Prehistoric Life on the Mississippi Coast: Chronology and Function of Ceramics from Three Shell Middens in the Grand Bay Estuary

Samuel Michael Huey
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PREHISTORIC LIFE ON THE MISSISSIPPI COAST: CHRONOLOGY AND FUNCTION OF CERAMICS FROM THREE SHELL MIDDENS IN THE GRAND BAY ESTUARY

by

Samuel Michael Huey

A Thesis
Submitted to the Graduate School of The University of Southern Mississippi in Partial Fulfillment of the Requirements for the Degree of Master of Arts

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May 2014
ABSTRACT

PREHISTORIC LIFE ON THE MISSISSIPPI COAST: CHRONOLOGY AND FUNCTION OF CERAMICS FROM THREE SHELL MIDDENS IN THE GRAND BAY ESTUARY

by Samuel Michael Huey

May 2014

This study analyzes ceramic assemblages with radio carbon dates produced from three archaeological sites, 22JA564, 22JA575, and 22JA633, with a view to determine the types and varieties of containers brought to and used at each site. The study area is located in the extreme eastern end of the Mississippi Sound in Jackson County, Mississippi. Methods employed in this research evaluate five variables: orifice diameter, vessel wall thickness, decoration, temper, and vessel shape. These variables were selected in order to determine the mechanical performance characteristics, as well as the formal and functional aspects of pottery assembled in this study. Determining form and function of recovered ceramics illuminates differences in site activity between each site and between periods. By correlating the results from the faunal analysis with ceramic analysis settlement patterns, subsistence patterns and a chronology of site use are constructed. This research evaluates prehistoric use of the Grand Bay estuary and documents how use of the estuary changed through time.
ACKNOWLEDGMENTS

This research would have not been possible without the support of Mississippi Department of Archives and History and personnel at the Grand Bay Research Reserve. Ceramic type distinctions in this research are credited largely to recent studies and feedback received in response to the 2012 Grand Bay report. These contributions were made by Chip McGimmsey, Richard Weinstein, Ian Brown, John Belmont, and Rick Fuller. The faunal analysis conducted by Susan Scott was integral to the understanding of the Grand Bay ceramic assemblages. Otolith analysis conducted by Sam Butz clarified seasonality of prehistoric occupation in Grand Bay. Data gleaned from Butz’s work identified a change in subsistence that is also reflected by changes in the ceramic assemblage and changes in faunal assemblage noted by Scott. Being able to consider the ceramic data and faunal data together was a large part of this study’s success.

My committee was supportive and provided the direction I needed to complete this work. Dr. Jeffrey Kaufmann and his contributions to my understanding of culture have helped me not to lose sight of the people whom the pottery represents. Working with Dr. Marie Danforth over the course of this research has immensely improved my writing and research abilities. A special thanks is owed to Dr. Ed Jackson who not only allowed me to center my thesis on the 2010 Grand Bay project, but also took me into the field, enabling me to see firsthand the sites and salt marsh. Crew members involved in the field portion of the 2010 Grand Bay project worked hard through adverse conditions, and the quality of work produced by the field technicians made the difference in the lab.

Dr. Jackson secured funding for my graduate school career by providing me with a research assistantship through The University of Southern Mississippi that entailed the
laboratory analysis of the artifacts produced by the 2010 Grand Bay project. For this I am very grateful because the assistantship allowed me to spend much more time analyzing the pottery than I otherwise would have. I am thankful that I was able to study under Dr. Jackson because he provided me with the tools I needed to conduct this research and the guidance I needed to finish it. An Acknowledgment is owed the Michael Fedoroff who introduced me to Dr. Jackson and offered his support at every turn down the long road to the completion of this thesis.

The emotional expenditure, the monetary expense, and the time that graduate school requires has placed stress on nearly all of my personal relationships, and I want to thank my parents, Lorna and Michael Huey, for always believing in me and providing me with a constant support network.
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CHAPTER I
INTRODUCTION

Recently, South Mississippi and the Northern Gulf Coast have been the focus of numerous archaeological studies (Blitz and Downs 2011, Blitz and Mann 2000, Boudreaux 2009, Fields 2005, Jackson et al. 1993, Jackson et al. 2002, Mann 1996, McGimsey 2000, 2004, Price 2008). Despite solid gains in our understanding of the prehistory of South Mississippi, the Gulf Coast still remains an area lacking well dated ceramic assemblages needed for a refinement of chronology and models of interaction. The Mississippi Sound and the surrounding environs are often viewed as a gray area between other regions or simply subsumed under one or another cultural framework drawn from adjacent regions without the data to support such assumptions. The common obstacle to conducting chronology building and cultural history work in this area is that, on the outset, it appears to lack a specific cultural influence and well dated assemblages.

This thesis extends our understanding of prehistoric interactions on the Mississippi Gulf Coast by examining three ceramic assemblages with radiocarbon dates from sites in the eastern end of the Mississippi Sound produced by the 2010 Grand Bay project. Directed by Dr. Ed Jackson, the Grand Bay research project aimed to evaluate prehistoric shell middens located in Grand Bay, with particular attention paid to questions concerning occupation, subsistence activities, and the cultural affiliation of the site’s occupants (Jackson et al. 2012:1). The project was funded through a Mississippi Development Authority grant received by The University of Southern Mississippi from the Mississippi Department of Archives and History. Fieldwork was conducted at three sites over the course of eight weeks with a regular crew of six investigators. In addition
to mapping, surface collecting, and shovel testing, TUs were also excavated on the sites. This was an important study, as it provided systematic excavation data for non-mound sites at the extreme eastern end of the Mississippi Gulf Coast (Jackson et al. 2012).

Purpose of Study

Building on the Grand Bay project, this study offers an inter-site ceramic analysis. A major goal of this study is to assess site use and its variation over time through a functional analysis of the ceramic assemblages with a view to determine types and varieties of containers brought to and used at each site. Based on this analysis, the study proposes to determine whether, during different periods of time, sites were used in similar fashions. In addition to outlining a chronology of site use, secondary research goals include an examination of pre-Columbian Mississippi coastal pottery style to understand the articulation of Grand Bay occupation with the regional cultural framework. To accomplish these goals, ceramic data from three sites, 22JA633, 22JA564, and 22JA575, was collected, including culturally or chronologically sensitive aspects of decoration and other stylistic attributes, as well as vessel size and morphology.

Organization of Study

This study is organized into six chapters providing a clear overview of the research questions and the methods used to answer them. Chapter I provides an overview of the 2010 Grand Bay project and research goals, followed by the proposed research goals for this study. Following the introduction, Chapter II includes an exhaustive literature review of research relevant to the pre-contact occupation of the Mississippi Gulf Coast in order to develop a working cultural history scheme. Next, Chapter III provides an overview of the sites analyzed for this study and introduces the ceramic
sample. Chapter IV outlines methods used in the study to score the ceramic assemblage and explains the rationale for these choices. Chapter V includes a summary of results and discussion concerning vessels brought to and used at each site analyzed in this study. Chapter VI offers a summary and conclusions pertaining to changes in site activity from one period to the next and differences in site activity between each site during coeval occupation.
CHAPTER II

REVIEW OF RELATED LITERATURE

The cultural history of the Mississippi Sound has been sporadically addressed and only recently has the archaeological community been able to provide answers to questions the previous data set could not accommodate (Jackson et al. 2012). This growth in data has been the result of efforts made by the Mississippi Department of Archives and History, university-sponsored studies, and federally mandated compliance work.

The Mississippi Sound region is known to have been culturally diverse from the Late Gulf Formational through the Terminal Woodland Periods. “Mississippi Sound inhabitant’s shared cognate ceramic style and similar mortuary practices with other coastal populations from Lake Pontchartrain to Mobile Bay” (Blitz and Mann 2000:98). Culturally distinctive regions are located to the east, west, and north of the study area. The ceramic tradition represented by Tchefuncte, Marksville, Troyville, and Coles Creek cultures in the Lower Mississippi Valley represent a westward influence and are delineated by the utilization of grog temper, incising, zoned stamping, and stamping decorative techniques. Bayou La Batre and Santa-Rosa ceramics represent a ceramic tradition radiating from the Mobile Bay region and are known to have sand paste temper, have rocker stamping decorations, and be incised and punctated (Brown 2004:577). Swift Creek, Weeden Island I and II ceramic markers denote an eastern tradition concentrated along the northwest Florida Gulf Coast, these ceramics being distinguished by the use of sand and grit temper. Complicated stamping is a decorative treatment common of Swift Creek ceramics. Weeden Island I pottery is characterized by the presence of Swift Creek...
related types through complicated stamping. Weeden Island I Period ceramics are also
distinguished by punctated incised pottery including ornate and stylized designs and
effigy vessels (Milanich 2002:354). Ceramic markers designating the Alexander and
Miller cultures were centralized in northeast Mississippi and northwest Alabama.
Alexander pottery has a sand-tempered paste, follows directly from the Wheeler tradition
and has surface treatments that include incising, pinching, punctuation, rocker stamping,
and dentate stamping (Sassaman 2002:418). In the subsequent Miller series, sand
tempering persisted. However, during the later Miller stages incorporable grog-tempered
pottery decorated by the application of cordage and fabric impressions became common
(Brown 2004:581).

The Mississippi Sound was a nexus of interaction between the defined cultures
outlined in the preceding paragraph. Neighboring sequences are used for comparison in
order to understand the archaeological sequence of Mississippi Coastal phases. The
regional sequence of each period for the Mississippi Sound and neighboring regions are
independently discussed. Two previous studies of coastal Mississippi, Blitz and Mann
(2000) and Blitz and Downs (2011), were relied upon for type-variety classification and
chronological considerations. West of the Mississippi Sound region is the Lower
Mississippi Valley region (LMV). The work conducted there by Brown (1984), Fuller and
Fuller (1987), McGimsey (2000, 2004), and Phillips (1970) is referenced for typological
and chronological data. Influence from cultures east of the study area permeates from two
different regions. The Mobile Bay region is understood through the work of, Brown
and Wimberly (1960). Sources primarily used to discern the archaeological sequences of
northwest Florida to southwest Georgia are Thomas et al. (1997), Stephenson, Bense, and Snow (2002), and Willey (1949).

Late Gulf Formational (1200-100 BC)

*Mississippi Coast*

On the Mississippi Coast, Late Gulf Formational Period is divided into two phases, the Claiborne Phase (1200-800 BC) and the Apple Street Phase (800-100 BC). The Claiborne Phase is distinguished by participation of Mississippi Sound inhabitants in the Poverty Point exchange system and the advent of ceramic technology. The Apple Street Phase is marked by waning interaction with Poverty Point culture and an increase in ceramic diversity (Blitz and Mann 2000:98).

Ceramics designating the Claiborne Phase (1200-800 BC) are crudely fired, fiber-tempered and temperless vessels (Blitz and Mann 2000:98). The Claiborne site (22-HA-501) is the namesake site for the phase. The Claiborne and Cedarland (22-HA-506) sites mark the location of two semicircular earth and shell mounds (now destroyed) at the mouth of the Pearl River. Radiocarbon dates obtained by Blitz and Mann (2000) and the lack of ceramics from Cedarland suggest that Cedarland predated the Claiborne site. Plain and punctuated Wheeler pottery, as well as plain and incised temperless pottery, was recovered at Claiborne (Bruseth 1991).

Pottery types designating the Apple Street Phase (800-100 BC) are related to the Tchefuncte, Bayou La Batre, and Alexander ceramic series (Blitz and Mann 2000:22). Alexander series types are geographically distributed across much of Alabama and Mississippi (Blitz and Mann 2000:98, Hodge 2004:33). Tchefuncte wares can be seen as related to western cultural systems, and Bayou La Batre types are understood to designate
cultural systems east of Grand Bay Mississippi. Wedge and conical shaped podal supports are a common trait during the Apple Street Phase (Dumas 2008:147) and are ubiquitous throughout the region.

**Mobile Bay Area**

In the adjacent Mobile Bay region the time-span concurrent with the Apple Street Phase is designated as the Bryant’s Landing Phase (750-100 BC). Coarse grit and sand tempering is characteristic of vessels manufactured early in the Bryant’s Landing Phase; however, fine to medium sand or sand and grog were used late in the phase beginning around 200 BC (Dumas 2008:147). Pottery produced during this time interval in the Mobile Basin is incorporated into the Circum-East tradition. The Circum-East tradition was coined by Fuller (1998) and defined as a progenitor of the later Gulf tradition that incorporates Bayou La Batre, Tchefuncte, Alexander, and other Early Woodland/Gulf Formational cultures that bordered the eastern United States from about 800 BC to 200 BC (Fuller 1998:9). Markers of the Bryant’s Landing Phase are types belonging to the Bayou La Batre series and include Bayou La Batre Plain, Bayou La Batre Stamped, Bayou La Batre Scalloped Impressed, and Bayou La Batre Cord Wrapped Dowell Impressed. Furthermore, wedge and conical shaped podal supports are common traits during the Bryant’s Landing Phase (Dumas 2008:147).

**Lower Mississippi Valley**

The Poverty Point site is located in northeast Louisiana on the eastern escarpment of Macon Ridge and 25 kilometers west of the Mississippi River (Gibson 1996:289). This site was the nexus of a long distance exchange network of trade goods and prestige items. Although construction of the mound complex commenced 3500 years ago, evidence
suggests that the site was occupied 2000 years prior to the mounds’ construction (Sassaman 2005:336). Poverty Point culture produced the oldest known pottery in the Mississippi River Valley, and the pottery recovered from the Poverty Point site is classified as Wheeler (fiber-tempered), Alexander (sand-tempered), and Tchefuncte (clay-tempered). A number of untempered ceramics sometimes classified as “the Poverty Point” type (Gibson 1996:295) have also been recovered from the site.

The Early Woodland Tchula Period (Phillips 1970) represents the emergence of Woodland cultural traits in the Lower Mississippi Valley. Tchula Period populations were the first to fully adopt ceramics for cooking and storage. Tchula pottery is considered to generally consist of crude pottery with soft paste that was fired at low temperatures (Kidder 2004:545-546). This period is characterized by two cultures: the Tchefuncte and Lake Cormorant. Tchefuncte culture was pervasive throughout the LMV, from the central Yazoo Basin south to the coast. Lake Cormorant culture was located in the northern Yazoo Basin eastward into the hills adjacent to the alluvial valley (Kidder 2004:546). Tchefuncte pottery is characterized by soft clay or temperless paste usually worked into a thick-walled, poorly-worked, and low-fired vessel (McGimsey et al. 2000:11). Tchefuncte wares can be seen as related to cultural systems focused west of Grand Bay Mississippi.

*Northern Florida Gulf Coast*

Norwood pottery currently dates no earlier than 1500 BC and are the oldest ceramics recovered from northwest Florida. This type was introduced by Phelps (1964) to provide a distinction from fine-paste, incised Orange pottery—the type typically confined to the St. Johns Basin of northeast Florida (Sassaman 2002:403). Norwood pottery is
fiber-tempered, has surfaces with stick impressions, and sandy paste (Sassaman 2002:405-406). During the time interval between Norwood and Deptford, evidence indicates that northwest Florida inhabitants experienced interaction with inhabitants of Poverty Point. Following the Norwood and Poverty Point occupations, inhabitants of the northern Florida Gulf Coast created shell middens, exploited littoral recourses, and produced pottery. These people are believed to have been incorporated within the Deptford ceramic culture. The Deptford horizon includes the geographic regions of South Carolina, Georgia, and north Florida. The Deptford type site is 9CH2 located in the Savannah River Valley area, Georgia (Stephenson et al. 2002). Along the Northern Florida Gulf Coast, surface stamping indicative of the Deptford tradition appeared around 500 BC and continued until 100 to 300 AD (Stephenson et al. 2002:319). Ceramics diagnostic of the Deptford Period include Deptford Linear Check Stamped, Deptford Bold Check Stamped, St. Marks Plain, St. Simons Plain, and Alexander Incised (Willey 1949:507). No evidence of mound construction during the Deptford Period has yet been identified.

Middle Woodland (100 BC-550 AD)

Mississippi Coast

Regarding the Mississippi Coast, the Middle Woodland Period is subdivided into the Greenwood Island Phase (100 BC-250 AD) and the Godsey Phase (250-550 AD) (Blitz and Downs 2011:99). These time intervals are contemporaneous with the Southeastern Hopewellian Interaction Sphere (Brown 2004:576). Increased ceramic diversity reflects additional interaction between coastal peoples at the onset of the Middle Woodland Period. The occurrence of zoned decoration and Marksville styles around 100
BC is a distinguishing trait of the Middle Woodland. The ceramic series designating the Greenwood Island Phase includes Alexander, Bayou La Batre/Santa Rosa, Deptford, Marksville, and Tchefuncte. The types belonging to the Alexander series can be further subdivided into Alexander Incised and Mandeville Stamped. Markers of the Bayou La Batre/Santa Rosa series include Santa Rosa Stamped, Santa Rosa Punctated, Bayou La Batre Scallop Impressed, Bayou La Batre Stamped, and Greenwood Stamped. Deptford series types recovered in Middle Woodland context from the Mississippi Gulf Coast include Deptford Simple Stamped, Deptford Linear Stamped, and Deptford Bold Check Stamped. The Marksville series is designated by Marksville Stamped, Mabin Stamped, and Indian Bay Stamped. Tchefuncte ceramic types recovered from coastal Mississippi include Lake Borgne Incised, Tammany Punctated, Tchefuncte Incised, Tchefuncte Bold Check Stamped, and Tchefuncte Scallop Impressed. Marksville crosshatched rims and podal supports are still common during the Greenwood Island Phase (Blitz and Mann 2000:27).

The Godsey Phase is distinguished by ceramics belonging to the Marksville series, Marksville Incised, var. Yokena, and Marksville Stamped, var. Godsey, which are primary types that occur during the beginning of the phase (Blitz and Downs 2011:98). Other types signaling the Godsey Phase include Churupa Punctated, Indian Bay Stamped, Alligator Bayou Stamped, and Basin Bayou Incised (Blitz and Mann 2000). Small conical podal supports and rim-top impressions are characteristic modes produced during the Godsey Phase (Blitz and Downs 2011:99). These ceramic types and modes indicative of the Godsey Phase are described by Blitz and Mann (2000:39) as a regional expression of “Coastal Issaquena,” meaning an interval following intermittent participation in the
Hopewell interaction sphere, when local cultures produced ceramics characteristic of the middle time span of the Marksville ceramic series continuum (Blitz and Downs 2011:98).

