of the vessel from the rim rider head.

Other rim riders do not necessarily resemble ducks, but are more general crested birds. Two examples were recovered from Castalian Springs (Figures 5.61). One, from Feature 119, has a bulbous eye and fat, curved beak and faces inward. The second was recovered from Mound

3, and has a more serpentine appearance with well-smoothed and compact paste, and faces outward.

Frog Bowls and Jars. Frog effigies are found in both jar and bowl forms in the Middle Cumberland region. Frog effigy forms on both vessel forms range from naturalistic to abbreviated depictions (Figure 5.62 and 5.63). The tail, four legs, and face are modeled on the vessel walls to form the image. Frog effigies jars are often strap handled, and occur with Beckwith and Matthews incising (Moore and Smith 2009:218). Bowls with modeled frog effigy surface treatment are generally of the restricted rim shape class.

Fish Bowls. Fish bowls are structural effigies. The dorsal and pectoral fins, head and tail are arranged around the vessel circumference so as to form the side-view of a fish when the bowl is viewed from above (Figure 5.64). Restricted rim bowls are the usual shape class for this effigy type. Fish are occasionally depicted in a similar manner on bottles.

Dog Bottles. Carafe neck bottles with a dog-like head and a four legged body are another animal effigy form found in the Middle Cumberland region. This type of bottle tends to be negative painted. The dogs are currently interpreted as supernatural creatures, rather than actual dogs (Dye 2009a). Putnam excavated one example from Sellars in 1877 (Moore and Smith 2009:49). The head from a dog bottle was recovered from Castalian Springs Feature 4 during 2006 excavations.

Human Bowls and Bottles. There are three major variations of human head rim rider bowls. Some bowls consist of a human head on one side of the bowl and a tab on the opposite site. These are often incised with parallel lines around the bowl rim (Mound Place Incised). A second type consists of a rim rider head with modeled arms and legs on the side and end of the bowl. The third type is often called “medallion head” bowls and have four small human heads spaced equally around the rim of the bowl. These are often accompanied by a notched rim appliqué strip.

Human effigy rim riders that had been affixed to bowls were recovered from Castalian Springs, Rutherford Kizer, and Sellars (Figure 5.65). Like owls effigy rim riders, human effigy rim riders can be hollow with seeds or pebbles inside to serve as a rattle.

Human effigies also occur on hooded bottle forms. These bottles depict women, and are usually negative painted with a distinctive patterned shawl design (Sharp 2011, Sharp et al. 2011). The female is usually in a sitting position with her hands on her stomach, and may have an exaggerated spine. Human effigy hooded bottles and bottle fragments have been recovered from Castalian Springs and Sellars (Figure 5.66).

Bottles with modeled faces on the vessel body also occur in the Middle Cumberland region, but are much less common. A negative painted composite bottle was excavated from a burial at Rutherford Kizer. It consists of a carafe neck, with two oppositely facing heads, and a cube-shaped base (Moore and Smith 2009:128; Figure 157).

Other types of effigy vessels that have been found in the Middle Cumberland region but are not recorded for the sample sites include conch and mussel shell effigy bowls, turtle effigy bowls, mace effigy bowls and beaver effigy bowls (Moore and Smith 2009:218).

5.3 Summary

The majority of ceramics excavated from Middle Cumberland sites are shell-tempered plain sherds. However, variability does exist between assemblages. Sources of variation include temper, surface treatment, vessel forms, secondary shape attributes. A small amount sherds with limestone, grog, quartz, and grit/sand temper as wall as mixed shell and limestone, shell and grog, and shell and grit were identified from the sample sites. Surface treatments recorded in the assemblages examined include several forms of incising on jars and less frequently on bowls, bottles, and plates, negative painting on bottles and plates, cordmarking on jars, fabric impressions on pans, red filming on jars and bottles, complicated stamping, and check-stamping on jars. Vessel forms documented include jars, bowls, plates, bottles, and pans. Jar, bowl, bottle, and plate shape classes were identified from the sample sites. Size classes were identified for jar shape classes and standard bowls. Closed handle forms were also defined based on their width to thickness ratio. Significant secondary shape attributes documented include peaked rims on jars, jar rim angle, and horns above closed handles. A variety of effigy vessel forms were also identified from the sample sites.

Table 5.1: Vessel Forms by Site.

Site	Jar Rims	Bottle Rims	Bowl Rims	Plate Rims	Pan Rims	Total Rims*
Rutherford Kizer	369 (54.5%)	35 (5.2%)	111 (16.4%)	15 (2.2%)	147 (21.7%)	677
Castalian Springs	504 (66.2%)	44 (5.8%)	47 (6.2%)	32 (4.2%)	134 (17.6%)	761
Sellars	118 (63.4%)	3 (1.6%)	42 (22.6%)	4 (2.2%)	19 (10.2%)	186
Beasley	29 (76.3%)	1 (2.6%)	2 (5.3%)	3 (7.9%)	3 (7.9%)	38
Moss	3 (100%)					3
Total Rims	1023 (61.4%)	83 (5.0%)	202 (12.1%)	54 (3.2%)	303 (18.2%)	1665

* not including miniature vessels.

Table 5.2: Jar Temper by Site (not including Rutherford Kizer).

Site	Coarse Shell	Fine Shell	Shell and limestone	Limestone	Quartz	Total
Castalian Springs	454 (90.1%)	42 (8.3%)	7 (1.4%)	1 (0.2%)		504
Sellars	101 (85.6%)	7 (5.9%)	7 (5.9%)	3 (2.5%)		118
Beasley	25 (86.2%)	3 (10.3%)			1 (3.4%)	29
Moss	2 (66.7%)	1 (33.3%)				3
Total	582 (89.0%)	53 (8.1%)	14 (2.1%)	4 (0.6%)	1 (0.2%)	654

Table 5.3: Jar Shape Class by Site.

Site	Gradual Neck	Distinct Neck	Wide Mouth	Total*
Castalian Springs	190 (76.6%)	45 (18.1%)	13 (5.2%)	248
Sellars	49 (62.0%)	24 (30.4%)	6 (7.6%)	79
Beasley	11 (73.3%)	2 (13.3%)	2 (13.3%)	15
Total	250 (73.1%)	71 (20.8%)	21 (6.1%)	342

*includes only jars for which shape class could be determined.

Table 5.4: Handles and Surface Treatment by Shape Class.

	Gradual Neck Jars	Distinct Neck Jars	Wide Mouth Jars
Handles	18 (7.2%)	11 (15.5%)	2 (9.5%)
Lugs	37 (14.8%)	3 (4.2%)	
Incised	33 (13.2%)	7 (9.8%)	2 (9.5%)
Lobed	4 (1.6%)	3 (4.2%)	
Check-Stamped	1 (0.4%)		
Cordmarked	1 (0.4%)		
Total	250	71	21

Table 5.5: Orifice Diameter Ranges for Gradual Neck Jar Size Classes.

Size Class	Orifice Diameter Range (cm)
Small	7 to 21
Medium	22 to 38
Large	40 to 46

Table 5.6: Mann Whitney Comparison of Gradual Neck Jar Neck Lengths by Size Class.

	Medium	Large
Small	2.03E-05	0.002191
Medium		0.022

Table 5.7: Mann Whiney Comparison of Gradual Neck Jar Lip Thickness by Size Class.

	Small	Medium	Large
Small		8.18E-11	0.0006349
Medium			0.2819

Table 5.8: Orifice Diameter Ranges for Distinct Neck Jar Size Classes.

Size Class	Orifice Diameter Range (cm)
Small	7 to 19
Medium	22 to 28
Large	33 to 37

Table 5.9: Mann Whitney Comparison of Distinct Neck Jar Neck Length by Size Class.

	Medium	Large
Small	0.064	0.0805
Medium		0.6502

Table 5.10: Mann Whitney Comparison of Distinct Neck Jar Lip Thickness by Size Class.

	Medium	Large
Small	0.00292	0.041
Medium		0.855

Table 5.11: Handles and Surface Treatment by Rim Angle.

	Jars with Direct Rims	Jars with Excurvate Rims	Jars with Incurvate Rims
Handles	18 (9.0%)	10 (17.2%)	
Lugs	31 (15.5%)	1 (1.7%)	10 (13.3%)
Incised	10 (5.0%)	3 (5.2%)	5 (6.7%)
Lobed	6 (3.0%)	2 (3.4%)	
Check-Stamped	1 (0.5%)		
Cordmarked	1 (0.5%)		
Total	200	58	75

Table 5.12: Handle Shape Classes (from Hilgeman 2000:129).

Shape Class	Width to Thickness Ratio
Loop	Greater than 1.00 to 0.75
Narrow Intermediate	0.74 – 0.57
Wide Intermediate	0.56 – 0.39
Strap	0.38 - .10

Table 5.13: Bottle Shape Class by Site.

Site	Context	Cylindrical Neck	Carafe Neck	Hooded	Total Identified Bottle Forms
Rutherford Kizer				23 (100.0%)	23
Castalian Springs		6 (14.6%)	6 (14.6%)	29 (70.7%)	41
	Feature 4		2 (28.6%)	5 (71.4%)	7
	Feature 106			1 (100.0%)	1
	Feature 119			5 (100.0%)	5
	preMound3			1 (100.0%)	1
Sellars		1 (33.3%)	1 (33.3%)	1 (33.3%)	3
Beasley			1 (100.0%)		1

Table 5.14: Carafe Neck Bottle Temper by Site.

Site	Coarse shell	Fine shell	Total
Castalian Springs	1 (16.7%)	5 (83.3%)	6
Sellars	1 (100.0%)		1

Table 5.15: Cylindrical Neck Bottle Temper by Site.

Site	Coarse shell	Fine shell	Total
Castalian Springs	3 (50.0%)	3 (50.0%)	6
Sellars	1 (100.0%)		1

Table 5.16: Hooded Bottle Temper by Site.

Site	%Coarse shell	%Fine shell	Total
Rutherford Kizer	2 (8.7%)	21 (91.3%)	23
Castalian Springs	19 (65.5%)	10 (34.5%)	29
Sellars	1 (100.0%		1

Table 5.17: Bowl Temper by Site.

Site	Coarse shell	Fine shell	Shell and limestone	Limestone	Other	Total
Castalian Springs	30 (63.8%)	14 (29.8%)			3 (6.4%)	47
Sellars	22 (52.4%)	9 (21.4%)	4 (9.5%)	5 (11.9%)	2 (4.8%)	42
Beasley		2 (100%)				2
Total	52 (57.1%)	25 (27.5%)	4 (4.4%)	5 (5.5%)	5 (5.5%)	91

Table 5.18: Bowl Shape Classes by Site.

Site	Standard	Restricted	Outslanting	Total
Rutherford Kizer	65 (69.9%)	10 (10.8%)	18 (19.4%)	93
Castalian Springs	43 (87.8%)	6 (12.2%)		49
Sellars	32 (74.4%)	5 (11.6%)	6 (14.0%)	43
Beasley	2 (100.0%)			2
Total	142 (75.9%)	21 (11.2%)	24 (12.8%)	187

Table 5.19: Plate Temper by Site.

Site	%Coarse shell	%Fine shell	%Shell and limestone	Total
Rutherford Kizer		15 (100%)		15
Castalian Springs	20 (62.5%)	10 (31.3%)	2 (6.3%)	32
Sellars	4 (100%)			4
Beasley Mounds	2 (66.7%)	1 (33.3%)		3

Table 5.20: Effigy Forms by Site.

Site	Owl	Duck	Crested Bird	Frog	Fish	Dog	Human Bowl	Human Bottle
Rutherford Kizer	2	9		1	5		5	6
Castalian Springs	1		2	2	1	1	1	4
Sellars		1		1	1	1	1	

Figure 5.1: Mississippi Plain Sherd with Shell Visible (from Sellars 18-78 NE 20-30cm). Note the sooting on the left side of the sherd.

Figure 5.2: Mississippi Plain Sherd Showing Linear Shell Voids (from Sellars Feature 26).

Figure 5.3: Bell Plain Sherd with Burnished Exterior (photo by K.E. Smith).

Figure 5.4: Kimmswick Fabric Impressed Sherd. Positive fabric impression on left (from Sellars Feature 4).

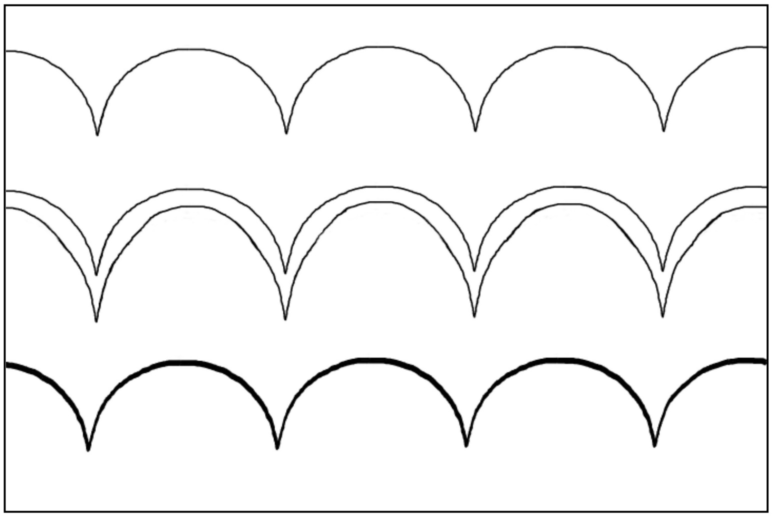

Figure 5.5: Matthews Incised *var. Matthews* Subvarieties. Top: subvariety A, Middle: subvariety B, Bottom: subvariety C.

Figure 5.6: Matthews Incised *var. Matthews* subvariety A. Note the sharp lower point (from Castalian Springs N1165 E792 level 3).

Figure 5.7: Matthews Incised *var. Matthews* subvariety B. Note the rounded, uneven lower point (from Castalian Springs N1000 E982 level 7).

Figure 5.8: Matthews Incised *var. Matthews* subvariety C (from Castalian Springs N1108E752 level 5).

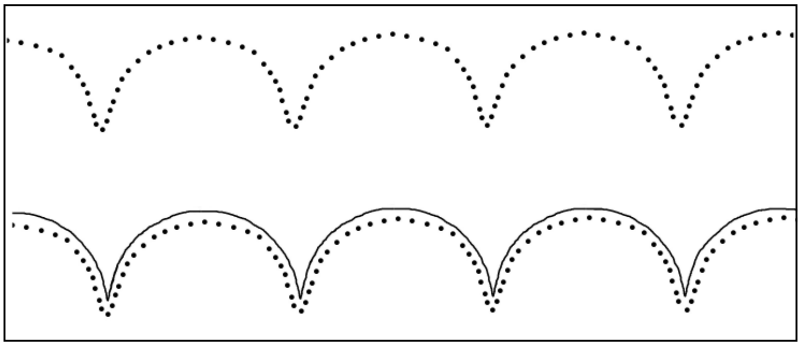

Figure 5.9: Matthews Incised *var. Manly* Subvarieties. Top: subvariety A; Bottom: subvariety B.

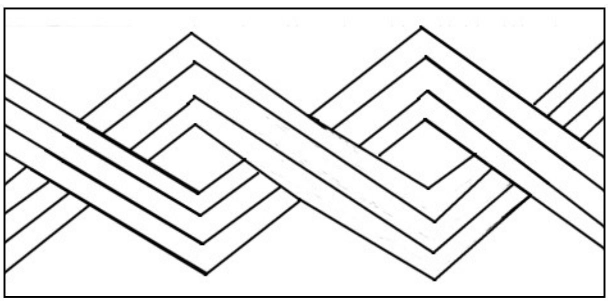

Figure 5.10: Beckwith Incising Design.

Figure 5.11: McKee Island Cordmarked Sherds (From Beasley. Top right from column sample, top middle and left from Test Unit F, lower right and left found in Test Unit G).

Figure 5.12: Wolf Creek Check-Stamped Sherds (from Beasley Test Unit G).

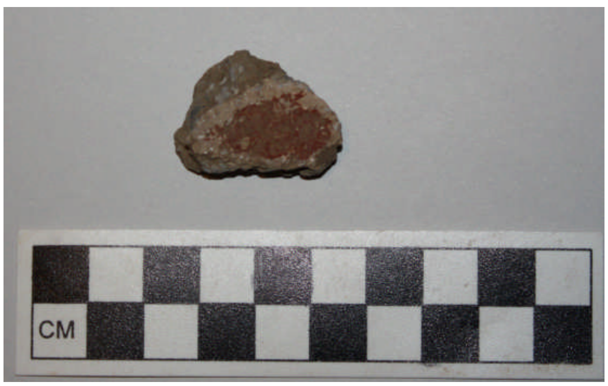

Figure 5.13: Red Filmed on Coarse Shell Tempered Sherds. Beasley Test Unit G.

Figure 5.14: Angel Negative Painted Plate Sherd with Fringed Pole Motif (from Castalian Springs N1000 E982 level 7).

Figure 5.15: Angel Negative Painted Plate with Cross-in-Circle Motif (from Castalian Springs N1167 E792 level 3).

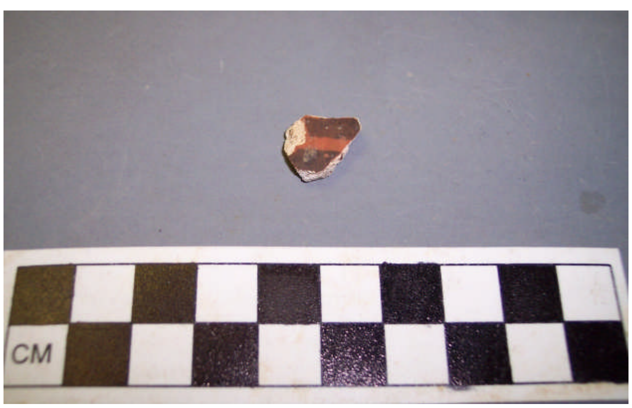

Figure 5.16: Possible Angel Negative Painted *var. Grimm* Sherd (from Castalian Springs Feature 9).

Figure 5.17: Nashville Negative Painted Bottle Sherd (from Castalian Springs Feature 119).

Figure 5.18: Mound Place Incised Bowl Rim Sherds (from Castalian Springs; on left: N1004 E998 level 3&4; on right: N1169 E790 level 3).

Figure 5.19: Notched Rim Bowl Rim Sherd (from Sellars 9-27 NW 0-15cm).

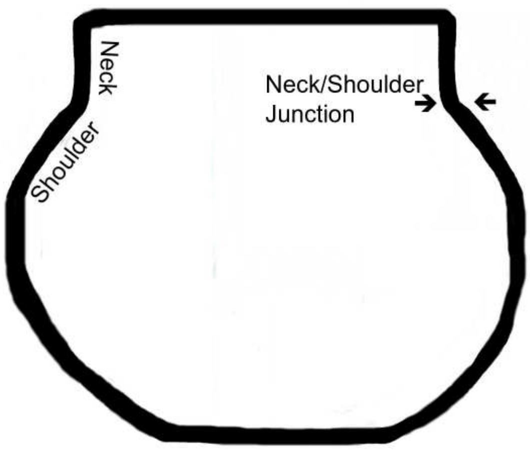

Figure 5.20: Location of Jar Neck/Shoulder Junction.

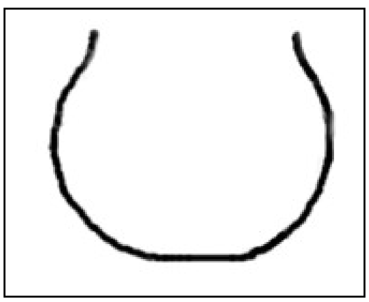

Figure 5.21: Generalized Gradual Neck Jar Outline.

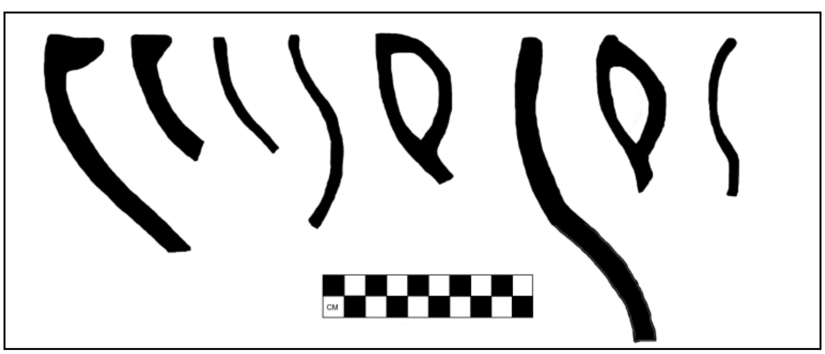

Figure 5.22: Examples of Gradual Neck Jar Profiles.

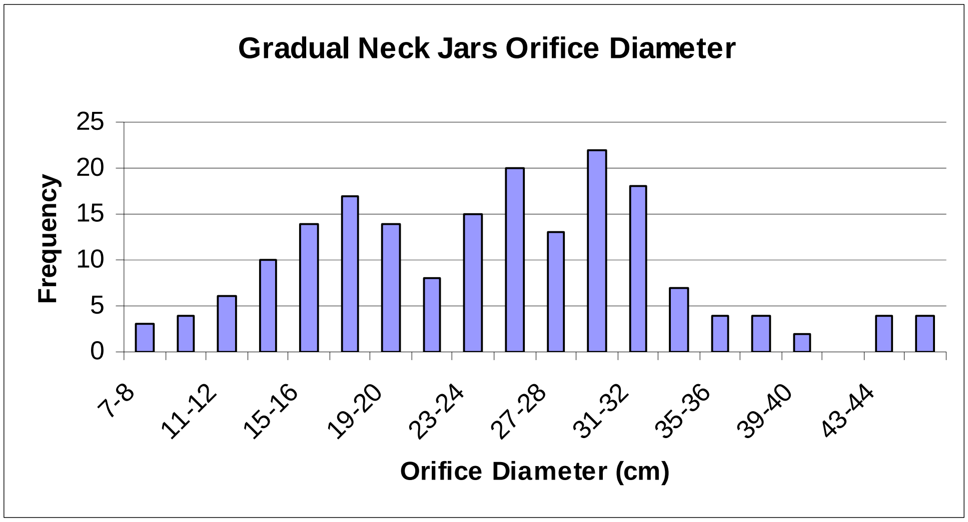

Figure 5.23: Orifice Diameters of Gradual Neck Jars (from Castalian Springs, Sellars, and Beasley).

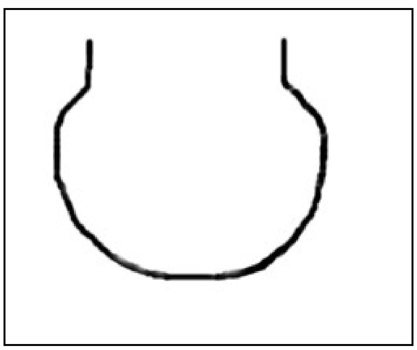

Figure 5.24: Generalized Distinct Neck Jar Outline.

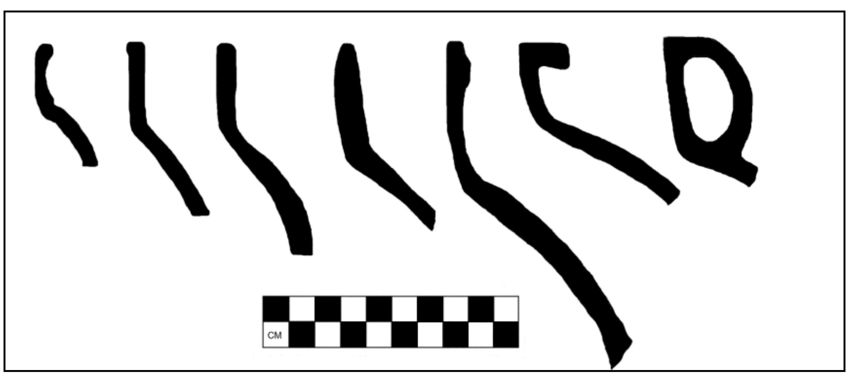

Figure 5.25: Examples of Distinct Neck Jar Profiles.

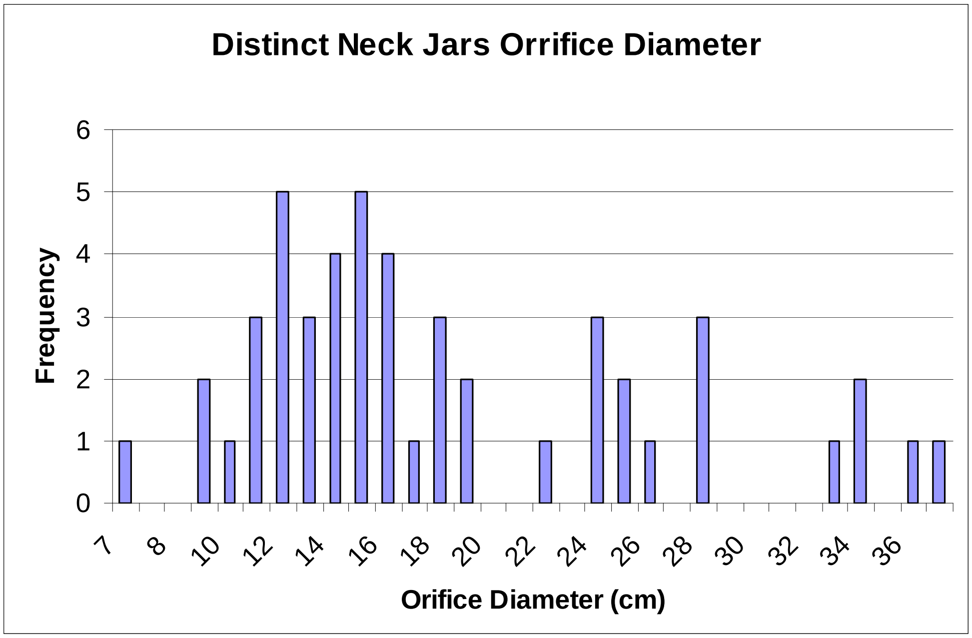

Figure5.26: Orifice Diameters of Distinct Neck Jars (from Castalian Springs and Sellars).

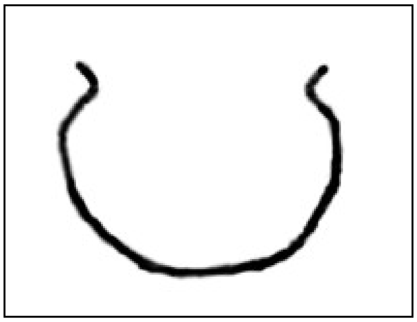

Figure 5.27: Generalized Wide Mouth Jar Outline.

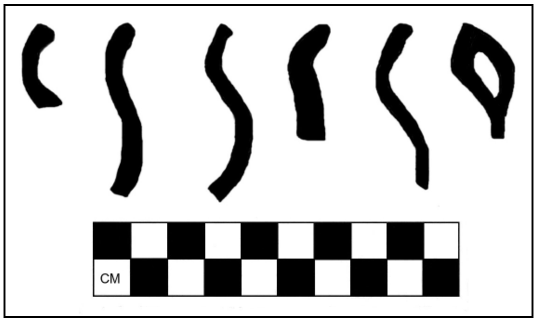

Figure 5.28: Examples of Wide Mouth Jar Profiles.

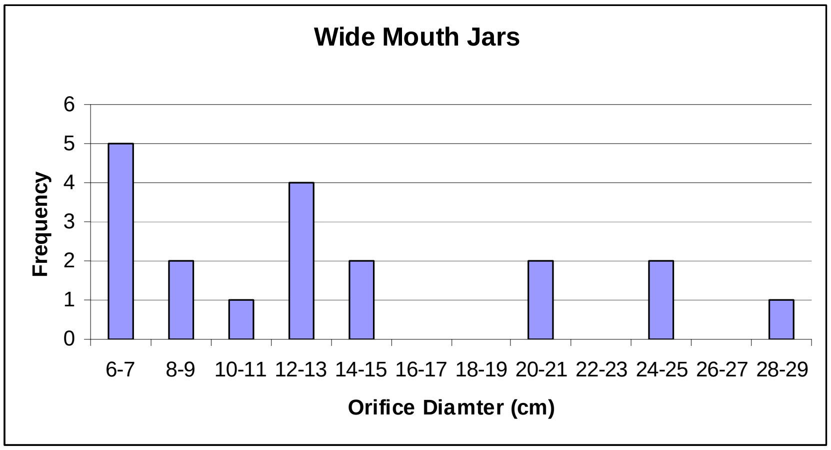

Figure 5.29: Orifice Diameter of Wide Mouth Jars.

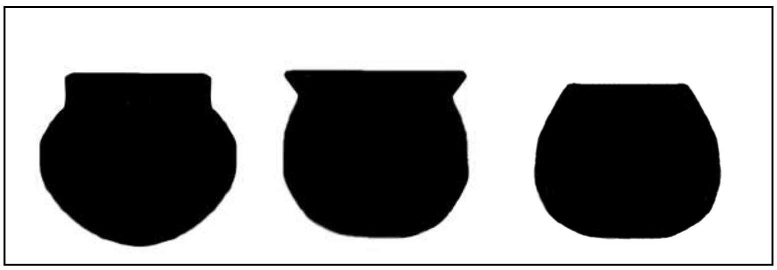

Figure 5.30: Generalized Outlines of Direct Rims, Excurvate Rims and Incurvate Rims.

Figure 5.31: Closed Handles with Double Horns. Handle on right also has a central groove. (from Castalian Springs; left to right: Feature 119, N1167E792 level 5, and N1167E782 level 4)

Figure 5.32: Closed Handle with Node (from Castalian Springs, Feature 134).

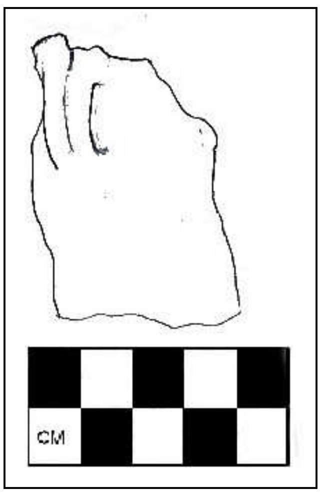

Figure 5.33: Incised Closed Handle (from Castalian Springs N1234 E838 level 14).

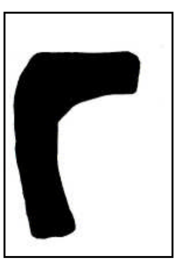
Figure 5.34: Generalized Lug Handle Profile.

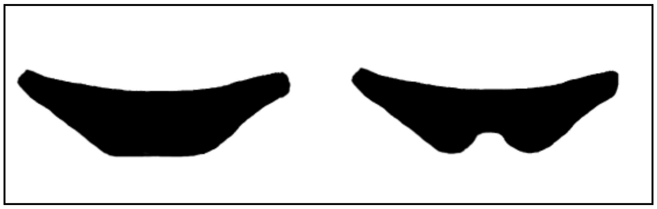

Figure 5.35: Generalized Lug Shapes. Left: single lug; Right: Bifurcate lug.

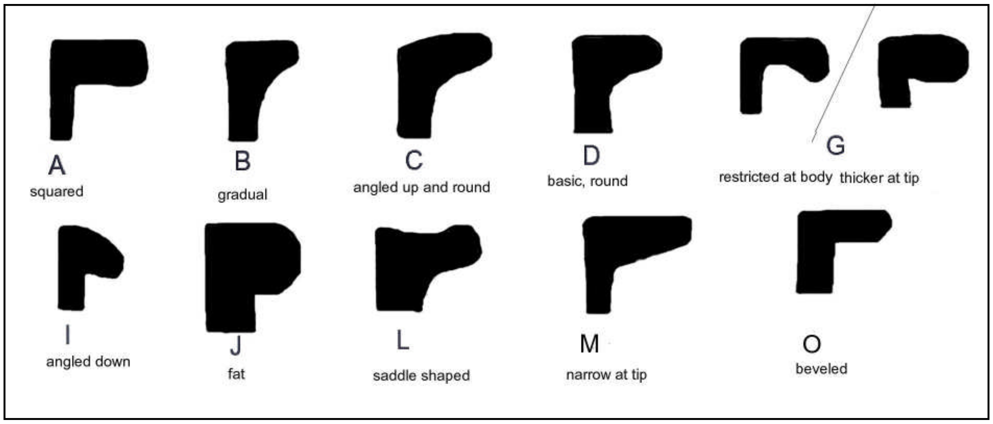

Figure 5.36: Lug Profile Shapes.

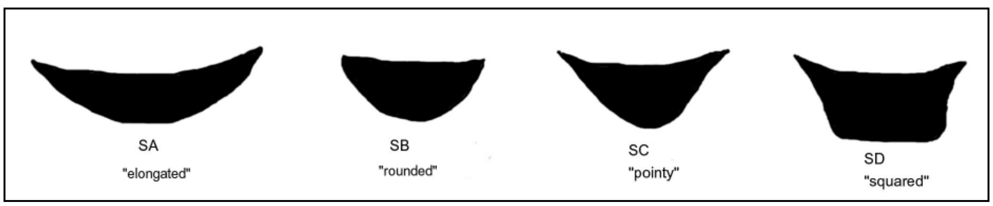

Figure 5.37: Single Lug Top Shape Variations.

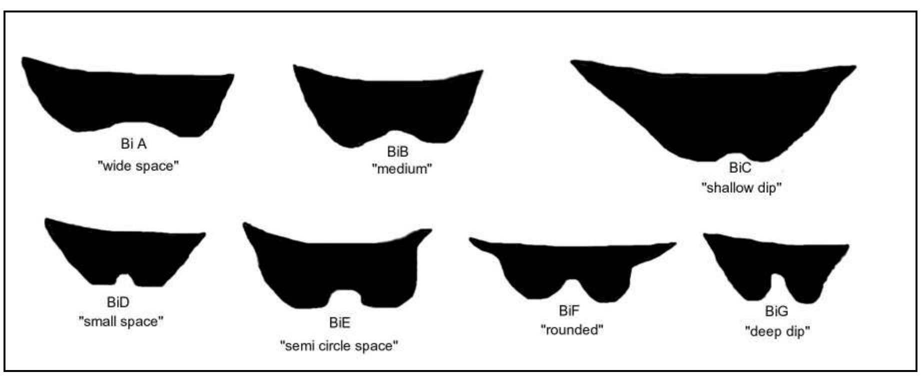

Figure 5.38: Bifurcate Lug Top Shape Variations.

Figure 5.39: Peaked Rim Jar Rim with Handle Attachment (from Castalian Springs, N1165E790 level 1&2).

Figure 5.40: Peaked Rim Jar Rim with Node (from Sellars, Feature 9).

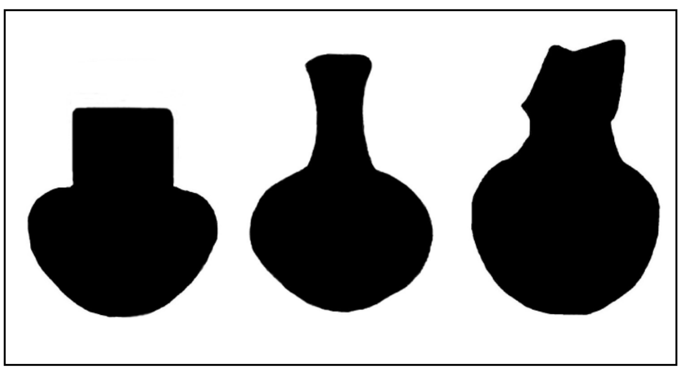

Figure 5.41: Generalized Bottle Shapes. Left: cylindrical neck; Middle: carafe neck; Right: hooded bottle (with orifice on the left).

Figure 5.42: Hooded Bottle Shape A (from Sellars Trench 3 10-12 m level 3).

Figure 5.43: Hooded Bottle Shape B (from Castalian Springs N1060 E792 level 2).

Figure 5.44: Hooded Bottle Shape C (from Castalian Springs Feature 4).

Figure 5.45 : Hooded Bottle Shape D (from Castalian Springs Feature 160).

Figure 5.46: Short-Neck Incised Bottle (from Castalian Springs, Feature 100).

Figure 5.47: Incised Bottle from Bosley Farm (Acc#32120) (photo by Kevin E. Smith).

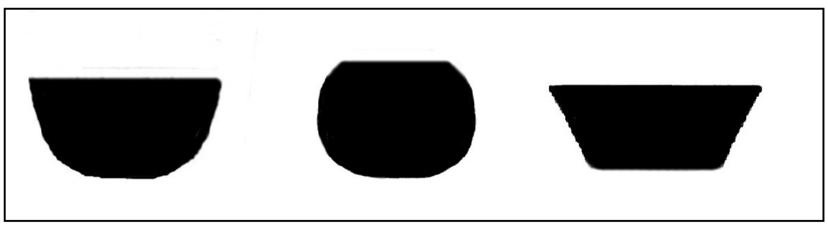

Figure 5.48: Generalized Bowl Shapes. Left: standard; Middle: restricted rim; Right: Outslanting wall.

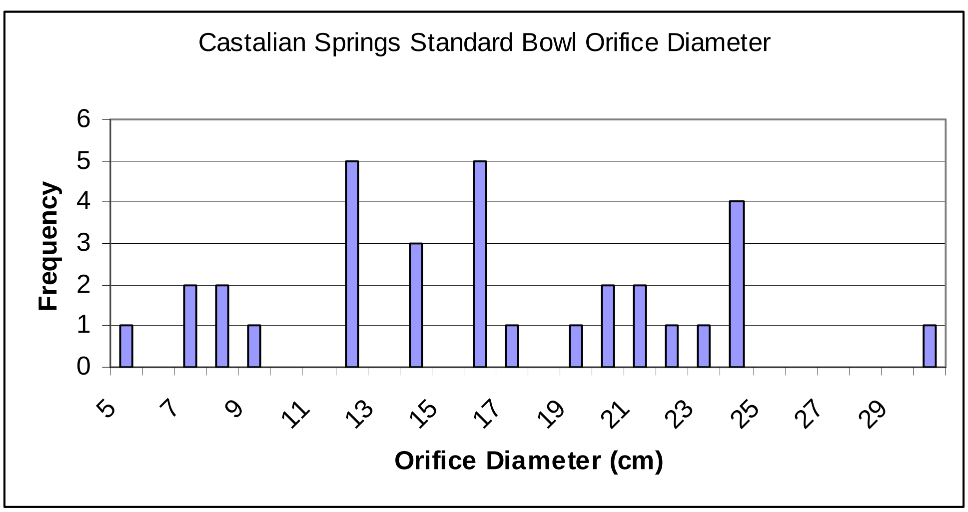

Figure 5.49: Castalian Springs Standard Bowl Orifice Diameter Distribution.

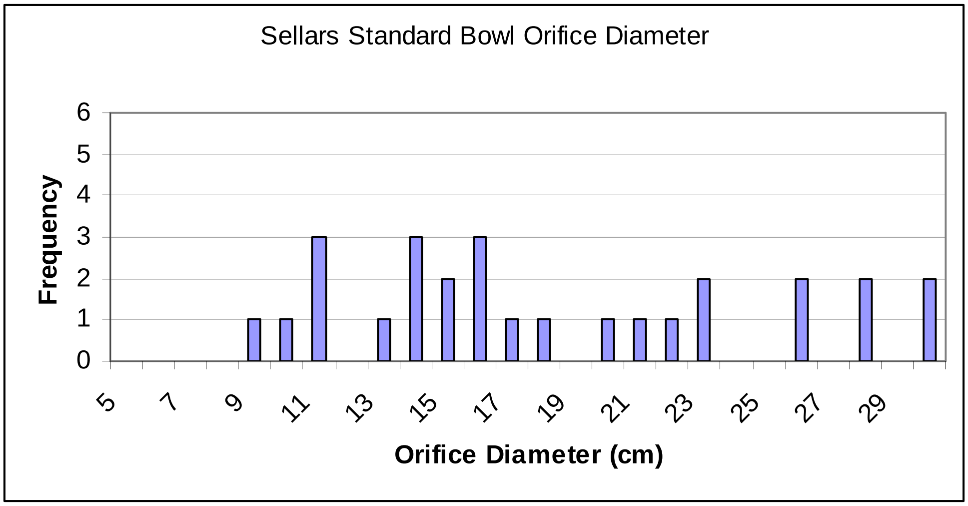

Figure 5.50: Sellars Standard Bowl Orifice Diameter Distribution.

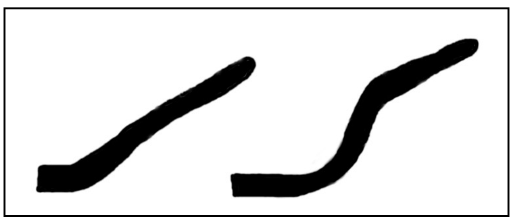
Figure 5.51: Plate Profiles. Left: with a gradual rim/body junction and Right: with a distinct rim/body junction.

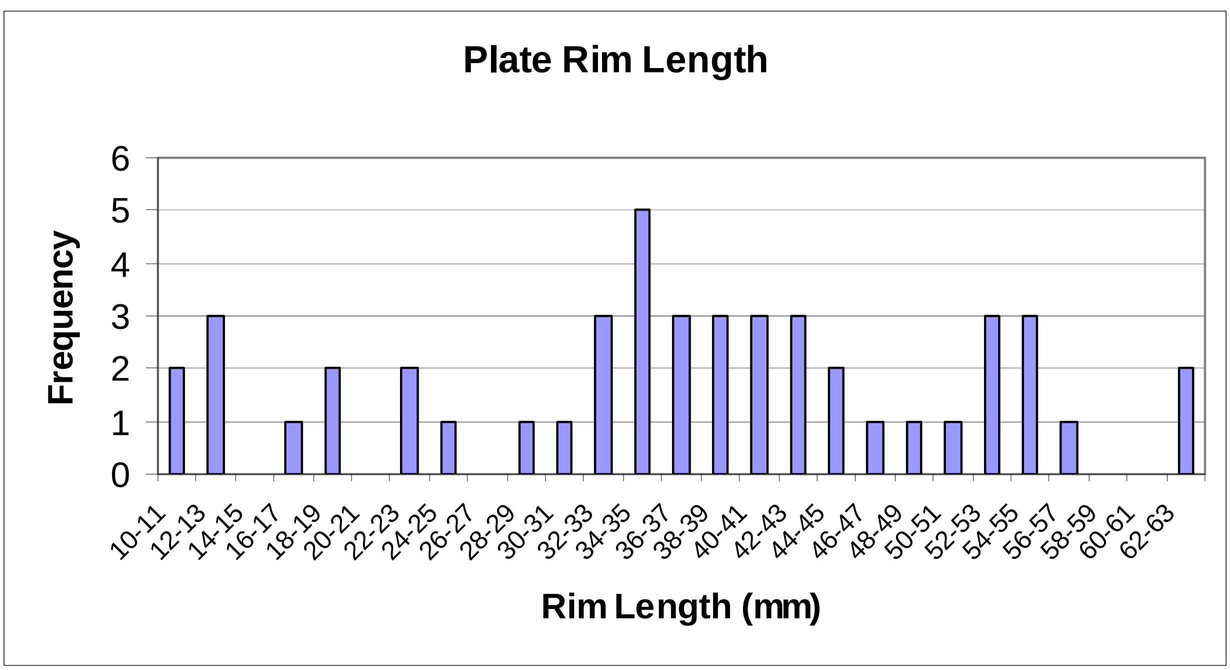

Figure 5.52: Plate Rim Length Distribution. Outlier of 98.25 not shown.

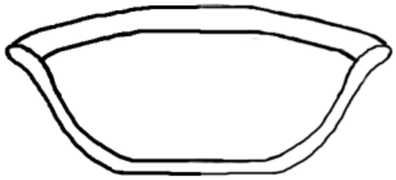
Figure 5.53: Generalized Short Rim Plate.


Figure 5.54: Examples of Short Rim Plate Profiles.

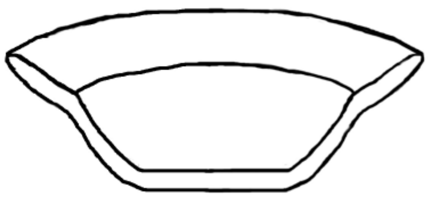
Figure 5.55: Generalized Short Standard Rim Plate.


Figure 5.56: Examples of Short Standard Rim Plate Profiles.

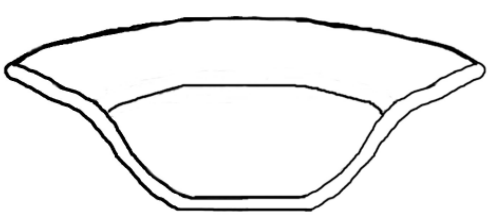
Figure 5.57: Generalized Long Standard Rim Plate.

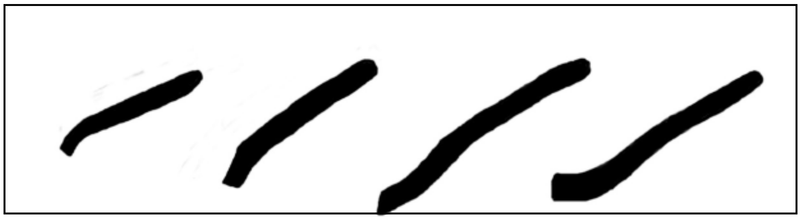

Figure 5.58: Examples of Long Standard Rim Plate Profiles.

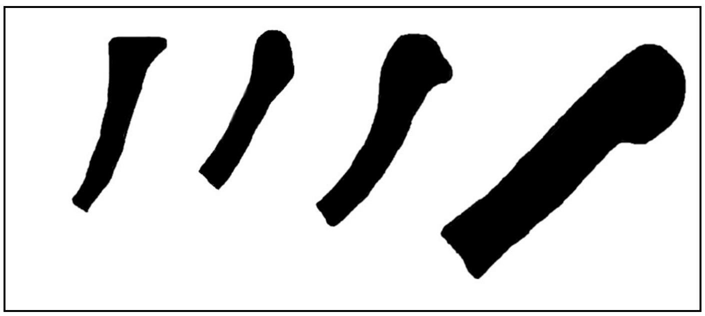

Figure 5.59: Example Pan Rim Profiles.

Figure 5.60: Owl Effigy Rim Rider (from Castalian Springs Feature 119).

Figure 5.61: Crested Bird Rim Rider (from Castalian Springs Feature 119).

Figure 5.62: Naturalistic Frog Effigy Bowl (from Sellars, 18-78 NE 20-30cm).

Figure 5.63: Frog Effigy Bowl Sherds. Abbreviated leg on left, rear on right (from Castalian Springs; on left: from N1167 E792 level 5, on right from Feature 119).

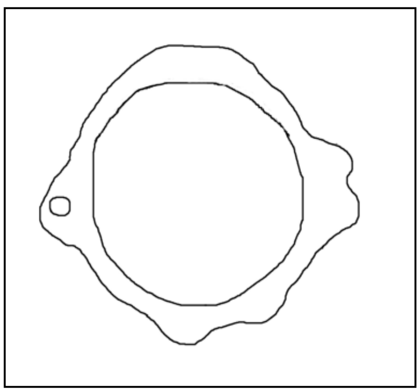

Figure 5.64: Overhead View of Generalized Fish Effigy Bowl.

Figure 5.65: Human Head Rim Rider (from Castalian Springs Feature 119).

Figure 5.66: Negative Painted Female Effigy Bottle Fragment (from Castalian Springs, N1167 E792 level 2).

CHAPTER 6

CERAMIC ANALYSIS

One of the goals of this dissertation is to determine the temporal relationship between several adjacent mound sites by refining the established ceramic chronology for the Middle Cumberland region. This was accomplished by dating all available contexts from each site as precisely as possible. All lines of evidence were compared and incorporated to determine the proper chronological placement for ceramic attributes, forms and types and the features and to avoid circular reasoning or too heavy a reliance on radiocarbon dates. In many cases, previously suggested chronological placement of ceramic attributes, forms and types were evaluated based on artifact associations, stratigraphy, and radiocarbon dates from the five sites in the study area. Ceramic data from other sites in the Middle Cumberland region were incorporated when relevant. Feature data and associated ceramic attributes led to the refinement of the Middle Cumberland ceramic chronology and the relative dating of many stratigraphic contexts from the sample sites. This chapter will discuss the ceramic analysis and resulting ceramic chronology. Specific histories for the sites in the sample are discussed in Chapter 7, using the ceramic traits described in this chapter, stratigraphic relationships, radiocarbon dates and other chronological indicators.

Ceramics are useful in determining chronology because many ceramic attributes, vessel forms and types and their frequencies are temporally sensitive. New attributes are introduced and old attributes fade away at different points in time and at different rates. With the use of seriation, archaeologists can develop ceramic sequences that document these changes in ceramic attributes, forms and types and their frequencies through time. When a ceramic assemblage is composed of a number of attributes, forms and types at different frequencies, the relative date when those ceramics were used can be determined, and tied to absolute radiocarbon dates from specific stratigraphic contexts.

6.1 Assemblages Included in the Analysis

Ceramic assemblages from Castalian Springs, Beasley, and Moss were processed by the author from the time of excavation through analysis. The ceramic assemblage from previous excavations at Sellars was loaned to the author by the Tennessee Division of Archaeology for direct analysis. The ceramic assemblage from Rutherford Kizer was not available for first hand examination by the author. However, notes and measurements made in the original ceramic analysis were available for examination along with the published report of excavations by Moore and Smith (2001). Ceramic types, vessel forms and attributes examined from the sample sites are reported in Appendices B-K. These tables include site and feature totals for Rutherford Kizer, Castalian Springs and Sellars and site, feature, and unit/level totals for Beasley and Moss.

The excavation and recovery techniques vary slightly between several sites in the sample. All feature fill from Castalian Springs, Beasley, and Moss was either screened through quarter inch hardware mesh or all or part was retained as a soil sample for more detailed analysis. The archaeology at Rutherford Kizer was focused on burial identification and mapping as much of the site as possible. Therefore most features were documented but not excavated. However all features in Strip Block B were excavated and screened through quarter inch hardware mesh with waterscreen and floatation samples. These include Features 20, 36, 101, and 110. Nonmortuary features in Lot 85 were also excavated and screened through quarter inch hardware mesh. These include Features 738- 742. One half of all pit features examined by private consultants were excavated by trowel to determine whether human remains were present. These include Features 194, 359, 360, 361, 392, 425, 500, 587, and 588, 695, and 863. Most features from Sellars were not screened but artifacts were picked out while troweling. Half of Feature 4 was screened through half inch hardware mesh while the other half was troweled. This less rigorous recovery technique at Sellars likely has only a small affect on the representation of Sellars in vessel form analysis, as rim sherds need to be of moderate size in order for form to be identified and analyzed. However, significant diagnostic surface treatments may have been missed during the excavations at the site.

Information on ceramics found during early explorations at Rutherford Kizer and Sellars were obtained from Moore and Smith's 2009 publication on their research at the Peabody Museum as well as notes and sketches from their analysis of these collections. Information on ceramics found at Castalian Springs by Myer was obtained from his unpublished notes at the Smithsonian Institution's National Anthropological Archives.

Few whole vessels were analyzed for this project, although images and records related to whole vessels from the sample sites were sought and recorded when found. However, a collection of 44 whole vessels excavated from the Bosley Farm site[1] (also called Bowling Farm) by John Wesley Powell and curated by the Anthropology Department of the National Museum of Natural History was analyzed and compared to the ceramic assemblages from the sample sites.

All ceramic material recovered from Castalian Springs, Sellars, Beasley and Moss were examined and cataloged. Ceramics sherds measuring less than 1 cm on a side or lacking the interior or exterior surface, referred to as sherdlets, were excluded from analysis (a total of 32,263 sherdlets from Castalian Springs, Sellars, Beasley and Moss) leaving a total of 38,925

[1] Bosley Farm is location in Davidson County, approximately 32 km southwest of Rutherford Kizer. Additional vessels from the site were excavated by Frederic Ward Putnam and are housed at the Peabody Museum. These were examined by Moore and Smith (2009).

sherds for analysis from all five sample sites. This reduces the potential discrepancy in ceramic material recovered from Sellars but does not completely make up for the lack of systematic screening at Sellars.

Rim sherds and body sherds with surface treatment or attributes such as handles were isolated and analyzed in more detail. A total of 3510 rim sherds and 2143 body sherds with surface treatment from the five sites in the sample were included in this analysis (Table 6.1). Sherds from feature and mound contexts were given priority at sites with an abundance of sherds (Castalian Springs, Sellars and Rutherford Kizer). At Beasley and Moss, all contexts were analyzed and included in comparisons.

6.2 Vessel Analysis Methods

In addition to standard type/variety categorization, a more detailed analysis of rim and decorated sherds was conducted on the ceramic assemblages examined by the author. Measurements of vessel shape attributes were of particular focus, in an attempt to make the most abundant type of utilitarian vessel fragments more useful to archaeologists for chronological studies.

A ceramic analysis recording sheet was designed for this project (Appendix A). A profile was drawn for each rim and decorated body sherd. The type/variety for each sherd was determined (Appendices B-F). Vessel form and measurements were recorded (Appendices G-K). When possible, the orifice diameter was measured using a metric ceramic diameter template. Lip form was noted (rounded vs. flattened), and the sharpness of the lip/interior and the lip/exterior margins was recorded (i.e. rounded, distinct). Lip thickness was measured as the width of the sherd at the orifice. When present, sooting, burnishing, fabric or cord impressions, applied slips, and any other surface attributes were recorded. Color and paste characteristics were also described.

When possible the significance of the difference in measured attributes was calculated among sites and features using a Mann-Whitney statistical test with the goal of discovering attributes that are chronologically sensitive. Normal distribution of measured attributes was not assumed and the sample sizes being compared ranged substantially. Therefore the Mann-Whitney significance test was chosen for this analysis because it does not require a normally distributed population of data or equal sample sizes (Hammer et al. 2001). These calculations were done using the PAST version 2.12 (Hammer et al. 2001). Table 6.2 shows the significance levels given to p-value ranges and the likelihood that differences observed are not due to chance. The results of Mann-Whitney tests are presented in Appendix L. Results with p-values up to 0.10 are highlighted in these tables.

6.3 Previously Established Ceramic Chronology

For over twenty years, Smith and Moore, as directors of the semi-formal Middle Cumberland Archaeological Survey Project, worked to develop a ceramic chronology for the Middle Cumberland region (Smith 1993b). Their ceramic chronology is the basis for the chronology refinement of this dissertation. In his 1992 dissertation, Smith divided the Mississippian period in the Middle Cumberland region into two phases: the Dowd phase (A.D. 1000 to 1250) and the Thruston phase (A.D. 1250 to 1450). Shell-tempered plain sherds dominate the ceramic assemblages from both phases. The Dowd phase ceramic assemblage includes coarse paste blank-faced hooded bottles, cylindrical neck fine paste bottles, fabric impressed pans, and outslanting walled bowls. Jars with cordmarked exteriors are occasionally present in small frequencies. Handle forms include loop and narrow strap handles as well as lug handles.

Thruston phase assemblages are characterized by notched rim appliqué bowls. The ceramic type Matthews Incised, *var. Matthews* and *Manly* and Beckwith Incised are the main types of decorated jars. Salt pans with plain surfaces become more common and jars with cord marking are absent. Handles become flatter and wider through time. Carafe neck bottles, hooded effigy bottles, and effigy bowls with rim riders are also present in this phase (Smith 1992; Smith and Moore 1996b).

An emergent Mississippian Spencer phase (A.D. 850-1050) has been tentatively proposed based on excavations from the Spencer site (Moore et al. 1993; Spears et al 2008; Walling et al. 2000:52).). Although this phase is not known from large ceramic collections, ceramics characteristics include cordmarked jars and small amounts of fabric-impressed pans (Spears et al. 2008; Walling et al. 2000:53). Jars, blank-faced hooded bottles, pans, and cylindrical neck bottles occur during this phase (Walling et al. 2000:53). Handles are rare, but, when present include lugs and unadorned riveted loop forms (Walling et al. 2000:53). Limestone-tempered and mixed shell-tempered pottery may also be important ceramic characteristics of this phase (Walling et al. 2000:52).

Recent work by Moore and Smith (2009) has refined this chronology. They developed a seriation using grave lots from Middle Cumberland sites from the Peabody Museum collections (Moore and Smith 2009: Figure 276). Based on this seriation, Moore and Smith divide Middle Cumberland Mississippian into five regional periods based on “broad regional patterns of artifact chronology” (2009:202).

6.4 Chronological Evaluation Methods

Research by Smith and Moore and others described above have identified important chronologically sensitive ceramic attributes. The most distinctive and easily observable ceramic chronological markers from the Middle Cumberland chronology include ceramic temper, cordmarking, negative painting, incising, handle forms, plate forms, bottle forms, bowls with notched rims, and effigy vessels.

A contextual seriation of specific stratigraphic contexts using presence/absence of particular attributes, types, and forms was conducted. The computer program PAST (Hammer et al. 2001) was used initially to produce a seriation with 50 stratigraphic contexts and 23 ceramic attributes. The ceramic attributes from Castalian Springs, Rutherford Kizer, Sellars, Beasley Mounds, and Moss Mounds that appear to be chronologically sensitive were used in this seriation. Stratigraphic contexts with more than one chronologically sensitive ceramic attributes were given priority in this analysis. While the presence rather than the absence of ceramic types is the most accurate chronological indicator (artifacts may have been present but not found by excavators), the absence of some key ceramic attributes in stratigraphic contexts with a fairly large sample size, while not definitive, is also chronologically informative. The resulting seriation was examined and further manipulated based on strong archaeological evidence and radiocarbon dates. Table 6.3 shows the results of the seriation. This seriation indicated how different stratigraphic contexts from all five sites related to one another chronologically. It also allowed for the combination of assemblages from different stratigraphic contexts that appeared to be contemporary. This created a larger sample size in order to conduct additional comparisons among stratigraphic contexts.

Most early stratigraphic contexts had relatively small ceramic assemblages. Stratigraphically early contexts from Castalian Springs (pre-Mound 2, pre-Mound 3, Feature 93) were combined to produce a larger sample size to represent early contexts. This “early Castalian Springs” context was compared to all Castalian Springs contexts and the other sites in sample. There are undoubtedly other “early” contexts at Castalian Springs that yielded sherd samples too small to be identified as such. In the following analysis, the “early Castalian Springs” contexts are compared with the other sites in the sample as well as all Castalian Springs (total of all Castalian Springs contexts including the early contexts). The seriation indicates that Rutherford Kizer contexts are the latest from the sample sites, Castalian Springs has contexts that are early and intermediate in time, and Sellars has early, intermediate and late contexts. Moss and Beasley contexts appear to be early.

In addition to the seriation, measured attributes that seemed to differ among sites or specific features were examined for chronological sensitivity. If a measured attribute is chronologically sensitive, but does not change very quickly over time, the difference in measurements between features may not be very significant statistically even if they are not contemporary. Therefore, measurements of specific shape attribute, such as lug length, were averaged for each site and individual feature/stratigraphic context. Those values were then numerically ordered. The orderings of these values were compared to each other and evaluated based on stratigraphic relationships and radiocarbon dates.

Radiocarbon dates are used extensively in this study. A total of 66 radiocarbon dates are available from the five sites in the study area; 15 from Rutherford Kizer (Table 4.1), 39 from Castalian Springs (Table 4.2), 8 from Sellars (Table 4.8), 3 from Beasley (Table 4.16) and 1 from Moss (Table 4.19). The Calib Radiocarbon Dating Program 6.1.0 using the Intcal09.14

calibration curve was used in radiocarbon calibrations, calculating pooled means and to establish whether radiocarbon dates were statistically the same for specific features and ceramic traits (Reimer et al. 2009).

The use of radiocarbon dates has some limitations. It is important that the material being dated actually reflects what the researcher is interested in dating. For example, if a pit feature was filled over a long period of time, a piece of charred wood from the feature may not accurately date all other material in the feature. For the stratigraphic and feature contexts dated from Castalian Springs, Beasley and Moss Mounds, where the author was involved in sample selection, every effort was made to use carbon samples associated with cultural material of interest and features spanning short intervals of time. Radiocarbon dates, especially older ones, may also have a very large range of error. This results in dates with marginal utility. This is particularly the case for several of the dates from Sellars. With the development of AMS dating, the date range has decreased but is still a range. A third major limitation of radiocarbon dates from this study is the wiggle in the calibration curve in the fourteenth century resulting in more than one calendar date per radiocarbon assay with a radiocarbon age around 640 to 580 BP (Bowman 1990:57-58). In many cases two or more calibration curve intercepts and their probabilities are reported to accurately and precisely reflect the possible date ranges. Stratigraphic contexts and associated material are used to make the most educated assessment of the radiocarbon dates available with the knowledge that intercepts with lower probabilities might represent an accurate date.

6.5 Ceramic Types and Type Attributes

The following is a discussion of the chronological placement of ceramic types and type attributes. Many of these ceramic attributes were included in the seriation, while others were not because of their low representation in the assemblages or lack of chronological sensitivity. The previously established chronology for the Middle Cumberland region figures prominently in the placement of these ceramic attributes. Specific evidence for their chronological placement is described and discussed including radiocarbon dates and relationships between sites and stratigraphic contexts that contain the ceramic attribute examined. The focus is on ceramics recovered from the sample sites, but in many cases evidence from other Middle Cumberland sites is considered to support chronological placement of a ceramic attribute. For example, Moore and Smith's work on documenting Middle Cumberland collections from the Peabody is frequently cited for supporting evidence. Ceramics and chronology from other regions, particularly East Tennessee, are mentioned when relevant.

6.5a Mississippi Plain and Bell Plain

Researchers have previously suggested the temporal trend of a slight increase in percentage of Bell Plain versus Mississippi Plain ceramics over time (Smith 1992:141). Rutherford Kizer has the highest total percentage of Bell Plain ceramics of 20 percent (Table 6.4). Bell Plain frequencies from Rutherford Kizer features with more than 30 sherds range from 14 percent to 28 percent. The average frequency of Bell Plain sherds from Castalian Springs is 10.9 percent, although frequencies reach as high as 29 percent in some feature assemblages. Beasley has a lower frequency of Bell Plain ceramics at 5.7 percent. Moss has a higher Bell Plain frequency than all sites other than Rutherford Kizer at 12.7 percent, but this may be due to small sample size. Bell Plain frequencies are lowest at Sellars at 5.3 percent. The reason for this low frequency of Bell Plain ceramics at Sellars is not clear, but may be related to the contexts of excavation or method of recovery.

The percentage of coarse (Mississippi Plain) versus fine (Bell Plain) shell-tempered ceramics is affected by the functional context from which the ceramics were excavated. Steponaitis (1983:36-45) has shown that coarse shell-tempered ceramics have more thermal strength than fine shell-tempered ceramics and therefore are more durable for cooking, while fine shell-tempered ceramics have more tensile strength and are more resistant to breakage from dropping. Contexts, such as feasting pits, with predominately serving vessels, are likely to have higher percentages of fine shell-tempered ceramics than contexts that contain a representative household vessel assemblage. Therefore, temper was also compared by vessel form in an effort to control for functional differences in temper.

6.5b Limestone-Tempered Ceramics

Ceramic temper is a strong temporal and spatial marker (Livingood 2010:67-105; McNutt 1996; Phillips et al. 1951; Williams 1954). Limestone tempering is associated with Woodland period Long Branch (400 to 200 B.C.), Neel (450 B.C. to A.D. 150), McFarland (200 B.C. to A.D. 200) and Owl Hollow (A.D. 200 to 700) phases in south-central Tennessee along the Duck and Elk Rivers (Figure 2.4) (Faulkner 1978, 2002; Weaver et al. 2011). It is likely that in sample sites with small frequencies of limestone-tempered ceramics, Mississippian occupants disturbed an earlier Woodland deposit while constructing buildings or digging pits.

The use of limestone in ceramic tempering may have continued into the emergent and early Mississippian phases in the Middle Cumberland region. This is clearly the case if limestone tempering is used with Mississippian vessel forms and attributes such as loop handles. The presence of mixed shell-and-limestone-tempered sherds also suggests a transition from limestone-tempered to shell-tempered ceramics.

Limestone-tempered sherds are found in small numbers at all sites in the sample (Table 6.5, 6.6). The sherds are mostly small, and either plain or cordmarked. These sherds were recovered from pit features and architectural features as well as in non feature contexts. One closed handle from Castalian Springs, and one closed handle from Sellars are tempered with limestone. Both are loop in form, indicating an early Mississippian manufacture.

From the excavations conducted in the Caney Fork drainage to the southeast of the Middle Cumberland region, it appears that limestone-tempered ceramics continued to be made into the Mississippian period. For example, the Duck’s Nest site ceramic assemblage is 67 percent limestone-tempered, 12 percent mixed limestone and shell, and only five percent shell-tempered (Kline 1979). Two limestone-tempered loop handles were recovered from the site (Kline 1979: 136-137). Two wall trench structures with associated limestone-tempered and mixed limestone-and-shell-tempered sherds were identified during excavations. Wall trench structure construction as well as six radiocarbon dates with a pooled mean of cal A.D. 1189 to 1197 (p=0.02) or cal A.D. 1207 to 1275 (p=0.98) (799±26 BP) indicate a Mississippian occupation at the Duck’s Nest site.

In east Tennessee, Emergent Mississippian Martin Farm phase sites (A.D. 900 to 1000) have ceramic assemblages with a majority of limestone-tempered plain and limestone-tempered cordmarked sherds (Kroener 2005:8; Schroedl et al 1990:185-186). Limestone-tempered loop handles have also been recovered from Martin Farm phase sites. Limestone tempering continues to be used during the subsequent Hiwassee Island phase (A.D. 1100-1300) at a smaller but substantial frequency (approximately five to 15 percent) (Kroener 2005:8; Schroedl et al 1990:185-186, Figure 69).

In other instances, limestone-tempered sherds are found in contexts that clearly date to later in the Mississippian period. This is the case for Castalian Springs Features 100, 106 and 119 where limestone-tempered ceramics make up 7.8 percent, 3.1 percent and 2.1 percent respectively while surface treatments, vessel forms, handle forms and radiocarbon dates date the use of these features to after A.D. 1250 (see sections 6.5j, 6.5k, 6.6b, 6.6d, 6.6f, 6.6g). The presence of these limestone-tempered sherds in later feature contexts indicates a disturbed earlier Woodland or early Mississippian context. From Castalian Springs, limestone-tempered sherds occur in highest frequencies from the deepest features, where earlier deposits are likely to be encountered, and mound fill, where earlier deposits were used in construction. For example, 65 percent of limestone-tempered sherds from Castalian Springs were recovered from Mound 3.

The presence of limestone-tempered ceramics at Middle Cumberland Mississippian sites either reflects the presence of an earlier Woodland period occupation in the location, or the continued use of limestone as a tempering agent in the emergent Mississippian period. An emergent Mississippian manufacture date is positively indicated in the cases where limestone is used as a temper in Mississippian form vessels or when limestone-tempered and mixed shell-and-limestone-tempered sherds are present in the same context.

6.5c Mixed Shell-and-Limestone-Tempered Ceramics

A small number of mixed limestone and shell-tempered ceramics are found in Castalian Springs, Sellars, and Beasley assemblages. No mixed shell-tempered sherds were identified from Moss or Rutherford Kizer. Mixed shell-and-limestone-tempered sherds are found in the highest frequency at Sellars, followed by “early” Castalian Springs contexts, Beasley, and all Castalian Springs contexts.

The occurrence of mixed shell-tempered sherds at Mississippian period sites can be interpreted in several ways (Wesler 2011). It is logical that the transition from limestone-tempered to shell-tempered ceramics was bridged by a mixture of the two. Emergent Mississippian ceramic assemblages from the Central Mississippi Valley are composed of shell-tempered as well as mixed shell-and-grog-tempered ceramics (the local Late Woodland temper) (McNutt 1996). All of the features with mixed shell-and-limestone-tempered sherds from Castalian Springs (n=12) and 50 percent of those from Sellars (n=4) also contain limestone-tempered sherds. This strongly suggests that mixed shell-and-limestone-tempered ceramics were made during transition between limestone tempering and shell tempering in the emergent Mississippian period. Conversely, only forty-one percent of the features with limestone-tempered sherds (n=29) also contain mixed shell-and-limestone-tempered sherds (n=12). This suggests that limestone-tempered ceramics also may have been made at these sites prior to the introduction of shell tempering, during the Woodland period.

It is not always possible to determine that limestone particles were intentionally added to the paste or if it was a natural inclusion in the clay used to make the pot (Smith and Moore 1994; Smith et al. 1993; Spears et al. 2008). The presence of limestone and other mineral particles in the paste of many shell-tempered sherds from Spencer and Brandywine Pointe is interpreted as potentially natural inclusions (Smith and Moore 1994; Spear et al. 2008). In reference to the ceramic assemblage at Brandywine Pointe, Smith and Moore explain "In addition to this primary temper [shell], a preponderance of sherds included a secondary agent that may represent either deliberate or accidental inclusions (e.g. rounded grit particles, sand, and limestone particles in varying percentages)" (1994:202). This may be the case as clay used to make pottery derives from parent limestone and residual limestone particles are not uncommon in local clay sources in the Middle Cumberland region.

Sites and contexts with early radiocarbon dates and ceramic attributes often have mixed shell-and-limestone-tempered ceramics. The conclusion that mixed shell-and-limestone-tempered ceramics were manufactured during the emergent Mississippian period is upheld whether this mixture was the result of deliberate addition of limestone along with shell tempering or if less pure clay sources or clay processing techniques resulted in limestone inclusions in emergent Mississippian ceramics. It is possible that microscopic analysis of paste from mixed-tempered sherds and a study of clay sources in the region could more definitely determine the process by which mixed shell-and-limestone-tempered sherds were made, but that research is beyond the scope of this study.

Several features from Sellars have relatively large frequencies of mixed limestone-and-shell-tempered sherds. Mixed limestone-and-shell-tempered sherds comprise 53 percent of the ceramic sample from Sellars Feature 12, and 15 percent of the ceramic sample from Sellars Feature 7, pit features located in the southern units. These two features alone comprise 39 percent of the shell-and-limestone-tempered sherds from the site as a whole. These features are located close together and do not include any other diagnostic material. Feature 7 produced an early radiocarbon date of cal A.D. 986 to 1191 (p=0.99) at 2 sigma (965±55 BP), which further supports an emergent Mississippian manufacture for these mixed-tempered ceramics.

6.5d Other-Tempered Ceramics

A small number of sherds tempered with material other than shell or limestone were identified from the sample sites (Table 6.7). Other tempers identified are quartz, sand/grit, and grog. Although a few of these sherds were recovered from feature contexts, most are from non-feature unit/level contexts. Knowledge of other tempered ceramics in Middle Tennessee is largely based on excavations of Woodland period sites on the Eastern Highland Rim to the south of the study area along the Elk and Duck Rivers (Figure 2.4).

Quartz was used as a tempering agent during the Early Woodland Watts Bar phase (600-400 B.C.) (Faulkner 2002:188; Weaver et al. 2011:17). Fabric marked ceramics are characteristic of this phase, while cordmarked and plain also are present. Quartz-tempered ceramics from the sample sites are predominately plain (72 percent) with a lesser amount of cordmarked (28 percent) (Table 6.8). These sherds are interpreted as represented an ephemeral Early Woodland present at Rutherford Kizer, Castalian Springs, Sellars and Beasley.

Sand/grit temper was used as a minor temper type during the Middle Woodland Owl Hollow phase (A.D. 200-600) in south-central Tennessee (Faulkner 1978:189). A distinctive trait of Owl Hollow ceramics are “pie crust” and notched lips (not to be confused with notched appliqué rims). A grit-tempered rim with a distinctive Owl Hollow “pie crust rim” (Figure 6.1) was recovered from within the fill of Mound 3 at Castalian Springs, strengthening the connection between sand-tempered ceramics and Owl Hollow phase occupations in the Middle Cumberland region.

Sand/grit was also used as tempering during the Mississippian period in northern Georgia. A few sand-tempered complicated stamped sherds (section 6.5m) were recovered from the sample sites. These sherds have been identified as Savannah Complicated Stamped, and date to the Mississippian period (A.D. 1250-1350) (Williams and Shapiro 1990:55). During this time plain sand-tempered ceramics were also being made in northern Georgia. Therefore, some sand-tempered plain ceramics recovered from the sample sites may be from an earlier Middle Woodland Owl Hollow phase and/or some may be of nonlocal Mississippian origin.

Grog temper is a characteristic of the Late Woodland McKelvey phase in Western Middle Tennessee (Weaver et al. 2011:19; Welch 2006: 50). Along with the presence of limestone-tempered ceramics, the grog-tempered and mixed grog-and-shell-tempered ceramics recovered from Castalian Springs and Sellars is interpreted as evidence for a Late Woodland occupation at the sites.

6.5e Red Filmed

One example of a coarse shell-and-grog-tempered red filmed sherd was identified from Castalian Springs (Figure 6.2). This sherd was found in the same level as *var. Matthew*s sherds as well as wide and narrow intermediate handles (see section 6.5j and 6.6b). The level below this red filmed sherd contained an Angel Negative Painted plate sherd and radiocarbon date around A.D. 1215 to 1300 (Table 4.2) (see section 6.5m). Several examples of coarse shell-tempered, red filmed sherds were identified from Sellars as well (Figure 6.3). Red filmed ceramics make up four percent of the ceramics identified from Sellars Feature 4. However, these sherds appear to be from the same vessel, thus inflating the importance of this ceramic type for the feature and the site as a whole. Beasley has also yielded a small number of sherds with interior or exterior red filming on coarse shell-tempered paste, making up less than one percent of the total assemblage. No red filmed ceramics were recovered from Rutherford Kizer or Moss. These red film sherds on coarse shell-tempered paste most closely resemble the Varney Red ceramic type.

In the Central Mississippi Valley, the Varney Red horizon dates to the early Mississippian period (A.D. 800 -1000) (Morse and Morse 1990:157). Wesler found that red filmed sherds decrease in frequency from Early to Late Wickliffe (A.D. 1000 to A.D. 1350) in Western Kentucky (2001:80). Red filming deceases over time at the Angel site as well (Hilgeman 2000:222). Red filming is much more common in these other regions, than in the study area, even in later periods. Although the presence of these coarse tempered red filmed sherds suggests an early Mississippian date, their presence says more about regional interactions and influences than chronology.

Four sherds with exterior red filming on fine shell-tempered paste were also recovered from Beasley. This ceramic type resembles the type Hiwassee Red Filmed found in the Tennessee River Valley. Red filmed sherds in east Tennessee are most common during the early Mississippian Hiwassee Island phase (A.D. 1000-1300), but are also present during the Dallas phase (A.D. 1300-1600) (Reed 1987:628). This suggests at least a post A.D. 1000 date for the fine tempered red filmed sherds from Beasley.

6.5f McKee Island Cordmarked

Beasley and Moss have the highest frequency of shell-tempered cordmarked ceramics in the sample sites (7.6 percent and 6.0 percent respectively). The significance of the relatively high percentages is discussed further in Chapter 8, as it appears to be a regional as well as chronological attribute. McKee Island Cordmarked sherds are also present at Sellars (1.0 percent), Rutherford Kizer (less than 0.1 percent) and Castalian Springs (less than 0.1 percent) at much lower frequencies (Table 6.9). Over fifty percent of the McKee Island cordmarked sherds from Sellars were recovered from Sellars Feature 33, and it is possible that these sherds are from a single vessel, artificially increasing this ceramic type's frequency at the site as a whole. Additional material recovered from this pit feature includes two *var. Matthews* sherds as well as five limestone-tempered sherds, suggesting that the material in the pit feature may represent a long time span, including post- A.D. 1200-1250 ceramics (see section 6.5j).

Several early Mississippian sites in the Middle Cumberland region have ceramic assemblages with large percentages of shell-tempered cordmarked pottery. Shell-tempered cordmarked sherds compose 40.5 percent of the ceramic assemblage from the Sogom site (Norton and Broster 2004:9). One shell-tempered cordmarked sherd from Sogom includes a loop handle (Norton and Broster 2009: Figure 8). A pit feature containing a large number of shell-tempered cordmarked sherds from Sogom produced an early Mississippian radiocarbon date range of cal A.D. 996 to 1006 (0.01) or cal A.D. 1012 to 1221 (p=0.99) at 2 sigma (930±60 BP) (Norton and Broster 2004:15). Shell-tempered cordmarked sherds represent 3 percent of the assemblage at the Spencer site (Spears et al. 2008). Closed handle forms recovered from Spencer include four loop and four intermediate forms (see section 6.6b). Nine dates from Spencer produce a pooled mean date range of cal A.D. 867 to 1016 (p=0.99) at 2 sigma (1111±34 BP) (Spears et al. 2008). McKee Island Cordmarked sherds were identified in several feature contexts from the Sandbar Village site (Smith and Moore 2012). The type makes up thirty-two percent of the ceramic sample from Feature 4, and 8 percent of the ceramic sample from Feature 5. Feature 4 produced a radiocarbon date of cal A.D. 880 to 1187 (p=0.997) at 2 sigma (1020±70 BP). Feature 5 produced a radiocarbon date of cal A.D. 1013 to 1284 (p=0.997). O'Brien identifies a shell-tempered cordmarked jar with two small loop handles from Mound Bottom (O'Brien 1977; Smith 1992) (see section 6.6b).

Cordmarking is a common surface treatment on Woodland period limestone-tempered ceramics in eastern and middle Tennessee (Bentz 1990:17). Limestone-tempered cordmarked pottery accounts for approximately 25 percent of the Mississippian component at Martin Farm in eastern Tennessee. In the Mississippian period, cordmarked pottery is shell-tempered and increases through time from around 5 percent in Hiwassee Island phase to as much as 25 percent in Dallas phase (Lewis and Kneberg 1993[1946]). Shell-tempered cordmarked sherds are common from Mississippian sites in the Upper Cumberland drainage. Jefferies et al. (1996:19) note that the percentage of cordmarking increases through time at the Crowley Evans site as well.

In East Tennessee, cordmarking on Late Woodland Hamilton phase cordmarked ceramics are made using wider cords that are loosely twined while Dallas phase cordmarked impressions are made with finer cord (Lewis et al. 1995:88,105). The shell-tempered cordmarked sherds from Beasley and Moss Mounds are made with cord that is generally less than 2 mm in width, which is considered here to be rather thin and is comparable to the Dallas phase cordmarked impressions.

McKee Island Cordmarked appears to have both chronological and spatial significance. The evidence indicates that in the Middle Cumberland region from Castalian Springs westward McKee Island Cordmarked is an early ceramic type. Shell-tempered cordmarked jars are most common at sites with early Mississippian components (A.D. 1000-1100), and continue at lower frequencies at sites with slightly later components (A.D. 1100-1250). However, the frequencies of McKee Island Cordmarked ceramics seen at Beasley and Moss do not directly reflect this trend, as radiocarbon dates indicate these sites were occupied during the twelfth and thirteenth centuries. These relationships are explored in more detail in Chapter 8.

6.5g Wolf Creek Check-Stamped

Wolf Creek Check-Stamped sherds are even rarer than cordmarked sherds in Middle Cumberland ceramic assemblages. Only two Wolf Creek Check-Stamped sherds each were identified from Rutherford Kizer and Castalian Springs and none were found at Sellars. In contrast, shell-tempered check-stamped sherds are a well-represented minority type from Beasley (11.5 percent) and Moss (7.8 percent) ceramic assemblages. No other Middle Cumberland site has produced a ceramic assemblage with such a high proportion of shell-tempered check-stamped ceramics. Therefore the distinctiveness of this ceramic type at Beasley and Moss is interpreted as being spatial rather than chronological in origin.

Limestone-tempered check-stamped pottery is commonly found in Woodland period contexts in Tennessee (Chapman 2001:57). Analysis of shell-tempered check-stamped pottery from a multicomponent site, 40DR226, in west Tennessee (Deter-Wolf and Tuschl 2005) suggests that check-stamping on Mississippian shell-tempered ceramics represents a development out of Late Woodland ceramic manufacturing techniques (2005). Shell-tempered check-stamped ceramics are rare during the Mississippian period in the Upper Tennessee River valley. Two examples of shell-tempered check stamped sherds were found at Ausmus Farm (40CE10) and Walters Farm (40UN11) in the Norris Basin (Griffin 1938:305).

Shell-tempered check-stamped sherds are more commonly found at Mississippian sites in southeastern Kentucky along the Green, Barren and Upper Cumberland Rivers. Frequencies vary from site to site but are similar to those from Beasley and Moss. It is possible that within the Upper Cumberland region the frequency of check-stamped ceramics is chronologically significant. The frequency of check-stamped ceramics was found to increase in relation to plain ceramics over time at Crowley Evans (15KX24) (Jefferies et al. 1996:19).

6.5h Kimmswick Fabric Impressed

Of all body and rim sherds examined, Castalian Springs has the highest percentage of Kimmswick Fabric Impressed sherds, at 3.4 percent followed by Rutherford Kizer (3.1 percent), Beasley (1.9 percent), early Castalian Springs stratigraphic contexts (1.9 percent), and Sellars (1.7 percent) (Table 6.10). No fabric impressed sherds were identified from Moss. A total of 134 pan rims were identified from Castalian Springs, 6 pan rims from Sellars, 5 from Beasley, and 147 from Rutherford Kizer. Table 6.11 shows the frequency of pan rim sherds for which surface treatment could be determined (for some pans, surface treatment could not be determined due to small size or eroded surface). Rutherford Kizer, a later site, has less plain pans (6.7 percent) than Castalian Springs contexts (9.3 percent).

The frequency of fabric impressed sherds from the sample sites is the opposite of what would be expected based on the stratigraphic evidence and radiocarbon dates from the sample sites. It has previously been suggested that the frequency of shell-tempered fabric impressed pans decrease and plain pans increase over time during the Mississippian period in the Middle Cumberland region and elsewhere (Clay 1979; Smith and Moore 1996b). The shift from fabric impressed to plain pans has also been observed in the lower Cumberland and Tennessee valley (Clay 1979:115) as well as at Wickliffe (Wesler 2001:80).

The chronological importance of fabric impressed pan frequencies in a vessel assemblage as a whole is somewhat complicated by the effect that the distance to mineral springs is proposed to have on the frequency of pans at any given site. Because of their wide, open form, pans likely functioned as both serving vessels and evaporators for making salt. Sites located closer to salt and mineral springs would have more use for pans as evaporators than sites located far from springs. In addition, even if all sites being compared are located on or near springs, the composition of the spring water is different among them. The different mineral compositions of the spring water would make salt production at these sites differentially productive and valuable. Therefore while all sites in the sample are located near springs, the different chemical compositions of the mineral springs between the sites in the sample may account for greater or lesser fabric impressed pan frequencies.

Fabric Structure. Drooker (1992:221) found some variation in fabric structure between earlier Wickliffe (approximately A.D. 1000-1150) and later Wickliffe (A.D. 1150-1300) phase ceramic assemblages (Drooker 1992:27; 144). Specifically she notes the use of weft-faced (compact) fabric on fabric impressed pans may be more prevalent in earlier Mississippian components. There also seems to be an increase in alternate pair twining and complex fabric structures during Late Wickliffe.

Impressions were taken from all fabric impressed pan sherds of feature contexts. Type of fabric structure for all fabric impressed sherds from feature contexts at Castalian Springs and Sellars and all contexts from Beasley was recorded when possible. Data from Hoyal's analysis of Rutherford Kizer fabric impressions were incorporated into this analysis as well. In cases where it could be determined, positive impressions were categorized as plain spaced, alternate pair spaced, compact, and complex (combination of compact and spaced). A total of 253 sherds from Castalian Springs were assigned a fabric structure, 39 from Sellars and two from Beasley. Hoyal identifies 195 fabric structures from Rutherford Kizer. The percentages of structure types were compared by sites and with fabric structures from an early Middle Cumberland site, Mound Bottom (Kuttruff 2008; Kuttruff and Kuttruff 1996). A lack of identified alternate pair fabric structures at Sellars is likely due to the relatively small sample from the site.

The twining direction was also recorded from fabric impressed rim sherds when possible (s or z twist). Several researchers (Drooker 1992: 207; Maslowski 1996:89; Minar 2001) have suggested that the twist direction differs between cultural groups. Therefore, this attribute could be useful is examining the cultural relationships between sample sites as well as possible chronological changes. However, in all cases from Castalian Springs, Sellars, Beasley, and Rutherford Kizer, that could be determined, twining was in the "S" directions which does not indicate differing cultural groups (Hoyal 2001:353).

This comparison indicates that compact fabric structures do not seem to decrease in later Mississippian ceramic assemblages, but complex fabric structures seem to increase through time (Figure 6.4). However, to use this attribute for dating purposes, a large sample size would be necessary for such a trend to be observable. Most feature contexts from the sites in this sample do not have enough fabric impressed sherds to make this useful for intra- site chronology.

Placement of Impression. The placement of the fabric impression onto the pan is another point of variation for this vessel form. It is related to the lip shape itself, as the area on the exterior surface below the lip before the fabric impression starts is often thicker than the rest of the rim. It has been suggested that at least in some areas, pans with fabric impressions right up to the lip occur earlier in the Mississippian period (Drooker 1992:15; Williams 1954:220). The width of this area from the lip to the fabric impression was measured on sample sherds. In some cases, the fabric impression continues to the lip, but in most cases it does not. It should also be noted that this space between the lip and fabric impression is very irregular, so the measurements should be viewed as only an approximate representation of the vessel as a whole.

The average width from lip to fabric impression from Castalian Springs is 11.2 mm, with 7 examples of the fabric impression beginning at the lip with no space; six from Feature 119, and the other from the top of Mound 3. The average width from lip to fabric impression from Sellars is 13.6 mm, with no examples of the fabric impression beginning at the lip of the pan. At Beasley, the average distance on two sherds from lip to fabric impression is 11.7 mm. It does not appear that the occurrence of pans with fabric impressions right up to the vessel lip is diagnostic of early Mississippian components in the Middle Cumberland region. Castalian Springs Feature 119 and the top of Mound 3 both produced relatively late radiocarbon dates.

6.5i O'Byam Incised *var. Adams*

One example of an O'Byam Incised *var. Adams* plate from the sample sites was identified from Castalian Springs Feature 94 (Figure 6.5). This sherd is missing the lip, so an exact rim length measurement could not be obtained (see section 6.6f). Plates with incised decoration on the rim are rare in the Middle Cumberland region, but a few examples have been identified (Smith et al. 2004). These examples have been identified as O'Byam Incised *var. Stewart* after the types present in the Lower Cumberland and Ohio River valley where this plate modification is more common. In contrast with other incised plates found in the Middle Cumberland region identified as O'Byam Incised *var. Stewart*, the downward pointing triangle and chevron pattern as well as the relative thickness of the incised line makes this plate more similar to O'Byam Incised *var. Adams*. In the Ohio- Mississippi confluence region, O'Byam *var. Adams* plates date to Dorena phase (A.D. 1100 to 1300) and the Middle Wickliffe phase (A.D. 1250 to 1350) (Hilgeman 2000:211, 213). Similar incised plates date to the Moorehead phase (A.D. 1200 to 1275) in the American Bottom region (Hilgeman 2000:213).

6.5j Matthews Incised *var. Matthews*

No *var. Matthews* sherds were identified in the assemblage examined from Beasley or Moss. A few examples of incised sherds were recovered from Beasley excavations. Although the shape of the incised design cannot be identified because of the small sherd size, it is most likely that these sherds were part of *var. Matthews* vessels. Seven examples of *var. Matthews* sherds were identified from Sellars, 28 from Castalian Springs, and 51 from Rutherford Kizer (Table 6.12). None of the stratigraphically early contexts from Castalian Springs contained *var. Matthews* sherds. Additional diagnostic artifacts in association with *var. Matthews* sherds from Castalian Springs include *var. Manly*, Nashville Negative Painted, dog effigy bottle, fish effigy bowl, owl effigy bowl, human head effigy bowl and a crested bird effigy bowl (see sections 6.5k, 6.5m, and 6.6g). *Var. Matthews* sherds are also associated with Beckwith Incised sherds at Rutherford Kizer (see section 6.5l). A strap handled frog effigy jar from Traveller's Rest is actually incised with both *var. Matthews* and Beckwith designs (PM 78-6-10/14140) (Moore and Smith 2009: Figure 8). Handles present on *var. Matthews* jar rim sherds from the sample assemblages include wide intermediate and strap forms (see section 6.6b).

Moore and Smith (2009:213) suggest that *var. Matthews* Incised appears around A.D. 1250 and increases in frequency through time. Twelve directly dated feature contexts containing *var. Matthews* from the Middle Cumberland region produced a pooled mean of cal A.D. 1286 to 1387 at 2 sigma (651±13 BP) (Table 6.13) (Moore and Smith 2001:Table 28). The range of these dates suggests that *var. Matthews* decoration was used on jars over a long period of time after around A.D. 1250.

Detailed examination of *var. Matthews* was conducted in an attempt to more accurately date the variety. Most of the identified examples of *var. Matthews* do not include the lower portion of the design. A total of 11 sherds from Castalian Springs and one from Sellars include the lower point of the arch design. All but two examples from Castalian Springs Feature 4 have arches that meet in a sharp, rather than rounded point. Although there is variation in this incising attribute both within the sample ceramic assemblages and from other Middle Cumberland sites, no potential chronological significance for the sharpness of the lower arch point was identified.

As discussed in Chapter 5, the *var. Matthews* can be divided into three subvarieties (Smith 1993a; Walling 2000). While the sample size for each subvariety is small, their stratigraphic contexts and associations were examined in an attempt to determine whether the subvarieties are chronologically sensitive.

Subvariety A is the most common. This subvariety is present at Rutherford Kizer, Castalian Springs, and Sellars. Five radiocarbon dates from features containing subvariety A from sample sites and other sites in the region range from cal A.D. 857 to 1310 (p=0.97) at 2 sigma (910±140 BP) to cal A.D. 1312 to 1358 (p=0.42) or cal A.D. 1387 to 1433 (p=0.58) at 2 sigma (550±30 BP) with a pooled mean of cal A.D 1297 to 1398 at 2 sigma (614±19 BP) (Table 6.13). Subvariety A 2 sigma date ranges overlap between A.D. 1283 to 1310.

Subvariety B was documented from Castalian Springs and Rutherford Kizer. No examples of subvariety B were found at Sellars. Two examples of subvariety B were recovered from Rutherford Kizer Feature 101. This feature also contains a notched rim bowl, indicating a post-A.D. 1350 date (see section 6.5p). Handles on subvariety B jars are wide intermediate or strap in form. The average handle date generated from Wesler's formula for feature contexts with subvariety B sherds from Castalian Springs and Rutherford Kizer is A.D. 1314 (Wesler 2001:99) (see section 6.6b). The pooled mean radiocarbon dates from features in the study area containing *var. Matthews* subvariety B is cal A.D. 1295 to 1324 (p=0.39) or cal A.D. 1345 to 1393 (p=0.61) (625±14 BP) at 2 sigma, with the most likely 1 sigma intercept at A.D. 1300 to 1317 (p=0.43) (Table 6.13). However, the Brick Church Business Park site produced an earlier date of cal A.D. 1030 to 1285 at 2 sigma (830±80 BP) for a stratigraphic context associated with a subvariety B sherd (Smith et al. 1993:103).

Subvariety C is present at Rutherford Kizer, Castalian Springs, and Sellars. It is a more common subvariety at Sellars (54.5 percent of *var. Matthews* subvarieties) than at Castalian Springs (28.6 percent of *var. Matthews* subvarieties). Subvariety C from Sellars is found in pit features associated with the early palisade at the site and one above a wall trench structure, suggesting a relatively early date for this subvariety. However, a subvariety C sherd from the

East Nashville Mounds site was found associated with a notched rim bowl (Walling 2000), suggesting a post A.D. 1350 date (see section 6.5p). The pooled mean of dated feature contexts with subvariety C sherds is cal A.D. 1297 to 1374 (p=0.79) or cal A.D. 1376 to 1399 (p=0.21) at 2 sigma (613±22 BP) (Table 6.13). The presence of subvariety C incised jars in these contexts suggests that jars with this incising technique were made over a substantial period of time.

No discernable chronological difference was revealed in the above comparison of *var. Matthews* subvarieties. Artifact associations and radiocarbon dates indicate that Matthews Incised *var. Matthews* appears in the archaeological record by at least A.D. 1250 and continues to be deposited through A.D. 1350.

Width and Depth of Incised Line. The incised lines from Sellars are on average wider and shallower than those from Castalian Springs. The difference in the ratio of incising depth to incising width between Castalian Springs and Sellars is very significant (p=0.005). The angle of incision is a factor in the incising width. Perpendicular incisions are generally narrower, while angled incisions create wider and shallower areas of indentation, with less distinct edges. The incising from Rutherford Kizer is similar in width to Castalian Springs, although some are incised at an angle.

6.5k Matthews Incised *var. Manly*

One example of a *var. Manly* sherd was recovered from Sellars, three from Castalian Springs, and ten from Rutherford Kizer. No *var. Manly* sherds were recovered from Beasley, Moss, or stratigraphically early contexts from Castalian Springs. The presence of *var. Manly* on a jar with a strap handle from Rutherford Kizer (as well as examples from 40DV48, 40DV60 and 40WM5) (Moore and Smith 2009:121, 153) suggests that this incising type continues after A.D. 1300. A *var. Manly* vessel fragment was recovered from single post Structure 57 at the

Brentwood Library site in association with a notched rim bowl, suggesting that this variety continued to be made after A.D. 1350 (see section 6.5p) (Moore and Smith 2005). The presence of *var. Manly* sherds at sites such as Bosley Farm with mainly early ceramic characteristics (loop handles, cylindrical neck bottles), suggest that this ceramic type may have been made earlier than A.D. 1250 (see section 6.6b) (Acc # 77-57-10/11872) (Moore and Smith 2009: 31).

Only one example of subvariety B was identified from the sample sites, but it is more common than subvariety A at the East Nashville Mounds and French Lick sites (Walling 2000:255). Subvariety B (punctations and incised line) has been found at other Middle Cumberland sites including Gordontown and Averbuch. The *var. Manly* jar from Averbuch has strap handles (see section 6.6b).

Dated feature contexts from the study sites that contain *var. Manly* sherds produce a pooled mean (592±17BP) of cal A.D. 1306 to 1363 (p=0.75) or 1385 to 1406 (p=0.25) at 2 sigma with the most likely 1 sigma at 1317 to 1354 (p=0.80) (Table 6.13) (Moore 2005b:119). These radiocarbon dates and artifact associations indicate that Matthews Incised *var. Manly* jars appeared in the archaeological record at least by A.D. 1250 and continued to be made after A.D. 1350.

6.5l Beckwith Incised

Two examples of Beckwith Incised sherds were identified from Castalian Springs, and one example was identified from Rutherford Kizer. Examples of Beckwith Incised jars with handles seem to be restricted to strap forms, suggesting a largely post A.D. 1300 date for Beckwith types (see section 6.6b) (Moore and Smith 2009). As Moore and Smith note, Beckwith incising often accompanies abbreviated frog effigy modeling on jars, indicating a post A.D. 1300 date (see section 6.6g) (2009:218). The association at Traveler's Rest of a Beckwith Incised jar with a notched rim bowl suggests that this incising method continued past A.D. 1350 (see section 6.5p) (Moore and Smith 2009).

Five dated feature contexts from the Middle Cumberland region containing Beckwith Incised sherds that produce a pooled mean date of cal A.D. 1296 to 1330 (p=0.39) or cal A.D. 1339 to 1397 (p=0.61) at 2 sigma (617±17 BP) (Table 6.13). These radiocarbon dates and strong association with the strap handle form indicates that Beckwith Incised jars began to be made around A.D. 1300 and continued to be used after A.D. 1350.

6.5m Nashville Negative Painted

Negative painting on different bottle forms may have begun at slightly different times. However, for this study all bottles with negative painting were grouped together, as in many cases the bottle neck is not attached to the bottle's negative painted surface and form cannot be determined. No negative painted bottles were documented from Beasley, Moss, or early Castalian Springs contexts. One context from Rutherford Kizer where negative painted bottles were identified, Feature 36, contained *var*. *Matthews* and *var*. *Manly* sherds as well as a duck effigy fragment (see section 6.6g). A minimum number of five Nashville Negative Painted bottles were represented in the sherds recovered from Castalian Springs during modern excavations. This does not include the numerous sherds that were likely negative painted but could not be definitively categorized as such because the negative design is no longer visible. In addition, two negative painted bottles were excavated from Castalian Springs in burial Mound 1 by Myer. The negative painted bottles from the burial mound were located within the upper half of the mound, implying that they were deposited during later burial mound stages. This supports the argument that negative painted bottles were made largely after A.D.1250. At least one negative painted bottle was recorded from Sellars House 13 Grave 2. This bear or dog effigy bottle was in the same burial as a jar with peaked rim and a duck effigy bowl. Both ceramic forms appear post A.D. 1250 (see section 6.6a and 6.6g). The gray paste of three carafe neck bottles, one from the upper tier, one from the middle tier, and one between the graves of Mound C at Sellars, suggests that they were also negative painted (Moore and Smith 2009:46). Negative painted bottles likely appear in the archaeological record after A.D 1250 and continue to be used through A.D. 1350.

Twenty-seven negative painted bottle sherds were excavated at the Middle Cumberland site of Brentwood Library (Moore and Smith 2005:149). Later ceramic types and attributes such as a frog effigy jar, *var. Matthews* and Beckwith Incised as well as Mound Place Incised sherds were in the same pit feature context as a negative painted sherd (see sections 6.5o and 6.6g). Negative painted bottles have been found at Moundville and East Tennessee, and Georgia sites dating to A.D. 1250 and later (Smith 1992:84).

Features containing negative painted bottles from Castalian Springs each have a post A.D.1250 radiocarbon assay and pooled mean. A radiocarbon date of cal A.D. 1293 to 1436 (p=1.0) at 2 sigma (570±60 BP), with the most likely 1 sigma intercept of cal A.D. 1309 to 1361 (p=0.62) was obtained from a feature with negative painted sherds from Brentwood Library (Moore 2005b:119). Researchers have suggested that negative painting on bottles is most common between A.D. 1300 and 1400 (Smith 1992:84; Smith and Moore 2001:173; Smith and Trubitt 1998:130). The features, associated artifacts, and radiocarbon dates from the sample sites suggest that negative painting on bottles begins in the Middle Cumberland region after A.D. 1250.

6.5n Angel Negative Painted

Two Angel Negative Painted plate sherds were identified from Sellars. A minimum number of eight Angel Negative Painted plates have been recovered from Castalian Springs. This includes thirteen sherds recovered during modern excavations and one vessel excavated by Myer (Smith and Beahm 2012a). Associated artifacts include *var. Matthews*, *var. Manly*, and Beckwith Incised sherds, lobed jar sherds, carafe neck bottle sherds, negative painted bottle sherds, owl effigy rim rider, crested bird rim rider, and fish bowl fragment (see sections 6.6d and 6.6g). Negative painted plates have also been found in the Middle Cumberland region at Gordontown, Brick Church Pike, Traveller's Rest and Inglehame Farm (40WM342) (Dicks 2004:26; Smith and Beahm 2012a).

Five radiocarbon dated features from Castalian Springs and Sellars with negative painted plates produced a pooled mean of cal A.D. 1288 to 1316 (p=0.40) or cal A.D. 1354 to 1389 (p=0.60) at 2 sigma (645±14 BP) (Table 6.14). Negative painted plates appear at the Angel site during the later half of the Angel 2 phase (around A.D. 1250 to 1275) (Hilgeman 2000:226), which compares favorably with the radiocarbon dates from the sample sites. It appears that negative painted plates in the Middle Cumberland region were made between A.D. 1250 and 1350.

6.5o Mound Place Incised

Mound Place Incised bowls were identified from Sellars, Castalian Springs, and Rutherford Kizer. Feature 101 from Rutherford Kizer contained one example and a notched rim bowl suggesting that Mound Place Incised continued to be made after A.D. 1350 (see section 6.5p). Two Mound Place Incised sherds were recovered from the Brentwood Library site (Moore and Smith 2005). Both of these stratigraphic contexts also contained a Beckwith Incised sherd, suggesting a later Mississippian date.

Brentwood Library Feature 10 containing a Mound Place Incised sherd is dated to cal A.D. 1294 to 1426 (p=1.0) at 2 sigma with the most likely 1 sigma intercept (p=0.67) at cal A.D. 1309 to 1360 (580±50 BP) (Moore 2005b). Four Mound Place Incised sherds were recovered from the East Nashville Mounds site. East Nashville Mounds Feature 36, which contained a Mound Place Incised sherd, dates to cal A.D. 972 to 1287 (p=1.0) at 2 sigma (890±100 BP). Because this feature (Feature 36) also contained loop as well as strap handles, it is possible that this feature contains material from a range of time, and would explain the relatively early association for a Mound Place Incised sherd (see section 6.6b).

The pooled mean for the three features from the sample sites that contained at least one Mound Place Incised sherd is cal A.D. 1295 to 1400 (p=1.0) at 2 sigma, or cal A.D. 1300 to 1368 at the most likely 1 sigma (p=0.81) (616±28 BP). This suggests that Mound Place Incised was most common in the Middle Cumberland around A.D. 1300 to 1350.

6.5p Notched Rim Noel Bowls

Nineteen notched rim bowl sherds were recovered from Rutherford Kizer from both early and modern site excavations. These sherds were recovered from general surface contexts, non-feature deposits, as well as from Features 83, 101, 110, 194, 359, 880 and grave 18 from Curtis' excavations (Smith and Moore 2001:165). Five examples of a notched rim bowl have been recorded from Sellars from both early and modern excavations. One specimen represented by several sherds was recovered from a non-feature context during modern excavations. Another was recovered by Putnam from the burial mound, one from House 9 and two from House 10 (Moore and Smith 2009:366-367). Sam Stone Bush gave Myer a photograph of five ceramic vessels he reports to have found from Beasley. These include a possible notched rim compound vessel. Unfortunately there is not way to directly examine or verify the provenience of the vessels in this photograph and no other notched rim bowls were found at Beasley. No notched rim bowls have been recovered from Castalian Springs or Moss during modern or early excavations of the site.

Notched rim bowls generally seem to be a relatively late ceramic characteristic throughout the Mississippian southeast. They are present at Angle 3 phase (A.D. 1325-1450) sites in the Ohio River Valley and increase in frequency through time at Caborn-Welborn sites (Hilgeman 2000: 85-86, 236; Pollack 2008:641, 649, 650). Notched rim bowls have been found in Fort Ancient ceramic assemblages after A.D. 1500 (Pollack et al. 2002). At Moundville, notched rim bowls begin to appear during the late Moundville II phase (A.D. 1260-1400), and continue to be deposited during the Moundville IV phase (1520-1650) (Porth 2011:7, 65; Steponaitis 1983). Notched rim bowls are also present in the Upper Tennessee River Valley from sites dating to the Dallas phase (A.D. 1300-1600) (Lewis and Kneberg 1993 [1946]: 105, Table 19; Koerner 2005:8). In northern Georgia, notched rim bowls date to the Barnett phase (A.D. 1500-1625) and in northeastern Georgia, they date to Late Lamar (ca A.D.1500-1600) (Wood 2009:63).

Nine radiocarbon dated features in the Middle Cumberland region containing notched appliqué rim bowls produced a pooled mean date of cal A.D. 1321 to 1349 (p=0.32) or cal A.D. 1391 to 1424 (p=0.68) at 2 sigma (551±18 BP) with the most likely intercept (p=0.79) at cal A.D. 1397 to 1416 at 1 sigma (Table 6.15). The radiocarbon dates from Castalian Springs also strongly indicated that most occupation at the site did not continue past A.D. 1350. The lack of notched rim bowls from this well-excavated site indicates that this ceramic type did not appear in the region until after A.D. 1350. Notched rim bowls are a significant chronological marker for Mississippian site components postdating A.D. 1350 for the Middle Cumberland region (Moore and Smith 2009:211).

6.5q Incised Bottles

Around A.D. 1350, incising replaced negative painting as the dominant surface decoration on bottles (Smith and Beahm 2012a). The example from Gray's Farm was found in the same grave as a notched rim appliqué bowl, suggesting a post 1350 date for at least some incised bottles (Moore and Smith 2009:204). One example of an incised bottle with a *var. Matthews* subvariety A design has been reported by an artifact collector as coming from Rutherford Kizer (Moore 2001e:188). A *var. Matthews* Incised bottle was excavated from Castalian Springs Feature 100. The paste of this bottle is tempered with shell and grog, and the neck is atypical– both short and narrow, so it is unclear how to interpret this particular incised vessel. Feature 100 feature produced a calibrated radiocarbon date of cal A.D. 1298 to 1370 (p=0.71) or cal A.D. 1379 to 1413 (p=0.29) at 2 sigma (590±30 BP). Examples of incised carafe neck bottles are also present at the generally late Averbuch (40V60). This conforms to a post-1350 designation for incised bottles (see section 6.6d).

6.5r Complicated Stamped

Complicated stamping is not a local surface treatment for the Middle Cumberland region. However, a few temporally diagnostic complicated stamped sherds have been recovered from sites in the sample. Seventeen sand-tempered complicated stamped sherds comprising two or three vessels were recovered from Rutherford Kizer Feature 20 and Feature 36. Although the stamped motifs on these sherds are not readily identifiable, they resemble Savannah Complicated Stamped, dating from A.D. 1250 to 1350 (Williams and Shapiro 1990:55). One example from

Castalian Springs Feature 119 was also identified as an early Savannah Complicated Stamped sherd dating to around A.D. 1250 (David Hally personal communication 2011) (Figure 6.6). A possible complicated stamped quartz-tempered rim sherd was also identified from Beasley Mounds that most resembles Late Savannah to Early Lamar types dating to around 1300 to 1450 (Hally personal communication 2011; Williams and Shapiro 1990:33).

6.5s Cob Marked

Two possible cob marked sherds with shell temper were identified from Beasley. One also has a row of check-stamping below the apparent cob marking, which is positioned around the neck of a jar with exteriorly angled rim (Figure 6.7). The significance of this surface treatment is not clear, other than its absence in Middle Cumberland ceramic assemblages.

Shell-tempered cob marked sherds are reported from East Tennessee at the Dallas and Chota-Tanasee sites (Bates 1986:305; Reed 1987:637, Figure 8.24f, g). They are attributed to Cherokee occupation of the region in the eighteenth century (Reed 1987:637). The impressions are described as a "roughened surface of irregular rows of striations" which is similar to the example from Beasley (Reed 1987:637). The impressions from Chota-Tanasee are oriented in the same way as those found at Beasley and occur on outwardly angled rims of jars and bowls (Bates 1986:305). Marcoux notes that Dallas phase shell-tempered plain ceramics are indistinguishable from Overhill shell-tempered plain body sherds (2008:117, 119), suggesting that the paste of impressed shell-tempered sherds would not be chronologically distinctive.

Grit/sand-tempered sherds with cob marking also are present in the Upper Savannah River Valley in low percentages from A.D. 1100 through A.D. 1450 and in very low frequency in the Middle Savannah River Valley from A.D. 1250-1350 where they occur on the necks of check-stamped jars (Rudolph and Hally 1985; Wood 2009:58, 61). Cob marking has also been identified on grit-tempered ceramics in northern Georgia during the Etowah phase (A.D. 1000-1200) (Wauchope 1966:71). The presence of these cob marked sherds indicates a trade relationship to the south around A.D. 1200-1350.

6.5t Brushed and Combed/Simple Stamped

One example of a shell-tempered brushed jar rim sherd was recovered from Beasley Mounds (Figure 6.8). Two examples of shell-tempered brushed sherds were recovered from the Middle Cumberland French Lick site (Walling et al. 2000:256). One example from French Lick has a peaked rim and strap handle which suggests a post A.D. 1300 date for this type of surface treatment. The rarity of this ceramic type suggests that it is likely a nonlocal ceramic type. A few examples were also found at Toqua and other post- A.D. 1250 sites in East Tennessee (Reed 1987:615-616; Walling et al 2000:276). Two shell-tempered brushed sherds were also recovered from Jewel (15BN21) located along the Barren River in Kentucky (Hanson 1970:47-48, Figure 17). Like the rim sherd from Beasley, one of the examples from Jewel has a flared or externally angled rim.

One example of a shell-tempered combed or simple stamped jar rim sherd was recovered from Moss Mounds (Figure 6.9). The surface treatment of this sherd consists of a series of vertically oriented lines. These lines extend up to the rim in some places and in other places have a space of up to 13.5 mm from the lip. These lines have a “v” shape profile and the combing implement or stamp design appears to have been angled slightly to the left in some places. This is likely a nonlocal vessel, as this surface treatment is not found in the Middle Cumberland region or the Upper Cumberland region and the chronological significance of this sherd is unknown.

6.6 Vessel Forms and Shape Attributes

6.6a Jars

Jars are the most common vessel form in Middle Cumberland ceramic assemblages (Table 5.1). Therefore, it was hoped that conducting a detailed analysis of jar shape would result in the identification of chronologically sensitive attributes which would make this common vessel form useful for dating sites and specific contexts. Measured jar shape attributes were compared in a variety of ways in order to identify any chronologically sensitive attributes.

Four rim sherds identified to form from Moss were jars, but the Moss ceramic assemblage was not included in analysis due to its small size. Rutherford Kizer jars were not included in the detailed jar analysis of shape attributes or shape classes, as measurements were not available. However, surface modification and rim angle of jars from Rutherford Kizer was incorporated into the jar analysis.

Jar Neck Length. Neck length was measured along the sherd itself from interior/lip margin to the point of curvature on the interior (Figure 6.10). Gradual Neck jars are more difficult to measure than Distinct Neck jars, since by definition the neck/shoulder junction is not as distinct. When it was not possible to identify this junction, no measurement was made for the rim sherd.

In the American Bottom region, the ratio of vessel wall thickness divided by neck length, or neck protrusion ratio, has been found to be useful in dating. Values were found to decrease over time, as neck lengths increase relative to vessel wall thickness in the American Bottom study (Holley 1989:21; Pauketat et al. 1998:33-34). Therefore, jar neck length was examined in a number of ways in this analysis with the goal of finding chronological sensitivity in some measure. Jar neck length and the ratio of jar neck length to lip thickness were compared within shape classes, size classes, and rim angle. These comparisons were both between sites and between features with large enough samples (Table 6.16).

Because neck length may be related to vessel size to some degree, regressions were performed to examine the relationship between neck length and both orifice diameter and lip thickness. The results of these regressions show that only approximately 25 percent of the variation in jar neck length can be attributed to orifice diameter (Figure 6.11). Lip thickness accounts for 30 percent of the variation in jar neck lengths (Figure 6.12).

Neck length was compared between sites and features. Only stratigraphic contexts with more than one measureable example were used in statistical comparisons. All available measurements for a specific attribute were included in the statistical comparisons, so an individual sherd might be included in one measured attribute comparison, but not in another. Appendices L.1- L.33 contains the results of the Mann –Whitney comparisons of jar neck lengths. P-values below 0.10 that are at least fairly significant are highlighted in the appendices.

Although the difference in the ratio of jar neck length to lip thickness was found to be very significant for some pairs of features, the ordering of features by this ratio does not appear to reflect the chronological placement of the features based on other ceramic attributes and radiocarbon dates (Table 6.17). Jar neck lengths and length averages of features by size class were also ordered, but there was no consistency between size classes in the sequence of features. Therefore, while jar attribute measurements were compared between sites and features in a number of ways for this study and some comparisons showed a large amount of difference statistically, these differences did not reveal useful information about the relative chronology of sites and features. Nevertheless, other jar attributes appear have chronological significance.

Jar Rim Angle. Jar neck length was also found not to be chronologically informative at the DeArmond (40RE12) mound site in east Tennessee (Koerner 2005). However, Koerner did find that jar rim angle was chronologically sensitive. He found that jar rim angles tend to become less excurvate and more vertical over the period of mound construction and use. There are also significant differences in percentages of jars with direct, incurvate, and excurvate rims between sites examined in this study.

Jars with direct rims are the most common jar rim orientation for each site but Rutherford Kizer has by far the highest percentage of jars with vertical necks (Table 6.18). This suggests that rim angle may also be a chronological indicator for Middle Cumberland sites, as Rutherford Kizer occupation appears to be later than most of the other sites based on the presence of notched rim bowls, exclusively strap handles and radiocarbon dates. The samples of jar rims from most features are not large enough for meaningful comparison, but jar rim angles seem to be useful in relatively dating site occupation as a whole.

Jars with Peaked Rims. Two examples of jars with peaked rims were identified in the ceramic assemblages examined; one from Castalian Springs and one from Sellars (Figures 5.39 and 5.40). In addition, one whole jar with a peaked rim from Sellars was excavated from House 13 Grave 2. This context also contained an outward-facing naturalistic duck bowl and a dog carafe neck bottle, both post-A.D. 1250 vessel forms (see section 6.6g). The sherd from a jar with peaked rim from modern Sellars excavations was recovered from Feature 9, an interior post associated with a single post structure. This architectural method suggests a later Mississippian date (see section 6.7d). The peaked rim sherd from Castalian Springs was recovered from the top of Mound 3. While the radiocarbon dates for Mound 3 are inconsistent, the mound top contexts date to around A.D. 1300 and perhaps slightly later.

In East Tennessee, where this rim modification is more common, it is diagnostic of the Dallas phase, which begins around A.D. 1300 (Lewis et al. 1995:100). The features and associations from the sample sites suggest that jars with peaked rims are present after around A.D. 1300 in the Middle Cumberland region as well.

6.6b Closed Handles.

In the analysis of closed handles, handle length, medial width, top width, bottom width, and medial thickness were measured (Figure 6.13). Ratios of length, width, and thickness were compared between sites and features. Additional handle characteristics recorded and analyzed include top nodes, top scallops, central handle groove, central handle incision, and handle nodes. Ninety-six handles and handle fragments from Castalian Springs, 15 from Sellars,11 from Beasley, and three from Moss were analyzed in this study. Measurements of 23 handles from Rutherford Kizer were also incorporated into handle analysis.

Forms. Four handle forms were identified in Chapter 5 based on the ratio of width to thickness: loop, narrow intermediate, wide intermediate, and strap. These handle forms are chronologically significant with loop handles being earliest and strap handles latest. Loop handles were recovered from early stratigraphic contexts of pre-Mound 2, pre-Mound 3, and pre-Feature 134 midden contexts at Castalian Springs. Strap handles are the only form recovered from later Rutherford Kizer. Strap handles are found in association with notched rim bowls and other late ceramic attributes such as duck and fish effigy bowls (Moore and Smith 2009; Smith and Moore 2001).

Width to Thickness. The ratio of handle medial width to medial thickness was compared between Rutherford Kizer, stratigraphically early Castalian Springs contexts, all Castalian Springs contexts, Sellars, Beasley and Moss. A total of 111 handles had measurable width and thickness dimensions that could be used in this analysis. The sample sites showed very significant differences statistically between most pairs of sites. There is not a significant difference between Sellars and early or all Castalian Springs contexts, Sellars and Moss or Beasley and Moss (Appendix L.34). The plot of these measurements shown in Figure 6.14 illustrates that Beasley and Moss handle measurements create a cluster distinct from Rutherford Kizer handles whereas the measurements from Castalian Springs and Sellars overlap with the other sites. A comparison of the frequency distribution of handle width to thickness ratios between sites illustrates the different temporal ranges of the sites and potentially identifies a break in site occupation at Sellars (Figures 6.15 to 6.20).

Individual features that had more than one handle from Castalian Springs, Rutherford Kizer, and Sellars were compared with each other and with the handles from Beasley and Moss and early contexts from Castalian Springs. The results of this comparison revealed that for many of the pairs of features, the difference in handle width to thickness is very significant statistically (Appendix L.35).

Change in handle morphology over time has been documented in other regions (Phillips et al 1951: 150-153; Steponaitis 1983; Wesler 2001:99-100) as well as in the Middle Cumberland region (Smith and Moore 1996b). In essence, handles with round cross sections were made earlier than wide, flat handles. A formula to estimate manufacture date from medial width and thickness ratios developed by Wesler (2001:100) also has been used in the Middle Cumberland region (Smith and Beahm 2007). The formula: 1500-[(medial thickness/medial width)x500] is not intended to generate an exact date from a single example, but is useful for quantifying the gradual change in handle shape over time and estimating dates for multiple examples. Table 6.19 shows the results of this formula as applied to the sample sites. The pre -

Mound 2 handle and Mound 3 fill from Castalian Springs produce the earliest dates, followed by handles from Beasley and Moss. The handle recovered from Feature 93 also produces a fairly early date. Most features from Castalian Springs and features from Sellars produce dates between A.D. 1230 and A.D. 1315. Handle measurements from Rutherford Kizer produce post-A.D. 1350 dates.

Length. Handle length was compared between sites. The difference between Rutherford Kizer and Sellars and between Rutherford Kizer and Beasley is very significant, with Sellars and Beasley having, on average, longer handles than Rutherford Kizer suggesting that earlier handles might be longer than later handles (Appendix L.36). The difference between stratigraphically early contexts from Castalian Springs and Rutherford Kizer is also very significant, as is the difference between early Castalian Springs contexts and the remaining Castalian Springs contexts. However, early contexts from Castalian Springs are on average shorter than handles from Rutherford Kizer and remaining Castalian Springs contexts. Therefore, longer handles do not seem to indicate early or late site occupations.

The ratio of handle medial width to length was also compared between early Castalian Springs contexts, all Castalian Springs contexts, Rutherford Kizer, Sellars and Beasley (Figure 6.21-6.25). The difference between sites for this ratio showed more significance than did length (Appendix L.37). A pair of sites that did not show very much significance is Sellars and Rutherford Kizer, even though there is significant difference in the length and in width. The number of handles from Rutherford Kizer, Sellars and Beasley that have a complete length are rather small, so these sites were not divided by feature, but individual features from Castalian Springs were compared to Rutherford Kizer, Sellars and Beasley handles in terms of medial width to length ratio. The difference in this medial width to length ratio between several pairs of features is very significant statistically (Appendix L.38). The difference in handle length to thickness was also very significant statistically between Castalian Springs and Rutherford Kizer and Castalian Springs and Sellars and Beasley and Rutherford Kizer and Beasley and Sellars (Appendix L.39).

Riveted Handles. Techniques used in attaching handles are not always observable. In some cases, however, handles break off the jar in such a way that the method of attachment can be observed. Two handles from Beasley show evidence that the lower part of the handle was riveted to the body of the jar (Figure 6.26). In one case the hole from the rim sherd and the handle are still intact, and fit together. The riveting on the lower part of a handle from Castalian Springs can be seen through a break in the body of the sherd, although the handle is still in place. All three examples of riveted handles are loop or intermediate forms. No riveted handles were documented from Sellars or Rutherford Kizer, and no handle attachment areas were identified from Moss. Therefore the lower riveted handle attachment technique was used early in the Mississippian period.

Horns and Nodes. Secondary handle shape characteristics are also potentially chronologically significant. Horns are projections at the top of a handle. These projections are either rounded or flattened. Horns occur in 40 percent of the jar rims with handles in sample sites (Table 6.20). Only midsections of handles were recovered from Moss, and no handle modification was present on these examples.

A single rounded horn over a handle occurs at Beasley on a single rim sherd. Single flattened horns are represented by single examples from Sellars, Castalian Springs and Beasley. Double horns over handles are fairly common at Castalian Springs (25 percent of handles attached to rim sherds), and Beasley (25 percent of handles attached to rim sherds) but were not found at Rutherford Kizer or Sellars.

Double horns over handles are associated with loop and intermediate handle forms. Only plain handles were recovered from the early Spencer and Sogom sites. No jars from the sample sites having handles with a horn show evidence of incised decoration. Curtiss' excavations from Bosley farm, however, did recover one example of a double horned handle with *var. Manly* punctations (Acc# 77-57-10/11872) (Moore and Smith 2009:31). This indicates that double horns continued to be made after *var. Manly* jars appear in the Middle Cumberland region, around A.D. 1250. This suggests that double horns over handles were made between A.D. 1100 and 1250, or later.

Nodes are occasionally placed on the body of the handle itself. This handle modification is present at Castalian Springs, Sellars and Rutherford Kizer, with the number of nodes on the handle ranging from one to three, with double nodes at Sellars and Rutherford Kizer, and one and three nodes at Castalian Springs. An additional strap handle with two nodes from Sellars was present in the Peabody collection (Acc#77-57-10/11979) (Moore and Smith 2009:365). The variable number and form of nodes on handle bodies makes the chronological significance of this attribute difficult to evaluate.

Incised/Central Groove. All handles in the sample that have an intact rim and a central groove or incised line also have a double horn at the top of the handle, although not all double horned handles have a central groove or incised line. A vertical central incised line down the handle appears to be an early pre-A.D. 1200 trait, and is present in the pre-Mound 2 stratum at Castalian Springs. Wider central grooves down the handle appear to be a slightly later trait, and it seems that such a handle modification would necessarily be linked to some extent to handle dimensions. If a handle was too narrow or too thin, such a groove would not be possible.

Elbow shaped handles. Another variation in handle form is the handle curvature. Most handles have a rounded profile from the jar lip to the jar shoulder. From Castalian Springs pre-Mound 3 context, one handle was recovered that has a distinctive angled or elbow shape, as well as double horn on the rim above the handle (Figure 6.27). No other handles from the sample sites have this handle shape, and this handle shape does not appear to be very common in the Middle Cumberland region in general.

Elbow shaped handles have been excavated from Bosley Farm and the Brick Church Business Park site. One example from the Bosley Farm collection was recorded at the Smithsonian (Acc#32062), and two elbow shaped handles were recorded from the Peabody collections (Moore and Smith 2009:28; 77-57-10/11908 and 77-65-10/12314). The example from the Brick Church Business Park site was recovered *in situ* from a structure floor along with a few examples of *var. Matthews*, an intermediate bottle form and an outslanting wall bowl (Smith et al. 1993). The association of elbow shaped handles with *var. Matthews* sherds suggests that this handle attribute continued to be made after *var. Matthews* jars appear, around A.D. 1250 while the width and thickness of handles with this angled profile, indicate an early Mississippi date of manufacture.

6.6c Lug Handles

In the detailed analysis of lugs from Castalian Springs, Sellars, and Beasley, a number of attributes were recorded. These include lug form (single or bifurcate), lug length (along rim), lug width (extending out from rim) lug thickness (vertical) (Figure 6.28), thickness of vessel wall below the lug, minimum lug width for bifurcate lugs, length from tip to tip of bifurcated lugs, and the length of space between the top of the vessel lip to the top of the lug, if applicable. Some of these measurements were available from Rutherford Kizer. The orifice of the vessel where the lug was affixed was also estimated when possible. However the curvature of a vessel's orifice is often flattened where the lug is affixed, creating an obstacle to accurate orifice diameter determination. Lug profiles were described based on ten general shapes (Figure 5.36). The top shape of the lug was also described based on generalized categories (Figure 5.37 and Figure 5.38). After the measurements and observations were completed, attributes were compared within and between the sites.

Rutherford Kizer has a significantly greater proportion of bifurcate lugs (94 percent) than Castalian Springs (47 percent) and Sellars (54 percent) (Table 6.21). The only lug from Beasley is bifurcate in form. To compare with other sites in the Middle Cumberland region, ninety percent of the identifiable lugs recovered from excavations at the Brentwood Library site were bifurcate (Moore and Smith 2005:143). This site appears was occupied mainly between A.D. 1300 and 1450, based on ceramics, architecture and radiocarbon dates (Moore 2005a:119, 274). Almost all of the lugs recovered from Gordontown were bifurcate. Gordontown was mainly occupied after A.D. 1250 (Moore 1998:175).

While it might be tempting to conclude from the sample sites that a greater frequency of bifurcate lugs indicates a later Mississippian date, the evidence from other sites in the Middle Cumberland region does not support that conclusion. Single lugs are more frequent at the East Nashville Mounds (40DV5) site (86 percent of the total 204 lugs identified to form). This site appears to have been mainly occupied after A.D. 1250, and has post-A.D. 1350 ceramic attributes such as notched rim bowls and fish effigy bowls (see section 6.6g) (Walling et al. 2000). The majority of appendages recovered from Brandywine Pointe are bifurcate lugs and all of the five lugs identified to form are bifurcate, but the site was occupied between A.D. 1050 and 1250.

To determine if variation in lug length is associated with vessel size, a regression was performed (Figure 6.29). Although larger jars more commonly have lugs, there does not seem to be a strong relationship between lug length and jar orifice diameter (r^2=0.1114). Linear regressions were also calculated for single and bifurcate lugs separately. Again, there is not a strong linear relationship between orifice diameter and lug length for single (r^2=0.058732) or bifurcate (r^2=0.07511) lugs (Figures 6.30 and 6.31).

Because orifice diameter was somewhat difficult to estimate on rim sherds with lugs, the thickness of sherds below the lug was compared to the orifice diameter on lug rim sherds in cases where this measurement was confidently estimated to determine whether the thickness of the sherd below the lug could be used as a proxy for vessel size. A strong correlation between these measurements would suggest that the thickness of the sherd below the lug could be used as a proxy for overall vessel size. However, there is not a strong linear relationship between orifice diameter and thickness of sherd below lug (r^2= 0.079679). Lug width was compared to orifice diameter to determine whether lug width varies based on the size of the jar. Linear regression shows that lug width and orifice diameter do not have a strong linear relationship (r^2=0.09631).

Since jar size does not seem to contribute very much to variation in lug length or lug width, a variety of lug measurement comparisons were made in an effort to identify chronological significance in lug dimensions. A list of lug measurement comparisons is presented in Table 6.22, and the results of statistical comparisons between stratigraphic contexts are presented in Appendices L.40-L.77. Lug length, lug length to lug thickness ratio, lug length to lug width ratio, lug width, lug width to lug thickness ratio, the minimum to maximum width of bifurcate lugs, and lug thickness are the measured attributes used in statistical comparisons. These attributes were compared between sites and features between all lugs, bifurcate lugs only, and single lugs only. The difference between many of these attributes is not very significant statistically. Those that did show some significance are discussed below.

Lug Length. While the difference between the length of all lugs and the length of bifurcate lugs between sites and features is not very significant statistically, the difference in single lug lengths between Castalian Springs and Sellars is very significant statistically (Appendix L.40-L.45), with Castalian Springs lugs being longer. However, the difference between feature pairs is not very significant statistically, perhaps due to a relatively small sample size.

Lug length was also compared to thickness of the lug. In a comparison between the ratios of lug length to thickness, the difference between Castalian Springs and Rutherford Kizer is fairly significant, with the lugs from Rutherford Kizer being longer and thinner than those from Castalian Springs (Appendix L.46). When bifurcate lugs and single lugs were considered separately it was found that the difference between bifurcate lug length to thickness ratio between Castalian Springs and Sellars is very significant (Appendix L.48). Bifurcate lugs from Sellars are on average somewhat longer but more significantly thinner than those from Castalian Springs (Appendix L.47).

Lug Width. The most significant difference in lug width is between Castalian Springs and Sellars (Appendix L.58). The lugs from Sellars are less wide than those from Castalian Springs and Rutherford Kizer. In a comparison of single lug widths, it was found that the difference between Castalian Springs and Sellars is very significant statistically (Appendix L.62). Several specific features show significant differences in lug width as well (Appendix L.59, L.61, L.63).

The ratio of lug width to lug thickness was compared between sites. The differences between Castalian Springs and Sellars and Castalian Springs and Rutherford Kizer have a great deal of significance statistically, with the lugs from Castalian Springs being wider and thicker than both other sites (Appendix L.64). The difference between Sellars and Rutherford Kizer is also fairly significant, with the thickness of the lugs being relatively similar, but Sellars lugs being less wide than those from Rutherford Kizer. For bifurcate lugs, both maximum and minimum widths were measured. The ratio of minimum to maximum widths of bifurcate lugs was compared between sites but found not to be statistically significant. The ratio of maximum to minimum lug width for individual features was compared as well.

Lug Thickness. The difference between sites in terms of lug thickness is very significant between Castalian Springs and Sellars and Castalian Springs and Rutherford Kizer and likely accounts for much of the significant differences seen in lug length to thickness and lug width to thickness ratios (Appendix L.72). Castalian Springs lugs are the thickest on average, followed by Sellars, and then Rutherford Kizer with the thinnest average lugs. Specific features were also compared in terms of lug thickness, and differences between several pairs of features are very significant (Appendix L.73).

Space above lug. Although not very common in these ceramic samples, in some rim sherds with lugs there is a space below the jar lip on the exterior of the vessel before the lug starts. This attribute is present in eight percent of rim sherds with lugs at Castalian Springs and 16 percent of rim sherds with lugs at Sellars.

Lug Orientation. It has been suggested that in eastern Tennessee ceramics, down-turned lugs are found in Early Mississippian deposits (Reed 1987:652). No significance was found in lug profiles from the sites analyzed in this study. Down-turned lugs were recovered from

Castalian Springs Feature 4, which dates prior to A.D. 1300. Two down-turned lugs were also recovered from Castalian Springs Feature 119, which has a wide range of ceramic material.

Lug measurements that showed statistically significant differences were examined by ordering the averages from specific features. The resulting order of features was evaluated for possible chronological significance (Table 6.23). No chronological significance could be determined for lug length to thickness ratio, lug width to thickness ratio, lug width or lug thickness for all lugs together or by examining bifrucate and single lugs separately. Sellars and Rutherford Kizer lugs tend to be thinner than Castalian Springs' lugs. Also, lugs from Sellars are less wide (do not stick out as far from the vessel body) than lugs from Castalian Springs. However, these trends do not appear to be chronological.

6.6d Bottles

Cylindrical vs. Carafe Neck Bottles. Six cylindrical neck bottles and six carafe neck bottles from Castalian Springs, and one cylindrical and one carafe neck bottles from Sellars and one carafe neck bottle from Beasley were identified in vessel form analysis (Table 5.13). An additional 2 cylindrical neck and 3 carafe neck bottles were excavated at Sellars by Putnam (Moore and Smith 2009:46, 49). Two cylindrical neck bottles were found in the lower tier of the Sellars burial mound, while two carafe neck bottles were found in the middle and upper tiers (Moore and Smith 2009). This supports the chronological placement of cylindrical neck bottles before carafe neck bottles as proposed by Smith and Moore (1996b). There are slightly more fine shell-tempered carafe neck bottles and more coarse shell-tempered cylindrical neck bottles in the sample examined however, the difference is not very great or chronologically informative (Table 5.14 and 5.15).

Several additional burial contexts from Moore and Smith's Peabody research (2009) also support this bottle chronological placement. Grave 51 from Bosley Farm and Grave 56 from the West's Farm site contain both a cylindrical neck bottle and loop handled jar, diagnostic of early Mississippian (Moore and Smith 2009:381). Gray's Farm Grave 16 contained both a carafe neck bottle and an outward facing naturalistic duck effigy bowl, a late vessel form (see section 6.6g) (Moore and Smith 2009:105).

Cylindrical neck bottles seem to be made prior to A.D. 1250 while carafe neck bottles appear around this time and continue to be made through A.D. 1350. There are some examples of "transitional" forms of bottles with relatively short necks and a carafe-like flare. An example of such a bottle can be found from Grave 28 at Bosley Farm (PM Acc.77-57-10/12319) (Moore and Smith 2009:29, Figure 15). Unfortunately because bottle form is largely a factor of neck length, bottle shape class is often difficult to determine from fragmentary bottle rim sherds that typically occur in non-burial contexts.

Hooded Bottles. Smith and Moore (2001) suggest that hooded bottles made with coarse shell-tempered paste are more prevalent earlier and those with fine shell-tempered paste later. From Castalian Springs, 62 percent of the hooded bottles have coarse shell-temper, while 38 percent have fine shell tempering (Table 5.16). The contexts with coarse shell-tempered hooded bottles include Feature 4, N1108E752, Feature 106, Feature 119, and the top of Mound 3. Castalian Springs Feature 4 and Feature 119 also have fine shell-tempered hooded bottles. The hooded bottles from Rutherford Kizer are 91 percent fine shell temper, and all hooded bottles found in feature contexts are fine shell-tempered. This difference is striking, and corresponds with the ceramic attributes and radiocarbon dates that indicate Rutherford Kizer was mainly occupied later than Castalian Springs, although it does not rule out the possibility of some overlap in occupation.

6.6e Bowls

Outslanting Wall. Outslanting wall bowls make up sixteen percent of bowl forms identified from modern excavations at Rutherford Kizer and thirteen percent from Sellars (Table 5.18). No definite examples of outslanting wall bowls were identified from Castalian Springs, although one is inferred, as discussed below. This is likely, at least in part, because more of the rim must be intact to allow outslanting wall bowls to be distinguished from plates. Two examples of outslanting wall bowls rim sherds were identified from Rutherford Kizer Feature 36, which also contained late ceramic attributes *var. Matthews, var. Manly,* Nashville Negative Painted, duck, fish, and human effigy bowls as well as strap handles (see section 6.6g). A total of six outslanting wall bowls were recovered from Sellars by Putnam. One was found in the same stone box grave as a McKee Island Cordmarked jar, suggesting an early Mississippian date. All three of the outslanting wall bowls recovered from burial Mound C at Sellars were recovered from the lowest tier (Moore and Smith 2009: 41-42, 46). Two of the graves also contained cylindrical neck bottles. This location implies that outslanting wall bowls were made prior to the construction of Sellars' burial mound. The association with cylindrical neck bottles suggests a relatively early date for this bowl form, prior to A.D. 1250.

The ceramic assemblages from Rutherford Kizer Feature 36 and Sellars Feature 4 each include an outslanting wall bowl. The pooled mean for the radiocarbon dates for these two features is cal A.D. 1275 to 1330 (p=0.49) or cal A.D. 1338 to 1397 (p=0.51) at 2 sigma (658±40 BP).

Outslanting wall bowl forms may be characteristic of earlier Mississippian occupations (Moore and Smith 1993:37; Smith and Moore 1996b). The stratigraphic placement and artifact associations from Putnam's excavations at Sellars support that outslanting wall bowls were made prior to A.D. 1250. However, the artifact associations and radiocarbon dates of features with outslanting wall bowls from Rutherford Kizer and Sellars indicates that this bowl form continued to be made after A.D. 1300 as well.

Scalloped Rim. Scalloped rim sherds, have been recovered from Rutherford Kizer, Castalian Springs, and Sellars. It is presumed that these rims are from outslanting wall bowls because whole examples of these bowls with scalloped rims have been found. One scalloped rim bowl was excavated at Rutherford Kizer. This rim sherd was recovered from pit Feature 194, which also contained *var. Matthews* jar sherds and notched rim bowl sherds, suggesting a later Mississippian date. The scalloped rims from Sellars were both excavated from non-feature contexts, but one was located in the same block of units where a single post structure was excavated. One excavated example from Castalian Springs is from Feature 119 with associated later Mississippian ceramic types *var. Matthews, var. Manly*, Nashville Negative Painted as well as earlier McKee Island Cordmarked sherds.

In addition, early excavations at Sellars recovered one outslanting wall scalloped rim bowl from a burial in the lowest tier of Mound C and associated with a Mississippi Plain jar. A second scalloped rim bowl was recovered from House 13, grave 1. Also in that grave was a finely shell-tempered cordmarked jar with nodes. The location in the lowest tier of Mound C implies that scalloped rim bowls were being manufactured before the burial Mound C at Sellars was constructed. The association with a cordmarked jar also suggests a relatively early date for scalloped rim bowls.

Castalian Springs Feature 119 yielded a pooled average radiocarbon date of cal A.D. 1302 to 1367 (p=0.75) or 1382 to 1407 (p=0.25) at 2 sigma (595±21 BP), suggesting a later date for scalloped rim bowls than suggested from the Sellars Mound C examples. These also suggest a later date for the use of scalloped rim bowls. Stratigraphic evidence from the Sellars burial mound excavations and artifact association with a shell-tempered cordmarked rim suggests that scalloped rim bowls first appear in the early Mississippian period (A.D.1100-1250). Artifact associations of incised jars and notched rim bowls from Rutherford Kizer and radiocarbon dates from Rutherford Kizer and Castalian Springs indicate that scalloped rim bowls continued to be used later into the Mississippian period, through A.D. 1350.

Restricted Orifice Bowls. Restricted rim bowls make up nine percent of bowls from modern excavations at Rutherford Kizer, 13 percent from Castalian Springs, and 11 percent from Sellars (Table 5.18). Restricted rim bowl rim sherds were recovered from Rutherford Kizer pit Features 20 and 361 and Burial 80. Associated diagnostic artifacts include *var. Matthews* sherds, a Nashville Negative painted sherd, and complicated stamped sherds (Smith and Moore 2001:143-148). Fish and human effigy fragments were also recovered from Feature 20. Two restricted rim bowl rim sherds were recovered from Castalian Springs Feature 119, including one effigy bowl. A restricted rim bowl rim sherd was also recovered from an early Castalian Springs Feature 134 context (pit 1 or pre-pit midden). *Var. Matthews* jar fragments were also present in these features as well as *var. Manly* and strap handles. A restricted rim bowl rim sherd was identified from Sellars Feature 4, in association with *var. Matthews*, Mound Place Incised, strap handles, as well as McKee Island Cordmarked sherds. A restricted rim bowl was recovered from Sellars Feature 4 and a frog effigy restricted rim sherd was identified from general unit contexts.

Two radiocarbon dates from Feature 20 from Rutherford Kizer with restricted orifice bowls produced a pooled mean of cal A.D. 1294 to 1410 (p=1.0) at 2 sigma (600±38 BP) with the most likely 1 sigma intercept at cal A.D. 1306 to 1363 (p=0.79) ((Moore 2001d:74). Three dated features from Castalian Springs with restricted rim bowls produced a pooled mean of cal A.D. 1291 to 1324 (p=0.39) or cal A.D. 1345 to 1393 (p=0.61) at 2 sigma (630±17 BP). Feature 4 from Sellars, has a calibrated date of A.D. 1212 to 1404 (p=1.0) at 2 sigma (705±65 BP) with the most likely intercept at cal A.D. 1253 to 1315 (p=0.69). The pooled mean of the contexts with restricted rim bowls from the sample sites is cal A.D. 1302 to 1366 (p=0.78) or cal A.D. 1383 to 1403 (p=0.22) at 2 sigma (600±17 BP).

It has been previously suggested that restricted rim bowls, especially those with two pairs of holes on the rim were being made prior to A.D. 1250 in the Middle Cumberland region (Smith and Trubitt 1998:130). From the early Mound Bottom site, 10.6 percent of the bowls are restricted, while no plain restricted rim bowls were recorded from the late Brentwood Library site (Moore and Smith 2005:171; O'Brien 1977). However, the presence of restricted rim bowls from contexts with later radiocarbon dates in association with later ceramic attributes indicates that restricted rim bowls continued to be deposited after A.D. 1250.

Effigy bowls, often restricted rim in form appear after A.D. 1250. It should be noted that only the portion of a rim with modeling, node or a rim rider attached can be identified as an effigy, so the distinction between plain restricted rim bowls and effigy restricted rim bowls is not always clear. The radiocarbon dates for stratigraphic contexts with restricted rim bowls and associated artifacts from site in the sample suggest that while restricted orifice bowls were present pre-A.D. 1250, they also continued to be used after A.D. 1300, particularly restricted rim effigy bowls.

6.6f Plates

Castalian Springs and Rutherford Kizer have fairly large samples of plates, while the sample size from Sellars and Beasley is small. Castalian Springs and Beasley have both fine and coarse shell-tempered plates. Rutherford Kizer has only fine shell-tempered plates and Sellars has only coarse shell-tempered plates (Table 5.19). The sample size is too small to make chronological determinations based on these differences in tempering.

Plate Rim Length. In a comparison of all measurable plate rims, the difference in plate rim length between Beasley and the other three sites is very significant. Beasley has, on average, plates with shorter rims (Appendix L.78). As is shown Figure 6.32, the distribution of plate rim lengths from Beasley is distinct from the distribution of plate rim lengths from Sellars and Rutherford Kizer, while the distribution of Castalian Springs plate rim lengths overlaps with all other sites.

As discussed in Chapter 5, plates were divided into three shape classes based on the plate rim lengths and angles and compared with one another within each shape class; short-rim, short standard-rim and long standard-rim plates. There are no measurable plate rim lengths from Sellars or Rutherford Kizer that can be identified as short-rim plate. Sites and stratigraphic contexts with short rim plates include Beasley, Moss, Castalian Springs pre-Mound 2, Feature 134 pit 1, Feature 4, Feature 119 and the top of Mound 3.

The average standard plate rim length for Beasley is the shortest at 30.6 mm, followed by Castalian Springs at 43.8 mm, Rutherford Kizer at 45.0 mm, and Sellars at 46.0 mm. If only the standard rim plate shape class is used as a comparison, the difference between Beasley and Castalian Springs and between Beasley and Rutherford Kizer is very significant (Appendix L.79). While Sellars has the longest average plate rim length, the sample size is small (n=4).

The ratio of plate lip thickness to plate rim length was also examined in an effort to control for the vessel size the assumption being that plate lip thickness will vary with plate size. Beasley plate rims are shorter and thinner than those from the other sites, although the difference is not very significant (Appendix L.80).

Hilgeman (2000:213) has demonstrated that at the Angel site, plate rim lengths increase through time. This also appears to be the case for the Middle Cumberland region. Wesler (2001:99) developed a dating formula using plate rim length and thickness based on the ceramic assemblage from Wickliffe Mounds (15BA4) in Kentucky: A.D. 1175 + (1450-1175)(x/122) where x is the Rim Length. A.D. 1175 is the proposed introduction of these vessels at Wickliffe; A.D. 1450 is the end of occupation in the region. The maximum plate rim length is 122 mm. Like the handle dating formula, the date generated should used with discretion, and an average of multiple rim lengths would be ideal.

Table 6.24 shows the results of the application of this formula to all plate rims measured from the sample sites. For features with more than one measurable rim, the dates were averaged. Those with only one measurable rim are presented with an asterisk. The formula shows the relative chronological position of features correctly, but does not express the temporal spread of the features that is indicated by available radiocarbon dates. Therefore the formula was modified to better reflect the archaeological situation in the Middle Cumberland region. The earliest known short rim plate is from Mound Bottom - O’Brien’s Form 5 of “outleaning wall bowls with flared rim” (1977:360) and dates to approximately A.D. 1100. The end of occupation date of A.D. 1450 is also applicable to the Middle Cumberland region. The maximum plate rim length from the specimens in the study collections is 98 mm, but is an extreme outlier. Therefore, the next longest measured plate rim of 66 mm was used in the formula. The dates resulting from this modification seem to better represent the occupation span of the sample sites (Table 6.24). The dates generated for Castalian Springs Feature 4 are slightly later than expected from the radiocarbon date from this feature, but otherwise the dates are consistent with other radiocarbon dates and associated artifacts.

6.5g Effigy forms

While most of the effigy vessels recorded from the sample sites were recovered from graves during early explorations, several fragments of effigy vessels were recovered from modern excavations in non-grave contexts. No effigy fragments were identified from Beasley or Moss excavations.

Fish Effigy Bowls. One rather crude fish bowl fragment was excavated from Castalian Springs Feature 119. Four fish bowl fragments were excavated from Rutherford Kizer (including one from Feature 20 and one from Feature 587) (Moore and Smith 2001:159). Another fish effigy bowl was obtained from a burial by Curtiss in his 1878 excavation at Rutherford Kizer (Moore and Smith 2009:126). The pooled mean radiocarbon date of Castalian Springs Feature 119 and Rutherford Kizer Feature 20 is cal A.D. 1303 to 1366 (p=0.77) or cal A.D. 1383 to 1406 (p=0.23) at 2 sigma (596±19 BP) and cal A.D. 1337 to 1357 at the most likely 1 sigma (p=0.43). These dates indicate a post-A.D. 1300 date for fish effigy bowls.

Many other fish bowls have been recorded from the Middle Cumberland region. Three were documented in the Peabody collection from at Cain's Chapel (40DV3) (Acc#78-6-14039, 5235, and 14266), including one from Stone Grave 11, which also contained a *var. Matthews* frog effigy jar with strap handles. A fish effigy bowl was recorded from Grave 24 (Acc#27337) at the Brentwood Library site, which also contained a strap handled froglet jar and a notched rim bowl. Two examples were documented in the Peabody collections from Gray's Farm (Acc#

15970 and 15981) including one in association with Cox Mound and Nashville style gorgets. Such associations indicate that fish effigy bowls were mainly deposited between A.D. 1300 and 1400.

Human Rim Rider Bowls. Smith and Trubitt (1998:130) suggest that human effigy rim rider bowls are one of the first types of effigies to appear in the Middle Cumberland region, by A.D. 1250. The presence of human head rim rider bowls at three of the sample sites does not refute this, but does suggest that this effigy form likely remained in use until A.D. 1350.

Three rim riders (two solid and one rattle) and one medallion human head were excavated from Rutherford Kizer (Moore and Smith 2001:156). One of these was excavated from Feature 20, which date to around A.D. 1300 to 1350. One rim rider rattle head was recovered from Castalian Springs Feature 119, which also dates to around A.D. 1300 to 1350 (Figure 5.65). In addition, a rim rider rattle head bowl was recovered from Sellars by a collector.

Medallion head bowls accompanied with notched rim appliqué strips likely occurred post-A.D. 1350. Examples with notched rims have been found from Brentwood Library, and Noel Cemetery (Moore and Smith 2009:220). However, it is unclear whether the example from Rutherford Kizer had the notched rim strip. Two rim sherds with medallion heads from the post-A.D. 1200 site, Gordontown, exhibits a plain rim.