Recent work conducted at the Graveline Site produced radiocarbon dates and ceramic data that have resulted in amendments to the chronological boundary between the Godsey Phase and the Graveline Phase. Pottery excavated from the phase type site, the Godsey site (22HR591), is Marksville Incised, var. Yokena, Marksville Stamped, var. Godsey, Marksville Stamped, var. Troyville, and Churupa Punctated, var. Thornton. These types were also excavated from the Harvey site with the addition of Marksville Incised, var. Leist, Goose Lake, and var. Spanish Fort, and a minor amount of Larto Red. These varieties of Marksville Incised, Stamped, as well as the Larto Red type are common in early Late Woodland Graveline Phase assemblages; this similarity between the Harvey and Graveline assemblages suggested that Harvey might be assigned to the Graveline Phase. However, two defining traits of Graveline Phase assemblages—a high frequency of Larto Red and a high frequency of grog-tempered, zoned red and black-filmed pottery—were absent from the Harvey assemblage. High frequencies of Marksville Stamped at the Godsey and Harvey site but not at the Graveline site caused Blitz and Mann to surmise that the Harvey assemblage was an intermediary of the Godsey site and the Graveline Mound assemblages (Blitz and Downs 2011:97, Blitz and Mann 2000:32-35). Based on these findings, Blitz and Mann defined the Godsey Phase as 200 AD to 400 AD and the Graveline Phase from 400 AD to 700 AD, thus defining the Harvey site to the Graveline Phase (Blitz and Mann 2000:98-99).

Present radiocarbon dates from the Graveline site shed additional light on the Godsey-Graveline boundary: dating produced an early group (420-610 AD) and a late
group (590-780 AD). The early group is likely a result of activity at the site prior to mound construction, and the late group dates correspond with Graveline Phase occupation at the Graveline mound site (Blitz and Downs 2011:96). Radio carbon dates from Graveline, compared with radio carbon dates from the Godsey and Harvey sites, 244 AD to 548 AD, show that the Harvey site should be reassigned to the Godsey Phase. Based on the associated radiocarbon dates and similarities to LMV relative ceramic chronologies, Blitz and Downs revise the estimation of the Godsey Phase time span to 250-550 AD (Blitz and Downs 2011:99).

*Mobile Bay Region*

East of the study area, in southwest Alabama, the Middle Woodland Period is described as the fusion of South Appalachian and Gulf ceramic traditions (Dumas 2008:151). This combination of traditions resulted in the Santa Rosa-Swift Creek ceramic series. Development of pottery cultures along the Mississippi coast during the Greenwood Island Phase parallels the evolution of Blakeley Phase (100 BC-300 AD) ceramic styles (Dumas 2008:147-148). Vessels continue to be tempered with fine sand throughout the beginning of the Blakeley Phase (100 BC), but over time the utilization of grog-tempering becomes increasingly prevalent. Zoned rocker stamping is the primary marker of the Blakeley Phase (Dumas 2008:152) and is indicative of a transition from Bayou La Batre to Santa Rosa series pottery. Ceramic types designating the Blakeley Phase include Santa Rosa Punctated, Santa Rosa Stamped, Alligator Bayou Stamped, and Mabin Stamped (Dumas 2008:149-152).

The Porter Phase (300-600 AD) refers to the Middle Woodland Period in the Mobile Bay region and is also contemporaneous with the Godsey Phase (Fuller and
Brown 1998:147, Dumas 2008:155, Blitz and Downs 2011:100). The Porter Phase is a local variant of the late Santa Rosa culture (Ridley 2006:17). Ceramics produced during this phase are similar to ceramics produced during the preceding Blakely Phase except that Porter Phase ceramic markers have better quality, exhibiting neater and more carefully executed decorations (Ridley 2006:17). Several poignant distinctions between Mississippi Coast and Mobile Bay region assemblages during this phase are currently noted: the high frequency of Issaquena-related Marksville series ceramics recovered from the Mississippi Coast, and the high frequency of Santa Rosa pottery types found in the Mobile Bay region which are rarely found in the Mississippi Sound region (Blitz and Mann 2000:39). The Mobile Bay region’s ceramic assemblage is not as homogeneous as that of the Mississippi Coast—at least not in terms of ceramic type diversity and temper (Dumas 2008:155). Santa Rosa Marksville type ceramics are dominant early in the phase, after which Weeden Island types—such as Carrabelle Incised and Weeden Island Incised—increased in frequency. Near the end of the Porter Phase (500-600 AD) Basin Bayou Incised designs start to mirror later Weeden Island types, such as Carrabelle Incised (Fuller and Brown 1998:148).

By the end of the Porter Phase, podal supports are nearly non-existent in both the Mississippi Sound and Mobile Bay regions (Dumas 2008:156, Fuller and Brown 1998:148). Common vessel forms during the Porter Phase include beakers and flared jars—often with flat bases—as well as small to medium-sized pots and bowls (Brown 2004:578, Dumas 2008:156). Approximately 80% of most Porter Phase assemblages are plain pottery (Brown 2004:576, Dumas 2008:156), while Franklin rim mode—which resembles a pie crust and is characterized by a vertical slightly flared rim with a notched
lip (Dumas 2008:157, Fuller, Brown 1998:148)—marks the latter portion of the Porter Phase (approximately 400-600 AD). Throughout most of the region, the end of the Middle Woodland Period was marked by an indigenous transition from the Porter Phase to a local expression of early Weeden Island culture (Fuller 1998:15).

Lower Mississippi Valley

The LMV is located west of the study area. Here, the onset of the Middle Woodland Period is primarily characterized by interaction with Midwestern Hopewellian communities. The Marksville Period (250 BC-350/400 AD) is defined by Phillips (1970) as that of Hopewellian ascendance throughout the Lower Mississippi area (Phillips 1970:16, see also McGimsey 2004:12, Neuman 1984:113). The Marksville Period is traditionally divided into two periods: the early Marksville Phase (100 BC-150/200 AD), which coincides with the Mississippi Coast Greenwood Island Phase (100 BC-250 AD), and the late Marksville Phase (200-350/400 AD), which coincides with the Godsey Phase (250-550 AD) (Blitz and Mann 2000:25, McGimsey et al. 2000:195-196).

Marksville ceramics are better made and have harder paste and better surface finishes than earlier pottery. Some ceramics display earlier Tchefuncte decorative characteristics, though Marksville pottery is stylistically different (Kidder 2004:548). Ceramic types and traits indicative of early Marksville Period assemblages recovered from the LMV include Mabin Stamped, Marksville Stamped, Marksville Plain, cross-hatched rims, and, to a lesser extent, Marksville Incised. Marksville Stamped, var. Troyville, and Marksville Incised, var. Yokena, are markedly absent in the early Marksville Period, but then gain popularity during the late Marksville Period. Late Marksville Period ceramic assemblages featuring Mabin Stamped and cross-hatched rims
wane in frequency while Marksville Stamped and Marksville Incised maintain popularity throughout the Middle Woodland Period.

The Marksville Period is traditionally considered a Southern version of Hopewellian culture and is defined as temporally equivalent to the Midwest Hopewellian culture. Undoubtedly, exchange and interaction between Midwest Hopewellian communities stimulated the growth of Marksville communities in the LMV, though the duration and extent of the exchange and interaction is uncertain. Shared ceramic styles indicate contact between the LMV and Midwest regions around 100 BC; this date coincides with the beginning of early Marksville (100 BC) (McGimsey et al. 2000:195-196). The late Marksville Period (200-350/400 AD) is characterized as a time during which local cultures follow their own trajectories without much influence from changing northern traditions.

An alternative theory argues that Marksville is an archaeological culture indigenous to the LMV—a product of the local syntheses of pan-Southeastern ideas and concepts (Kidder 2004:551, McGimsey et al. 2000:11, Neuman 1984:113). This perspective is supported by the fluid nature of the Marksville pattern. Issaquena and Northern Plainware Phases demonstrate that Middle Woodland cultures thrive well after the period of the Hopewellian interaction ends (Kidder 2004:551). Cultural frameworks contrary to this theory maintain that the late Marksville Period ended around 350 AD. However, McGimsey et al. (2000) suggest that this date was selected for several reasons the date is contemporaneous with Midwestern Hopewellian chronologies and fits projected chronologies and cultural histories for the LMV. Data compiled since Philips (1970) and Toth’s (1988) proposed cultural historical schemes for the LMV indicates that
Marksville culture endured much longer in the LMV than originally hypothesized. Early Marksville is now thought to have spanned from 200 BC to 400 AD, and the late Marksville Period is believed to have begun around 400 AD and persisted until 650 AD (McGimsey et al. 2000:196).

Northwest Florida

The Santa Rosa-Swift Creek Phase is an archaeological culture with a ceramic assemblage distinguished by the presence of Alligator Bayou Stamped, Basin Bayou Incised, Santa Rosa Stamped, Santa Rosa Punctated, Swift Creek Complicated Stamped, St. Andrews Complicated Stamped, Gulf Check Stamped, West Florida Cord Marked, and Franklin Plain (Ridley 2006:49, Willey 1949:509). Santa Rosa-Swift Creek pottery produced along the northwest Florida coast during the same time as Mississippi Coastal Greenwood Island and Godsey Phases exhibit applications of nonlocal designs on local paste (Brown 2004:577, Ridley 2006:14, Willey 1949:509). This highly decorative, complicated-stamped ceramic tradition is the product of the South Appalachian Swift Creek cultural system fusing with the Santa Rosa complex of the Gulf tradition (Dumas 2008:152). Santa Rosa-Swift Creek sites adhere to a similar settlement pattern and subsistence strategy as the earlier Deptford Period sites. It is believed that Santa Rosa-Swift Creek culture is a continuous development of the Deptford and Cartersville cultures of south Georgia and northwest Florida (Brown 2004:577). Santa Rosa-Swift Creek settlement patterns are characterized as small hunting/fishing/gathering communities concentrated on rivers and bays. Shell middens are often associated with Santa Rosa-Swift Creek sites and burial mounds are commonly located near shell middens (Brown 2004:577, Ridley 2006:14, Willey 1949:509).
Early Late Woodland (550-800 AD)

Mississippi Coast

On the Mississippi Coast, the Early Late Woodland Period is defined as the Graveline Phase (550-800 AD, Blitz and Downs 2011:99, Blitz and Mann 2000:99). The chronological positioning of this phase was changed from the date of 400-700 AD established by Blitz and Mann (2000), to 550-800 AD by Blitz and Downs (2011). The revised chronology is based on associated radiocarbon dates from Harvey, Godsey, and Graveline sites, as well as similarities to LMV relative ceramic chronologies (Blitz and Downs 2011:99).

The Graveline Phase can be considered a local expression of the Coastal Troyville culture; this is a concept that has utility in the chronological ordering of ceramic cultures indigenous to the Mississippi Coast. Blitz and Downs (2011) define Coastal Troyville as a set of widely shared ceramic styles—a ceramic subseries that is the terminal expression of the long Marksville ceramic series continuum. Churupa Punctated, French Fork Incised, Landon Red on Buff, Marksville Incised, and Marksville Stamped are ceramic types recovered from Graveline Phase deposits that belong to the Marksville (Troyville) series (Blitz and Mann 2000:42). Marksville Stamped varieties common during the Godsey Phase are replaced by types decorated with elaborate incised designs, primarily Marksville Incised varieties Goose Lake, Steele Bayou, and Spanish Fort. The small conical podal supports of the Godsey Phase are absent from Graveline assemblages (Blitz and Downs 2011:99). During this period, Weeden Island I series ceramics appear in the Mississippi Sound for the first time. Weeden Island I series decoration techniques utilize punctations and incisions; ceramics types recovered along the Mississippi Coast include
Carrabelle Punctated, Carrabelle Incised, Indian Pass Incised, and Weeden Island Incised (Blitz and Mann 2000:42).

The Graveline Phase is chiefly characterized as a time of interaction and exchange between the Coastal Troyville and Weeden Island cultural systems. The ceramic assemblage excavated from Graveline Mound (22JA503) reflects interaction linking Mississippi coastal groups with populations as far away as Louisiana and Florida (Blitz and Mann 2000:43). Landon Red on Buff type ceramics and painted, globular vessels with thickened, restricted rims were recovered at Graveline Mound and trace amounts were recovered from the Harvey site (22HR534) (Blitz and Mann 2000:43, 44). These ceramics are examples of a painted pottery trade network defined by Belmont and Williams (1981) as the Quafalorma horizon.

In the neighboring western subregion of the Mississippi Sound, three excavated mound sites produce assemblages dating 250-800 AD: Jackson Landing (22Ha504 and 22HA515), Indian Camp (16ST6), and Ramsey (22HA528). Jackson Landing is located near the mouth of the Pearl River and presents evidence of large-scale, public events such as feasts and monument-building (Boudreaux 2011). The majority of the pottery sherds collected from 22HA515 are grog-tempered ceramics consistent with the Troyville subseries of the Marksville ceramic series (Boudreaux 2011:180). Indian Camp is a small platform mound situated at the mouth of the Pearl River on the Louisiana side. Ramsey is a small mound surrounded by midden deposits located in urban Bay Saint Louis (Blitz and Downs 2011:100).
Mobile Bay

The Tates Hammock Phase (600-850 AD) is coeval with the Graveline Phase along the Mississippi coast. Tates Hammock Phase developed directly out of the preceding Porter Phase (300-600 AD) and was a perpetuation of Gulf Tradition decorative themes expressed by high frequencies of incising and punctation (Dumas 2008:167) and is chiefly characterized by Weeden Island and Coastal Coles Creek decorative styles and vessel shapes (Fuller 1998:17). Tates Hammock assemblages are diverse; Weeden Island Incised, Weeden Island Punctated, Carrabelle Incised, Carrabelle Punctated, Keith Incised, St. Petersburg Incised, and Tucker Ridge Pinched represent eastern influences, and grog-tempered cognates of the Coles Creek-Troyville pottery culture including Coles Creek Incised, Mazique Incised, Hollyknowe Pinched, and Evansville Punctated signal western influence (Dumas 2008:167). Amidst this Weeden Island—Coles Creek—Troyville cultural interaction, Tates Hammock assemblages signal the Santa Rosa and Bayou La Batre cultures by frequencies of Basin Bayou Incised and Santa Rosa Punctated (Dumas 2008:167). Early in the Tates Hammock Phase, Weeden Island Incised occurs more frequently than Weeden Island Punctated. Another indicator of early Tates Hammock occupation is that incised and punctated types are more prevalent than check-stamped types (Blitz and Downs 2011:100).

Dumas (2008) recommends that the Tates Hammock Phase be divided into early and late subphases and that the early portion is contemporary with the Graveline Phase in coastal Mississippi. Types characteristic of the early subphase are Weeden Island Incised and, to a lesser degree, Weeden Island Punctated, Saltillo Fabric Marked, Indian Pass Incised and late varieties of Swift Creek Complicated Stamped. The late portion of the
Tates Hammock Phase is described by Dumas (2008) as noticeably devoid of pottery consistent with the Troyville culture, and that grog-tempered wares were in decline and replaced by sand-tempered Wakulla Check Stamped and Weeden Island Plain.

*Lower Mississippi Valley*

Two cultural systems were thought to be operating in the LMV during the post-Hopewellian Baytown Period (roughly 400-800 AD). Baytown culture was focused in the northern reaches of the LMV, and Troyville culture extended from north Louisiana southward into adjacent portion of the Mississippi Deltaic Plain (Weinstein 2005:21). Ceramic types associated with Baytown culture include Mulberry Creek Cord Marked, Alligator Incised, Salomon Brushed, and Larto Red. The Troyville Period (approximately 400-1050 AD) is overlapped by the previous Late Marksville Period; Marksville ceramic types continue to be produced during the Troyville Period. Marksville pottery types are recovered from Troyville Period context at the Marksville and Baptiste sites. At the Baptiste site, AV-25, later varieties of the Marksville series like *Troyville Stamped* recovered from Late Marksville and Troyville Period deposits are dated between 350 AD and 525 AD (McGimsey et al. 2000: 196). Troyville assemblages are differentiated by the presence of late Marksville varieties of Marksville Incised, Marksville Stamped, Churupa Punctated, and, to a lesser extent, Larto Red and Mulberry Creek Cord Marked.

The division of Troyville and Coles Creek cultures is hotly debated. For instance, McGimsey and Neuman argue that there is little to no difference in settlement, subsistence, or ceramics between Troyville and Coles Creek cultures in coastal Louisiana (McGimsey 1999:14, Neuman 1984:169). However, it is this author’s opinion that a division between Troyville and Coles Creek may be established by examining differences
in ceramic assemblages produced during each period. North of the Red River (in the northern portion of the LMV) the Coles Creek culture can be marked by the appearance of Coles Creek Incised varieties. In the southern portion of Louisiana, check stamping and a departure from designs consistent with Marksville—Troyville can signal the start of the Coles Creek Period and the end of Troyville (Gibson 1985:80).

As previously outlined in the “Middle Woodland” section, Marksville culture persisted much longer into the Late Woodland Period than projections made by Phillips (1970). Recent work in the LMV has found that Issaquena and Northern Plainware Phases demonstrate that Middle Woodland cultures were thriving well after the period of Hopewellian interaction ended (Kidder 2004:551, McGimsey et al. 2000:11, Neuman 1984:113). Unlike the broad u-shaped incisions typical of Marksville pottery, design implementation changes were now being executed with narrow and shallow incisions. The use of new type-varieties was required to accommodate these sherds—type-varieties other than Marksville Incised, *var. Yokena, var. Steele Bayou, var. Leist, var. Goose Lake*, and, *var. Spanish Fort*, and Marksville Stamped, *var. Godsey*, and, *var. Troyville*. This new scheme was based on an unpublished typological work by John Belmont (n.d.), as well as the chronological evaluation of Marksville varieties by McGimsey (2004). Although Belmont’s efforts were not published, they exist as a corpus of notes, tables, and figures that were compiled and presented by McGimsey as part of his report on the Troyville Period site, Goldmine Plantation (McGimsey 2004). Partial implementations of Belmont’s scheme are presented by Weinstein et al. (1995) in their analysis of the late Marksville component of the Rock Levee site in the northern Mississippi Delta and by Bitgood (1982) in the Tensas Basin of North Louisiana. The recognition that the character
of line incision changed over time was chief among Belmont’s innovations, that line character provided a way to delineate the progression of varieties of Marksville Incised, Marksville Stamped, Troyville Stamped, and Churupa Punctated (see Table 1) (McGimsey 2004: 312).

Table 1

*Belmont’s Line Character Schema*

<table>
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<tr>
<th></th>
<th>Early Issaquena</th>
<th>Late Issaquena</th>
<th>Early Troyville</th>
<th>Late Troyville</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line Characteristics</td>
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<td>Classic broad, deep in wet clay, messy</td>
<td>Medium broad, shallow</td>
<td>Narrow, shallow</td>
</tr>
<tr>
<td>Type, Design</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marksville Incised with Marksville motifs</td>
<td><em>Eagle Lake</em></td>
<td><em>Yokena</em></td>
<td><em>Anglim</em></td>
<td><em>Vick</em></td>
</tr>
<tr>
<td>Marksville Incised with Steel Bayou design</td>
<td><em>Hays Landing</em></td>
<td><em>Steele Bayou</em></td>
<td><em>Scott</em></td>
<td><em>Dunbar</em></td>
</tr>
<tr>
<td>“Indian Pass” design</td>
<td></td>
<td></td>
<td><em>Liddieville</em></td>
<td><em>Liddieville</em></td>
</tr>
</tbody>
</table>
Table 1 (continued).