Female Effigy bottles, rattles and figurines. Female effigy bottles and figurines negative painted with a shawl design is a distinctive trait of Middle Cumberland ceramic assemblages. A classic example of a negative painted female figurine/rattle was found at Castalian Springs by Sam Stone Bush (Myer 1924a). A variation on the female effigy bottle was found in the burial Mound at Rutherford Kizer during Curtiss' exploration (Moore and Smith 2009:127). Sharp has examined the stylistic diversity of these negative painted female bottles and figurines in great detail (Sharp 2011). He concludes that some variations may be temporal but much of the variation is due to different artists or workshops.

No female effigy bottles have been recovered from the early Mound Bottom site (Smith 1992:121). The depositional context of a negative painted female vessel excavated from Mound 3 at Castalian Springs has been specifically dated. This context produced a radiocarbon date of cal A.D. 1275 to 1319 (p=0.55) or 1351 to 1390 (p=0.45) at 2 sigma (670±30 BP) and 1282-1303 (p=0.57) at the most likely 1 sigma (Table 4.2). Several burial contexts from the Middle Cumberland site, such as at Averbuch and Traveller's Rest include both female effigy bottles and notched rim bowls. There are also several associations of female effigy bottles and fish effigy bowls, which is likely a post A.D. 1300 effigy form. Therefore, it seems that female effigy bottles appear in the region around AD 1250 and continue to be made after AD 1350.

Smith and Sharp (2013) suggest that around A.D. 1300 to 1350, there is a shift in the use of these bottles from items included in bundles on a community level to use in personal ritual, as the bundles themselves become effigies. After this time, effigies of female effigy bottles (solid figurines in the shape of female effigy bottles) and tiny pendants in the shape of female figures are made as representations of female effigy bottles.

Dog Bottles. Dog bottles have been recovered from the Middle Cumberland region from Noel Cemetery (PM 78-6-10/13998) and Sandbar Village/Widemere site (40DV9/40DV36) (Moore and Smith 2009; Smith and Moore 2012; Thruston 1890 PLIX). Dog bottles are also found in southwestern Georgia, East Tennessee and northeastern Georgia, and into western Tennessee and Arkansas (Dye 2009a). Based on associated artifacts and radiocarbon dates, Dye dates the use of these dog bottles to between A.D. 1250 and 1400, with dog/serpent vessels continuing to be made later in Arkansas (Dye 2009a). Sellars House 13 grave 2, excavated by

Putnam in 1877 contained a carafe neck effigy bottle in the form of a bear or dog. The carafe form of the bottle suggests a post-A.D. 1250 date for the vessel. An outward facing duck effigy bowl and a jar with a peaked rim were also in the grave (Moore and Smith 2009:49). The head from a dog bottle was recovered from Castalian Spring Feature 4, which yielded a radiocarbon date of cal A.D. 1039-1277 (p=1) at 2 sigma (840±70 BP). These lines of evidence confirm a date of A.D. 1250-1400 for dog bottles.

Owls. The one owl bowl rim rider recovered from excavations at the sample sites is from Castalian Springs Feature 119 (Figure 5.60). The pooled mean for the two dates from this feature is cal A.D. 1302 to 1367 (p=0.75) or cal A.D. 1382 to 1407 (p=0.25) at 2 sigma (595±21 BP). An owl effigy rim rider bowl was identified from the Peabody collection from Grave 30 at Gray's Farm in Williamson County (Moore and Smith 2009:375). Grave 30 also contained a female effigy bottle, a human head effigy bowl, a mussel shell effigy bowl as well as a Matthews Incised *var. Matthews* jar with strap handles. This suggests that owl effigy rim rider bowls are deposited between A.D. 1300 and 1450. Moore and Smith suggest that owl rim rider rattles, and rim riders in general were made between A.D. 1200 and 1325, and not deposited after A.D. 1350 (2009:215-216).

An owl effigy hooded bottle was recovered from Rutherford Kizer Grave 14 from Curtis excavations (PM 79-4-10/17247) (Moore and Smith 2009:Figure 158). A jar with strap handles was also found in Grave 14. Moore and Smith suggest a date range of A.D. 1200 to 1325 for manufacture of hooded bottles with owl faces, with deposition through A.D. 1350 (2009:216). Although measurements of the handle on the associated jar are not available, the strap handles suggest a date of at least A.D. 1250 if not later.

Ducks and Crested Birds. One duck effigy bowl was recovered from Putnam's house mound excavations at Sellars (Moore and Smith 2009: 49-50; Figure 42). The head on this bowl faces outward, and is naturalistic in form. As is common in duck effigy bowls, a small lug is located on the bowl rim opposite the duck head. Several rim sherds with this sort of lug were excavated from Rutherford Kizer, in addition to four avian rim rider heads. While some avian rim riders look like easily recognized bird species such as the mallard duck from Sellars, others generally resemble crested birds.

In the Middle Cumberland region it appears that bird rim riders that are less naturalistic and face inward occur earlier than those that are more naturalistically depicted and face outward (Smith and Trubitt 1998:130). While evidence for inward facing bird rim riders is limited, there is substantial evidence to indicate a relatively late Mississippian date for outwardly facing naturalistic duck bowls. An outwardly facing naturalistic duck effigy bowl was recovered from Grave 35 from Gordontown in association with a fish effigy bowl, suggesting a late date for this effigy form (Trubitt 1998:99). An outwardly facing naturalistic duck bowl was recorded from Grave 16 at Gray's Farm in association with carafe neck bottles, also indicating a later Mississippian date (Moore and Smith 2009:111).

The chronological relationship between less naturalistic, inwardly facing bird effigy bowls and outwardly facing naturalistic duck bowls has been identified at Moundville (Steponaitis 1983). Steponaitis also suggests that outward facing less naturalistic forms is the transition between the two. While they do not necessarily occur together in specific contexts, naturalistic outward facing duck bowls seem to be found at sites in the Middle Cumberland that also have late ceramic characteristics such as notched rim bowls, jars with peaked rims, Beckwith Incised jars, strap handles, and fish effigy bowls. This is the case at Arnold (40WM5)

(Broster 1972b:63; Moore and Smith 2009:153), Noel Cemetery (Moore and Smith 2009:83), and Gray's Farm (Moore and Smith 2009:111).

Frog Effigy Bowls. Moore and Smith hypothesize that naturalistic frog bowls appear early (A.D.1200-1350) while more abbreviated forms, with smaller arms and legs and loss of detail appear slightly later (ca. A.D. 1300-1350) (Moore and Smith 2009:217). One example of an abbreviated frog effigy bowl was excavated from a burial at Rutherford Kizer, two from Castalian Springs, and one from Sellars.

Although no diagnostic artifacts were associated with this burial, the later Mississippian date for Rutherford Kizer's occupation also conforms to Moore and Smith's suggested time range for abbreviated frog effigy bowls. The frog effigy bowl from Mound 3 at Castalian Springs is abbreviated, suggesting a post A.D. 1300 date for Mound 3 (Figure 5.63). The radiocarbon dates from Mound 3 also indicate that it was constructed quickly around A.D. 1300. This conforms to Moore and Smith's general dating of abbreviated frog effigy bowls. The frog effigy bowl fragment from Sellars Feature 4 is naturalistic in execution (Figure 5.62). The most likely radiocarbon date range at 1 sigma for Sellars Feature 4, cal A.D 1253 to 1315 (p=0.69), falls comfortably within the suggested date range for naturalistic frog effigy bowls.

Frog Effigy Jars. Frog jars appear later than naturalistic frog bowls around A.D. 1300 to 1450 (Moore and Smith 2009:217). Frog jars have strap or intermediate handle forms and are often incised with *var. Matthews, var. Manly* or especially Beckwith designs. Five out of the eleven gravelots from Moore and Smith's Peabody investigations that have a frog effigy jar and one or more other associated artifacts, also had a notched rim bowl. These lines of evidence strongly place frog jars as markers for post A.D. 1300 to 1350 occupation. Frog effigy jars were not recovered from any site in the sample.

Effigy vessels are mainly a post-A.D. 1250 ceramic characteristic in the Middle Cumberland region. Based on artifact associations, owl effigy bottles, negative painted female effigy bottles, human effigy rim rider bowls and naturalistic frog bowls seem to be some of the earlier effigy vessel forms while fish effigy bowls, naturalistic, outwardly facing duck bowls, and abbreviated frog jars appear slightly later and continue to be deposited through A.D. 1350.

6.7 Other Chronologically Sensitive Attributes

While ceramics are the most chronologically sensitive artifact category, other types of cultural material also have the potential to be chronologically informative. Projectile points were not examined in detail for this study. They do have the potential to be chronologically informative but the date ranges for late prehistoric triangular projectile points as currently known are much longer than is useful for this study. Pipe forms, hypertrophic weaponry forms, gorget styles, and architectural techniques are all chronologically informative for the sample sites.

6.7a Pipes

A variety of pipe forms have been found at Middle Cumberland sites, including elbow, tubular, platform, square and effigy pipes (Smith 1992:175). The most common form in the Middle Cumberland region appears to be elbow, made in both stone and ceramic. The most common type of stone used in this region for pipes is steatite, but other stones were also used (Smith 1992:175). Unfortunately, no chronological sequence of Mississippian pipe forms in the Middle Cumberland has been established for the Middle Cumberland region. Catlinite disc pipes are known to date to the sixteenth century but none have been found in any of the sample sites (Smith 1992: 177, 415).

A distinctive steatite effigy pipe depicting a male holding a jar was recovered during Putnam's excavations at Mound C at Sellars (Acc#77-57-10/11993) (Moore and Smith 2009:48,

Figure 38). This pipe appears to be of nonlocal origin, as the pot that the man is holding has four handles, rather than two handles typical for Middle Cumberland jars (Smith and Miller 2009). Three other nearly identical pipes have been documented in the southeast. One is from Mound C at Etowah in northwest Georgia (9BR1), one is from the Hollywood mound site (9RI1) in northeast Georgia, and a third similar example is from the Bell site (40RE1) in East Tennessee (Brain and Phillips 1996: 254-255; Smith and Miller 2009:162). The stratigraphic context where the pipe was recovered from the Hollywood site has been dated to A.D. 1250 to 1350 (Smith and Miller 2009:162).

6.7b Hypotrophic Weapons

No symbolic weaponry has been recovered from Sellars, Beasley, or Moss Mounds. Moore and Smith note that a Dover crown-form mace was reportedly found at a farm adjacent to the Rutherford Kizer (Moore and Smith 2001:189). A crown form mace is also depicted on the Human Figural gorget found at the base of Mound 1 at Castalian Springs (Dye 2004: Figure 1). Outside the study area but within the Middle Cumberland region, a crown form mace petroglyph is located on the bluff-top overlooking the early Mound Bottom site.

A Dover sword was recovered from Castalian Springs near the top of burial Mound 1 indicating a post-A.D. 1250 date for the deposition of the sword. The stratigraphic context where a Dover sword fragment was excavated from Castalian Springs Mound 3 was dated specifically to provide insight into the deposition dates of Dover swords. This context produced a radiocarbon date of cal A.D. 1298 to 1370 (p=0.71) or cal 1379 to 1413 (p=0.29) at 2 sigma (590±30 BP) or A.D. 1313-1357 at the most likely 1 sigma (p=0.75). Crown form maces and Dover swords appear early in the Mississippian period and continue to be present from approximately A.D. 1200 to 1350 (Smith and Moore 2010).

6.7c Gorgets

Although engraved gorgets are rare artifacts compared to ceramics or projectile points, they have great potential for conveying chronological information because of the amount of elaboration and potential variation in execution. Specific forms are both regionally and temporally specific (Knight 2013:24). Local Middle Cumberland forms include the Cox Mound and Triskele gorgets (Smith and Beahm 2010b, 2011). The Cox Mound gorgets are composed of four crested bird heads equally spaced around a looped square that surrounds an equal armed cross-in-circle within a rayed circle (Figure 6.33) (Lankford 2004). Triskele gorgets all have a central whorl motif, most commonly a three part swirl but occasionally a four part swirl. While there is some variation, the classic form (also called Nashville style by Brain and Phillips 1996:113) is characterized by a center dot in circle within a rotational motif (triskele) inside a plain band surrounded by a pitted band with interspersed circles ("ophidian band"), on a gorget with a scalloped edge (Figure 6.34) (Smith and Beahm 2010).

Eight marine shell gorgets were excavated from Rutherford Kizer by Curtis in 1878. Six of these are Nashville style triskele gorgets; one is a Cox Mound style gorget. One of the gorgets recovered by Curtiss could not be assigned to a style as it is extremely worn. All of these gorgets show significant wear. An additional human figural gorget was recovered from Rutherford Kizer by an artifact collector (Brown 2004: Figure 22). Seventeen marine shell gorgets have been recovered from Castalian Springs. This includes seven Cox style and 8 triskelion gorgets, two crib gorgets, and one Human figural gorget. A single plain shell gorget was excavated from Beasley in 2008. In addition, a Cox style gorget was reportedly found in a stone box grave near Dixon Springs, the small community where Beasley Mounds is located (Beahm and Smith 2012a; Thruston 1890:328). No gorgets have been reported from Sellars or Moss. However, a

Cox style gorget was recovered from the Lover's Leap rockshetler in Smith County, located on the Caney Fork River very close to Moss Mounds (Smith and Beahm 2012b). In addition, two very classic Nashville style triskele gorgets were recovered from Piper's Ford, located across the Cumberland River from Moss Mounds along the Caney Fork River (Brain and Phillips 1996:114; NAA, MS 2570, Myer Notebooks Subject File M-Z notes, MS 2570).

Cox Style. One Cox style gorget was found at Rutherford. The example from Rutherford Kizer was found in burial mound grave along with two Nashville style gorgets (Moore and Smith 2001; 2009). Five of the Cox style gorgets recovered from Castalian Springs were located in Mound 1, which appears to have been constructed between A.D. 1250 and 1325 (Smith and Beahm 2010a, 2010b). Two of these were also in association with trikelion gorgets.

A Cox style gorget was recovered from a burial mound at the Middle Cumberland site Williams Farm (40SW40). The mound appears to have been constructed prior to A.D. 1325 given the presence of loop handled jars, cylindrical neck bottles, and lack of notched rim bowls (Smith and Beahm 2012b; Moore and Smith 2009:142).

Triskeles. The triskele gorgets from Castalian Springs were recovered from all levels in burial Mound 1 while the Cox style examples from Mound 1 were found in the lower two levels of Mound 1. Examinations of radiocarbon dates from sites where triskele gorgets have been recovered suggest that they were being made around A.D. 1200 to 1250, and deposited by around A.D. 1400 in the Nashville area and later in surrounding regions (Smith and Beahm 2010a).

Nashville style gorgets from Middle Tennessee have been found in grave contexts associated with relatively late ceramics attributes including carafe neck bottles, fish effigy bowls, naturalistic outward facing duck effigy bowls and notched rim bowls (Moore and Smith 2009;

Smith and Beahm 2009). This supports the argument that deposition of this style continued after A.D. 1350. Several of the triskele gorgets recovered from Castalian Springs were categorized by Brain and Phillips as Springs Style and are extensively fenestrated while others lack an ophidian band or deviated from the typical ophidian band of the classic Nashville triskelion style. These likely represent precursors to the classic Nashville triskele style such as those found at Bosley Farm or Piper's Ford. Later in time in East Tennessee, the scallops became plain bands (Smith and Beahm 2010a).

Crib. Two Moorehead style crib style gorgets were excavated from Mound 1 at Castalian Springs (Brain and Phillips 1996; Sawyer 2009). Both of these gorgets were found in Mound 1. One was within Burial 60, located in the top four feet of the mound. Sawyer suggests that this gorget style was made around A.D. 1200 and deposited between A.D. 1250 and 1325.

Human Figural. The human figural gorget from Rutherford Kizer is in the Cartersville style, a late Braden design. Late Braden material dates from 1250 to 1400 (Brown 2011:38). Two other known Cartersville style gorgets were found in Mound C at Etowah (Brain and Phillips 1996:50). One was excavated by Rogan in 1884 from Grave f, which King has dated to the Early Wilbanks phase (A.D. 1250-1325) (King 2004; Thomas 1894:303). The second was excavated by Larson in a final mantle burial and is associated with the Late Wilbanks phase (A.D. 1325-1375) (Brain and Phillips 1996:50; King 2004:154; King 2007:126).

The Dancing Warrior or Myer gorget found in Grave 34 at Castalian Springs, is executed in the Classic Braden A style (Dye 2004:Figure 1). The figure is often compared to the image on the Lightner Cup; the resemblance in depiction so similar that many researchers considered them to have been created by the same artist (Phillips and Brown 1978:19-20, Plate 20). Objects created in the Classic Braden style are made by around A.D. 1050, but are more common by

A.D. 1150-1200 (Brown 2011:38; Pauketat 2004). Grave 34, at the base of Mound 1, also contained two Cox style gorgets, two triskelion gorgets along with the Myer gorget.

A bundle found in Burial 122 from the Craig Mound at Spiro shows remarkable similarity to Castalian Spring Grave 34 in content if not exact form. The bundle is comprised of a cane basket and leather fragment, a copper plate depicting a human head with long nose god maskette earrings in Classic Braden style, a copper gorget with a sun symbol and two copper gorgets with four crested birds forming a cross (similar to a Cox style). This bundle produced a radiocarbon date of cal A.D. 1038-1277 (p=1.0) at 2 sigma (850±65 BP) or cal A.D. 1157-1262 (p=0.85) at the most likely 1 sigma (Brown and Rogers 1999; Smith personal communication 2012).

6.7d Architecture

While architectural change through time in the Middle Cumberland region is not the focus of this research, on a large scale, architectural techniques and structural forms change through time. The largely circular structures of the Woodland period are generally replaced by square or rectangular structures during the Mississippian. The two main methods of construction seen in Middle Cumberland architecture is single post and wall trench wall construction.

In East Tennessee, Hiwassee Island domestic structures are largely wall trench while later Dallas and Mouse Creek phase structures are mainly of single post construction (Lewis et al. 1995). At Toqua (40MR6), single set post construction became more common than wall trench architecture around A.D. 1250 to 1300 (Braly et al. 2008:3; Polhemus 1987:230). In the Norris Basin, Webb distinguished between earlier small log and latter large log construction. This distinction reflects the smaller posts used in wall trenches versus single set posts (Webb 1938).

Both wall trench and single set post structures were recorded from Rutherford Kizer and Sellars. Some possible single post structures were excavated at Castalian Springs. From the small scale excavations at Beasley, only evidence of wall trench architecture was documented, and from Moss only evidence of single set posts were identified.

No stratigraphic relationship between wall trench and single set post structures was observed at Rutherford Kizer. However, the single set post palisade line does appear to pre-date the wall trench palisade line at the site. At Sellars, wall trench Structure 3 is directly below single post Structure 4. A hearth from wall trench Structure 3 produced a radiocarbon date around A.D. 1270.

At Castalian Springs, structures are mainly constructed with wall trenches. One possible section of a single post structure was excavated in 2009. A post from this structure yielded a calibrated radiocarbon date of cal A.D. 1317-1354 (p=0.30) or cal A.D. 1389 to 1437 (p=0.70) (540±30 BP) (2 sigma). A line of single set posts were excavated in Mound 2 as well. As these posts were angled outward, they may have been part of a screen or light palisade enclosing the mound summit rather than a structure. A post from this line dates to around A.D. 1225. Several sets of single posts were also excavated from central construction stages of Mound 3. However, the last structures built on Mound 3 were of wall trench construction. This does not support the conclusion that wall trench architecture was replaced by single post architecture at the site. Single post architecture appears later at the site, but wall trench architecture continued to be used.

Two possible wall trenches in different locations were excavated from Beasley Mounds, both under midden deposits. The midden above these possible wall trenches likely dates around A.D. 1275 to 1300. From Moss, the single posts excavated from a 2 by 2 m unit did not produce a clear pattern, and may not be part of a structure. Few artifacts were recovered in this unit make dating the postholes difficult. A handle fragment recovered from a large postmold suggests an early, pre-1200 date.

In the Middle Cumberland region west of Castalian Springs, architectural forms in the very Early Mississippian included single post structures with rounded corners (Moore and Smith 1993; Norton and Broster 2004; Spears et al. 2008). Square wall trench structures appear at least by A.D. 1200 if not earlier and single post square structures appear again somewhat later around A.D. 1300. All of the structures at the relatively late Middle Cumberland Brentwood Library site were constructed with single set posts. Late ceramics recovered at the site include *var. Matthews*, *var. Manly* and especially Beckwith Incised jars, fish effigy bowls and frog effigy jars as well as a large number of notched rim bowls (Moore and Smith 2005). Three radiocarbon dates from structures at Brentwood Library produced a pooled mean of cal A.D. 1311 to 1359 (p=0.43) or cal A.D. 1387 to 1433 (p=0.57) (at 2 sigma) (551±30 BP) (Moore 2005b). Two single post structures from Gordontown produced a pooled mean of cal. A.D. 1297 to 1373 (0.60) or cal A.D. 1377 to 1430 (0.40) (at 2 sigma) (Moore 1998). Strap handled jars, Beckwith Incised jars and notched rim bowls recovered at the site also support a post A.D. 1300 date for these single set post structures.

While it may reflect the general trend in architecture through time, a progression from single post to wall trench to single post structures is too simplistic. Variation in construction methods can be seen in the post size, post spacing, trench width, post placement within trench, the presence of wedges in trench, open or closed corners of structures, rounded corners of structures and wall length of structures. Size and construction methods of structures likely varied based not only on convention through time, but also environment, structure function, social organization, household size and availability of resources (Steere 2011).

6.8 Middle Cumberland Phases

Researchers have lamented the prevalence of plain ceramics at Middle Cumberland sites, and the lack of chronological control because of the scarcity of chronologically sensitive decorated pottery. In this chapter, ceramic shape attributes were analyzed in depth in attempt to make the plain pottery useful in dating Mississippian sites. The chronology developed by Smith and Moore for the Middle Cumberland over the past twenty years remains the foundation for the ceramic sequence arrived at here (Table 6.25).

An archaeological phase is defined as "an archaeological unit possessing traits sufficiently characteristic to distinguish it from all other units similarly conceived" that is restricted spatially and temporally (Willey and Phillips (2001 [1958]:22). Due to the differences in ceramic assemblages from Beasley/Moss and the Middle Cumberland region (discussed in more detail in Chapter 8), it would not be appropriate to assign Middle Cumberland phases to the Beasley and Moss site occupations. The main ceramic difference between the Middle Cumberland and Beasley/Moss is the relatively high percentage of shell-tempered cordmarked and shell-tempered check-stamped pottery found at the later two sites. In spite of these assemblage differences, there are some shared chronologically sensitive ceramic attributes including handle forms, plate rim length and bottle forms. To make comparison between all five sample sites clear, Middle Cumberland phases will be referenced when discussing Beasley and Moss occupation dates in the following chapters. A unique phase designation for Beasley and Moss may be assigned at a future time.

A schematic representation of the ceramic chronology proposed here is presented in Figure 6.35. This chronology is based on the seriation results, other artifact associations, stratigraphy, chronologies of adjacent regions and radiocarbon dates. The most chronologically sensitive ceramic attributes are temper type, handle forms, plate rim length and notched rim bowls. Incising and negative painting decorative treatments, as well as modeled effigies are also important chronological indicators. The presence of different shape classes such as cylindrical neck and carafe neck bottles do seem to vary over time but it is not always possible to identify these forms from collections of fragmentary sherds. Vessel shape attributes such as angle of the jar neck and peaked rims on jars are also chronologically significant. While lug handle dimensions and jar neck length had the potential to be useful in this regard, the chronological significance of variation in these attributes could not be determined from comparison of available collections. The composition of fabric structures from impressions on fabric impressed pans is a potentially useful chronological technique, but would require large samples for comparison.

The following is a revised description of Middle Cumberland Mississippian phases based on the above ceramic analysis. The Spencer phase remains incompletely understood. The Dowd phase is described in detail with the addition of plate rim lengths, handle modifications and jar rim angles. As a revision to the traditional Middle Cumberland ceramic chronology, the Thruston phase is divided into Early Thruston and Late Thruston. All sites in the sample appear to have had at least some pre-Mississippian occupation. While Woodland period ceramics were briefly discussed above, the small samples are not robust or discrete enough to revise the Middle Cumberland Woodland ceramic chronology.

Pre-Mississippian Woodland Components. There is a small percentage of non-shell-tempered ceramics from all sites in the sample, including limestone, quartz, sand/grit, and grog. Some sand/grit-tempered sherds have the potential to date to the later Mississippian period (ca. A.D. 1300-1450), and some limestone-tempered sherds, especially those with Mississippian vessel shape attributes date to the earliest Mississippian component, but in general the non-shell-tempered ceramics from these sites are interpreted as evidence for a pre-Mississippian occupation.

Spencer Phase (A.D. 900-1100). Proposed Spencer phase traits are based on characteristics from the Spencer and Sogom sites, Feature 4 from Sandbar Village (40DV36). Features 7 and 12 from Sellars may also date to the Spencer phase. This is only a tentative assignment due to the lack of stratigraphic evidence and only a single radiocarbon date from Feature 7 to support this early date. Limestone-tempered sherds with Mississippian vessel shape attributes and mixed shell-and-limestone-tempered sherds in unit/level and some feature contexts at Castalian Springs, and Sellars is interpreted as evidence of a disturbed Spencer phase occupation at these sites. There is evidence of occupation during this time at Beasley as well. Because only a small number of sites and features represent the Spencer phase, conclusions presented here should be considered preliminary.

Terminal Woodland and Emergent Mississippian traits from surrounding regions were explored to further define Spencer phase traits. Perhaps reflecting different reactions to and different adoption rates of new ceramic manufacturing techniques, there is variety in ceramic assemblages during this time (Table 6.26). As noted above, researchers often do not separate mixed shell-tempered sherds from Mississippi Plain sherds because the non shell material is considered to be natural inclusion in the clay rather than intentionally added (Norton and Broster 2004; Spears et al. 2008).

Spencer phase ceramic types include Mississippi Plain, Bell Plain, McKee Island Cordmarked, Kimmswick Fabric Impressed, and as well as mixed shell-and-limestone-tempered sherds (Walling et al. 2000:52). Mississippian vessel forms tempered with limestone also appear to be a Spencer phase trait. Since it is not always possible to determine vessel form from small body sherds, a small frequency of limestone-tempered body sherds might be expected in Spencer phase components. McKee Island Cordmarked sherds are present at Spencer phase sites at a frequency of greater than 2 percent. Handles are rare during this phase. When they do occur, handles are either plain loop or lug forms. Vessel forms include jars, pans, standard and outslanting wall bowls. Jar rim angles include direct, excurvate and incurvate (Spears et al. 2008:11). Modeled effigy vessels are not present in ceramic assemblages from this time. Non-ceramic Spencer phase characteristics include single post architecture and an apparent lack of stone box graves (Norton and Broster 2004; Spears et al. 2008; Walling et al. 2000).

The Callender Court site (40SU251) produced radiocarbon dates that indicate it dates to the late 10th and early 11th centuries. This site has an anomalous ceramic assemblage that does not include any shell-tempered sherds and is largely limestone and mixed limestone and grog or grit (Weaver et al. 2011:199). The majority of sherds from this site are cordmarked and many appear to be red filmed. Jars, outslanting wall bowls, and restricted rim bowls were identified at the site. No handles were recovered. Three radiocarbon dates from feature contexts with this component produce a pooled mean of cal A.D. 988 to 1026 (1023±17 BP) at 2 sigma (Weaver et al. 2011:186). Weaver et al. suggest that this site represents a small Terminal Woodland/ Emergent Mississippian population entering the region from the west (2011:220). Therefore although this site is located less than 2 km from Rutherford Kizer, it is not considered representative of Spencer phase sites for the general region.

*Dowd Phase (A.D. 1100-1250).*The Dowd phase is better represented in the Middle Cumberland region than the previous Spencer phase. The Dowd phase is represented in part of the Castalian Springs and Sellars occupation. Other sites in the Middle Cumberland region that date to the Dowd phase include Brandywine Pointe, Mound Bottom, French Lick, and Brick Church Business Park.

Contexts from the sample sites from Dowd phase include a pre-Mound 2 midden deposit, Feature 93, and Structure 1 at Castalian Springs, and the bottom tier of the burial mound at Sellars. Beasley and Moss were also occupied during the end of this phase. However, regional differences in the frequency of McKee Island Cordmarked and Wolf Creek Check-Stamped in their ceramic assemblages make them non-representative of the Dowd phase.

Ceramic traits present at Dowd phase components of Mississippian Middle Cumberland sites include loop and narrow intermediate handles, often with double horns and central grooves, riveted at the lower attachments. Elbow shaped handles date to this time, but are rare. Short rimmed plates, cylindrical neck and hooded bottles and jars with direct, excurvate, and incurvate rims are present in these early assemblages. Shell-tempered cordmarked jars are present in Dowd phase ceramic assemblages at lower frequencies than the Spencer phase, generally less than 1 percent of the ceramic assemblage. Incurvate rim bowls, especially those with paired suspension holes, and outslanting wall bowls are made during this time. Incised jars are rare, but becoming gradually more frequent after A.D. 1200. Shell gorgets and other medium in the Classic Braden style date to the late part of the Dowd phase between A.D. 1200 and A.D. 1250. Wall trench architecture is most common during this phase.

Early Thruston Phase (A.D. 1250-1350). Most of the Castalian Springs occupation and the construction of Mound 2, Mound 3 and the circular structure took place during the Early Thruston phase. Beasley and Moss were occupied at the beginning of this phase as well. There is some evidence for an Early Thruston phase occupation at Sellars, although many diagnostic ceramics are from non-feature contexts, so distinguishing between Late Dowd and Early Thruston phase contexts can be difficult.

Incising on jars continues to increase during the Early Thruston phase. Matthews Incised *var. Matthews* becomes more common, although remains less than one percent of Early Thruston assemblages. Subvarieties A, B and C are present throughout this range. *Var. Manly* jars appear around A.D. 1300 and continue at least through A.D. 1350. Nashville Negative painted bottles and Angel Negative Painted plates are rare (generally less than one percent of the total ceramic assemblage), but appear during the Early Thruston phase.

Carafe neck bottles appear during the Early Thruston phase. Jars with peaked rims, and fish effigy bowls are post-A.D. 1300 characteristics. Abbreviated frog effigy bowls are also most common post A.D. 1300. Wide intermediate and strap handles are made during this time. Plain pans, become more common during the Early Thruston phase, but still remain less common than fabric impressed pans. Wall trench architecture is most common during this phase, although single post architecture may also be present.

Late Thruston Phase (A.D. 1350-1450). Of the sites in the sample, Late Thruston phase ceramic traits are mainly present at Rutherford Kizer and late Sellars contexts. Other sites in the Middle Cumberland region with Late Thruston phase components include Brentwood Library, Averbuch, East Nashville Mounds, and Gordontown.

A limitation to this distinction between Early and Late Thruston phases is that most Early Thruston phase presence/absence attributes such as peaked rim jars, carafe neck bottles, and *var. Matthews* and *var. Manly* jars are also present in Late Thruston phase assemblages. Additional ceramic traits are present in Late Thruston phase assemblages such as notched rim bowls, incised bottles and other effigy forms like duck bowls. Beckwith incised jars are most common during the Late Thruston phase. In addition, the trend of an increase in Bell Plain frequency continues in the Late Thruston phase

Incised bottles and effigy vessels are not commonly excavated artifacts, particularly in non-grave contexts. Therefore the lack of these Late Thruston phase attributes in a small assemblage does not positively indicate that particular context dates to the Early Thruston phase. Notched rim bowls, however, are well represented in Late Thruston phase assemblages. They range from 16 percent of bowl rims from Rutherford Kizer to 75 percent of bowl rims from the Brentwood Library site (Moore 2005) west of the sample, and occur in both grave and non-grave contexts. Therefore you would expect to see notched rim bowl sherds in a decent sized Late Thruston phase assemblage. Measured attributes such as handle dimension and plate rim length do differ between these two phases so they are also particularly helpful in making the distinction between Early and Late Thruston phases.

6.9 Summary

Ceramic assemblages from Rutherford Kizer, Castalian Springs, Sellars, Beasley and Moss were analyzed in detail to identify as many chronologically sensitive ceramic attributes as possible and to improve the existing Middle Cumberland ceramic chronology. A seriation of twenty-five presence/absence ceramic attributes from fifty-one contexts was conducted. A less formal comparison of artifact associations was also carried out using the sample site ceramic assemblages as well as other published information on Middle Cumberland sites. Measured attributes such as jar and plate rim length and ratios of rim length to thickness were compared between sites and specific features. Comparison was done using the Mann-Whitney significance test to detect potentially chronologically significant vessel shape attributes. Site and features were also ordered by average measurement value to evaluate the chronological significance of each measured attribute. Radiocarbon dates from the sample sites as well as from features containing relevant ceramic attributes from other Middle Cumberland sites were used to determine absolute dates for ceramic attributes.

Four ceramic phases were defined based on this ceramic analysis. The sample site assemblages provide additional support for the Spencer phase (A.D. 900-1100). The Dowd phase (A.D. 1100-1250) ceramic attributes are present in the sample assemblages as well. The Thruston phase was divided into Early Thruston (A.D. 1250-1350) and Late Thruston (A.D. 1350-1450) phases.

Table 6.1: Ceramic Totals by Sites and Features in Sample.

Site	Context	Total Sherds	Total Rims	Total with Surface Treatment
Rutherford Kizer		9770	682	510
	Feature 20	613	0	74
	Feature 36	1149	0	76
	Feature 40	2	0	0
	Feature 89	45	0	7
	Feature 101	1511	5	46
	Feature 110	20	3	0
	Feature 194	121	13	6
	Feature 359	118	8	6
	Feature 361	23	4	3
	Feature 392	53	2	2
	Feature 425	8	2	3
	Feature 500	6	0	2
	Feature 587	14	1	2
	Feature 588	34	2	8
	Feature 695	19	2	0
	Feature 799	1	0	1
	Feature 863	12	0	2
	Feature 868	3	0	0
	Feature 880	289	0	13
	Burial 14	155	2	1
	Burial 80	2	2	1
	Burial 85	1	1	1
Castalian Springs		33679	2370	1200
	Feature 4	1886	219	152
	Feature 16	533	36	9
	Feature 51	274	16	6
	Feature 53/91	448	58	24
	Feature 92	24	3	0
	Feature 93	58	8	4
	Feature 94	16	3	2
	Feature 100	374	18	28
	Feature 106	677	33	26
	Feature 119	7183	396	326
	E752lvl 4&5	363	44	40
	Feature 134	1150	85	58
	Feature 138	30	0	1
	Md2 lvl 14	89	9	2
	Base of Md3	583	40	42
	Feature 305	52	5	9
	Feature 335	64	1	2
	Feature 351	43	4	3
	Feature 360	160	5	7
	Feature 377	30	4	1
	Structure A Md3	629	44	49
	Top of Md 3	744	41	36

Table 6.1 cont.

Site	Context	Total Sherds	Total Rims	Total with Surface Treatment
Sellars		3923	385	167
	Feature 4	599	80	67
	Feature 5	3	1	0
	Feature 6	132	12	3
	Feature 7	100	13	2
	Feature 33	72	13	24
	Feature 40	15	5	1
	Feature 50	76	3	0
	Postmold 4	1	1	0
Beasley		1017	60	225
Moss		306	13	41

Table 6.2: Significance Levels (adapted from Drennan 1996:Table 11.3).

Significance	Difference due to chance	Significance terminology
p= 0.001-	Extremely unlikely	Extremely significant
p=0.01-0.04	Very unlikely	Very significant
p=0.05-0.09	Fairly unlikely	Fairly significant
p=0.10-0.19	Not very likely	Small amount of significance
p=0.20-	Fairly to very likely	Not very significant

Table 6.3: Seriation Results (RK=Rutherford Kizer, CS=Castalian Springs, S=Sellars, BMP=Beasley, MMAP=Moss, F=Feature, B= Burial, G=Grave).

	Mixed Shell Temper	Loop	Excurvate Jar	McKee Island CM	Short Rim Plate	NI Handle	WI Handle	Neg Painted Plate	Short Standard plate	Coarse Hooded	Fine Hooded	Long Standard plate	Strap Handle	var Matt	Frog effigy	Dog Effigy	var Man	Owl effigy	Neg Painted Bottle	Fish effigy	Peaked Jar	Notched rim bowl	Duck effigy
pre Md2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CS preF134	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CSF51	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CSF93	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MMAP	0	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CSF91	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SF7	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CSF351	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BMP	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CSF134 pit1	0	0	0	0	1	1	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
CSF134 pit 2	0	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
CSF134 pit 3	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SF40	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
CS Md 3 base	1	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
SF4	0	1	1	1	0	0	0	0	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0
CS752	1	0	1	0	0	1	1	1	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0
CSF92	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
SF5	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CSF4	0	1	1	1	1	0	1	0	1	0	1	1	1	1	0	1	0	0	0	0	0	0	0
CSSt1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CSF106	1	0	0	1	0	1	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0
CSF16	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
CSF100	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
CSF119	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	0	0
SF33	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0

Table 6.3 (cont)

	Mixed Shell Temper	Loop	Excurvate Jar	McKee Island CM	Short Rim Plate	NI Handle	WI Handle	Neg Painted Plate	Short Standard plate	Coarse Hooded	Fine Hooded	Long Standard plate	Strap Handle	var Matt	Frog effigy	Dog Effigy	var Man	Owl effigy	Neg Painted Bottle	Fish effigy	Peaked Jar	Notched rim bowl	Duck effigy
SF6	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Top Md3	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0
RKF868	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
RKF695	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
RKF588	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
RKF425	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
RKB14	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
RKF392	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
RKF500	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
RKF799	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
RKF36	0	0	1	0	0	0	0	0	1	0	0	1	1	1	0	0	1	1	1	1	0	0	1
RKB80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
RKF194	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
CSF335	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0
RKF359	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
RKF101	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	1	1
RKF20	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
RKG14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
RKF880	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0
RKF587	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
SHouse13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1
Spost structure	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
RKF110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
RKF863	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
RKB85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

Table 6.4: Mississippi Plain vs. Bell Plain (percentage based on only shell-tempered plain) ceramics).

Site	Mississippi Plain	Bell Plain	Total Shell Tempered Plain
Rutherford Kizer	7326 (80.0%)	1835 (20.0%)	9161
Castalian Springs All	27440 (89.1%)	3361 (10.9%)	30801
Castalian Springs Early	396 (95.2%)	20 (4.8%)	416
Sellars	3150 (94.7%)	175 (5.3%)	3325
Beasley	662 (94.3%)	40 (5.7%)	702
Moss	214 (87.3%)	31 (12.7%)	245

Table 6.5: Ceramic Temper by Site (percentage of total ceramic types).

Site	Shell Temper	Limestone & Shell	Limestone Tempered	Other Temper	Total
Rutherford Kizer	9706 (99.3%)		22 (0.2%)	42 (0.4%)	9770
Castalian Springs All	32131 (95.4%)	268 (0.8%)	1009 (3.0%)	271 (0.8%)	33679
Castalian Springs Early	425 (90.0%)	28 (5.9%)	20 (4.2%)		473
Sellars	3472 (88.5%)	279 (7.1%)	93 (2.4%)	80 (2.0%)	3924
Beasley	964 (94.8%)	14 (1.4%)	16 (1.6%)	23 (2.3%)	1017
Moss	302 (98.7%)		1 (0.3%)	3 (1.0%)	306

Table 6.6: Limestone, Mixed Shell, and Quartz-Tempered Ceramics (only showing those features with greater than 1 percent of sherds with tempering listed).

Site	Context	LT Plain	LT cordmarked	LT and Shell Tempered	Quartz Temper	Total
Rutherford Kizer			20 (0.2%)		13 (0.1%)	9770
	Feature 12		10 (90.9%)			11
	Feature 14		3 (1.3%)			234
	Feature 16		2 (12.5%)			16
	Feature 17		1 (100.0%)			1
	Feature 89		4 (8.9%)			45
	Feature 739				11 (100.0%)	11
Castalian Springs		464 (1.4%)	544 (1.6%)	268 (0.8%)	55 (0.2%)	33679
	Structure 1	19 (2.5%)	24 (3.2%)			759
	Structure 3	2 (4.2%)	3 (6.3%)			48
	Structure 4		6 (18.2%)			33
	Structure 5	3 (4.8%)	2 (3.2%)			62
	Pre Mound 2	1 (1.1%)	1 (1.1%)	19 (21.3%)		89
	Mound 3	9 (2.8%)	11 (3.5%)		1 (0.3%)	316
	Mound 3 base	5 (9.6%)	7 (13.5%)	4 (7.7%)		52
	Md 3 top structure	7 (17.1%)	1 (2.4%)			41
	CS F44	1 (3.1%)	1 (3.1%)			32
	CS F51	3 (1.1%)	3 (1.1%)	5 (1.8%)		274
	CS F100	10 (2.7%)	19 (5.1%)	3 (0.8%)	1 (0.3%)	374
	CS F106	6 (0.9%)	15 (2.2%)	1 (0.1%)	1 (0.1%)	677
	CS F119	40 (0.6%)	109 (1.5%)		7 (0.1%)	7183
	CS F133				2 (11.1%)	18
	CS F155		1 (5.6%)			18
	CS F320	4 (1.6%)	11 (4.4%)			251
	CS F312		1 (11.1%)			9
Sellars		90 (2.3%)	3 (0.1%)	279 (7.1%)	7 (0.2%)	3923
	Feature 6	3 (2.3%)		5 (3.8%)		132
	Feature 7 (81)	6 (6.0%)		15 (15.0%)		100
	Feature 8	1 (5.9%)	1 (5.9%)			17
	Feature 12 (81)	14 (7.9%)		95 (53.4%)		178
	Feature 33	5 (5.2%)				97
	Feature 40	1 (6.7%)		1 (6.7%)		15
	Feature 45	4 (19.0%)		1 (4.8%)		21
	Feature 50	4 (5.3%)				76
Beasley		13 (1.3%)	3 (0.3%)	14 (1.4%)	1 (0.1%)	1017
Moss		1 (0.3%)				306

Table 6.7: Other Tempered Ceramics

Site	Feature	Quartz	Grog	Shell/Grog	Sand/Grit	Total
Rutherford Kizer		13 (0.1%)			25 (0.3%)	9770
	Feature 36	1 (0.01%)			2 (0.2%)	1149
	Feature 739	11 (100%)				11
	Feature 740				6 (85.7%)	7
Castalian Springs		55 (0.2%)		49 (0.1%)	2 (0.0%)	33679
	Feature 4			1 (0.1%)	6 (0.3%)	1888
	Feature 9				3 (2.4%)	125
	Feature 16				2 (0.4%)	484
	Feature 17				1 (4.2%)	24
	Feature 36			4 (5.6%)		72
	Feature 113	1 (33.3%)				3
	Feature 119	7 (0.1%)	1 (0.0%)	8 (0.1%)	16 (0.2%)	7183
	Feature 362	1 (100%)				1
Sellars		7 (0.2%)		6 (0.2%)	3 (0.1%)	3923
	Feature 8		1 (5.9%)			17
	Feature 33		2 (2.1%)			97
	Feature 5	1 (25.0%)				4
Beasley		1 (0.1%)			4 (0.4%)	1017
Moss				3 (1.0%)		306

Table 6.8: Quartz-Tempered Ceramics by Surface Treatment.

Site	Feature	Plain	Cordmarked	Total
Rutherford Kizer		2	11	13
	Feature 36	1		
	Feature 739		11	
Castalian Springs		45	10	55
	Feature 113		1	
	Feature 119	7		
	Feature 362	1		
Sellars		7		7
	Feature 5	1		4
Beasley		1		1

Table 6.9: McKee Island Cordmarked Ceramics.

Site	Feature	McKee Island Cordmarked Sherds	Total Sherds
Rutherford Kizer		6 (<0.1%)	9770
	Feature 101	2 (0.1%)	1511
Castalian Springs		19 (<0.1%)	33679
	Feature 4	1 (<0.1%)	1888
	Feature 31	1 (1.5%)	68
	Feature 106	1 (0.1%)	676
	Feature 119	2 (<0.1%)	7183
Sellars		36 (0.9%)	3923
	Feature 4	3 (0.5%)	599
	Feature 6	1 (0.7%)	135
	Feature 12	1 (5.6%)	18
	Feature 33	19 (19.6%)	97
Beasley		85 (8.4%)	1017
Moss		17 (5.6%)	306

Table 6.10: Percentage Kimmswick Fabric Impressed Ceramics (body and rim sherds).

Site	Kimmswick Fabric Impressed	Total Sherds
Rutherford Kizer	309 (3.1%)	9970
Castalian Springs	1133 (3.4%)	33679
Castalian Springs Early	9 (1.9%)	473
Sellars	68 (1.7%)	3923
Beasley	19 (1.9%)	1017

Table 6.11: Pan Rims Surface Treatment by Site.

Site	Fabric Impressed	Plain	Total Identified Surface Treatment Pan Rims
Rutherford Kizer	83 (93.3%)	6 (6.7%)	89
Castalian Springs	117 (90.7%)	12 (9.3%)	129
Castalian Springs Early	3 (75.0%)	1 (25.0%)	4
Sellars	8 (53.3%)	7 (46.7%)	15
Beasley	2 (66.7%)	1 (33.3%)	3

Table 6.12: Subvarieties of Matthews Incised, *var.Matthews* by Site.

Site	Subvariety A	Subvariety B	Subvariety C	Total
Rutherford Kizer	Undetermined	3 (5.9%)	Undetermined	51
Castalian Springs	13 (46.4%)	7 (25.0%)	8 (28.6%)	28
Sellars	5 (71.4%)		2 (28.6%)	7

Table 6.13: Radiocarbon Dates of Contexts with Incised Jars.

Variety	sub-variety	Site	Context	Sample ID	Date B.P.	Calibrated Ranges from Probability Distribution (1 sigma)	Calibrated Ranges from Probability Distribution (2 sigma)	Source
Matthews	A	40DV4	Feature 57	Beta-61250	640±70	1285-1326 (0.44) and 1343-1394 (0.55)	A.D. 1262-1424 (1.0)	Walling 2000:485
Matthews	A	40DV4	Feature 57	Tx-7866	910±140	1018-1256 (1.0)	782-789 (0.00), 811-846 (0.01), 856-1310 (0.97), 1360-1386 (0.01)	Walling 2000:485
Matthews	A	40SU14	Feature 119	Beta 322132	640±30	1292-1314 (0.40) and 1356-1388 (0.60)	1283-1329 (0.43) and 1340-1396 (0.57)	
Matthews	A	40SU14	Feature 119	Beta 322130	550±30	1326-1343 (0.35) and 1394-1420 (0.65)	1312-1358 (0.42) and 1387-1433 (0.58)	
Matthews	A	40WI01	Feature 4	UGA945	705±65	1253-1315 (0.69) and 1355-1388 (0.31)	1212-1404 (1.0)	Butler 1981:54; Smith 2002:23
Matthews	B	40DV301	Structure 1	TX-7001	830±80	1054-1077 (0.12) and 1154-1273 (0.88)	1030-1285 (1.0)	Smith et al. 1993:103, 106
Matthews	B	40SU14	Md3 top	Beta 322133	670±30	1282-1303 (0.57) and 1365-1383 (0.43)	1275-1319 (0.55) and 1351-1390 (0.45)	
Matthews	B	40SU14	Feature 106	Beta 322135	670±30	1282-1303 (0.57) and 1365-1383 (0.43)	1275-1319 (0.55) and 1351-1390 (0.45)	
Matthews	B	40SU14	Feature 119	Beta 322132	640±30	1292-1314 (0.40) and 1356-1388 (0.60)	1283-1329 (0.43) and 1340-1396 (0.57)	
Matthews	B	40SU14	Feature 119	Beta 322130	550±30	1326-1343 (0.35) and 1394-1420 (0.65)	1312-1358 (0.42) and 1387-1433 (0.58)	
Matthews	B	40SU15	Feature 101	Beta-70873	580±50	1309-1360 (0.67) and 1386-1412 (0.33)	1294-1426 (1.0)	Moore 2001:74
Matthews	B	40SU15	Feature 101	Beta-70872	500±50	1334-1336 (0.01) and 1398-1448 (0.99)	1307-1362 (0.18) and 1385-1475 (0.82)	Moore 2001:74
Matthews	C	40DV4	Feature 24	Beta-61244	550±50	1319-1351 (0.45) and 1390-1428 (0.55)	1299-1370 (0.49) and 1380-1441 (0.51)	Walling 2000:484
Matthews	C	40DV4	Feature 11	Beta-61242	750±70	1210-1299 (0.94) and 1370-1380 (0.05)	1054-1078 (0.02), 1153-1328 (0.87), and 1341-1395 (0.12)	Walling 2000:484

Table 6.13 cont.

Variety	sub-variety	Site	Context	Sample ID	Date B.P.	Calibrated Ranges from Probability Distribution (1 sigma)	Calibrated Ranges from Probability Distribution (2 sigma)	Source
Matthews	C	40DV4	Feature 11	TX-7855	670±60	1275-1318 (0.54) and 1352-1390 (0.46)	1252-1411 (1.0)	Walling 2000:484
Matthews	C	40SU14	Feature 100	Beta 322129	590±30	1313-1357 (0.75) and 1388-1403 (0.25)	1298-1370 (0.71) and 1379-1413 (0.29)	
Matthews	C	40WI01	Feature 6	UGA947	975±235	784-787 (0.01), 825-841 (0.03), and 862-1269 (0.97)		Butler 1981:54; Smith 2002:23
Matthews		40SU15	Feature 36	Beta-70877	630±50	1292-1323 (0.40), 1346-1393 (0.60)	1281-1407 (1.0)	Moore 2001:74
Matthews		40SU15	Feature 20	Beta-70874	630±60	1291-1325 (0.41) and 1344-1394 (0.59)	1276-1415 (1.0)	Moore 2001:74
Matthews		40SU15	Feature 20	Beta-70875	580±50	1309-1360 (0.67) and 1386-1412 (0.33)	1294-1426 (1.0)	Moore 2001:74
Manly		40SU14	Feature 119	Beta 322132	640±30	1292-1314 (0.40) and 1356-1388 (0.60)	1283-1329 (0.43) and 1340-1396 (0.57)	
Manly		40SU14	Feature 119	Beta 322130	550±30	1326-1343 (0.35) and 1394-1420 (0.65)	1312-1358 (0.42) and 1387-1433 (0.58)	
Manly		40SU15	Feature 36	Beta-70877	630±50	1292-1323 (0.40) and 1346-1393 (0.60)	1281-1407 (1.0)	Moore 2001:74
Manly		40SU15	Feature 101	Beta-70873	580±50	1309-1360 (0.67) and 1386-1412 (0.33)	1294-1426 (1.0)	Moore 2001:74
Manly		40SU15	Feature 101	Beta-70872	550±50	1334-1336 (0.01) and 1398-1448 (0.99)	1307-1362 (0.18) and 1385-1475 (0.82)	Moore 2001:74
Beckwith		40DV4	Feature 11	Beta-61242	750±70	1210-1299 (0.94) and 1370-1380 (0.06)	1054-1078 (0.02), 1153-1328 (0.87) and 1341-1395 (0.12)	Walling et al. 2000
Beckwith		40DV4	Feature 11	TX-7855	670±60	1275-1318 (0.54) and 1352-1390 (0.46)	1252-1411 (1.0)	Walling et al. 2000

Table 6.13 cont.

Variety	sub-variety	Site	Context	Sample ID	Date B.P.	Calibrated Ranges from Probability Distribution (1 sigma)	Calibrated Ranges from Probability Distribution (2 sigma)	Source
Beckwith		40DV6	Feature 23		640±70	1285-1326 (0.44) and 1343-1394 (0.56)	1262-1424 (1.0)	Moore 1998:37
Beckwith		40DV6	Feature 25		520±60	1323-1347 (0.25) and 1392-1443 (0.75)	1297-1466 (1.0)	Moore 1998:37
Beckwith		40SU14	Feature 119	Beta 322132	640±30	1292-1314 (0.40) and 1356-1388 (0.60)	1283-1329 (0.43) and 1340-1396 (0.57)	
Beckwith		40SU14	Feature 119	Beta 322130	550±30	1326-1343 (0.35) and 1394-1420 (0.65)	1312-1358 (0.42) and 1387-1433 (0.58)	
Beckwith		40DV301	Feature 1		760±70	1187-1199 (0.06) and 1206-1295 (0.94)	1050-1083 (0.03), 1125-1136 (0.01), 1151-1322 (0.88), and 1347-1392 (0.08)	Smith 1993, 2002:23

Table 6.14: Radiocarbon Dates of Contexts with Negative Painted Plates.

Site	Name	Context	Date B.P.	Sample ID	Source
40SU14	Castalian Springs	N1100E982 Level 7	745±70	UTCAG 08-022 V1	
40SU14	Castalian Springs	Feature 100	590±30	UTCAG 08-021 V2	
40SU14	Castalian Springs	Feature 119	550±30	Beta 322130	
40SU14	Castalian Springs	Feature 119	640±30	Beta 322132	
40SU14	Castalian Springs	N1167E792 Level 3	770±30	Beta 322136	
40WI1	Sellars	Structure 3	730±80	UGA4552	Smith 2002:23

Table 6.15: Radiocarbon Dates of Contexts with Noel Notched Rim Bowls.

Site	Name	Context	Date B.P.	Sample ID	Source
40V6	Gordontown	Feature 23 (Structure 1)	640±70	Tx-5551	Moore 1998:37
40V6	Gordontown	Feature 25 (Structure 3)	520±60	Tx-5550	Moore 1998:37
40WM210	Brentwood Library	Feature 10 (pit)	580±50	Beta-186722	Moore 2005:119
40WM210	Brentwood Library	Feature 60 (pit)	570±60	Beta-186725	Moore 2005:119
40WM210	Brentwood Library	Structure 2 (charred post on floor)	480±50	Beta-186723	Moore 2005:119
40SU15	Rutherford Kizer	Feature 101	500±50	Beta-70872	Moore 2001:74
40SU15	Rutherford Kizer	Feature 101	580±50	Beta-70873	Moore 2001:74
40DV4	East Nashville Mounds	Feature 24	550±50	Beta-61244	Walling 2000:484
40DV36	Sandbar Village	Feature 8	590±60	Beta-65690	Smith and Moore 2012

Table 6.16: Jar Neck Length Comparisons.

Variable Compared	Contexts Compared	Contexts with p<0.1
All Jars		
Jar Neck Length	Sites	Castalian Springs and Sellars
	Features	Yes
Ratio of Orifice Diameter to Neck Length	Sites	Castalian Springs and Sellars; Beasley and Sellars
	Features	Yes
Ratio of Lip Thickness to Neck Length	Sites	Castalian Springs and Sellars
		Beasley and Sellars
	Features	Yes
By Size Class		
Jar Neck Length for Gradual Neck Jars	Sites	No
	Features	Yes
Ratio of Neck Length to Lip Thickness for Gradual Neck Jars	Sites	Castalian Springs and Sellars
	Features	Yes
Jar Neck Length for Small size class of Gradual Neck Jars	Sites	Castalian Springs and Sellars
Jar Neck Length for Medium size class of Gradual Neck Jars	Sites	No
Jar Neck Length for Large size class of Gradual Neck Jars	Sites	No
Jar Neck Length of Distinct Neck Jars	Sites	No
	Features	Yes
Ratio of Neck Length to Lip Thickness for Distinct Neck Jars	Sites	No
	Features	No
Jar Neck Length for Small size class of Distinct Neck Jars	Site	No
Jar Neck Length for Medium size class of Distinct Neck Jars	Sites	No
Jar Neck Length for Large size class of Distinct Neck Jars	Site	No
Jar Neck Length of Wide Mouth Jars	Sites	No
By Rim Angle		
Neck Length of Jars with Direct Rims	Sites	No
	Features	No
Ratio of Neck Length to Lip Thickness for Jars with Direct Rims	Sites	No
	Features	Yes
Neck Length of Jars with Excurvate Rims	Sites	No
	Features	No
Ratio of Neck Length to Lip Thickness for Jars with Excurvate Rims	Sites	No
	Features	Yes
Neck Length of Jars with Incurvate Rims	Sites	Castalian Springs and Sellars
	Features	No
Ratio of Neck Length to Lip Thickness for Jars with Incurvate Rims	Sites	No
	Features	No

Table 6.17: Ordered Jar Measured Attributes.

Shape Attribute	Sites Ordered (least to greatest measurement value)	Features Ordered (least to greatest measurement value)
All Jars Neck Length	early Castalian Springs, Beasley, all Castalian Springs, Sellars	CSF10, CSF36, SF12, CSF377, CSpreMd2, CSF25, CSF51, CSF91, CSF16, CSF134pit1, SF10, BMP, CSF31, CSF134pit3, CS752, CSF92, SF34, CSF119, SF2, CSF4, SF6, CSF134pit2, CSF351, SF50, SF4, SF40, CSF138, CSF305, SF33, SF7, CSF335, CSF133, CSF106
Distinct Neck Jar Neck Length	Beasley, Sellars, Castalian Springs	CSF25, SF40, CSF119, CSF134pit2, CSF31, SF33, CSF92, CSF106, CSF16, CS752, BMP, CSF4, SF50, CSF91, SF4, CSF138, CSF133
Gradual Neck Jar Neck Length	early Castalian Springs, Beasley, all Castalian Springs, Sellars	CSF10, CSF36, CSF51, CSF91, SF10, CSF16, CSF360, CSF134pit1, CspreMd2, CSF134pit3, SF34, CSF4, BMP, CSF147, SF6, CSF351, CSF119, SF4, CSF106, CS752, SF7, SF40, CSF335, CSF134pit2, SF33
Wide Mouth Jar Neck Length	Beasley, all Castalian Springs, Sellars, early Castalian Springs	BMP, CSF119, SF4, SF12, SF2, CSF51
All Jars Lip Thickness	early Castalian Springs, Sellars, Beasley, all Castalian Springs	SF12, SF11, CspreMd2, CSF16, CSF31, CSF36, CSF92, CSF138, CSF133, SF33, SF50, CSF335, CSF134pit1, SF2, SF40, SF6, SF40, SF6, CSF25, SF4, CS752, CSF51, CSF337, BMP, SF34, CSF106, CSF134pit3, SF7, CSF91, CSF119, CSF134pit2, CSF360, CSF10, CSF100, CSF4, CSF351, CSF305, CSF9, SF30, SF10, CSF94
Distinct Neck Jar Lip Thickness	Castalian Springs, Sellars	SF33, CSF92, CSF31, CSF138, SF40, CS752, CSF25, CSF133, CSF16, CSF106, CSF119, CSF4, SF4, SF50, CSF91, CSF134pit2
Gradual Neck Jar Lip Thickness	Sellars, Beasley, early Castalian Springs, all Castalian Springs	CspreMd2, CSF36, CSF16, CSF335, SF33, SF6, CSF360, CS752, SF4, CSF106, SF34, BMP, SF40, CSF91, SF7, CSF147, CSF4, CSF100, CSF119, CSF351, CSF10, CSF91, CSF51, SF30, SF10, CSF94
Wide Mouth Jar Lip Thickness	early Castalian Springs, Beasley, all Castalian Springs, Sellars	CSF51, SF12, SF4, BMP, CSF119, SF2
All Jars Neck Length to Lip Thickness Ratio	Sellars, all Castalian Springs, early Castalian Springs, Beasley	CSF133, CSF138, SF12, SF33, CSF335, CSF92, CSF31, SF6, SF7, SF40, CSF305, SF50, SF2, SF4, CSF305, SF50, SF2, SF4, SF34, CSF106, CS752, CSF134pit1, CSF36, CSF51, CspreMd2, CSF16,CSF377, CSF25, CSF4, CSF119, CSF134pit3, CSF51, CS134pit2, BMP, SF10, CSF91, CSF10
Distinct Neck Jar Neck Length to Lip Thickness Ratio	Castalian Springs, Sellars	CSF133, CSF138, CSF92, CSF31, SF33, CS752, CSF4, CSF106, CSF16, SF4, SF50, CSF91, CSF119, CSF134pit2
Gradual Neck Jar Neck Length to Lip Thickness Ratio	Sellars, all Castalian Springs, Beasley, early Castalian Springs	SF33, CSF335, CspreMd2, CS752, SF6, SF7, CSF106, SF40, CSF134pit2, SF4, SF34, CSF134pit1, SCF360, CSF16, CSF36, CSF351, CSF147, CSF119, CSF4, BMP, CSF134pit3, SF10, CSF51, CSF10, CSF91
Wide Mouth Jar Neck Length to Lip Thickness Ratio	early Castalian Springs, Sellars, all Castalian Springs, Beasley	CSF51, SF12, SF4, SF2, BMP, CSF119

Table 6.17 (cont).

Shape Attribute	Sites Ordered (least to greatest measurement value)	Features Ordered (least to greatest measurement value)
All Jar Neck Length to Orifice Diameter Ratio	Sellars, early Castalian Springs, all Castalian Springs, Beasley	CSF335, SF40, CSF138, CSF31, SF33, CSF92, SF6, SF50, CSF51, CSF133, CSF106, CS752, SF34, SF7, CSF16, CSF4, SF4, CSF305, SF2, CSF134pit1, CSF119, CSF134pit2, CSF377, CSF351, CspreMd2, CSF134pit3, BMP, CSF91, SF10
Distinct Neck Jar Neck Length to Orifice Diameter Ratio	Castalian Springs, Sellars	CSF91, CSF138, CSF31, CSF106, CSF92, SF33, SF50, CS752, CSF133, CSF134pit2, SF4, CSF4, CSF16, CSF119
Gradual Neck Jar Neck Length to Orifice Diameter Ratio	Sellars, all Castalian Springs, early Castalian Springs, Beasley	CSF335, SF33, SF40, SF6, CS752, SF34, CSF16, SF7, CSF106, CSF4, SF4, CSF119, CSF351, CSF360, BMP, CSF147, SF10, CSF91
Wide Mouth Jar Neck Length to Orifice Diameter Ratio	early Castalian Springs, all Castalian Springs, Sellars, Beasley	CSF51, CSF119, SF4, SF2, BMP

Table 6.18: Jar Rim Angles by Site.
*of determined rim angle.

Site	%Direct	% Excurvate	% Incurvate	Total*
Rutherford Kizer	308 (95.1%)	2 (0.6%)	14 (4.3%)	324
Castalian Springs	137 (55.7%)	43 (17.5%)	66 (26.8%)	246
Sellars	55 (69.6%)	13 (16.5%)	11 (13.9%)	79
Beasley	9 (64.3%)	3 (21.4%)	2 (14.3%)	14
Moss Mounds		2 (100.0%)		2
Total	509 (76.5%)	63 (9.5%)	93 (14.0%)	665

Table 6.19: Dates Generated from Handle Measurements (formula from Wesler 2001:100).

Site	Context	Date Calculated (AD)
Rutherford Kizer		1411
	Feature 36	1437
	Feature 392	1358
	Feature 425	1413
	Feature 588	1403
	Feature 695	1431
Castalian Springs		1266
	Feature 4	1268
	Feature 16	1270
	Feature 53	1299
	Feature 93	1144
	Feature 106	1277
	Feature 119	1302
	N1108E752	1251
	Feature 134	1246
	Feature 138	1290
	Feature 143	1279
	Pre Md2	1105
	All Md3	1263
	Top Md3	1279
	Md3 StA	1229
	Md3 base	1282
	Feature 335	1313
	Feature 351	1297
Sellars		1284
	Feature 4	1309
	Feature 7	1229
Beasley Mounds		1140
Moss Mounds		1160

Table 6.20: Handle Modifications.

Site	Context	Top Horn (flattened)		Top Horn (rounded)			Central Groove	Central Incised	Handle Node		
		1	2	1	2	4			1	2	3
Rutherford Kizer										1	
	F425									1	
Castalian Springs					9	1	4	4	1		2
	F4						1				
	F6					1					1
	F93										
	F106				1						
	F134				3		1		1		
	E838							1			
	F119	1			3		1				
	Md3				1						
	E752		2				1	3			
Sellars		1					2				
	F4						2		1	1	
	F7										
Beasley		1		1	1						

Table 6.21: Lug Forms.

Site	Context	Single Lugs	Bifurcate Lugs	Total Identified Lugs
Rutherford Kizer		2 (6.5%)	29 (93.5%)	31
Castalian Springs		35 (53.0%)	31 (47.0%)	66
	Feature 4	7 (46.7%)	8 (53.3%)	15
	Feature 16	1 (100.0%)		1
	Feature 91	4 (100.0%)		4
	Feature 94	1 (100.0%)		1
	Feature 106	1 (50.0%)	1 (50.0%)	2
	Feature 119	10 (41.7%)	14 (58.3%)	24
	Mound3 base	1 (50.0%)	1 (50.0%)	2
Sellars		11 (45.8%)	13 (54.2%)	24
	Feature 4	4 (57.1%)	3 (42.9%)	7
	Feature 6	1 (50.0%)	1 (50.0%)	2
	Feature 7 (81)	1 (100.0%)		1
	Feature 40		2 (100.0%)	2
	Feature 50		1 (100.0%)	1
Beasley			1 (100.0%)	1

Table 6.22: Lug Measurement Comparisons.

Variable Compared	Contexts Compared	Contexts with p<0.1
Lug Length	Sites	No
	Features	No
Bifurcate Lug Length	Sites	No
	Features	No
Single Lug Length	Sites	Castalian Springs and Sellars
	Features	No
Lug Length to Thickness	Sites	Castalian Springs and Rutherford Kizer
	Features	No
Bifurcate Lug Length to Thickness	Sites	Castalian Springs and Sellars
	Features	No
Single Lug Length to Thickness	Sites	No
	Features	No
Lug Length to Width	Sites	No
	Features	Yes
Bifurcate Lug Length to Width	Sites	No
	Features	Yes
Single Lug Length to Width	Sites	No
	Features	No
Lug Width	Sites	Castalian Springs and Sellars
	Features	Yes
Bifurcate Lug Width	Sites	No
	Features	Yes
Single Lug Width	Sites	Castalian Springs and Sellars
	Features	Yes
Lug Width to Thickness	Sites	Castalian Springs and Rutherford Kizer; Castalian Springs and Sellars; Sellars and Rutherford Kizer
	Features	Yes
Bifurcate Lug Width to Thickness	Sites	Castalian Springs and Sellars
	Features	No
Single Lug Width to Thickness	Sites	No
	Features	No
Minimum to Maximum Bifurcate Lug Width	Sites	No
	Features	Yes
Lug Thickness	Sites	Castalian Springs and Rutherford Kizer; Castalian Springs and Sellars
	Features	Yes
Bifurcate Lug Thickness	Sites	Castalian Springs and Rutherford Kizer; Castalian Springs and Sellars
	Features	Yes
Single Lug Thickness	Sites	Castalian Springs and Sellars
	Features	Yes

Table 6.23: Ordered Lug Measured Attributes

Shape Attribute	Sites Ordered (least to greatest attribute measurement)	Features Ordered (least to greatest attribute measurement)
Lug Length	Sellars, Beasley, Castalian Springs, Rutherford Kizer	SF6, SF7, CSF91, CS752, RKF36, BMP, RKF89, SF40, SF4, CSF106, CSF119, CSF4, CSF305, RKF20, RKF359, SF50, CSF94
Lug Width	Sellars, Beasley, Rutherford Kizer, Castalian Springs	SF6, RKF20, SF4, SF40, CSF305, BMP, RKF89, CS752, CSF106, CSF4, CSF16, CSF119, SF7, SF50, CSF91, RKF36, RKF101, CSF94
Lug Thickness	Rutherford Kizer, Sellars, early Castalian Springs, all Castalian Springs, Beasley,	SF40, RKF101, CSF16, CS752, SF4, SF50, CSF93, RKF36, CSF305, RKF20, CSF106, SF6, CSF4, CSF119, BMP, CSF91, CSF134pit3, CSF94, RKF89, SF7, CSF100
Lug Length to Width	Rutherford Kizer, Beasley, Sellars, Castalian Springs	RKF20, SF40, CSF94, CSF305, SF4, BMP, CSF106, RKF89, SF6, CSF119, CSF4, CS752, RKF36, CSF91
Lug Length to Thickness	Rutherford Kizer, Sellars, Castalian Springs, Beasley	CSF94, CS752, SF40, RKF20, CSF305, CSF106, SF4, SF6, RKF36, CSF4, BMP, CSF119, CSF91, RKF89, SF7
Lug Width to Thickness	Rutherford Kizer, Sellars, Castalian Springs, Beasley	RKF101, CSF16, SF50, CSF94, CS752, RKF36, SF40, SF6, SF4, CSF91, CSF119, CSF4, CSF106, CSF305, BMP, RK89, RKF20
Bifurcate Lug Length	Beasley, Castalian Springs, Sellars, Rutherford Kizer	SF6, RKF36, BMP, SF40, CSF4, CSF119, CSF106, SF4, CSF134, CSF305, RKF20, RKF359, SF50
Bifurcate Lug Width	Beasley, Sellars, Castalian Springs, Rutherford Kizer	SF6, RKF20, CSF134, SF4, SF40, BMP, CSF4, CSF305, CSF119, CSF106, RKF36, SF50
Bifurcate Lug Thickness	Sellars, Rutherford Kizer, Beasley, Castalian Springs	SF6, SF40, SF50, SF4, RKF36, CSF4, RKF20, CSF134, BMP, CSF305, CSF106, CSF119
Bifurcate Lug Length to Width	Sellars, Rutherford Kizer, Beasley, Castalian Springs	RKF20, CSF134, SF40, SF4, SF50, CSF305, BMP, CSF106, SF6, CSF4, CSF119, RKF36
Bifurcate Lug Length to Thickness	Sellars, Rutherford Kizer, Beasley, Castalian Springs	SF50, SF40, SF4, RKF20, CSF134, CSF305, SF6, CSF106, RKF36, CSF4, BMP, CSF119
Bifurcate Lug Width to Thickness	Rutherford Kizer, Sellars, Castalian Springs, Beasley	SF50, RKF36, SF40, SF6, SF4, CSF4, CSF106, CSF119, CSF305, BMP, CSF134, RKF20
Bifurcate Max Lug Thickness-Min Lug Thickness	Sellars, Beasley, Castalian Springs, Rutherford Kizer	SF4, SF50, SF6, BMP, SF40, CSF134, CSF119, CSF305, CSF106, CSF36, CSF4
Single Lug Length	Sellars, Rutherford Kizer, Castalian Springs	SF4, SF7, CSF91, CSF106, RKF89, CSF119, CSF4, CSF94
Single Lug Width	Sellars, Rutherford Kizer, Castalian Springs	CSF305, SF4, RKF89, CSF4, SF7, CSF119, CSF91, CSF94
Single Lug Thickness	Sellars, Castalian Springs, Rutherford Kizer	SF4, CSF305, CSF106, CSF119, CSF94, RKF89, CSF91, CSF4, SF6
Single Lug Length to Width	Rutherford Kizer, Castalian Springs, Sellars	CSF94, CSF4, CSF119, RKF89, SF4, SF7, CSF91
Single Lug Length to Thickness	Sellars, Castalian Springs, Rutherford Kizer	CSF94, CSF106, CSF4, SF4, RKF89, CSF91
Single Lug Width to Thickness	Sellars, Castalian Springs, Rutherford Kizer	CSF94, CSF119, CSF91, SF4, CSF305, CS4F4, RKF89

Table 6.24: Dates Generated from Plate Rim Length.
* only one example

Site	Context	Wickliffe Formula (AD)	Modified Formula (AD)
		A.D. 1175+(1450-1175)(x/122)	A.D.1100+(1450-1100)(x/66)
Rutherford Kizer		1276	1339
	Feature 36	1275	1336
	Feature 423*	1278	1343
Castalian Springs		1258	1294
	Feature 4	1263	1316
	pre Md2*	1232	1234
	Feature 106*	1257	1294
	Feature 119	1265	1313
	Feature 134 pit 1	1240	1252
	All Mound 3	1243	1260
Sellars		1279	1344
	Feature 4	1292	1375
	Feature 5*	1252	1280
Beasley		1229	1226
Moss *		1210	1183

Table 6.25: Traits of Middle Cumberland Mississippian Phases

Phase	Date Range	Traits
Spencer	850/900-1100	• Limestone tempered and Mixed Shell tempered ceramics (large variation in frequency) • McKee Island Cordmarked (generally > 2%, but also quite variable) • Handle Forms: Few Plain, Riveted Loop Handles; Very Few Lugs • Vessel Forms: Jars, Pans, Bowls • Jar Rim Angles: Direct, Excurvate, Incurvate • Bowl Forms: Standard, Restricted Rim, Outslanting Wall • Bottle Forms: Cylindrical Neck, Blank Faced Hooded • Architecture: Single Post
Dowd	1100-1250	• McKee Island Cordmarked (<1%) • Occasional limestone tempered Mississippian vessel and mixed shell tempered ceramics • Matthews Incised *var Matthews* rare • Handle Forms: Loop and Intermediate, Often with Double Horns and Central Groove; Single and Double Lugs • Vessel Forms: Jars, Bowls, Bottles, Plates, Pans • Jar Rim Angles: Direct, Excurvate and Incurvate • Bowl Forms: Standard, Restricted Rim, Outslanting Wall • Bottle Forms: Cylindrical Neck, Blank Faced Hooded • Plate Forms: Short Rim Plates • Architecture: Predominately Wall Trench
Early Thruston	1250-1350	• Handle Forms: Wide Intermediate and Strap; Single and Double Lugs • Matthews Incised *var Matthews* and *var Manly* • Nashville Negative Painted and Angel Negative Painted • Vessel Forms: Jars, Bowls, Bottles, Plates, Pans • Jar Rim Angle: Direct, decreased frequency of Excurvate and Incurvate • Bowl Forms: Standard, Outslanting, Restricted Rim • Bottles Forms: Carafe Neck, Blank Faced Hooded, Female Effigy Hooded • Effigy vessels: Frog Bowls, Inward Facing Crested Birds, Dog Bottles • Architecture: Predominately Wall Trench, Some Single Post • Late Braden Style Gorgets
Late Thruston	1350-1450	• Handle Forms: Thin, wide Strap; Single and Double Lugs • Vessel Forms: Jars, Bowls, Bottles, Plates, Pans • Jar Rim Angles: Predominately Direct • Bowl Forms Standard, Few Outslanting, Restricted Rim (esp. effigy) • Effigy vessels: Abbreviated Frog Jars, Outward Facing Naturalistic Duck Bowls, Restricted Rim Fish Bowls • Noel Notched Rim Bowls (15-75% of Bowls) • Predominately Single Post Architecture

Table 6.26: Spencer Phase Ceramic Assemblages.
*Inclusions in paste noted by researchers. (Norton and Broster 2004; Smith and Moore 2012; Spears et al 2008).
† Potential Spencer phase features.