<table>
<thead>
<tr>
<th>Churupa Punctated</th>
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<th>Churupa</th>
<th>Thornton</th>
<th>Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marksville Stamped</td>
<td>Newsome</td>
<td>Manny</td>
<td>Cummins</td>
<td></td>
</tr>
<tr>
<td>Troyville Stamped</td>
<td>Poindexter</td>
<td>Troyville</td>
<td>Elm Ridge</td>
<td>Bayou Rouge</td>
</tr>
</tbody>
</table>

Northwest Florida

During the Late Woodland Period, Weeden Island cultures were located along the panhandle of Florida and adjacent portions of Georgia and Alabama. The Weeden Island Period (200-1000/1200 AD) is subdivided into Weeden Island I (200-750 AD) and Weeden Island II (750-1200 AD) (Milanich et al. 1984:163,164). The distinction between Weeden Island I and II is that Weeden Island I more resembles Swift Creek culture than Weeden Island II, and the production of check-stamped pottery dramatically increased at the onset of Weeden Island II. Additionally, Weeden Island I types encompassed a wider range of exotic forms and styles when compared to Weeden Island II ceramics (Milanich et al. 1984:164,165, Willey 1949:407).

Weeden Island I Period settlement pattern in northwest Florida resembles that of the preceding Swift Creek Period, and it is believed that Weeden Island I ceramics evolved from Swift Creek ceramics (Milanich et al. 1984:166, Willey 1949:563-565). Weeden Island I ceramic types include Weeden Island Plain, Weeden Island Punctated, Weeden Island Zoned Red, Weeden Island Incised, Carrabelle Punctated, and Carrabelle
Incised. Weeden Island I series decoration techniques predominantly utilize punctuations and incisions. However, a light red pigment was often used to fill incised zones; sometimes the entire vessel is adorned in a red slip (Willey 1949:407). Weeden Island II ceramic types include Weeden Island Incised and Weeden Island Punctated, but the primary marker of a Weeden Island II assemblage is a high frequency of check-stamped pottery, known as Wakulla Check Stamped.

Later Late Woodland Period (800-1200 AD)

Mississippi Coast

Tates Hammock Phase (800-1200 AD) follows the Graveline Phase and corresponds with the Terminal Woodland Period. Decorative techniques include check stamping and cord mark treatments (Blitz and Mann 2000:45). Ceramic diversity dramatically increases; grog-tempered Coastal Coles Creek series represents a pan-regional fusion of the South Appalachian Check Stamped pottery tradition into the Gulf tradition (Blitz and Mann 2000:99). This cultural fusion is marked by a check-stamped pottery horizon that encompassed peoples living along the Gulf Coast between the LMV and Northeast Florida (Milanich et al. 1997:187). Three major ceramic series were present on the Mississippi Gulf Coast: the Coastal Coles Creek series, Miller series, and Weeden Island series. The Coles Creek series is composed of grog-tempered pottery including Pontchartrain Check Stamped and Coles Creek Incised. The Miller series is expressed by ceramic types, including Mulberry Creek Cord Marked and Furrs Cord Marked. Miller influence would have been lost on the Mississippi Sound by 1100 AD. This date is consistent with the ending of the Miller III Phase for the Tombigbee River (Jenkins 1981:22-29). Weeden Island series ceramics recovered along the Mississippi
coast signaling Tates Hammock Phase include Weeden Island Punctated, Wakulla Check Stamped, and Carrabelle Incised (Blitz and Mann 2000:45).

**Mobile Bay**

In the Mobile Bay region, the occurrence of Coden Phase (850-1100 AD) coincides with the Tates Hammock Phase (800-1200 AD) designation for the Mississippi Coast. Following and partially overlapping the Coden Phase are the Tensaw Lake (850-1100/1200 AD) and McLeod Phases (400-1100/1200 AD) (Fuller 1998:16-21). The Weeden Island variant was the most influential culture in Mobile Bay during the Late Woodland Period, and is distinguished by high frequencies of Wakulla Check Stamped and plain, fine to medium sand-tempered vessels (Dumas 2008:166,170). Furrs Cord Marked, as well as simple stamping and brushing, represent minority types in Coden Phase assemblages (Dumas 2008:170). The major difference between the Mobile Bay region’s Tates Hammock and Coden Phases is that Coles Creek types drop in frequency during the Coden Phase and the Weeden Island types, such as Wakulla Check Stamped, increase (Dumas 2008:170).

Between 700 AD and 800 AD, a geographical expansion of Weeden Island settlements coincides with the transition from Weeden Island I to the Weeden Island II Period (Milanich et al. 1997). The Weeden Island II Period is characterized as a time of increased Weeden Island influence. North of Mobile Bay (toward the lower Tombigbee and Alabama River region) pottery types reflect more influence from the Miller or Baytown cultures than from Weeden Island or Troyville cultures (Dumas 1999, Fuller and Brown 1998:148). Toward the end of the Late Woodland Period in Mobile Bay, Pontchartrain Check Stamped, Hubbard Check Stamped, McLeod Check Stamped,
Mulberry Creek Cord Marked, and Wakulla Check-stamped pottery types mark the Late Coden Phase, Tensaw Lake Phase, and McLeod Phase occupations. The form and size of pots recovered in Late Woodland Period McLeod deposits from the lower Tombigbee River indicate that open bowls and restricted bowls were the most prevalent vessel forms (Dumas 1999:118). Late manifestations of the McLeod and Tensaw Lake Phases, the Claiborne complex, and the Wakulla Weeden Island complex designate the material product of people living in the Mobile Basin who selectively participated in Mississippi culture adaptations. Fuller (1985) identifies McLeod and Tensaw Lake Phases as time intervals during which Mobile Basin groups resisted Mississippi adaptation (Fuller 1984). The Claiborne complex is a designation defined by Craig Sheldon (1984) to account for concentrations of Late Woodland components in the Lower Alabama Valley. Commonality between ceramic assemblages produced by Later Late Woodland or Terminal Woodland groups in the Mobile Basin and the Mississippi Gulf Coast is high frequency of check-stamped and cord marked pottery.

*Lower Mississippi Valley*

In the Lower Mississippi Valley during the latter half of the late Woodland Period, Troyville culture is replaced by Coles Creek (800-1200 AD) culture. This transition is characterized by an increase of check stamping and a decrease of Marksville-like designs (McGimsey 2000:12) in coastal Louisiana. North of the Red River, the occurrence of multiple, overhanging lines, and rim incising are defining traits of the onset of the Coles Creek Period. Ceramics with multiple, overhanging lines or rim incising are sorted as Coles Creek Incised. In the southern portion of the LMV (south of the Red River) check-stamped pottery classified as Pontchartrain Check Stamped is the primary ceramic type
signaling the beginning of the Coles Creek Period (Gibson 1985:80). Ceramic markers designating the Baytown series include Baytown Plain and Mulberry Creek Cord Marked, whereas Alligator Incised and Larto Red are pottery types of the Baytown culture and Troyville coeval (Phillips 1970, Weinstein 2005:22). Ceramic types distinguishing the Coles Creek series are Baytown Plain, Pontchartrain Check Stamped, Coles Creek Incised, French Fork Incised, Evansville Punctated, and Mazique Incised. Coles Creek ceramics, such as French Fork Incised, have a striking similarity to Weeden Island ceramics produced in Northwest Florida. Both are typified by incised, stamped, and punctated pottery types in which the decorative zone is largely restricted to decorative bands around the vessel shoulder and neck (Weinstein 2005:23).

Mississippi Period (1200-1550 AD)

*Mississippi Coast*

On the Mississippi Coast, emergence of the Mississippi Period occurred during the Pinola Phase (1200-1350 AD). The beginning of this phase is marked by the initial utilization of shell and/or shell with grog as tempering agents. This pottery is thought to mark a fusion of the Gulf and Middle Mississippian traditions (Blitz and Mann 2000:99). Artifact assemblages produced from past excavations of the Mississippi Sound reflect a considerable amount of exchange between neighboring groups. Designated ceramic types for this phase include Moundville Incised, D’Olive Incised, Medora Incised, Carter Engraved, Coles Creek Incised, Evansville Punctated, Mazique Incised, Barton Incised, Mobile Cord Marked, and Mulberry Creek Cord Marked (Jackson et al. 2012:19).

The Singing River Phase (1350-1550 AD) is a local Mississippi Coast expression of the Pensacola culture (Blitz and Mann 2000:99). Pensacola Incised, Incised, Owens
Punctated, Mound Place Incised, and late varieties of the Moundville series are all considered markers of the Singing River Phase. Dominant modes during the Singing River Phase include handles, lip nicks and notches, effigy rim treatments, shell-grog temper, coarse shell temper, and fine shell-tempered Bell Plain wares. Depiction of skulls, bones, and hand and eye motifs are decorative schemes incorporated into coastal Mississippi pottery from the Southeastern Ceremonial Complex (Jackson et al. 2012:20).

**Mobile Bay**

Emergence of Mississippian culture in the Mobile Bay region, which began around 1100 AD, is designated the Andrews Place Phase (1100-1250 AD) (Dumas 2008:174). Chronological positioning of the Andrews Place Phase corresponds with the end of the Tates Hammock Phase (800-1200 AD) and beginning of the Pinola Phase (1200-1350 AD) on the Mississippi Coast. Pottery types associated with the Moundville I Phase (1050-1250 AD) are the primary identifier of Andrew Place Phase assemblages. Types such as Carthage Incised, Moundville Incised, Moundville Engraved, and low frequency of Wakulla Check Stamped and traditional Late Coles Creek types are markers of the Andrew Place Phase. Vessels common during the Andrews Place Phase are Mississippi Plain jars with peaked loop handles and plain bowls.

The Bottle Creek I Phase (1200/1250-1350/1400 AD) designates the Middle Mississippi Period in the Mobile Basin region. The Pensacola Mississippian culture was well established in Southwest Alabama during the Bottle Creek Phase (Fuller 1985:12). The Bottle Creek site (1BA2) was the principal political and ceremonial center for the Pensacola variant and was occupied as early as 1150 AD by Mississippian people who probably affiliated with Moundville culture (Fuller and Brown 1998:55). Ceramics
recovered from Bottle Creek indicate that common vessel forms include the jar, bowl, plate, bottle, and saltpan. Graveline Plain, *var. Aiken*, and Guillory Plain, *var. Briar Lake*, are plain ware types diagnostic of Bottle Creek I occupation (Fuller and Brown 1998:35). Vessel forms produced during the Bottle Creek I Phase include Mississippian Plain bowls and vessels with peaked loop handles on jars (Fuller and Brown 1998:145). The Late Mississippi Period (1350/1400-1550 AD) is designated the Bottle Creek II Phase in the Mobile-Tensaw Basin, Lower Alabama River, Lower Tombigbee, and the Alabama Coast. Bottle Creek II Phase is an expression of Pensacola culture and marked by the Middle Mississippian pottery tradition (Fuller and Brown 1998:145). Along the Mississippi Coast, the Bottle Creek I Phase is roughly contemporary with the Pinola Phase, and the Bottle Creek II Phase is contemporary with the Singing River Phase.

*Lower Mississippi Valley*

New ceramic styles and technology, increased reliance on agriculture, and an increase in the size and number of mounds and mound groups characterize the Mississippi Periods in the LMV (Bense 1994:184,195, Kidder 2004:555). In the LMV the Early Mississippi Period incorporates Late Coles Creek culture, the Middle Mississippi Period designates Plaquemine, and the Natchez series designates the Late Mississippi Period. Plaquemine culture (1200-1500 AD) is viewed as an indigenous outgrowth of Coles Creek culture (800-1100/1200 AD) distributed south from the lower Yazoo Basin to coastal Louisiana (Bense 1994:195). On the Louisiana coast the Plaquemine period is divided into three phases: Medora, Barataria, and Burk Hill (Weinstein 1985:93). Ceramics indicative of the Medora Phase are Addis Plain, Plaquemine Brushed, L’Eau Noire Incised, Australia Incised, Evangeline Incised, and Coles Creek Incised, *var.*
Types signaling the Barataria Phase include Anna Incised, Mazique Incised, Plaquemine Brushed, L’Eau Noire Incised, Carter Engraved, and a shell-tempered type labeled as Maddox Engraved. The final Plaquemine Phase is the Burk Hill Phase; ceramic types signaling this phase are Anna Incised, Carter Engraved, Fatherland Incised, and two shell-tempered types classified as Leland Incised and Maddox Engraved (Weinstein 1985:96). Following Plaquemine is the final stage before the New and Old Worlds collide. People living in the LMV during this time were incorporated into the Natchez variant (Bense 1994). During the end of the Mississippi Period chiefdom level social organization was failing due in part to turbulence caused by European contact, but land misuse, drought, and loss of centralized control within complex chiefdoms also factored into the fall of Mississippian culture.

Proto-Historic (1550-1699 AD)

Mississippi Coast

Post-1550 is considered the Proto-Historic Period. After New World/Old World contact, the Mississippi Sound entered what is known as the Bear Point Phase (1550-1700 AD). Ceramics characteristic of this phase are Pensacola Incised and D’Olive Incised (Jackson et al. 2012:20). This phase lasted from 1550 until 1700 AD—at which point late varieties of the historic La Point Phase appear. Knowledge concerning this phase in the region is limited (Blitz and Mann 2000:100).

The time span represented by the La Point Phase started in 1700 AD and ended by 1775 AD. This phase is characterized by French colonialism and changes in vessels. European steel pots largely replaced coarse shell temper pottery and there was a reduction in decoration variability (Fuller 1998:33-35). The La Point Phase is signaled by the
appearance of the Gulf Historic Fineware tradition manifesting on the Mississippi Coast as Natchezan-Chocotawan series ceramics. Markers of this phase are Port Dolphin Incised, Chickachae Incised, Fatherland Incised, *var. Fatherland*, Owens Punctated, *var. Muir*, Chickachae Combed, La Point Combed, and Kemper Combed (Fuller 1998:35). This phase marks the first time in 3300 years that the regional occupancy experienced a decline, which is undoubtedly related to European contact (Fuller 1998:35).

**Mobile Bay**


The Mississippi Coast’s La Point designation is contemporaneous with the Port Dauphine Phase (1700-1750 AD) assigned to Mobile Bay. Ceramics signaling this phase include varieties of Port Dauphine Incised. The curvilinear decoration characteristics of these vessels were foreshadowed by the decoration style of Pensacola types. Plain wares utilized during this phase include Mississippi Plain, Bell Plain, *var. Ft. Conde*, and Graveline Plain, *var. Graveline* (Dumas 2008:189,193, Fuller and Brown 1998:35).

**Cultural Adaptations**

Throughout time prehistoric people who lived along the Mississippi Gulf Coast produced material evidencing affiliation with populations located east, west, and north of the study area. Direction and intensity of external influence fluctuated between phases. At
various points in time different longstanding ceramic traditions with equally broad horizons incorporated Mississippi Coastal populations. These prehistoric ceramic traditions were distinguished by Blitz and Mann (2000), Caldwell (1958), Fuller (1998) as the Formative Gulf/Circum-East Tradition, Gulf, South Appalachian, Northern, and Middle Mississippi. The ceramic complexes subsumed within these traditions are related to one another in the way of ceramic series, also known as variants. Ceramic series commonly recovered from the Mississippi Coast are linked together through time and space by a set of longstanding decorative ideas and style defined here as tradition (Blitz and Mann 2000:117). The Formative Gulf/Circum-East Traditions are both temporal constructs designed to account for early ceramic producing cultures that preceded and lead to the formation of the Gulf tradition. Fuller (1998) used the Circum-East Tradition as a progenitor of the later Gulf tradition that incorporates Bayou La Batre, Tchefuncte, Alexander, and other Early Woodland/Gulf Formational series that bordered the eastern United States from about 800 BC to 200 BC (Fuller 1998:9). Since ceramics included within the Circum-East tradition are confined to post-800 BC, it is worth noting that the Formative Gulf preceded the Circum-East Tradition, indicated by the inclusion of fiber tempered Wheeler series, St. Johns, and other early variants.

Ceramic series or variants/cultures frequently represented in the Grand Bay assemblages have evolved from four main variants: Bayou La Batre, Tchefuncte, Alexander, and Deptford. Bayou La Batre, Tchefuncte, and Alexander were indigenous developments beginning by 800 BC in response to an east-west exchange of plain and punctated fiber tempered and temperless pottery (St. Johns and Wheeler series) facilitated by the Poverty Point exchange system (Blitz and Mann 2000:23). Deptford series has a
large horizon and is evidenced to have developed in north Florida out of the Norwood series. Unlike the St. Johns series, the Norwood series did not participate in the Poverty Point exchange system.

Tchefuncte ceramic series is a variant most prevalent west of the Mississippi Sound in the LMV. At the onset of the Middle Woodland, Tchefuncte is believed to have developed into the Marksville ceramic series. The Marksville ceramics series can be divided into two time periods. Early Marksville is typified by interaction with Hopewellian communities, and late Marksville is characterized as a time in which local populations followed their own trajectories. Late Marksville is typified by the late Issaquena series continuum. The Marksville Issaquena continuum horizon covered the northern Gulf Coast, during which time the Troyville ceramic series developed. Troyville assemblages consist of late Marksville Issaquena types and new decorated grog-tempered types like Churupa Punctated or French Fork Incised, which have cognate sand-tempered types associated with eastern origins. Concurrent with the Troyville Period is the Baytown Period, characterized by grog-tempered types like Mulberry Creek Cord Marked, Alligator Incised, Salomon Brushed, and Larto Red. During this time, nearly the entire northern Gulf Coast was participating in a painted pottery trade network coined by Belmont and Williams (1981) as the Quafalorma horizon. Coles Creek ceramic series developed from the preceding Marksville, Troyville, and Baytown series. Coles Creek assemblages are dominated by check-stamped pottery. The Coles Creek series is believed to have developed directly into the Plaquemine series.

Bayou La Batre is a ceramic series indigenous to the Mobile Bay region. The Santa Rosa series is an evolution of the Bayou La Batre series first appearing at the onset
of the Middle Woodland. The Alexander series is thought to have influenced the adoption of the Santa Rosa variant. Ceramic types indicative of the Bayou La Batre variant are concurrent with the Santa Rosa series. During the Middle Woodland as a reaction to eastward Swift Creek influences the Santa Rosa-Swift Creek series developed. Santa Rosa and Bayou La Batre culture persisted into the Late Woodland, evidenced by the recovery of Basin Bayou Incised in the Mobile Bay region’s Tates Hammock Phase.

The Deptford ceramic series designates a large time interval during which peoples lived on shell middens and exploited littoral and terrestrial resources. The Swift Creek variant is believed to have evolved from the Deptford ceramic series. The Swift Creek ceramic series gave way to the Weeden Island culture. Unlike its predecessors, the Weeden Island ceramic series is associated with mound building; evidence at Kolomoki mound site indicates mound building as early as 300 AD. Weeden Island can be divided into Weeden Island I and Weeden Island II; Weeden Island I is typified by ornate designs and Weeden Island II is characterized by check-stamped Wakulla Pottery. Weeden Island, then, more than likely had involvement in the manifestation of the Pensacola variant of Mississippian culture.