Site	Mississippi Plain	Bell Plain	McKee Island Cordmarked	Kimmswick Fabric Impressed	Shell and Limestone Tempered	Limestone Tempered	Other Temper	Total
Spencer	735 (81.1%)	94 (10.4%)	28 (3.1%)	3 (0.3%)	*	6 (0.6%)	40 (4.4%)	906
Sogom	176 (43.5%)	9 (2.2%)	164 (40.5%)	53 (13.1%)	*	0	3 (0.7%)	405
Sandbar Village	13 (41.9%)	0	10 (33.3%)	8 (25.8%)	0	0	0	31
Sellars Feature 7 and 12†	134 (48.0%)	5 (1.8%)	0	6 (2.2%)	110 (39.4%)	20 (7.2%)	4 (1.4%)	279

Figure 6.1: Grit Tempered "Pie Crust Rim" from Castalian Springs Mound 3 Fill (N1165E792 Level 4).

Figure 6.2: Red Filmed Sherd from Castalian Springs (N1000E982 level 5).

Figure 6.3: Red Filmed Sherds from Sellars (Feature 4).

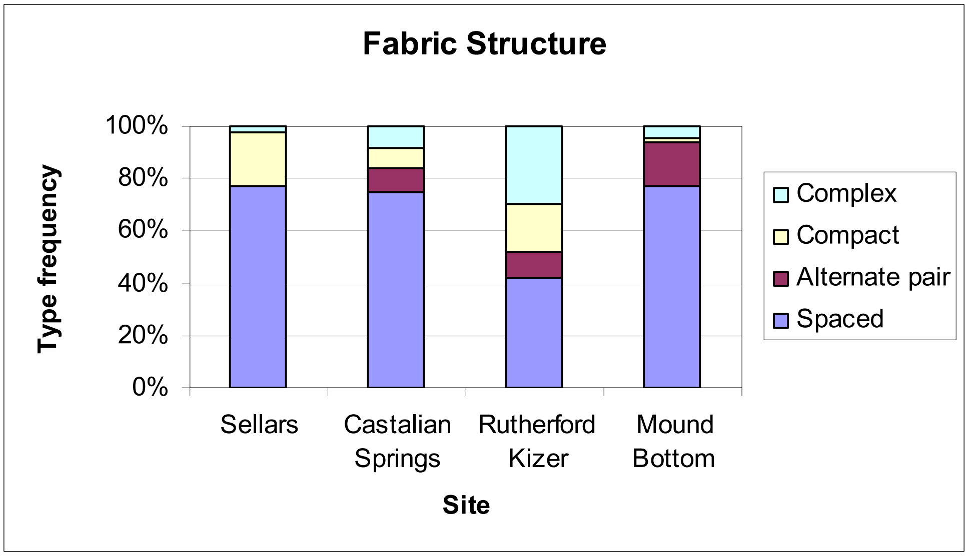

Figure 6.4: Fabric Structure from Kimmswick Fabric Impressed Pans. Castalian Springs, Sellars and Rutherford Kizer as compared to the early Mound Bottom (40CH8) site (Kuttruff 1996).

Figure 6.5: O'Byam Incised *var. Adams* Plate Rim Sherd (from Castalian Springs Feature 94).

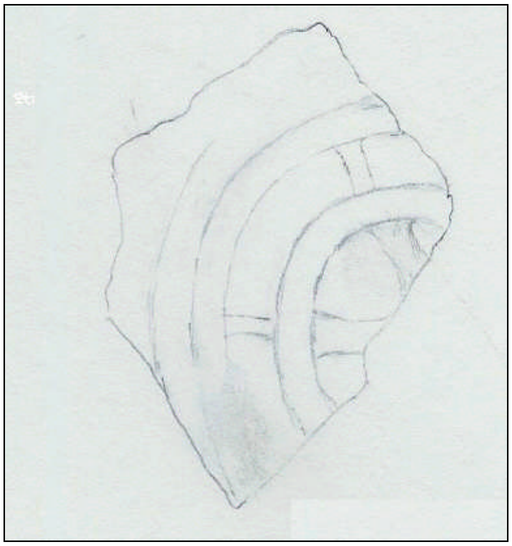
Figure 6.6: Sketch of Complicated Stamped Sherd from Castalian Springs (Feature 119).


Figure 6.7: Cobb-marked Sherd with Check-Stamping (from Beasley, Test Unit K level 4).

Figure 6.8: Shell Tempered Brushed Sherd (from Beasley, Test Unit K level 6).

Figure 6.9: Shell Tempered Combed Sherd (from Moss, Test Unit 1 level 4).

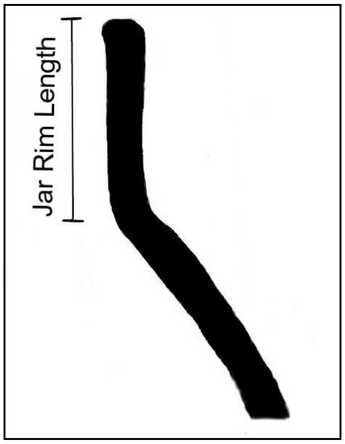

Figure 6.10: Jar Rim Length Measurement Location.

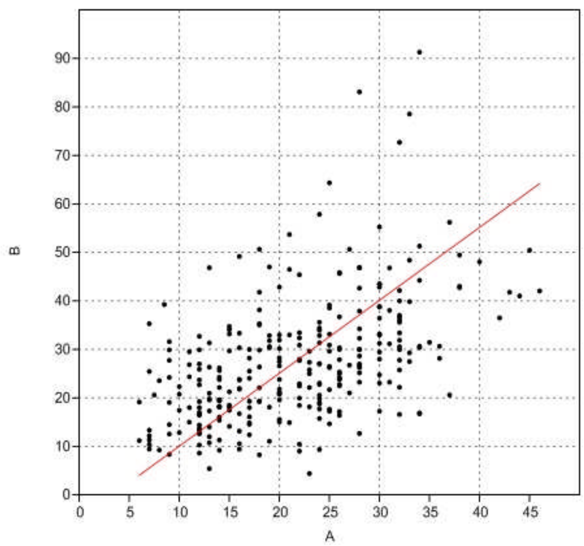

Figure 6.11: Regression Comparing Jar Orifice Diameter (A)(cm) to Rim Length (B)(mm).
r=0.50434, r^2=0.25436
y=1.504x – 4.9788

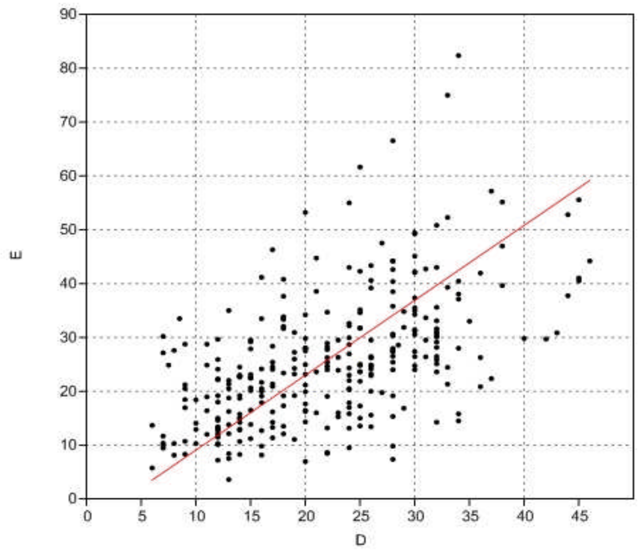

Figure 6.12: Regression Comparing Jar Lip Thickness (D) (mm) to Rim Length (E) (mm).
r=0.55366 r^2=0.30654
y=1.3913 – 4.8242

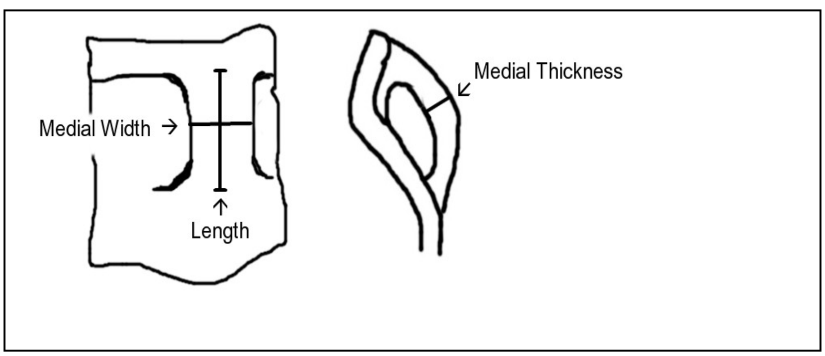

Figure 6.13: Location of Basic Handle Measurements.

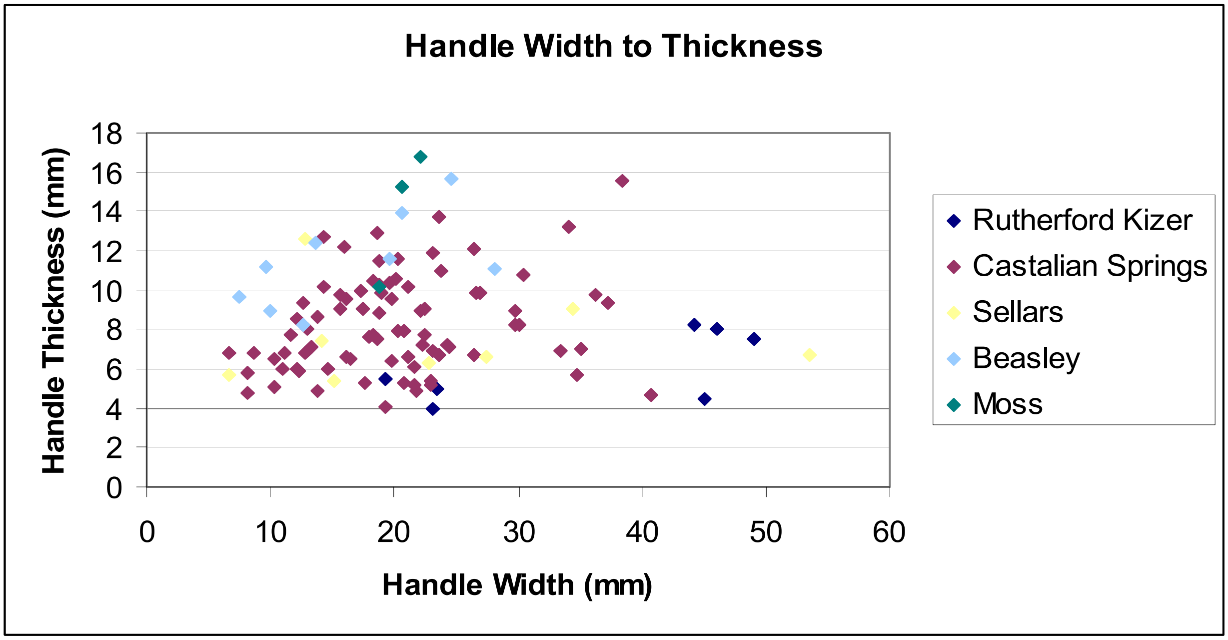

Figure 6.14: Handle Width to Thickness Plot by Site.

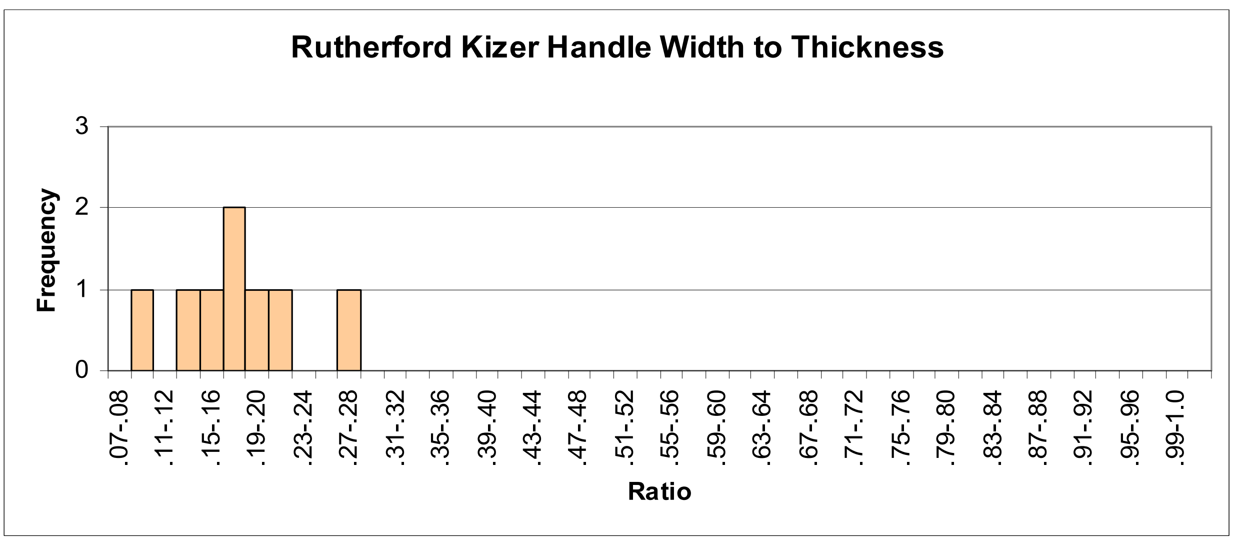

Figure 6.15: Frequency Distribution of Rutherford Kizer Closed Handle Width to Thickness Ratio (strap forms only).

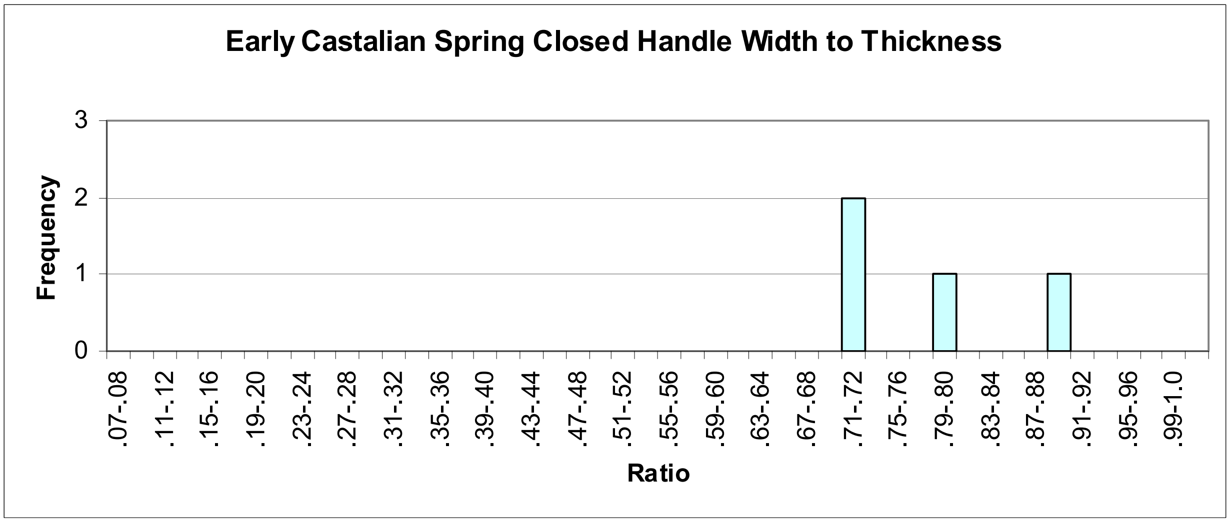

Figure 6.16: Frequency Distribution of Early Castalian Springs Contexts (pre-Mound 2, pre-Mound 3, Feature 93, pre-Feature 134) Closed Handle Width to Thickness Ratio (loop forms only).

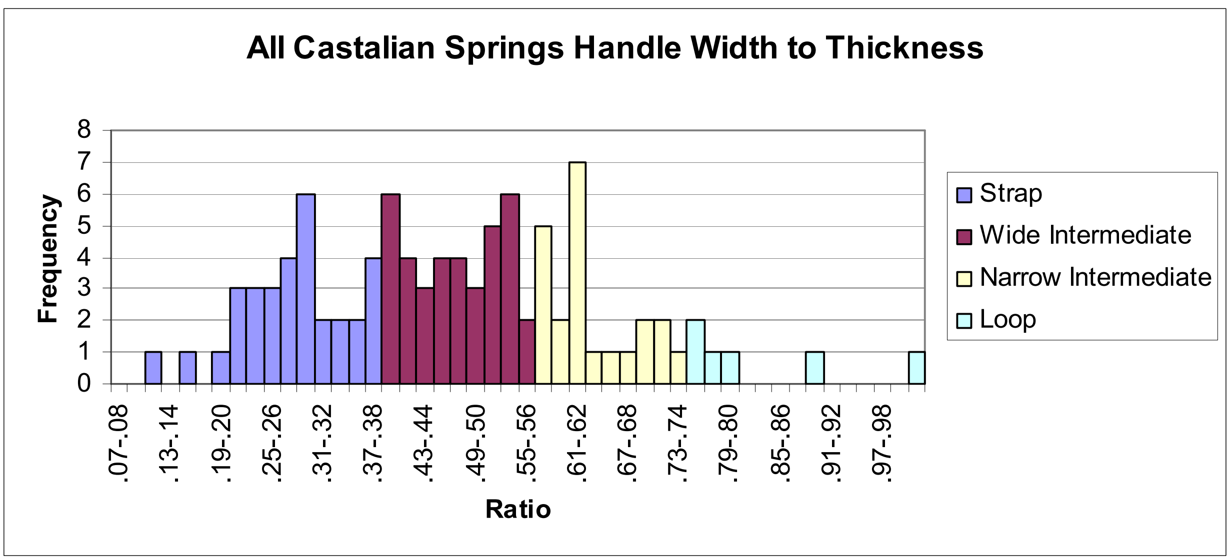

Figure 6.17: Frequency Distribution of All Castalian Springs Closed Handle Width to Thickness Ratio.

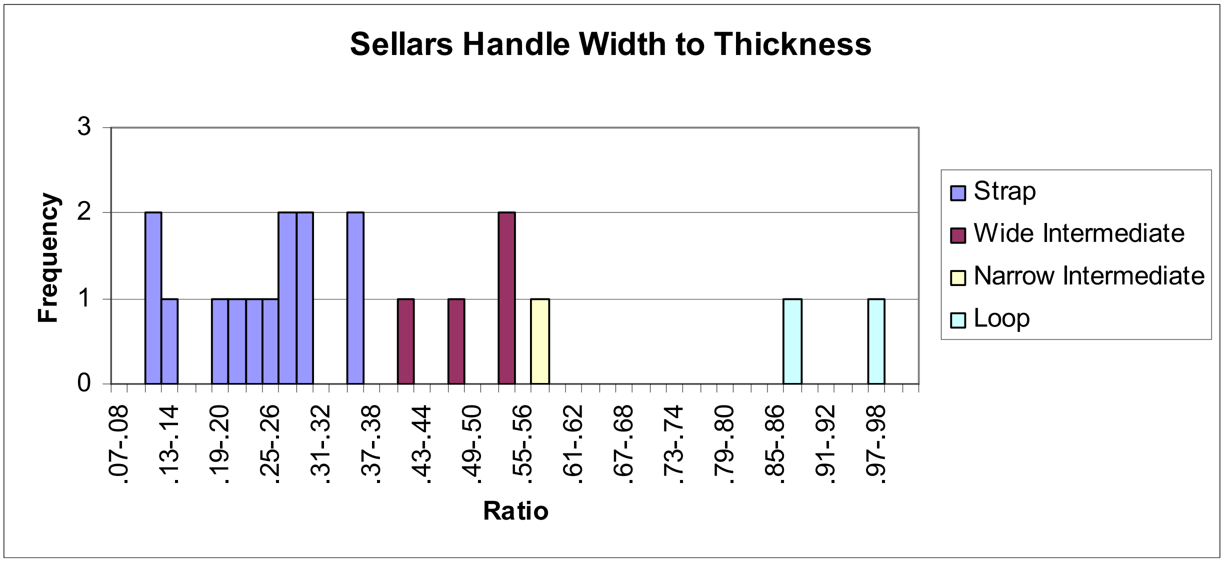

Figure 6.18: Frequency Distribution of Sellars Closed Handle Width to Thickness Ratio.

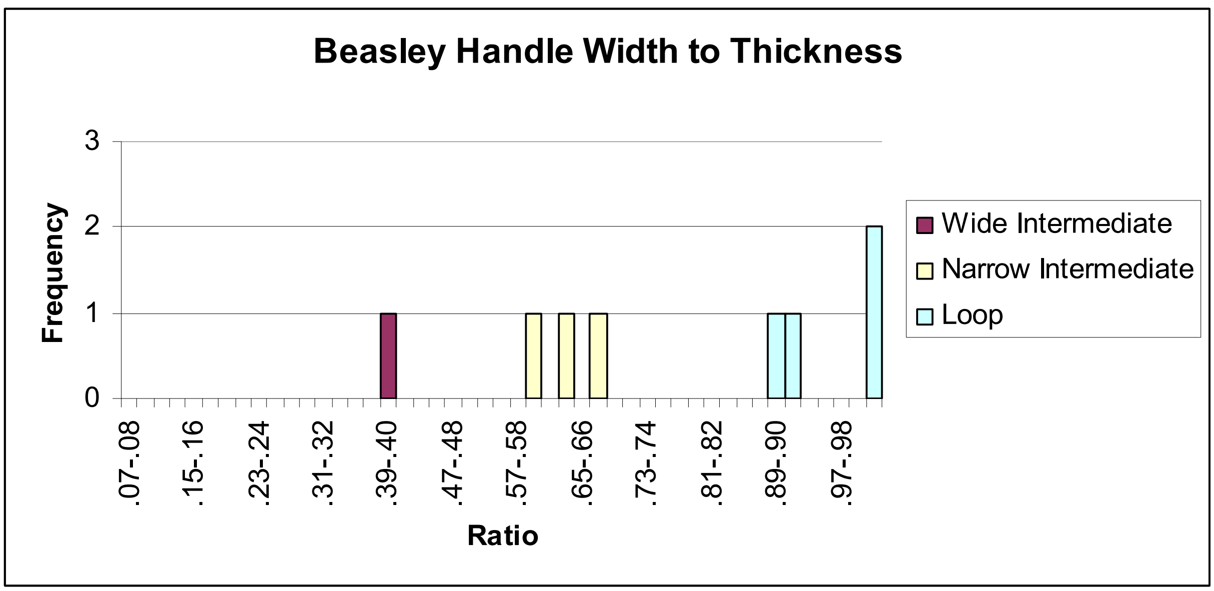

Figure 6.19: Frequency Distribution of Beasley Closed Handles Width to Thickness Ratio.

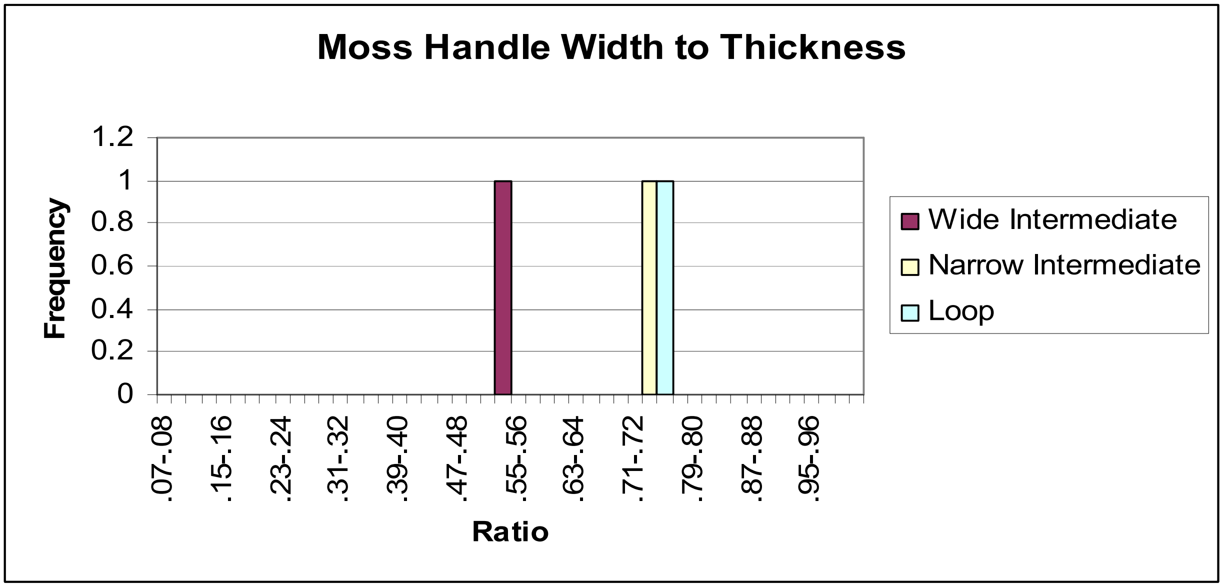

Figure 6.20: Frequency Distribution of Moss Closed Handles Width to Thickness Ratio.

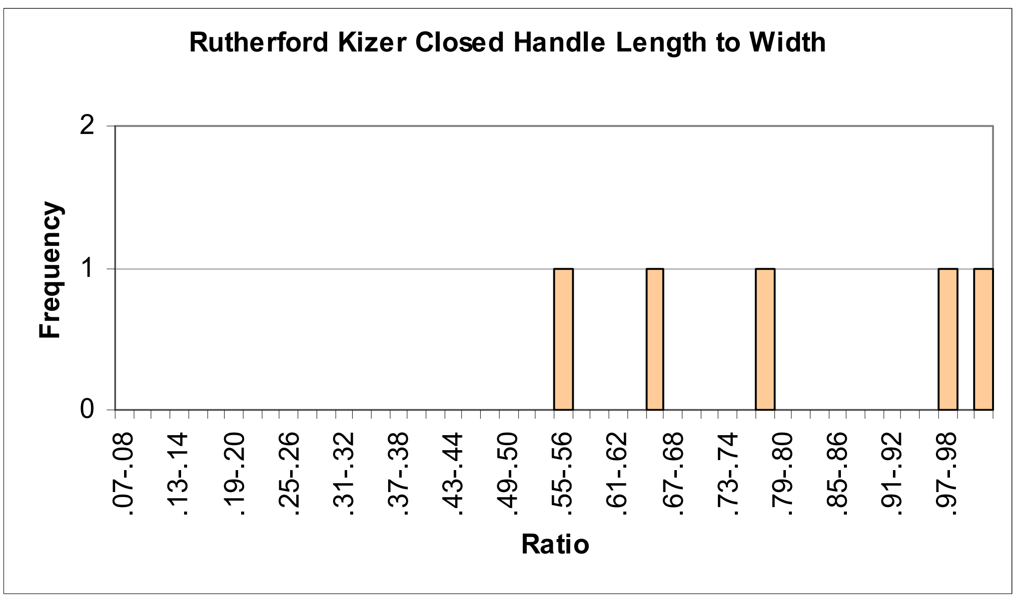

Figure 6.21: Frequency Distribution of Rutherford Kizer Closed Handle Length to Width Ratio.

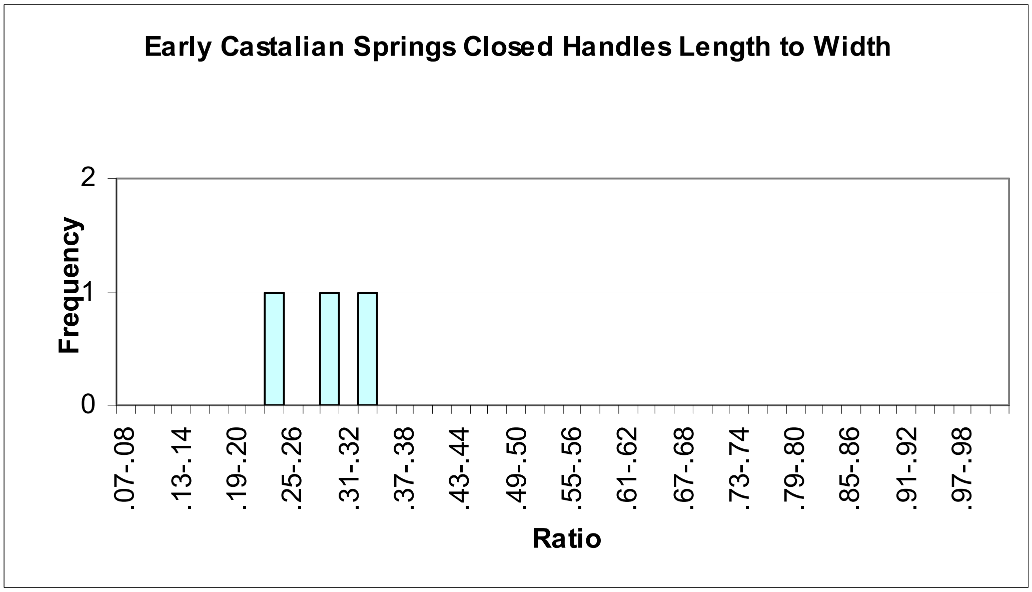

Figure 6.22: Frequency Distribution of Early Castalian Springs Contexts (pre-Mound 2, pre-Feature 134, Feature 93) Closed Handle Length to Width Ratio.

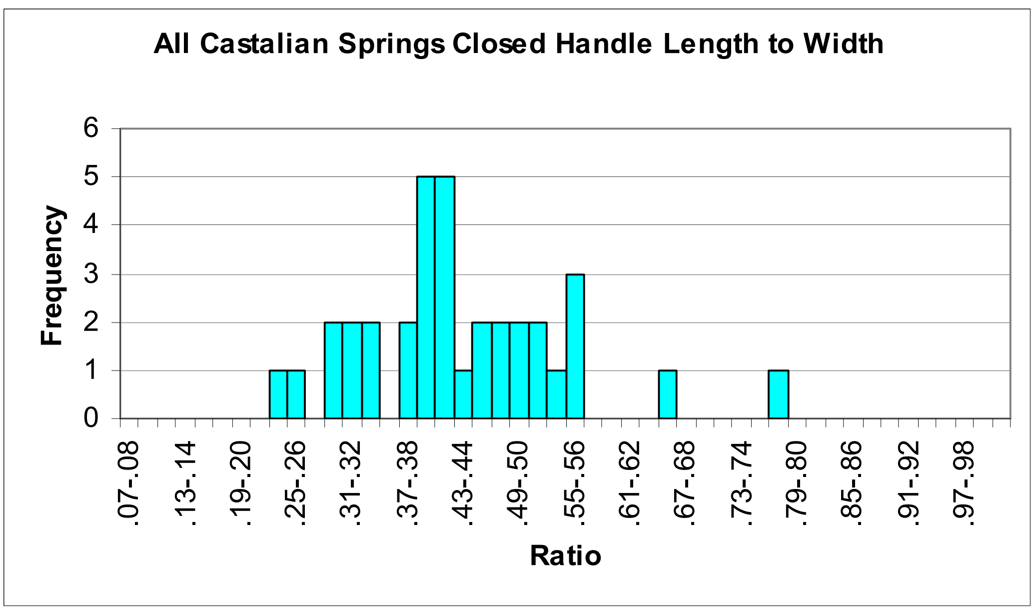

Figure 6.23: Frequency Distribution of All Castalian Springs Closed Handle Length to Width Ratio.

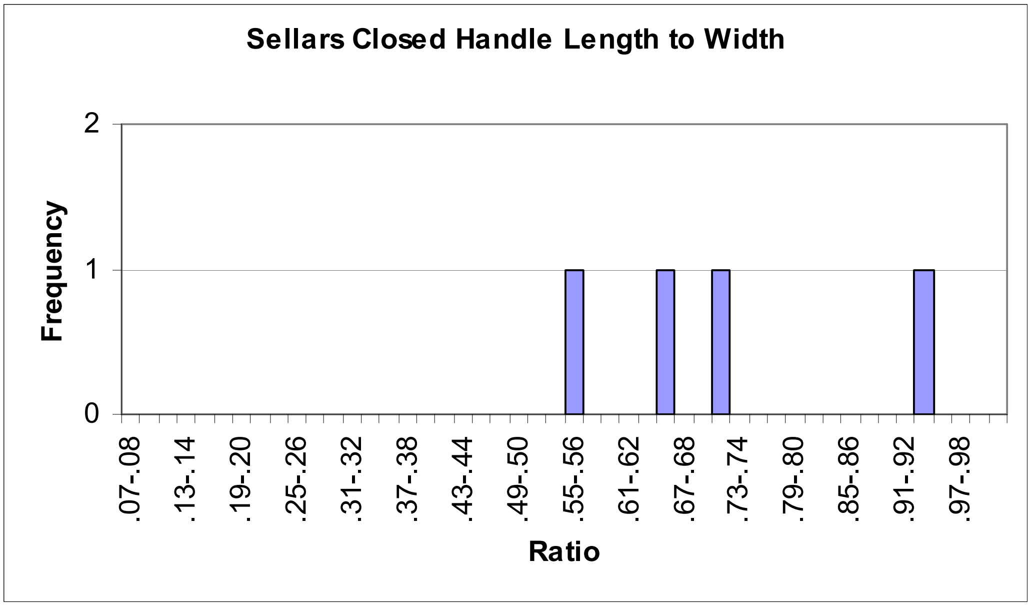

Figure 6.24: Frequency Distribution of Sellars Closed Handle Length to Width Ratio.

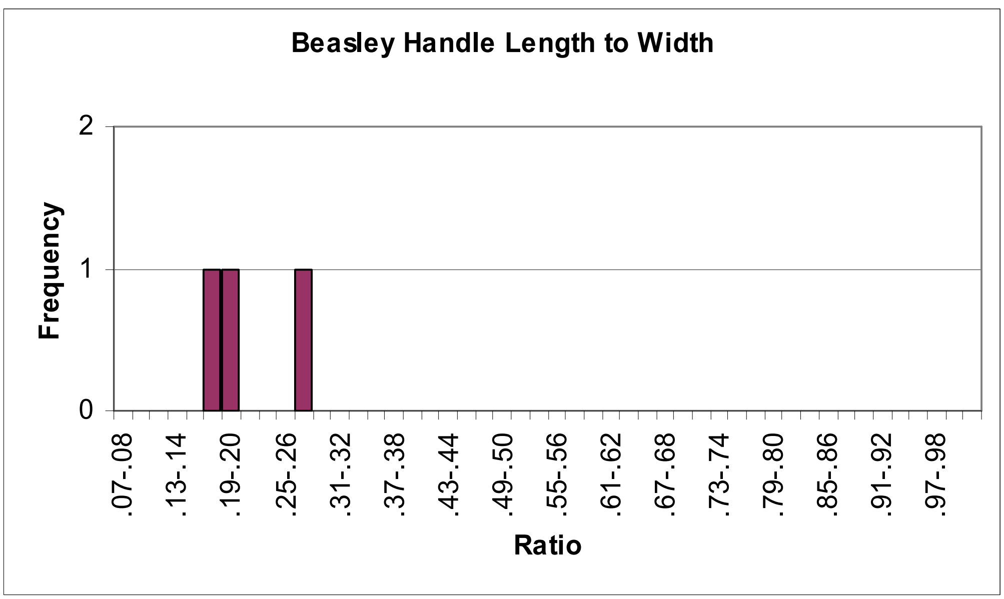

Figure 6.25: Frequency Distribution of Beasley Closed Handle Length to Width Ratio.

Figure 6.26: Riveted Handles (from Beasley Mounds).

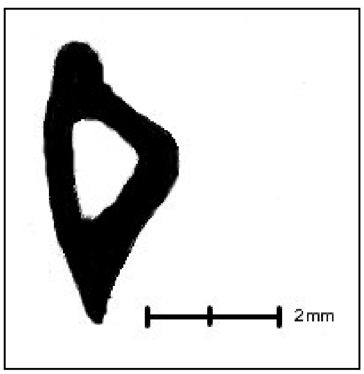

Figure 6.27: Profile of Elbow-Shaped Handle (from Castalian Springs).

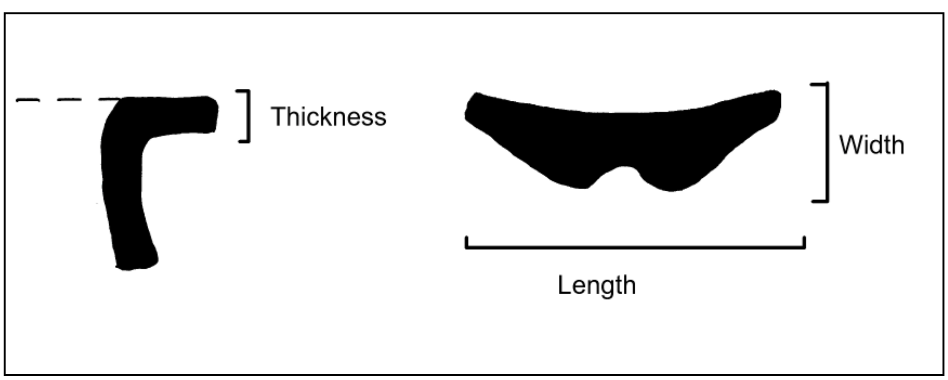

Figure 6.28: Locations of Lug Measurements.

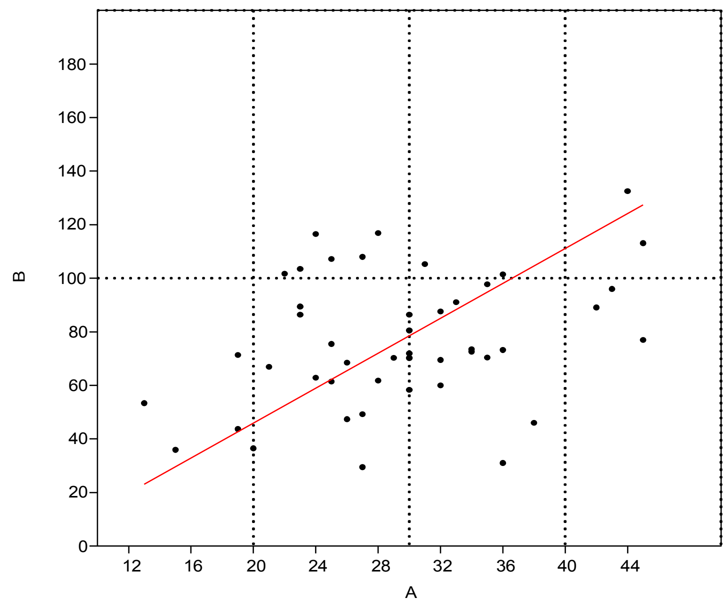

Figure 6.29: Linear Regression Comparing Jar Orifice Diameter (A) (cm) to Lug Length (B) (mm).

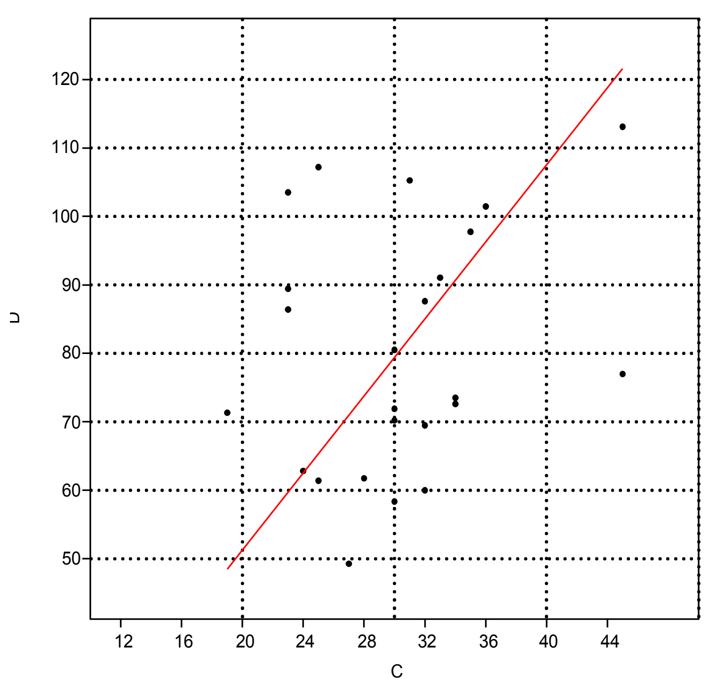

Figure 6.30: Linear Regression Comparing Jar Orifice Diameter (C) (cm) to Single Lug Length (D) (mm).

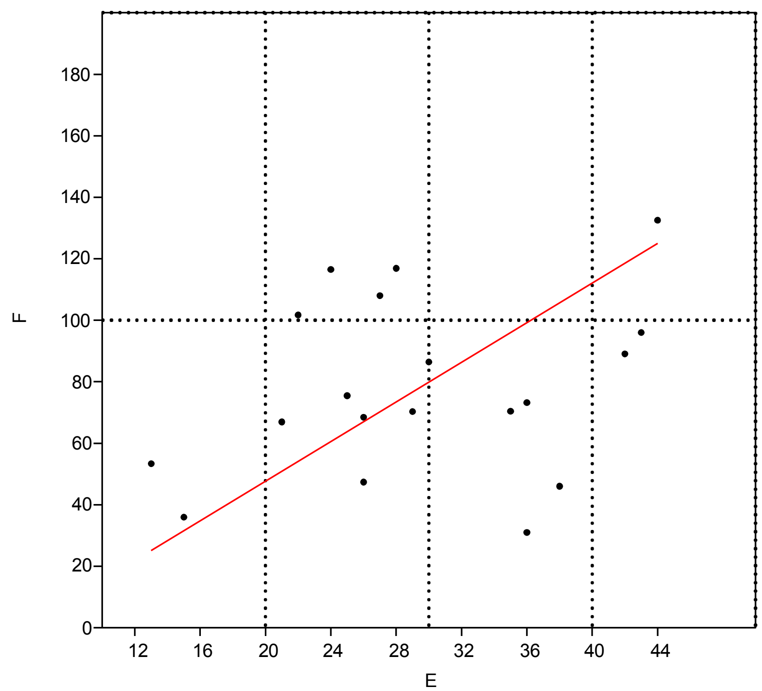

Figure 6.31: Linear Regression Comparing Jar Orifice Diameter (cm) (E) to Bifurcate Lug Length (mm) (F)

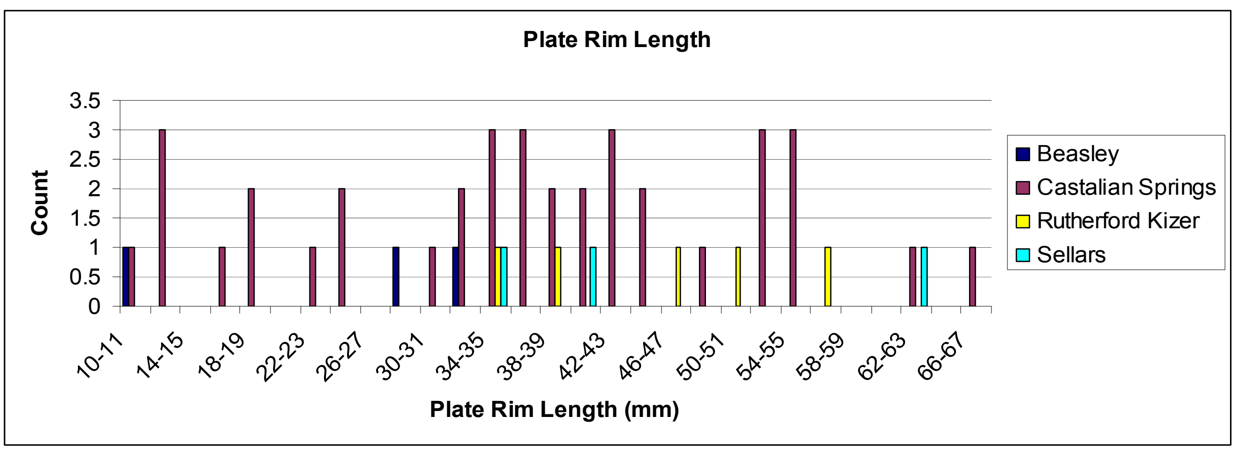

Figure 6.32: Plate Rim Length Distribution by Site (all measurable plate rims).

Figure 6.33: Sketch of Cox Gorget from Castalian Springs (based on National Museum of the American Indian Catalog Number 150855.000).

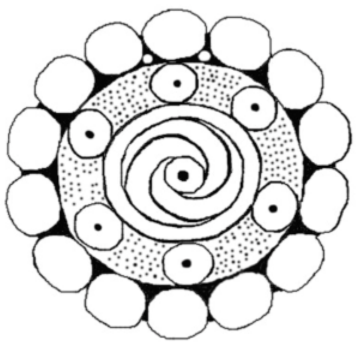

Figure 6.34: Sketch of Triskele Gorget from Gray's Farm (based on Peabody Museum of Archaeology and Ethnology Acc. Number 78-6-10/15835).

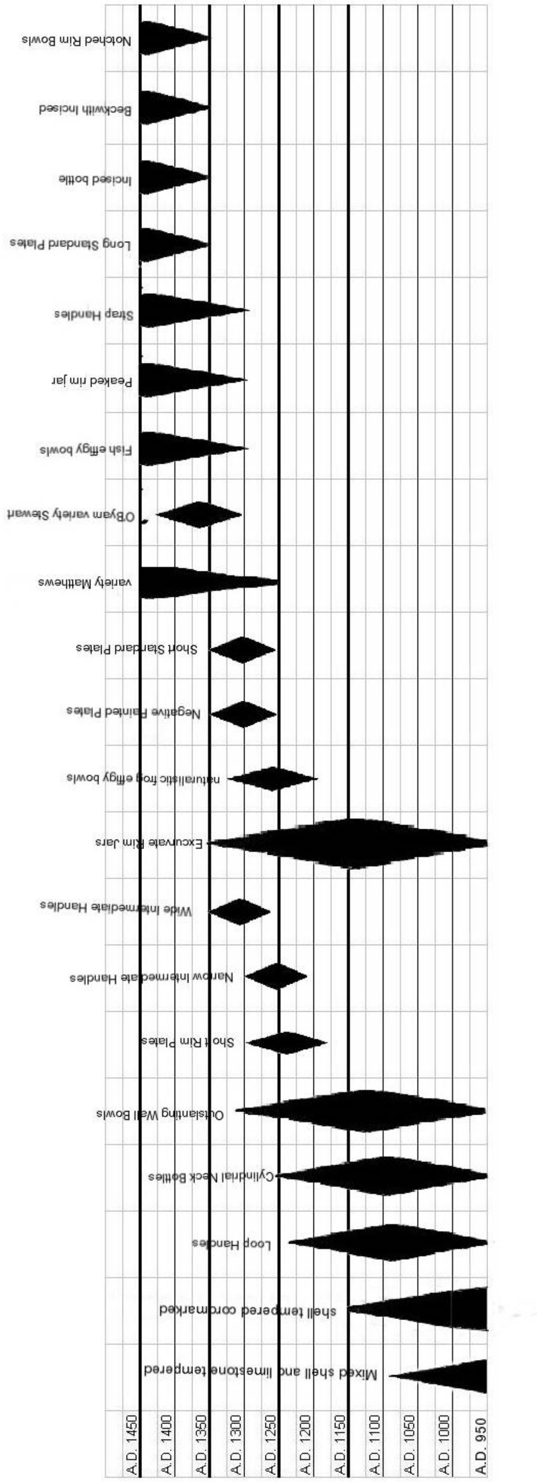

Figure 6.35: Schematic Representation of Middle Cumberland Ceramic Attributes Through Time (diamond widths do not represent specific trait frequencies).

CHAPTER 7

SITE HISTORIES

A town's configuration is always evolving as a result of socio-political changes; as some households grow and others shrink, as political power is more or less centralized, and as threats of violence induce more or less people to live inside a town's walls. An archaeological site is a manifestation of its complete history, not simply a moment of time. Therefore in order to understand how sites related to one another, it is important to understand not only the range of time a site was occupied, but also what the site looked like, and how it functioned through time. This, of course, is limited by the amount of excavations conducted at each particular site. Knowledge of specific site histories is essential to understand when each mound site served as a polity capital within the total site occupation. In this chapter the evidence for the chronological placement of features, structures, palisades, and mounds from the five sample sites are outlined.

7.1 Site Sequences

The chronologies presented below are based on radiocarbon dates, ceramic chronology, the presence of other diagnostic artifacts and stratigraphic superposition from both modern and early explorations in an attempt to produce the most thorough chronology for each site given the data available. While the resulting ceramic chronology and radiocarbon dating do not allow dating each site's occupational history as precisely as would be desired, the time each mound site served as polity capital is identified and a site history sequence is developed for each mound center.

7.1a Rutherford Kizer

Although modern excavations at Rutherford Kizer were salvage in nature, a significant amount of information about the site was documented (Moore and Smith 2001). Eleven structures and two palisade lines were recorded along with many pit features and human burials.

Limestone-tempered cordmarked sherds present in a small number of pit features indicates a small Woodland occupation at the site. The majority of the diagnostic ceramics from Rutherford Kizer indicate a Late Thruston phase occupation. These ceramic indicators include relatively high percentages of Bell Plain sherds compared to the other sites in the sample. These are exclusively strap handles, notched appliqué rim bowls, *var. Matthews, var. Manly,* and Beckwith Incised jars, high percentage of jars with direct rims, carafe neck bottles, long rim plates, Nashville Negative Painted bottles, fish effigy bowl, duck effigy bowls. A small number of McKee Island Cordmarked sherds hint at a small early Spencer or Dowd phase occupation at the site.

Radiocarbon dates also support that the main occupation of Rutherford Kizer took place during the late Early Thruston phase and early Late Thruston phase, with at least a small Middle Woodland occupation present at the site (Figure 7.1).

Palisade. One palisade line is illustrated by Curtiss' and Thruston's maps of the site (Figure 4.1) (Smith and Moore 2001:21, 23). Thruston's profile of the palisade remnants indicates it had an inner and outer ditch (Moore and Smith 2009:134; Thruston 1897:33). A total of two palisade lines were identified in modern excavations at Rutherford Kizer. The interior palisade of single post construction with bastions appears to have been constructed prior to the outer wall trench palisade (Figure 4.2). While no artifacts were recovered from this palisade line were recovered, two radiocarbon dates were obtained from two posts in the inner palisade. The two dates are statistically different at a 95% level. The earlier date, one of the earliest from the site, produces a calibrated date of cal A.D. 1152 to 1302 (p=0.94) but may date to as late as 1366 to 1383 (p=0.02) at 2 sigma (780±60 BP). The second date obtained from the outer palisade is more in line with the majority of the site's dates and produces a calibrated date of cal A.D. 1293 to 1436 at 2 sigma (p=1.00) (570±60 BP). There is no obvious rebuilding or refurbishing for this palisade line, but it possible that the later date is a result of a repair to the palisade. The later date is associated with a bastion while the earlier date is from a post in the palisade line itself. It is possible that the surrounding wall was constructed first, and the closed bastions were added later, in response to the need for more security. There are two overlaps in the intercepts of the two dates between cal A.D. 1293 to 1302 and cal A.D. 1366 to 1383. The artifacts and other radiocarbon dates from Rutherford Kizer suggest that it is most likely that this later palisade line was constructed around A.D. 1360 to 1380, during the beginning of the Late Thruston phase.

The outer, later palisade line encompassed a larger area and was more substantial than the inner palisade. The expansion of the area enclosed by the palisade wall likely reflects the site's growing population or the need for more of the local population to reside inside the protected area. Three radiocarbon dates from the outer palisade line are the same at a 95% level and produced a pooled mean of cal A.D. 1316 to 1355 (p=0.3) or cal A.D. 1388 to 1439 (p=0.7) (at 2 sigma) (538±32 BP). There are overlaps in the 2 sigma intercepts at cal A.D. 1307 to 1362 and cal A.D. 1385 to 1428. It appears this later palisade line was constructed after A.D. 1385, during the Late Thruston phase.

Structures. Four wall trench and seven single post structures were excavated at Rutherford Kizer. Five of the seven single post structures clearly are located outside the inner palisade line (Figure 4.2). The southwest corner of Structure 7 overlaps with the interior palisade. Moore (2001e) comments that the relationship between the two is difficult to determine stratigraphically. Structure 1 is located far to the east of the inner palisade line was traced. Extrapolating from the western side of the inner palisade, the most likely path of the inner palisade would take it to the west of Structure 1 through an un-mapped area of the site left by the developers for a green space (Figure 4.3). Single post structures located outside the inner palisade line suggests that they were constructed after the earlier palisade was in use and date to the Late Thruston phase.

Three of the four excavated wall trench structures are located within the inner palisade line. These structures could have been constructed prior to the first palisade wall, during the time the first palisade wall was in use, or possibly when the outer palisade wall was in use. Wall trench Structure 5 is located outside the inner palisade but within the outer palisade. It is possible that this structure is contemporary with the inner palisade but constructed outside its walls but more likely this wall trench structure could be contemporary with the outer palisade line.

Refuse Pits and Borrow Pits. Thirty-eight refuse filled pits were excavated from Rutherford Kizer. Materials recovered from these features do not include any early ceramic markers such as loop or narrow intermediate handles or any identified cylindrical neck bottles. Rather, the ceramics recovered from these pit features indicate a post A.D. 1250 date. One exception is Feature 15, which produced a radiocarbon date of cal A.D. 984 to 1185 (p=1.0) (at 2 sigma) (970±50 BP) (Moore 2001c:74). No diagnostic ceramics were recovered from this pit, but the radiocarbon date suggests a late Spencer or early Dowd phase date for this feature.

There does seem to have been some Woodland period occupation of the site. Pit Features 738, 739, and 740 were identified southeast of the palisade lines among some Mississippian period burials. Based on the limestone-tempered cordmarked ceramics and associated radiocarbon date of cal A.D. 612 to 828 (p=0.97) or cal A.D. 838 to 866 (p=0.03) (at 2 sigma) (1320±60 BP), these pits appear to date to the Woodland period (Moore 2001c:294). An Archaic or Woodland period biface cache (Feature 742) was also identified adjacent to Features 738, 739 and 740 (Moore 2001e:293-294).

Features 20 and 36 are located inside the posthole pattern of single post Structure 1. Both of these features contained relatively large ceramic samples (Feature 20 n=613, Feature 36 n=1149). Moore (2001e) suggests that these pit features likely post-date the structure's use.

Ceramics from Features 20 and 36 indicate a Late Thruston formation of these features. Late diagnostic ceramics from Feature 20 include strap handles, *var. Matthews,* Nashville Negative Painted, Savannah Complicated Stamped sherds and human and fish effigy bowl sherds. One limestone-tempered cordmarked sherd and one quartz-tempered sherd from Feature 36 are likely from a disturbed Woodland period deposit. Late diagnostic ceramics from Feature 36 include strap handles, *Matthews* incised, and a duck effigy bowl sherd (Smith and Moore 2001). The measurements of two strap handled jars from Feature 36 produced a mean estimated date of A.D. 1437.

Two radiocarbon dates from Feature 20 produced a mean calibrated date of cal A.D. 1294 to 1410 (p=1.0) (at 2 sigma) (600±38 BP) or cal A.D. 1306 to 1363 at the most likely 1 sigma (p=0.79). Feature 36 produced a radiocarbon date of cal A.D. 1281 to 1407 at 2 sigma (630±50 BP) or cal A.D. 1346 to 1393 at the most likely 1 sigma (p=0.60). A Late Thruston date for these features is consistent with the supposition that they post-date Structure 1. The radiocarbon dates for these features are consistent with a date between A.D. 1350 and 1400. The date estimated from the handle measurements produced a date consistent with post-A.D. 1350, although slightly later than the radiocarbon dates indicate.

Feature 101 pit located to the northeast of Structure 1. This feature also contained two shell-tempered cordmarked sherds, strap handles, frog effigy fragments, and notched rim bowl fragments (Smith and Moore 2001). With the exception of the shell-tempered cordmarked sherds (likely the result of a disturbed earlier site occupation), these ceramic attributes indicate a post-A.D. 1350 Late Thruston phase date. The mean of two radiocarbon dates from the feature produced a calibrated date of cal A.D. 1302 to 1366 (p=0.57) or cal A.D. 1383 to 1429 (p=0.43) (at 2 sigma) (565±35 BP), further supporting a Late Thruston phase date for Feature 101.

Several other refuse filled pits contained diagnostic ceramics. Features 194 and Feature 359 both contained notch rim appliqué bowls, which are Late Thruston phase indicators, as well as Matthews Incised, *var. Matthews* sherds. Feature 359 also contained Beckwith Incised sherd, another Late Thruston indicator (Smith and Moore 2001).

Feature 361 contains a restricted rim bowl, an outslanting wall bowl, a Matthews Incised, *var. Matthews* jar, and a particularly high percentage of Bell Plain ceramics (30.4 percent of total feature assemblage) (Smith and Moore 2001). This feature likely originates after at least A.D. 1250. Feature 392 contained a *Matthews* incised jar with strap handle which produced a date estimate of A.D. 1350. The strap handles from Feature 588 produced a slightly later date estimate of A.D. 1400, and the strap handle from Feature 425 produced a date estimate of A.D. 1410 (see section 6.6b).

The refuse filled pits largely confirm that the occupation of Rutherford Kizer mainly occurred during the Late Thruston phase. Feature 15 and the presence of a small amount of early ceramic types such as McKee Island Cordmarked and limestone-tempered and quartz-tempered sherds likely reflect a small population that was present at the site before it became a large mound center.

Twenty-one features from Rutherford Kizer were identified as borrow pits. They are located along the inside and outside of the outer palisade line and were likely created as clay was extracted to cover the palisade wall. Although no diagnostic ceramics were recovered from these pits, their close association to the outer palisade trench suggests that they date to this palisade's construction during the early Late Thruston phase.

Burials. Burials have been excavated at Rutherford-Kizer from both Curtiss' excavations in 1878 and by a consultant company in the 1990s (Moore and Smith 2009). Approximately twenty percent of the graves Curtiss excavated contained grave goods. Few graves from modern excavations contained associated artifacts, likely because of Curtiss' previous exploration of the site and looting (Moore and Smith 2009:136).

A cemetery outside the palisade line and to the southwest was identified at Rutherford Kizer during modern excavations (Figure 4.3). Twenty five graves were identified from this area. Two burials contained ceramic vessels. Burial 80 contained the remains of two children along with an abbreviated frog effigy bowl and a incurvate rim jar (Moore et al. 2001: 320). Moore and Smith have suggested that abbreviated frog bowls likely date to late Early Thruston phase (around A.D. 1300 to 1330) (2009: 217). Burial 85 also contained two children along with a ceramic bowl. This bowl has a tab on one side with a broken rim rider on the opposite end. The vessel orifice has an oval rather than circular shape. The effigy form of this bowl cannot be determined with certainty, but it is likely some sort of bird. The graves in this location were not consistent in orientation, but some clusters of similarly oriented graves are present. The sharing of side walls between Burials 74 and 75 and between Burials 89, 90 and 91 suggest that these individuals were buried at the same time (Moore et al. 2001). All that can be said with certainty is that although this stone-box cemetery may have been used throughout the site's occupation, it seems to have been used after A.D. 1300. It appears that Curtiss also excavated 15 burials in this area. Among these burials, Curtiss recovered an unusual tri-stirup hooded bottle and a triskele gorget (Moore and Smith 2009:126).

Associated diagnostic artifacts within graves excavated by Curtiss and located inside Rutherford Kizer's palisade include strap handled jars, *var. Matthews* incised jar, notched appliqué rim bowl, negative painted owl effigy hooded bottle, fish effigy bowl, and a bottle with carafe neck. Most of these diagnostics indicate a post A.D. 1325-1350 deposition, congruent with a late Early Thruston or Late Thruston phase occupation.

Summary. Rutherford Kizer shows evidence of being occupied during the Woodland period and a small occupation in the late Spencer or early Dowd phase. The main occupation of the site appears to have begun during the late Early Thruston or early Late Thruston phase, with Rutherford Kizer serving as polity capital mainly during the early part of the Late Thruston phase.

It is unfortunate that no information on the platform mound construction at Rutherford Kizer exists. Although it was removed for fill, it is possible that primary construction stages or pre-mound deposits are still intact. If land owner permission could be obtained, excavation in the location of the platform mound would be a valuable future research project. Even so, information about the site's occupation history from burials, structures, pits features and palisade constructions provides evidence regarding when the site occupation began and when it likely served as a polity capital.

7.1b Castalian Springs

Seven years of excavations at Castalian Springs have produced a representative ceramic assemblage and large number of radiocarbon dates. This evidence permits precise dating of the site's history. One element that is lacking from the data is information on a palisade. Although a systematic search was conducted, no evidence of the palisade wall described by Earl has been found during modern excavations (Haywood 1823). If there was a palisade at the site, it likely was constructed and used at the time of mound construction and use, when the site served as chiefdom capital.

A Woodland period occupation at Castalian Springs is suggested by small numbers of limestone-tempered and other tempered ceramics in general unit contexts, deep pit features and mound fill. Specifically, a grit-tempered "pie crust" rim sherd from Mound 3 fill suggests an Owl Hollow phase Woodland occupation at the site. Mixed shell-and-limestone tempered ceramics and relatively high percentage of shell-tempered cordmarked sherds present in a pre-Mound 2 deposit suggests a Spencer phase component present at the site, as does a limestone-tempered loop handle from Mound 3. Dowd phase diagnostic ceramic attributes present at Castalian Springs include loop and narrow intermediate handles, elbow shaped handles, double horned handles, handles with riveted lower attachment, cylindrical neck bottles, short rim plates, coarse tempered hooded bottles, lobed jars, and jars with excurvate and incurvate rims. Early Thruston phase ceramics identified at Castalian Springs includes wide intermediate and strap handles, *var. Matthews* and *var. Manly* sherds, peaked rim jar sherd, carafe neck bottles, fine tempered hooded bottles, Nashville Negative Pained bottles, Angel Negative Painted plates, dog effigy bottle, short standard plates, abbreviated frog effigy bowl, owl effigy bowl, and crested bird effigy bowl sherds.

Radiocarbon dates from Castalian Springs indicate that the majority of occupation at Castalian Springs took place after A.D. 1150, with a few date ranges extending back to the ninth century (Figure 7.2). Some radiocarbon date ranges also extend into the Late Thruston phase but ceramics from the site strongly suggest that the early calibration curve intercepts should be used in interpretation.

Pit Features. Feature 93 is one of the earliest features documented at Castalian Springs, and likely formed during early Dowd phase. A handle recovered from Feature 93 is narrow intermediate in form. Measurements from this handle produced an early date estimate of A.D. 1144. This feature produced a radiocarbon date of cal A.D. 893 to 1187 (p=0.99) or cal A.D. 1199 to 1206 (p=0.01) at 2 sigma (1000±70 BP).

Feature 93 as well as Feature 92, are stratigraphically below Feature 53/91. Feature 53/91 was likely creating during the Early Thruston phase. Handle measurements from Feature 53/91 produced an estimated date of A.D. 1257. The Mound Place Incised sherd from this feature suggests a feature date of A.D. 1275 to 1350. This feature produced a radiocarbon date of cal A.D. 1186 to 1201 (0.02) or cal A.D. 1206 to 1406 (p=0.98) (at 2 sigma) (710±70 BP) with the most likely 1 sigma at cal A.D. 1251-1311 (p=0.65). Stratigraphically, Feature 92 may either be younger or contemporary with Feature 93. The presence of a *var*. *Matthews* subvariety A incised sherd suggests that Feature 92 was formed at a later date than Feature 93, during the Early Thruston phase.

Feature 51 also appears to contain relatively early material. Limestone and mixed shell-tempered ceramics make up 4 percent of the total feature assemblage. Excurvate rim jars were found in the fill of this feature and hint at an early fill date (either Spencer or Dowd phase), while a plain pan from the feature does not conform to Spencer phase characteristics. A radiocarbon date of cal A.D. 1040 to 1111 (p=0.18) or 1115 to 1283 (p=0.81) at 2 sigma (825±70 BP) points to a Dowd phase date for this feature.

The large pit Feature 4 was formed during the Early Thruston phase. Diagnostic ceramics from Feature 4 include short rim and short standard rim plates, *var. Matthews* subvariety A sherds, and a dog effigy bottle fragment. The handles from this feature produce an estimated date of A.D. 1307 (see section 6.6b). If measurements of handle attachment areas are included, the average handle forms suggest a slightly earlier date of A.D. 1274 (see section 6.6b). The plate rims from this feature produced an estimated date of A.D. 1267 (see section 6.6b). Limestone-tempered sherds make up less than one percent of the total feature assemblage, while mixed shell, limestone and grit (possibly incidental inclusions) make up 1.6 percent of the feature assemblage. The presence of these early ceramic types along with later ceramic attributes suggests the disturbance of an earlier Woodland and/or Spencer phase deposit.

The calibrated radiocarbon date for this feature is cal A.D. 1039 to 1277 (p=1.0) (at 2 sigma) (840±70) with the most likely 1 sigma at cal A.D. 1154 to 1265 (p=0.88). Although the date range for the radiocarbon date is slightly earlier than the estimates based on handle and plate rim measurements, they are not incompatible and both suggest a late Dowd or early Early Thruston phase date.

Pit Feature 16 was also formed during the early part of the Early Thruston phase. The handle measurement from Feature 16 produced an estimated date of A.D. 1306 (see section 6.6b). The presence of *var. Matthews* sherds in this feature also supports a post A.D. 1250 date for this relatively small pit feature. The presence of two grit-tempered sherds, one limestone-tempered and two mixed shell-limestone-and-grit-tempered sherds in this feature suggests the disturbance of an earlier Woodland andl/or Spencer phase deposit.

Feature 106 appears to date to the Early Thruston phase. The handles from Feature 106 include both narrow intermediate and strap forms and produced an estimated date of A.D. 1280.

The short standard plate rim sherd, shell-tempered cordmarked sherds and coarse tempered hooded bottle sherds from the features suggest a Dowd or early Early Thruston phase for this feature. The presence of limestone-tempered, quartz-tempered and a single mixed shell-and-limestone-tempered sherd from this deep feature suggests that this feature disturbed an earlier Woodland and/or Spencer phase deposit.

The radiocarbon date from Feature 106 ranges from cal A.D. 1275 to 1319 (p=0.55) or cal A.D. 1351 to 1390 (p=0.45) (at 2 sigma) (670±30 BP) (Table 4.2). Taken together this evidence suggests that the feature was filled during the Early Thruston phase.

Feature 134 is a series of superimposed pit features ranging in date from the early part of the Early Thruston phase (around A.D. 1270) for the earliest pit to the later part of the Early Thruston phase (A.D. 1325 to 1350) for the latest of these pits. These pits are underlain by an early midden deposit dating to the Dowd phase. This midden contained a loop handled jar. The handle measurements produce a date estimate of A.D. 1150. The earliest pit contained narrow and wide intermediate handles as well as excurvate rim jar sherds and a short rim plate as well as a three limestone-tempered cordmarked sherds. The later two pit features contain later wide intermediate and strap handle forms.

Pit 1, the earliest pit, produced a radiocarbon date of cal A.D. 1262 to 1309 (p=0.81) or cal A.D. 1361 to 1386 (p=0.19) (at 2 sigma) (520±30 BP) with the most likely 1 sigma at cal A.D. 1271 to 1297 (p=0.96). The middle pit (Pit 2) produced a radiocarbon date of cal A.D. 1324 to 1345 (p=0.11) or cal A.D. 1393 to 1443 (p=0.89) (at 2 sigma) (520±30 BP). The ceramic and radiocarbon evidence indicates that these series of pits were formed during the Early Thruston phase, with the last two pits potentially as late as the Late Thruston phase.

Feature 100 appears to have been filled relatively late in the site's occupation. Few diagnostic artifacts were found in this feature other than a *var. Matthews* sherd which conforms to a post A.D. 1250 date for the feature. A negative painted plate was also recovered from Feature 100, which indicates a post A.D. 1250 date for the feature. The presence of limestone-tempered, quartz-tempered and mixed shell-and-limestone-tempered sherds from this deep feature suggests the disturbance of an earlier Woodland and/or Spencer phase deposit.

A radiocarbon date from Feature 100 produced a date of cal A.D. 1298 to 1370 (p=0.71) or cal A.D. 1379 to 1413 (p=0.29) (2 sigma) (590±30 BP) with the most likely 1 sigma at cal A.D. 1313 to 1357 (p=0.75). The diagnostic ceramics and radiocarbon evidence indicate that this feature was filled during the later part of the Early Thruston phase (around A.D. 1315 to 1350).

The large Feature 119 contains a wide variety of diagnostic artifacts, making dating the feature difficult. It seems likely that although no stratigraphic distinctions were observed in the field and ceramics cross mends were present between levels, there is some time depth to the material in the sample. Ceramics include narrow intermediate to strap handles, excurvate rim jars, incurvate rim bowls and shell-tempered cordmarked jars. Short rim, short standard rim and long standard rim plates are all present in this feature. *Var. Matthews, var*. *Manly* and Beckwith Incised jars were recovered from the feature as well as an owl, fish, frog and bird effigy fragments. The handles from Feature 119 produced a date estimate of A.D. 1312 while the plates produced earlier date of A.D. 1265. The presence of limestone-tempered, quartz-tempered, grog-tempered and other mixed tempered sherds in Feature 119 suggests that this large, deep feature disturbed an earlier Woodland and/or Spencer phase deposit. Even with the large ceramic sample size, no examples of notched appliqué rim bowls were recovered from this feature, indicating a pre Late Thruston use of this feature.

The two radiocarbon dates from this feature are statistically different at a 95% confidence interval. The earlier calibrated date ranges from cal A.D. 1283 to 1329 (p=0.43) or cal A.D. 1340 to 1396 (p=0.57) (at 2 sigma) (640±30 BP). The later date has a 2 sigma range of cal A.D. 1312 to 1358 (p=0.42) or cal A.D. 1387 to 1433 (p=0.58) (550±30 BP). These dates overlap in the 2 sigma ranges between A.D. 1312 and 1329 and from A.D. 1387 to 1396 but do not overlap in the 1 sigma ranges. Taking the ceramic and radiocarbon evidence together, a use range estimate for this feature sometime during the Early Thruston phase (ca. A.D 1250 to 1350) is proposed.

The pit features excavated from Castalian Springs demonstrate that Castalian Springs was occupied from Early Dowd phase to the end of the Early Thruston phase (A.D. 1100 until A.D. 1350) with evidence for the most occupation from around A.D. 1225 to 1325.

Structures. Structure 1 appears to have been constructed and used relatively early in the site's history. While very few diagnostic ceramics have been recovered from the structure seven radiocarbon dates from the structural features produced a mean calibrated radiocarbon date of cal A.D. 1184 to 1271 (p=1.0) at 2 sigma (807±26 BP). This indicates that Structure 1 was built during the Dowd or Early Thruston phase.

Structures 2 and 4 are oriented at the same angle, suggesting that they were contemporary. They are also oriented at the same angle as Structures 1 and the overall site in general, approximately 15 degrees east of north (Figures 4.5, 4.10, 4.12, and 4.14). Few diagnostic artifacts were recovered from features associated with these structures and no radiocarbon samples have been obtained from the structures. A narrow intermediate handle fragment from within the wall trenches of Structure 2 produces a date estimate of A.D. 1245. Therefore it seems likely that Structures 2 and 4 were constructed during the time Structure 1 was in use, likely during the late Dowd or Early Thruston phase.