The Mississippi Coast is at the center of all aforementioned cultural developments. At times eastern affiliated series are better represented, at other times western or northern affiliated series are more common, or all three may be present in the same assemblage. Pottery analyzed in this study reflects this constant give and take between neighboring regions and the various trade networks operating throughout prehistory.
CHAPTER III
SITE BACKGROUNDS

Data compiled in this thesis were collected from ceramic assemblages from three sites in the Grand Bay Estuary. These sites are the Ford site (22JA564), Kenny’s Island (22JA633), and Crooked Bayou (22JA575). Each site is a shell midden produced by Native American occupations.

Ford Site (22JA564)

The Ford Site is located on the bank of Bayou Heron. This site is a shallow earth and shell deposit 60 by 20 meters in extent. The site was recorded in 1973 by an avocational archaeologist and was originally known as Betty’s Site (Blitz and Mann 2000:177). During the 2010-2012 Grand Bay study, the site name was changed to the Ford Site to acknowledge the cooperation of the current property owner (Jackson et al. 2012:31). Of the sites in the current study, the Ford Site is closest in proximity to the mainland coast and the nearest to the Mobile Bay region. The Ford Site is surrounded by grass beds and expanses of salt marsh, which provide relief from various natural transformational processes such as storm surges, wave action, and erosion. A sizeable salt pan is located approximately 20 meters east of the site’s tree line (Jackson et al. 2012:32). The site has considerable groundcover consisting of palmettos, yaupon, wire grass, and Devil’s Walking stick. A low canopy comprising cedar trees, scrub oaks, and live oaks provide overhead cover of the site.

The Ford Site has been visited and examined by several archaeologists. In Prehistoric Human Remains Recovered on the Mississippi Gulf Coast: A Bioarchaeological Analysis, Marie Danforth (2013) identifies all known pre-historic
burials along the Mississippi Coast. Danforth’s report notes that the site was surveyed in 1983 by Noel R. Stowe, during which an unknown number of Woodland Period burials were encountered. Following Hurricane Katrina, Coastal Environments, Inc. launched a FEMA funded project to account for disturbance caused by the hurricane, which included archaeological surveys of sites along the Mississippi Gulf Coast. The field portion of the project was completed between March 2006 and July 2007 by Tony Boudreaux, Kelsie Lowe, and Michael Fedoroff. Boudreaux’s group visited 314 sites, one of which was the Ford Site 22-JA-564 (Boudreaux 2009). Finally, in 2008 and 2010, H. Edwin Jackson visited the site prior to the crew entering the field; he did not collect any artifacts, as his excursions served the purpose of field reconnaissance.

Testing of the Ford Site indicated that wave action caused by storms and boat wakes, as well as the constant ebb and flow of the bayou’s tide had eroded away an unknown portion of the shell midden. The remaining shell midden is thickest in the western portion of the site near the bayou bank and thins as it extends eastward away from Bayou Heron. Subsurface testing of the Ford site revealed stratified deposits. A humus layer of varying thickness overlays a shell deposit, which ranges from 25 to 60 cm thick. Sixteen shovel test pits (STPs) were dug, three 1-x-1 m test units (TUs) were excavated, and one test unit (N491 E494) was extended 50 cm northward in order to completely excavate a feature (Jackson et al. 2012:32).

Calibrated radiocarbon dates evidence Middle Woodland (100 BC-550 AD), Early Late Woodland (550-800 AD), and Mississippian Period (1200-1550 AD) occupation, as well as occupation during the era of European colonization (1699-1775 AD). Ceramics recovered from the site indicate occupation as early as the Late Gulf
Formational Period and as late as the Mississippian Period. Local Mississippi Coast Phases designated by ceramics present in the assemblage include the Apple Street Phase (800-100 BC), Godsey Phase (250-550 AD), Graveline Phase (550-800 AD), Tates Hammock Phase (800-1200 AD), Singing River Phase (1350-1550 AD), and La Point Phase (1699-1775 AD).

Kenny’s Island (22JA633)

Kenny’s Island, 22JA633, is a long linear shell and earth midden running east-west on the bank of Bayou Cumbest. The shell midden is approximately 175 meters long and less than a third that distance in width. Kenny’s Island is situated on a remnant of a natural levee formed by the prior course of the Escatawba River. The landform on which Kenny’s Island is set continues northeast 500 meters past the shell deposit. Of the sites that were selected for subsurface testing, Kenny’s Island is the highest in elevation. The location of Kenny’s Island affords the shell midden a reasonable amount of protection from natural transformational processes and affords the possibility to recover the earliest known deposits in the Grand Bay area (Jackson et al. 2012:50).

Kenny’s Island was surveyed prior to the field work that was undertaken in the summer of 2010. In November, 1983 a cultural resource survey was performed by U.S. Army Corps of Engineers (USACE) personnel of the Bayou Cumbest Navigation Project in Jackson County, Mississippi. A report detailing this survey was sent to the Mississippi State Historic Preservation Officer. In this report, 22JA633 was described as a shell midden on the northern bank of Bayou Cumbest. The site and two additional archaeological sites included in the survey were recommended to be avoided during the dredging and deposition of soil (Mann 1996:1). A large surface collection from the site is
curated by the USACE in Mobile. The site card notes the presence of Gulf Formational, Middle Woodland, Late Woodland, and Mississippian components based on ceramics (Boudreaux 2009:175). The only subsurface testing of Kenny’s Island was conducted by Baxter Mann in 1996. Artifacts collected by Mann indicate occupation of the site during the Late Gulf Formational, early Late Woodland, Terminal Woodland, Mississippian, and the Proto-Historic Periods (Mann 1996:16). The site was included by John Blitz and Baxter Mann in their archaeological report published in 2000 by Mississippi Department of Archives and History (Blitz and Mann 2000, Jackson et al. 2012:50). Kenny’s Island was also investigated during the post-Katrina archaeological survey conducted by Coastal Environments Inc. (CEI). The main purpose of the post-Katrina site evaluation was to grade the effects of erosion, collect exposed artifacts, and record general site condition. No sub-surface excavations were undertaken at Kenny’s Island by Boudreaux during the 2006 and 2007 field work.

The 2010 excavation of the site consisted of 25 STPs and 5 1-x-1 meter TUs. Test unit N492E550 was expanded a meter south to delineate Feature 1 (Jackson et al. 2012:52). Excavation revealed stratified deposits of humus, shell, earth, and cultural material. The shell midden was covered with a hummus layer that is underlined by shell deposits, which varied in thickness across the site. The shell deposits were approximately 13 cm thick in the northern portion of the site and were recorded in TU N491E563 to be 45 cm thick (Jackson et al. 2012:58).

Calibrated radiocarbon dates evidence occupation of this site during the Middle Woodland Period (100 BC-550 AD), Mississippian Period (1200-1550 AD), and Proto-Historic Period (1550-1699 AD). Ceramics recovered from the site indicate that initial
occupation occurred during the Apple Street Phase (800-100 BC). The site was occupied again during the Godsey Phase (250-550 AD), Tates Hammock Phase (800-1200 AD), Pinola Phase (1200-1350 AD), and Singing River Phase (1350-1550 AD).

Crooked Bayou (22JA575)

Crooked Bayou site is located on the bank of Crooked Bayou at the confluence of the North Rigolets and Crooked Bayou. The site is a linear crescent moon-shaped shell midden. Among the sites tested, Crooked Bayou is the least protected from wave action and storms. The site has a small amount of ground cover that consists of several small scrub oaks, yaupon, and some wire grass.

Baxter Mann surveyed the site for the U.S. Fish and Wildlife Service (Mann 1996). He conducted auger tests and mapped the site. His efforts produced a variety of pottery, including Baytown Plain, Mulberry Creek Cord Marked, Cracker Road Incised, Pensacola Incised, var. Gasque and var. Perdido Bay, and Weeden Island Plain (Mann 1996:6). Mann determined that the site was a secondary deposit. However, auger testing alone may not provide sufficient data to support his theory (Jackson et al. 2012:42, Mann 1996:7). Between March 2006 and July 2007, Boudreaux, Lowe, and Fedoroff visited Crooked Bayou to evaluate the site’s condition following Hurricane Katrina. Boudreaux (2009) believed that archaeological deposits may be intact but that 22JA575 should be tested to determine its eligibility for the NRHP.

Out of the three shell middens chosen for testing, Crooked Bayou was the most difficult to excavate because the shell was very compact. Nine STPs were excavated across the shell midden in order to determine the area of the site with the most intact deposits. Based on the artifact frequencies and water table data produced from the STPs,
two 1-x-1 m units were excavated—one in each area determined to hold the greatest likelihood of having intact deposits (Jackson et al. 2012:44). Of the three sites, Crooked Bayou has the deepest shell deposit recorded in TU N495 E478 to be at least 150 cm thick. Three strata were recorded from TU N495E478 and two strata were recorded from TU N505E506. The deposit is composed almost entirely of shell; strata were delineated mainly by differences in the state of the shells. The first stratum consists of a very dense and hard packed mantle composed of shell hash (Jackson et al. 2012:48), while the second stratum was very deep and was distinguished by significantly greater numbers of whole shell. Reaching the full extent of the third stratum was accomplished by auger in TU N495E478 (Jackson et al. 2012:44-48). Unfortunately, the rise and fall of the water table obscured the TUs profile wall. The combination of the water damage and auger made deciphering lower stratum levels of both TUs difficult.

Calibrated radiocarbon dates evidence occupation during the Mississippian Period (1200-1550 AD) and Proto-Historic Period (1550-1699 AD). Ceramic types recovered from the site indicate occupation during the Tates Hammock Phase (800-1200 AD), Pinola Phase (1200-1350 AD), Singing River Phase (1350-1550 AD), and Bear Point Phase (1550-1699 AD).

Ceramic Sample

Some 3,895 sherds weighing 13,766.54 g constitute the Grand Bay Assemblages. However, 1,380 of these sherds are designated as sherdlets because they lack distinctiveness and were smaller than ½ in. The remaining 2,515 sherds are deemed fit for analyses and are considered in this study. One thousand ninety-four of these sherds weighing 5,165.34 g constitute the ceramic assemblage of the Ford site (22JA564). Four
hundred thirty sherds weighing 2,630.28 g constitute the ceramic assemblage of Crooked Bayou (22JA575). Nine hundred ninety-one sherds weighing 4,845.00 g constitute the ceramic assemblage of Kenny’s Island (22JA633). Differences in counts tabulated for ceramics in this study versus the Grand Bay Report (Jackson and Huey 2012) reflect the discovery of a number of sherds that could be fitted together and thus counted as one; the refits had not been recognized during the initial sorting of the assemblage. Total counts are tabulated below in Table 2.

Table 2

Total Ceramic Assemblage

<table>
<thead>
<tr>
<th>Site</th>
<th>Analyzed Sherds (N)</th>
<th>Sherds less than 1.25 cm. (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>22JA564</td>
<td>1094</td>
<td>369</td>
</tr>
<tr>
<td>22JA575</td>
<td>431</td>
<td>304</td>
</tr>
<tr>
<td>22JA633</td>
<td>990</td>
<td>707</td>
</tr>
</tbody>
</table>

It is from these sherds that site activity is inferred. Methods used to analyze these pottery fragments aim to understand what role the artifact had in the formation of the site. From this perspective, site formational process involving pottery may be illuminated, lending to a greater understanding of prehistoric Native American life-ways. By analyzing decorative aspects of these assemblages Coastal Mississippi ceramic complexes may be recognized and interaction with neighboring groups may be inferred.
CHAPTER IV

METHODS

The following five variables were evaluated in this study: decoration, including other formal properties (Blitz and Downs 2011, Blitz and Mann 2000, Dumas 2008, Fuller and Brown 1998, Jackson et al. 2012, Willey 1949, Wimberly 1960); vessel form (Fuller and Brown 1998, Gomberg and Hunt 2012, Willey 1949, Wimberly 1960); vessel orifice diameter (Plog 1985, Rice 1987, Sims 1997); temper kind, including particle sizes (Johnson 2003, Steponaitis 1983); and sherd thickness (Rice 1987, Sims 1997). These five variables were chosen in order to tease apart differences in decoration, size, shape, and overall functionality of ceramic vessels brought to and used along the eastern Mississippi Gulf Coast. These variables provide data needed to determine what cultural systems operated within the study area, what activities were performed at each site, how sites compare to one another during each period, and how each period compares to the next.

Formal Typological Classifications

Pottery classification of the Grand Bay assemblages follows the type-variety system. This system was developed during the mid-20th century for creating, describing, and naming widely comparable historical-index classificatory units. At the base of the classification system employed in this study and in Southeast archaeology are a number of sources including Phillips, Ford, and Griffin’s (1951) “Archaeological Survey in the Lower Mississippi Alluvial Valley, 1940-1947,” Phillips’ (1970) “Archaeological Survey in the Lower Yazoo Basin, Mississippi, 1949-1955,” Wimberly’s (1960) “Indian Pottery from Clarke, Mobile Counties,” and Willey’s (1949) “Archaeology of the Florida Gulf
Coast.” These works encompass the geographical extent of cultures that are found along the Mississippi Gulf Coast. Since the publication of these works, several key studies have been conducted in South Mississippi and the adjacent Mobile Bay and LMV regions that have resulted in amendments to established chronologies, as well as the development of local sequences previously subsumed within a broad overarching regional sequence. In order to account for data produced from recent studies and to understand the local Mississippi coastal chronological sequence, the work of Jenkins (1981), Sims (1997), Fuller and Brown (1998), Blitz and Mann (2000), McGimsey (2000, 2004), Fields (2005), Dumas (1999, 2008, 2009), and Blitz and Downs (2011) are referenced.

The type-variety scheme applied in this research is a hierarchical system of classification in which varieties are the smallest unit recognized and are subsumed within types (Rice 1987:283). A vessel type is classified by grouping vessels together on the basis of similar features. A single example is illustrated, which then serves as a representative of all other types (Orton et al. 1993:153). Ceramic types are cultural and historical markers whose dimensions reflect social norms to which the potters were subject. Varieties are apt to reflect “individual and small social group variation,” while the type portrays a combination of a number of pottery traits that were influential not only to the potter but to most others adhering to a given cultural pattern (Gifford 1960:343). Regional cultural sequences are then developed through the analysis of ceramic decoration. Pottery in this study is assembled to cultural phases defined by Blitz and Mann (2000) and Blitz and Downs (2011). Decorated ceramics identified at the three tested sites are described below and are organized, if applicable, by the phase during which they first appeared and the ceramic series to which they belong.
Vessel Form

Native American potters maximized the functional efficiency of their pottery by manufacturing a number of vessel types with different performance characteristics and each with a limited range of uses (Hally 1986:268). As a result, vessel form and function variation is low within a type. Rims analyzed in this study were able to be grouped into vessel shape classes based on similarities in vessel form. Understanding basic vessel function through analysis of vessel form is straightforward. For example, vessels with large, open orifices, thick walls, and/or coarser temper particles are assumed to have been used for cooking, while bottle or vase designs were utilized to transport liquids, jars were employed for storage or cooking, and shallow open orifice vessels used for serving (Rice 1987:210). Several aspects of vessel form reflect mechanical performance characteristics inherent to the vessel. Rim morphology affects, removal of vessel contents, vessel content spilling, and orifice closure. Vessel body shape affects vessel stability, effective vessel capacity, space utilizations, and, to an extent, manipulation of vessel contents (Hally 1986:278-280).

Vessel shape classifications for this assemblage are defined by lip treatment, rim form and modification, geometric shape, and orifice diameter in relationship to vessel midpoint and height. The actual size of the sherd is not as important as the size of the sherd relative to the size and shape of the vessel. Some shapes can be reconstructed from remarkably small sherds; others require the pot. Bowls are generally easier to reconstruct than jars, and jars are generally easier to reconstruct than beakers (Phillips 1970:758). It is possible that beakers are underrepresented in this study, primarily because only a small
portion of the rim was available for analysis in many cases, which could result in beaker rims being graded into the open bowl or jar classifications.

Vessel form is inferred through the examination of the curvature and angle of a rim sherd (Dumas 1999:117). Examination of rim curvature and angle is best accomplished by finding the sherd’s rim stance—what Knight refers to as “resting posture”—by placing the rim upside down on a flat surface and rotating the sherd inward or outward on its lip until no space is visible between the lip and flat plain (Dumas 1999, Gomberg and Hunt 2012:1, Plog 1985, Rice 1987). By gauging the degree and direction of curvature of a rim when held against a horizontal axis, rims can be sorted into one of six vessel shape classes: jars, open bowls, restricted bowls, flattened globular bowls, collared globular bowls, and carinated bowls (Dumas 1999:116-117, Willey 1949:496-502). Each of these forms can function in four broad realms—namely storage, processing, serving, and transfer or transport (Rice 1987:208). If the orifice diameter is greater than or equal to the vessel’s maximum diameter, then the rim sherd is classified as having an unrestricted orifice; if maximum diameter occurs below the orifice the vessel is considered restricted (Dumas 1999:117, Rice 1987:212). Considered research holds that orifice diameter provides data relating to vessel size and shape and, in some cases, inferred function (Rice 1987:222). Vessels whose primary purpose is storage or transport tend to have a narrow orifice diameter that would inhibit spills and allow the container to be covered. A vessel whose primary purpose is serving food would have a wide unrestricted orifice which would allow contents of the container to be accessed. One hundred thirteen rim sherds were able to be sorted into a vessel shape class.
Rims are the main portion of this assemblage considered for form and functional analysis. However, base sherds hold information relating to vessel function. Because of this, base sherds recovered from 22JA564 and 22JA633 are included in the functional analysis of pottery assembled in this study. Five bases were collected from the sites tested, three bases were collected from 22JA633, and two bases were recovered from 22JA564. Six attributes of these base sherds are recorded and scored, including temper, thickness, sooting, pitting, oxidation discoloration, surface texture, and the presence or absence of podal supports. Each base is sorted into one of the established temper groups, thickness measurements were recorded using digital calibers, while sooting, pitting, oxidation, discoloration, and surface texture were recorded through observation. Temper and thickness estimation may correlate the base to either a cooking or serving related function. Sooting, pitting, oxidation discoloration and surface texture may indicate post-production thermal alteration or wear related to either serving or utilitarian activities. Presence and/or absence of podal supports can relate either temporality of the sherd or functional aspects of the base sherd.

Illustrations of rim profiles are generated using a method utilized by Knight at the University of Alabama on an assemblage from Cuba (Gomberg and Hunt 2012). Step one requires a rim sherd with at least 2.5 cm of measurable surface; the rim’s shape and lip type is recorded, and the sherd is assigned an identification number. This allows the sherd to then be identified by listing site number followed by the catalog number, followed by the rim identification number. The next step entails gauging the angle relative to its location on the vessel by holding the sherd on a horizontal surface and articulating it as it would have been as part of a vessel. Proper stance is assumed to be the angle at which the
lip makes maximum contact with the horizontal surface, as would be the case if a whole vessel has been turned upside down and placed on a table. A photo of the “edge-on view” or profile view of the sherd is taken. After the picture is taken, the image is rotated 180 degrees to display the sherd in an upright orientation, at which point, a sherd profile is traced over the “edge-on view”. Finally, the background is changed to white and a scale is added. Figures 1 through 10 display the rim profile drawings produced from this method.

Orifice Estimation

Orifice estimation was possible for 94 of the 197 analyzed sherds. The “Curve-Fitting” method is the orifice estimation technique selected for this study (Plog 1985, Rice 1987). This method was used by Douglas C. Sims (1997) to estimate vessel orifice diameter of sherds from an assemblage from Diamondhead Mississippi (22HA550) by Jessica Kowalski (2009) on the Winterville assemblage, and by Ashley Dumas (1999) in her analysis of McLeod culture pottery types collected from sites on the lower Tombigbee River.

Sims (1997) analyzed an assemblage excavated in 1988 by a University of Southern Mississippi field school at Diamondhead site 22HA550. The recovered assemblage includes jars, restricted bowls, simple bowls (comparable to open bowls), outslanting bowls (also comparable to open bowls), and cylindrical/straight bowls. Average orifice diameter of jars is 47.5 cm. Average orifice diameter of restricted bowls is 41.3 cm. Average orifice diameter of simple bowls is 42 cm. Average orifice diameter of outslanting bowls is 41 cm.
In this study, measurements of rim sherd diameters were recorded using a vessel diameter template. Estimation of the orifice diameter of the original vessel from a rim sherd is accomplished by finding the closest fit between the degree of curvature of the lip and a series of concentric circles of increasing diameter (Plog 1985:244, Rice 1987:223, Sims 1997:84). First rim stance must be obtained by slanting the sherd to find the position where the lip touches the vessel diameter template in all places. The rim sherd is then moved along the center axis until a diameter line is found that corresponds with the rim sherd.

Recording orifice diameter measurements provides insight to the size of the containers within each vessel shape class (Hally 1986:272). It is likely that vessels of different sizes performed different tasks. Orifice diameter measurements of rim sherds assembled in this study were plotted by vessel shape class in frequency histograms (Figures 17-34). Measurements recorded for each vessel shape class are determined to be unimodally distributed, bimodally distributed, or trimodally distributed. Hally (1986) noted a tendency of orifice diameter measurements to concentrate with one or more narrow size ranges. Manufacture of a small number of vessel shapes in multiple sizes increases the morphological variability of an assemblage. Full vessel assemblages typically consist of between eight and 20 morphological vessel types (Hally 1986:275).

Orifice measurement results also offer insight to mechanical performance characteristics, as well as vessel size. Aspects of mechanical performance characteristics affected by orifice diameter include manipulations of vessel contents, removal of vessel contents, vessel content spilling, vessel content heat loss, evaporation of vessel contents, and orifice closure (Hally 1986:278-281). Standard deviations within vessel orifice
measurements recorded for each vessel shape class are analyzed to interpret variability of vessel size within the said vessel shape class (Table 12).

Two shortcomings of the curve-fitting method are that the rim may be uneven or imperfectly circular, causing inaccurate readings, and that measurement or sampling errors may produce inaccurate data (Plog 1985:243, Rice 1987:223). To diminish errors resulting from uneven, eroded, or small rims, only sherds having at least 2.5 cm of measurable lip surface are considered in this study for orifice estimation.

Temper Considerations

Temper is an important aspect of functional and cultural analyses of pottery. The 2,515 sherds collected from the 2010 Grand Bay Project were separated into 10 groups based on temper and particle size. Elements used to temper pottery generally suggest the influences of neighboring cultures on the people who produced the Grand Bay assemblages. Grog-tempered pottery signals connections with the Lower Mississippi Valley people and their traditions, while sand-tempered pottery indicates connections with Eastern traditions, and shell-tempered pottery denotes the presence of Mississippian affiliated groups. Minor transitional tempers (shell/grog mix) provide insight into geographical influences at various points in time (Sims 1997:56). Undecorated ceramics were sorted according to temper. It was possible to assign some sherds to types and varieties based on temper, rim mode, and vessel shape.

Analysis of vessel ware will enable thermal shock resistance performance characteristics of temper particle size to be accessed (Steponaitis 1983, Hally 1986, Johnson 2003). In order to apply this knowledge, temper agents are size graded, creating groups of coarse tempered wares and groups of fine tempered wares. A study conducted
by Steponaitis (1983) using a Moundville ceramic assemblage illustrated that Mississippi Plain was a utilitarian type that could resist fracture under high temperatures and the Bell Plain was suited for mechanical tasks. Bottle Creek site was subject to the same temper situation as ceramics analyzed from Moundville, indicating that coarse wares are suited for withstanding thermal stress and fine wares are better able to handle mechanical stress (Johnson 2003:158).

There is considerable variability in grain size within the sand-tempered category, which is similar to Mississippi Coast ceramics reported on elsewhere. Sand is a likely constituent regardless of the primary (presumed intentional) tempering agent. For example, analyses of ware has been simplified by not distinguishing between wares that are grog-tempered from those that are grog-tempered with sand inclusions, with the assumption that—at least to some extent—the sand may be a naturally occurring constituent of the clays used in making pots (see Hester 2012 for a discussion of temper category possibilities) (Jackson and Huey 2012:70). To illuminate performance characteristics of the pottery, grog, shell, and sand temper groups are divided into coarse and fine-medium ware groups (Tables 6-8). Additionally, fine sand and fine grog temper groups were established. However, only rim sherds were sorted into these categories and these sherds are considered with the fine-medium temper groups when conducting an aggregate analysis. Resulting temper categories include the following.

*Fine-Medium Sand Temper.* This group includes sand-tempered sherds where sand grain size is generally less than 1 mm. Plainware types include Weeden Island Plain and Baldwin Plain, with distinctions made (when possible) based on vessel shape and rim mode.
**Fine Sand Temper.** This group includes sherds tempered with granules so small that magnification is needed to approximately determine temper. Fine sand sherds feel smooth to the touch. This temper group was distinguished only among the rim sherds. The fine sand temper group developed during a secondary analysis of rim sherds to infer vessel form.

**Course Sand Temper.** This group is made up of sherds with sand 1 mm in size or larger. A few sherds were tempered with pieces of crushed rock, generally larger than 1 mm in size and are subsumed within the coarse sand category. Bayou La Batre Plain is coarse sand-tempered pottery.

**Fine-Medium Grog Temper.** Fine-medium grog tempering refers to the use of ground potsherds smaller than 1.9 mm as the agent. This category allows the possibility of hardened clay (which could be resultant of incomplete clay matrix mixing), in which in the particular collections are difficult to distinguish from grog. Plainware types that are fine-medium grog-tempered are categorized as Baytown Plain and Franklin Plain; these are not further subdivided into varieties (except in specific cases), as local variants have not yet been defined.

**Coarse Grog Temper.** Coarse grog tempering refers to the use of ground potsherds 2 mm or larger as the agent. Plainware types that are tempered with coarse grog are categorized as Baytown Plain. These are not further subdivided into varieties (except in specific cases) as local variants have not yet been defined.

**Coarse Lamellar Shell Temper.** As pointed out by Fuller (Fuller 1996, 2003, Fuller and Brown 1998, Fuller and Stowe 1982), there exists on the Gulf Coast shell-tempered pottery using shell that generally exfoliates into platy fragments, as well as shell that,
when crushed, produces angular pieces these pieces can be further subdivided into coarse and fine shell. Coarse lamellar shell-tempered wares conform to the type Mississippi Plain and contain temper particles 1.5 mm or larger. Although Fuller has defined varieties of Mississippi Plain for the Mobile Bay region, they rely at least in part on products of firing that may or may not be intentional (soft chalky ware versus hard) and are difficult to apply in the present context.

_Fine Lamellar Shell Temper._ Finely ground shell particles—generally 1 mm or less in size—characterize this category, which conforms to the type Bell Plain. As with Mississippi Plain, Fuller (1996, 2003) has defined multiple varieties, but the present sample is too small to warrant subdivision.

_Coarse Angular Shell._ Tempering with coarse angular shell results in a ware defined as Guillory Plain. Guillory Plain includes two varieties, _Briar Lake_ and _Guillory_, on the basis of hard (_Briar Lake_) or soft (_Guillory_) surfaces. Although Fuller attributes a chronological difference between the two, with _Guillory_ being associated with the later Bear Point Phase, it is not clear that this distinction is useful regarding the collections examined here.

_Fine Angular Shell._ Fine angular shell tempering characterizes the Plainware Graveline Plain. Distinctions at the variety level are based on the presence of burnishing (_var. Aiken_) or the presence of bowls with the “Port Dauphin” rim mode (_var. Graveline_). Fine angular shell tempering is often mixed with fine sand.

_Mixed Shell and Grog._ Shell-tempered ware marks the transition to the Mississippian Period and is characteristic of the Panola Phase (Blitz and Mann 2000:57).
Sherd Thickness

Wall thickness of rim sherds was considered in this study. Evaluation of wall thickness provides data relating to size and intended use of the vessel (Rice 1987:227). Measurements were taken below the lip on or as close to the body as possible. Thickening resultant from rim treatments are not included in wall thickness calculations. Measurements were taken in millimeters and rounded to the nearest whole number. Small and eroded rim sherds were not included in this analysis. Vessel wall thickness of base sherds was recorded and is included in the base sherd section of the “Results and Discussion” chapter. Rim sherds are measured a consistent distance from the lip to produce standardized measurements. Data produced from this exercise can be used to help identify vessel functions (Sims 1997:75).

Consistency within vessel wall thickness measurements could be reflective of enduring production objectives or capacities (Sims 1997). Change of vessel wall thickness through time could reflect a change in ceramic technology or functional difference between phases. Mechanical performance characteristics related to vessel wall thickness include thermal shock resistance and manipulation of vessel contents, assuming that thicker wall can sustain greater amounts of physical stress (Hally 1986:281).

Of the 197 rim sherds examined, 117 were large enough to permit wall thickness measurements. Wall thickness measurements are organized by site and divide into categories along the lines of vessel form (Figures 35-40).

Methods selected for ceramic analysis of the Grand Bay assemblage were done so in order to collect the greatest amount of formal and functional data possible. Despite the
fragmentary nature of the assemblage the methods employed in this study are able to identify the types and varieties of containers brought to and used in Grand Bay.
CHAPTER V

RESULTS AND DISCUSSION

This chapter is organized into seven main sections. The first section lists and discusses decorated pottery collected during the 2010 Grand Bay project. The second section begins with a discussion about performance characteristics related to temper particle size and is followed by a summary of temper groups and plain ware. Section three documents vessel shapes identified among the assemblage and the vessel shape classes used to sort them. Mechanical performance characteristics of orifice measurement results are evaluated in section four. Interpretation of vessel function by the examination of wall thickness is presented in section five. The sixth section is devoted to the recovered base sherds, and Chapter V concludes with a section providing a brief synopsis.

Formal Typological Classifications

Decorated ceramics identified at the three sites are described below, organized by the phase during which they first appeared and the ceramic series to which they belong, if applicable.

*Apple Street Phase, 800-100 BC*

*Bayou La Batre Series.*

Bayou La Batre Cord Wrapped Dowell Impressed (Blitz and Mann 2000, Wimberly 1960)

Ford Site (22JA564) N = 3

Bayou La Batre Cord Wrapped Dowell Impressed is coarse, sand-tempered ware decorated with generally parallel impressions made with a cord-wrapped stick. It was
identified in the Mobile Bay Region (Wimberly 1960) and recovered from Bryant’s Landing Phase contexts at the Plash Island site (Dumas 2008).

Bayou La Batre/Santa Rosa Series.


Kenny’s Island (22JA633) N = 1

Santa Rosa Punctated consists of widely spaced u-shaped incisions forming zones of punctations on sand-tempered ceramics. Santa Rosa Punctated began to make an appearance in the Apple Street Phase (Blitz and Mann 2000:111); however, this punctated design is more common in the succeeding Greenwood Island Phase and may persist into the Godsey Phase. Its grog-tempered cognate is Churupa Punctated.

Santa Rosa Stamped (Blitz and Mann 2000, Dumas 2008, Willey 1949, Wimberly 1960,)

Kenny’s Island (22JA633) N = 1

Santa Rosa Stamped is a coarse, sand-tempered ware decorated with unzoned rocker-stamping. It first appeared during the Apple Street Phase and may have continued into the Greenwood Island Phase (Blitz and Mann 2000:111).

Alexander Series.

Chinchuba Brushed, var. Chinchuba (Blitz and Mann 2000, Ford and Quimby 1945, Phillips 1970)

Ford Site (22JA564) N = 6

Chinchuba Brushed, var. Chinchuba, is carefully brushed with a fine-toothed implement. The brushed design resembles markings that look combed rather than brushed. This decoration was apparently done with a fine-toothed implement on sand-
tempered ware. The type was defined on the basis of research on the Tchefuncte culture in coastal Louisiana.


Kenny’s Island (22JA633) N = 1

Mandeville Stamped includes sand-tempered pottery with vertical rows of dentate stamping around the rim as well as the upper portion of the vessel. As with Chinchuba Brushed, it was defined based on coastal Louisiana Tchefuncte sites.

*Greenwood Island Phase, 100 BC- 250 AD*

Types tabulated for previous phase but present in this phase: Santa Rosa Stamped, Santa Rosa Punctated.

*Santa Rosa (Swift Creek) Series.*


Ford Site (22JA564) N = 2

Basin Bayou Incised is sand-tempered ware with broad u-shaped incisions in either curvilinear or rectilinear patterns and sometimes circles and triangles filled with parallel lines. This type persists into the succeeding Godsey Phase.

*Godsey Phase, 250-550 AD*

*Marksville (Issaquena) Series.*


Ford Site (22JA564) N = 1
Churupa Punctated, *var. Thornton*, includes broad line incision that defines zones filled with shallow, circular punctations.


Ford Site (22JA564) N = 2

Two sherds from surface collections at the Ford site were too small to confidently assign to a specific variety of Churupa Punctated.


Ford Site (22JA564) N = 2

The *Yokena* variety of Marksville Incised is defined as broad cleanly cut u-shaped incisions on a leather hard clay surface, producing closely or widely spaced simple repetitive rectilinear and curvilinear designs on grog-tempered ware.

Marksville Stamped, *var. Godsey* (Blitz and Mann 2000)

Kenny’s Island (22JA633) N = 1

Ford Site (22JA564) N = 2

*Var. Godsey*, includes zoned rocker-stamped decorations where stamping is accomplished with a crenulated shell edge. It is likely that this variety may eventually require subdivision on the basis of incised line character. The present sample precludes such an exercise.

Graveline Phase, 550-800 AD

Types tabulated for previous phase but present in this phase: Churupa Punctated, *var. Thornton*, Churupa Punctated *var. unspecified*, Marksville Stamped, *var. Godsey*. 
Marksville (Troyville/Late Issaquena) Series.


Ford Site (22JA564) N = 1
Kenny’s Island (22JA633) N = 1

Churupa Punctated includes grog-tempered wares with punctated zones delineated by curvilinear u-shaped incisions. Variety Watson, is distinguished by narrow, shallow lines compared to “classic” examples of the type (see Table 1). In the Lower Mississippi Valley it is considered to date to the late Troyville time range, which would be near the end of the Graveline Phase and into the early Tates Hammock Phase.

Larto Red, var. unspecified (Belmont and Williams 1981, Blitz and Mann 2000, Phillips 1970)

Ford Site (22JA564) N = 2
Kenny’s Island (22JA633) N = 1

Larto Red includes “red-filmed,” generally coarse grog-tempered pottery. The red film is an attribute that defines Larto pottery, but it also occurs as a mode associated with other decorated types representative of an interaction linking Louisiana and Florida (Blitz and Mann 2000:43). This network of interaction was coined as the Quafalorma horizon, which was in operation throughout the Graveline Phase.


Kenny’s Island (22JA633) N = 1
Ford Site (22JA564) N = 8
Marksville Incised, *var. Anglim*, includes curvilinear Marksville style designs executed with medium broad but shallow U-shaped lines (see Table 1). It is considered to be diagnostic of the early Troyville Period in the Lower Mississippi Valley.

Marksville Incised, *var. Spanish Fort*

Ford Site (22JA564) N = 2

Kenny’s Island (22JA564) N = 3

Marksville Incised, *var. Spanish Fort*, includes designs executed with broad lines in the wet paste of grog-tempered pottery. This *variety* is the Troyville expression of the long lasting Marksville ceramic series continuum (Blitz and Mann 2000:42).


Ford Site (22JA564) N = 1

Grog-tempered pottery decorated with wet paste, closely spaced narrow lines made from a pointed instrument is indicative of the *Liddieville* variety of Marksville Incised, with clear similarity to Indian Pass Incised.


Kenny’s Island (22JA633) N = 1

Ford Site (22JA564) N = 4

Marksville Incised, *var. Vick*, is a late (Late Troyville) variety of the type identified on the basis of incisions that are narrow and shallow, and produce Marksville motifs (Table 1) on grog-tempered pottery.

Kenny’s Island (22JA633) N = 1

Marksville Stamped, var. Bayou Rouge, is similar to var. Troyville in that the stamping is accomplished by a flat stamping implement (plain rocker stamped), but is distinguished by incisions executed with a narrow shallow line, and is indicative of a late Troyville Period time frame, thus likely straddling the late Graveline and early Tates Hammock Phases. It should be noted that it appears that Belmont (n.d.) re-elevated Troyville stamped to the level of type, but this study refrains from doing so.


Ford Site (22JA564) N = 4

Marksville Stamped, var. Cummins, is identified by areas of stamping zoned by medium broad, shallow incisions on grog-tempered pottery. It is considered diagnostic of the early Troyville Period in the Lower Mississippi Valley and is theoretically somewhat later than Manny.

Marksville Stamped, var. Manny (Blitz and Mann 2000, Phillips 1970)

Ford Site (22JA564) N = 1

Marksville Stamped, var. Manny, was developed by Phillips (1970) out of the need to distinguish temporal differences within the stylistic adaptations of the Marksville Stamped type. Var. Manny initially received type designation and then was reduced to variety status. The basis of the argument to establish firmer distinctions of zoned dentate rocker stamping from material recovered in Louisiana from the early occupation at the Baptiste site. Early Baptiste site occupation was contemporaneous with the interval between the Marksville and Troyville Periods. Phillips created Marksville Stamped, var.
Newsome, to account for earlier examples of finer zoned rocker stamping and established Marksville Stamped, var. Manny, to incorporate ceramics decorated with zones and bands of relatively coarse dentate stamping (Phillip 1970:124).

Mossy Ridge Incised, var. Mossy Ridge (Fields 2005)

Ford Site (22JA564) N = 4

Mossy Ridge Incised, var. Mossy Ridge, is a type formally defined by Rita Fields (2005) following field work conducted at 22GN687 in Greene County, Mississippi. Mossy Ridge Incised type is heterogeneous gog- and sand-tempered ware. The motif embodies design themes indicative of the latter half of the Middle Woodland Period. Wide curvilinear incisions zoning fields of parallel fine-line incisions or stamping are characteristics of the type’s design. The predominate decoration is that of a keyhole design with a thin line incision located down the center and a punctuation at the line terminus. Other patterns included S-shaped meanders, cloverleaf shapes, and line-filled circles and rectangles (Fields 2005:3). A resemblance of Mossy Ridge Incised to Weeden Island Incised is the non-repetitive decorative pattern, while the keyhole motifs are reminiscent of French Fork Incised. Some incised shapes bear striking resemblance to later Marksville incised varieties, e.g., var. Steele Bayou, which establishes a relationship with the Coastal Troyville Issaquena subseries of the Marksville continuum.