The superposition of Structure 3 onto Structure 2 demonstrates that Structure 3 was built after Structure 2. The re-alignment of the structure rather than expansion and rebuilding of Structure 2 suggests that there was a period of time between when Structure 2 was abandoned and when Structure 3 was constructed. By the time Structure 3 was constructed, alignment with the "site plan" was apparently no longer an issue, as it is oriented approximately north-south unlike any other excavated structure at the site. Therefore Structure 3 may date to after the main occupation of the site, perhaps as late as the early Late Thruston phase.

Several postmolds, intrusive into Feature 134 series of pits were identified in 2009 (Figure 4.23). No wall trenches were identified associated with these postmolds. Although these postmolds do not form a clear structural pattern, they might represent a domestic structure or a structure of lighter construction like a corn crib. One radiocarbon date from one of these posts produced a radiocarbon date of cal A.D. 1317 to 1354 (p=0.30) or cal A.D. 1389 to 1437 (p=0.70) (at 2 sigma) (540±30 BP) with the most likely 1 sigma of cal A.D. 1396 to 1426 (p=0.82). This possible structure appears to have been constructed during the late Early Thruston or even the Late Thruston phase.

A large circular wall trench structure at Castalian Springs was identified in 2009 and partially excavated in 2010 (Dacus 2010). Very few artifacts were recovered from the floor of the structure or associated structural features. Two radiocarbon dates were obtained from the eastern and western wall trench sections. These two radiocarbon dates are not statistically the same at a 95% confidence. The most likely overlap in these dates is between A.D. 1300 and 1320 (Table 4.2). After the structure was used, it was covered over with dirt to form a small mound, and the central post was dug out in a ceremony involving human skull bundles (Dacus et al. 2010). The re-filled central feature produced a radiocarbon date of cal A.D. 1288 to 1405 (p=1.0)

(620±40) (at 2 sigma). Construction of the structure took place during the Early Thruston phase. Later associated ceremonial activities occurred shortly after the structure was mounded over, around A.D. 1325 to 1350.

In 2011 a portion of a wall trench structure designated as Structure 5 was excavated. It is located adjacent to the base of Mound 3 (Figure 7.3). The fragment of an engraved shale gorget was recovered from one of these wall trenches. The north wall of this structure produced a radiocarbon date of cal A.D. 1317 to 1354 (p=0.30) or cal A.D. 1389 to 1437 (p=0.70) (at 2 sigma) (540±30 BP). It seems likely that the structure was in use at the same time as Mound 3. Both date to relatively late in the site's history during the later part of the Early Thruston phase. Although the structure is not of unusual size, it's location near the mound and the presence of a unique engraved shale gorget within the northern wall trench suggests that the structure had some importance (Figure 7.4).

Burial Mound Interments. Several papers have been devoted to the chronological placement and interpretation of material from Castalian Spring's burial Mound 1 excavated by William Edward Myer in 1891 (Smith and Beahm 2010a, 2010b, 2011). The placement of diagnostic material including a Dover sword, carafe neck and Nashville Negative Painted bottles, and Triskele, Cox and a Braden style gorget, within the mound suggests that the first burial likely dates to between A.D. 1250 to 1275 and the last burials occurred between A.D. 1300 and 1350 (Smith and Beahm 2010a).

Platform mounds. Mound 2. Mound 2 is the largest platform mound at Castalian Springs. It appears to have supported structures on both parts of its compound form. Only a few diagnostic ceramics were recovered from Mound 2. In addition, the radiocarbon dates from Mound 2 show some inconsistencies making the exact mound construction sequence difficult to determine. However, mound construction appears to have begun around A.D. 1300 or slightly before and was completed in the mid-fourteenth century during the Early Thruston phase.

There is evidence for both Spencer and Dowd phase pre-mound deposits. The Spencer phase may be represented by the 21 percent mixed shell-and-limestone-tempered sherds from below mound construction. A Dowd phase deposit is indicated by a thinly incised loop handle on an excurvate rim jar sherd as well as the rim sherd of a short rim plate. Handle measurements produced an estimated date of A.D. 1105 while the plate rim length produced a rather later date estimate of A.D. 1230. This suggests that Mound 2 construction did not begin before A.D. 1230.

Two radiocarbon dates from a feature at the base of the mound, statistically the same at the 95% confidence interval, produced a mean radiocarbon date of cal A.D. 1300 to 1368 (p=0.69) or cal A.D. 1381 to 1414 (p=0.31) (at 2 sigma) (585±28 BP), and cal A.D. 1316 to 1354 at the most likely 1 sigma (p=0.71). This suggests that the mound construction began by A.D. 1300. However, a post from the mid-mound construction stage produced a radiocarbon date of cal A.D. 1155 to 1277 (p=0.99) at 2 sigma (820±40 BP) with the most likely 1 sigma at cal A.D. 1206 to 1261 (p=0.85).

Two radiocarbon dates were obtained from the last construction stage on the eastern platform portion of Mound 2. One date is substantially earlier than expected with a 2 sigma range of cal A.D. 1023 to 1152 (960±40) and the most likely (p=0.50) range of cal A.D. 1081 to 1126. The sample was taken from the outer rings of a post burned in place and it is unclear why it produced such an early date. However, it is clearly not congruent with the mound construction sequence. The second date is more in line with other mound dates and site chronology. This sample produced a date range of cal A.D. 1301 to 1434 at 2 sigma (610±40). The 1 sigma intercepts of cal A.D. 1300 to 1368 is the most likely (p=0.80). These radiocarbon dates indicate that construction of Mound 2 began around A.D. 1300 and was likely completed fairly quickly by around A.D. 1350. This places Mound 2 construction at the end of the Early Thruston phase.

Mound 3. Mound 3 at Castalian Springs is interpreted as a platform mound that supported the site's temple, which housed the sacred fire of the community (Smith et al. 2012). A large ash deposit (Feature 360) measuring over 2 m on a side and hearth area (Feature 377) on the last remaining summit is interpreted as the remnants of this fire. The negative painted plates found at the site in general, and on the mound specifically support the conclusion that a sacred fire and the associated renewal ceremony was part of the religious life for the residents of Castalian Springs (Bossu 1962:32; DuPratz 1947 [1774]:315; Hilgeman 1991; 2000).

Excavations from Mound 3 yielded a sizable ceramic sample and ten radiocarbon dates. There are a number of limestone and other temper ceramics from Mound 3 that likely originated from fill from earlier site occupation used in mound construction. This includes a limestone-tempered loop handle. Ceramics from a pre-Mound 3 deposit includes limestone-tempered plain and cordmarked sherds, a small number of mixed shell-and-limestone-tempered sherds. This indicates an earlier Woodland and likely Spencer phase occupation at the site. Ceramics from the base of Mound 3 construction include a Matthews Incised sherd and both wide intermediate and strap handles. These handles produced a date estimate of A.D. 1345. Three radiocarbon dates from the base of Mound 3 are the same at a 95% level and produce a mean calibrated radiocarbon date of cal A.D. 1290 to 1322 (p=0.40) or cal A.D. 1347 to 1392 (p=0.60) (at 2 sigma) (633±17 BP). This indicates that construction of Mound 3 began late in the site's occupation, during the later part of the Early Thruston phase.

At least one single post structure was identified from the penultimate mound construction stage. A sample taken from this construction stage produced a radiocarbon date of cal A.D. 1292 to 1399 (p=1.0) (620±30 BP). Two wall trench structures were identified on the last documented mound construction stage. Three radiocarbon dates from fill inside the southern structure are significantly different at 95% confidence. They range from cal A.D. 1161 to 1264 (p=1.0) (at 2 sigma) (830±30 BP) to cal A.D. 1298 to1370 (p=0.71) or cal A.D. 1379 to 1413 (p=0.29) (at 2 sigma) (590±30 BP). Like the earlier limestone-tempered ceramics, the samples that produced the early dates likely originated from mound construction fill taken from earlier deposits around the site. These two wall trench structures were likely constructed during the latter part of the Early Thruston phase. Taken together, this evidence suggests that Mound 3 was constructed quickly between A.D. 1300 and 1350 during the later part of the Early Thruston phase.

Summary. Pit features, several domestic structures and Structure 1 appear to have been created and used early in the site's history during Dowd phase. There is some evidence for an earlier Spencer phase component at the site as well. The first burials in Mound 1 were interred around A.D. 1250 to 1275 and completed by A.D. 1350. Both Mound 2 and Mound 3 were constructed over a short period of time, during the later part of the Early Thruston phase, between ca A.D. 1275 and 1350. Structure 5 was also constructed and used during this time. The large circular structure was constructed during the Early Thruston phase as well. This evidence indicates that Castalian Springs acted as chiefdom capital between A.D. 1275 and 1350.

7.1c Sellars

Sellars appears to have been occupied during both the early and late Mississippian period. It is possible that there was a hiatus in occupation at the site. The frequency distribution of handle width to thickness ratios hint that there may have been a break in occupation during the twelfth century, but the gap in handle forms may also be a result of the small sample size (Figure 6.18). Evidence from other ceramic attributes and radiocarbon dates support an occupation at the site between A.D. 1200 and A.D. 1400, with some evidence of site occupation between A.D. 900 and 1100.

A number of small sherds with limestone and mixed limestone and shell temper, a few contexts with a relatively high percentage of shell-tempered cordmarked sherds as well as a single limestone-tempered handle were recovered from Sellars, suggesting the presence of a small Spencer phase occupation at Sellars. Dowd phase ceramics at Sellars include loop and narrow intermediate handles, and cylindrical neck bottles. Early Thruston phase ceramic attributes include wide intermediate and strap handles, *var. Matthews* and *var. Manly* incised jar sherds, peaked rim jars, carafe neck bottles, Mound Place Incised, Nashville Negative Painted, Angel Negative Painted plate sherds, dog effigy bottle. Late Thruston phase ceramic attributes at Sellars include strap handles, notched appliqué rim bowls, and a naturalistic duck effigy bowl.

Most of the radiocarbon dates from Sellars have large calibrated ranges and therefore the intercept probabilities will be carefully considered when using radiocarbon dates to date features. One radiocarbon date from Sellars indicates a Woodland period occupation at the site. The remaining dates from Sellars range from Late Woodland to the Late Thruston phase (Figure 7.5).

Palisade. Modern excavations at Sellars have documented two palisade lines at the site. The inner palisade section appears to have been constructed first during the Dowd phase (A.D. 1100-1250). It appears in the excavation as a series of short wall trench segments, but these are likely the remnants of a continuous wall trench. Several large postholes running perpendicular to the wall trench suggest that there were bastions along this palisade line (Butler 1981:47). A sample from Feature 6, associated with this palisade line, produced a radiocarbon date of cal A.D. 634 to 1420 (p=1.0) at 2 sigma (975±235 BP) with the most likely 1 sigma (p=0.97) range of cal A.D. 862 to 1269. The ceramic assemblage from Feature 6 includes a shell-tempered cordmarked sherd as well as a small number of mixed temper sherds which could indicate either a Spencer or Dowd phase date. The presence of a *var. Matthews* sherd, in the feature suggests some artifact mixing within the feature.

A short segment of the outer palisade was excavated corresponding to the still visible complex of two embankments with a central ditch. Two rises visible on the interior at the time of excavation are interpreted as remnants of bastions, which Putnam described as spaced at regular intervals along the palisade. A radiocarbon sample from this outer palisade line produced a date of cal A.D. 1146 to 1295 at the most likely 2 sigma (p=0.87) (800 ±65 BP) with 1 sigma at cal A.D. 1178 to 1276 (p=1.0). This dates the later palisade line to the late Dowd or early part of the Early Thruston phase (around A.D. 1175 to 1275).

Structures. Structure 1. Structure 1 is a square wall trench structure with no evidence of rebuilding. It is located close to and in the same alignment as the platform mound, suggesting that they were in use at the same time, although the mound was likely in use for a longer period of time than Structure 1 (Butler 1981). A sample from Structure 1 produced a radiocarbon date of cal A.D. 943 to 1289 at the most likely (p=0.98) 2 sigma (900±110 BP), suggesting a Dowd or Early Thruston phase date for this structure.

Structures 3 and 4. Wall trench Structure 3 dates to the Dowd or Early Thruston phase. A sample retrieved from a hearth associated with the structure produced a radiocarbon date of cal A.D. 1154 to 1409 at the most likely 2 sigma (p=0.99) (730±80 BP), and cal A.D. 1215 to 1310 at the most likely (p=0.83) 1 sigma. The structure does not show any evidence of rebuilding. After use, it was dismantled and covered with dirt (Butler 1981). Single post Structure 4 was then built on top of this low mound. A *var. Manly* sherd was recovered in the unit and level of this structure, which would be consistent with a post A.D. 1250 date for Structure 4 and is in line with the radiocarbon date from the earlier Structure 3.

1981 Single post structure. A small pit feature (Feature 5) from the 1981 single post structure contained a plate rim fragment which produces a date estimate of A.D. 1280. However, this pit may not be directly associated with this structure. Two radiocarbon dates were run on features associated with the single post structure excavated in 1981. Feature 7, a pit feature that predates the structure produced an early radiocarbon date of cal A.D. 986 to 1191 (p=0.99) or cal A.D. 1196 to 1207 (p=0.01) (at 2 sigma) (965±55 BP). A post from the structure was also dated, but produced a very early date of cal A.D. 660 to 1030 (p=1.0) (at 2 sigma) (1160±100 BP). Therefore the date for this single post structure is unclear.

In addition to excavating the platform mound at Sellars, Putnam also excavated 19 house locations (Moore and Smith 2009:49). His excavations did not document construction techniques of the structures, but he did record the associated artifacts with stone-box graves of children buried under the house floors of five separate houses. The carafe neck bottle from a grave under House 10 (Acc#77-57-10/12086) suggests a post A.D. 1250 deposition and use of that structure. Ceramics recovered from a grave under House 8 include a wide, thin strap handle, indicating a Late Thruston phase date. Wide intermediate and a strap handles were recovered from two graves under House 10, indicating a late Early Thruston or Late Thruston date. House 13 can be confidently dated to post A.D. 1350 from presence of a peaked rim jar and outward facing duck effigy bowl. The dog bottle with a carafe neck, also found in a burial in this house, is consistent with a post A.D. 1350 date. Therefore it appears that residential structures excavated by Putnam potentially date to as early as the Dowd phase or the Early Thruston phase but certainly were used during the Late Thruston phase.

Pit Features. Several pit features were excavated at Sellars. These features indicate a Dowd and Early Thruston phase occupation at the site. Pit Feature 4 contained a *var. Matthews* incised jar sherd, a Mound Place Incised bowl rim sherd and a carafe neck bottle rim sherd. Handles from this feature include loop, wide intermediate, and strap forms. Plate forms recovered from Feature 4 include short standard and long standard plates. Measurements of the plate rims from Feature 4 result in a later date estimate of A.D. 1370. This feature produced a radiocarbon date of cal A.D. 1212 to 1404 (p=1.0) (at 2 sigma) (705±65 BP) with the most likely 1 sigma at cal A.D. 1253 to 1315 (p=0.69). It is most likely that Feature 4 was filled during the Early Thruston phase.

Pit Feature 6 contained a shell-tempered cordmarked sherd as well as some mixed shell-tempered sherds. This feature produced the wide ranging date of cal A.D. 634 to 1420 (p=1.0) (at 2 sigma) (675±235) with the most likely 1 sigma at cal A.D. 862 to 1269 (p=0.97). The ceramics and radiocarbon date for Feature 6 could indicate either a Spencer or Dowd phase date.

Pit Features 7 and 12 also contain a large number of mixed shell-and-limestone-tempered sherds, suggesting a Spencer phase date. A radiocarbon date of cal A.D. 986 to 1191 (p=0.99) at 2 sigma (965±55 BP) from Feature 7 also supports a Spencer or Dowd phase date for the feature.

Burial Mound. The burial mound excavated by Putnam in 1877 appears to have been enlarged over a long period of time. There are relatively early ceramics, including a cylindrical neck bottle, in the lowest tier of the mound which date to pre-A.D. 1250 (Moore and Smith 2009:46, Table 4). Above these initial graves are carafe neck bottles, strap handles and a notched rim bowl indicating a post A.D. 1350 date for the final burials.

Platform Mound. There is little direct chronological information regarding the construction of the platform mound at Sellars. Putnam's excavation notes of this mound indicated that there were at least four construction episodes of the mound (Putnam 1878:329-360; Smith and Miller 2009:40). The only diagnostic ceramic material from Putnam's excavations at the Peabody is a noded strap handle recovered from an ash deposit in the mound at a depth of 7 to 8 feet, which corresponds to the second documented construction stage (Moore and Smith 2009:365). The handle measurements produce a date estimate of A.D. 1402, suggesting that the latter two construction stages were used during the Late Thruston phase.

As is the case for Rutherford-Kizer, it seems reasonable to assume that Sellars acted as polity capital during a time when its palisade was being constructed and used, during the Dowd through the early part of the Early Thruston phase (A.D. 1100 to 1275). Structure 1, which appears to be oriented with the platform mound, also produced a date that falls into this range. The strap handle from the second construction stage suggests that the mound was also used during the Late Thruston phase. Admittedly the presence of a single handle fragment excavated in 1877 is not indisputable evidence for dating mound construction. However, as discussed above, there is additional evidence for occupation at Sellars during the Late Thruston phase.

Summary. From the material recovered from pit features, structures, general unit contexts and the burial mound, it seems that the site was occupied during the Dowd and Early Thruston phases (A.D. 1200 to 1350) as well as in the Late Thruston phase (post A.D. 1350). Prior to construction of the mound at Sellars, there appears to have been at least a small Spencer phase occupation at the site. The inner palisade line appears to have been built during the Dowd phase, at which point some sort of community organization must have been in place, and there was likely some need for defense. A wall trench Structure 1 was also constructed around this time and the first individuals were buried in the burial mound. At this time, Sellars became a chiefdom capital. Wall trench Structure 3 was also constructed at this time or slightly later when the larger palisade wall with a ditch and embankment was constructed during the late Dowd or early part of the Early Thruston phase. The expansion and improvement to the palisade wall likely reflects both a growing population and a growing need for better defense perhaps indicating more violence in the region. Putnam maps over seventy-five potential structure locations within the palisade (Moore and Smith 2009:45) suggesting that the site potentially was occupied over a relatively long period of time or had a dense population.

7.1d Beasley Mounds

Beasley shows evidence of being occupied during the Spencer phase and also during the late Dowd and early part of the Early Thruston phase. The radiocarbon dates from Beasley indicate site occupation during the Early Thruston phase.

Limestone-tempered sherds make up 1.6 percent of the site's ceramic assemblage and mixed shell-and-limestone-tempered and other mixed tempered ceramics make up 2.9 percent of the site's ceramic assemblage. These sherds suggest a small Spencer phase occupation prior to the time Beasley served as polity capital. Contexts with limestone and mixed shell tempering at Beasley tend to lack shell-tempered check-stamped and cordmarked sherds, indicating two ceramic components at the site.

Handles forms recovered from Beasley range from loop to strap and produce a date estimate of A.D. 1100. The range in handle forms suggests that at least a small population was present at the site during most of the Mississippian period. The plate rims from Beasley were both short rimmed and short standard rims, suggesting an early component at the site. Plate rim lengths produce a date estimate of A.D. 1229.

A carafe neck bottle rim sherd was recovered from Test Unit K, supporting an occupation at the site after A.D. 1250. Although no Matthews, Beckwith or Mound Place Incised sherds were identified from Beasley, four shell-tempered incised sherds, not identifiable to type because of their small size, were documented from modern excavations. These most likely represent Matthews Incised sherds.

Myer had a photograph of five ceramic vessels excavated from Beasley by Sam Stone Bush in 1895 (Figure 7.6) (Smith and Beahm 2010c). The back is labeled "Pottery from the old town at Mound of Dixon's Creek. 5 pots from Mound and Grave on town site at Mouth of Dixon's Creek, excavated by Sam Stone Bush 1895- 2&3 shows rounded, indented, lotus conventional form- sorry not able to get better photo". Vessels shown include a cylindrical neck bottle as well as two Matthews Incised jars and a compound vessel with a possible notched rim appliqué strip bowl as the base. The cylindrical neck bottle suggests a pre-A.D. 1250 component present at the site, while the Matthews Incised jars suggest a post-A.D. 1250 component as well. A possible compound vessel with appliqué rim strip may indicate some occupation during the Late Thruston phase.

The three radiocarbon dates obtained from the site support the evidence for an occupation at the site from the mid to late thirteenth century. The burned remnants of the last remaining structure from the platform mound at Beasley Mounds dates to around A.D. 1270 (between cal A.D. 1219 and 1303 at the most likely 1 sigma (p=0.88)). The documentation of two previous construction episodes suggests that mound construction began at the site by around A.D. 1225 (Beahm and Smith 2012a).

Summary. Although several mounds were constructed, testing throughout the site does not suggest that this town had a very dense population whereas the range of ceramics recovered from the site suggests a long occupation. Evidence indicates a small occupation during the

Spencer phase and more intensive occupation from A.D. 1200 to 1300 with the site serving as capital between A.D. 1225 and 1300.

7.1e Moss Mounds

Although only a small area was excavated at Moss, the excavation does provide some information about site occupation based on ceramics and a single radiocarbon date. The light artifact density from posthole tests placed around the core of the site indicates that the site was not occupied heavily or for an extensive period of time.

The ceramics from Moss indicate a pre-A.D. 1300 occupation for the site. The three jar rim sherds recovered are all excurvate in angle, which suggests a relatively early Mississippian occupation. Three handle midsections were recovered from the site as well. These were found in Test Unit 1, located to the northeast of the platform mound. One handle was located within a posthole. They are loop and narrow intermediate in form, also suggesting a relatively early date for the site. The handle measurements produce a date estimate of A.D. 1160.

One radiocarbon date was obtained from the site. This sample was taken from within the platform mound, under the clay cap 70 cm below ground surface. The sample used in this radiocarbon date was recovered from a feature that also contained shell-tempered ceramics, chipped stone debris and calcined animal bone fragments. This sample produced a calibrated date of cal A.D. 1220 to 1283 (p=1.0) at 2 sigma (760±30 BP) with the most likely 1 sigma at cal A.D. 1251 to 1279 (p=0.82). This strongly suggests that this mound was constructed during the same time that the mound at Beasley was being used, in the mid to late thirteenth century.

Summary. Although the sample size is small, ceramics from Moss indicated that the site was occupied during the Dowd phase. No diagnostic ceramics were recovered from the platform mound. A single radiocarbon date from a feature located within the mound produced a radiocarbon date indicates the mound was constructed during the late Dowd or (more likely) the early part of the Early Thruston phase.

7.2 Summary

The goal of this chapter was to establish a detailed site history for each of the sample sites in order to determine which mound sites served as political capitals at the same time, the length of time each site served as a polity center, and identify mound reuse. The level of precision from the developed phases is still 100 to 150 years, too long a period to precisely detect the timing of a chiefdom fall and rise. Ceramic and radiocarbon dating of all features possible conducted to narrow down site occupation and chiefdom presence (Table 7.1).

Each site was occupied to some degree prior to their becoming capitals and there is substantial overlap in site occupation of the sample sites, particularly between A.D. 1250 and 1350 (Table 7.2) (Figure 7.1, 7.2, 7.5, 7.7, 7.8). This makes inferences about the dating of Rutherford Kizer and Sellars as polity capitals, where no modern platform mound excavations have taken place, based largely on the logic that palisades would have been present at a polity capital, much like the assumption that mound construction would have been coterminous with the presence of a chiefdom.

Rutherford Kizer appears to have served as polity capital around A.D. 1325 to 1400. Castalian Springs seems to have become a polity capital at least by A.D. 1275 and continued as capital until around A.D. 1350. The Sellars site likely served as a polity capital between A.D. 1200 and 1275 and possibly again after A.D. 1350. The Beasley Mounds site served as a polity capital between A.D. 1225 and 1300. Moss served as a center during this time as well. The ceramic and radiocarbon dating evidence indicates that there is overlap in the time that Rutherford Kizer and Sellars, Sellars and Beasley, Sellars and Moss, and Beasley and Moss, Rutherford Kizer and Castalian Springs, Castalian Springs and Beasley, and Castalian Springs and Moss served as polity capitals. The political and cultural relationship among these mound centers and the implications for chiefdom territorial extent will also be discussed in Chapter 9.

Table 7.1: Ceramic Traits by Contexts Described in Text (besides shell tempered plain). Does not include contexts with only shell tempered plain and Kimmswick Fabric Impressed types.

Site	Context	Ceramics Characteristics
Rutherford Kizer	Feature 20 (pit)	Kimmswick Fabric Impressed, *var Matthews*, Nashville Negative Painted, fish effigy bowl, human effigy bowl, strap handles, bifurcate lug, jars with direct and incurvate rims, restricted rim bowl
Rutherford Kizer	Feature 36 (pit)	Kimmswick Fabric Impressed, *var Matthews*, Beckwith, Nashville Negative, duck effigy bowl, fish effigy bowl, human effigy bowl, limestone tempered cordmarked, quartz tempered plain, sand tempered complicated stamped, strap handles (date estimate A.D.1437), bifurcate lugs, jars with direct and excurvate rims, outslanting wall bowls, short standard and long standard plates (date estimate of A.D. 1337).
Rutherford Kizer	Feature 101 (pit)	Kimmswick Fabric Impressed and Plain pans, *var Matthews*, *var Manly*, Mound Place, Nashville Negative Painted, unidentified effigy fragments, McKee Island Cordmarked, strap handles, jars with direct rims, fine tempered hooded bottle, bifurcate lug, notched rim appliqué bowls
Rutherford Kizer	Feature 194 (pit)	Kimmswick Fabric Impressed, *var Matthews*, strap handles, notched rim appliqué bowls, jars with direct rims
Rutherford Kizer	Feature 359 (pit)	Kimmswick Fabric Impressed and Plain pans, *var Matthews*, Beckwith, jars with direct rims, strap handles, notched rim appliqué bowl
Rutherford Kizer	Feature 361 (pi0)	Kimmswick Fabric Impressed, *var Matthews*, restricted rim bowl, outslanting wall bowl
Rutherford Kizer	Feature 392 (pit)	*var Matthews*, jar with direct rim, strap handle (date estimate A.D.1350)
Rutherford Kizer	Feature 588 (pit)	Kimmswick Fabric Impressed, *var Matthews*, strap handles (date estimate A.D.1400)
Rutherford Kizer	Feature 425 (pit)	Kimmswick Fabric Impressed, Nashville Negative Painted, jar with direct rim, strap handle (date estimate A.D.1410)
Rutherford Kizer	Burial 80	Abbreviated frog effigy bowl
Rutherford Kizer	Features 738, 739 and 740 (pit)	Quartz tempered cordmarked, grit tempered cordmarked, Wolf Creek Check-Stamped
Castalian Springs	Feature 93 (pit)	Kimmswick Fabric Impressed, jar with direct and incurvate rims, narrow intermediate (date estimate A.D. 1144)
Castalian Springs	Feature 92 (pit)	*var Matthews*
Castalian Springs	Feature 53/91 (pit)	Kimmswick Fabric Impressed and Plain pans, *var Matthews*, Mound Place, Limestone tempered cordmarked, jars with direct, excurvate and incurvate rims, lobed jar, narrow intermediate and wide intermediate handles (date estimate A.D. 1257), single lugs
Castalian Springs	Feature 51 (pit)	Kimmswick Fabric Impressed Plain pans, mixed shell and limestone tempered, limestone tempered plain and cordmarked, jars with direct and excurvate rims, lobed jar
Castalian Springs	Feature 4 (pit)	Kimmswick Fabric Impressed and Plain pans, *var Matthews*, McKee Island Cordmarked, Limestone tempered plain and cordmarked, sand/grit tempered, jars with direct and incurvate rims, lobed jars, handle with central groove, wide intermediate and strap handles (date estimate A.D.1307, with attachment areas A.D. 1274), single and bifurcate lugs, coarse paste hooded bottles, carafe neck bottle, dog effigy bottle, short and short standard rim plate (date estimate A.D. 1315).

Table 7.1 cont.

Site	Context	Ceramics Characteristics
Castalian Springs	Feature 16 (pit)	Kimmswick Fabric Impressed and Plain pans, *var Matthews, var Manly,* Limestone tempered plain, sand/grit tempered, jars with direct and incurvate rims, nodded handle with four horns, wide intermediate handle (date estimate A.D.1306), single and bifurcate lugs
Castalian Springs	Feature 106 (pit)	Kimmswick Fabric Impressed, McKee Island Cordmarked, mixed shell and limestone tempered, Limestone tempered plain and cordmarked, quartz tempered, jars with direct rims, narrow intermediate and strap handles (date estimate A.D.1280), single and bifurcate lugs, fine tempered hooded bottle, short standard rim plate (date estimate A.D. 1294).
Castalian Springs	preFeature 134 midden	loop handle (date estimate A.D.1150)
Castalian Springs	Feature 134 pit 1	Kimmswick Fabric Impressed, Limestone tempered cordmarked, lobed jar, jars with excurvate rims, handles with double horns, narrow intermediate, wide intermediate, and strap handles (date estimate A.D.1250), short rim plate and short standard rim plate (date estimate 1252).
Castalian Springs	Feature 134 pit 2	Kimmswick Fabric Impressed, handle with double horn, nodded handle, jars with direct, excurvate, and incurvate rims, wide intermediate and strap handles (date estimate A.D. 1294)
Castalian Springs	Feature 134 pit 3	Kimmswick Fabric Impressed, jar with excurvate rim, wide intermediate (date estimate A.D.1238)
Castalian Springs	Feature 100 (pit)	Kimmswick Fabric Impressed, mixed shell and limestone tempered, Limestone tempered plain and cordmarked, quartz tempered, jar with direct rim, Angel Negative Painted
Castalian Springs	Feature 119 (pit)	Kimmswick Fabric Impressed and Plain pans, *var Matthews, var Manly,* Beckwith, Nashville Negative Painted, Angle Negative Painted, McKee Island Cordmarked, Limestone tempered plain and cordmarked, shell and grit tempered, grog tempered, owl effigy bowl and crested bird effigy bowl, lobed jars, jars with direct, excurvate and incurvate rims, handles with single and double horns, handles with central groove and central incised line, narrow intermediate, wide intermediate, strap handles (date estimate A.D. 1312), single and bifurcate lugs, coarse and fine tempered hooded bottles, restricted rim bowls, short rim, short standard and long standard rim plates (date estimate A.D. 1313)
Castalian Springs	Structure 2	wide intermediate handle (date estimate A.D.1245)
Castalian Springs	Mound 1	Nashville Negative Painted, carafe neck bottle, Braden style gorget, triskele gorgets, Cox gorgets, Crib gorgets, Dover sword
Castalian Springs	preMound 2	Kimmswick Fabric Impressed, mixed shell and limestone tempered, limestone tempered plain and cordmarked, jar with excurvate rim, handle with double horn, handle with incised line, loop handle (date estimate A.D.1105), short rim plate (date estimate A.D.1234).
Castalian Springs	Feature 305- pre Mound 3	Kimmswick Fabric Impressed, mixed shell and limestone, limestone tempered plain and cordmarked, coarse tempered hooded bottle,
Castalian Springs	base of Mound 3	*var Matthews,* wide intermediate and strap handles (date estimate A.D.1345)
Sellars	Feature 6 (associated with inner palisade)	Kimmswick Fabric Impressed, *var Matthews, var Manly,* McKee Island Cordmarked, mixed shell and limestone tempered, limestone tempered plain, jars with direct rims, single and bifurcate lugs,

Table 7.1 cont.

Site	Context	Ceramics Characteristics
Sellars	Feature 4 (pit)	Kimmswick Fabric Impressed, *var Matthews*, Mound Place, McKee Island Cordmarked, Red Filmed, lobed jar, jars with direct, excurvate, and incurvate rims, nodded handle, handle with central groove, loop and strap handles (date estimate A.D. 1309), single and bifurcate lugs, carafe neck and cylindrical neck bottle, outslanting wall bowls, restricted rim bowls, short standard plates (date estimate A.D. 1375)
Sellars	Feature 33	*var Matthews*, McKee Island Cordmarked, limestone tempered plain, jars with direct and incurvate rims
Sellars	Feature 7	Kimmswick Fabric Impressed, mixed shell and limestone tempered, limestone tempered
Sellars	Feature 12	Shell and limestone tempered, limestone tempered
Sellars	Mound C (burial)	*var Matthews*, cylindrical neck bottle, carafe neck bottle, outslanting wall bowl, scalloped rim bowl, notched appliqué rim bowl, strap handles (date estimate A.D.1312), human effigy pipe
Sellars	Platform Mound	strap handle (date estimate A.D.1402)
Sellars	House 8	strap handle (date estimate A.D.1438), unidentified effigy bowl
Sellars	House 10	strap handles (date estimate A.D.1383)
Sellars	House 12	lobed jar, carafe necked bottle (tripod)
Sellars	House 13	peaked rim jar, duck effigy bowl, dog effigy bottle (carafe neck), shell tempered cordmarked jar, lobed jar, bifurcate lug
Beasley	Test Units A, B, C, F (platform mound)	Wolf Creek Check-Stamped, McKee Island Cordmarked, mixed shell and limestone tempered, limestone tempered plain and cordmarked, red filmed (fine shell temper), plain pan
Beasley	Test Units K and L (southwest midden)	Kimmswick Fabric Impressed, Wolf Creek Check-Stamped, McKee Island Cordmarked, cob marked, brushed, mixed shell and limestone tempered, limestone tempered plain, jars with direct and excurvate rims, handles with single and double horns, loop, narrow intermediate, and wide intermediate handles (date estimate A.D.1114), bifurcate lug, carafe neck bottle, short standard rim plate (date estimate A.D. 1249)
Beasley	Test Units G and M (northeast midden)	Kimmswick Fabric Impressed, Wolf Creek Check-Stamped, McKee Island Cordmarked, red filmed (coarse and fine shell), mixed shell and limestone tempered, limestone tempered plain, quartz tempered, jars with direct, excurvate and incurvate rims, loop handles (date estimate A.D.1050) short rim and short standard rim plates (date estimate A.D. 1215)
Beasley	Test Units E, H, I, J (remaining units)	mixed shell and limestone tempered, grit tempered, white filmed, limestone tempered plain and cordmarked
Moss	Test Unit 1	Wolf Creek Check-Stamped, McKee Island Cordmarked, combed, limestone tempered plain, loop and narrow intermediate handles (date estimate A.D. 1161)

Table 7.2: Phase Designations for Features and Structures from Sites in Study Area. Rutherford Kizer (RK), Castalian Springs (CS), Sellars (S), Beasley (B), and Moss (M). Dark gray indicates strongly supported phase designation. Light gray indicates less certain but possible phase designation. Blue indicates mound construction and use. Yellow indicates total site occupation.

		900-950	950-1000	1000-1050	1050-1100	1100-1150	1150-1200	1200-1250	1250-1300	1300-1350	1350-1400	1400-1450
Site	Feature	Spencer				Dowd			Early Thruston		Late Thruston	
RK	Single post structures											
RK	Pit F. 20											
RK	Pit F. 36											
RK	Pit F. 194											
RK	Pit F. 359											
RK	Pit F. 588											
RK	Pit F. 425											
RK	Pit F. 101											
RK	Wall trench structures											
RK	Platform mound											
S	House 13											
RK	All site components											
S	All site components											
S	Burial Mound											
RK	Pit F. 392											
RK	Outer palisade											
S	Structure 4											
CS	All site components											
B	All site components											
CS	Structure 3											
CS	Post intrusive to F. 134											
CS	Pit F. 100											
CS	Structure 5											
CS	Md 3 top structures											
CS	Pit F. 134 Pit 3											
CS	Md 3 penulitmate structure											
CS	Circular structure											
CS	pre-Md 3 deposit											
CS	Platform Md 3											

Table 7.2 cont.

		900-950	950-1000	1000-1050	1050-1100	1100-1150	1150-1200	1200-1250	1250-1300	1300-1350	1350-1400	1400-1450
Site	Feature	Spencer				Dowd			Early Thruston		Late Thruston	
CS	Main Platform Md 2											
RK	Inner palisade											
CS	Pit F. 119											
RK	Pit F. 360											
RK	Pit F. 587											
CS	Pit F. 134 Pit 2											
CS	Burial Md 1											
S	Pit F. 4											
CS	Pit F. 16											
CS	Pit F. 106											
S	Platform Md											
CS	Pit F. 53/91											
CS	Pit F. 92											
CS	Pit F. 4											
CS	Pit F. 134 Pit 1											
M	Platform Md											
CS	Structure 4											
CS	Structure 2											
S	Structure 3											
S	Single post structure											
S	House 12											
B	Platform Mound											
S	Structure 1											
S	Outer palisade											
M	All site components											
S	House 10											
CS	Structure 1											
CS	Pit F. 93											
CS	pre-Md 2 deposit											
S	Inner palisade											
S	Pit F. 6											

Table 7.2 cont.

		900-950	950-1000	1000-1050	1050-1100	1100-1150	1150-1200	1200-1250	1250-1300	1300-1350	1350-1400	1400-1450
Site	Feature	Spencer				Dowd			Early Thruston		Late Thruston	
CS	Midden under Pit F. 134											
RK	Pit F. 15											
S	Pits F. 7 and F.12											

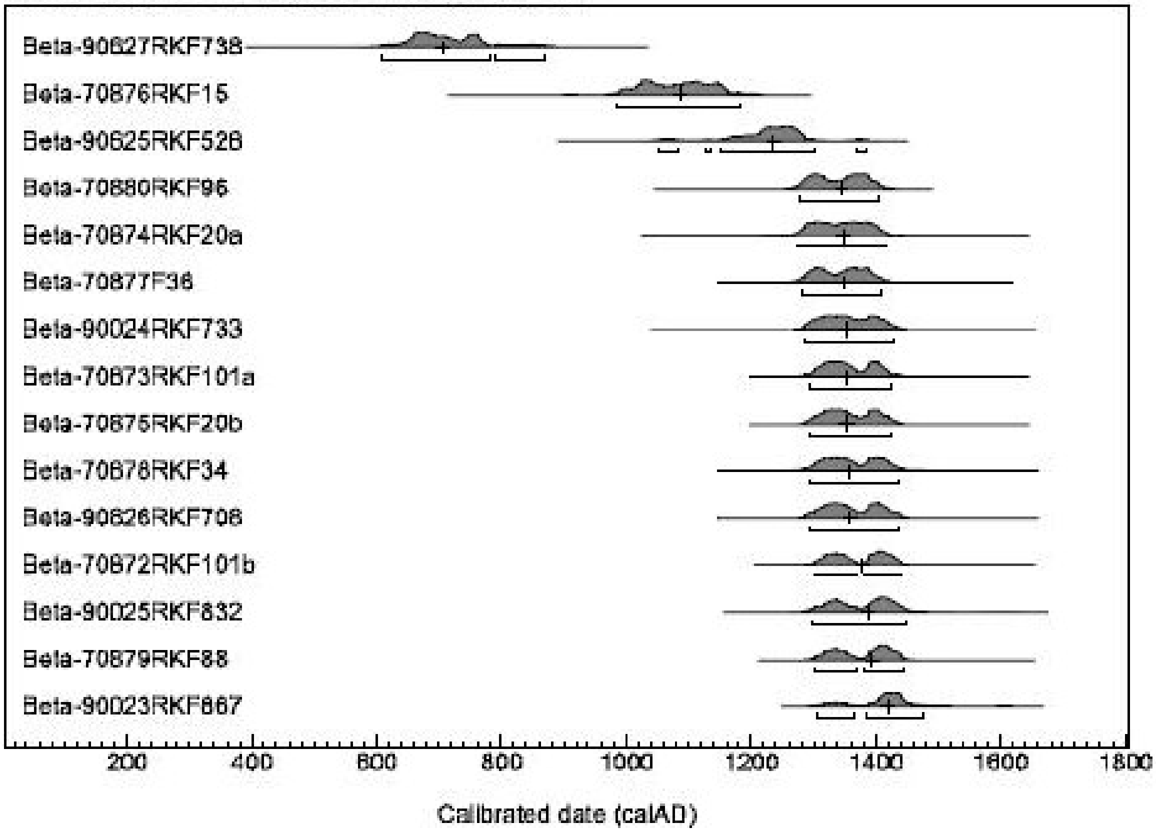

Figure 7.1: Rutherford Kizer Radiocarbon Dates by Context (OxCal v4.2.3. Bronk Ramsey (2013); r:5 IntCal13 atmospheric curve (Reimer et al. 2013)).

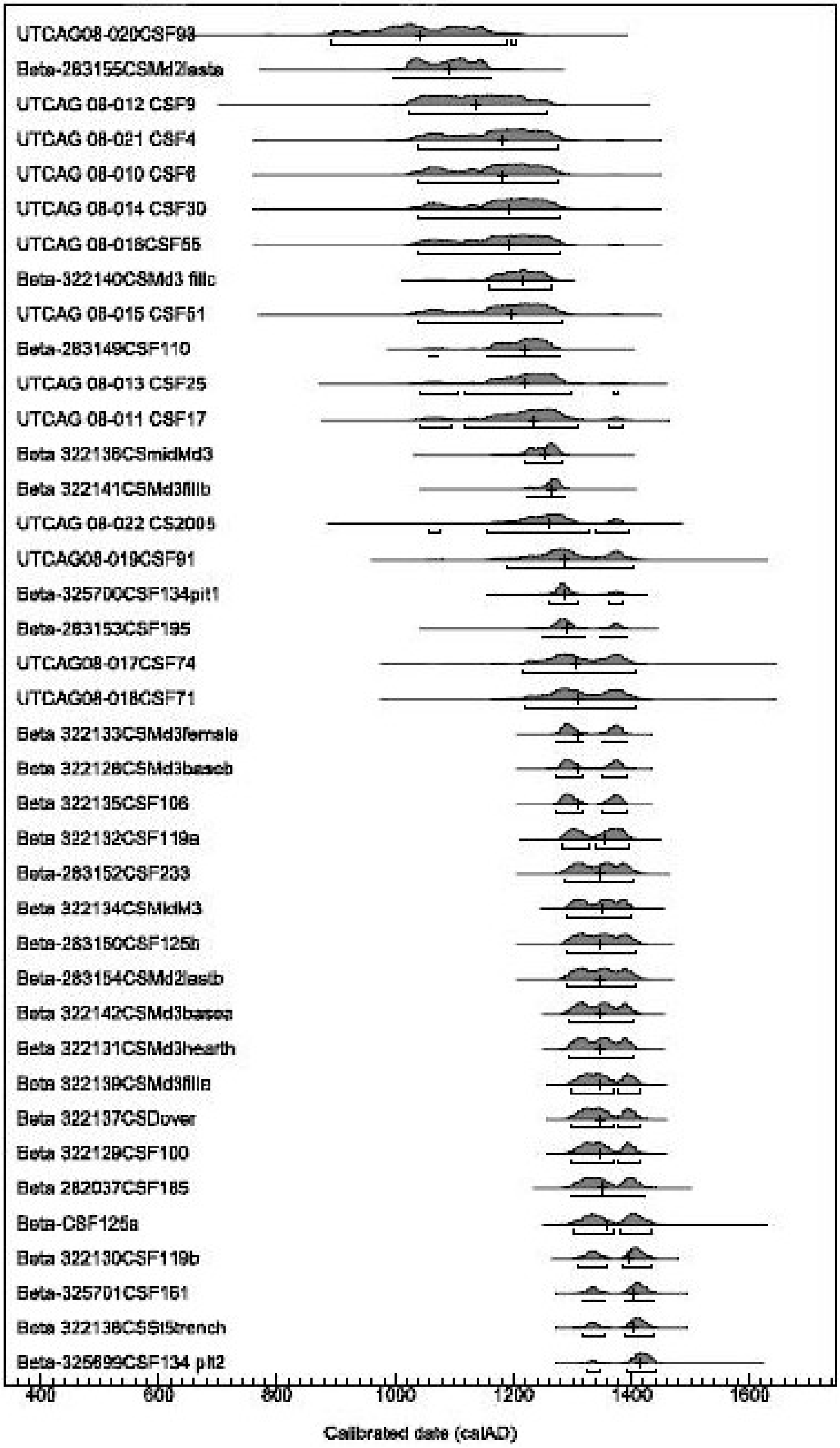

Figure 7.2: Castalian Springs Radiocarbon Dates by Context (OxCal v4.2.3. Bronk Ramsey (2013); r:5 IntCal13 atmospheric curve (Reimer et al. 2013)).

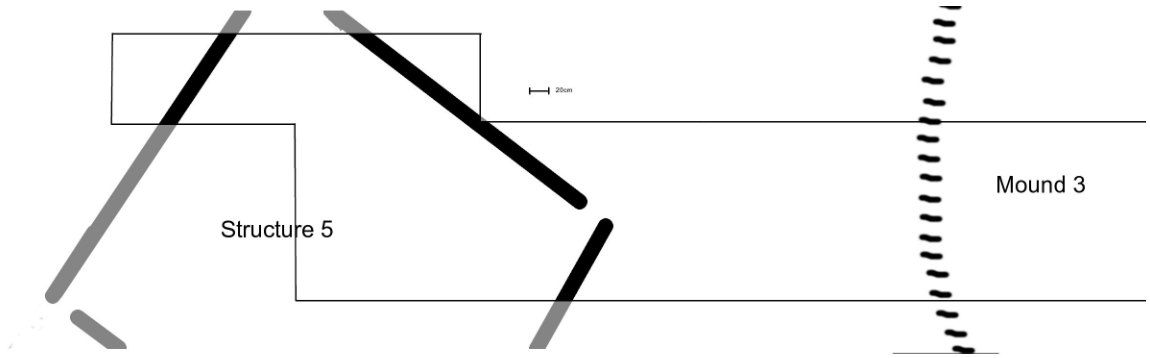

Figure 7.3: Structure 5, Located West of Castalian Springs Mound 3. Gray areas of wall trench are extrapolated.

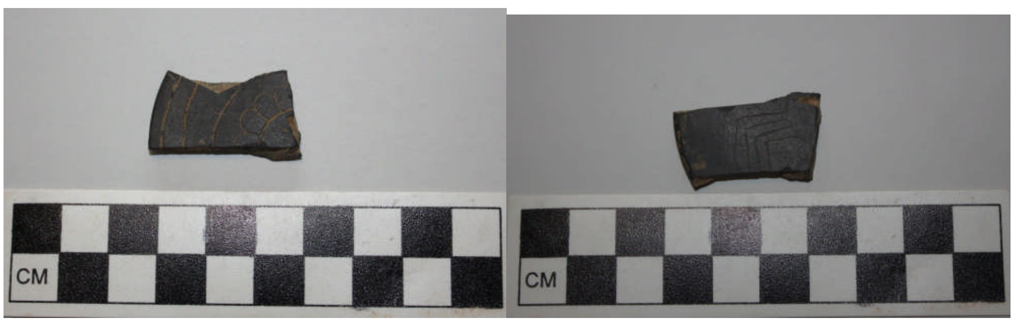

Figure 7.4: Shale Gorget Recovered from Northern Wall trench of Structure 5. Both sides shown.

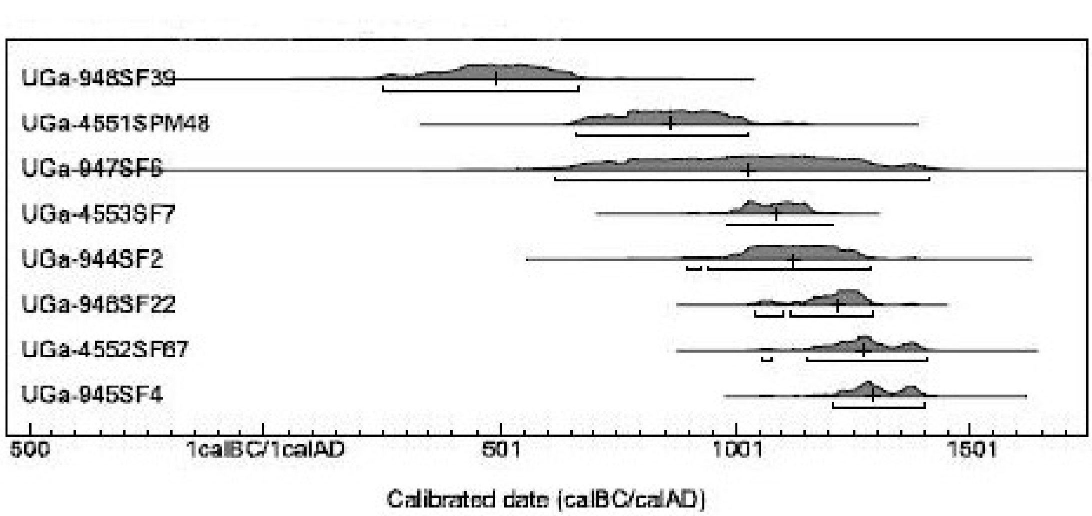

Figure 7.5: Sellars Radiocarbon Dates by Context (OxCal v4.2.3. Bronk Ramsey (2013); r:5 IntCal13 atmospheric curve (Reimer et al. 2013)).

Figure 7.6: Photo of Ceramic vessels from Beasley. Given to William Edward Myer by Sam Stone Bush. Note the two Matthews incised jars second and third of the left (Photograph courtesy of Samuel D. Smith).

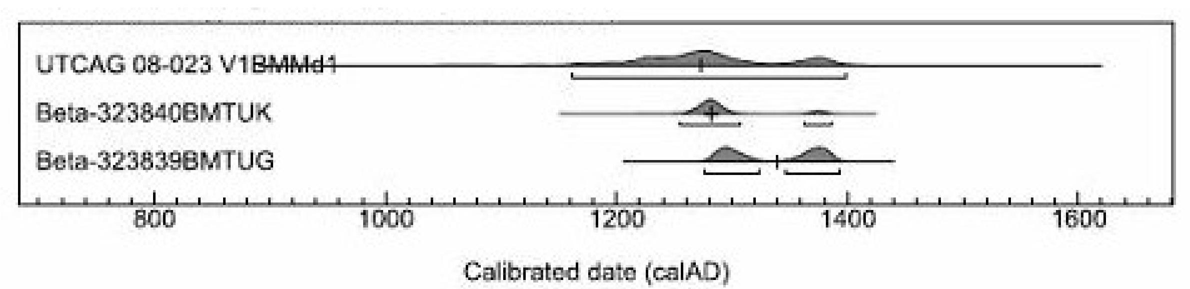

Figure 7.7: Beasley Radiocarbon Dates by Context (OxCal v4.2.3. Bronk Ramsey (2013); r:5 IntCal13 atmospheric curve (Reimer et al. 2013)).

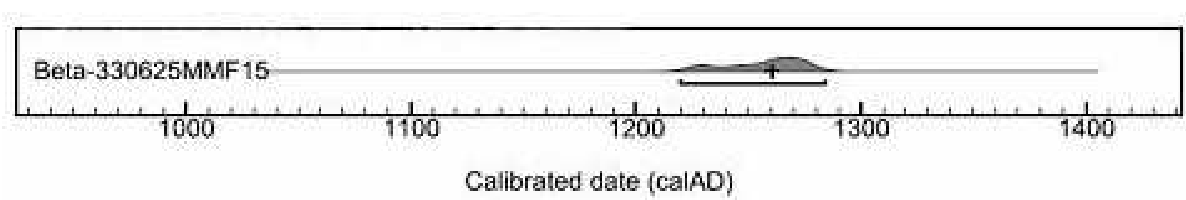

Figure 7.8: Moss Radiocarbon Date (OxCal v4.2.3. Bronk Ramsey (2013); r:5 IntCal13 atmospheric curve (Reimer et al. 2013)).

CHAPTER 8

CERAMIC STYLE AREAS

Excavations at Beasley and Moss provide the first archaeological collections of any kind from these sites. Prior research presumed that something like Middle Cumberland ceramic assemblages would be present at sites up the Cumberland east of Castalian Springs. In the course of this research, it was discovered that the ceramic assemblages of the Beasley and Moss sites differ from typical Middle Cumberland assemblages. In this chapter the distinction between the Beasley and Moss and Middle Cumberland ceramic assemblages are described and reasons for this distinction is explored.

8.1 Beasley and Moss vs. Middle Cumberland Ceramic Assemblages

Shell-tempered plain ceramics dominate the ceramic assemblages from the Middle Cumberland region and Beasley/Moss. Although the easternmost well-documented Middle Cumberland site, Castalian Springs, is located only 22 km from Beasley, these two sites have dissimilar ceramic assemblages. The main ceramic differences between Middle Cumberland region sites and Beasley/Moss are the relatively high percentage of shell-tempered cordmarked (McKee Island Cordmarked) and shell-tempered check-stamped (Wolf Creek Check-Stamped) ceramics found at the later two sites. There are also several ceramic types recovered from Beasley and Moss in small numbers that are very rarely found at Middle Cumberland assemblages. These include fine shell-tempered red filmed sherds, cob-marked sherds, combed sherds and brushed sherds. Negative painted and effigy vessels, routinely found in Middle Cumberland sites, have not been recorded from Beasley or Moss.

8.1a. McKee Island Cordmarked

There are relatively high percentages of McKee Island Cordmarked sherds in the ceramic assemblages from Beasley and Moss in comparison to Middle Cumberland Mississippian ceramic assemblages. McKee Island Cordmarked sherds comprise 7.6 percent and 6.0 percent of the ceramic assemblages from Beasley and Moss respectively (Table 8.1). This differs substantially from the frequency of McKee Island Cordmarked ceramics recorded from the other three sample sites. This ceramic type comprises one percent of the sherds from Sellars, and less 0.1 percent of the sherds from both Rutherford Kizer and Castalian Springs (Table 8.2). Most other Middle Cumberland Mississippian ceramic assemblages (Table 8.3) have less than one percent McKee Island Cordmarked sherds (40DV4, 40DV5) or do not include any McKee Island Cordmarked sherds (40DV6, 40DV234, 40WM2, 40DV210).

McKee Island Cordmarked sherds are chronologically significant in the Middle Cumberland region. Early Thruston and Late Thruston Middle Cumberland phase ceramic assemblages do not include McKee Island Cordmarked ceramics. Dowd phase ceramic assemblages can include a small amount (less than one percent) of McKee Island Cordmarked sherds. The Middle Cumberland Spencer phase ceramic assemblages are quite variable, but generally McKee Island sherds comprise greater than two percent of the total ceramic assemblage. Although the percentages of McKee Island Cordmarked ceramics in the Beasley/Moss assemblages and Middle Cumberland Spencer phase assemblages are comparable, components at Beasley and Moss that have a high percentage of McKee Island Cordmarked sherds date later (A.D. 1100-1300) than the Spencer phase (A.D. 900-1100). Therefore, the relatively high percentage of McKee Island Cordmarked sherds at Beasley and Moss in comparison to typical Middle Cumberland assemblages is not simply due to chronological differences.

8.1b Wolf Creek Check-Stamped

There are also relatively high percentages of Wolf Creek Check-Stamped sherds in ceramic assemblages from Beasley and Moss in comparison to assemblages from the Middle Cumberland region. Wolf Creek Check-Stamped sherds comprise 11.5 percent of the ceramic assemblage from Beasley and 7.8 percent of the ceramic assemblage from Moss (Table 8.1). This is a substantially greater representation of Wolf Creek Check-Stamped sherds than is present at the other three sample sites or any other Middle Cumberland Mississippian ceramic assemblage (Tables 8.2 and 8.3). Two examples of Wolf Creek Check-Stamped sherds were identified from Rutherford Kizer and two examples were identified from Castalian Springs, comprising less than 0.1 percent of the total ceramic assemblages of both sites. No Wolf Creek Check-Stamped sherds have been identified from Sellars. The only other known Middle Cumberland Mississippian site with Wolf Creek Check-Stamped sherds is the Hooper site (40DV234) with one example (0.2 percent of the total ceramic assemblage) (Smith and Moore 1996c:31). This is a significant disparity between Beasley/Moss and Middle Cumberland Mississippian ceramic assemblages.

8.2 The Cumberland Plateau- A Physiographic Obstacle

Although there are no physiographic impediments to travel between Beasley/Moss and the Middle Cumberland region to explain their dissimilar ceramic assemblages, the Cumberland Plateau, located to the east and southeast of the Beasley and Moss, would have been an effective obstacle to the regular movement of prehistoric people across it. Early European pioneers had difficulty crossing the Cumberland Plateau into Middle Tennessee (Luther 1977). “Standing athwart the direct path like the Great Wall of China, but a hundred times higher and 50 miles across, is the Cumberland Plateau, a very real barrier to western migration" (Luther 1977: 54). These early settlers went around the plateau down the Tennessee River and up to the Ohio and up the Cumberland, or traveled through the Cumberland Gap, a narrow path across the plateau first used by Native Americans (Luther 1977: 54).

The relative scarcity of Mississippian open habitation sites on the Cumberland Plateau suggests that either the Plateau was little occupied during the Mississippian period or that people living on the Cumberland Plateau during the Mississippian period practiced a different way of life than people living in the more densely occupied Middle Cumberland and Upper Tennessee River Valley regions. This obstacle explains why the ceramic assemblages from Beasley and Moss do not seem to have been influenced by people from the Upper Tennessee River drainage.

Four mound sites, 20 habitation sites and 35 rockshelter sites dating to the Mississippian period are documented in the state site files for the Cumberland Plateau in Tennessee. Three of the known mound sites on the plateau are located in southern Tennessee, at a great distance from the study area. The Frogge Mound and Village site is the one recorded Mississippian mound site in the northern section of the Cumberland Plateau in Tennessee (Figure 8.1). The number of known Mississippian sites on the Cumberland Plateau, although small, may be inflated. Many of the open habitation sites are designated as Mississippian based on the presence of triangular projectile points. However this projectile point form is also characteristic of the Late Woodland period. A very small amount of Mississippian period pottery has been recovered from the Cumberland Plateau. Ceramics recovered include shell-tempered plain sherds and mixed shell-and-limestone-tempered sherds as well as shell-tempered cordmarked and shell-tempered check-stamped sherds (Franklin 2002).

Franklin (2002) conducted a survey of the Upper Cumberland Plateau (UCP) in Fentress County, Tennessee, and found a definite Mississippian presence in the region. He concludes, "Mississippian peoples occupied the UCP frequently and intensively, but perhaps for only certain activities" (2002:249). He did not identify any village sites in his survey, but 28 Mississippian components from rockshelter and cave sites were recorded (Franklin 2002:205). Fourteen Mississippian period radiocarbon dates were obtained in this study, all from dark zone cave contexts (Franklin 2002:249). These dates range from the early Mississippian around A.D. 900-1150, to later Mississippian from around A.D. 1300 to after A.D. 1400 (Franklin 2002:70, 75, 77, 161). These dates indicate that the caves and rockshelters on the plateau were used throughout the Mississippian period.

Petroglyphs, pictographs and mudglyphs are found in rockshelters and caves on the plateau (Simek et al. 2002). Mississippian images such as the bow and arrow, bilobed arrow, crowned form mace, monolithic axe, crested bird and birdman also indicate a Mississippian presence (Franklin 2002:124, Simek et al. 2002). Archaeological evidence indicates that Mississippians explored caves and rockshelters on the Cumberland Plateau and used them as ceremonial and burial locations. The illustration of iconographic images such as the birdman indicates that occupants of the plateau were not isolated from the greater Mississippian world. Occupation on the plateau was mainly in the form of hunting and extraction camps or special ceremonial uses. Mississippians that resided on the Cumberland Plateau year-round lived in scattered farmsteads and their subsistence strategies likely took advantage of the region's diverse environment rather than relying on maize agricultural techniques.

Mississippian towns and mound centers are present east of the Cumberland Plateau within the Upper Tennessee drainage in East Tennessee. Cordmarked ceramics are commonly found in Mississippian assemblages from the East Tennessee Martin Farm phase (A.D. 900-1000) through Hiwassee Island (A.D. 1000-1300) and Dallas (A.D. 1300-1600) phases (Table 8.4). The frequency of cordmarked ceramics at Beasley and Moss is similar to some ceramic assemblages from sites in East Tennessee such as Toqua. East Tennessee ceramic assemblages often include a small amount of red filmed and/or red painted ceramics similar to those found at Beasley. However, unlike Beasley and Moss assemblages, shell-tempered check-stamped ceramics are extremely rare in East Tennessee ceramic assemblages (Table 8.4). The few recorded shell-tempered check-stamped ceramics from the Upper Tennessee River drainage are limited to three examples from Hixon (40HA3) and 28 examples from Toqua (40MR6), which make up less than 0.1 percent of the ceramic assemblages from both of these sites (Lewis and Kneberg 1993). Only two examples of shell-tempered check-stamped sherds were found at Ausmus Farm and Walters Farm in the Norris Basin (Figure 8.1) (Griffin 1938:305). Therefore although there are some similarities between the Beasley and Moss ceramic assemblages and the East Tennessee Mississippian ceramic assemblages, it does not appear that distinctive ceramic assemblage documented at Beasley and Moss is a result of influence the Upper Tennessee River Valley sites.

Difficulty crossing the Cumberland Plateau and the relative scarcity of permanent Mississippian settlements on the plateau created a boundary between people living in the Middle Cumberland region as well as residents of Beasley and Moss and Mississippian occupants of the Upper Tennessee River drainage. This makes it unlikely that the distinct ceramic style characteristics seen at Beasley and Moss is due to influence or regular interaction with Mississippians from eastern Tennessee.

8.3 Southeastern Kentucky

The Middle Cumberland region and the Upper Tennessee River drainage are unlikely sources for the distinctive ceramic assemblages documented at Beasley and Moss. However, excavations at Mississippian mound sites to the north and northeast in southeastern Kentucky along the Green, Barren, and Upper Cumberland Rivers, produced ceramic assemblages very similar to assemblages from Beasley and Moss. These ceramic assemblages are a majority shell-tempered plain sherds with shell-tempered cordmarked sherds comprising six to 31 percent and shell-tempered check-stamped sherds comprising eight to 81 percent of the assemblage (Table 8.5; Figure 8.2 and 8.3). Figure 8.1 shows the location of Mississippian mound sites along the Upper Cumberland, Green, and Barren Rivers in Kentucky. Nearly 20 Mississippian mound sites are recorded in the south-central and eastern area of Kentucky, but these are the closest sites to the Middle Cumberland region (Pollack 2008).

8.3a Mound Sites in Southeastern Kentucky

Jewell (15BN21/ 349/ 384/390) is located on the Barren River, a southern tributary of the Green River. It is located approximately 55 km from Castalian Springs and approximately 58 km from Beasley. Jewel consists of a platform mound, village and cemeteries. It is the proposed center of the Peter Creek Complex , which is a concentration of Mississippian farmsteads within 4 km of Jewel (Lowthert et al. 1998:14; Pollack 2008:673). Although the majority of ceramics from Jewel are shell-tempered plain, there is a large percentage of shell-tempered check-stamped sherds from the site (Table 8.5). Shell-tempered cordmarked sherds also make up a small percentage of the assemblage.

Nine radiocarbon dates from Jewel produce a pooled mean of cal A.D. 1224 to 1279 (p=1.0) at 2 sigma (762±23) with the most likely 1 sigma at cal A.D. 1251 to 1278 (p=0.93)

(Table 8.6) (Pollack 2008:Table 6.8). The thick strap and loop handles recovered from the site, the predominance of wall trench architecture, and the radiocarbon dates suggest that the site was occupied around A.D. 1200 to 1325. The platform mound was constructed in three stages, suggesting that the site served as a polity center for at least 60 years (Hally 1996). Jewel's occupation likely overlapped with both Beasley and Castalian Springs. The frequency of check-stamped ceramics from Jewel is also closer to the frequencies at Beasley and Moss than at sites in the Middle Cumberland region.

Corbin (15AD04) is located on the Green River approximately 120 km from Beasley. This palisaded village has three mounds and dates to around A.D. 1000 to 1200 (Pollack 2008:668). Although Corbin is a substantial distance from Beasley and other Middle Cumberland sites it is of interest because the majority of the ceramics recovered from the site are shell-tempered check-stamped, with minority plain and cordmarked (Table 8.5; Figures 8.2 and 8.3).

Located about 90 km from Beasley, 15Cu110 is a village with a stone-box cemetery (Pollack 2008:685). The ceramic assemblage from this site is characterized by an equal number of shell-tempered plain and shell-tempered check-stamped sherds with small amounts of cordmarked, brushed, and scraped ceramics (Pollack 2008:685). Handles from this site are loop in form. A series of eight radiocarbon dates were obtained from the site. One date appears to be from the late Woodland period. The pooled mean of the remaining seven dates produces a calibrated range of cal A.D. 1052 to 1080 (p=0.11), cal A.D. 1129 to 1132 (p=0.01), or cal A.D. 1153 to 1216 (p=0.88) at 2 sigma (877±17 BP) with the most likely 1 sigma range of cal A.D. 1159 to 1191 (p=0.76) (Table 8.6). This suggests that 15Cu110 was occupied during the early part of Beasley site occupation.

Long (15Ru17) is a mound site over 100 km from Beasley (Pollack 2008). Although the ceramics from this site have not been analyzed, two radiocarbon dates from the site have been obtained (Table 8.6). The pooled mean of these dates produces a 2 sigma range of cal A.D. 1179 to 1287 (p=1.0) (775±42 BP). These dates suggest that the mound may have been constructed at Long while 15Cu110 was still occupied, occupation continued after 15Cu110 was abandoned. Although it is possible that 15Cu110 may have been abandoned prior to the founding of Beasley, the occupation of Long likely overlapped that of Beasley, as well as that of Sellars and Castalian Springs.

Rowena is a mound and village site with three mounds located about 105 km from Beasley (Pollack 2008:687). The one excavated mound had four construction episodes (Pollack 2008:687; Weinland 1980). At Rowena, shell-tempered plain ceramics are the most common type, followed by shell-tempered cordmarked, Dallas Decorated, and a small percentage of shell-tempered check-stamped (Pollack 2008; Weiland 1980). The Dallas Decorated type is described as "incising in parallel lines surrounding a broad flattened node, plain strap handle" (Weinland 1980:111). The examples illustrated resemble Matthews Incised, *var. Manly* subvariaty B (Pollack 2008:687; Weinland 1980:110). The checks on the check-stamped ceramics from Rowena are described as 4 to 6 mm squares (Weinland 1980:112). This is comparable to the Beasley and Moss check-stamped that have an average of 5.8 mm side length, although they appear to have a larger size range than is reported from Rowena. Peaked rim jars, strap handles, and notched rim bowls are also present in the ceramic assemblage at Rowena and suggest a post-A.D. 1350 site component. No radiocarbon dates have been obtained from Rowena, but the ceramics suggest a post-A.D. 1300 occupation of the site (Weinland 1980). This suggests that the occupation of Rowena continued after Beasley was abandoned.

Croley-Evans (15KX24) is located further to the east along the Cumberland River. The site is located a little less than 200 km from Beasley. It consists of a platform mound and habitation area covering approximately 5 ha (Pollack 2008:690). The platform mound has three construction episodes, and appears to have been constructed early in the site's history (Pollack 2008:690). Ceramics from Croley-Evans include shell-tempered plain, cordmarked and check-stamped, along with a few examples of painted ceramics (Table 8.5) (Jefferies et al. 1996; Pollack 2008:691). Handles are mostly loop in form, although a few strap handles are also reported. The radiocarbon dates obtained from the site suggests that it was mainly occupied between A.D. 1200 and 1450 (Table 8.6) (Pollack 2008:690). This would make the site generally contemporary to and later than Beasley and Moss.

Bowman (15WH14) is another platform mound site located along the Clear Fork of the Upper Cumberland River on the Cumberland Plateau, approximately 35 km from Croley-Evans and 180 km from Beasley. The mound was constructed in two stages. Although there are no radiocarbon dates for the site, the ceramics from Bowman are similar to those from Croley-Evans, and they may have been contemporary centers (Pollack 2008:691).

8.3b Summary and Discussion

A regional ceramic chronology has not been developed for southeastern Kentucky (Pollack 2008:668-690). However Jefferies et al. (1996:19) do observe that cordmarked and check-stamped pottery appear to increase through time at Croley-Evans. It is unclear whether this trend is a region-wide phenomenon.

Jewel, Long, and Croley-Evans were contemporaries to Beasley and Moss. Corbin may have been a polity capital before any of five sites in the sample. The Jewel site appears to have acted as a mound center after Corbin, at around the same time as Beasley and Castalian Springs.

Croley-Evans and Bowman appear to be roughly contemporary independent chiefdom centers at approximately this time as well. Radiocarbon dates and diagnostic ceramics suggest that Long was occupied at around the same time as Castalian Springs, Sellars, and Beasley. Although Rowena may have been occupied at the same time as Beasley and Moss, it appears to have been occupied after Beasley and Moss were abandoned.

Beasley and Moss have ceramic assemblages quite similar to sites in southeastern Kentucky. There has not been any significant modern excavation along the Cumberland River in Tennessee between Beasley and Moss and southeastern Kentucky. The early work of William Edward Myer provides some information on mound sites in the area. Mound sites along the Upper Cumberland River in Tennessee explored by Myer include Flynns's Lick (40JK15), Bullard's Gap (40JK11), Celina and Hassler Mounds (NAA MS2570). Diagnostic ceramics recorded by Myer from Flynn's Lick include a fish effigy bowl, a dog effigy bottle, a negative painted female effigy bottle, and a notched rim bowl. These are all typical ceramic types found in the Middle Cumberland region during the Early and Late Thruston phases, none of which have been recovered from Beasley or Moss. The small collection of ceramics recovered from Bullard's Gap by the Tennessee Division of Archaeology consists only of shell-tempered plain sherds. Myer's does not note any diagnostic ceramics from Bullard's Gap, Celina or Hassler Mound (NAA MS2570). Unfortunately the examination of Myer's notes did not positively determine whether sites along the Upper Cumberland in Tennessee have ceramic assemblages that include McKee Island Cordmarked and Wolf Creek Check-Stamped sherds. It is possible that additional research along the Upper Cumberland in Tennessee will identify additional sites with ceramic assemblages similar to Beasley, Moss, and the sites in eastern Kentucky.

8.4 Processes that Result in Stylistic Similarity

The examination of material culture variability is one of the foundations of archaeological research (Stark 1998:3, Willey and Phillips 2001[1958]). Identification and comparison of similarities and differences in material culture leads to the recognition of artifact types, artifact styles, archaeological cultures, and the historical relationships that existed between them. Stylistic similarities in material culture extending over large regions have been recognized in many parts of the world. These regions typically encompass many politically independent communities and polities. Southeastern archaeologists frequently use the term “culture” to refer to such phenomenon. Groups of sites with shared material culture such as Dallas, Lamar, Swift Creek and Coles Creek represent this type of culture (Willey and Phillips 1958). Since the comparison of style presented here is focused on ceramic material, it is more appropriate to use the term “ceramic style area” rather than “culture”. For this discussion, a “ceramic style area” is defined as an archaeological site or sites with shared ceramic characteristics such ceramic temper, surface treatment, and vessel form, that are distinct from other areas. This section discusses the meaning of style and the processes that result in ceramic style areas.

8.4a Style

Style is simply a particular way of doing something that involves a choice (Hegmon 1992). More specific definitions of style are applied to individual projects to fit specific research goals. For example, Wobst (1977) defines style as material culture variation that is related to information exchange. Muller (1966) describes style as a type of grammar consisting of specific elements and rules to combine them into units. Stylistic variability can be seen in almost any form of material culture, but is most commonly identified and analyzed by archaeologists in ceramics, projectile points, and architecture (Hegmon 1992, Renfrew 1986, Sackett 1982, Whittaker 1987, Willey and Phillips 2001 [1958]).

Groups of people have set ideas about what is an appropriate vessel not only in surface treatment, but also in shape, adornments, paste, and temper. These choices affect function as well as the outward appearance of the vessel. In this dissertation, style is defined following Knight (2012:23) as "cultural models governing the form of all things artificial". The interpretation of style in this dissertation is based in practice theory. The practice or actions that result in stylistic differences in ceramics is the result of the decisions about how to make and decorate pottery based on what an appropriate vessel looks like according to the cultural model for a particular group (Sassaman and Rudolphi 2001). The potters in each household made the decision, consciously or unconsciously about what temper to use, how to finish the exterior of the pots, how long necks should be, and the right thickness of handles among other decisions. The specific *chaîne opératoire* leads to different ceramic surface treatments and forms (Dietler and Herbich 1998:238).