Sherds identified in the Grand Bay assemblage as Mossy Ridge Incised, var. Mossy Ridge, lack the defining criteria of the keyhole, S-shaped meanders, and cloverleaf decorations but are included in the type based on zoned incised line-filled circles and triangles. As the data set continues to grow, defining new varieties of Mossy Ridge
Incised could contribute a great deal to our understanding of the Graveline and early Tates Hammock Phases.

*Weeden Island Series.*


*Ford Site (22JA564) N = 23*

Carrabelle Incised includes sand-tempered vessels with close-spaced, parallel fine lines that are normally less than 1.5 mm wide. Incisions form rectangular decorations and punctuations are absent. These incised lines often form rectilinear patterns limited to shoulder and neck areas of vessels. Rims are usually thickened by a fold or the addition of a clay strap.

Carrabelle Punctated (Blitz and Mann 2000, Dumas 2008, Dumas 2009, Willey 1949, Wimberly 1960)

*Kenny’s Island (22JA633) N = 3*

Carrabelle Punctated includes sand-tempered ceramics with decorative motifs typically expressed as rows of punctations on the upper portion of the vessel, often zoned by one or more incisions. The punctations are made with a var. of different implements, including those that leave rectangular, circular, or hemiconical impressions.

Indian Pass Incised (Blitz and Mann 2000, Willey 1949)

*Ford Site (22JA564) N = 1*

*Kenny’s Island (22JA633) N = 2*

Multiple, closely spaced, parallel fine line incisions forming a curvilinear design is the decorative treatment characteristic of sand-tempered Indian Pass Incised. The
present sample includes sherds with fine to medium sand, with the exception of one sherd that has minor amounts of grog inclusions. Blitz and Mann note a relationship between Indian Pass Incised and Marksville Incised var. Leist and Liddieville.

Weeden Island Incised (Blitz and Mann 2000, Dumas 2008, Dumas 2009, Willey 1949, Wimberly 1960)

Ford Site (22JA564) N = 5

Kenny’s Island (22JA633) N = 13

Decoration characteristic of Weeden Island Incised include fine line rectilinear designs with backgrounds of punctations, and ends of lines are commonly accented. Weeden Island Incised ceramics recovered from Grand Bay lack lines terminating with punctations on excisions. The temper of these sherds is fine to medium sand. Weeden Island rim modes are folded or fitted with a clay strap on the exterior and finished with a u-shape incision or folded to the interior on restricted bowls. The interior folds sometimes exhibit decoration. (Dumas 2008:156). Unlike their grog-tempered cognates, Weeden Island rims are thickened by folding or a clay strap and are seldom flattened.

Santa Rosa Series.

Basin Bayou Incised, var. Ford (new var.)

Kenny’s Island (22JA633) N = 1

Ford Site (22JA564) N = 2

Basin Bayou Incised, var. Ford, is defined here on the basis of a small sample of sherds from Kenny’s Island and the Ford site. It is analogous to the previously defined Basin Bayou Incised but differs in that the decoration is executed by a much thinner but still u-shaped line, and thus seems to follow the temporal trend defined for late varieties
of its grog-tempered cognate Marksville Incised (McGimsey 2004). Basin Bayou Incised, var. Ford, is a Mississippi Sound expression of Porter Phase culture during the contemporary Late Godsey and Graveline Phases. Basin Bayou Incised, var. Ford, Alligator Bayou Stamped, and St. Andrews Complicated Stamped are terminal expressions of the Santa Rosa series types present in the study area (Blitz and Mann 2000:39). Over time, Basin Bayou Incised designs begin to resemble the later Weeden Island types (Dumas 2008:155). The newly defined Ford variety design favors incisions and excludes punctations. This type may also be distinguished from Basin Bayou Incised, var. Porter, by rim mode. The Porter rims are rarely wedge-shaped and are not flattened unless finished with a notched lip (Dumas 2008:156). In contrast to the Basin Bayou Incised, var. Porter, a recovered var. Ford, rim from TU N501 E469 has a flattened Marksville (Issaquena) type rim.

_Tates Hammock Phase, 800-1200 AD_

There are several types tabulated for previous phases but are also present in this phase, including French Fork Incised, var. unspecified, Marksville Incised, var. Vick, Marksville Stamped, var. Bayou Rouge, Mossy Ridge Incised, var. Mossy Ridge, Weeden Island Incised, Carrabelle Incised.

_Coastal Coles Creek Series._


Crooked Bayou (22JA564) N = 1

Kenny’s Island (22JA633) N = 2
Alligator Incised, *var. Alligator*, includes rectilinear designs, which are most often manifested as zones of diagonal parallel incisions on the vessel body of grog-tempered ceramics. The incised lines are narrow and shallow.


Ford Site (22JA564) N = 1

Incisions form rectilinear bands or triangular zones of punctations alternating with plain bands. Punctations are either dots or comma-shaped. Phillips (1970) acknowledges that the combination of line-filled triangles and punctations typical of Avoyelles Punctated, *var. Dupree*, is a late decorative scheme which relates to the Mazique Incised, *var. Manchac*, type in that both designs are sloppily executed. Phillips holds that both types continued to be produced during the Middle Mississippian Period, which would extend its presence at least through the Pinola Phase (Phillips 1970:42).

Beldeau Incised, *var. unspecified* (Blitz and Mann 2000, Phillips 1970)

Ford Site (22JA564) N = 1

The design consists of incised cross-hatching with punctations in each of the diamond shaped areas, executed on grog-tempered pottery. Wimberly (1960) recognized the type as a cognate of Keith Incised, which when identified on the Mississippi Coast, places the type in the Terminal Woodland and Emergent Mississippian Periods (Blitz and Mann 2000).


Ford Site (22JA564) N = 2
Coles Creek Incised, *var. Pecan*, was defined by Brown (1984:109) to include
grog-tempered pottery with a single non-overhanging incised line running parallel to the
rim. Williams and Brain (1983) classify the same mode as *var. Philips*. Fuller, on the
other hand, deals with single line incision as a mode, which he refers to as the Pecan
mode (Fuller 1987). The temper ranges between medium to coarse grog. The ware is of
medium texture and a moderately lumpy ceramic with a hard surface. These sherds signal
the Tates Hammock Phase, and this variety persists into the Pinola Phase.

Coles Creek Incised, *var. unspecified*

Ford Site (22JA564) N = 1

One small surface collected sherd has two incised lines running parallel to the
rim.

Evansville Punctated, *var. unspecified* (Blitz and Mann 2000, Dumas 2008,
Phillips 1970)

Ford Site (22JA564) N = 4

Kenny’s Island (22JA633) N = 1

Evansville Punctated sherds recovered from Grand Bay display un-zoned
punctations on grog-tempered ware. Blitz and Mann (2000) assigned the type to the Tates
Hammock Phase and suggest a relationship with Weeden Island Punctated.


Ford Site (22JA564) N = 1

Crooked Bayou (22JA575) N = 1

French Fork Incised, *var. Iberville*, is a late variety of the type that consists of
thin-lined incision delineating zones of punctations and/or incisions (Phillips 1970:85).
Plaquemine Brushed (Blitz and Mann 2000, Phillips 1970)

Ford Site (22JA564) N = 1

Plaquemine Brushed is defined as grog-tempered ceramic with a surface treatment administered through brushing. In some cases it looks as though a multi-pointed implement is used to accomplish the “brushed” or “combed” effect.


Ford Site (22JA564) N = 8

Kenny’s Island (22JA633) N = 1

The design on the vessel is accomplished by stamping with a paddle carved in a checkered pattern. The resulting decorations are square impressions neatly arranged in a pattern of parallel columns and rows. The nature of the checks suggests the sherds are *var. Pontchartrain*. The surface treatment is implemented on grog-tempered wares.

Pontchartrain Check Stamped, *var. Pacaniere*

Ford Site (22JA564) N = 6

Kenny’s Island (22JA633) N = 84

The temper is grog with fine to medium sand, occasional coarse sand, quartz, and grit inclusions. This Wakulla-like variety of Pontchartrain Check Stamped was originally described at the Morgan site 16-Vm9 by Fuller and Fuller (1987). *Pacaniere* variety is recognized only in West Central Coastal Louisiana, but the occurrence of this type in Grand Bay is a testament to how seamlessly decoration and paste recipe combinations were able to trend across the northern Gulf Coast. The Pontchartrain, *var. Pacaniere*, sherds represented in the assemblage are fine ware ceramics comparable to Baytown
Plain, *var. Vicksburg*, differing only in the abundance of sand. The check-stamping is neatly executed and slightly smoothed while the paste is wet. The check-stamping terminates just before the lip begins, and the rims are simple with round or round-tapered lips. The recovered rims are closely akin to what Fuller and Fuller (1987) define as the Salt Mine Valley rim mode, which they found to be associated with Pontchartrain Check Stamp, *var. Pacanierè* (Fuller and Fuller 1987:136).

*Miller Series.*

Mobile Cord Marked (Dumas 2008, Fuller 1998)

Ford Site (22JA564) N = 1
Kenny’s Island (22JA633) N = 6

Mobile Cord Marked sherds are decorated with impressions of cordage applied by repeated stamping with a cord-wrapped implement. The recovered sherds are tempered with coarse sand accompanied with small amounts of clay and grog. Recovered Mobile Cord Marked typed sherds are in part the product of proximity to the Mobile Basin. These sherds are assigned to the Tensaw Lake or Coden Phases of the Mobile-Tensaw Basin of the Alabama Coast cultural historical framework outlined by Fuller (1998). This time period spans from 750 AD through 1100-1200 AD, which coincides with the Tates Hammock Phase for coastal Mississippi as defined by Blitz and Mann (2000).

Mulberry Creek Cord Marked (Blitz and Mann 2000, Dumas 2008, Phillips 1970)

Crooked Bayou (22JA575) N = 4
Ford Site (22JA564) N = 24
Kenny’s Island (22JA633) N = 42
Mulberry Creek Cord Marked is a broadly distributed Late Woodland type that spread southward into the Gulf Coastal Plain. It encompasses grog-tempered sherds with impressions made by cord-wrapped implements. Sherds collected from Grand Bay are generally sandy paste ceramics tempered with grog. This type persists into the Pinola Phase.

*Weeden Island Series.*


Ford Site (22JA564) N = 5

Keith Incised is a fine to very fine sand-tempered ware with narrow, neat, and shallow incisions forming a diamond pattern; occasionally a single punctation is set in the center of the diamond.

Tucker Ridge Pinched (Dumas 2009, Willey 1949, Wimberly 1960)

Ford Site (22JA564) N = 1

Tucker Ridge Pinched includes sand-tempered pottery with decoration consisting of parallel rows of small ridges produced by the pinching of moist clay between the thumbnail and index finger. The pinching of the clay between the finger and thumb results in triangular ridges or in a V-shape decorative pattern. The single example from Grand Bay is tempered sand and grit with pieces of fractured quartz.


Ford Site (22JA564) N = 7

Kenny’s Island (22JA633) N = 3

Crooked Bayou (22JA575) N = 2
The exterior portion of the Wakulla Check Stamped type is covered in a neat, square check pattern that was accomplished by repeated stamping of the vessel with a paddle carved in a checked pattern. The recovered ceramic sherds are typical of the sand-tempered Wakulla Check Stamped type in terms of temper. However, the single rim sherd in the sample lacks a collar typically associated with Wakulla rim treatment. The rim sherd closely resembles what Brown (1984) identified as the Salt Mine Valley rim mode, which displays round or round pointed lips, with check stamping that terminates just before the lip begins, rather than the characteristic folded rims associated with Wakulla.


Ford Site (22JA564) N = 1

Kenny’s Island (22JA633) N = 1

Weeden Island Punctated is defined by small, closely spaced punctations organized into linear decoration on medium to fine sand-tempered ware. This type is void of any incised lines.

*Pinola Phase, 1200-1350 AD*

Types tabulated from previous phases but also present in this phase include Coles Creek Incised, *var. Philips*, Coles Creek Incised, *var. unspecified*, Evansville Punctuated, *var. unspecified*, Mazique Incised, *var. unspecified*, Mobile Cord Marked, and Mulberry Creek Cord Marked.

Anna Incised (Fuller 2003, Phillips 1970, Williams and Brain 1983)

Crooked Bayou (22JA575) N = 1
The Anna Incised type is grog-tempered ware with decoration incised on the interior surface of bowls. The Anna Incised sherd recovered from Crooked Bayou displays a single thin line incision on the interior surface of a grog-tempered body sherd.


Kenny’s Island (22JA633) N = 1

A single sherd from surface collection was classified as *var. Carter*. Its designs consist of dry paste incised and intersecting sets of parallel lines.

Carter Engraved, *var. Sara* (Blitz and Mann 2000, Williams and Brain 1983)

Kenny’s Island (22JA633) N = 1

The single example of Carter Engraved, *var. Sara*, is a fine grog-tempered ware, with fine lines incised on dry paste or engraved into fired paste. Decoration on the sherd is cross-hatched fine line engraving that extends onto the body from a neatly executed exterior folded rim on medium/fine textured pottery.

*Pensacola Series.*


Crooked Bayou (22JA575) N = 1

A single shell-tempered sherd classified as Barton Incised has eight closely spaced parallel incisions that appear to be zoned by an oblique incision. The sherd broke along the site of the diagonal incision zoning the parallel lines. The decorative treatment applied to the surface of the sherd is consistent with incised motifs on the necks of Barton vessels. The type is a product of the Middle Mississippian pottery tradition and, when
contextualized on the Mississippi Coast, is a marker of the Pinola Phase. (Blitz and Mann 2000:114, Phillips 1970:43-44, Price 2008:144)

*Singing River Phase, 1350-1550 AD*

*Moundville Series.*

Moundville Incised, *var. Singing River* (Blitz and Mann 2000)

Crooked Bayou (22JA575) N = 1

Decoration consistent with Moundville Incised is a motif constructed of medium width curvilinear incisions that form arches placed end to end, which encircle the upper portion of the vessel. Moundville Incised, *var. Singing River*, is distinguished as having three or more rows of punctations or short, eyelash-like incisions placed above the arches. Punctations are zoned by a single line incised below the rim, creating a zoned field of punctations above the arches.

*Pensacola Series.*

Mound Place Incised, *var. McMillan* (Blitz and Mann 2000, Dumas 2008)

Crooked Bayou (22JA575) N = 13

The decorative treatment defined for the Mound Place incised type consists of two or more parallel lines incised horizontally on the exterior upper portion of a shell-tempered vessel below the lip. Mound Place Incised, *var. McMillan*, is distinguished by six or more closely spaced parallel fine line incisions, typically on burnished well-made vessels.

Mound Place Incised, *var. Walton’s Camp* (Blitz and Mann 2000, Dumas 2008)

Crooked Bayou (22JA575) N = 3

Kenny’s Island (22JA633) N = 1
Mound Place Incised, *var. Walton’s Camp*, has a surface treatment consisting of two to five widely spaced incisions parallel to the rim of a burnished vessel. The incised decoration may also include festoons and horizontal P-shaped loops.

Pensacola Incised, *var. unspecified* (Blitz and Mann 2000, Dumas 2008)

Kenny’s Island (22JA633) N = 3

Pensacola Incised includes shell-tempered vessels with curvilinear designs as well as motifs related to the Southeastern Ceremonial Complex, typically on a burnished ware. In the sample from Grand Bay, two sherds are tempered with angular shell, while the third is tempered with lamellar shell. This type is thought to represent the initial ceramic marker of Mississippian culture along the Alabama and Eastern Mississippi Coasts.


Ford Site (22JA564) N = 1

The Owens Punctated collected from the Ford site has angular shell temper, with a decorative treatment of linear bands of punctations bordered by straight narrow to medium incisions.

*Bear Point Phase, 1550-1699 AD*

Types tabulated for previous phase but present in this phase: Pensacola Incised, *var. unspecified.*

*Moundville Series.*


Crooked Bayou (22JA575) N = 1
Moundville Incised, *var. Douglas*, is defined by a decoration typified by one to three curvilinear incisions made in wet paste, forming arches around the upper portion of the vessel, with one to three rows of conical shaped punctations placed above the arches.  

*La Pointe Phase, 1699-1775 AD*

*Choctawan Series.*

Chickachae Incised (Blitz and Mann 2000)

Ford Site (22JA564) N = 1

Chickachae Incised is a sand-tempered fine ware with fine incised lines applied in bands of parallel lines. This Gulf Coast historic fine ware is the sand-tempered cognate of Port Dauphine Incised and Fatherland Incised.

Chickachae Combed (Blitz and Mann 2000, Dumas 2008)

Ford Site (22JA564) N = 1

Chickachae Combed is a sand-tempered fine ware devoid of shell and grog. The decoration is a design constructed from bands of parallel fine lines applied with a toothed implement.

*Unclassified Decorated Sherds*

Four hundred seventy-two sherds and 12 sherdlets recovered in the Grand Bay assemblages exhibited some form of decorative treatment. The majority of these sherds were able to be sorted into one of the previously outlined type-varieties. However, 111 sherds and nine sherdlets were simply too small or too weathered to classify with confidence. These unclassified sherds (and sherdlets) are sorted by temper and type of surface treatment. A sherd recovered from 22JA575 (cat#75) and a sherd recovered from 22JA633 (cat#128) are the only two sherds with an unidentifiable surface treatment.
Decorative treatments present on the 109 unclassified sherds and the nine unclassified sherdlets are executed with punctations, incising, stamping, brushing, and combinations of these surface treatments (Tables 3-5). Sherd counts marked with asterisks include sherdlets. Four of the 28 UID Incised grog body sherds collected from 22JA564 are sherdlets. Sherd counts for the remaining designations are increased by one sherdlet.

Table 3

*Unidentified Decorated Pottery Recovered from 22JA564*

<table>
<thead>
<tr>
<th>Decoration:</th>
<th>Temper:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Grog</td>
</tr>
<tr>
<td></td>
<td>Body</td>
</tr>
<tr>
<td>Incised</td>
<td>24*</td>
</tr>
<tr>
<td>Punctated</td>
<td>1</td>
</tr>
<tr>
<td>Incised and Punctated</td>
<td>2</td>
</tr>
<tr>
<td>Stamped</td>
<td>1</td>
</tr>
<tr>
<td>Cord Marked</td>
<td></td>
</tr>
<tr>
<td>Brushed</td>
<td>1</td>
</tr>
<tr>
<td>Stamped and Incised</td>
<td>2</td>
</tr>
</tbody>
</table>

Note. Of the 24 unclassified incised grog-tempered body sherds four are sherdlets. One of the 18 unclassified incised sand-tempered UD body sherds is a sherdlet. The single unclassified Cork Marked sherd is a sherdlet.

Table 4

*Unidentified Decorated Pottery Recovered from 22JA575*

<table>
<thead>
<tr>
<th>Decoration</th>
<th>Temper:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Grog</td>
</tr>
<tr>
<td></td>
<td>Body</td>
</tr>
<tr>
<td>Incised</td>
<td>4</td>
</tr>
<tr>
<td>Punctated</td>
<td></td>
</tr>
<tr>
<td>Incised and Punctated</td>
<td>1</td>
</tr>
<tr>
<td>Undetermined Surface Treatment</td>
<td>1</td>
</tr>
</tbody>
</table>
Note: An unclassified incised and punctated angular shell-tempered sherdlet is included in the total.

Table 5

*Unidentified Decorated Pottery Recovered from 22JA633*

<table>
<thead>
<tr>
<th>Decoration</th>
<th>Temper:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Grog</td>
</tr>
<tr>
<td></td>
<td>Body</td>
</tr>
<tr>
<td>Incised</td>
<td>10*</td>
</tr>
<tr>
<td>Punctated</td>
<td>5</td>
</tr>
<tr>
<td>Incised and Punctated</td>
<td>1</td>
</tr>
<tr>
<td>Stamped</td>
<td>2</td>
</tr>
<tr>
<td>Cord Marked</td>
<td>4*</td>
</tr>
<tr>
<td>Check Stamped</td>
<td>1</td>
</tr>
<tr>
<td>Undetermined Surface Treatment</td>
<td></td>
</tr>
</tbody>
</table>

Note: Of the ten unclassified incised grog-tempered body sherds one is a sherdlet. One of the four unclassified cord marked grog tempered sherds is a sherdlet.

**Temper Considerations**

Analysis of vessel ware will enable the performance characteristics of the pottery sherds to be accessed (Johnson 2003, Steponaitis 1983). A study conducted by Steponaitis (1983) using a Moundville ceramic assemblage illustrated that Mississippi Plain was a utilitarian type that could resist fracture under high temperatures and that Bell Plain was suited for mechanical tasks. This same discussion about mechanical performance of coarse ware and fine ware has been applied in other analyses, such as Bottle Creek (Johnson 2003:158).

A vessel is most vulnerable to thermal stress after firing, while the pot is cooling. The ability of a low fired vessel to withstand thermal shock is affected by the type,
quantity, and size of temper particles (Hally 1986:281). Although smaller particle size is chemically superior to large particle size for reducing thermal stress, potters may use coarse tempers in utilitarian vessels because the coarse temper causes the vessel to become porous and leaves room for the clay to expand and contract during thermal reactions (Rice 1987:230). Ceramics tempered with finer particle sizes are generally compact and are, as a result, devoid of excess space for the clay to expand. Contact during thermal reactions tends to cause fine wares to crack and break. Furthermore, fine wares are commonly burnished or slipped, and these treatments would be obscured and/or damaged if exposed to thermal stress. However, fine wares are harder and vessel walls are typically thinner, so these traits permit fine wares to better handle mechanical stress versus utilitarian stress (Johnson 2003:158).

As was the case with shell-tempered vessels recovered from Moundville and Bottle Creek, coarsely tempered vessels recovered from the Grand Bay project appear to have been involved in cooking; conversely, finely tempered vessels seem to have been used as serving dishes. The majority of the pottery recovered from the tested sites was not tempered with shell; most of the recovered pottery sherds were tempered with fine to medium grog. Tables 6 through 8 display the temper groups distinguished among sherds considered in this study.

Table 6

22JA633 Temper Groups

<table>
<thead>
<tr>
<th>Temper Groups</th>
<th>Base</th>
<th>Body</th>
<th>Rim</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fine-Medium Sand Temper</td>
<td>1</td>
<td>147</td>
<td>16</td>
<td>164</td>
</tr>
<tr>
<td>Coarse Sand Temper</td>
<td>21</td>
<td>5</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Fine-Medium Grog Temper</td>
<td>2</td>
<td>536</td>
<td>25</td>
<td>563</td>
</tr>
</tbody>
</table>
Table 6 (continued).

<table>
<thead>
<tr>
<th>Temper Groups</th>
<th>Body</th>
<th>Rim</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coarse Grog Temper</td>
<td>10</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Fine Lamellar Shell Temper</td>
<td>49</td>
<td></td>
<td>49</td>
</tr>
<tr>
<td>Coarse Lamellar Shell Temper</td>
<td>17</td>
<td>11</td>
<td>28</td>
</tr>
<tr>
<td>Fine Angular Shell</td>
<td>55</td>
<td>5</td>
<td>60</td>
</tr>
<tr>
<td>Coarse Angular Shell</td>
<td>69</td>
<td>12</td>
<td>81</td>
</tr>
<tr>
<td>Mixed Shell and Grog</td>
<td>4</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Totals</td>
<td>3</td>
<td>908</td>
<td>79</td>
</tr>
</tbody>
</table>

Table 7

*22JA575 Temper Groups*

<table>
<thead>
<tr>
<th>Temper Groups</th>
<th>Body</th>
<th>Rim</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fine-Medium Sand Temper</td>
<td>72</td>
<td>6</td>
<td>78</td>
</tr>
<tr>
<td>Coarse Sand Temper</td>
<td>8</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Fine-Medium Grog Temper</td>
<td>84</td>
<td>7</td>
<td>90</td>
</tr>
<tr>
<td>Coarse Grog Temper</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Fine Lamellar Shell Temper</td>
<td>65</td>
<td></td>
<td>65</td>
</tr>
<tr>
<td>Coarse Lamellar Shell Temper</td>
<td>17</td>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>Fine Angular Shell</td>
<td>95</td>
<td>11</td>
<td>106</td>
</tr>
<tr>
<td>Coarse Angular Shell</td>
<td>55</td>
<td>3</td>
<td>58</td>
</tr>
<tr>
<td>Mixed Shell and Grog</td>
<td>4</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Totals</td>
<td>403</td>
<td>28</td>
<td>431</td>
</tr>
</tbody>
</table>

Table 8

*22JA564 Temper Groups*

<table>
<thead>
<tr>
<th>Temper Groups</th>
<th>Base</th>
<th>Body</th>
<th>Rim</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fine-Medium Sand Temper</td>
<td>1</td>
<td>364</td>
<td>35</td>
<td>400</td>
</tr>
</tbody>
</table>
Table 8 (continued).

<table>
<thead>
<tr>
<th></th>
<th>11</th>
<th>1</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coarse Sand Temper</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fine-Medium Grog Temper</td>
<td>470</td>
<td>41</td>
<td>512</td>
</tr>
<tr>
<td>Coarse Grog Temper</td>
<td>103</td>
<td>13</td>
<td>116</td>
</tr>
<tr>
<td>Fine Lamellar Shell Temper</td>
<td>6</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Coarse Lamellar Shell Temper</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Fine Angular Shell</td>
<td>21</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Coarse Angular Shell</td>
<td>14</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Mixed Shell and Grog</td>
<td>9</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>2</td>
<td>1001</td>
<td>91</td>
</tr>
</tbody>
</table>

Following Blitz and Mann (2000) and Blitz and Downs (2011), temper-ware groups are based on combinations of (1) temper (material and particle size, Tables 4-6), (2) surface finish (burnished or unburnished), and (3) texture (Blitz and Mann 2000:107, Blitz and Downs 2011:66). Plain ware types identified among fine–medium sand-tempered undecorated sherds include Weeden Island Plain. See Figure 8 for illustration. Sand-tempered pottery is an indication of interaction between Mississippi Sound inhabitants and communities located to the East of the project area (Blitz and Downs 2011:66). Fine-medium grog-tempered and coarse grog-tempered sherds are classified as Baytown Plain. In certain cases a variety level distinction is possible. As outlined above, shell-tempered pottery operates in two realms—mechanical and utilitarian. Fine lamellar shell-tempered sherds are classified as Bell Plain, var. unspecified. Fine lamellar shell-tempered vessels are included in the Pensacola, Moundville, and Gulf Historic series (Dumas 2008:132). When possible varieties were identified, indicating a phase of occupation. Unspecified types may be considered product of Mississippian occupation. Coarse lamellar shell-tempered sherds are considered markers of Moundville, Pensacola,
and Early Gulf Historic. These sherds are classified as Mississippi Plain (Dumas 2008:133). Unless attributes are available to make a variety level designation, fine angular shell-tempered sherds are classified as Graveline Plain, *var. unspecified*. Fine angular shell-tempered sherds mark the Pensacola and Gulf Historic series (Dumas 2008:133). Coarse angular shell-tempered sherds are identified as Guillory Plain, *var. unspecified*. When possible variety level distinction is applied, coarse angular shell-tempered sherds signal Pensacola, Proto-Historic, and Gulf Historic series (Dumas 2008:134). Tables 9 through 11 provide a tally of plain ware types by site.

Table 9

*Distribution of Plain Ware for 22JA564*

<table>
<thead>
<tr>
<th>Plain Ware</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baytown Plain, var. unspecified</td>
<td>508</td>
</tr>
<tr>
<td>Bell Plain, var. unspecified</td>
<td>7</td>
</tr>
<tr>
<td>Graveline Plain, var. Aiken</td>
<td>4</td>
</tr>
<tr>
<td>Graveline Plain, var. Graveline</td>
<td>1</td>
</tr>
<tr>
<td>Graveline Plain, var. unspecified</td>
<td>20</td>
</tr>
<tr>
<td>Guillory Plain, var. Briar Lake</td>
<td>1</td>
</tr>
<tr>
<td>Guillory Plain, var. unspecified</td>
<td>8</td>
</tr>
<tr>
<td>Mississippi Plain</td>
<td>2</td>
</tr>
<tr>
<td>Weeden Island Plain</td>
<td>23</td>
</tr>
</tbody>
</table>

Total                                           | 574   |
Table 10

*Distribution of Plain Ware for 22JA633*

<table>
<thead>
<tr>
<th>Plain Ware</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baytown Plain, var. unspecified</td>
<td>394</td>
</tr>
<tr>
<td>Bell Plain, var. Holy Bluff or var. St. Catherine</td>
<td>6</td>
</tr>
<tr>
<td>Bell Plain, var. Stockton</td>
<td>2</td>
</tr>
<tr>
<td>Bell Plain, var. unspecified</td>
<td>40</td>
</tr>
<tr>
<td>Franklin plain</td>
<td>18</td>
</tr>
<tr>
<td>Graveline Plain, var. Aiken</td>
<td>16</td>
</tr>
<tr>
<td>Graveline Plain, var. unspecified</td>
<td>42</td>
</tr>
<tr>
<td>Guillory Plain, var. Guillory</td>
<td>9</td>
</tr>
<tr>
<td>Guillory Plain, var. unspecified</td>
<td>31</td>
</tr>
<tr>
<td>Guillory Plain, var. unspecified</td>
<td>31</td>
</tr>
<tr>
<td>Mississippi Plain</td>
<td>26</td>
</tr>
<tr>
<td>Weeden Island Plain</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>619</strong></td>
</tr>
</tbody>
</table>

Table 11

*Distribution of Plain Ware for 22JA575*

<table>
<thead>
<tr>
<th>Plain Ware</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baytown Plain, <em>var. Addis</em></td>
<td>6</td>
</tr>
<tr>
<td>Baytown Plain, <em>var. unspecified</em></td>
<td>80</td>
</tr>
</tbody>
</table>
Table 11 (continued).

<table>
<thead>
<tr>
<th>Clay Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bell Plain, var. boatyard</td>
<td>2</td>
</tr>
<tr>
<td>Bell Plain, var. Conde</td>
<td>4</td>
</tr>
<tr>
<td>Bell Plain, var. Hale</td>
<td>4</td>
</tr>
<tr>
<td>Bell Plain, var. Stockton</td>
<td>19</td>
</tr>
<tr>
<td>Bell Plain, var. unspecified</td>
<td>35</td>
</tr>
<tr>
<td>Graveline Plain, var. Aiken</td>
<td>18</td>
</tr>
<tr>
<td>Graveline Plain, var. Graveline</td>
<td>7</td>
</tr>
<tr>
<td>Graveline Plain, var. unspecified</td>
<td>62</td>
</tr>
<tr>
<td>Guillory Plain, var. Guillory</td>
<td>3</td>
</tr>
<tr>
<td>Guillory Plain, var. unspecified</td>
<td>51</td>
</tr>
<tr>
<td>Mississippi Plain</td>
<td>13</td>
</tr>
<tr>
<td>Mississippi Plain, var. Yazoo</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>308</td>
</tr>
</tbody>
</table>

**Vessel Form**

*Jar*

Twenty-five sherds representing jars were recovered in the Grand Bay assemblages, four from 22JA564, eight from 22JA575, and 13 from 22JA633. Two of the 13 jars counted in the assemblage produced from 22JA633 were determined to be jars based on the recovery of strap handles alone. These strap handle sherds are shell-tempered, which is typically found on jars during the Mississippian Period. Only one of these 13 jars is diagnostic of the Later Late Woodland Period; it is coarse sand-tempered and recovered with Tates Hammock Phase markers. Remaining jar rims collected from
22JA633 signal site activity during the Mississippian Period. Of the eight jar rims recovered from 22JA575, four are diagnostic. One jar rim identified as Carrabelle Incised is a marker of the Graveline Phase and is the only jar rim collected from 22JA575; the other three jar rims are Mississippian. Two of the four jar rims collected from 22JA564 are diagnostic. Both jar rims are Tates Hammock Phase markers, a product of the Later Late Woodland Period.

Vessels subsumed within the jar vessel shape class have spherical bodies and constricted necks (Dumas 1999:117, Johnson 2003:162, Rice 1987:216-217, Ridley 2006:39). Rims are excursive or flared, and lips are flattened, round-flattened, rounded, or tapered. Willey (1949) defines a jar as a vessel whose total height is greater than maximum diameter with walls that curve inward to a constricted orifice or to a constriction at the base of collar or neck.

During sorting, collared jars, straight necked jars/shortened collared jars, and simple jars were distinguished. Three of the 25 jars are collared jars; two were collected from 22JA633 (Figure 1 A and B) and the third was surface collected from 22JA575 (Figure 1 C). No collared jars were recovered from 22JA564. Collared jars are distinguished from other jar forms by narrowly constricted necks and excursive, flared rims (Dumas 1999:117). Twelve of the 25 jars are shortened collared jars or straight-necked jars. One shortened collared jar was surface collected from 22JA564 (Figure 2 A). Two shortened collared jars were collected from 22JA575 (Figure 2 B and C). Nine shortened collared jars were recovered from 22JA633 (Figure 2 D, E, F, G, H, I, J). Two shortened collared jar rim sherds collected from 22JA633 are identified by the recovery of strap handles. Shortened collared jars are characterized as having restricted orifices.
and collars with vertical, straight to excursive rims. This form is similar to the parameters for short-collared jars outlined by Willey (Willey 1949:113). Eight of the recovered jar rims are classified as simple jars. Three simple jar rims were surface collected from 22JA564 (Figure 3 A, B, and C), four were surface collected from 22JA575 (Figure 3 D, E, F, and G), and two were recovered from 22JA633 (Figure 3 H and I). Simple jars include vessels with globular bodies, constricted necks, and straight to excursive rims. These vessels are distinguished from straight necked jars by absence of a collar (Dumas 1999:117, Willey 1949:498).

*Figure 1. Collared jar rim sherd profiles.*
Figure 2. Shortened collared jar rim sherd profiles.
Figure 3. Simple jar rim sherd profiles.
Three rims recovered in the Grand Bay assemblages represent flattened globular bowl: two were recovered from surface collection of 22JA564 and the third was surface collected from 22JA633. Vessels incorporated in this category are restricted bowls. These types are distinguished by their ellipsoid geometric form (Ridley 2006:41, Willey 1949:498). Lips are rounded on strongly incurving rims. Orifice modification is accomplished through interior rim thickening by the addition of a clay strap. One of the two rims recovered from 22JA564 is identified as Marksville Incised, *var. Yokena*, and the other appears to have an orange slip. Decoration is absent from the sherd surface collected from 22JA633.

Vessel walls range from inslanted to strongly inslanted and began to curve inward near the vessel midpoint (Willey 1949:499). Size range of flattened globular bowls defined by Willey (1949) varies from 9 to 35 cm in diameter, with the average at about 18 cm. Height varies from half to almost the equivalent of the diameter (Willey 1949:498-499). Despite the small sample size, certain inferences may be drawn from these sherds. It appears that thickened incurving rims with rounded lips articulated to strongly inslanted vessel walls averaging 5 mm in thickness and tempered with medium to coarse particles are defining traits of flattened globular bowls. The nature of the restricted orifice and thickened rims would have allowed these vessels to be covered. These traits could have made the vessel functional in indirect cooking procedures, storage, and/or transport (Sims 1997:130). It is this author’s opinion that these containers acted as storage vessels, suggested by the stability, spill resistance, and closure ability offered by the flattened globular bowl style.
Temper material used in these vessels differs: the sherds from 22JA564 (Figure 4 A and C) are tempered with grog, while the sherd from 22JA633 (Figure 4 B) is tempered with sand. Moreover, orifice diameters of sherds collected from 22JA564 vary by only 2 cm—averaging 26 cm in diameter, compared to the 9 cm orifice diameter of the sherd collected from 22JA633. This contrast between flattened globular bowls recovered from 22JA564 and 22JA633 could be reflective of a temporal difference, a difference in intended vessel function, or a result of the potters’ cultural affiliations. Unfortunately, these sherds were surface collected and the sample size is very small; both factors make determining the source of variation difficult, if not impossible.

Figure 4. Flattened globular bowl rim sherd profiles.
Collared Globular Bowl

In the Grand Bay assemblages, three rim sherds surface collected from 22JA564 designate this category. Collared globular bowls are restricted spherical bowls with inslanted to strongly inslanted vessel walls that constrict at the base of a short neck or collar. Lips are rounded to round-flattened and rims may be excurvate, flared, or everted. When present, rim modification is accomplished through exterior thickening by the application of clay strap. The clay strap is smoothed into the vessel wall giving the appearance of a folded rim.

The rim sherd depicted in Figure 5 B is thickened by an exterior clay strap and identified as Weeden Island Plain (Dumas 1999:129). Collared globular bowl rim (Figure 5 A) has rounded notches present in the lip, which is defined by Blitz and Downs as a scalloped rim (Blitz and Downs 2011:85). This rim could also be classified as an everted bowl, which is a vessel shape class used by Dumas (Dumas 1999:117,119). Scalloped lips are a morphological characteristic also noted at the Terry Cove site 1BA468 and believed to be associated with Santa-Rosa Swift Creek ceramics (Ridley 2006:38). Willey (1949) defines a collared globular bowl as having the maximum vessel diameter at the midpoint of the vessel and that the orifice diameter varies from almost equivalent to maximum diameter to half of the maximum diameter. He also holds that the size range varies from 9 to 26 cm in diameter (with an average of 18 cm) and vessel height is from three-quarters to equivalent of diameter (Willey 1949:499). Vessel sizes of rim sherds recovered from Grand Bay may be inferred from orifice diameter because orifice diameter ranges from almost equivalent to half of the maximum diameter. Size range of orifice diameters from
rims recovered in Grand Bay assemblages are 19 cm to 23 cm in diameter, with an average of 20.6 cm.