8.4b Ceramic Style and Interaction

Decisions about how to make ceramics are based on how potters are taught, how the others in their community make pots (interaction), what the other vessels from elsewhere look like, and whether the potter wishes to emulate or differentiate from neighboring groups. Ethnographic research demonstrates that in many cases stylistic similarity in material culture among human groups (households, communities, societies) increases with social interaction (Binford 1965:206-209; DeBoer and Moore 1982; Friedrich 1970; Graves 1994; Wiessner 1983, Wobst 1977). However, stylistic similarity should not be used by itself to estimate the degree of social interaction between human groups because stylistic similarity depends on many factors

(Jones 1997:114). The context of manufacture, exchange, and use of objects impacts stylistic variation, and should be clearly understood before interpreting the distribution of style in space and time.

Finely crafted items made of exotic materials tend to be traded well beyond regions of intense interaction. Domestic cooking vessels are less likely to move far from the community where they were made. The characteristics that are expected to reflect the most specific cultural identity are those carried out by individuals at the household level, and those for which small variations are possible in manufacture and detectable by archaeologists (Emberling 1997). Blitz and Lorenz (2006) suggest that because Mississippian utilitarian pottery was a product of household production and exchanged at the local level, stylistic similarities in utilitarian pottery can be correlated with social interaction at the local level.

8.4c Interaction among Polities

In a move away from a normative approach and in an attempt to avoid reifying material culture, a few scholars have attempted to identify the social processes responsible for large areas of cultural similarity. Renfrew's (1986) concept of peer-polity interaction recognizes some of these processes and predicts the high degree of cultural similarity that often existed between independent political entities- peer polities-in a region (Renfrew and Cherry 1996).

Mississippian polities did not exist in isolation. Members of different polities fought with their neighbors, traded, borrowed cultural practices, and absorbed each other's members when they collapsed (Dye 1995; Hally 1996, 2006). Groups of polities that had history of shared populations and shared ideas with one another over generations are expected to show a high degree of ceramic style similarity. Populations in different polities were shared by absorbing each other's members when a polity collapsed and when different polity members joined together to form new polities when necessary. Through these types of interactions, members of different polities shared ideas about what ceramics should look like

8.4d Social Identity

For this research, social identity is defined as the aspect of an individual that is defined by group membership (Deaux 2001:1). Identities are “situational, flexible, nested in a variety of contexts, and created in social processes” (Roberts 2011:86). Through this perspective, the actions resulting in particular material cultural patterns are examined to gain knowledge about group membership. As Gardner explains, “[t]he activities that people undertake- eating, dressing, building, disposing of waste, writing, speaking, and so on- are the mechanisms by which people are categorized by others, or themselves, as they interact” (2011:17).

Identities are changeable and situational. There are also different levels of identity (Meskell 2002). The similarity in material culture seen archaeologically suggests the level of shared identity (Sullivan and Harle 2010:237). Boundaries between areas with shared social identities may involve interaction which would lead to a gradation in material culture styles, or boundaries may lead to more distinctive material culture traits in an effort to maintain distinction (Barth 1969; Lightfoot and Martinez 1995).

On a large scale, the Mississippian sites and regions are quite similar. They built mounds, tempered their ceramics with mussel shell, shared the same basic ideology, and many buried their dead in stone box graves. Variations in mound construction, burial techniques and ceramic style suggest regional identities result from more concentrated interactions and a shared history. It is also important to note that the location of the most intense interactions and shared identity did not remain static through time. During the Mississippian period, shifts in areas of shared cultural tradition and social identity might have been induced by need for new farmland or the creation of new polities. Some identities may not be visible in the archaeological record but differences in material culture, particularly between contemporary sites in close proximity to each other, warrant investigation and evaluation as possible indication of distinctive social identities.

8.4d Summary

The style of a ceramic vessel is the result of a series of choices about how to make a pot and what a “correct” pot looks like. These choices are made based on shared history within a group and interaction with outside groups. Mississippians that have a history of living together and interacting are expected to make similar styles of ceramics and have a shared social identity. Interaction between groups with distinctive traditions might result in the decision to make vessel to resemble the outsiders’ ceramics or in the decision to distinguish ones own social identity from an outside group by making traditional vessels and rejecting outside ceramic types.

8.5 Discussion and Conclusions

Beasley and Moss Mounds share many characteristics with Mississippian sites in the Middle Cumberland region. Ceramics were made with similar paste and in similar forms. However there are substantial differences between the ceramic assemblages from Beasley/Moss and the Middle Cumberland region, namely the presence of McKee Island Cordmarked and Wolf Creek Check-Stamped ceramics. These ceramic assemblage differences are not due to differences in site occupation dates.

The Cumberland Plateau likely acted as a physiographic barrier to regular interaction between people from Beasley and Moss and residents of the Upper Tennessee River drainage. Therefore the distinctive ceramic assemblage from Beasley and Moss does not seem to be the result of influence from East Tennessee Mississippians. Beasley and Moss have ceramic assemblages that are more similar to assemblages from several sites in southeastern Kentucky than to Middle Cumberland region assemblages. Beasley and Moss also appear to have been occupied at around the same time as several southeastern Kentucky polities.

The unexpected distinctiveness in ceramic assemblages between Beasley/Moss and the Middle Cumberland region raises several questions; generally, why are there areas of ceramic stylistic similarity? The most likely explanation is that an area of ceramic stylistic similarity is the result of people within that area having a shared history of interaction in the form of trade, warfare, and population mixture. In some cases, such as between the Upper Tennessee Valley and the Middle Cumberland region as well as Beasley and Moss, physical boundaries (Cumberland Plateau physiographic region) result in limited interaction between people resulting in distinct cultural traditions and social identity. In other cases, no boundary is visible on the landscape to explain distinct ceramic style areas.

Answers to other questions about the specific relationship of Beasley/Moss to surrounding regions remain less clear. Questions such as; why are two distinct style areas so close together? Also, how did this affect the relationship between closely spaced Castalian Springs and Beasley chiefdom capitals and Sellars and Beasley chiefdom capitals? This dissertation cannot adequately answer why two ceramic style areas, presumably resulting from two separate populations with a history of interaction, are located at such close proximity to one another. As is demonstrated here, distinct ceramic style areas do not always smoothly grade into one another. There are a number of different ways that boundary areas affect populations and subsequently material culture patterns (Amundsen-Meyer 2011; Emberling 1997; Welsch and Terrell 1998:72). Boundaries may involve interaction which would lead to a gradation in material culture styles, but boundaries may also lead to sharp contrasts in material culture styles that maintain distinct social identities (Barth 1969; Lightfoot and Martinez 1995). The later appears to have been the case for the boundary between the Beasley/Moss ceramic style area and the Middle Cumberland region ceramic style area.

It is also unclear how belonging to distinct ceramic style areas may have affected the relationship between Castalian Springs and Beasley/Moss and Sellars and Beasley/Moss, which appear to overlap in occupation dates. The distinctiveness of the ceramic assemblages does clearly indicate that Castalian Springs and Sellars were not part of the same chiefdom as Beasley or Moss.

Future research to the north and east of Moss is needed to identify whether Beasley and Moss are isolated examples of sites with this ceramic assemblage or if these ceramic assemblages are a continuous manifestation of a distinct style area extending into southeastern Kentucky. Thoroughly documenting the style in other forms of material culture such as projectile points, structures, and burial methods would further elucidate the relationship among people living at Beasley/Moss and residents of southeastern Kentucky.

Table 8.1: Shell-Tempered Ceramic Assemblage from Beasley and Moss

	Plain	Fabric Impressed	Cordmarked	Check-Stamped	Incised	Negative Painted	Brushed/ Combed	Cobb Impressed	Red Filmed	Uneven Exterior	Total Shell Tempered
Beasley	74.2%	1.9%	7.6%	11.5%	0.4%		0.1%	0.2%	0.4%	4.0%	948
Moss	80.9%		6.0%	7.8%			0.3%				299

Table 8.2: Shell-Tempered Ceramic Assemblage from Rutherford Kizer, Castalian Springs, and Sellars (Smith and Moore 2001).

	Plain	Fabric Impressed	Cordmarked	Check-Stamped	Incised	Negative Painted	Brushed/ Combed	Cobb Impressed	Red Filmed	Uneven Exterior	Total Shell Tempered
Rutherford Kizer	94.4%	3.2%	0.2%	<0.1%	0.8%	0.2%					9706
Castalian Springs	95.6%	3.2%	0.1%	<0.1%	0.3%	0.1%				<0.1%	32114
Sellars	95.4%	2.0%	1.0%		0.8%	<0.1%			0.7%		3487

Table 8.3: Shell-Tempered Ceramic Assemblages from Other Middle Cumberland Mississippian Sites (Smith 1993a; Smith and Moore 1996, 2005; Trubitt 1998; Walling et al. 2000)

	Plain	Fabric Impressed	Cordmarked	Check-Stamped	Incised	Negative Painted	Brushed/ Combed	Cobb Impressed	Red Filmed	Uneven Exterior	Total Shell Tempered
40DV4	95.9%	3.2%	<0.1%		0.6%						25848
40DV5	90.5%	8.7%	0.2%		0.5%		<0.1%		<0.1%		3303
40DV6	98.1%	0.5%			1.3%						5923
40DV234	97.7%	2.0%		0.2%	0.2%						898
40WM2	98.5%	0.6%			0.6%				0.1%		618
40WM210	97.9%	0.5%			1.1%	0.4%					6397

Table 8.4: Shell-Tempered Ceramic Assemblage from Upper Tennessee Drainage Sites (Koerner 2004; Lewis and Kneberg 1993; Reed 1987).

	Plain	Fabric Impressed	Cordmarked	Check-Stamped	Incised	Negative Painted	Brushed/ Combed	Cobb Impressed	Red Filmed	Uneven Exterior	Total Shell Tempered
40RE12	64.0%	7.2%	0.1%		1.1%				1.8%		21207
40MG31	71.7%	6.4%	16.7%		0.8%	<0.1%			2.7%		13301
40MR6	90.3%	0.2%	8.1%	<0.1%	0.7%	<0.1%	<0.1%	<0.1%	0.1%		164915
40HA1	65.8%	1.6%	29.4%		0.8%	<0.1%			<0.1%		20577
40HA3	74.3%	1.5%	23.2%	<0.1%	0.2%	<0.1%			0.2%		5798

Table 8.5: Shell-Tempered Ceramic Assemblage from Southeastern Kentucky Sites (Jefferies et al. 1996; Pollack 2008; Weinland 1980)

	Plain	Fabric Impressed	Cordmarked	Check-Stamped	Incised	Negative Painted	Brushed/ Combed	Cobb Impressed	Red Filmed	Uneven Exterior	Total Shell Tempered
Rowena	61.5%	0.3%	30.0%	2.8%	5.3%				0.2%		5868
Croley-Evans	57.8%	0.6%	31.8%	9.0%							1250
Jewel	72.2%	4.0%	4.0%	19.4%	0.3%	<0.1%					6753
Corbin	13.7%		4.7%	81.3%	0.2%						866

Table 8.6: Radiocarbon Dates from Kentucky Mentioned in Text.

Site	Sample ID	Age B.P.	Calibrated Ranges from Probability Distribution A.D. (1 sigma)	Calibrated Ranges from Probability Distribution A.D. (2 sigma)	Reference
Jewel	I- 1108	527 ± 120	1290-1471 (1.00)	1266-1642 (1.00)	Hanson 1970: 26; Pollack 2008:Table 6.8
Jewel	I-1109	657 ± 100	1274-1400 (1.00)	1177-1443 (1.00)	Hanson 1970:25; Pollack 2008:Table 6.8
Jewel	I-1110	922 ±-125	998-1003 (0.01), 1013-1225 (0.98) and 1235-1235 (0.00)	784-786 (0.00), 827-840 (0.00), 864-1297 (0.99) and 1373-1377 (0.00)	Hanson 1970:24; Pollack 2008:Table 6.8
Jewel	Beta-85813	770 ±-40	1225-1234 (0.18) and 1236-1275 (0.82)	1186-1202 (0.03) and 1205-1289 (0.97)	Pollack 2008:Table 6.8
Jewel	Beta-98789	670 ± 90	1267-1329 (0.52) and 1339-1396 (0.48)	1187-1199 (0.01) and 1206-1434 (0.99)	Pollack 2008:Table 6.8
Jewel	Beta-98790	760 ± 80	1176-1297 (0.99) and 1374-1376 (0.01)	1046-1092 (0.05), 1120-1140 (0.02), 1148-1328 (0.82) and 1341-1395 (0.11)	Pollack 2008:Table 6.8
Jewel	Beta-98791	790 ± 60	1187-1199 (0.08) and 1206-1279 (0.92)	1048-1087 (0.05), 1122-1138 (0.02), 1150-1298 (0.93) and 1371-1378 (0.01)	Pollack 2008:Table 6.8
Jewel	Beta-98792	740 ± 60	1219-1295 (1.00)	1166-1319 (0.89) and 1351-1390 (0.11)	Pollack 2008:Table 6.8
Jewel	Beta-100551	840 ± 60	1059-1064 (0.03) and 1155-1264 (0.97)	1042-1107 (0.18) and 1117-1276 (0.82)	Pollack 2008:Table 6.8
	Pooled Mean	*762 ±-23*	*1229-1231 (0.02), 1243-1246 (0.05) and 1251-1278 (0.93)*	*1224-1279 (1.00)*	
Croley-Evans-	Beta-67660	520 ± 50	1328-1341 (0.16) and 1395-1441 (0.84)	1303-1365 (0.31) and 1383-1453 (0.69)	Pollack 2008:Table 6.8
Croley-Evans	Beta-67661	730 ± 50	1226-1234 (0.07) and 1237-1295 (0.93)	1209-1319 (0.88) and 1352-1390 (0.12)	Pollack 2008:Table 6.8
Croley-Evans	Beta-67662	690 ± 60	1265-1314 (0.63) and 1356-1388 (0.37)	1224-1399 (1.00)	Pollack 2008:Table 6.8
Croley-Evans	Beta-76072	960 ±80	999-1002 (0.01) and 1013-1165 (0.99)	898-920 (0.02), 945-1227 (0.97), 1233-1240 (0.01) and 1248-1251 (0.00)	Pollack 2008:Table 6.8
	Pooled Mean	*682 ±28*	*1278-1300 (0.71) and 1369-1381 (0.29)*	*1271-1314 (0.65) and 1356-1388 (0.35)*	
CU110	Beta-210620	790 ±-60	1187-1199 (0.08) and 1206-1279 (0.92)	1048-1087 (0.04), 1122-1138 (0.02), 1150-1298 (0.93) and 1371-1378 (0.01)	Pollack 2008:Table 6.20
CU110	Beta-210621	840 ±60	1059-1064 (0.03) and 1155-1265 (0.97)	1042-1107 (0.18) and 1117-1276 (0.82)	Pollack 2008:Table 6.20

Table 8.6 cont.

Site	Sample ID	Age B.P.	Calibrated Ranges from Probability Distribution A.D. (1 sigma)	Calibrated Ranges from Probability Distribution A.D. (2 sigma)	Reference
CU110	Beta-210622	790 ±50	1212-1276 (1.0)	1058-1064 (0.00), 1069-1071 (0.00), and 1155-1292 (0.99)	Pollack 2008:Table 6.20
CU110	Beta-210623	870 ±50	1049-1084 (0.25), 1124-1137 (0.08) and 1151-1222 (0.67)	1040-1112 (0.28) and 1115-1257 (0.72)	Pollack 2008:Table 6.20
CU110	Beta-210624	820 ±-40	1187-1199 (0.15) and 1206-1261 (0.85)	1058-1065 (0.01), 1066-1072 (0.01), and 1155-1277 (0.99)	Pollack 2008:Table 6.20
CU110	Beta-210625	910 ±40	1043-1105 (0.58), 1118-1144 (0.24) and 1146-1166 (0.18)	1032-1210 (1.00)	Pollack 2008:Table 6.20
CU110	Beta-210626	850 ±40	1158-1228 (0.89), 1232-1241 (0.07) and 1247-1251 (0.04)	1046-1092 (0.12), 1120-1140 (0.04) and 1148-1266 (0.84)	Pollack 2008:Table 6.20
CU110	Beta-210627	1140 ±50	784-786 (0.02), 826-840 (0.08) and 863-978 (0.90)	774-997 (0.99) and 1004-1012 (0.01)	Pollack 2008:Table 6.20
	Pooled Mean	*877 ±17*	*1159-1191 (0.76) and 1196-1207 (0.24)*	*1052-1080 (0.11), 1129-1132 (0.01) and 1153-1216 (0.88)*	
Long (15Ru17)	Beta-48504	830 ±-60	1159-1265 (1.00)	1043-1104 (0.15), 1118-1144 (0.05) and 1146-1279 (0.80)	Pollack 2008: Table 6.20
Long (15Ru17)	Beta-48505	720 ±60	1226-1234 (0.06), 1237-1301 (0.80) and 1367-1382 (0.15)	1188-1198 (0.01), 1206-1330 (0.77) and 1339-1397 (0.22)	Pollack 2008: Table 6.20
	Pooled Mean	775 ±-42	1224-1272 (1.00)	1179-1287 (1.00)	

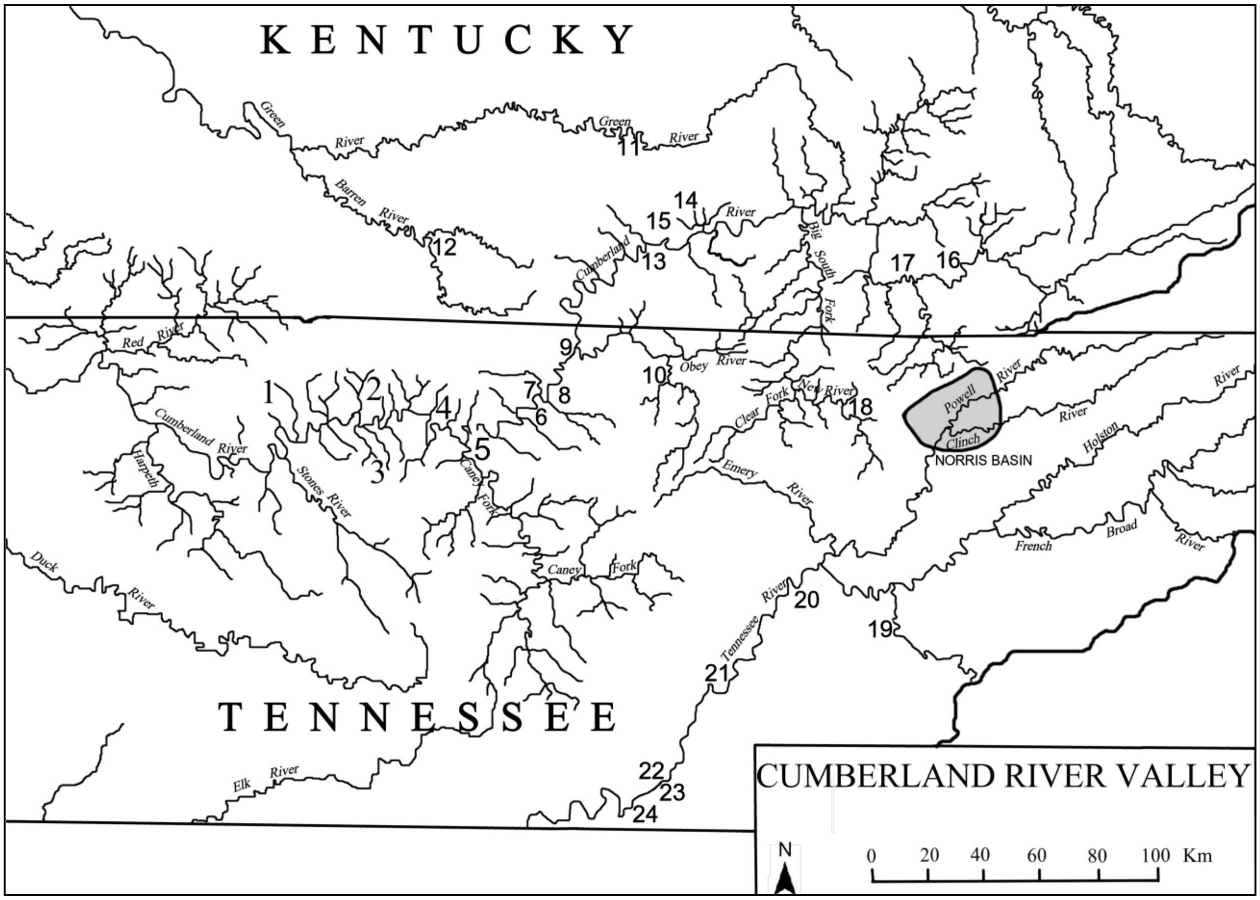

Figure 8.1: Mississippian Sites Referred to in Chapter 8. 1: Rutherford Kizer, 2: Castalian Springs, 3: Sellars, 4: Beasley, 5: Moss, 6: Flynn's Lick, 7: Bullard's Gap, 8: McCoin, 9: Celina, 10: Hassler Mounds, 11: Corbin, 12: Jewel, 13: 15CU110, 14: Long, 15: Rowena, 16: Croley-Evans, 17: Bowman, 18: Frogge Mound, 19: Toqua, 20: DeArmond, 21: Hiwassee Island, 22: Hixon, 23: Dallas, 24: Citico.

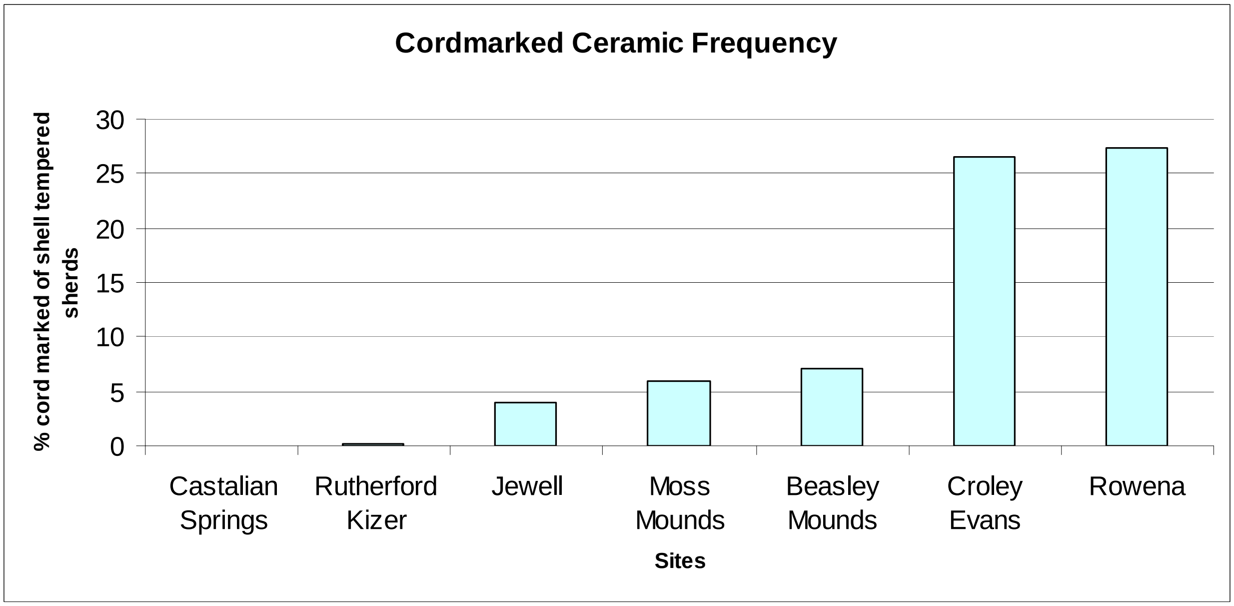

Figure 8.2: McKee Island Cordmarked Sherds by Sites in the Middle Cumberland and Eastern Kentucky.

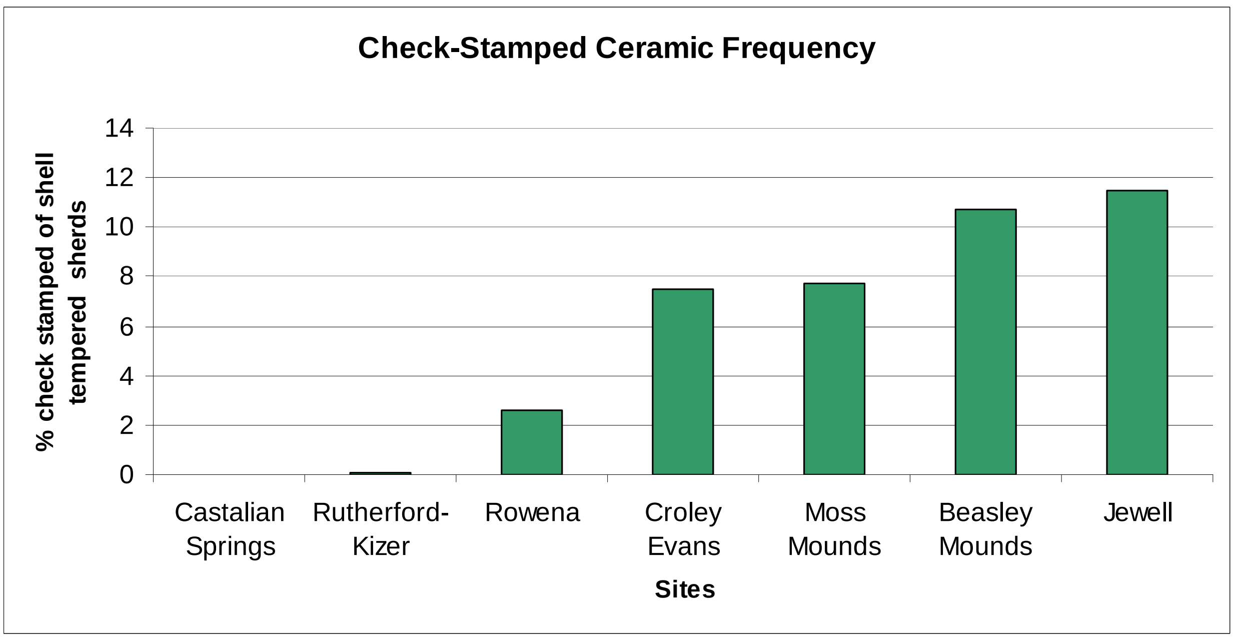

Figure 8.3: Wolf Creek Check-Stamped Sherds by Sites in the Middle Cumberland and Eastern Kentucky.

CHAPTER 9

MIDDLE CUMBERLAND CHIEFDOMS

The ultimate goal of the research presented here is to understand the spatial, temporal, and political relationships among mound sites on the eastern edge of the Middle Cumberland region. This research was designed to test a model for interpreting mound site locations developed by Hally (1993; 1996; 2006; Hally et al. 1990) using site distribution data from northern Georgia. In northern Georgia, contemporary mound sites are spaced either more than 31 km apart (with a mean of 44 km) and interpreted as separate chiefdoms, or less than18 km apart (with a mean of 7.3 km) and interpreted as primary and secondary administrative centers in a single complex chiefdom (Hally 1993; Hally and Lankford 1988; Hally et al. 1978; Scarry 1996). According to Hally's model, settlements within a polity are no more than 20 km from the capital (Hally 1993). Beyond this core area, a buffer zone of at least 10 km separates each chiefdom from an adjacent one (Hally 1993). This model also predicts that polities last approximately 100 years and polity territories are abandoned when the polity collapses (Hally 1996:112).

The Middle Cumberland region is a particularly relevant region in which to test this model because the close spacing among the many mound sites in the region does not seem to conform to the northern Georgia model. Towards this end, five mound sites on the eastern edge of the Middle Cumberland region were studied to determine when they functioned as administrative centers; the aim being to find the distance between mound sites that operated as political capitals at the same time. If contemporary, the spacing between five pairs of mound sites in this sample would violate the spacing pattern seen in northern Georgia (Table 1.1).

Through ceramic analysis and extensive radiocarbon dating, a site history sequence for each mound center was developed. Below, the implications for the resulting interpretation of chiefdom composition, size, and duration are discussed and compared with the chiefdom spacing model proposed by Hally for northern Georgia.

9.1 Mound Site Size and Chiefdom Political Power

As discussed in Chapter 7, the ceramic analysis and radiocarbon dates from the five sample sites show some overlap in site occupation and in time each served as chiefdom center. In order to evaluate whether such contemporary centers were arranged hierarchically as primary and secondary centers, the relative size and political power of each polity center were compared. If complex chiefdoms were present in the sample area, significant differences in site size, mound size, number of mounds, wealth of high status individuals and access to non-local and highly crafted goods should be found between primary and secondary centers. Table 9.1 compares variables that can be used to evaluate a mound site's political importance on the landscape (Payne 1994).

9.1a Number of Mounds

The total number of mounds at a site is one way to measure a chiefdom's political power. A powerful chief would be able to coordinate the construction of a larger number of mounds than less powerful chiefs would be able to do Rutherford Kizer, Castalian Springs, and Beasley each have five documented mounds; Sellars and Moss have two. This measure, however, does not take into account the differences in mound size and function. The general type of the mounds from Rutherford Kizer, Sellars, and Moss are relatively clear. It is not clear what category Mound 25 at Castalian Springs falls into, although it is likely a substructure mound.

Number of Platform Mounds. Rutherford Kizer, Sellars and Moss each have one known platform mound. Two platform mounds have been verified from Castalian Springs (Mound 2 and Mound 3). All of the mounds at Beasley have not been explored, but the site potentially has more than one platform mound.

The general model for Mississippian chiefdoms is that the complex chiefdom capitals have multiple platform mounds (Hally 1993; Steponaitis 1978). More than one platform mound requires additional cooperation of polity members and coordination by the chief. Multiple platform mounds may indicate the influence of multiple corporate groups at a site (Blitz and Lorenz 2006:78). As Blitz and Lorenz explain, “the number of same-period mounds at a center provides a relative scale of political integration and organizational complexity at the central place, and indicates the site’s relative political importance in a region” (2006:78). However, at some mound sites, a single platform mound is the base for multiple structures, while at other sites, multiple mounds act as platforms for similar functioning structures.

Multiple mounds may reflect the different functions of platform mounds in each polity. Multiple platform mounds may also be a result of the town’s religious or political focus. More emphasis may be given to a building and its function if it has its own mound than to a structure that shares a mound summit with other buildings. For instance, Mound 3 at Castalian Springs has two structures on the last documented construction stage. One of these structures contained a very large ash deposit and hearth, which suggests that this structure housed the town’s sacred fire and temple. This is similar to the Natchez temple described by D’Artaguiette: “They adore the sun from which they claim their chief is descended, and they have a temple where they keep a sacred fire, which is never extinguished, several savages being assigned to care for the temple and to keeping up this fire” (Mereness 1916: 47). The discovery of more negative painted plates at Castalian Springs than at any other site in the Middle Cumberland region may also indicate the significance of the sacred fire at Castalian Springs (Hilgeman 1991). The recurrent design themes on these plates are the cross-in-circle and suncircle motifs, references to the sun and the sacred fire; the latter being built on four logs arranged in an equal armed cross in many southeastern societies (Hilgeman 2000:191). These vessels are interpreted by some as special ceremonial vessels used in fire renewal ceremonies such as the green corn ceremony practiced by the Creek and Yuchi (Hilgeman 2000:191l; Speck 1909:120). In the green corn/new fire ceremonies, all household fires are extinguished and lit anew from the sacred fire of the town, which is relit annually. Iconography present at Castalian Springs include “Old Woman Who Never Dies” (life-giving female) figurines and Hero Twins (who resurrected their father after his death) theme on the “Dancing Warrior” gorget and a human effigy rattle head bowl. These emphasize rebirth and renewal, concepts also central ceremonies involving the sacred fire (Beahm and Smith 2012b; Hall 2000, Hilgeman 1991; Lankford 2011). The presence of multiple mounds at a site may also be related to solar alignments. At Castalian Springs it appears that several of the mounds align with seasonal solstices, and may also be related to concepts of yearly rebirth and renewal (Smith and Sharp 2013).

Number of Burial Mounds. Burial mounds were present at all sites in the sample. Only Rutherford Kizer has multiple burial mounds (four) whereas the other sites have one known burial mound. In addition to burial mounds, cemeteries have been documented at and around Rutherford Kizer, Castalian Springs, Sellars, and Beasley.

Multiple burial mounds may indicate a long site occupation or a large number of high status residents. More than one burial mound at a site also may be the result of multiple clans or lineage groups residing at the town or living in the polity. For instance at Moundville, Knight

(1998:60) suggests that the paired burial and platform mounds around the plaza at Moundville represent ranked local kin groups.

Number of Other Non-platform Mounds. There are a variety of other non-platform mounds present at the sample. At Castalian Springs, a rise designated by Myer as Mound 24 is the result of a large circular ceremonial structure being buried beneath a mound of earth. There is no evidence that the resulting mound was used as a substructure for subsequent buildings. This type of mound is not documented from the other sites in the sample.

There are low stone mounds at Castalian Springs and Sellars. These mounds were not included in the mound totals used here but warrant mention. The significance and use of these mounds is not clear and they are not directly dated. Several rock mounds were also identified from the Center Hill Reservoir survey on the Caney Fork River (Willey 1947). Myer located the one example from Castalian Springs, Mound 4, outside the palisade line (Myer 1924a). Myer excavated the mound in 1893 and encountered limestone rock and ash together, as well as layers of earth and burned clay. At Sellars there are seven rock mounds outside the palisade line. These were also composed of limestone rocks and ash (Butler 1981:40; Putnam 1878). It is interesting that the examples from both sites were located outside the town’s walls. Butler (1981:40) suggests that those from Sellars were refuse deposits.

9.1b Size of Main Platform Mound

Size of the main platform mound reflects the ability of a chief to coordinate and mobilize labor for mound construction. It is expected that platform mounds at secondary centers in a complex chiefdom would be smaller mounds than those at primary centers. In order to evaluate the political relationships among people at mound sites in the sample, platform mound height and volume were compared.

A comparison of main platform mounds at each site in the study area, based on early measured dimensions given by Curtiss, Myer, and Putnam, are shown in Figure 9.1. Mound dimensions are a reflection of the final mound form measured by these early investigators. The initial construction stages of mounds with multiple construction stages were obviously smaller prior to subsequent construction stages and not all of these mounds were constructed at the same time. Mound heights have been differentially affected by agricultural and other earth moving activities. Even as early as the late nineteenth century, when the heights were measured, agriculture had significantly reduced the size of these earthworks. Myer comments about Beasley:

> This ancient village site has been in cultivation for about 90 years. The height of the earthworks has been much reduced thereby. Some of them have been entirely destroyed. Those who know them well agree that they were from one to two feet higher forty years ago. Their original height was probably from two to three feet more than now [NAA MS 2570].

This observation could be extended to all of the mounds discussed here.

Rutherford Kizer and Castalian Springs have the tallest mounds at 7.9 m (26 ft) and 7.6 m (25 ft) respectively (Figure 9.2) (Moore and Smith 2001: 22; Myer 1924a; Thruston 1890). The difference in height between these two mounds is negligible. The platform mound at Sellars is significantly shorter at 4.6 m (15 ft) (Putnam 1878). The platform mounds at Beasley and Moss are about half as tall at 2.4 m (8 ft) and 1.8 m (6 ft) respectively (Myer 1924a).

A volume index (basal length x basal width x height divided by 1000), used by Steponaitis 1978 (1978:446) and others (Blitz and Livingood 2004; Steponaitis 1978; Payne 1994:107) facilitates comparison of the overall size of main platform mounds from all five sites in the sample. This index is used for comparison only, and not to calculate actual mound volume. The platform mound at Rutherford Kizer has the highest mound volume, followed by Castalian Springs, Sellars, Beasley, and Moss (Figure 9.3). In her study of 271 southeastern mound sites, Payne found that the majority of platform mounds have a mound volume index less than 10 (such as Sellars, Beasley, and Moss), followed by sites with a mound volume index between 10 and 19.9 (like Castalian Springs' value of 19.1) (1994:109). The mound volume index of 24.9 for the platform mound at Rutherford Kizer is just above Payne's (1994:108) sample site mean of 23.6.

Blitz and Livingood found that, for sites with less than nine mounds, duration of mound use, and thus the length of time the site acted as polity center, accounts for 41 percent of the variation in mound size. Rutherford Kizer, Castalian Springs, Sellars, and Beasley served as chiefdom capitals for approximately the same length of time. Therefore, the duration should not have affected the size of their main platform mounds. The relatively small size of the main platform mound at Moss may be due in part to its apparent shorter duration. The differences in main platform mound size may be due in part to different population sizes for each polity or differences in polity demographics (more or less able bodied youths to carry out hard labor) (Blitz and Livingood 2004:299). However, difference in mound size likely indicates different degrees of chiefly coordination and influence for these earthmoving activities. Therefore it can be inferred that the chiefs from Rutherford Kizer and Castalian Springs had more power, at least in terms of labor mobilization, than Sellars, Beasley, and Moss, while the chief at Sellars exercised more power than did chiefs at Beasley and Moss.

9.1c Site Area

Site area is another way to measure the importance of a polity center on the political landscape (Wood 2009:332). It is assumed that a larger population would be present in chiefdoms with greater political power. Therefore it is expected that the primary center of a complex chiefdom would have a larger population than would a secondary center. Site size can be used as a proxy for residential population based on the assumption more people would occupy a larger area. While Schreiber and Kintigh (1996) found that population density was lower at political centers than at villages in the Peruvian Andes, a comparison between only mound site areas compensates for such a possibility. Castalian Springs has the greatest site area (8.1 ha) followed by Rutherford Kizer (5.7 ha), Sellars (4.1 ha), Beasley (2.6 ha), and Moss (1.6 ha) (Table 9.1)(Figure 9.4). This indicates that the Castalian Springs chiefdom held the most political power of the five sample sites, with the Moss chiefdom having the least political power as measured resident population.

9.1d Grave Goods

The percentages of burials with grave goods and the types of grave goods were compared among sites in the sample to explore possible differences in wealth and status of occupants of these polity centers. As mentioned in Chapter 3, the frequency of burials accompanied by artifacts is low in the Middle Cumberland region. Even so, comparison of grave artifacts within and between sites can potentially yield information about the timing of those burials as well as the wealth and status of the interred individual (Binford 1971; Carr 1995; Larson 1971; Peebles 1971; Sullivan and Mainfort 2010). This has been observed both cross culturally (Binford 1971l; Carr 1995) and within Mississippian burial contexts (Larson 1971; Peebles 1971). Primary centers in a complex chiefdom are expected to have graves that contain more high status grave goods than secondary centers, because the primary chief and close relatives would have higher status than the secondary chief in a complex chiefdom.

Graves from the Rutherford Kizer, Sellars and Castalian Springs sites were explored by antiquarians in the late nineteenth and early twentieth centuries. Edwin Curtiss excavated 108 stone-box graves at Rutherford Kizer for the Peabody Museum in December of 1878 (Moore and Smith 2009:125). The salvage excavations at Rutherford Kizer in 1993-1995 recorded 81 graves (some of which may be the same as those explored by Curtiss). Frederic Ward Putnam excavated stone-box graves for the Peabody Museum from a burial mound and house mounds at Sellars in 1877 (Moore and Smith 2009:40). Myer excavated 90 graves (some of which contained multiple individuals) in Mound 1at Castalian Springs in 1891.

Grave Good Frequencies. Of the 108 graves excavated at Rutherford Kizer by Curtiss, Moore and Smith (2009) have documented 23 graves with associated artifacts (21 percent), seven of which have multiple grave goods within a single grave (30 percent). Fifty-four stone-box graves were excavated at Rutherford Kizer in 1993-1995 as part of a salvage archaeology project. Only five of these contained burial goods, but they may be graves previously investigated by Curtiss (Moore and Smith 2009:136).

Sixty graves were explored by Putnam from Burial Mound C at Sellars, plus at least 17 additional burials from house mounds. Associated burial artifacts are reported for from 20 burials (26 percent), 10 of which have multiple artifacts within the same grave (50 percent). In the burial mound, only 17 percent of the burials had grave goods (Moore and Smith 2009:46).

Of the 90 graves (some of which contained multiple individuals) excavated by Myer in Mound 1 at Castalian Springs, associated artifacts are documented for 41 (46 percent). Of those graves with associated artifacts, 24 had more than one artifact within a single grave (59 percent).

It is evident that Castalian Springs has higher percentages of burials with grave goods and burials with multiple grave goods than Rutherford Kizer or Sellars. However, it should be kept in mind that all graves included in this comparison from Castalian Springs were located within a burial mound, which would be expected to contain the most important people in a community, accompanied by more grave goods than the general population. At Sellars, graves were found within the burial mound and under house mounds. However, when only the burial mound graves are considered, a smaller percentage of Sellars burials have accompanying artifacts. The graves from Rutherford Kizer were also not all excavated from a burial mound.

Grave Good Distributions. Fewer types of artifacts were found in the graves at the Sellars site than at Rutherford Kizer and Castalian Springs (Figure 9.5). The distribution of certain types of grave goods varies widely among the three sites. Of all the burials that contain grave goods, ceramics are present in 85 percent of graves at Sellars, 50 percent of graves at Rutherford Kizer, and only 22 percent at Castalian Springs. Shell beads are common at all three sites. Fifteen percent of the graves at Sellars had beads, while 25 percent at Rutherford Kizer, and 61 percent at Castalian Springs had one or more shell beads. The distribution of shell gorgets is also striking. Shell gorgets are highly crafted from non-local materials, and therefore, indicate a high status individual. While five shell gorgets (18 percent of graves) were recorded from Rutherford Kizer and 18 (37 percent of graves) from Castalian Springs, no shell gorgets have been recovered from the Sellars site.

Nonlocal Material in Burials. The presence of nonlocal and highly crafted material indicates the influence of specific individuals within a community and of the chiefdom in general. The political power of chiefdoms likely affected the ability of residents to obtain nonlocal material.

The percentage of nonlocal goods in burial contexts at Rutherford Kizer, Castalian Springs and Sellars were compared to evaluate the relative importance of the local high status residents (Figure 9.6). Nonlocal materials present in these graves were marine shell, marine shell gorgets, copper and mica. Ten percent of the burials with grave goods at Sellars contained nonlocal material. Burials with nonlocal material from Sellars include only one of the 60 graves in the burial mound and one from a house floor. This is less than three percent of the burials excavated by Putnam (Moore and Smith 2009:46, 49). Twenty-eight percent of the burials with grave goods from Rutherford Kizer contained nonlocal material. This is seven percent of the graves excavated by Curtiss in 1878 (Moore and Smith 2009:126). From Castalian Springs, 41 percent of the burials with grave goods from Mound 1 contained nonlocal material. This is over 18 percent of the total burials from Mound 1. Castalian Springs burials had a greater frequency of burials with nonlocal material than did Rutherford Kizer or Sellars.

The number and size of mounds, site area, and burial items indicate that the Castalian Springs chiefdom had the most political power in the study area, and may have acted as a primary center in a complex chiefdom. The large size of the platform mound, multiple burial mounds, and site area of Rutherford Kizer indicates that the chiefdom also had a large amount of political power. These measures of political power are substantially less for Sellars, although Sellars measures are greater in most variables than Beasley and in all variables than Moss. While the platform mound size and site area is relatively small for Beasley, the presence of multiple mounds (and potentially multiple platform mounds) suggests that this site may have acted as a primary center to the smaller Moss site.

9.2 Polity Descriptions

In this section, the occupation history, site spacing, and measures of political power are incorporated to present a description of each polity in the sample area. Specific attention is paid to the relationship between pairs of mound sites whose spacing does not follow the patterning seen in northern Georgia: Rutherford Kizer and Castalian Springs, Castalian Springs and Sellars, Castalian Springs and Beasley, Sellars and Beasley, and Sellars and Moss. Open habitation sites dating to the Mississippian period within 20 km of the sample sites are also examined to explore the extent of each chiefdom's territory (Figures 9.7, 9.8 and 9.9).

9.2a Rutherford Kizer

Rutherford Kizer appears to have been occupied between A.D. 1250 to 1400 and served as polity capital for approximately 75 years (from around A.D. 1325 to 1400). Mound construction at Rutherford Kizer is not precisely dated but likely occurred at the end of the Early Thruston phase or the Late Thruston phase.

If contemporary, the spacing between Rutherford Kizer and Castalian Springs, at approximately 27 km, does not follow the pattern seen in northern Georgia. Ceramic and radiocarbon dating evidence suggests that the beginning of mound construction at the site and the construction of the first palisade at Rutherford Kizer occurred near the end of the Early Thruston phase, when Castalian Springs was still a polity center. The construction of a palisade at the end of the Early Thruston phase or beginning of the Late Thruston phase suggests some level of community organization at Rutherford Kizer. Unfortunately, there is not direct evidence to date the Rutherford Kizer platform mound directly and precisely. Therefore, it is possible that the rise of the Rutherford Kizer chiefdom and the fall of the Castalian Springs chiefdom were sequential within a few years, rather than overlapping. The spacing between Rutherford Kizer and Castalian

Springs may conforms to Hally's chiefdom spacing model, although archaeological evidence suggest that there was a slight overlap in time that these two mound sites served as chiefdom centers.

Rutherford Kizer could have served as a secondary center in the Castalian Springs polity. However, if Castalian Springs was a primary center with Rutherford Kizer serving as secondary center, it is expected that the sites would have served as centers more coterminous in time. Instead, it appears that these were independent chiefdoms for the short time that they may have been contemporary. It is likely that after the decline of the Castalian Springs chiefdom, at least some former residents of Castalian Springs moved to the growing Rutherford Kizer. There are several specific material culture similarities between Castalian Springs and Rutherford Kizer that lend support to the conclusion these sites were closely related. These similarities include human effigy rim rider heads with double braids, a large number of triskele gorgets, and gorgets with the hero twins theme found at both sites (Smith and Beahm 2011).

To the west, outside the sample area, two possibly contemporary single mound sites are located less than 18 km from Rutherford Kizer: 40SU112 (9 km away) and 40DV17 (16 km away). From the information available, the chronological relationship between Rutherford Kizer and the two other mound sites is not possible to determine but if these mound sites are contemporary to Rutherford Kizer, the spacing would follow the pattern seen in northern Georgia. A third Mississippian mound site, Moss-Wright (40SU20/61), is located 8 km from Rutherford Kizer, but appears to date to the Dowd phase and thus was occupied earlier than Rutherford Kizer (Benthall 1987; Worne 2011:66).

Five and possibly six other Mississippian mound sites to the west of Rutherford Kizer are located more than 18 km and less than 31 km from the site (40DV4- East Nashville Mounds, 40DV5- French Lick, 40DV39- Brick Church Pike, 40DV48- Whites Creek Mound, and 40DV442 (40DV9/36 is also a possible mound site) (Smith and Moore 2012; TDOA). French Lick, composed of one platform mound and three burial mounds, served as polity center during the Dowd and into the early Early Thruston phase with some evidence of later occupation (Walling et al. 2000:85, 501). The East Nashville Mounds site, composed of one platform mound and three burial mounds) served as a chiefdom center during the late Early Thruston and early Late Thruston phase (Walling et al. 2000:73, 501). The Brick Church Pike site had at least two platform mounds (Barker and Kuttruff 2010; Moore and Smith 2009:39). The presence of *var. Matthews* and *var. Manly* sherds at the site indicates that it was occupied sometime during the Early or Late Thruston phase and potentially earlier (Barker and Kuttruff 2010). The White's Creek site also appears to have been occupied during the late Early Thruston or Late Thruston phase, based on the presence of a carafe neck bottle and *var. Manly* jar with strap handles (Moore and Smith 2009:121). According to Curtiss, the site had a platform and burial mound (Moore and Smith 2009:121). Little work has been done at 40DV442 and it is not possible to date mound construction at the site (TDOA). The presence of these mound sites, at least some of which appear to have been polity centers at the same time as Rutherford Kizer, suggests that contemporary mound site spacing in the Middle Cumberland region is different from the pattern recognized in northern Georgia. However, without precise dating of these sites, it is not possible to be certain about this interpretation.

A cluster of four Mississippian non-mound open habitation sites and Rutherford Kizer are located along an approximately 6 km stretch of the same tributary creek (Figure 9.7). With the information available it is not possible to verify the chronological relationship between these habitation sites and Rutherford Kizer. However, the location of habitation sites near this mound site suggests that they may have been part of its polity. If so, the core of the Rutherford Kizer polity had a diameter of at least 3 km. There are several additional open habitation sites along an adjacent tributary creek which also may have been part of the Rutherford Kizer polity. If these sites were part of the Rutherford Kizer polity, this would extend the polity core diameter to a maximum of around 10 km.

9.2b Castalian Springs

There is some evidence for an early Spencer phase occupation at Castalian Springs. Castalian Springs was also occupied during the Dowd phase, and its use continued through the Early Thruston phase. The site served as a polity capital during the Early Thruston phase. The size and number of mounds at the Castalian Springs site suggest that it served as a primary mound center of a complex chiefdom. However, there are no known Mississippian mound sites within 18 km of the site that could have served as a secondary center following the pattern seen in northern Georgia (Figure 9.7). Rutherford Kizer is located 26.6 km from Castalian Springs, Sellars is located 26.2 km from Castalian Springs, and Beasley is located 22.2 km from Castalian Springs (Table 1.1). As mentioned above, early in its site history Rutherford Kizer may have been a contemporary chiefdom center with Castalian Springs.

The mound construction at Sellars also is not directly dated. At least the beginning of mound construction at Sellars likely took place between A.D. 1200 and 1275, when the site's palisade walls were constructed. Putnam documented four mound construction stages at Sellars, making it possible that additional mound construction took place at Sellars while Castalian Springs was the chiefdom capital. The presence of a strap handle found in the second construction stage of Sellars' platform mound suggests that mound construction took place during the Late Thruston phase. However, beyond this small piece of evidence, platform mound construction at Sellars is not precisely dated, and therefore it is not possible to definitively determine the temporal or political relationship between Castalian Springs and Sellars.

Beasley is located 22.2 km to the east of Castalian Springs. Both sites were occupied during the Dowd and Early Thruston phases. Castalian Springs served as a polity center during the Early Thruston phase, likely between A.D. 1275 and 1350. Beasley served as polity center between A.D. 1225 and 1300. Therefore it appears that there was at least some overlap in the time Castalian Springs and Beasley served as chiefdom capitals. The difference in ceramic assemblages at these two sites indicates that they were not part of the same complex chiefdom.

There is not a well-defined cluster of open habitation sites recorded around Castalian Springs. Three open habitation sites are located within 10 km of the mound site (Figure 9.7). The absence of additional documented open habitation Mississippian sites around Castalian Springs is likely at least in part due to the lack of systematic survey in this area.

9.2c Sellars

The main occupation of Sellars began during the Late Dowd phase. During this phase the first stages of the burial mound were deposited and both palisade lines were constructed. It is at this time of coordinated activity that Sellars most likely acted as a chiefdom capital. There is some evidence for occupation through the Early Thruston phase. The final depositions in the burial mound occurred during the early part of the Late Thruston phase. There is some evidence that additional mound construction took place at Sellars during the Late Thruston phase as well.

As noted above, Sellars is located 26.2 km from Castalian Springs. While Sellars may not have served as a chiefdom capital at the same time as Castalian Springs, there is some evidence to suggest that Sellars was occupied during that time.

Beasley is located 24.2 km from Sellars. It appears that mound use took place at both sites during the Late Dowd phase and early Thruston phase. If these two sites had been part of the same complex chiefdom, the larger site area and size of the main platform mound at Sellars suggests that it served as primary center, although the multiple platform mounds potentially present at Beasley suggests that it acted as a primary center. However, the significant difference in ceramic assemblages of the two sites is strong evidence that these two sites were not part of the same chiefdom. The close spacing between these two separate polity centers does not conform to expectations based on the northern Georgia model. It is also unexpected that polities with different ceramic style areas would be located so near each other.

Two known Mississippian period open habitation sites are within 20 km of Sellars. One (40WI4) is located less than 1 km from the mound site, while the other is close to 15 km away (Figure 9.7). The small number of Mississippian open habitation sites in the region may be partly due to the lack of archaeological survey that has been conducted in this area. However, the location of Sellars is a bit unusual, as it is the only mound site located in the Inner Nashville Basin. It is generally thought that the lack of mound sites in this physiographic region is due to resource constraints, mainly poor and shallow soils. If these two open habitation sites were contemporary with Sellars, the polity was potentially as large as 15 km in radius. Unfortunately no Mississippian ceramics were recovered from these sites and cultural affiliation was made based on the presence of triangular projectile points, so it is not possible to determine if these sites were contemporary to Sellars.

9.2d Beasley

Beasley was occupied during the later part of the Dowd phase through the Early Thruston phase. The site served as chiefdom capital between A.D. 1225 and 1300. There are six

Mississippian period open habitation sites within 3 km of Beasley (Figure 9.7). Myer also observed this clustering. He explains:

> There are also traces of scattered wigwam sites at several other places within two miles, both up and down stream. These settlements ranged from isolated wigwams, probably surrounded by cultivated fields, to small villages, presided over by sub-chiefs. The outlying inhabitants evidently relied on this central fortified town as a place of refuge in case of attack [NAA MS 2570].

It is not possible to confirm that all of these sites are contemporary to Beasley. However, their clustering does suggest that they might have been members of the Beasley polity. Excavations have been conducted at the western-most site in the cluster, 40TR32 (Autry 1985). Unfortunately very few ceramics were recovered from these excavations. A wall trench structure was excavated at 40TR32 and two radiocarbon dates were obtained (Table 9.2) (Smith 1992). These dates, which are statistically the same at the 95 percent level, produce a pooled mean of cal A.D. 1208 to 1407 (p=1.0) at 2 sigma (706±67 BP), with the most likely 1 sigma at cal A.D. 1252 to 1315 (p=0.69). These dates indicate that this open habitation site was occupied at the same time as Beasley. The location of 40TR32 suggests that the core territory of the Beasley polity was at least 3 km in radius.

9.2e Moss

Moss appears to have acted as a political center between A.D. 1200 and 1300. Beasley, located 17 km to the west, served as chiefdom capital during this time as well. The spacing of these two contemporary mound sites conforms to the pattern seen in northern Georgia, and suggests that they were members of the same complex chiefdom. Based on number of mounds, mound size, and site size, Beasley was the more politically powerful, and likely served as primary center.

A cluster of six recorded Mississippian open habitation sites are located within 13 km of Moss (Figure 9.7). It is curious that all of these are located to the south and east of Moss, the opposite direction from Beasley. Large artifact samples have not been collected from these sites, nor have they been precisely dated. Therefore, it is not possible to determine if they were all contemporary with the occupation of Moss.

9.3 Summary of Contemporary Chiefdom Spacing

Research presented here has determined that for a time, Beasley acted as polity capital at the same time as Sellars and Castalian Springs. The distance between Beasley and Sellars is 24 km and between Beasley and Castalian Springs is 22 km. The distinctive ceramic assemblage from Beasley indicates that it was not a member of the same polity as Sellars or Castalian Springs. Mound construction appears to have taken place during the same time period at Beasley and Moss as well. Beasley and Moss are spaced 17 km apart. This spacing and similarity in ceramic assemblages indicates that they were likely primary and secondary centers in a single polity.

Mound construction at Rutherford Kizer occurred during or after the decline of the Castalian Springs polity. There is overlap in occupation at Rutherford Kizer and the time that Castalian Springs served as polity capital. Because this overlap is quite short in duration, it does not appear that Castalian Springs and Rutherford Kizer were part of the same complex chiefdom. Instead, they appear to have been part of separate independent chiefdoms for the short time they were contemporary mound centers.

Castalian Springs and Sellars are located 26 km apart. At least some mound construction had already taken place at Sellars by this time. However, it is not clear if mound construction activity took place at Sellars during the time Castalian Springs was a chiefdom capital. The larger site size, larger number of mounds, larger main platform mound, and greater percentage of graves with non-local material at Castalian Springs indicates that Castalian Springs could have been a primary center and Sellars the secondary mound center if they were part of the same polity, but there is no direct evidence to support this.

The distance between contemporary mound sites in the study area ranges from 17 km to 24 km. The distance between Beasley and Moss conforms to Hally's northern Georgia mound site spacing model for members of the same polity. However, the distance between Beasley and Sellars and Beasley and Castalian Springs does not conform to the northern Georgia spacing model. If Rutherford Kizer and Sellars were mound centers at the same time as Castalian Springs, their spacing would also not conform to Hally's mound site spacing model.

9.4 Comparison to Northern Georgia

The chiefdom spacing model proposed by Hally is designed to find order in the chaos of regional mound site distributions, is based on archaeological observation and ethnographic evidence, and is supported by cost-distance analysis (Hally 1993, Livingood 2012). The reasoning behind the spacing pattern of mound sites is that a chief would be able to maintain control, protect, and keep in contact with members of his polity at a distance of less than 18 km. It is suggested that chiefdoms in general will limit the size of their territory to a radius of 20 km, a distance that could be traversed by foot in a half of a day (Livingood 2012).

9.4a Chiefdom Duration

Hally (1996:112) suggests that chiefdoms usually last approximately 100 years. Chronological evidence from the sites in the sample supports this generalization. Rutherford Kizer, Castalian Springs and Beasley appear to have been polity centers for approximately 75 years. Sellars appears to have served as a polity center for 75 years, during the late Dowd and early Thruston phase, and possibly again for an unknown length of time during the early Late Thruston phase. The duration of use for Moss's platform mound is less clear, but the site's relationship with Beasley as a secondary center suggests that it was not used for longer than 75 years.

9.4b Polity Core Area Size

To examine the core polity area size (defined as mound and open habitation clusters) of each chiefdom and compare that to northern Georgia, Mississippian open habitation sites recorded in the Tennessee Division of Archaeology Site File Database were mapped in the vicinity of each mound site in the sample. It should be kept in mind that systematic survey has not been conducted in the region and that most of these habitation sites have not been precisely dated. In the Middle Cumberland sample area, core polity extent ranges from less than 5 km to as much as 16 km apart. Sites within the core polity area are between 1 km and 15 km apart.

In the Ridge and Valley section of northwester Georgia, southeastern Tennessee, and northeastern Alabama, large habitation sites within the same polity are spaced around 3-5 km apart and the core polity area ranges from 11 to 29 km in extent (Hally et al. 1990). The polity core areas in the Middle Cumberland sample area were on the small end of the size range for northwestern Georgia, southeastern Tennessee and northeastern Alabama. Smaller polity size is a likely explanation for the closer mound site spacing seen in the Middle Cumberland region.

Comprehensive survey work around each of these mound sites is needed to accurately map each polity’s extent.

9.4c Buffer Zones

For the Middle Cumberland sites in the sample, the distance between site clusters ranges from potentially as little as 13.5 km to as much as 26.6 km. This is on the small end of the range seen in northern Georgia of 16 to 50 km (Hally et al. 1990). Comprehensive survey work around each of these mound sites would be needed to more accurately map each polity’s extent. However, smaller polity size as well as a tendency toward small buffer zones is a logical explanation for the closer mound site spacing seen in the Middle Cumberland region.

Buffer zone areas would be lightly occupied and act to reduce violent conflicts. Buffer zones would also act as a reservoir of wild plants and animals (Anderson 1994:40, 264; Hally 1996). Natural barriers could make the need for extensive buffer zones between polities unnecessary. Rough terrain could slow down travel time and reduce distances that could be traveled in a day. While the Cumberland Plateau creates a natural boundary between the Middle Cumberland region and Eastern Tennessee sites, the topography within the Middle Cumberland region does not impede movement between Middle Cumberland mound sites.

9.4d Spacing between Contemporary Mound Sites

The results of this research do not entirely support Hally’s chiefdom spacing model, although the spirit of those conclusions are upheld. The upper limits of chiefdom territory are not disproven by the mound site spacing of the Middle Cumberland. Instead it appears that contemporary mound sites are spaced closer together and chiefdoms have smaller territories in the Middle Cumberland region than in northern Georgia.

Rutherford Kizer was rising as a chiefdom center during the end of the time Castalian Spring served as chiefdom capital between A.D. 1325 and 1350. This does not follow the northern Georgia mound site spacing model. Castalian Springs was a larger and more powerful chiefdom than Rutherford Kizer ultimately proved to be, as evidenced by a larger site area, more platform mounds, and higher status grave goods. However, if Castalian Springs was a primary center with Rutherford Kizer serving as secondary center, the sites would have served as centers more coterminous in time. Instead it appears that these were independent chiefdoms for the short time that they were contemporary. It is likely that after the decline of the Castalian Springs chiefdom, at least some former residents of Castalian Springs moved to the growing Rutherford Kizer.

Mound construction at Beasley clearly overlapped in time of mound use at Sellars and the beginning of mound construction at Castalian Springs. Beasley is located 22 km from Castalian Springs and 24 km from Sellars. Therefore, Beasley and both of these mound sites are located at a distance that does not conform to Hally's chiefdom spacing model. The distinctive ceramic style area at Beasley further complicates the matter.

The archaeological record should be viewed as the material manifestation of the processes that take place in human society. Culture is not a constant thing; it is a process (Alt 2006:290). It was likely not ideal for the Beasley polity to be located so near the Castalian Springs polity. The presence of a large number of projectile points located on the top of Mound 3 at Castalian Springs suggests that conflict did occur at the site around A.D. 1300, when Beasley was declining as a chiefdom capital.

Differences in material culture makes it is clear that Beasley was not part of the same complex chiefdom as Sellars or Castalian Springs. It might be expected that the margins of distinctive ceramic style areas would be located at a greater distance than distinct polities with the same social identity. Blitz and Lorenz studied utilitarian ceramic style zones in the Lower Chattahoochee Valley. For all 7 periods examined in their study, the style zone frontier, or distance between closest mound centers in different style zones, was larger than the distance between contemporary mound centers within a style zone; greater than twice the average distance of mound centers within a style zone (2006:107-114). However, around the eastern edge of the Middle Cumberland region, two ceramic style areas were closely spaced together. It is not clear from this research why these two ceramic style areas are located so close together.

9.4e Mound Site Re-Use

As outlined in Chapter 1, part of Hally's chiefdom model predicts that abandoned mound sites will often be re-occupied after a period of approximately 100 years (Hally 1996). All of the sites in the sample show some evidence of pre-Mississippian and/or early Mississippian occupation. However, there is no evidence re-occupation after site abandonment at Rutherford Kizer, Castalian Springs, Beasley or Moss.

Evidence from Sellars is more equivocal. There is little direct evidence for dating platform mound construction beyond a wide strap handle from a central construction stage. Palisade construction took place during the Dowd or Early Thruston phase. Burial mound construction took place during the Dowd and the Late Thruston phase and residential structures date to the late Dowd or early part of the Early Thruston phase as well as the Late Thruston phase. As discussed in Chapter 7, measured dimensions of handles recovered from Sellars suggest a break in site occupation in the twelfth century (Figure 6.18). It is possible that the mound site was reused during the Late Thruston phase after this period of abandonment.

9.5 Influences on Polity Location, Size and Spacing

A number of variables affect where a polity was located, how long it lasted and how large a territory it maintained. Differences in some of these variables between northern Georgia and the Middle Cumberland region likely explain, at least in part, the reason for differences observed in chiefdom spacing throughout the region and specifically between Sellars and Beasley and potentially between Rutherford Kizer and Castalian Springs, Castalian Springs and Sellars, and Castalian Springs and Beasley. These include environmental conditions, population concentration, the level of violence in the region, and different leadership strategies.

9.5a Environmental Conditions

Productivity for Agriculture. If an environment can sustain a large population per area, then it is possible that a chiefdom would not be as large spatially as one which requires more land to sustain its population. Therefore, environmental differences between northern Georgia and Middle Tennessee might influence how large polities were spatially, and therefore, their spacing. A detailed comparison of environmental conditions between northern Georgia and the Middle Cumberland region is beyond the scope of this research. Some environmental variables that would have an effect on agricultural productivity include bedrock and soil types, soil depth, slope, floodplain width, annual precipitation, and number of frost-free days. Chamblee et al. (2012) suggest that the nature of floodplain deposits in northern GA, which has widely spaced large patches of fertile alluvial soil, contributed to the larger spacing seen in the region as compared to the Middle Cumberland which has a more regularly spaced distribution of alluvial patches.

Valuable Natural Resources. In addition to productive agricultural land, other natural resources for use and trade likely made particular locations more attractive to Middle

Cumberland inhabitants than others. Many mound sites in the Middle Cumberland region are located near salt or mineral springs. The locations of the sites in the sample were likely selected, at least in part, because of their proximity to springs.

There are several ways that salt was likely important to Mississippian occupants of the Middle Cumberland region. Some researchers have emphasized the importance of salt in the Mississippian diet, as reliance on maize increased (Brown 1980, 1981a; Gilmore 1955; Wentowski 1970). Vegetarians need additional salt in their diet, but hunters and fishers do not (Brown 1980; Wentowski 1970:11-12). Estimates of required daily amounts of sodium chloride vary from 1 gm to around 8 gm per day in order to yield sodium of about 1 gm per day. Requirements vary with physical activity as sodium is lost during sweating. An adequate and constant level of sodium is important for regulating plasma volume and fluid balance (Institute of Medicine 2005: 270-271). Reactions to a deficiency in salt include weight loss, fatigue and reduced fecundity (Brown 1980:3; Keslin 1964:6). Keslin estimates that 100 gm of edible portions of maize yields only 1 mg of sodium; this amount being reduced further by drying corn for storage (1964:11). Mississippians were certainly still hunting and fishing even while intensively growing maize. However there may have been periods of time in which meat sources were low and free salt was needed to maintain good health. It is interesting that evidence for salt procurement increases when maize agriculture is intensified (Brown et al. 1990:271).

Salt was likely an important trade item; one that would not be preserved in the archaeological record. No obvious salt containers or molds have been identified in ceramic assemblages such as those found from the Halle Culture in Bronze Age Germany (Riehm 1961). However, salt represents a potentially valuable resource with a limited distribution that would have been readily portable. Middle Cumberland residents would have been trading something in exchange for the nonlocal chert, copper and minerals found at many Mississippian sites (Smith and Moore 1999). There are many references by early European explorers to gifts of salt given to them by the Native Americans (Hudson 1999:110).

Salt may also have been ritually important to Mississippians. The black drink, ingested as part of council meetings and ceremonies described by early European travelers is well known (Hudson 1999:226). This tea-like drink, made with a type of holly, had a high caffeine content as well as emetic and diuretic properties (Hudson 1999:226, 348). The drink was particularly associated with purity and the consumption of this drink sometimes resulting in vomiting, as illustrated in deBry’s engraving (Hudson 1999, Figure 56:227). At least some mineral springs, especially those which contain magnesium, would also have had purgative properties. According to Hawkins’ account, the Creek consumed salt as part of their new fire ceremony: “This day they eat salt, and they dance Obungauchapco, (the long dance)” (Hawkins 1848:76).

Symbolically significant location. Mound site locations were also likely selected for their symbolic significance. Such reasons for selecting a particular location for a polity capital may not be apparent to a researcher. Certain landscape features held symbolically powerful associations that made particular locations attractive, especially for chiefs whose power was largely derived from sacred power. Springs were likely symbolically important locations, as the water comes from below ground (the underworld). In a similar way, caves were symbolically significant locations, and appear to have represented portals to the underworld and used for burials (Simek et al 2012; Smith 2012).

All of the sites in the sample are located near springs. In addition, Castalian Springs is located less than 500 m from a cave known as “The Cave of Skulls”. According to Myer, “this burial cave [is] described by Haywood as containing many skulls unaccompanied by other portions of the body" (Haywood 1823: 122; Myer 1924a). This cave almost certainly was used in ceremonial activities resulting in the deposition of cranial elements, similar to the deposition seen in the circular structure at Castalian Springs (Smith and Sharp 2013).

Strategically Advantageous Location. Other locations selected for chiefdom capitals were likely strategically advantageous for trade and defense. The location of a capital town directly on the Cumberland River would have increased connectivity between the mound site and other towns along the river. This would be advantageous for trade and also for communication between towns within the same chiefdom and neighboring chiefdoms. Beasley is located on the confluence of the Cumberland River and a small creek. Moss is located at the confluence of two large rivers- the Cumberland and the Caney Fork. This would have been a particularly strategic location for communication and trade. In a viewshed analysis of 13 Middle Cumberland sites, Worne (2011) found mound sites with less ability to communicate with neighboring allies showed more evidence of warfare related trauma. Thus while the locations of Beasley and Moss directly on the Cumberland River may seem more exposed to violence, their locations were advantageous because of the potential for early warnings of coming enemies.

The location of Sellars, in the Inner Nashville basin along a small creek does not follow the typical pattern of mound site locations in the Middle Cumberland. However, this location would have been a strategic location for trade between the Middle Cumberland region and sites in southeastern Tennessee and northern Georgia. The human effigy pipe recovered from burial Mound C at Sellars and nearly identical pipes found at the East Tennessee Bell site and Hollywood site in Georgia indicates that Sellars was trading with people to the southeast of the site (Brain and Phillips 1996:255, 384; Moore and Smith 2009:48; Smith and Miller 2009:162).

Although the Native American trails documented by Myer (1923a) do directly not pass Sellars, the Black Fox Trail and The Cisca and St. Augustine Trail pass only 32 km from Sellars and lead to southeastern Tennessee and northern Georgia. This distance from the documented trail is located between the drainages of the Caney Fork and the Stones River and a path could be taken to these trails that would not involve rough terrain.

9.5b Population Concentration

In part because of its heavy reliance on maize, overall health of Middle Cumberland populations was poor (Eisenberg 1986; Breitburg and Moore 2001b:90). Low adult survivorship, high infant mortality, and infectious diseases such as tuberculosis, nutritional stress and anemia have been documented in Middle Cumberland populations (Breitburg and Moore 2005:141; Breitburg et al. 1998:59). The infectious diseases suggest that populations were concentrated; living in crowded, unclean living conditions (Breitburg et al 1998:60). While models of chiefdom size limits are mainly focused on spatial extent, Kosse (1990) discusses limitations of leadership organization based on population size. A high population concentration may result in spatially smaller polities.

9.5c Violence

The level of violence in a region is closely related to population concentration. The presence and the threat of violence likely influenced Middle Cumberland residents’ decision about where to locate and when to relocate. Dye explains that “frequent war is correlated with both a fear of unpredictable natural disasters and a deep seated fear of outsiders” (2009b). Thus, stress from drought, trade rivalries, or a nearby polity might act as an impetus for an increase in warfare. The threat of warfare might result in construction of fortifications or relocation of a polity. In some instances, closely spaced chiefdoms might result in a high level of regional violence. Conversely, a possible explanation for closer spaced polities in the Middle Cumberland region than in northern Georgia is that the threat of violence was lower in the Middle Cumberland region.

In her dissertation, Worne examines skeletal remains of 1711 individuals from 13 Middle Cumberland sites for violence related trauma (2011:120). Fifteen individuals from Rutherford Kizer and 18 individuals from Sellars were included in this study. One adult male from Rutherford- Kizer shows evidence of scalping, and one child from Sellars shows evidence of scalping (Worne 2011:141, 146). Worne found that while men were more likely to be the victims of violence, women and some children were attacked as well (2011:167). Occasional raids on villages would create this type of injury pattern. The presence of palisade fortifications at most Middle Cumberland mound sites also supports the conclusion that occasional raids on villages occurred during the Mississippian period.

Warfare-related trauma is relatively low in studies of the Middle Cumberland region compared to Mississippian populations from west-central Illinois and northwestern Alabama (Worne 2011:167-168, Table 8.2). Indications of violence from studies of southeastern Tennessee sites are used to approximate the level of violence from adjacent northern Georgia, for which there is no large scale study of violence related trauma for Mississippian populations. Violence-related trauma from the Middle Cumberland and southeastern Tennessee sites do not differ substantially (Hally 1993, Smith 2003, Worne 2011: Table 8.2). However, the percentages of females with trauma are higher in the East Tennessee populations. Of the Middle Cumberland individuals analyzed by Worne (2011), 5.4 percent of the 870 count skeletal sample showed evidence of trauma. This includes 3.5 percent of the females in the sample. In comparison, 5.6 percent of individuals and 6.7 percent of females analyzed from East Tennessee Mouse Creek and Dallas sites showed evidence of trauma. This suggests that polities in southeastern Tennessee may have been involved in more raiding or warring than those in the Middle Cumberland region. Therefore northern Georgia polities may have been spaced at greater distances from each other, in part, because of a higher level of violence from raiding.

9.6 Summary and Conclusions

Research presented here has approached Middle Cumberland chiefdoms through multiple levels of analysis. Analysis ranges from specific features to individual site histories, to a comparison between the five sample mound centers in the region and their polities. The information obtained from these different levels of analysis has allowed contemporary chiefdom capitals to be identified and potential explanations offered for the deviation of mound site spacing from that in northern Georgia.

Environmental conditions and warfare were examined in the Middle Cumberland to explore other potential factors influencing chiefdom capital placement. Differences in environment between the Middle Cumberland region and northern Georgia may have affected the productivity of the land and perhaps the amount of land necessary to produce enough food to support the members of a chiefdom. Specific landscape traits such as local resources, symbolically significant features and strategic locations for defense, trade and communication differ between every individual mound center and likely affected decisions about polity center locations. The threat of violence in the form of occasional village raiding may have been greater in northern Georgia and perhaps lead to greater distance between polity centers.

The mound site spacing model based on northern Georgia remains a useful method of interpreting the patterns of mound site locations. Deviations from the mound site spacing model suggest that factors other than the most efficient chiefly leadership strategy were influencing polity size and spacing in some regions. In the case of the Middle Cumberland region, it appears that areas with local resources and/or symbolically significant landscape features and/or strategically advantageous locations resulted in polities with dense populations and in some cases these variables resulted in polity centers being located shorter distances apart than Hally's mound site spacing model predicts.

9.7 Research Significance

This research has synthesized two centuries of archaeological research in the Middle Cumberland region. Through this research, I have developed a more detailed ceramic chronology and shorter phase lengths, which will aid future researchers in the Middle Cumberland region better date site occupations. This will also help interpret archaeological collections from previously destroyed sites. As a result, we will improve our understanding of how Middle Cumberland Mississippian mound centers related to one another beyond what is documented in this dissertation.

This research has documented regional variation in Mississippian chiefdom size and spacing. The chiefdoms in the Middle Cumberland region were spatially smaller and more tightly packed than chiefdoms in northern Georgia. This demonstrates that Hally's mound site spacing model should be tested against mound site distribution data in a region before being used to characterize the nature of the polities in the region. The mound site spacing model should be modified to fit the specific conditions that exist in a particular region.

This research also documents regularities in other aspects of chiefdom characteristics. At a general level, Middle Cumberland chiefdoms follow the basic pattern of chiefdom organization including centers surrounded by a cluster of habitation sites, monumental construction of mounds, social ranking indicated by highly crafted and nonlocal material, and the existence of simple and complex chiefdoms. More specifically, chiefdoms in the Middle Cumberland region appear to last for a similar length of time as those in northern Georgia. There is some evidence that complex chiefdoms were present in the study area, but not in greater frequencies than in northern Georgia. It is also possible that, like many of chiefdom locations in northern Georgia (Hally 2006), the Sellars site was re-occupied after approximately 100 years. This research has documented that while Mississippian chiefdoms do differ from one another, they share an organizational pattern that existed over much of the southeast and continued for around 500 years.

In this dissertation, environmental and social factors that account for variation seen in chiefdom spacing are identified. One implication of closely spaced and contemporary chiefdoms is that the regional population density was greater in the Middle Cumberland than in northern Georgia. This also implies that the Middle Cumberland region is capable of supporting more people than the north Georgia environment. With closer spaced polities, there would be less opportunity for the natural resources, such as game such as deer and turkey, but also the soil fertility, in the region to recover after prolonged exploitation. An atmosphere of less violence in the Middle Cumberland may have allowed for smaller buffer zones between chiefdoms than seen in northern Georgia.

9.8 Future Research

There is much more work that could be done at these five sites and in the Middle Cumberland region in general. Planned future work includes LiDAR imaging at Castalian Springs and magnetometry at Rutherford Kizer. Modern excavation of the platform mound at Sellars would provide additional ceramic material and carbon samples for direct dating of mound construction. It is possible that premound deposits are still intact where the Rutherford Kizer platform mound used to be, which would provide a valuable pre-mound construction date from the site. More extensive site survey for open habitation sites around the mound sites in the study area would provide clearer information on chiefdom territorial extent in the region.

Although most of the mound centers in the Middle Cumberland region have been destroyed by construction activities, there is a great deal more information that can be obtained about Middle Cumberland polities and the changing cultural tradition along the eastern edge of the Middle Cumberland region. Excavations at sites in Jackson County, Tennessee, such as Flynn's Lick and Bullard's Gap, would clarify the processes taking place up the Cumberland River in Tennessee from the sample sites. It is also important that researchers in the region continue to examine existing collections, unpublished notes of early archaeological explorers of the region, the provenience and provenance of objects from artifact collectors and museums in order to make the most out of information available about Middle Cumberland Mississippians lifeways, relationships and beliefs.

Table 9.1: Comparison of Sample Site Size and Prominence Variables.
*: mound volume index calculated as (basal length x basal width x height) ÷1000 (following Payne 1994:107).

	Total # of mounds	# of platform mounds	# of burial mounds	# non-platform mounds	site area (ha)	max height of main platform mound (ft)	main platform mound volume index*
Rutherford Kizer	5	1	4	4	5.7	26	24.86
Castalian Springs	5	2 or 3	1	1 or 2	8.1	25	19.11
Sellars	2	1	1	1	4.1	15	7.07
Beasley	5	1			2.6	8	0.5
Moss	2	1	1	1	1.6	6	0.15

Table 9.2: Radiocarbon Dates from 40TR32 (from Smith 1992, 2002).

		intcal09.14c	
Sample No.	Date BP	Calibrated Ranges from Probability Distribution A.D. (1 sigma)	Calibrated Ranges from Probability Distribution A.D. (2 sigma)
Uga-3969	800±90	1057-1075(0.07) and 1154-1286(0.93)	1028-1309 (0.97) and 1361-1386(0.03)
Uga-3970	590±100	1296-1415 (1.00)	1219-1491 (1.00) and 1603-1610 (0.00)
Pooled Mean	*706±67*	*1230-1230(0.01), 1244-1245(0.01), 1252-1315 (0.69) and 1355-1388 (0.30)*	1208-1407 (1.00)

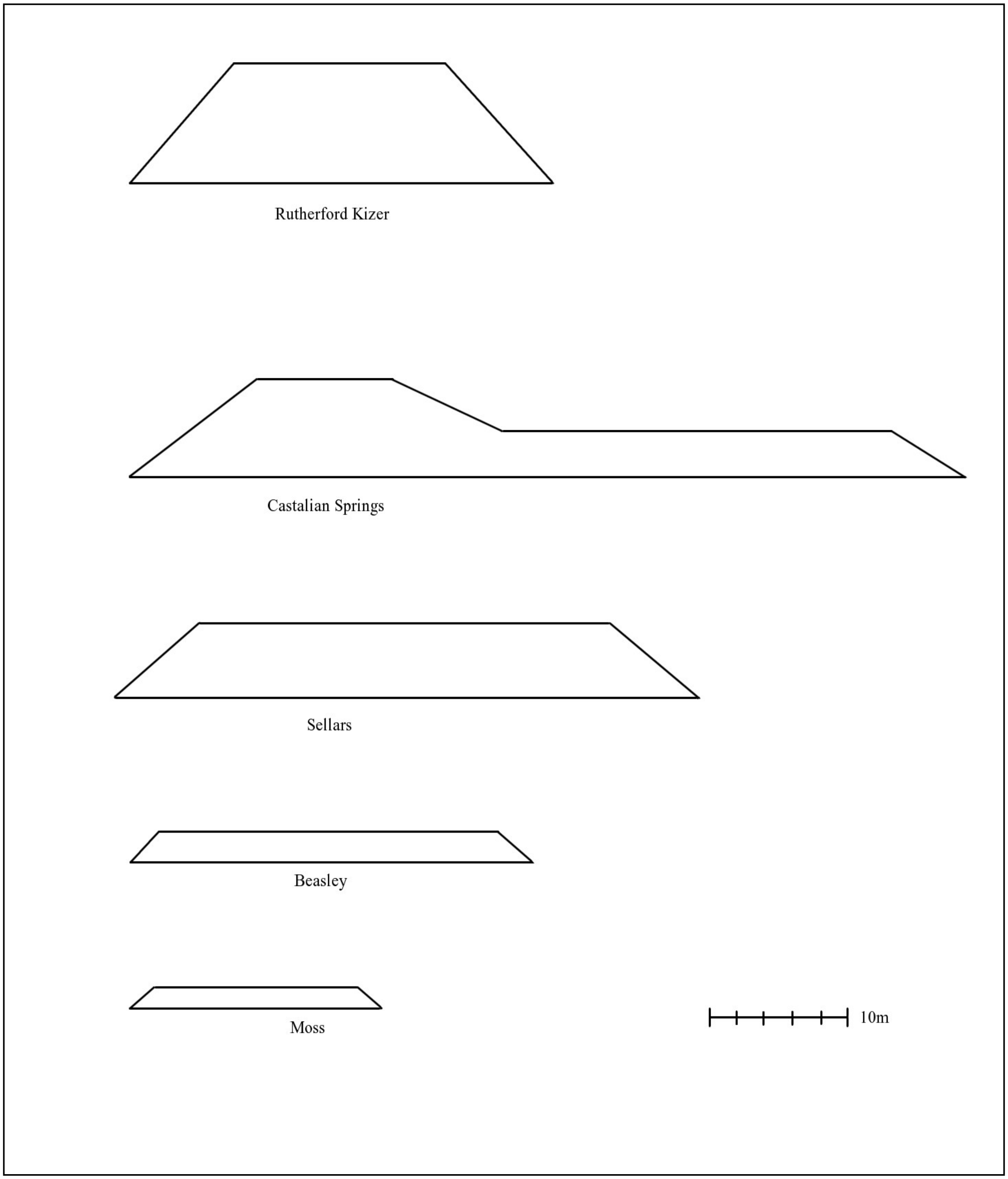

Figure 9.1: Comparison of Main Platform Mounds from the Sample Sites.

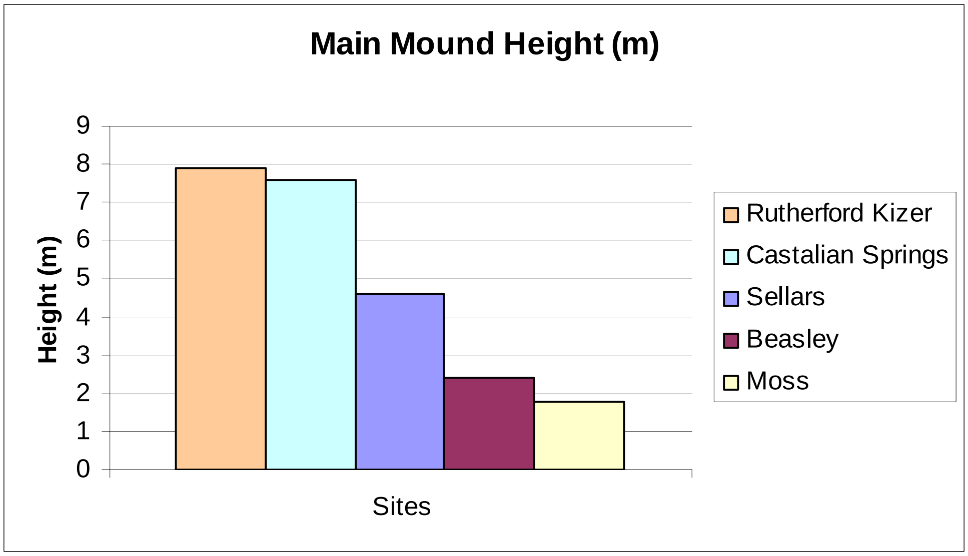

Figure 9.2: Comparison of Main Mound Height.

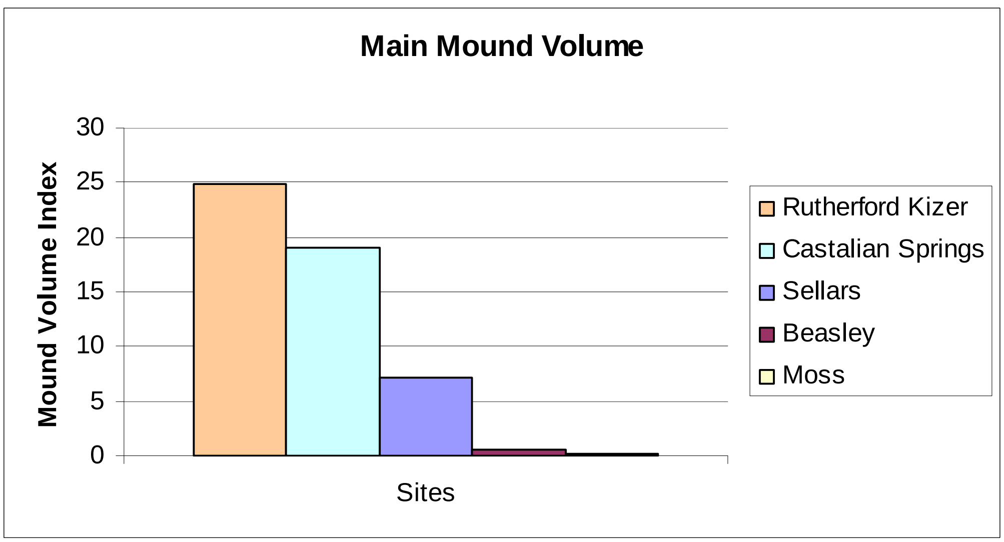

Figure 9.3: Comparison of Main Mound Volume Index.

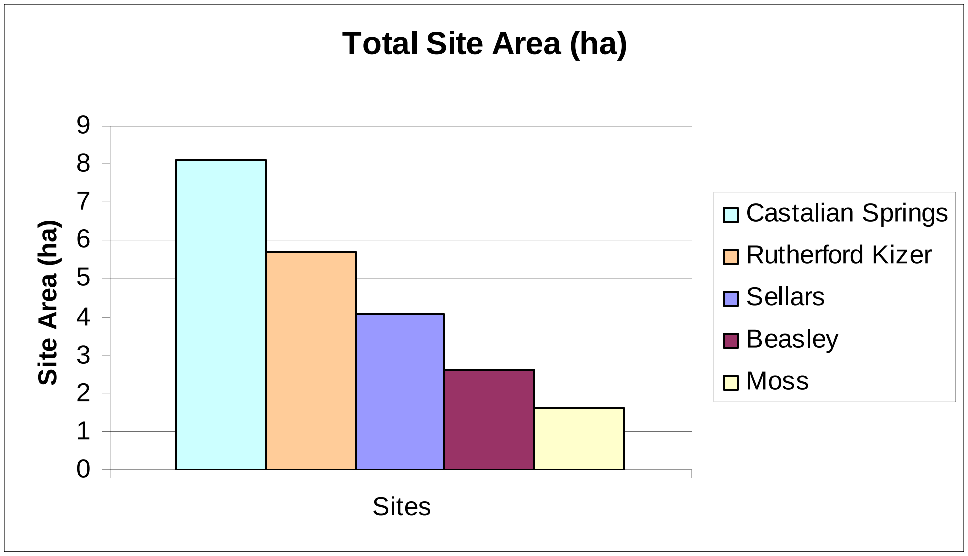

Figure 9.4: Comparison of Site Area.

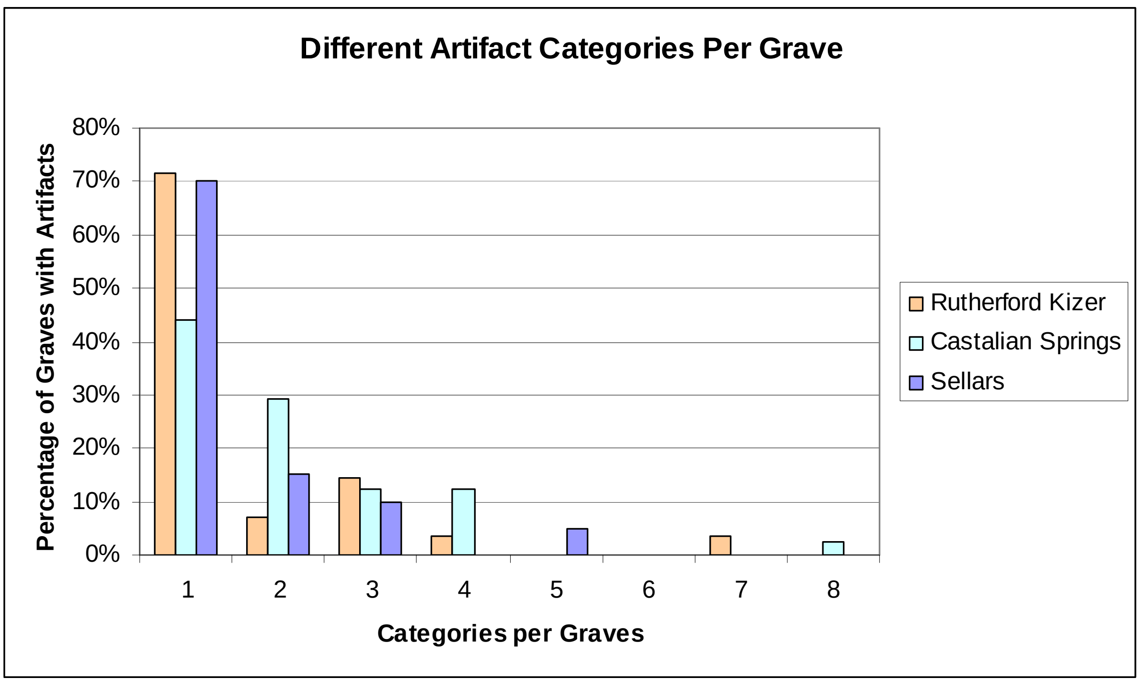

Figure 9.5: Different Artifact Categories in Documented Graves with Artifacts from Rutherford Kizer, Castalian Springs and Sellars.

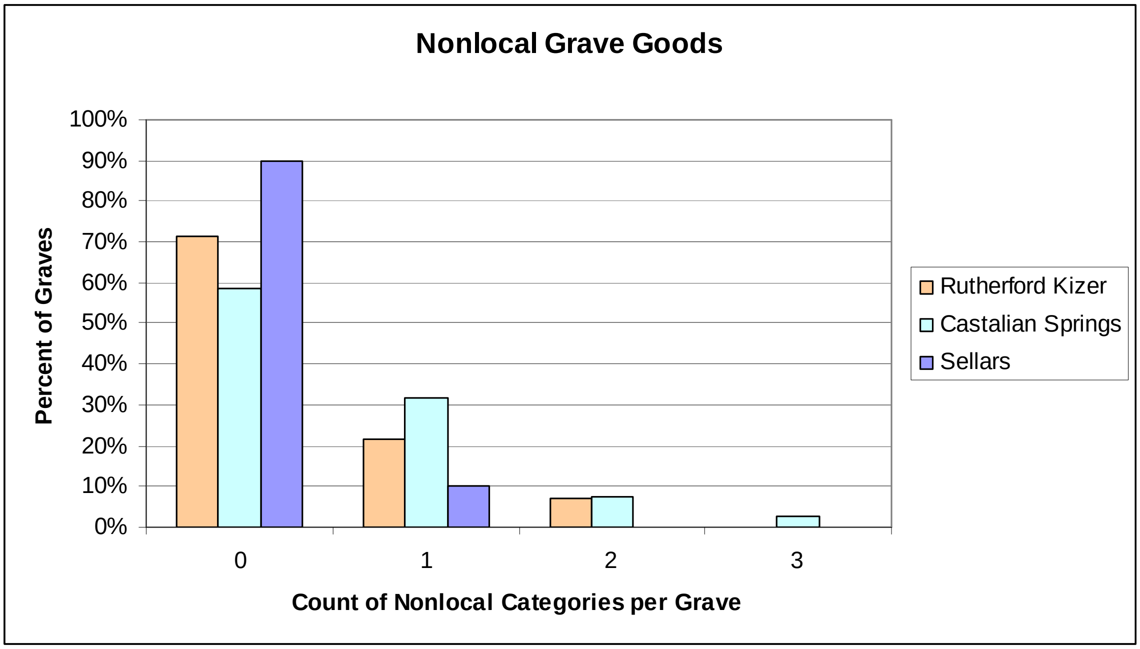

Figure 9.6: Number of Nonlocal Grave Good Categories.

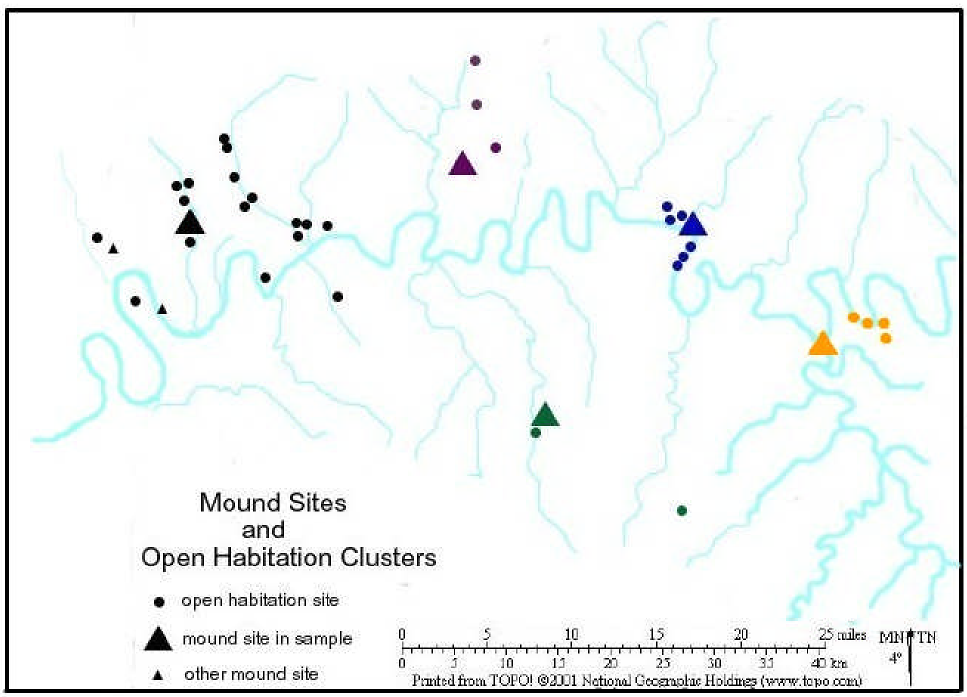

Figure 9.7: Mississippian Mound and Open Habitation Site Clusters in Study Area. Rutherford Kizer in black; Castalian Springs in purple; Sellars in green; Beasley in blue; Moss in orange. Only open habitation sites within 20 km shown.

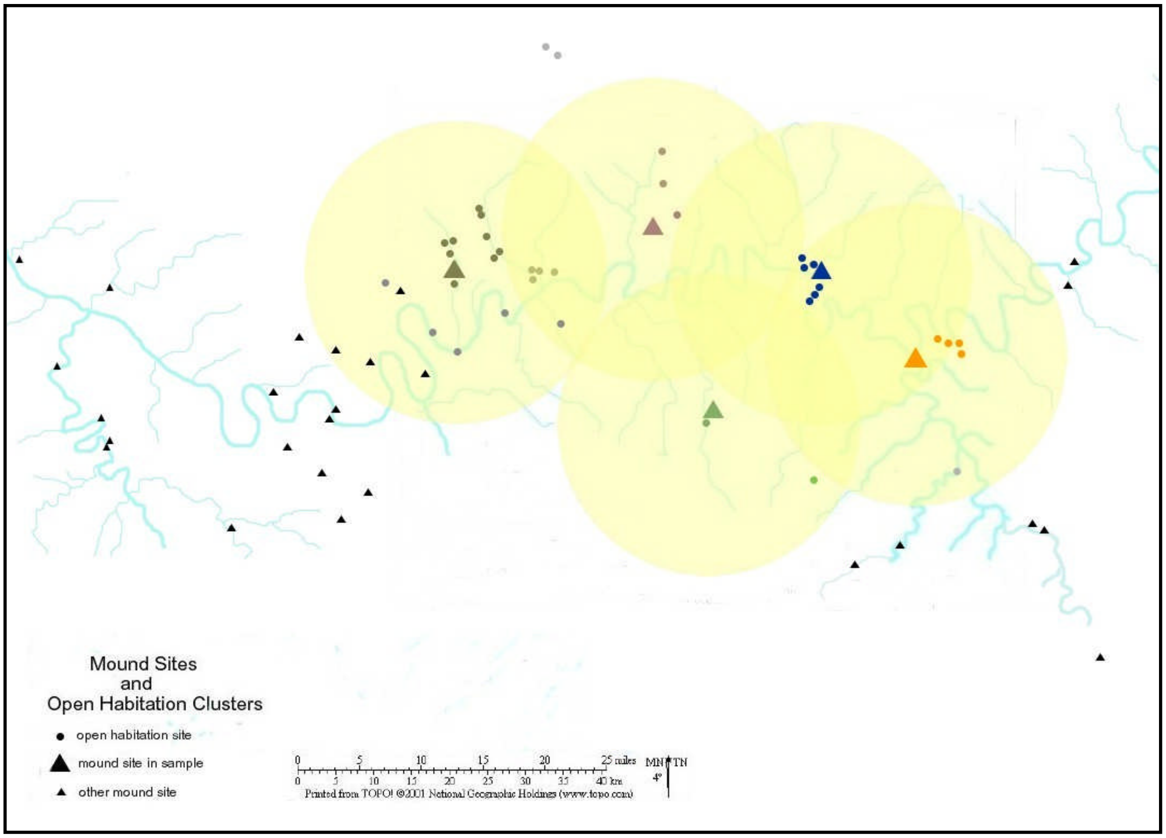

Figure 9.8: Mississippian Mound Sites in Middle Cumberland Region Showing 20 km Distance around each Mound Site in Sample. Rutherford Kizer in black; Castalian Springs in purple; Sellars in green; Beasley in blue; Moss in orange. Only open habitation sites within 20 km shown.

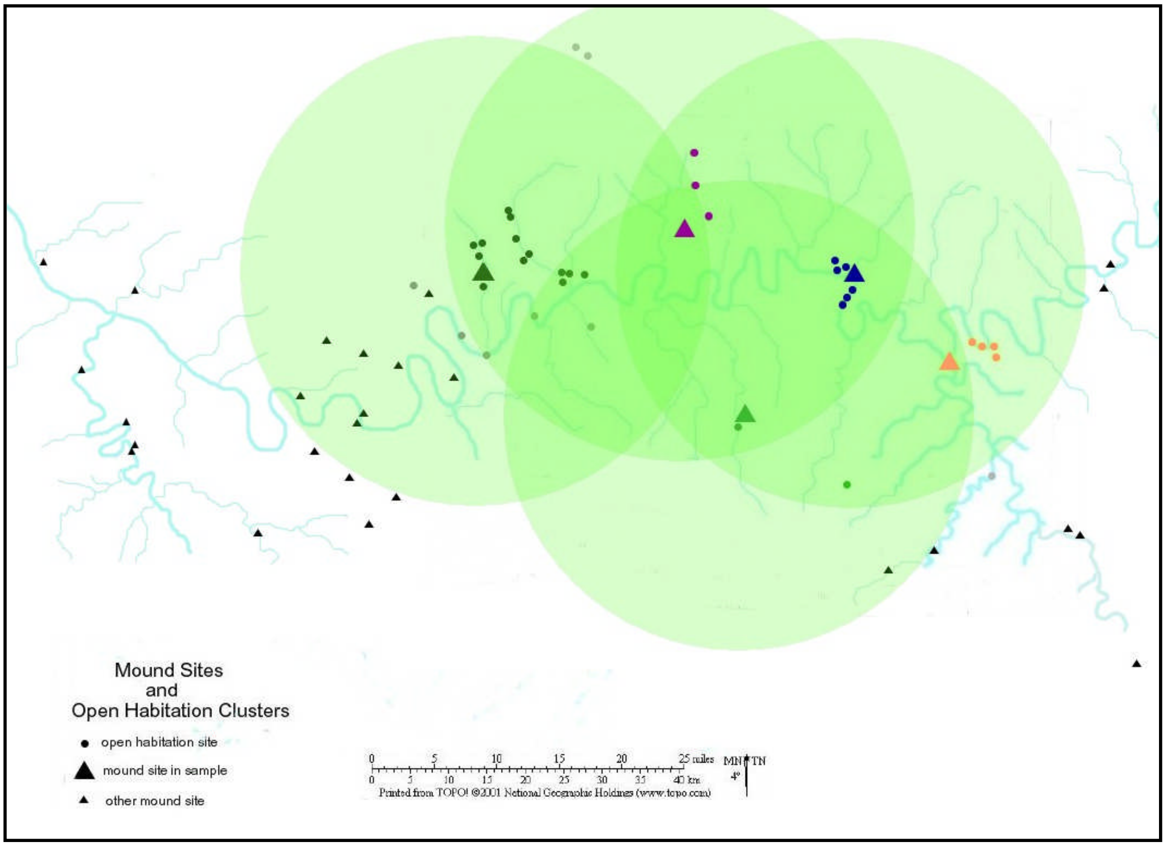

Figure 9.9: Mississippian Mound Sites in Middle Cumberland Region Showing 31 km Distance around each Mound Site in Sample. Rutherford Kizer in black; Castalian Springs in purple; Sellars in green; Beasley in blue; Moss in orange. Only open habitation sites within 20 km shown.

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APPENDIX A: RIM ANALYSIS SHEET

		Lot Number	CSAP-08-21
Unit	____________	**Level/Feature**	____________

CERAMIC ANALYSIS SHEET- 2008 CASTALIAN SPRINGS ARCHAEOLOGICAL PROJECT (40SU14)

Temper	_	Lip Thickness	
Surface Treatment		Rim Length	
Vessel Form		Thickness	
Vessel Attribute		Length	
Lip Form		Width	
Orifice Diameter		Notes	
% Complete			
Paste			
Color			

APPENDIX B: RUTHERFORD KIZER (40SU15) CERAMIC TYPES

Appendix B.1: Rutherford Kizer Ceramic Types Total and Features 20, 36, 101, 110, 194, 359, 392, and 425 (Smith and Moore 2001).

	Total	Feature 20	Feature 36	Feature 101	Feature 110	Feature 194	Feature 359	Feature 361	Feature 392
All sherds	9770	613	1149	1511	20	121	118	23	53
Mississippi Plain	7326	444	758	1179	15	84	90	13	36
Bell Plain	1835	85	307	284	2	31	22	7	15
Kimmswick Fabric Impressed	309	56	46	24		1	2	1	
Kimmswick Unidentified	91	10	7	2	3				
Matthews Incised var. Matthews	51	1	6	8		5	2	2	2
Matthews Incised var. Manley	10			1					
Beckwith Incised	1		1				1		
Mound Place Incised	1			2					
Shell Tempered Incised	9			7			1		
Negative Painted	24	1	9						
McKee Island Cordmarked	6			2					
Wolf Creek Check-stamped	2								
Effigy Fragments	40	2	11	2					
Limestone Tempered Cordmarked	20		1						
Limestone Tempered Stamped	2								
Grit Tempered Plain	1								
Grit Tempered Cordmarked	6								
Quartz Tempered Plain	2		1						
Quartz Tempered Cordmarked	11								
Sand Tempered Plain	1								
Sand Tempered Comp Stamped	17	14	2						
Untempered Sherd	4								

Appendix B.2: Rutherford Kizer Ceramic Types for Features 500, 587, 588, 695, 799, 863, and 868.

	Feature 425	Feature 500	Feature 587	Feature 588	Feature 695	Feature 799	Feature 863	Feature 868
All sherds	8	6	14	34	19	1	12	3
Mississippi Plain		3	11	21	8		10	3
Bell Plain	5		5	5	10			
Kimmswick Fabric Impressed	2	2	7	7				
Matthews Incised var. Matthews			1	1		1		
Negative Painted	1							
Effigy Fragments					1		2	

Appendix B.3: Rutherford Kizer Ceramic Types for Feature 880 and Burial 14, 80, 85 and Grave 14.

	Feature 880	Burial 14	Burial 80	Burial 85	Grave 14
All sherds	289	155	2	1	2
Mississippi Plain	217	121			1
Bell Plain	59	33	1		
Kimmswick Fabric Impressed	6				
Matthews Incised var. Matthews	1	1			
Negative Painted	5				
Effigy Fragments	1		1	1	1

APPENDIX C: CASTALIAN SPRINGS (40SU14) CERAMIC TYPES

Appendix C.1: Castalian Springs Ceramic Types Totals and Features 4, 9, 10, 16, 25, and 31. * total for site total selected from 2010 and 2011

	*Total**	Feature 4	Feature 9	Feature 10	Feature 16	Feature 25	Feature 31
All sherds	33679	1888	125	27	484	47	68
Mississippi Plain	27440	1579	95	27	450	42	63
Bell Plain	3361	101	7		20	4	
Kimmswick Fabric Impressed	1133	138	3		6		1
Matthews Incised var. Matthews	28	7			1		1
Matthews Incised var. Manley	3				1		
Beckwith Incised	2						
Mound Place Incised	3						
O'byam Incised	2						
Shell Tempered Incised, indeterminate	63	7	1		1	1	
Nashville Negative Painted	5						
Angel Negative Painted	14		1				
McKee Island Cordmarked	19	1					1
Wolf Creek Check-stamped	2						
Shell tempered uneven exterior	30	2					
Red Filmed	1						
Limestone Tempered Plain	464	15	3		1		
Limestone Tempered Cordmarked	544	2	3				1
Limestone Tempered Brushed	1						
Sand/Grit Tempered	50	8	3		2		
Sand Tempered, Complicated Stamped	1						
Quartz Tempered	55						
Grog Tempered	5						
Shell and Limestone Tempered Plain	268						
Chert Tempered	1						
Other Mixed Temper	129	30			2		1

Appendix C.2: Castalian Springs Ceramic Types from Features 33, 36, 47, 53/91, 69, and 92.

	Feature 33	Feature 36	Feature 47	Feature 51	Feature 53/91	Feature 69	Feature 92
All sherds	46	19	70	274	448	4	24
Mississippi Plain	40	19	63	255	384	4	23
Bell Plain			4	5	40		1
Kimmswick Fabric Impressed	1		3	3	20		
Matthews Incised, *var. Matthews*					1		1
Mound Place Incised					1		
Shell Tempered Incised, Indeterminate	1				1		
Limestone Tempered Plain	1			3			
Limestone Tempered Cordmarked	3			3	1		
Shell and Limestone Tempered				5			

Appendix C.3: Castalian Springs Ceramic Types from Features 93, 94, 100, 106, 119, 133 and preMound 2 deposit.

	Feature 93	Feature 94	Feature 100	Feature 106	preMound2	Feature 119	Feature 133
All sherds	58	16	374	676	89	7183	18
Mississippi Plain	49	12	313	585	59	5734	15
Bell Plain	5	2		58	8	899	
Kimmswick Fabric Impressed	4	1	9	8	1	195	1
Matthews Incised, *var. Matthews*						8	
Matthews Incised, *var. Manley*						2	
Beckwith Incised						2	
O'byam Incised		1					
Shell Tempered Incised, Indeterminate				1		16	
Nashville Negative Painted						215	
McKee Island Cordmarked				1		2	
Limestone Tempered Plain			10	6	1	40	
Limestone Tempered Cordmarked			19	15	1	109	
Sand/Grit Tempered						16	
Quartz Tempered			1	1		7	2
Shell and Limestone Tempered			3	1	19	130	
Other Mixed Temper						19	

Appendix C.4: Castalian Springs Ceramic Types from Features 134, 138, 143 and N1108E752.

	Feature 134						
	Pit 1 or underlying midden	Pit 1	Pit 2	Pit 3	N1108E752	Feature 138	Feature 143
All sherds	37	633	325	145	831	30	27
Mississippi Plain	37	593	296	136	774	26	28
Bell Plain		4	2	2	65	1	
Kimmswick Fabric Impressed		33	13	7	21		1
Shell Tempered Incised, Indeterminate			1		2		
McKee Island Cordmarked					1		
Shell tempered uneven exterior					1		
Limestone Tempered Plain					5	2	
Limestone Tempered Cordmarked		3			21	1	
Shell and Limestone Tempered					2		
Other Mixed Temper					8		

Appendix C.5: Castalian Springs Ceramic Types from Features 147, 152, 160, 163, 303, 304, and 305.

	Feature 147	Feature 152	Feature 160	Feature 163	Feature 303	Feature 304	Feature 305-pre Mound 3
All sherds	28	1	12	1	25	1	52
Mississippi Plain	27	1	8	1	22		33
Bell Plain			1		1		2
Kimmswick Fabric Impressed	1		3		1	1	1
Shell Tempered Incised, Indeterminate							
Limestone Tempered Plain							5
Limestone Tempered Cordmarked					1		7
Shell and Limestone Tempered							4

Appendix C.6: Castalian Springs Ceramic Types from Features 309, 331, 335, 340, 351, 360, 377, and Premound 3 Deposit.

	Feature 308	Feature 309	Feature 331	Feature 335	Feature 340	Feature 351	Feature 360	Feature 377
All sherds	21	39	28	65	8	43	160	30
Mississippi Plain	16	30	17	54	3	36	136	25
Bell Plain	1	4	8	8		4	9	4
Kimmswick Fabric Impressed	1	1	2	1	4	3		
Shell Tempered Incised, Indeterminate	1							
Red Filmed		1						
Limestone Tempered Plain	1	2	1				8	
Limestone Tempered Cordmarked	1	1		1	1		7	1

Appendix C.7: Castalian Springs Ceramic Types from base of Mound 3, Mound 3 below clay cap, and Structure A contexts.

	Base of Mound 3	Mound3 top below clay cap	Structure A
All sherds	540	563	26
Mississippi Plain	391	443	14
Bell Plain	87	54	1
Kimmswick Fabric Impressed	17	19	
Matthews Incised var. Matthews	1		
Nashville Negative Pained		1	
Shell Tempered Incised, Indeterminate	1	1	
Shell tempered uneven exterior	5		
Limestone Tempered Plain	15	28	6
Limestone Tempered Cordmarked	18	13	5
Limestone Tempered Brushed		1	
Sand/grit tempered		2	
Quartz Tempered		1	
Shell and Limestone Tempered	2		

APPENDIX D: SELLARS (40WI01) CERAMIC TYPES

Appendix D.1: Sellars Ceramic Type Total and Features 2-11 (1974).

	Total						
		Feature 2 (78)	Feature 4 (78)	Feature 6 (78)	Feature 8 (78)	Feature 10 (78)	Feature 11 (78)
All sherds	3923	3	599	135	17	1	11
Mississippi Plain	3150	3	523	117	12	1	11
Bell Plain	175		9	4	1		
Kimmswick Fabric Impressed	68		33	1			
Matthews Incised , *var. Matthews*	7		1	1			
Matthews Incised , *var. Manley*	1						
Mound Place Incised	1		1				
Incised, indeterminate	4		3				
Fingernail Punctated	1		1		1		
Negative Painted	2						
McKee Island Cordmarked	36		3	1			
Red Filmed	26		25				
Limestone Tempered Plain	90			3	1		
Limestone Tempered Cordmarked	3				1		
Grit Tempered	3						
Quartz Tempered	7						
Grog Tempered	3						
Shell and Limestone Tempered	278			5			
Shell and Limestone Tempered Cordmarked	1						
Other Shell Mixed Temper	67			3	1		

Appendix D.2: Sellars Ceramic Type for Feature 12, 18, 19, 23-25, 30 (1974).

	Feature 12 (74)	Feature 18 (74)	Feature 19 (74)	Feature 23 (74)	Feature 24 (74)	Feature 25 (74)	Feature 30 (74)
All sherds	18	4	2	3	1	2	8
Mississippi Plain	15	1	2	2			8
Bell Plain		2					
Kimmswick Fabric Impressed	2					2	
Incised, indeterminate		1			1		
McKee Island Cordmarked	1						
Other Shell Mixed Temper				1			

Appendix D.3: Sellars Ceramic Types for Features 31-34, 39, 40 (1974).

	Feature 31 (74)	Feature 32 (74)	Feature 33 (74)	Feature 34 (74)	Feature 39 (74)	Feature 40 (74)
All sherds	8	1	95	4	3	15
Mississippi Plain	8	1	66	4	3	12
Matthews Incised , *var. Matthews*			2			1
Incised, indeterminate			2			
Fingernail Punctated			1			
McKee Island Cordmarked			19			
Limestone Tempered Plain			5			1
Shell & Limestone Tempered						1

Appendix D.4: Sellars Ceramic Types for Features 43, 45, 46, 48-50 (1974)

	Feature 43 (74)	Feature 45 (74)	Feature 46 (74)	Feature 48 (74)	Feature 49 (74)	Feature 50 (74)
All sherds	1	21	3	1	1	76
Mississippi Plain	1	16	3			71
Limestone Tempered Plain		4				4
Shell & Limestone Tempered		1		1	1	
Other Shell Mixed Temper						1

Appendix D.5: Sellars Ceramic Types for Feature 52, Posthole 17 (1974) and Features 55 and 61 (1977)

	Feature 52 (74)	Posthole 17 (74)	Feature 55 (77)	Feature 61 (77)
All sherds	1	2	9	6
Mississippi Plain	1	2	7	6
Bell Plain			1	
Incised, Indeterminate			1	

Appendix D.6: Sellars Ceramic Types for Features 2, 5-7, 9-11 (1981).

	Feature 2 (81)	Feature 5 (81)	Feature 6 (81)	Feature 7 (81)	Feature 9 (81)
All sherds	18	4	6	106	5
Mississippi Plain	17	3	6	69	4
Bell Plain	1			4	
Kimmswick Fabric Impressed				6	
Incised, indeterminate				2	
Limestone Tempered				6	
Quartz Tempered		1			
Shell & Limestone Tempered				15	
Other Shell Mixed Temper				4	1

Appendix D.7: Sellars Ceramic Types for Features 12 and Posthole 2, 19, 33, 34, and 37 (1981).

	Feature 12 (81)	Posthole 2 (81)	Posthole 19 (81)	Posthole 33 (81)	Posthole 34 (81)	Posthole 37 (81)
All sherds	175	1	1	1	9	2
Mississippi Plain	65	1		1	8	2
Bell Plain	1				1	
Shell & Limestone Tempered	95					
Limestone Tempered	14					
Other Shell Mixed Temper			1			

Appendix D.8: Sellars Ceramic Types for Postholes 38, 47, 55, 58, 67, and 68 (1981).

	Posthole 38 (81)	Posthole 47 (81)	Posthole 55 (81)	Posthole 58 (81)	Posthole 67 (81)	Posthole 68 (81)
All sherds	1	1	1	1	5	1
Mississippi Plain	1	1	1	1	5	1

APPENDIX E: BEASLEY (40SM43) CERAMIC TYPES

Appendix E.1: Beasley Ceramic Type Totals and Test Units A, B, and C.

	Total	TU A	TU B			TU B&C	TU C				
		0-20cm	20-35cm	40-50cm	50-60cm	0-20cm	20-35cm	35-37cm	F1	50-60cm	60-80cm
All sherds	1017	2	16	7	3	1	4	3	12	2	18
Mississippi Plain	662		13	3	1		1		6		10
Bell Plain	40			1							
Kimmswick Fabric Impressed	19										
Shell Tempered Incised	5							1			
McKee Island Cordmarked	85				1						2
Wolf Creek Check-stamped	108	1	2	1					2	2	1
Cob Marked	2										
Brushed	1										
Red Filmed	5										
White Filmed	1										
Limestone Tempered Plain	13					1	1				
Limestone Tempered CM	3						2				
Grit Tempered	4			1							
Quartz Tempered	1										
Shell & Limestone Tempered	12		1					1			1
Shell & Limestone Tempered CM	2										2
Other Shell Mixed Temper	15	1		1	1				4		2
Shell tempered uneven exterior	38										
Untempered sherd	3										

Appendix E.2: Beasley Ceramic Types from Test Unit E, F, G H and I.

	TU E		TU F			TU G			TU H	TU I
	0-20cm	20-40cm	30-40cm	40-50cm	50-60cm	0-20cm	20-40cm	40-60cm	0-20cm	0-20cm
All sherds	3	3	2	10	4	103	83	45	5	2
Mississippi Plain	1		1	5	2	58	44	33		
Bell Plain							1		1	
Kimmswick Fabric Impressed							1	3		
Shell Tempered Incised						1				
McKee Island Cordmarked				2	2	26	14	1		
Wolf Creek Check-stamped						14	20	7		
Cob Marked										
Brushed										
Red Filmed			1			1	3			
White Filmed									1	
Limestone Tempered Plain		1		3						2
Limestone Tempered CM										
Grit Tempered									3	
Quartz Tempered										
Shell and Limestone Tempered		1				1	1			
Shell and Limestone Tempered CM										
Other Shell Mixed Temper	2	1								
Shell tempered uneven exterior						1		1		
Untempered sherd						1				

Appendix E.3: Beasley Ceramic Types from Test Unit J and K and Column Sample.

	TU J		Column Sample	TU K					
	0-20cm	20-40cm	25-30cm	0-20cm	20-30cm	30-40cm	40-50cm	50-60cm	60-70cm
All sherds	1	10	1	33	14	51	45	57	19
Mississippi Plain		2		29	12	35	29	29	13
Bell Plain		2		1		6			1
Kimmswick Fabric Impressed			1			1	2		
Shell Tempered Incised								1	
McKee Island Cordmarked				1	1	2	4	10	3
Wolf Creek Check-stamped				1		3	4	10	1
Cob Marked								2	
Brushed									1
Limestone Tempered Plain	1	3			1				
Limestone Tempered CM		1							
Shell and Limestone Tempered		2				3			
Shell tempered uneven exterior						1	6	5	
Untempered sherd				1					

Appendix E.4: Beasley Ceramic Types from Test Unit L.

	TU L						
	0-20cm	20-30cm	30-40cm	40-50cm	50-60cm	60-70cm	wall cleanup
All sherds	27	21	35	55	13	6	5
Mississippi Plain	26	20	27	33	8	2	4
Bell Plain	1	1	1	2		1	1
Kimmswick Fabric Impressed				2	1		
McKee Island Cordmarked			2	4	2	1	
Wolf Creek Check-stamped				8	2	2	
Shell and Limestone Tempered			1				
Shell tempered uneven exterior			3	6			
Untempered sherd			1				

Appendix E.5: Beasley Ceramic Types from Test Unit M.

	TU M				
	0-20cm	20-30cm	30-40cm	40-50cm	50-60cm
All sherds	109	85	41	37	26
Mississippi Plain	80	58	32	25	20
Bell Plain	8	8	4		
Kimmswick Fabric Impressed	5	1	1	1	
Shell Tempered Incised		2			
McKee Island Cordmarked	3	4			
Wolf Creek Check-stamped	5	4	2	10	6
Quartz Tempered			1		
Other Shell Mixed Temper		3			
Shell tempered uneven exterior	8	5	1	1	

APPENDIX F: MOSS (40SM25) CERAMIC TYPES

Appendix F.1: Moss Ceramic Type Totals and Test Unit 1.

	Total	Test Unit 1					
		0-20cm	20-30cm	30-40cm	40-50cm	50-60cm	60-70cm
All sherds	306	6	22	101	118	11	6
Mississippi Plain	214	6	19	60	83	6	6
Bell Plain	31		6	9	8	4	
McKee Island Cordmarked	17			4	13		
Wolf Creek Check-stamped	23			17	5	1	
Combed	1			1			
Limestone Tempered Plain	1			1			
Other Shell Mixed Temper	3				1		
Shell tempered uneven exterior	16			8	8		

Appendix F.2: Moss Ceramic Types from Features.

	Feature 1	Feature 4	Feature 11	Feature 15
All sherds	2	1	1	2
Mississippi Plain	2	1	1	1
Other Shell Mixed Temper				1

Appendix F.3: Moss Ceramic Types from Test Unit 2.

	Test Unit 2							
	0-20cm	20-30cm	30-40cm	40-50cm	50-60cm	60-70cm	70-80cm	80-90cm
All sherds	3	7	4	1	5	1	10	3
Mississippi Plain	3	4	3	1	5	1	10	2
Bell Plain		3	1					
Other Shell Mixed Temper								1

APPENDIX G: RUTHERFORD KIZER (40SU15) VESSEL FORMS AND MEASURMENTS

Appendix G.1: Rutherford Kizer Vessel Forms and Measurements Total and Features 20, 36, 89, 101, 110 and 194.

	Total	Feature 20	Feature 36	Feature 89	Feature 101	Feature 110	Feature 194
Rims	682						
Total Number of Jar Rims	369	34	51	7	52		8
Mississippi Plain Jars	344	31	49	7	37		1
Bell Plain Jars	25	1			4		3
Incised Jars	44	2	2		11		4
Lobed Jars	1						
Cordmarked Jars	2						
Jars by Rim Angle							
Jars with Direct Rims	353	32	50	7	52		8
Jars with Excurvate Rims	2		1				
Jars with Incurvate Rims	14	2					
Handles							
Closed Handles	33	2	3				2
Average Width (mm)	37.9	37.525	49.83				46
Average Thickness (mm)	6.08		6				
Average Length	35.43		41.5				
Average Width to Thickness Ratio	0.179		0.127				
Average Length to Thickness Ratio	0.156		0.143				
Average Length to Width Ratio	0.863		1.17				
Strap Handles	33	2	3				2
Lug Handles	42		2	1	1		
Single Lugs	2			1			
Bifurcate Lugs	29	1	2		1		
Lug Width (mm)	26.68	20.6	30.5	25.5	34.35		
Lug Thickness (mm)	11.56	14.6	13		10.55		
Lug Length (mm)	85.68	92	68	71.2			

Appendix G.1 cont.

	Total	Feature 20	Feature 36	Feature 89	Feature 101	Feature 110	Feature 194
Bottles							
Bottle Rims	35	1	1		5		
Mississippi Plain Bottles	4	1					
Bell Plain Bottles	30		1		4		
Negative Painted Bottles	1				1		
Hooded Bottles	11				2		
Coarse Shell Tempered Hooded Bottles	2						
Fine Shell Tempered Hooded Bottles	9				2		
Effigy Fragments	40						
Duck Effigy Bowl Fragments	9						
Fish Effigy Bowl Fragments	4						
Frog Effigy Bowl Fragments	1						
Human Head Rim rider (bowl)	3						
Human Head Medallion (bowl)	1						
Owl Effigy Bottle	1						
Bowls							
Bowl Rims	111	7	5			1	3
Mississippi Plain Bowls	17	1	1				
Bell Plain Bowls	40	6	4				
Noel Bowls	18				1	1	3
Standard Bowls	65	1	2		5		
Mississippi Plain Standard Bowls	11	1	1				
Bell Plain Standard Bowls	54		2		4		
Outslanting Wall Bowls	18		2				
Mississippi Plain Outslanting Wall Bowls	4						
Bell Plain Outslanting Wall Bowls	14		2				
Restricted Rim Bowls	10	6					
Bell Plain Restricted Rim Bowls	10	6					
Outslanting Wall Bowls or Plates	18						
Mississippi Plain	4						
Bell Plan	14						
Plates							
Plate Rims	15	1	3		1		1

Appendix G.1 cont.

	Total	Feature 20	Feature 36	Feature 89	Feature 101	Feature 110	Feature 194
Bell Plain Plates	15	1	3		1		1
Pans							
Pan Rims	147	27	6		10	2	1
Kimmswick Fabric Impressed	83	17	2		3		1
Plain	6				4		
Unidentified	58	10	4		3	2	

Appendix G.2: Rutherford Kizer Vessel Forms and Measurements for Feature 359, 392, 425, 500, 587, 588, and 695.

	Feature 359	Feature 392	Feature 425	Feature 500	Feature 587	Feature 588	Feature 695
Total Number of Jar Rims	4	1	1				2
Mississippi Plain Jars	1		1				1
Bell Plain Jars							1
Incised Jars	3	1					
Jars by Rim Angle							
Jars with Direct Rims	4	1	1				1
Jars with Incurvate Rims							1
Handles							
Closed Handles	3	1	1			2	1
Average Width (mm)	42.3	19.3	46			23.275	
Average Thickness (mm)		5.5	8			4.5	
Average Length		35				33	
Average Width to Thickness Ratio		0.285	0.174			0.193	
Average Length to Thickness Ratio		0.1571				0.136	
Average Length to Width Ratio		0.5514				0.7106	
Strap Handles	3	1	1			2	
Bottles							
Bottle Rims		1					
Bell Plain Bottles		1					
Bowls							
Bowl Rims	1					1	
Bell Plain Bowls						1	
Noel Bowls	1						
Restricted Rim Bowls						1	
Bell Plain Restricted Rim Bowls						1	
Plates							
Plate Rims			1				
Bell Plain Plates			1				
Pans							
Pan Rims	2						
Kimmswick Fabric Impressed	1						
Plain	1						

Appendix G.3: Rutherford Kizer Vessel Forms and Measurements for Features 799, 863, 868, and Burials 14 and 80.

	Feature 799	Feature 863	Feature 868	Burial 14	Burial 80
Jars					
Total Number of Jar Rims	1	1		1	
Mississippi Plain Jars		1			
Bell Plain Jars				1	
Incised Jars	1				
Jars by Rim Angle					
Jars with Direct Rims	1				
Jars with Incurvate Rims		1		1	
Handles					
Closed Handles			1		
Lug Handles				1	
Bifurcate Lugs				1	
Lug Width (mm)				31.3	
Lug Thickness (mm)				10.8	
Bottles					
Frog Effigy Bowl Fragments					1
Bowls					
Bowl Rims				1	1
Bell Plain Bowls				1	
Standard Bowls				1	
Bell Plain Standard Bowls				1	

APPENDIX H: CASTALIAN SPRINGS (40SU14) VESSEL FORMS AND MEASURMENTS

Appendix H.1: Ceramics Vessel Forms and Measurement Totals and Features 4, 9, 10, and 16.

	Total	Feature 4	Feature 9	Feature 10	Feature 16
Jars					
Total Number of Jar Rims	504	55	1	3	9
Average Jar Orifice Diameter (cm)	22.6	25.97	16	27	16.33
Average Neck Length (mm)	26.39	27.72		12	24.66
Average Neck Length to Thickness Ratio	0.299	0.293		0.53	0.25
Mississippi Plain Jars	454	51	1	3	8
Bell Plain Jars	42				
Incised Jars	15	2			1
Lobed Jars	4	1			
Limestone Tempered Jars	1	1			
Shell and Limestone Tempered Jars	7				
Grit Tempered Jars	1	1			
Peaked Rim Jars	1				
Jars by Shape Class					
Gradual Neck Jars	190	26	1	2	4
Average Orifice Diameter of Gradual Neck Jars (cm)	24.57	27.11	16	26	21
Average Neck Length of Gradual Neck Jars (mm)	29.63	27.28		12	23.66
Average Neck Length to Thickness Ratio of Gradual Neck Jars	0.28	0.306		0.53	0.269
Closed Handles on Gradual Neck Jars	12				
Lug Handles on Gradual Neck Jars	29	5			
Distinct Neck Jars	45	3			
Average Orifice Diameter of Distinct Neck Jars (cm)	18.22	24			
Average Neck Length of Distinct Neck Jars (mm)	28.02	30.25			
Average Neck Length to Thickness ratio of Distinct Neck Jars	0.202	0.202			
Closed Handles on Distinct Neck Jars	8				
Lug Handles on Distinct Neck Jars	3	2			

Appendix H.1 cont.

	Total	Feature 4	Feature 9	Feature 10	Feature 16
Wide Mouth Jars	13				
Average Orifice Diameter of Wide Mouth Jars (cm)	10.92				
Average Neck Length of Wide Mouth Jars (mm)	16.65				
Average Neck Length to Thickness Ratio	0.299				
Closed Handles on Wide Mouth Jars	2				
Jars by Rim Angle					
Jars with Direct Rims	137	20		1	2
Average Orifice Diameter of Jars with Direct Rims (cm)	22.8	26.08			20
Average Neck Length of Jars with Direct Rims (mm)	30.65	28.47		12	24.37
Average Neck Length to Thickness Ratio	0.254	0.277		0.53	0.267
Closed Handles on Jars with Direct Rims	15				
Lugs on Jars with Direct Rims	23	5			
Jars with Excurvate Rims	43				
Average Orifice Diameter of Jars with Excurvate Rims (cm)	18.44				
Average Neck Length of Jars with Excurvate Rims (mm)	24.92				
Average Neck Length to Thickness Ratio	0.253				
Jars with Incurvate Rims	66	10	1	1	1
Average Orifice Diameter of Jars with Incurvate Rims (cm)	23.85	27.63	16	26	
Average Neck Length of Jars with Incurvate Rims (mm)	25.9	23.48			26.08
Average Neck Length to Thickness Ratio	0.33	0.369			0.162
Lug Handles on Jars with Incurvate Rims	7	1			
Handles					
Closed Handles	82	4			1
Average Width	20.31	25.458			34.04
Average Thickness	8.256	8.923			13.21
Average Length	42.88	40.45			60.72
Average Width to Thickness Ratio	0.453	0.386			0.388
Average Length to Thickness Ratio	0.206	0.224			0.218
Average Length to Width Ratio	0.434	0.455			0.561

Appendix H.1 cont.

	Total	Feature 4	Feature 9	Feature 10	Feature 16
Single Horn	2				
Double Horn	12				
Four Horns	1				1
Noded Handles	2				1
Handles with Central Groove	9	1			
Handles with Central Incised Line	4				
Loop Handles	5				
Narrow Intermediate Handles	19				
Wide Intermediate Handles	28	2			1
Strap Handles	30	2			
Lug Handles	115	18			1
Single Lugs	35	7			1
Bifurcate Lugs	31	8			
Space between Lug and Lip?	9	1			
Lug Shapes[1]	BiA, BiB, BiC, BiD, BiE, BiG, SA, SB, SC, SD	BiB, BiC, BiD, SA, SB, SC	SD		
Lug Profile Shapes[2]	A, B, C, D, E, F, G, H, I, J, L, M, N	A, B, C, D, J, K, M, N	F		
Average Lug Length (mm)	79.14	81.4			
Average Lug Width (mm)	27.63	26.94			28.05
Average Lug Thickness (mm)	15.53	15.29			10.65
Average Lug Width to Thickness Ratio	0.574	0.562			0.38
Average Lug Length to Thickness Ratio	0.224	0.212			
Average Lug Length to Width Ratio	0.387	0.401			
Bottles					
Bottle Rims	44				
Mississippi Plain Bottles	23				
Bell Plain Bottles	19				
Carafe Neck Bottles	6				
Mississippi Plain Carafe Neck Bottles	1				
Bell Plain Carafe Neck Bottles	5				

Appendix H.1 cont.

	Total	Feature 4	Feature 9	Feature 10	Feature 16
Average Orifice Diameter of Carafe Neck Bottles (cm)	3.83				
Cylindrical Neck Bottles	6				
Mississippi Plain Cylindrical Neck Bottles	3				
Bell Plain Cylindrical Neck Bottles	3				
Average Orifice Diameter of Cylindrical Neck Bottles (cm)	12.1				
Blank Face Hooded Bottles	25				
Mississippi Plain Blank Face Hooded Bottles	15				
Bell Plain Blank Face Hooded Bottles	10				
Blank Face Hooded Bottle Types	B, C, D				
Average Orifice Diameter of Blank Faced Hooded Bottles (cm)	4.73				
Effigy Bottles	4				
Human Effigy Bottles	2				
Owl Effigy Bottles	1				
Dog Effigy Bottles	1	1			
Bowls					
Bowl Rims	47	2			1
Average Orifice Diameter of Bowls (cm)	15.22	24			22
Mississippi Plain Bowls	30	2			1
Bell Plain Bowls	14				
Sand Tempered Bowls	3				
Standard Bowls	43	2			1
Average Orifice Diameter of Standard Bowls (cm)	16.09	24			22
Grit tempered Standard Bowls	3				
Standard Bowl with Nodes	10	2			
Standard Bowls with Tabs	1				
Standard Bowl with Rim Riders	1				
Restricted Rim Bowls	6				
Average Orifice Diameter of Restricted Rim Bowls (cm)	9.6				
Restricted Rim Modeled Effigy Bowls	2				
Plates					
Plate Rims	32	6			

Appendix H.1 cont.

	Total	Feature 4	Feature 9	Feature 10	Feature 16
Average Orifice Diameter (cm)	24.56	26.33			
Average Rim Length (mm)	36.30	38.97			
Average Rim Length to Thickness Ratio	0.298	0.319			
Short Rim Plates	8	1			
Short Standard Rim Plates	18	5			
Long Standard Rim Plates	7				
Mississippi Plain Plates	20	4			
Bell Plain Plates	10	2			
Limestone and Shell	2				
Angel Negative Painted plates	8				
O'byam Incised var. Stewart Plates	1				
Pans					
Pans	134	24			1
Kimmswick Fabric Impressed	117	24			
Plain	12				1
Average Lip Thickness (mm)	17.31	21.54			16.97

Appendix H.2: Castalian Springs Vessel Forms and Measurements of Features 25, 31, 33, 36, 47, 51, and 53/91.

	Feature 25	Feature 31	Feature 33	Feature 36	Feature 47	Feature 51	Feature 53/91
Jars							
Total Number of Jar Rims	2	2		1		4	20
Average Jar Orifice Diameter (cm)		19.5				18	18.83
Average Neck Length (mm)	18.25	24.35		16.15		21.81	21.35
Average Neck Length to Thickness Ratio	0.282	0.177		0.271		0.324	0.456
Mississippi Plain Jars	1	2		1		4	19
Incised Jars							1
Lobed Jars						1	1
Shell and Limestone Tempered Jars	1						
Jars by Shape Class							
Gradual Neck Jars				1		2	8
Average Orifice Diameter of Gradual Neck Jars (cm)						25	20.2
Average Neck Length of Gradual Neck Jars (mm)				16.15		17.9	20.58
Average Neck Length to Thickness ratio of Gradual Neck Jars				0.271		0.451	0.593
Lug Handles on Gradual Neck Jars							1
Distinct Neck Jars	1	1					2
Average Orifice Diameter of Distinct Neck Jars (cm)		11					16
Average Neck Length of Distinct Neck Jars (mm)	18.25	24.35					31.35
Average Neck Length to Thickness Ratio of Distinct Neck Jars		0.177					0.25
Wide Mouth Jars						1	
Average Orifice Diameter of Wide Mouth Jars (cm)						9	
Average Neck Length of Wide Mouth Jars (mm)						27.75	
Average Neck Length to Thickness Ratio						0.069	
Jars by Rim Angle							
Jars with Direct Rims	1	1				1	5
Average Orifice Diameter (cm) of Jars with Direct Rims		11				25	17
Average Neck Length of Jars with Direct Rims (mm)	18.25	24.35				26.5	38.93

Appendix H.2 cont.

	Feature 25	Feature 31	Feature 33	Feature 36	Feature 47	Feature 51	Feature 53/91
Average Neck Length to Thickness Ratio	0.282	0.177				0.491	0.201
Lugs on Jars with Direct Rims							1
Jars with Excurvate Rims						2	1
Average Orifice Diameter of Jars with Excurvate Rims (cm)						9	19
Average Neck Length of Jars with Excurvate Rims (mm)						18.53	
Average Rim Length to Thickness Ratio						0.24	
Jars with Incurvate Rims				1			4
Average Orifice Diameter of Jars with Incurvate Rims (cm)							20
Average Neck Length of Jars with Incurvate Rims (mm)				16.15			11.94
Average Neck Length to Thickness Ratio				0.271			0.708
Lug Handles on Jars with Incurvate Rims							
Handles							
Closed Handles							2
Average Width							21.38
Average Thickness							10.32
Average Length							62.9
Average Width to Thickness Ratio							0.487
Average Length to Thickness Ratio							0.184
Average Length to Width Ratio							0.322
Narrow Intermediate Handles							1
Wide Intermediate Handles							1
Lug Handles		1					6
Single Lugs							4
Bifurcate Lugs							
Space between Lug and Lip?							1
Lug Shapes[1]							SB, SC
Lug Profile Shapes[2]							B, D, E, N
Average Lug Length (mm)							66.37
Average Lug Width (mm)							30.14
Average Lug Thickness (mm)		22.92					16.44
Average Lug Width to Thickness Ratio							0.544
Average Lug Length to Thickness Ratio							0.261

Appendix H.2 cont.

	Feature 25	Feature 31	Feature 33	Feature 36	Feature 47	Feature 51	Feature 53/91
Average Lug Length to Width Ratio							0.471
Bowls							
Bowl Rims					1		3
Average Orifice Diameter of Bowls (cm)					16		18.5
Mississippi Plain Bowls					1		3
Standard Bowls					1		3
Average Orifice Diameter of Standard Bowls (cm)					16		18.5
Pans							
Pans			1		1	1	1
Kimmswick Fabric Impressed					1		
Plain			1			1	1
Average Lip Thickness (mm)			14.53		22.19	12.22	17.1

Appendix H.3: Castalian Springs Vessel Forms and Measurements for Features 69, 92, 93, 94, 100, and 106.

	Feature 69	Feature 92	Feature 93	Feature 94	Feature 100	Feature 106
Jars						
Total Number of Jar Rims		2	2	1	5	17
Average Jar Orifice Diameter (cm)		13		44	21.33	19.5
Average Neck Length (mm)		26.35				30.48
Average Neck Length to Thickness Ratio		0.161				0.245
Mississippi Plain Jars		1	2	1	3	15
Bell Plain Jars						1
Incised Jars		1				1
Lobed Jars		1				
Limestone Tempered Jars					1	
Jars by Shape Class						
Gradual Neck Jars			1	1	2	6
Average Orifice Diameter of Gradual Neck Jars (cm)				44	17	19.4
Average Neck Length of Gradual Neck Jars (mm)						36.94
Average Neck Length to Thickness ratio of Gradual Neck Jars						0.203
Closed Handles on Gradual Neck Jars			1			2
Lug Handles on Gradual Neck Jars				1	1	
Distinct Neck Jars		1				2
Average Orifice Diameter of Distinct Neck Jars (cm)		13				12
Average Neck Length of Distinct Neck Jars (mm)		26.35				26.45
Average Neck Length to Thickness Ratio of Distinct Neck Jars		0.161				0.206
Jars by Rim Angle						
Jars with Direct Rims		1	1	1	1	8
Average Orifice Diameter of Jars with Direct Rims (cm)		13		44		17.29
Average Neck Length of Jars with Direct Rims (mm)		26.35				33.47
Average Neck Length to Thickness Ratio		0.161				0.204
Closed Handles on Jars with Direct Rims						2
Lugs on Jars with Direct Rims			1	1	1	
Incurvate Rim Jars					1	
Average Orifice Diameter of Jars with Incurvate Rims (cm)					17	
Handles						
Closed Handles	1		1			2

Appendix H.3 cont.

	Feature 69	Feature 92	Feature 93	Feature 94	Feature 100	Feature 106
Average Width	18.57		8.2			25.94
Average Thickness	12.91		5.84			9.77
Average Length	49.88		27			55.12
Average Width to Thickness Ratio	0.695		0.712			0.447
Average Length to Thickness Ratio	0.259		0.216			0.193
Average Length to Width Ratio	0.372		0.304			0.454
Narrow Intermediate Handles	1		1			1
Strap Handles						1
Lug Handles			1	1	1	3
Single Lugs				1		1
Bifurcate Lugs						1
Lug shapes[1]				SA		BiA, SA
Lug profile shapes[2]			L	D	I	K, N
Average Lug Length (mm)				132.5		76.45
Average Lug Width (mm)				40.57		26.9
Average Lug Thickness (mm)			12.48	16.8	18.75	14.73
Average Lug Width to Thickness Ratio				0.414		0.593
Average Lug Length to Thickness Ratio				0.127		0.19
Average Lug Length to Width Ratio				0.306		0.358
Bowls						
Bowl Rims			1		1	4
Average Orifice Diameter of Bowls (cm)			24		14	20.33
Mississippi Plain Bowls			1		1	3
Bell Plain Bowls						1
Standard Bowls			1		1	4
Average Orifice Diameter of Standard Bowls (cm)			24		14	20.33
Plates						
Plate Rims					1	1
Average Orifice Diameter (cm)						34
Average Rim Length (mm)						36.56
Average Rim Length to Thickness Ratio						0.3

Appendix H.3 cont.

	Feature 69	Feature 92	Feature 93	Feature 94	Feature 100	Feature 106
Short Standard Rim Plates						1
Mississippi Plain Plates						1
Angel Negative Painted Plates					1	
Pans						
Pans			2		3	1
Kimmswick Fabric Impressed			2		1	1
Average Lip Thickness (mm)			18.09		18.52	24.08

Appendix H.4: Castalian Springs Vessel Forms and Measurements for Features 119, 133, 134, and Pre-Mound 2 Deposit.

				Feature 134			
	preMound2	Feature 119	Feature 133	Pit 1/underlying midden	Pit 1	Pit 2	Pit 3
Jars							
Total Number of Jar Rims	2	106	1	2	7	10	4
Average Jar Orifice Diameter (cm)	13	23.03	34	20	18.17	21.22	24.67
Average Neck Length (mm)	17.95	26.53	51.3	27.5	22.07	29.9	25.75
Average Neck Length to Thickness Ratio	0.278	0.324	0.1	0.21	0.264	0.325	0.323
Mississippi Plain Jars	2	95	1	2	7	10	4
Bell Plain Jars		5					
Incised Jars		2					
Lobed Jars		3			1		
Jars by Shape Class							
Gradual Neck Jars	1	47		1	4	2	1
Average Orifice Diameter of Gradual Neck Jars (cm)		26.14		17	22	29.5	32
Average Neck Length of Gradual Neck Jars (mm)	25.15	30.27		30	23.96	47.48	25.75
Average Neck Length to Thickness ratio of Gradual Neck Jars	0.151	0.293		0.21	0.259	0.219	0.323
Closed Handles on Gradual Neck Jars	1	2		1	1		
Lug Handles on Gradual Neck Jars		14					
Distinct Neck Jars		6	1			2	
Average Orifice Diameter of Distinct Neck Jars (cm)		19.43	34			17.5	
Average Neck Length of Distinct Neck Jars (mm)		23.25	51.3			24.35	
Average Neck Length to Thickness ratio of Distinct Neck Jars		0.251	0.1			0.319	
Closed Handles on Distinct Neck Jars		2					
Wide Mouth Jars		3					
Average Orifice Diameter of Wide Mouth Jars (cm)		7.33					
Average Neck Length of Wide Mouth Jars (mm)		11					
Average Neck Length to Thickness Ratio		0.439					
Closed Handles on Wide Mouth Jars		1					
Jars by Rim Angle							
Jars with Direct Rims		35	1	1		3	
Average Orifice Diameter of Jars with Direct Rims (cm)		25.88	34	17		22.67	

Appendix H.4 cont.

				Feature 134			
	preMound2	Feature 119	Feature 133	Pit 1/underlying midden	Pit 1	Pit 2	Pit 3
Average Neck Length of Jars with Direct Rims (mm)		29.8	51.3	30		42.42	
Average Neck Length to Thickness Ratio		0.21	0.1	0.21		0.25	
Closed Handles on Jars with Direct Rims		4		1		2	
Lugs on Jars with Direct Rims		9				1	
Jars with Excurvate Rims	1	7			4	1	1
Average Orifice Diameter of Jars with Excurvate Rims (cm)	13	16			22	28	32
Average Neck Length of Jars with Excurvate Rims (mm)	10.75	19.46			23.96	30	25.75
Average Neck Length to Thickness Ratio	0.404	0.321			0.259	0.172	0.323
Jars with Incurvate Rims		17				1	
Average Orifice Diameter of Jars with Incurvate Rims (cm)		24.4				26	
Average Neck Length of Incurvate Rim Jars (mm)		27.57				16.4	
Average Neck Length to Thickness Ratio		0.321				0.326	
Handles							
Closed Handles	1	18		1	3	2	1
Average Width	8.65	20.429		14.27	20.383	24.36	20.15
Average Thickness	6.83	6.29		10.19	9.733	9.43	10.55
Average Length	25.25	33.38		58.8	55.75	56.68	
Average Width to Thickness Ratio	0.79	0.375		0.714	0.499	0.411	0.524
Average Length to Thickness Ratio	0.271	0.216		0.173	0.335	0.167	
Average Length to Width Ratio	0.343	0.46		0.243	0.185	0.438	
Single Horn		1					
Double Horn	1	2			2	1	
Noded Handles						1	
Handles with Central Groove		1					
Handles with Central Incised Line	1	1					
Loop Handles	1			1			
Narrow Intermediate Handles		3			1		
Wide Intermediate Handles		5			1	1	1
Strap Handles		9			1	1	
Lug Handles		40				1	1
Single Lugs		10					

Appendix H.4 cont.

				Feature 134			
	preMound2	Feature 119	Feature 133	Pit 1/underlying midden	Pit 1	Pit 2	Pit 3
Bifurcate Lugs		14					
Space between Lug and Lip?		4					
Lug Shapes[1]		BiA, BiE, SiA, SiB, SiD	BiA				
Lug Profile Shapes[2]				D			B
Average Lug Length (mm)		78.86		86.4			
Average Lug Width (mm)		29.09		21.7			
Average Lug Thickness (mm)		15.67		13.95			16.65
Average Lug Width to Thickness Ratio		0.553		0.691			
Average Lug Length to Thickness Ratio		0.25		0.174			
Average Lug Length to Width Ratio		0.4		0.251			
Bowls							
Bowl Rims		8		1			
Average Orifice Diameter of Bowls (cm)		14.29					
Mississippi Plain Bowls		2		1			
Bell Plain Bowls		4					
Sand Tempered Bowls		1					
Standard Bowls		5					
Average Orifice Diameter of Standard Bowls (cm)		17					
Restricted Rim Bowls		3		1			
Average Orifice Diameter of Restricted Rim Bowls (cm)		7.5					
Effigy Restricted Rim Bowls		2					
Plates							
Plate Rims	1	12			2		
Average Orifice Diameter (cm)	22	22.14			32		
Average Rim Length (mm)	25.25	40.14			28.7		
Average Rim Length to Thickness Ratio	0.182	0.329			0.235		
Short Rim Plates	1	2			1		
Short Standard Rim Plates		5			1		
Long Standard Rim Plates		4					
Mississippi Plain Plates	1	6			2		

Appendix H.4 cont.

				Feature 134			
	preMound2	Feature 119	Feature 133	Pit 1/underlying midden	Pit 1	Pit 2	Pit 3
Bell Plain Plates		5					
Angel Negative Painted Plates		1					
Pans							
Pans		119	1	1			
Kimmswick Fabric Impressed		30	1				
Plain		3		1			
Average Lip Thickness (mm)		16.15	16.83	9.7			

Appendix H.5: Castalian Springs Vessel Forms and Measurements for Features 138, 143, 147, 152, 233 and N1108E752.

	N1108E752	Feature 138	Feature 143	Feature 147	Feature 152
Jars					
Total Number of Jar Rims	22	1	2	1	1
Average Jar Orifice Diameter (cm)	19.07	15		32	
Average Neck Length (mm)	26.19	34.75		27.8	
Average Neck Length to Thickness Ratio	0.263	0.131		0.279	
Mississippi Plain Jars	17	1		1	
Bell Plain Jars	3				
Incised Jars	2				1
Lobed Jars	2				
Jars by Shape Class					
Gradual Neck Jars	4			1	
Average Orifice Diameter of Gradual Neck Jars (cm)	23.3			32	
Average Neck Length of Gradual Neck Jars (mm)	37.54			27.8	
Average Neck Length to Thickness ratio of Gradual Neck Jars	0.156			0.279	
Lug Handles on Gradual Neck Jars	1				
Distinct Neck Jars	4	1	2		
Average Orifice Diameter of Distinct Neck Jars (cm)	19	15	19		
Average Neck Length of Distinct Neck Jars (mm)	26.88	34.75	26.65		
Average Neck Length to Thickness ratio of Distinct Neck Jars	0.202	0.131	0.211		
Closed Handles on Distinct Neck Jars	1	1			
Jars by Rim Angle					
Jars with Direct Rims	3			1	
Average Orifice Diameter of Direct Rims (cm)	16			32	
Average Neck Length of Jars with Direct Rims (mm)	24.91			27.8	
Average Neck Length to Thickness Ratio	0.239			0.279	
Lugs on Jars with Direct Rims	1				
Jars with Excurvate Rims	4	1			
Average Orifice Diameter of Jars with Excurvate Rims (cm)	23.75	15			
Average Neck Length of Jars with Excurvate Rims (mm)	33.44	34.75			
Average Neck Length to Thickness Ratio	0.168	0.131			
Jars with Incurvate Rims	1				
Average Orifice Diameter of Jars with Incurvate Rims (cm)	16				
Average Neck Length of Jars with Incurvate Rims (mm)	49.18				

Appendix H.5 cont.

	N1108E752	Feature 138	Feature 143	Feature 147	Feature 152
Average Neck Length to Thickness Ratio	0.127				
Handles					
Closed Handles		1			
Average Width		18.35			
Average Thickness		7.7			
Average Length		48.69			
Average Width to Thickness Ratio		0.42			
Average Length to Thickness Ratio		0.158			
Average Length to Width Ratio		0.377			
Wide Intermediate Handles					
Lug Handles	2				
Single Lugs	1				
Lug Shapes[1]	SC				
Lug Profile Shapes[2]	D, F				
Average Lug Length (mm)	67.65				
Average Lug Width (mm)	26.57				
Average Lug Thickness (mm)	10.97				
Average Lug Width to Thickness Ratio	0.427				
Average Lug Length to Thickness Ratio	0.13				
Average Lug Length to Width Ratio	0.437				
Bottles					
Bottle Rims					
Mississippi Plain Bottles					
Blank Face Hooded Bottles					
Mississippi Plain Blank Face Hooded Bottles					
Average Orifice Diameter of Blank Faced Hooded Bottles (cm)					
Bowls					
Bowl Rims					
Average Orifice Diameter of Bowls (cm)					
Mississippi Plain Bowls					
Restricted Rim Bowls					
Average Orifice Diameter of Restricted Rim Bowls (cm)					
Restricted Rim Modeled Effigy Bowls					

Appendix H.5 cont.

	N1108E752	Feature 138	Feature 143	Feature 147	Feature 152
Plates					
Plate Rims	1				
Angel Negative Painted plates	1				
Pans					
Pans	2				
Kimmswick Fabric Impressed	1				
Average Lip Thickness (mm)	16.8				

Appendix H.6: Castalian Springs Vessel Forms and Measurements for Features 304, 305 308, 309, 335, and 340.

	Feature 304	Feature 305	Feature 308	Feature 309	Feature 335	Feature 340
Jars						
Total Number of Jar Rims		2	1	1	2	
Average Jar Orifice Diameter (cm)		31.5	25	20	15	
Average Neck Length (mm)		36.07	64.35		41.68	
Average Neck Length to Thickness Ratio		0.225	0.093		0.135	
Mississippi Plain Jars		2	1	1	2	
Jars by Shape Class						
Gradual Neck Jars					2	
Average Orifice Diameter of Gradual Neck Jars (cm)					15	
Average Neck Length of Gradual Neck Jars (mm)					41.68	
Average Neck Length to Thickness Ratio of Gradual Neck Jars					0.135	
Closed Handles on Gradual Neck Jars					1	
Jars by Rim Angle						
Jars with Direct Rims			1		1	
Average Orifice Diameter of Jars with Direct Rims (cm)			25		12	
Average Neck Length of Jar with Direct Rims (mm)			64.35		32.7	
Average Neck Length to Thickness Ratio			0.093		0.138	
Closed Handles on Jars with Direct Rims					1	
Jars with Incurvate Rims					1	
Average Orifice Diameter of Jars with Incurvate Rims (cm)					18	
Average Neck Length of Jars with Incurvate Rims (mm)					50.65	
Average Neck Length to Thickness Ratio					0.133	

Appendix H.6 cont.

	Feature 304	Feature 305-Pre Mound 3	Feature 308	Feature 309	Feature 335	Feature 340
Handles						
Closed Handles						
Average Width						
Average Thickness						
Average Length						
Average Width to Thickness Ratio						
Average Length to Thickness Ratio						
Average Length to Width Ratio						
Wide Intermediate Handles						
Strap Handles						
Lug Handles		2				
Single Lugs		1				
Bifurcate Lugs		1				
Lug Shapes[1]		BiB, SA				
Lug Profile Shapes[2]		D				
Average Lug Length (mm)		87.6				
Average Lug Width (mm)		24.28				
Average Lug Thickness (mm)		14.46				
Average Lug Width to Thickness Ratio		0.594				
Average Lug Length to Thickness Ratio		0.19				
Average Lug Length to Width Ratio		0.312				
Pans						
Pans	1	1			2	1
Kimmswick Fabric Impressed	1	1			2	1
Average Lip Thickness (mm)	12.07	19.4			17.61	17.7

Appendix H.7: Castalian Springs Vessel Form and Measurements for Features 351, 377, Pre-Mound 3, Mound 3 Top and Structure A.

	Feature 351	Feature 377	base of Mound 3	Mound 3 top below clay cap	Structure A
Jars					
Total Number of Jar Rims	2	3	8	5	
Average Jar Orifice Diameter (cm)	26.5	22	23.57	18.25	
Average Neck Length (mm)	29.95	17.66	25.89	23.4	
Average Neck Length to Thickness Ratio	0.271	0.281	0.219	0.232	
Mississippi Plain Jars	2	3	6	5	
Bell Plain Jars			2		
Jars by Shape Class					
Gradual Neck Jars	1		3	2	
Average Orifice Diameter of Gradual Neck Jars (cm)	32		19.33	15	
Average Neck Length of Gradual Neck Jars (mm)	29.95		31.37	20.55	
Average Neck Length to Thickness ratio of Gradual Neck Jars	0.271		0.226	0.244	
Closed Handles on Gradual Neck Jars			1		
Distinct Neck Jars			1	1	
Average Orifice Diameter of Distinct Neck Jars (cm)			9	28	
Average Neck Length of Distinct Neck Jars (mm)			12.55		
Average Neck Length to Thickness ratio of Distinct Neck Jars			0.222		
Lug Handles on Distinct Neck Jars				1	
Wide Mouth Jars				2	
Average Orifice Diameter of Wide Mouth Jars (cm)				15	
Average Neck Length of Wide Mouth Jars (mm)				26.26	
Average Neck Length to Thickness Ratio				0.22	
Closed Handles on Wide Mouth Jars				1	
Jars by Rim Angle					
Jars with Direct Rims	1		2		
Average Orifice Diameter of Jars with Direct Rims (cm)	32		15.5		
Average Neck Length of Jars with Direct Rims (mm)	29.95		28.98		
Average Neck Length to Thickness Ratio	0.271		0.241		
Closed Handles on Jars with Direct Rims			1		
Lugs on Jars with Direct Rims			2		
Jars with Excurvate Rims			1		

Appendix H.7 cont.

	Feature 351	Feature 377	base of Mound 3	Mound 3 top below clay cap	Structure A
Average Orifice Diameter of Jars with Excurvate Rims (cm)			16		
Average Neck Length of Jars with Excurvate Rims (mm)			16.75		
Average Neck Length to Thickness Ratio			0.233		
Jars with Incurvate Rims			1	2	
Average Orifice Diameter of Jars with Incurvate Rims (cm)			20	30	
Average Neck Length of Jars with Incurvate Rims (mm)			31.95	31.43	
Average Neck Length to Thickness Ratio			0.185	0.251	
Handles					
Closed Handles	1		2	1	
Average Width	38.32		16.3	6.65	
Average Thickness	15.55		6.92	6.82	
Average Length	76.6		30.7		
Average Width to Thickness Ratio	0.406		0.435	1.026	
Average Length to Thickness Ratio	0.203		0.191		
Average Length to Width Ratio	0.5		0.401		
Double Horn			1		
Loop Handles				1	
Wide Intermediate Handles	1		2		
Lug Handles			3		
Lug Profile Shapes[2]			B, D		
Average Lug Length (mm)					
Average Lug Width (mm)			23.33		
Average Lug Thickness (mm)			15.92		
Average Lug Width to Thickness Ratio			0.698		
Average Lug Length to Thickness Ratio					
Average Lug Length to Width Ratio					
Pans					
Pans	2				2
Kimmswick Fabric Impressed	2				2
Average Lip Thickness (mm)	14.34				17.61

[1]: see Figures 5.37 and 5.38.

[2]: see Figure 5.36.

APPENDIX I: SELLARS (40WI01) VESSEL FORMS AND MEASUREMENTS

Appendix I.1: Sellars Vessel Forms and Measurements Totals and Features 2, 4, 5 and 6 (1974).

	Total	Feature 2 (74)	Feature 4 (74)	Feature 6 (74)
Jars				
Total Number of Jar Rims	118	2	40	3
Average Jar Orifice Diameter (cm)	22.9	25	25.48	21
Average Neck Length (mm)	28.8	27	30.42	29.7
Average Neck Length to Thickness Ratio	0.232	0.236	0.236	
Mississippi Plain Jars	94	2	36	2
Bell Plain Jars	6			
Incised Jars	9		2	1
Lobed Jars	3		1	
Fingernail Punctated	1		1	
Shell and Limestone Tempered Jars	7			
Limestone Tempered Jars	3			
Shell and Limestone Tempered Jars	1		1	1
Peaked Rim Jars	2			
Jar Shape Classes				
Gradual Neck Jars	49		15	2
Average Orifice Diameter of Gradual Neck Jars (cm)	24.74		28.07	15
Average Neck Length of Gradual Neck Jars (mm)	32.9		32.27	29.7
Average Neck Length to Thickness Ratio of Gradual Neck Jars	0.227		0.22	0.177
Closed Handles on Gradual Neck Jars	2			
Lug Handles on Gradual Neck Jars	8		5	
Distinct Neck Jars	24		10	
Average Orifice Diameter of Distinct Neck Jars (cm)	18.84		21.44	
Average Neck Length of Distinct Neck Jars (mm)	28.2		32.29	
Average Neck Length to Thickness Ratio of Distinct Neck Jars	0.216		0.215	
Closed Handles on Distinct Neck Jars	3		3	

Appendix I.1 cont.

	Total	Feature 4 (74)	Feature 6 (74)
Lug Handles on Distinct Neck Jars	2	1	
Wide Mouth Jars	6		
Average Orifice Diameter of Wide Mouth Jars (cm)	17.5		
Average Neck Length of Wide Mouth Jars (mm)	20.68		
Average Neck Length to Thickness Ratio of Wide Mouth Jars	0.238		
Jars by Rim Angle			
Jars with Direct Rims	55	18	2
Average Orifice Diameter of Jars with Direct Rims (cm)	21.06	23.88	15
Average Neck Length of Jars with Direct Rims (mm)	31.41	32.2	29.7
Average Neck Length to Thickness Ratio	0.218	0.215	0.177
Closed Handles on Jars with Direct Rims	4	3	
Lugs on Jars with Direct Rims	7	4	
Jars with Excurvate Rims	13	4	
Average Orifice Diameter of Jars with Excurvate Rims (cm)	23.6	26	
Average Neck Length of Jars with Excurvate Rims (mm)	28.31	27.09	
Average Neck Length to Thickness Ratio	0.214	0.174	
Jars with Incurvate Rims	11	3	
Average Orifice Diameter of Jars with Incurvate Rims (cm)	25.5	29.3	
Average Neck Length of Jars with Incurvate Rims (mm)	37.38	34.75	
Lug Handles on Jars with Incurvate Rims	3	2	
Handles			
Closed Handles	8	6	
Average Width (mm)	23.323	27.66	
Average Thickness (mm)	7.478	7.788	
Average Length (mm)	49.05	49.05	
Average Width to Thickness Ratio	0.455	0.375	
Average Length to Thickness Ratio	0.151	0.151	
Average Length to Width Ratio	0.732	0.732	
Noded Handles	1	1	
Handles with Central Groove	2	2	
Loop Handles	2	1	
Narrow Intermediate Handles			
Wide Intermediate Handles	1		

Appendix I.1 cont.

	Total	Feature 4 (74)	Feature 6 (74)
Strap Handles	5	5	
Lug Handles	37	10	2
Single Lugs	11	4	1
Bifurcate Lugs	13	3	1
Space between Lug and Lip?	6	no	1
Lug Shapes[1]	SA, SB,SD	BiB, BiF, BiG, SA, SB, SD	BiF
Lug Profile Shapes[2]	A, B, C, D, E, F, G, H, K, L, M, N, O	C, D, F, J, M	N
Average Lug Length (mm)	69.4	71.73	49.26
Average Lug Width (mm)	24.168	23.57	19.32
Average Lug Thickness (mm)	11.937	11.63	15.225
Average Lug Width to Thickness Ratio	0.504	0.523	0.515
Average Lug Length to Thickness Ratio	0.193	0.194	0.202
Average Lug Length to Width Ratio	0.369	0.383	0.392
Bottles			
Bottle Rims	3	2	
Mississippi Plain Bottles	2	1	
Bell Plain Bottles	1	1	
Carafe Neck Bottles	1	1	
Bell Plain Carafe Neck Bottles	1	1	
Average Orifice Diameter of Carafe Neck Bottles (cm)	3.8	3.8	
Cylindrical Neck Bottles	1	1	
Mississippi Plain Cylindrical Neck Bottles	1	1	
Average Orifice Diameter of Cylindrical Neck Bottles (cm)	7	7	
Blank Face Hooded Bottles	1		
Mississippi Plain Blank Face Hooded Bottles	1		
Blank Face Hooded Bottle Types	A		
Average Orifice Diameter of Blank Faced Hooded Bottles (cm)	6		
Dog Effigy Bottles	1		
Bowls			
Bowl Rims	42	8	

Appendix I.1 cont.

	Total	Feature 4 (74)	Feature 5 (74)	Feature 6 (74)
Average Orifice Diameter of Bowls (cm)	18.36	20.43		
Mississippi Plain Bowls	22	7		
Bell Plain Bowls	9	1		
Shell and Limestone Tempered Bowls	4			
Limestone Tempered Bowls	5			
Shell and Grog Tempered Bowls	2			
Standard Bowls	32	5		
Average Orifice Diameter of Standard Bowls (cm)	18.4	17.6		
Mississippi Plain Standard Bowls	15	4		
Bell Plain Standard Bowls	8	1		
Standard Bowl with Nodes	3			
Standard Bowls with Tabs	2	1		
Standard Bowl with Notched Applique Rim	1			
Outslanting Wall Bowls	6	2		
Average Orifice Diameter of Outslanting Wall Bowls (cm)	25.2	27.5		
Mississippi Plain Outslanting Wall Bowls	5	2		
Bell Plain Outslanting Wall Bowls	1			
Scalloped Rim Outslanting Wall Bowls	1			
Restricted Rim Bowls	5	1		
Average Orifice Diameter of Restricted Rim Bowls (cm)	7.5			
Plates				
Plate Rims	4	2	1	
Average Orifice Diameter (cm)	27	24.5	32	
Average Rim Length (mm)	59.1	51.88	34.38	
Average Rim Length to Thickness ratio	0.484	0.129	0.163	
Short Standard Rim Plates	2	2	1	
Long Standard Rim Plates	2			
Mississippi Plain Plates	4	2	1	
Pans				
Pan Rims	19	6		
Kimmswick Fabric Impressed	8	5		
Plain	7			
Average Lip Thickness (mm)	14.93	14.95		

Appendix I.2: Sellars Forms and Measurements for Feature 7-12 (1974 and 1981).

	Feature 7 (81)	Feature 8 (74)	Feature 9 (74)	Feature 10 (74)	Feature 11 (81)	Feature 12 (74)
Jars						
Total Number of Jar Rims	7		1	1	1	2
Average Jar Orifice Diameter (cm)	24.42			31	12	8
Average Neck Length (mm)	38.8			23.25		17.45
Average Neck Length to Thickness Ratio				0.429		0.132
Mississippi Plain Jars	7		1	1	1	1
Shell and Limestone Tempered Jars						1
Peaked Rim Jars			1			
Jar Shape Classes						
Gradual Neck Jars	6			1		
Average Orifice Diameter of Gradual Neck Jars (cm)	26			31		
Average Neck Length of Gradual Neck Jars (mm)	38.8			23.25		
Average Neck Length to Thickness Ratio of Gradual Neck Jars	0.194			0.429		
Lug Handles on Gradual Neck Jars	1					
Jars by Rim Angle						
Direct Rim Jars	3					
Average Orifice Diameter of Jars with Direct Rims (cm)	21.5					
Average Neck Length of Jars with Direct Rims (mm)	30.55					
Average Neck Length to Thickness Ratio	0.256					
Jars with Excurvate Rims	2					1
Average Orifice Diameter of Jars with Excurvate Rims (cm)	28.5					
Average Neck Length of Jars with Excurvate Rims (mm)	47.05					17.45
Average Neck Length to Thickness Ratio	0.149					0.132
Jars with Incurvate Rims	1					
Average Orifice Diameter of Jars with Incurvate Rims (cm)	28.5					
Handles						
Lug Handles	1					
Single Lugs	1					
Lug Profile Shapes[2]	E					

Appendix I.2 cont.

	Feature 7 (81)	Feature 8 (74)	Feature 9 (74)	Feature 10 (74)	Feature 11 (81)	Feature 12 (74)
Average Lug Width (mm)	29.55					
Average Lug Thickness (mm)	63.64					
Average Lug Length to Width Ratio	0.464					
Bowls						
Bowl Rims	1	1		1		
Average Orifice Diameter of Bowls (cm)	11	11		14		
Bell Plain Bowls		1				
Standard Bowls	1	1		1		
Average Orifice Diameter of Standard Bowls (cm)	11	11		14		
Bell Plain Standard Bowls		1				
Standard Bowl with Nodes	1					

Appendix I.3: Sellars Forms and Measurements for Features 13, 18, 23, 30, 33, and 34 (1974).

	Feature 13 (74)	Feature 30 (74)	Feature 33 (74)	Feature 34 (74)	Feature 40 (74)	Feature 50 (74)
Jars						
Total Number of Jar Rims	1	1	5	1	3	4
Average Jar Orifice Diameter (cm)	32	32	22.67	20	19	21
Average Neck Length (mm)			36.87	26.6	27.38	30.35
Average Neck Length to Thickness Ratio			0.132	0.247	0.222	
Mississippi Plain Jars	1		3	1	1	3
Bell Plain Jars		1	1			1
Incised Jars			2		1	
Shell and Limestone Tempered Jars					1	
Limestone Tempered Jars			1		1	
Jar Shape Classes						
Gradual Neck Jars		1	3	1	1	
Average Orifice Diameter of Gradual Neck Jars (cm)		32	24.5	20		
Average Neck Length of Gradual Neck Jars (mm)			49.76	26.6	34.25	
Average Neck Length to Thickness Ratio of Gradual Neck Jars			0.11	0.247	0.209	
Distinct Neck Jars			2		1	1
Average Orifice Diameter of Distinct Neck Jars (cm)			19			19
Average Neck Length of Distinct Neck Jars (mm)			25.97		45.15	30.35
Average Neck Length to Thickness ratio of Distinct Neck Jars			0.19			0.227
Closed Handles on Distinct Neck Jars					1	
Jars by Rim Angle						
Jars with Direct Rims		1	4		2	1
Average Orifice Diameter of Jars with Direct Rims (cm)		32	14			19
Average Neck Length of Jars with Direct Rims (mm)			36.87		27.38	30.35
Average Neck Length to Thickness Ratio			0.132		0.222	0.227
Jars with Incurvate Rims			1		1	
Average Orifice Diameter of Jars with Incurvate Rims (cm)			40		19	
Average Neck Length of Jars with Incurvate Rims (mm)					47	
Lug Handles on Jars with Incurvate Rims					1	
Handles						

Appendix I.3 cont

	Feature 13 (74)	Feature 30 (74)	Feature 33 (74)	Feature 34 (74)	Feature 40 (74)	Feature 50 (74)
Lug Handles					2	2
Bifurcate Lugs					2	1
Space between Lug and Lip?					1	
Lug Shapes[1]					BiB	
Lug Profile Shapes[2]					O	
Average Lug Length (mm)					71.32	107.2
Average Lug Width (mm)					24.255	29.84
Average Lug Thickness (mm)					10.1	11.84
Average Lug Width to Thickness Ratio					0.438	0.397
Average Lug Length to Thickness Ratio					0.136	0.109
Average Lug Length to Width Ratio					0.258	0.29
Bowls						
Bowl Rims			1			
Average Orifice Diameter of Bowls (cm)			26			
Mississippi Plain Bowls			1			
Standard Bowls			1			
Average Orifice Diameter of Standard Bowls (cm)			26			
Mississippi Plain Standard Bowls			1			
Standard Bowl with Nodes			1			

Appendix I.4: Sellars Vessel Forms and Measurements from Feature 51 and Posthole 4 (1974)

	Feature 51 (74)	Posthole 4 (74)
Bowls		
Bowl Rims	1	
Average Orifice Diameter of Bowls (cm)	16	
Bell Plain Bowls	1	
Standard Bowls	1	
Average Orifice Diameter of Standard Bowls (cm)	16	
Bell Plain Standard Bowls	1	
Plates		
Plate Rims		1
Average Rim Length (mm)		98.25
Average Rim Length to Thickness Ratio		0.059
Long Standard Rim Plates		1
Mississippi Plain Plates		1

[1]see figures 5.37 and 5.38.
[2] see figure 5.36.

APPENDIX J: BEASLEY (40SM43) VESSEL FORMS AND MEASUREMENTS

Appendix J.1: Beasley Form Totals, Test Unit B, and Test Unit G.

	Total	TU B	TU G			Column Sample
		20-35cm	0-20cm	20-40cm	40-60cm	25-30cm
Jars						
Total Number of Jar Rims	29		1	1	1	
Average Jar Orifice Diameter (cm)	24.5			16	25	
Average Neck Length (mm)	23.92		7.85	23.72	17.25	
Average Neck Length to Thickness Ratio	0.354					
Mississippi Plain Jars	22		1	1	1	
Bell Plain Jars	3					
Lobed Jars	1					
Cordmarked Jars	1					
Check-stamped Jars	1					
Quartz Tempered	1					
Jar Shape Classes						
Gradual Neck Jars	11		1	1		
Average Orifice Diameter of Gradual Neck Jars (cm)	25.11			16		
Average Neck Length of Gradual Neck Jars (mm)	27.49		12.8	23.72		
Average Neck Length to Thickness Ratio of Gradual Neck Jars (mm)	0.311		0.613	0.223		
Closed Handles on Gradual Neck Jars	1					
Lug Handles on Gradual Neck Jars	2					
Distinct Neck Jars	2					
Average Neck Length of Distinct Neck Jars (mm)	27.33					
Closed Handles on Distinct Neck Jars	2					
Wide Mouth Jars	2					
Average Orifice Diameter of Wide Mouth Jars (cm)	21					
Rim Angle						
Jars with Direct Rims	9			1	1	

Appendix J.1 cont.

	Total	TU B	TU G	Column Sample		
		20-35cm	0-20cm	20-40cm	40-60cm	25-30cm
Average Orifice Diameter of Jars with Direct Rims (cm)	27			16	25	
Average Neck Length of Jars with Direct Rims (mm)	30.7					
Average Neck Length to Thickness Ratio	0.249					
Closed Handles on Jars with Direct Rims	2					
Lugs on Jars with Direct Rims	1					
Jars with Excurvate Rims	3					
Average Orifice Diameter of Jars with Excurvate Rims (cm)	22					
Average Neck Length of Jars with Excurvate Rims (mm)	9.21					
Jars with Incurvate Rims	2		1			
Average Neck Length of Jars with Incurvate Rims	31.15					
Handles						
Closed Handles	9					
Average Width (mm)	16.251					
Average Thickness (mm)	11.406					
Average Length (mm)	45.833					
Average Width to Thickness Ratio	0.800					
Average Length to Thickness Ratio	0.215					
Average Length to Width Ratio	0.219					
Single Horn	2					
Double Horn	1					
Loop Handles	5					
Narrow Intermediate Handles	3					
Wide Intermediate Handles	1					
Strap Handles						
Lug Handles	1					
Bifurcate Lugs	1					
Space between Lug and Lip?	no					
Lug Shapes[1]	BiB					
Lug Profile Shapes[2]	D					
Average Lug Length (mm)	69.48					
Average Lug Width (mm)	24.69					
Average Lug Thickness (mm)	15.86					

Appendix J.1 cont.

	Total	TU B	TU G			Column Sample
		20-35cm	0-20cm	20-40cm	40-60cm	25-30cm
Average Lug Width to Thickness Ratio	0.642					
Average Lug Length to Thickness Ratio	0.228					
Average Lug Length to Width Ratio	0.355					
Bottles						
Bottle Rims	1					
Mississippi Plain Bottles	1					
Carafe Neck Bottles	1					
Mississippi Plain Carafe Neck Bottles	1					
Average Orifice Diameter of Carafe Neck Bottles (cm)	8					
Bowls						
Bowls Rims	2					
Bell Plain Bowls	2					
Standard Bowls	2					
Average Orifice Diameter of Standard Bowls (cm)	10					
Bell Plain Standard Bowls	2					
Standard Bowl with Nodes	1					
Plates						
Plates Rims	3					
Average Rim Length (mm)	23.8				10.26	
Short Rim Plates	1				1	
Short Standard Rim Plates	2					
Mississippi Plain Plates	2				1	
Bell Plain Plates	1					
Pans						
Pan rims	3	1				1
Kimmswick Fabric Impressed	2					1
Plain	1	1				
Average Lip Thickness (mm)	14.6	11.77				18.53

Appendix J.2: Test Unit K Forms

	TU K					
	0-20cm	30-40cm	40-50cm	50-60cm	60-70cm	wall cleanup
Jars						
Total Number of Jar Rims	1	4	2	2	1	
Average Jar Orifice Diameter (cm)	28	24.3	22	24	25	
Average Neck Length (mm)	12.65	21.8	20.8		26.25	
Mississippi Plain Jars		3	2	2		
Bell Plain Jars		1				
Cordmarked Jars					1	
Quartz Tempered	1					
Jar Shape Classes						
Gradual Neck Jars		1	1		1	
Average Orifice Diameter of Gradual Neck Jars (cm)		32			25	
Average Neck Length of Gradual Neck Jars (mm)		30.55	31.15		26.25	
Average Neck Length to Thickness ratio of Gradual Neck Jars (mm)		0.246	0.216		0.228	
Lug Handles on Gradual Neck Jars		1				
Wide Mouth Jars	1					
Average Orifice Diameter of Wide Mouth Jars (cm)	28					
Rim Angle						
Jars with Direct Rims		3	1	1	1	
Average Orifice Diameter of Jars with Direct Rims (cm)		22.5	22		25	
Average Neck Length of Jars with Direct Rims (mm)		17.11	10.45		26.25	
Closed Handles on Jars with Direct Rims		1		1		
Lugs on Jars with Direct Rims		1				
Jars with Excurvate Rims	1					
Average Orifice Diameter of Jars with Excurvate Rims (cm)	28					
Jars with Incurvate Rims			1			
Average Neck Length of Jars with Incurvate Rims			31.15			
Handles						
Closed Handles		1		3		
Average Width (mm)		7.44		22.767		
Average Thickness (mm)		9.69		12.200		
Average Length (mm)		37.50				
Average Width to Thickness Ratio		1.302		0.554		

Appendix J.2 cont.

	TU K					
	0-20cm	30-40cm	40-50cm	50-60cm	60-70cm	wall cleanup
Average Length to Thickness Ratio		0.2584				
Average Length to Width Ratio		0.1984				
Single Horn				1		
Double Horn		1				
Loop Handles		1				
Narrow Intermediate Handles				2		
Wide Intermediate Handles				1		
Strap Handles						
Lug Handles						
Bifurcate Lugs		1				
Space between Lug and Lip?		no				
Lug Shapes[1]		BiB				
Lug Profile Shapes[2]		D				
Average Lug Length (mm)		69.48				
Average Lug Width (mm)		24.69				
Average Lug Thickness (mm)		15.86				
Average Lug Width to Thickness Ratio		0.642				
Average Lug Length to Thickness Ratio		0.228				
Average Lug Length to Width Ratio		0.355				
Bottles						
Mississippi Plain Bottles						1
Carafe Neck Bottles						1
Mississippi Plain Carafe Neck Bottles						1
Average Orifice Diameter of Carafe Neck Bottles (cm)						8
Plates						
Plates Rims			1			
Average Rim Length (mm)			28.05			
Short Standard Rim Plates			1			
Mississippi Plain Plates			1			

Appendix J.3: Test Unit L

	TU L					
	0-20cm	30-40cm	40-50cm	50-60cm	60-70cm	wall cleanup
Jars						
Total Number of Jar Rims			1	4	2	
Average Jar Orifice Diameter (cm)			32	22	28	
Average Neck Length (mm)			36.71	57.87	27.53	
Mississippi Plain Jars			1	3	1	
Bell Plain Jars					1	
Lobed Jars				1		
Check-stamped Jars				1		
Jar Shape Classes						
Gradual Neck Jars			1	1	1	
Average Orifice Diameter of Gradual Neck Jars (cm)			32	24	28	
Average Neck Length of Gradual Neck Jars (mm)			36.71	57.87	29.95	
Average Neck Length to Thickness Ratio of Gradual Neck Jars (mm)			0.279	0.122	0.216	
Lug Handles on Gradual Neck Jars			1			
Distinct Neck Jars					1	
Average Neck Length of Distinct Neck Jars (mm)					25.11	
Closed Handles on Distinct Neck Jars					1	
Rim Angle						
Jars with Direct Rims			1	1	2	
Average Orifice Diameter of Jars with Direct Rims (cm)			32	24	28	
Average Neck Length of Jars with Direct Rims (mm)			36.71	57.87	27.53	
Closed Handles on Jars with Direct Rims					1	
Handles						
Closed Handles			1	1		1
Average Width to Thickness Ratio			0.639	0.65		1.149
Average Length to Thickness Ratio				0.184		0.2012
Average Length to Width Ratio				0.2829		0.175
Single Horn				1		
Loop Handles			1			1
Narrow Intermediate Handles				1		

Appendix J.3 cont.

	TU L					
	0-20cm	30-40cm	40-50cm	50-60cm	60-70cm	wall cleanup
Bowls						
Bowls Rims	1	1				
Bell Plain Bowls	1	1				
Standard Bowls	1	1				
Bell Plain Standard Bowls	1	1				
Standard Bowl with Nodes		1				
Plates						
Plates Rims			1			
Bell Plain Plates			1			

Appendix J.4: Test Unit M Forms

	TUM			
	0-20cm	20-30cm	30-40cm	40-50cm
Jars				
Total Number of Jar Rims	1	4	1	1
Average Jar Orifice Diameter (cm)	20	30	14	
Average Neck Length (mm)		16.6	9.21	
Mississippi Plain Jars	1	4		1
Bell Plain Jars			1	
Jar Shape Classes				
Gradual Neck Jars		1		
Average Orifice Diameter of Gradual Neck Jars (cm)		32		
Average Neck Length of Gradual Neck Jars (mm)		16.6		
Average Neck Length to Thickness Ratio of Gradual Neck Jars (mm)		0.426		
Wide Mouth Jars			1	
Average Orifice Diameter of Wide Mouth Jars (cm)			14	
Rim Angle				
Jars with Direct Rims		1		
Average Orifice Diameter of Jars with Direct Rims (cm)		32		
Average Neck Length of Jars with Direct Rims (mm)		16.6		
Jars with Excurvate Rims			1	
Average Orifice Diameter of Jars with Excurvate Rims (cm)			14	
Average Neck Length of Jars with Excurvate Rims (mm)			9.21	
Handles				
Closed Handles			2	
Average Width to Thickness Ratio			0.9	
Loop Handles			2	
Plates				
Plates Rims		1	1	
Average Rim Length (mm)			33.07	
Short Standard Rim Plates			1	
Mississippi Plain Plates			1	
Bell Plain Plates		1		

Appendix J.4 cont.

	TUM			
	0-20cm	20-30cm	30-40cm	40-50cm
Pans				
Pan rims			1	
Kimmswick Fabric Impressed			1	
Average Lip Thickness (mm)			13.5	

[1]: see figures 5.37 and 5.38.
[2]: see figure 5.36.

APPENDIX K: MOSS (40SM25) VESSEL FORMS AND MEASUREMENTS

Appendix K.1: Moss Vessel Forms

	Total	Test Unit 1		
		30-40cm	40-50cm	Feature 4
Jars				
Total Number of Jar Rims	3			
Average Jar Orifice Diameter (cm)	40			
Average Neck Length (mm)	17.02			
Average Neck Length to Thickness Ratio	0.433			
Mississippi Plain Jars	1			
Bell Plain Jars	1			
Combed Jars	1			
Jar Shape Classes				
Gradual Neck Jars	2			
Average Orifice Diameter of Gradual Neck Jars (cm)	40			
Average Neck Length of Gradual Neck Jars (mm)	17.03			
Average Neck Length to Thickness Ratio of Gradual Neck Jars	0.433			
Rim Angles				
Jars with Excurvate Rims	2			
Average Orifice Diameter of Jars with Excurvate Rims (cm)	40			
Average Neck Length of Jars with Excurvate Rims (mm)	17.02			
Average Neck Length to Thickness Ratio	0.433			
Handles				
Closed Handles		1	1	1
Average Width to Thickness Ratio	0.679	0.538	0.759	0.739
Loop Handles	1		1	
Narrow Intermediate Handles	2	1		1

APPENDIX L: MANN-WHITENY COMPARISONS OF MEASURED VESSEL ATTRIBUTES

Appendix L.1: Mann Whitney Comparison of Neck Length for All Jars by Site.

	Castalian Springs	Sellars
Beasley	0.4387	0.1069
Castalian Springs		0.06845

Appendix L.2: Mann Whitney Comparison of Neck Length for All Jars by Feature.

	CS782	CS838	CS106	CS119	CS134pit2	CS134pit1	CS16	CS335	CS377	CS4	CS51	CS91	S33	S40	S4	S7
Beasley	0.754	0.55	0.5676	0.398	0.8989	1	0.55	0.073	0.595	0.23	0.751	0.6	0.263	0.2	0.05	0.07
CS752	0.9631	0.302	0.8814	0.9454	0.9109	0.379	0.691	0.132	0.6914	0.54	0.284	0.394	0.426	0.28	0.24	0.08
CS782		0.561	0.6261	0.8641	1	0.835	0.847	0.175	0.5613	0.59	0.766	0.5101	0.54	0.37	0.4	0.27
CS838			0.3055	0.3067	0.4642	0.561	0.699	0.245	0.6985	0.19	0.773	0.896	0.488	0.39	0.13	0.247
CS106				0.8205	0.8983	0.745	0.884	0.306	0.3055	1	0.820	0.325	0.508	0.49	0.57	0.395
CS119					0.8205	0.438	0.758	0.089	0.2236	0.5	0.511	0.251	0.371	0.27	0.09	0.05
CS134g						0.745	0.884	0.188	0.4642	0.46	1	0.452	0.508	0.49	0.27	0.219
CS134y							0.561	0.081	0.8465	0.26	1	0.714	0.391	0.23	0.12	0.07
CS16								0.699	0.2453	0.78	0.773	0.514	0.817	0.77	0.82	0.25
CS335									0.2453	0.15	0.149	0.090	0.488	0.77	0.21	1
CS377										0.15	0.773	0.695	0.105	0.15	0.11	0.11
CS4											0.438	0.178	0.561	0.34	0.33	0.10
CS51												0.919	0.596	0.38	0.18	0.22
CS5391													0.149	0.18	0.06	0.08
S33														0.86	0.87	0.67
S40															0.55	0.60
S4																0.16

Appendix L.3: Mann Whitney Comparison of Neck Length to Orifice Diameter for All Jars by Site.

	Castalian Springs	Sellars
Beasley	0.03098	0.0104
Castalian Springs		0.1563

Appendix L.4: Mann Whitney Comparison of Neck Length to Orifice Diameter Ratio for All Jars by Feature.

	CS752	CS782	CS106	CS119	CS134g	CS134y	CS16	CS233	CS335	CS377	CS4	CS51	CS91	S33	S4	S7
Beasley	0.04884	0.174	0.0893	0.0858	0.4687	0.2573	0.4897	0.3502	0.0382	0.6217	0.15	0.2776	0.1473	0.061	0.11	0.28
CS752		0.734	0.9098	0.1626	0.3651	0.3079	0.9214	0.5334	0.0934	0.3744	0.22	0.7672	0.7172	0.2	0.36	0.76
CS782			0.4034	0.3928	0.516	0.6761	0.8465	1	0.0814	0.3329	0.49	0.5613	0.6261	0.175	0.51	1
CS106				0.1675	0.3299	0.2963	0.5613	0.3711	0.0814	0.3329	0.14	0.8465	1	0.333	0.31	0.55
CS119					0.5475	0.9895	0.7172	0.9313	0.0282	0.7172	0.78	0.4558	0.1583	0.043	0.88	0.46
CS134g						0.6261	0.8836	0.6485	0.1877	0.8836	0.48	0.4642	0.6093	0.306	0.43	0.65
CS134y							0.8465	1	0.0814	0.8465	0.92	0.5613	0.2556	0.081	1	0.55
CS16								0.7728	0.2453	0.6985	0.93	0.6985	0.8836	0.699	0.96	0.77
CS233									0.1489	0.7728	0.89	0.7728	0.6485	0.387	1	1
CS335										0.2453	0.03	0.6985	0.05704	0.245	0.06	0.15
CS377											0.55	0.6985	0.3055	0.245	0.65	0.39
CS4												0.3502	0.2346	0.051	0.84	0.69
CS51													0.6605	0.699	0.58	0.77
CS5391														0.464	0.33	0.82
S33															0.1	0.39
S4																0.57

Appendix L.5: Mann Whitney Comparison of Neck Length to Lip Thickness for All Jars by Site.

	Castalian Springs	Sellars
Beasley	0.3561	0.0114
Castalian Springs		0.0002

Appendix L.6: Mann Whitney Comparison of Neck Length to Lip Thickness Ratio for All Jars by Feature.

	CS838	CS106	CS119	CS134g	CS134y	CS16	CS233	CS335	CS377	CS4	CS51	CS91	S33	S40	S4	S7
CS752	0.9323	0.8741	0.1367	0.3834	0.6934	0.893	0.7879	0.1488	0.55	0.4768	0.6865	0.303	0.03	0.93	0.46	0.3463
CS782	0.8465	1	0.0554	0.3299	0.2101	0.7656	0.7656	0.0814	0.56	0.0848	0.551	0.074	0.04	0.85	0.697	0.3711
CS838		0.8836	0.6451	0.8836	0.8465	0.7728	0.7728	0.2453	0.7	0.947	0.7728	0.661	0.25	0.7	0.817	0.7728
CS106			0.1382	0.4433	0.4168	1	0.8197	0.1877	0.66	0.1623	0.8197	0.125	0.05	0.88	0.75	0.6485
CS119				0.9243	0.2942	0.6117	0.6759	0.0258	0.65	0.3784	0.8112	0.621	0	0.23	7E-04	0.0685
CS134g					0.6261	0.6485	1	0.1877	0.88	0.7508	0.8197	0.798	0.07	0.46	0.158	0.2545
CS134y						1	1	0.0814	0.85	0.4807	0.551	0.256	0.02	0.56	0.317	0.136
CS16							1	0.7728	0.77	0.8323	1	0.362	0.38	0.77	0.766	1
CS233								0.1489	0.77	0.9157	1	0.494	0.11	0.77	0.373	0.3827
CS335									0.25	0.0284	0.7728	0.057	0.49	0.25	0.058	0.7728
CS377										0.8421	0.7728	0.661	0.11	0.7	0.379	0.3865
CS4											0.5254	0.409	0	0.26	0.02	0.09034
CS51												1	0.6	0.77	0.458	0.6625
CS5391													0.02	0.19	0.05	0.1106
S33														0.11	0.021	0.2159
S40															0.817	0.7728
S4																0.5038

Appendix L.7: Mann Whitney Comparison of Neck Length for Gradual Neck Jars by Site.

	Castalian Springs	Sellars
Beasley	0.8066	0.2276
Castalian Springs		0.1062

Appendix L.8: Mann Whitney Comparison of Neck Length for Gradual Neck Jars by Feature.

	CS752	CS782	CSF106	CS119	CS134	CS16	CS335	CS4	CS5391	S33	S40	S4	S7
Beasley	0.2671	0.436	0.5569	0.6063	0.9014	0.557	0.1388	0.944	0.209	0.4897	0.1388	0.2301	0.1704
CS752		0.86	0.8852	0.1724	0.1488	0.112	0.4875	0.117	0.07	0.817	0.817	0.5853	0.8852
CS782			0.5959	0.8378	0.6098	0.596	0.3865	0.672	0.3662	0.7728	0.3865	0.9425	0.5959
CSF106				0.6539	0.7989	0.665	0.817	0.561	0.241	0.4875	0.817	0.6712	0.8852
CS119					0.5082	0.36	0.1855	0.482	0.0756	4.47E-01	0.1589	0.4353	0.1334
CS134						0.799	0.151	0.861	0.1752	0.6953	0.151	0.2976	0.2027
CS16							0.2472	0.823	0.594	0.4875	0.2472	0.1631	0.1939
CS335								0.163	0.1336	0.6985	0.6985	0.3153	1
CS4									0.1512	0.3879	0.0968	0.1564	0.0975
CS5391										0.2433	0.1336	0.0832	0.1098
S33											0.6985	0.6481	0.817
S40												0.4113	0.817
S4													0.2493

Appendix L.9: Mann Whitney Comparison of Neck Length to Lip Thickness Ratio for Gradual Neck Jars by Site.

	Castalian Springs	Sellars
Beasley	0.98	0.176
Castalian Springs		0.033

Appendix L.10: Mann Whitney Comparison of Neck Length to Lip Thickness Ratio for Gradual Neck Jars by Feature.

	CS752	CS782	CS106	CS119	CS134	CS16	CS335	CS4	CS5391	CS51	S33	S4	S7
Beasley	0.043	0.876	0.5569	0.6601	0.7102	0.648	0.0934	0.276	0.6404	0.2776	0.0608	0.1661	0.6217
CS752		0.081	0.3768	0.0219	0.0827	0.86	0.7728	0.018	0.3827	0.1489	0.3865	0.279	0.7728
CS782			0.8597	0.304	0.6098	0.86	0.1489	0.193	0.6625	0.1489	0.1489	0.516	0.7728
CS106				0.1988	0.6711	0.885	0.4875	0.064	0.3768	0.1052	0.2472	0.9517	0.817
CS119					0.3694	0.636	0.0395	0.733	0.8952	0.08319	0.0395	0.0312	0.2807
CS134						0.799	0.151	0.208	0.7595	0.05019	0.0897	0.4636	0.5139
CS16							0.4875	0.726	0.8597	0.2472	0.2472	0.7618	0.817
CS335								0.031	0.1489	0.2453	0.2453	0.0358	0.6985
CS4										0.06241	0.0307	0.0205	0.2051
CS5391										0.7728	0.1489	0.6134	0.3865
CS51											0.2453	0.0358	0.2453
S33												0.0358	0.2453
S4													0.6481

Appendix L.11: Mann Whitney Comparison of Neck Length for Gradual Neck Jars Small Size Class by Site.

	Castalian Springs	Sellars
Beasley	0.3525	0.139
Castalian Springs		0.069

Appendix L.12: Mann Whitney Comparison of Neck Length for Gradual Neck Jars Medium Size Class by Site.

	Castalian Springs	Sellars
Beasley	0.827	0.968
Castalian Springs		0.707

Appendix L.13: Mann Whitney Comparison of Neck Length for Gradual Neck Jars Large Size Class by Site.

	Sellars
Castalian Springs	0.7728

Appendix L.14: Mann Whitney Comparison of Neck Length for Distinct Neck Jars by Site.

	Castalian Springs	Sellars
Beasley	0.8767	0.9601
Castalian Springs		0.6878

Appendix L.15: Mann Whitney Comparison of Neck Length for Distinct Neck Jars by Feature.

0	CS752	CS106	CS119	CS134	CS16	CS4	S33	S4
Beasley	0.817	0.6985	0.2888	0.6985	0.6985	0.7728	0.6985	0.4521
CS752		0.4875	0.3961	0.4875	0.817	0.5959	0.817	0.4367
CS106			0.2888	0.2453	0.6985	0.7728	0.6985	0.3893
CS119				0.4094	0.5557	0.3552	0.5557	0.03049
CS134					0.6985	0.7728	0.6985	0.1626
CS16						0.7728	0.6985	0.4521
CS4							0.7728	0.735
S33								0.3337

Appendix L.16: Mann Whitney Comparison of Neck Length to Lip Thickness Ratio for Distinct Neck Jars by Site.

	Sellars
Castalian Springs	0.2622

Appendix L.17: Mann Whitney Comparison of Neck Length to Lip Thickness for Distinct Neck Jars by Feature.

	CS106	CS119	CS134	CS16	CS4	S4
CS752	0.817	0.3951	0.2472	0.817	0.817	0.6997
CS106		0.6605	0.2453	0.6985	0.6985	0.5557
CS119			0.3055	0.8836	0.6605	0.5254
CS134				0.2453	0.2453	0.1255
CS16					0.6985	0.9062
CS4						0.5557

Appendix L.18: Mann Whitney Comparison of Neck Length for Distinct Neck Jars Small Size Class by Site.

	Sellars
Castalian Springs	0.778

Appendix L.19: Mann Whitney Comparison of Neck Length for Distinct Neck Jars Medium Size Class by Site.

	Sellars
Castalian Springs	0.3951

Appendix L.20: Mann Whitney Comparison of Neck Length for Wide Mouth Jars by Site.

	Sellars
Castalian Springs	0.5686

Appendix L.21: Mann Whitney Comparison of Neck Length to Lip Thickness for Wide Mouth Jars by Site.

	Sellars
Castalian Springs	0.3571

Appendix L.22: Mann Whitney Comparison of Neck Length of Jars with Direct Rims by Site.

	Castalian Springs	Sellars
Beasley	0.7674	0.9518
Castalian Springs		0.96

Appendix L.23: Mann Whitney Comparison of Neck Length of Jars with Direct Rims by Feature.

	CS752	CS106	CS119	CS134g	CS16	CS233	CS4	CS5391	S33	S40	S4	S7
Beasley	0.5791	0.953	0.5807	1	0.3552	1	0.7464	0.1949	0.9385	0.9062	0.332	0.9062
CS752		0.8973	0.7385	1	1	0.6625	0.5254	0.1489	0.5959	0.7728	0.204	0.7728
CS106			0.719	0.8973	0.5186	0.8973	0.5995	0.6171	0.7491	0.8676	0.7794	0.8676
CS119				0.5591	0.3586	0.4867	0.8809	0.1781	0.6175	1	0.1711	0.7041
CS134g					0.3827	1	0.5254	0.7728	0.8597	0.7728	0.9157	0.7728
CS16						0.3827	0.5254	0.3865	0.3768	0.7728	0.1688	0.3865
CS233							0.5254	0.3865	0.8597	0.7728	1	0.7728
CS4								0.2069	0.6223	0.947	0.1965	0.7398
CS5391									0.817	0.6985	0.465	0.6985
S33										0.817	0.8228	0.817
S40											0.55	0.6985
S4												0.8421

Appendix L.24: Mann Whitney Comparison of Neck Length to Lip Thickness Ratio for Jars with Direct Rims by Site.

	Castalian Springs	Sellars
Beasley	0.9197	0.3531
Castalian Springs		0.1073

Appendix L.25: Mann Whitney Comparison of Neck Length to Lip Thickness Ratio of Jars with Direct Rims by Feature.

	CS752	CS106	CS119	CS134g	CS16	CS233	CS4	CS5391	S33	S40	S4
Beasley	0.8836	0.284	0.4514	1	1	0.6485	0.4334	0.8836	0.02976	0.6605	0.3408
CS752		0.8676	0.5715	0.7728	0.7728	0.7728	0.8118	0.6985	0.2472	0.6985	0.55
CS106			0.1223	0.6985	0.6985	0.5186	0.07618	0.8676	0.06995	0.8676	0.9164
CS119				0.9033	1	0.9516	0.8734	0.3856	0.00554	0.4282	0.02168
CS134g						1	0.9498	0.7728	0.3768	0.7728	0.672
CS16							0.9498	0.7728	0.3768	0.7728	0.672
CS233							0.9498	0.7728	0.1116	0.7728	0.2898
CS4								0.4749	0.006768	0.3825	0.04093
CS5391									0.2472	0.6985	0.947
S33										0.1052	0.02822
S40											0.8421

Appendix L.26: Mann Whitney Comparison of Neck Length for Jars with Excurvate Rims by Site.

	Castalian Springs	Sellars
Beasley	0.2826	0.2719
Castalian Springs		0.4951

Appendix L.27: Mann Whitney Comparison of Neck Length for Jars with Excurvate Rims by Feature.

	CS752	CS119	CS134y	CS51	CS4	S7
Beasley	0.2159	0.6985	0.3768	0.7728	0.3827	0.1489
CS752		0.1098	0.1124	0.1052	0.5959	0.1052
CS119			0.3374	0.8676	0.3662	0.1336
CS134y				0.817	0.5959	0.1052
CS51					0.3865	0.2453
CS4						0.1489

Appendix L.28: Mann Whitney Comparison of Neck Length to Lip Thickness Ratio for Jars with Excurvate Rims by Site.

	Castalian Springs	Sellars
Beasley	0.3534	0.1508
Castalian Springs		0.3395

Appendix L.29: Mann Whitney Comparison of Neck Length to Lip Thickness Ratio for Jars with Excurvate Rims by Feature.

	CS752	CS119	CS134y	CS51	S4	S7
Beasley	0.1116	0.8973	0.8597	0.7728	0.1904	0.1489
CS752		0.1098	0.03038	0.817	0.8597	0.4875
CS119			0.4555	0.6171	0.1556	0.2433
CS134y				0.817	0.05183	0.1052
CS51					0.7728	0.6985
S4						0.3865

Appendix L.30: Mann Whitney Comparison of Neck Length for Jars with Incurvate Rims by Site.

	Castalian Springs	Sellars
Beasley	0.266	0.1116
Castalian Springs		0.07947

Appendix L.31: Mann Whitney Comparison of Neck Length of Jars with Incurvate Rims by Feature.

	CS119	CS4	CS5391	S4
Beasley	0.3481	0.7728	0.6625	0.3865
CS119		0.6481	0.1296	0.4113
CS4			0.3865	0.6985
CS5391				0.3865

Appendix L.32: Mann Whitney Comparison of Neck Length to Lip Thickness Ratio for Jars with Incurvate Rims by Site.

	Castalian Springs	Sellars
Beasley	0.2459	0.1904
Castalian Springs		0.2108

Appendix L.33: Mann Whitney Comparison of Neck Length to Lip Thickness Ratio of Jars with Incurvate Rims by Feature.

	CS119	CS4	CS5391	S4
Beasley	0.3502	0.7728	1	0.3865
CS119		0.6217	0.3502	0.3744
CS4			0.7728	0.6985
CS5391				0.3865

Appendix L.34: Mann Whitney Comparison of Handle Width to Thickness Ratio by Site.

	Castalian Springs	Sellars	Beasley	Moss
Rutherford Kizer	2.315-05	0.02395	0.0006355	0.0189
Castalian Springs		0.5007	0.0003069	0.03505
Sellars			0.03038	0.2616
Beasley				0.7115

Appendix L.35: Mann Whitney Comparison of Handle Width to Thickness Ratio by Feature.

	RKF36	RKF588	CS119	CS752	CS106	CS134pit 2	CS134pit 1	CSF4	preMd3	md3below clay	SF4	BMP	MM
RK	0.1928	0.7225	0.0022	0.011	0.077	0.04513	0.01623	0.0168	0.04513	0.006928	0.068	0.0004	0.0162
RKF36		0.2453	0.0376	0.1052	0.2453	0.2453	0.1489	0.1052	0.2453	0.1052	0.134	0.0451	0.1489
RKF588			0.1474	0.1052	0.2453	0.2453	0.1489	0.2472	0.2453	0.1052	0.243	0.0451	0.1489
CS119				0.3714	0.4128	0.8501	0.3397	0.966	0.5708	0.58	0.714	0.0003	0.0237
CS752					0.817	0.817	0.8597	0.8852	0.817	0.665	0.241	0.0372	0.1116
CS106						0.6985	0.7728	0.817	0.6985	0.817	0.617	0.1255	0.3865
CS134pit2							0.3865	0.817	0.6985	0.817	0.405	0.0771	0.1489
CS134pit1								0.2159	0.7728	0.5959	0.156	0.042	0.3827
CSF4									0.4875	0.8852	0.594	0.0168	0.0518
preMd3										0.817	0.243	0.0771	0.3865
md3below clay											0.11	0.0253	0.0518
SF4												0.0216	0.1556
BMP													0.7115
MM													

Appendix L.36: Mann Whitney Comparison of Handle Length by Site.

	Castalian Springs	Rutherford Kizer	Sellars
Beasley	0.665	0.06741	0.6625
Castalian Springs		0.2801	0.4168
Rutherford Kizer			0.03963

Appendix L.37: Mann Whitney Comparison of Handle Length to Width Ratio by Site.

	Rutherford Kizer	Castalian Springs	Sellars	Beasley
Rutherford Kizer		0.001069	0.7656	0.03689
Castalian Springs			0.007989	0.006796
Sellars				0.08086
Beasley				

Appendix L.38: Mann Whitney Comparison of Handle Length to Width Ratio by Feature.

	Sellars	Beasley	CSF119	CS752	CS106	CSF134pit2	CSF4
Rutherford Kizer	0.7656	0.03689	0.00431	0.03689	0.08136	0.1752	0.08136
Sellars		0.08086	0.0189	0.08086	0.1489	0.1489	0.1489
Beasley			0.0189	0.08086	0.1489	0.1489	0.1489
CSF119				0.2616	0.6953	0.8961	0.6953
CS752					0.7728	0.7728	0.7728
CS106						0.6985	0.6985
CSF134pit2							0.6985
CSF4							

Appendix L.39: Mann Whitney Comparison of Handle Length to Thickness Ratio by Site.

	Castalian Springs	Sellars	Beasley
Rutherford Kizer	0.008476	1	0.06825
Castalian Springs		0.04518	0.9138
Sellars			0.08086
Beasley			

Appendix L.40: Mann Whitney Comparison of Lug Length by Site.

	Castalian Springs	Sellars
Rutherford Kizer	0.3954	0.1464
Castalian Springs		0.1826

Appendix L.41: Mann Whitney Comparison of Lug Length by Feature.

	CS119	CS4	CS91	RK36	S4
CS106	0.9323	0.9214	0.2472	0.6985	0.8836
CS119		0.8167	0.2821	0.6711	0.6345
CS4			0.6477	0.7672	0.5261
CS91				0.817	0.7768
RK36					0.8836

Appendix L.42: Mann Whitney Comparison of Bifurcate Lug Length by Site.

	Castalian Springs	Sellars
Rutherford Kizer	0.3296	0.3929
Castalian Springs		0.9726

Appendix L.43: Mann Whitney Comparison of Bifurcate Lug Length by Feature.

	CS4	RK36	S4
CS119	0.3408	0.5557	0.7115
CS4		0.8836	0.4941
RK36			0.3865

Appendix L.44: Mann Whitney Comparison of Single Lug Length by Site.

	Castalian Springs	Sellars
Castalian Springs		0.09404

Appendix L.45 Mann Whitney Comparison of Single Lug Length by Feature.

	CS4	S4
CS119	0.6985	0.817
CS4		0.817

Appendix L.46: Mann Whitney Comparison of Lug Length to Lug Thickness Ratio by Site.

	Castalian Springs	Sellars
Rutherford Kizer	0.05449	0.3074
Castalian Springs		0.1336

Appendix L.47: Mann Whitney Comparison of Lug Length to Thickness Ratio by Feature.

	CS106	CS119	CS4	CS91	S4
RK36	0.6985	0.5522	0.9	0.817	0.8836
CS106		0.9323	0.8	0.1052	0.8836
CS119			0.8	0.3958	0.3416
CS4				0.1332	0.5869
CS91					0.2193

Appendix L.48: Mann Whitney Comparison of Bifurcate Lug Length to Thickness Ratio by Site.

	Castalian Springs	Sellars
Rutherford Kizer	0.1479	0.8208
Castalian Springs		0.01476

Appendix L.49: Mann Whitney Comparison of Bifurcate Lug Length to Thickness Ratio by Feature.

	CS119	CS4	S4
RK36	0.5557	0.8836	0.3865
CS119		1	0.1391
CS4			0.1715

Appendix L.50: Mann Whitney Comparison of Single Lug Length to Thickness Ratio by Site.

	Sellars
Castalian Springs	0.9417

Appendix L.51: Mann Whitney Comparison of Single Lug Length to Thickness Ratio by Feature.

	CS4	CS91	S4
CS119	0.8852	0.665	0.8852
CS4		0.3123	0.8852
CS91			0.8852

Appendix L.52: Mann Whitney Comparison of Lug Length to Width by Site.

	Castalian Springs	Sellars
Rutherford Kizer	0.607	0.6745
Castalian Springs		0.5863

Appendix L.53: Mann Whitney Comparison of Lug Length to Width by Feature.

	CS4	CS91	RK36	S4
CS119	0.8603	0.06171	0.2776	0.01273
CS4		0.3525	0.4521	0.3525
CS91			0.7728	0.08086
RK36				0.1489

Appendix L.54: Mann Whitney Comparison of Bifurcate Lug Length to Width by Site.

	Castalian Springs	Sellars
Rutherford Kizer	0.7508	0.9098
Castalian Springs		0.2945

Appendix L.55: Mann Whitney Comparison of Bifurcate Lug Length to Width Ratio by Feature.

	CS119	CS4	S4
RK36	0.3608	0.6605	0.1489
CS119		0.8622	0.0189
CS4			0.3619

Appendix L.56: Mann Whitney Comparison of Single Lug Length to Width Ratio by Site.

	Sellars
Castalian Springs	0.957

Appendix L.57: Mann Whitney Comparison of Single Lug Length to Width Ratio by Feature.

	CS4	CS91	S4
CS119	1	0.1904	0.8597
CS4		0.3827	0.8597
CS91			0.3768

Appendix L.58: Mann Whitney Comparison of Lug Width by Site.

	Castalian Springs	Sellars
Rutherford Kizer	0.9283	0.1517
Castalian Springs		0.006276

Appendix L.59: Mann Whitney Comparison of Lug Width by Feature.

	CS119	CS305	CS4	CS91	RK36	S40	S4	S50
CS106	0.4644	0.6985	0.9406	0.4875	0.6985	0.6985	0.4521	0.6985
CS119		0.2453	0.09293	0.5756	0.5186	0.4136	0.004781	0.6985
CS305			0.4123	0.2472	0.2453	0.6985	0.9145	0.2453
CS4				0.2937	0.1358	0.7094	0.1416	0.2051
CS91					0.817	0.2472	0.0771	0.817
RK36						0.6985	0.1071	0.6985
S40							0.9145	0.6985
S4								0.06784

Appendix L.60: Mann Whitney Comparison of Bifurcate Lug Width by Site.

	Castalian Springs	Sellars
Rutherford Kizer	0.8392	0.3847
Castalian Springs		0.4749

Appendix L.61: Mann Whitney Comparison of Bifurcate Lug Width by Feature.

	CS119	CS4	S4	S40
RK36	0.3744	0.08965	0.3865	0.6985
CS119		0.0985	0.1195	0.4897
CS4			0.9187	0.8961
S4				0.7728

Appendix L.62: Mann Whitney Comparison of Single Lug Width by Site.

	Castalian Springs	Sellars
Castalian Springs		0.003321

Appendix L.63: Mann Whitney Comparison of Single Lug Width by Feature.

	CS4	CS91	S4
CS119	0.3153	0.8973	0.1098
CS4		0.3711	0.1113
CS91			0.05183

Appendix L.64: Mann Whitney Comparison of Lug Width to Thickness Ratio by Site.

	Castalian Springs	Sellars
Rutherford Kizer	0.005828	0.09143
Castalian Springs		0.005199

Appendix L.65: Mann Whitney Comparison of Lug Width to Thickness by Feature.

	CS119	CS4	CS305	CS91	CS752	S40	S4	S50
RK36	0.282	0.5912	0.2453	0.4875	0.6985	0.6985	0.5023	0.6985
CS119		0.2664	0.636	0.7909	0.3223	0.2453	0.6938	0.05281
CS4			0.4521	0.358	0.5912	0.5912	0.2794	0.1626
CS305				0.4875	0.2453	0.2453	0.3326	0.2453
CS91					0.4875	0.4875	0.8808	0.1052
CS752						0.6985	0.6018	0.6985
S40							0.5023	0.6985
S4								0.03065

Appendix L.66: Mann Whitney Comparison of Bifurcate Lug Width to Thickness Ratio by Site.

	Castalian Springs	Sellars
Rutherford Kizer	0.4074	0.7674
Castalian Springs		0.01791

Appendix L.67: Mann Whitney Comparison of Bifurcate Lug Width to Thickness by Feature.

	CS119	CS4	S40	S4
RK36	0.2776	0.8961	0.6985	0.7728
CS119		0.1485	0.1995	0.4363
CS4			0.8961	0.9187
S40				0.7728

Appendix L.68: Mann Whitney Comparison of Single Lug Width to Thickness Ratio by Site.

	Sellars
Castalian Springs	0.1805

Appendix L.69: Mann Whitney Comparison of Single Lug Width to Thickness Ratio by Feature.

	CS4	CS91	S4
CS119	0.1643	0.3608	0.9323
CS4		0.8465	0.7133
CS91			0.817

Appendix L.70: Mann Whitney Comparison of Minimum to Maximum Bifurcate Lug Width by Site.

	Castalian Springs	Sellars
Rutherford Kizer	0.4521	0.1296
Castalian Springs		0.1128

Appendix L.71: Mann Whitney Comparison of Minimum to Maximum Bifurcate Lug Width by Feature.

	CS119	CS4	S40	S4
RK36	0.6217	0.8836	0.6985	0.1489
CS119		0.3191	0.9214	0.01273
CS4			0.6605	0.02265
S40				0.1489

Appendix L.72: Mann Whitney Comparison of Lug Thickness by Site.

	Castalian Springs	Sellars
Rutherford Kizer	6.615E-05	0.3674
Castalian Springs		4.15E-07

Appendix L.73: Mann Whitney Comparison of Lug Thickness by Feature.

	CS119	CS4	CS91	CS106	CS305	CS752	CS134	S4	S40
RK36	0.3395	0.4128	0.4047	0.7728	0.6985	0.6985	0.4142	0.4521	0.2453
CS119		0.8156	0.563	0.7776	0.7262	0.1044	0.7745	0.003451	0.02804
CS4			0.5049	0.9599	0.9498	0.1859	0.7528	0.01354	0.02747
CS91				0.5186	0.6171	0.1336	0.8676	0.0197	0.06675
CS106					0.7728	0.3865	0.7728	0.1083	0.1489
CS305						0.6985	0.6985	0.3337	0.2453
CS752							0.2453	0.9145	0.6985
CS134								0.1071	0.2453
S4									0.7473

Appendix L.74: Mann Whitney Comparison of Bifurcate Lug Thickness by Site.

	Castalian Springs	Sellars
Rutherford Kizer	0.07706	0.375
Castalian Springs		0.0009042

Appendix L.75: Mann Whitney Comparison of Bifurcate Lug Thickness by Feature.

	CS119	CS4	S4	S40
RK36	0.2341	0.8961	0.7728	0.2453
CS119		0.07601	0.0803	0.0508
CS4			0.9187	0.05019
S4				0.3865

Appendix L.76: Mann Whitney Comparison of Single Lug Thickness by Site.

	Sellars
Castalian Springs	0.001468

Appendix L.77: Mann Whitney Comparison of Single Lug Thickness by Feature.

	CS4	CS91	S4
CS119	0.204	0.6997	0.07598
CS4		0.7048	0.02976
CS91			0.1124

Appendix L.78: Mann Whitney Comparison of Plate Rim Length by Site.

	Castalian Springs	Rutherford Kizer	Sellars
Beasley	0.08216	0.03689	0.05183
Castalian Springs		0.2573	0.1514
Rutherford Kizer			0.5403

Appendix L.79: Mann Whitney Comparison of Standard Plate Rim Length by Site.

	Castalian Springs	Rutherford Kizer	Sellars
Beasley	0.03856	0.08136	0.1052
Castalian Springs		0.7508	0.4118
Rutherford Kizer			0.5403

Appendix L.80: Mann Whiney Comparison of Plate Rim Length to Thickness by Site.

	Castalian Springs	Rutherford Kizer	Sellars
Beasley	0.1488	0.136	0.1116
Castalian Springs		0.9823	0.2175
Rutherford Kizer			0.3913

APPENDIX M: MIDDLE CUMBERLAND MISSISSIPPIAN SITES MENTIONED IN TEXT

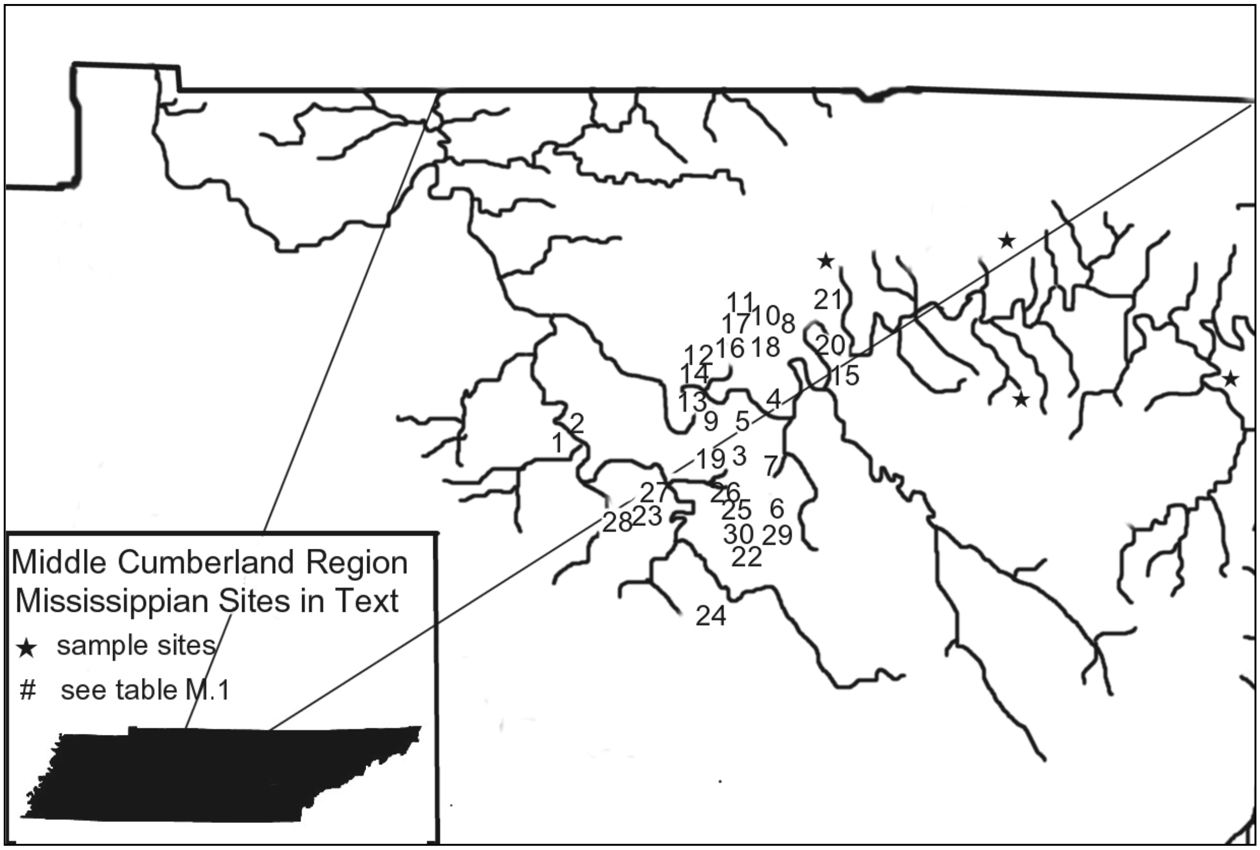

Figure M.1

	Site Name	Site #	Source
1	Pack	40CH01	
2	Mound Bottom	40CH08	O'Brien 1977; O'Brien and Kuttruff 2012; Smith 1992
3	Noel Cemetery/ Cain's Chapel	40DV03	Smith 1998; Thruston 1890
4	East Nashville Mounds	40DV04	Walling et al. 2000
5	French Lick	40DV05	Walling et al. 2000
6	Gordontown	40DV06	Moore and Breitburg 1998
7	Traveller's Rest/ Overton Estate	40DV11	Moore and Smith 2009:15-17; Putnam 1878: 308-310
8	Maddux Mound	40DV17	TDOA
9	Fort Zollicoffer	40DV32	Moore and Smith 2009:13-14; Putnam 1878:305-308
10	Brick Church Pike/ Love Mound	40DV39	Moore and Smith 2009:34-39; Putnam 1878:337-339
11	White's Creek/Marshall's Farm	40DV48	Moore and Smith 2009:
12	Averbuch	40DV60	Eisenberg 1986; 1991
13	Sogom	40DV68	Norton and Broster 2004
14	Spencer	40DV191	Spears et al. 2008
15	Brandywine Pointe	40DV247	Moore and Smith 1993; Smith and Moore 1994
16	Brick Church Business Park	40DV301	Smith et al. 1993
17		40DV442	TDOA
18	Armes Farmstead	40DV444	Smith and Moore 1995
19	Bosley Farm/ Boiling Farm	40DV426	Moore and Smith 2009:18-27
20	Lock Three	40SU112	TDOA
21	Callender Court	40SU251	Weaver et al. 2011
22	Fewkes	40WM01	Smith and Beahm 2012
23	Old Town	40WM02	Smith 1993a
24	DeGraffenreid	40WM04	Smith 1994
25	Arnold/ Hayes Farm	40WM05	Ferguson 1972
26	Colman	40WM08	Broster 1972a
27	Gray's Farm	40WM11	Moore and Smith 2009:103-120
28	Fernvale	40WM51	Deter-Wolf 2013; Steere 2011
29	Chenoweth/John Owen Hunt Mound	40WM86	Moore and Smith 2009:196-197
30	Brentwood Library	40WM210	Moore 2005

Table M.1: Middle Cumberland Sites Mentioned in Text.