Orifice diameter, wall thickness, and temper coarseness are characteristics that should be considered with vessel form to help distinguish between the possible inferred functions of this vessel shape class. Rim thickening may have been necessary for two different reasons: either to support the collar or to facilitate covering. Both reasons may exert equal pressure onto the adaption of collared globular bowl rim morphology. The ability to cover these vessels would have been advantageous during indirect cooking, or storage and/or transport (Sims 1997:130). Wall thickness measurements were possible for two rims, as shown in Figure 5 A (7.56mm) and Figure 5 B (8.4mm). Thicker walls would have provided insulation and stability; both vessel traits suggest these vessels served as storage containers (Hally 1986:268). Mechanical performance characteristics shared by collared globular bowls include accessibility of vessel contents, stability, controlled evaporation or heat loss, and spill resistance. Rim morphology of collared globular bowls is both incurving and flaring. Flared rim bowls facilitated transfer of vessel contents, particularly liquid, and provided an area to tie or secure a lid to the vessel (Hally 1986:272-174). Orifice diameters of collared globular bowls from the Grand Bay assemblage are similar to orifice measurements typically recorded for jars. Both sherds permitting wall thickness measurements had medium to coarse temper, evidencing possible utilitarian use (food processing); however, the third collard globular bowl rim sherd (Figure 5 C) was tempered with fine particles, suggesting mechanical function. Temper variation between these sherds is frustrating.
It is noteworthy that collared globular bowl rims were only recovered from 22JA564. This suggests that certain activities were performed at 22JA564 that were not performed at 22JA633 and 22JA575. Recovery of collared globular bowls from the 22JA564 assemblage could be a reflection of residential/multi-seasonal settlement. Unique types and a larger variety of vessel types recovered from 22JA564 are contrary to what would be expected from a procurement/processing loci.

Figure 5. Collared globular bowl rim sherd profiles.

*Open bowl*

Forty-five rim sherds recovered in the Grand Bay assemblages are identified as open bowls; sixteen open bowl rims were recovered from 22JA564, six open bowl rims were recovered from 22JA575, and 23 rims from open bowls were collected from 22JA633. The primary trait of an open bowl is that maximum diameter occurs at or near the orifice (Dumas 1999:117). Lips are typically rounded or flattened—however, four of the 45 rims from open bowls have round-flattened lips and five of the 45 rims have
round-pointed lips. Rims are vertical plain, sloping plain, and flared. Vessel walls are outslanted, strongly outslanted, or vertical and geometric forms. Open bowls assembled in this study include spherical, ellipsoid, and ovaloid shapes.

Open bowl rims from the Grand Bay assemblages often exhibit exterior rim thickening accomplished through rim folds and the application of clay straps (Figure 6 A, B, D, and E; Figure 7 H). Interior folding and application of a clay strap to the interior of the vessel occur in much lower frequencies than exterior thickening (Figure 7 A and C). Five rims recovered from 22JA564 (see Figure 6 B and F and Figure 7 J) have an incised line parallel to the lip set just below the rim fold. Three of these rims signal occupation during the Tates Hammock Phase and the fourth is diagnostic of the Graveline Phase. Additional examples of orifice modification were recorded from 22JA564 and 22JA633. A Pensacola Incised sherd collected from 22JA633 has notches on the exterior of a flattened lip, a Carrabelle Punctated sherd from 22JA633 has punctations on the interior of the lip, and an unidentified incised sherd from 22JA564 (Figure 6 C) exhibits zoned cross-hatching on the rim up to the lip.

Open bowls were involved in food processing, while vertical and sloping plain rim vessels were more likely utilized during the preparation of bulkier foodstuffs. Mechanical performance characteristics indicative of cooking include thick walls with a vertical, incurved, or sloping plain rim tempered with coarser particles (Figure 6 D; Figure 7 B, E, and J). Cylindrical bowl/beaker vessels recovered from Mound C at Bottle Creek were used in a food cooking/processing context (Johnson 2003:162). Open bowls allow for easy manipulation of the vessel contents both during and after the processing activity (Hally 1986:279-280, Sims 1997:130). Open bowls with strongly outslanted and
flared rims signify possible eating and serving vessels (Sims 1997:131). Examples of open bowl rims with mechanical wear characteristics indicative of serving are shown in Figure 6 F and Figure 7 C and F. Examples of rim morphologies conducive for transferring vessel contents include those illustrated in Figure 6 E and Figure 7 A and I. A Marksville Stamped, var. Godsey, open bowl collected from 22JA633 also evidences serving applications. Vessels having wide orifice diameters, thin vessel walls, and fine temper particles are vessel traits associated with serving dishes or mechanical functions.
Figure 6. Open bowl rim, sherd profiles. (A) Carrabelle Incised, with a Weeden Island A rim (Fuller and Brown 1998:37), (B) depicts a grog-tempered vessel with a Weeden Island rim mode, possibly a Weeden Island D rim, (D) Mound Place Incised, var. Walton’s Camp (E) is identified as Coles Creek Incised, var. Pecan, and (H) exhibits punctations; however, a type designation is not possible.
Two rim sherds collected from 22JA575 have wide orifices averaging 40 cm in diameter and thickened lips. Characteristics of these two open bowl rims indicate large scale food processing. Figure 6 D depicts one such rim.

The majority of rim sherds assembled in the Grand Bay assemblage are small and broken; because of this beakers were very difficult to distinguish. Beakers and bowls both have outslanding to vertical vessel walls with vertical, sloping, or incurvate rims (Dumas 1999:117, Johnson 2003:162). Due to the small rim segments available for analyses and similarities between beaker and bowl rim profiles, beakers tend to grade into open bowl form. Figure 7 E is an example of one such rim. A secondary possibility is that jars and bowls dominate Late Woodland ceramics assemblages at the expense of beakers. This trend is evident at the Eureka Landing site (1MN30) (Dumas 1999:120). Problems arising from this identification issue manifest only in the underrepresentation of vessel shape classes present in the assemblage. Since open bowls and beakers served as cooking vessels, functional interpretations are more than likely unaffected. Open bowl rim sherd profiles are illustrated in Figures 6 and 7.
Figure 7. Open bowl rim sherd profiles. (H) Weeden Island folded medium sand/grog-tempered rim with an overhanging incised line parallel to the rim, relationship to Weeden Island D and cane ridge rim modes; (J) Mound Place Incised, var. Walton’s Camp.
**Restricted Bowl**

Thirty-six rims recovered in the Grand Bay assemblages are identified as restricted bowls: twenty rims were collected from 22JA564, three rims were surface collected from 22JA575, and 13 rims were recovered from 22JA633. A defining trait shared by all restricted bowls is that maximum vessel diameter occurs below the rim (Dumas 1999:117). Restricted bowls recovered in the Grand Bay assemblages have rounded, round-flattened, and flattened lips; rim forms designating this vessel class are incurving, strongly incurving, and sloping plain. Vessel walls are inslanted to strongly inslanted, and geometric forms designating restricted bowls assembled in this study include spherical and ovaloid shapes. Rim modification is present in the form of interior and exterior thickening most often accomplished by an interior or exterior rim fold/clay strap. Each rim profile depicted in Figure 8 is thickened by the application of a rim fold/clay strap. The rim depicted in Figure 9 G is thickened by an interior clay strap, and a rim recovered from 22JA633 is thickened by the addition of an interior clay strap. Incisions parallel to the lip on the exterior of the vessel are present on two rims recovered from 22JA564 and notching that resembles a pie crust is a rim modification exhibited on two sherds collected from 22JA633 (Figure 9 J). Notching that resembles a pie crust is defined as the Franklin Plain rim mode (Dumas 2008:157-158, Thomas et al.1996:77, Willey 1949:392-393). Medium sand-tempered rims with lips thickened by folding or the addition of a clay strap that is wedge, squared, or trianguloid in cross section are identified as Weeden Island Plain. Figure 8 displays rim sherd profiles of rims identified as Weeden Island Plain—(Figures 8, A, B, C, D, E, and F). The Weeden Island rim mode appears on decorated types and ware not typically classified in Weeden Island ceramic
series. One of these restricted bowls is Carrabelle Incised (Figure 9 E) and the other two examples are adorned on a Baytown Plain grog-tempered bowls (Figure 8 F and Figure 9 M). Several decorated types are among the restricted bowl assemblage: Carter Engraved (Figure 9 N), Plaquemine Brushed (Figure 9 H), Mulberry Creek Cord Marked, and Pontchartrain Check Stamped were also identified among the sherds designating restricted bowls.

*Figure 8.* Restricted bowl rim sherd profiles.
Rim thickening and restricted orifice may have been advantageous for covering the vessel, thereby providing assistance during indirect cooking applications, storage, and/or transport (Sims 1997:130). Dumas (1999) holds that restricted bowls and open bowls were both made for the cooking and consumption of food. Johnson noted that restricted bowls recovered from Mound A at Bottle Creek were probably related to elite subsistence activities (Johnson 2003:162). The function of restricted bowls recovered from mound context at Bottle Creek may not be applicable to the function of restricted bowls recovered in Grand Bay because of the difference in activities conducted on mounds versus shell middens. The function of restricted bowls from Bottle Creek and sites in the Lower Tombigbee (Dumas 1999) is noted here to show that restricted bowls are interpreted as having functions other than storage and/or transport.

**Figure 9.** Restricted bowl rim sherd profiles.
Carinated Bowl

A single carinated bowl rim sherd was surface collected from 22JA633 (Figure 10 A). Three rows of unzoned punctations are placed on the vessels shoulder above the corner point. The lower portion of the vessel is smooth and undecorated. The nature of the punctations causes this sherd to be sorted as Evansville Punctated. The sherd is broken below the lip, which obscures the punctated design. Fortunately, enough of the sherd is available to demonstrate an exterior corner point delineating the inslanting shoulder from the outslanding vessel wall. This vessel form is described by Hally as having a flat base, straight sloping walls, and an insloping rim. He notes that the shoulder is marked by a sharp break in the vessel profile (Hally 1986:277). Foster recognizes the same morphological characteristic of the carinated bowl as a distinct shoulder break (Foster 2007:95). What Hally refers to as a sharp break in the vessel profile and Foster calls a distinct shoulder break is defined in this study as a corner point—on an inverted rim (Joukowsky 1980:351-352). Carinated bowls were used for both cooking and serving. Carinated bowls recovered from the Little Egypt and King sites displayed pitting and soot, both traits evidence of use over a fire. Hally determined that the bowls were used to cook, mix, and serve soup (Hally 1986:289-290). A distinction was made by Hally between large and small carinated bowls by capacity, frequency, and absence of interior pitting. The sherd recovered from Grand Bay did not have surface pitting, but does have dark spots possibly indicating soot or burn (See Figure 10).
Rim sherds classified as undetermined bowls represent rims lacking the traits required to gain membership in one of the six designated vessel shape classes. Rims included in the category are broken, eroded to the point of obscurity, or too small to determine vessel shape. When possible, wall thickness measurements were taken, orifice diameters were measured, and, when present, decoration was sorted into a type-variety or listed as unidentified and the type of surface treatment, e.g., UID Incised, UID Stamped, and so on.

Chronological Assignment of Deposits and Intersite Analysis

An important aspect of this thesis is the illustration of how—and how much—site use may have changed from one period to the next and whether site use varied between sites during coeval occupations. Site use at 22JA564, 22JA575, and 22JA633 was
inferred through the analysis of recovered rim sherds, supplemented by data gathered from base and body sherds, to document the vessel shapes present, under the assumption that vessel shapes reflect different categories of use (Hally 1986). While vessel shape may change over time, reflecting stylistic trends, at any one time the vessel assemblage will be constrained to include differing functional needs. Radiocarbon dating and diagnostic pottery types were used to distinguish deposits related to particular periods of occupation, and associated rim sherds were analyzed for determination of vessel shape. In addition, shell temper is used as a historical index delineating Mississippi Period site activity. Sherds distinguished by shell temper alone are designated as Pinola/Singing River. Several rims were decorated, which permitted them to be assigned to a decorated type and, in some cases, the variety was determined. Varieties associated with particular phases and temper material allowed for rim sherds recovered from the surface to be included in the assessment of site activity.

Rim sherds served as the primary means to understand what vessels were brought to and used at the Grand Bay sites. One hundred ninety-seven rims were collected and analyzed from 22JA564, 22JA633, and 22JA575. One hundred forty-eight of these sherds were able to be related to a phase of occupation by association with other decorated ceramics. In some cases, the sherd itself had decoration or ware permitting a type-variety designation. Of these 148 sherds, vessel shape classification was possible for 89 sherds, with the remaining 59 designated as undetermined bowl.

In Figures 11-14 ceramics from sites tested were organized into phases (x-axis), counts (y-axis), and differentiated by vessel shape classification (indicated by color and
location of bar). The result is a figure that dates and tracks site activity by correlating vessel shape class with period of occupation.

Ninety-one rim sherds were analyzed from 22JA564, 68 of which can be associated with site occupation during a particular phase. In Figure 11 the distribution of vessel classes by phase is presented, including the 47% that can be designated only as undetermined bowls. Figure 12 does not included undetermined bowls.

*Figure 11.* Vessel shape class correlated with occupation using rims recovered from 22JA564.

*Figure 12.* Vessel shape class and occupation correlation of rims recovered from 22JA564 minus UD bowls.
The sample size and variety of vessel shapes produced by the 22JA564 assemblage suggest that an array of activities occurred at this site. The time of most intensive occupation occurred during the Graveline and Tates Hammock Phases. The collared globular bowl vessel shape class was only recovered from 22JA564. This may be the result of activities performed at 22JA564 that were not performed at the other tested sites. Restricted bowl rims and open bowl rims dominate the assemblage. During the Graveline Phase restricted bowl rims have the highest recorded frequency, followed by open bowl rims and collared globular bowls. Then, during the Tates Hammock Phase the frequency of open bowl rims climbs seemingly at the expense of restricted bowl rims. This shift in prevalence could possibly reflect that during the Tates Hammock Phase open bowls were employed for tasks that restricted bowls and collared globular bowls served in the preceding Graveline Phase.

Of 28 rims collected from 22JA575, 18 were assigned to a phase and vessel class. Figure 13 includes UD bowls, while Figure 14 does not. UD bowls account for 39% of considered rims.
22JA575 produced the smallest assemblage dominated by undetermined bowls, jars, and open bowls. Figure 13 shows that activity at the Ford Site jumped at the onset of the Pinola Phase. An increase in frequency and variety suggest most intense occupation
of 22JA575 occurred during the Pinola and Singing River Phases. However, even during those phases of intense occupation activities appear to have been focused on a small number of tasks indicated by the homogenous assemblage.

Seventy-eight rims were analyzed from 22JA633; 62 rims could be assigned to a phase and vessel class (Figures 15 and 16). Figure 15 includes undetermined bowl rims; 32% are undetermined vessels.

![Bar chart](chart.png)

*Figure 15. Vessel shape class correlated with occupation using rims recovered from 22JA633.*
Figure 16. Vessel shape class correlated with occupation using rims recovered from 22JA633 minus UD bowl rims.

A shift in popularity of open bowl rims during the Tates Hammock Phase to jar rims during the Pinola Phase could be a reaction to the functional responsibilities of open bowls tasked to jars. Open bowl rims are present during every phase at 22JA633. Aside from the Apple Street Phase restricted bowl rims are present during each phase. Functional variation of open bowl rims and restricted bowl rims over time is explored further in the orifice diameter section. Based on sample size and diversity within vessel shape class the heaviest occupation at 22JA633 occurred during the Graveline, Tates Hammock, Pinola, and Singing River Phases.

A large Pinola Phase occupation of 22JA633 is evidenced by the recovery of Carter Engraved, var. Carter, Graveline Plain, and Guillory Plain open bowl rims and jar rims. Within the jar vessel shape class, shortened collared jars were highest in frequency. Shortened collared jars were possibly used exclusively for cooking, as evidenced by handles for hanging over fire, coarse temper to resist thermal stressors, flared or
excurvate rims to facilitate transfer of contents (likely liquid), and constricted orifices which would have limited heat loss and provided spill resistance (Hally 1986:271-273).

Orifice Estimation

Hally’s (1986) work with the Little Egypt (9Mu102) and King (9F15) sites evidence a tendency for orifice diameters to concentrate within one or more relatively narrow size range and reflects the existence of culturally standardized classes within each vessel shape class (Hally 1986:273). Hally holds that one or more morphological vessel type may exist within each vessel shape class (Hally 1986:275,291). This tendency is also noted by Sims regarding orifice diameters of rim sherds from the Diamondhead (22HA550) assemblage (Sims 1997:84). Orifice diameters recorded by Dumas (1999) of ceramic assemblages from sites located in the lower Tombigbee waterway also suggest a relationship between orifice diameter size and vessel forms (Dumas 1999:188-189).

One hundred ninety-seven rim sherds were analyzed from the Grand Bay assemblages. Orifice size estimations were possible for 94 of the recovered rim sherds, which range from 9 cm to 48 cm. Forty-four of the measurable rims were collected from the Ford Site (22JA564), 11 from Crooked Bayou (22JA575), and 39 from Kenny’s Island (22JA633).

The ceramic assemblage produced by 22JA564 included measurable jar rims, collared globular bowl rims, flattened globular bowl rims, open bowl rims, and restricted bowl rims. Four jar rims were collected and measured, producing an average orifice diameter of 16 cm. Three collared globular bowl rims were collected and each rim was measurable, producing an average orifice diameter of roughly 20 cm. Two flattened globular bowl rims were recovered; orifice estimation was possible for both rims, and the
The average orifice diameter for flattened globular bowl rims is 26 cm. Sixteen open bowl rims were recovered. Three of these rims would not permit orifice estimation; orifice diameter for the remaining 13 rims averaged 26 cm. Twenty restricted bowl rims were produced by 22JA564; 17 were measurable, and the average orifice diameter for these rims is approximately 23 cm.

![Figure 17. Distribution of 22JA564 jar rim sherds by orifice diameter measurement.](image)

Each measurable jar rim recovered from 22JA564 was surface collected. Figure 17 depicts orifice diameter measurements recorded for jar rims collected from 22JA564. The jar rim approximately 25 cm in diameter signals Mississippian site activity and is tempered with lamellar shell. The 19 cm jar rim is a marker of the Tates Hammock Phase, with decoration identified as the Mulberry Creek Cord Marked type. Check-stamped decoration may have provided better grip or might have served to increase surface area, allowing for optimal heat transfer. It is the author’s opinion that the vessel’s shape allowed for large capacity and minimal horizontal space utilization, suggestive of a storage container (Hally 1986:279). Orifice diameters recorded for the two smaller jar
rims both measure 10 cm, have thin vessel walls averaging 5 mm thick, excursive rims, and both rims are tempered with fine grog and minor amounts of fine sand. One of these sherds is decorated with fine line incisions and is classified as French Fork Incised, *var. Iberville*, a marker of the Tates Hammock Phase. It is possible that the remaining small jar rim was produced during the preceding Graveline Phase. This earlier date would coincide with findings from Graveline Mound (Blitz and Downs 2011). Recovery of this vessel type implies the consumption of individual size servings, particularly of liquids (Hally 1986: 280, Blitz and Downs 2011:102). Analysis of the ceramic assemblage recovered from the Graveline Mound site suggests that painted filmed and/or incised cup-sized beakers and small jars were used for the consumption of individual servings (Blitz and Downs 2011:93). Food consumption at Graveline Mound occurred in a context different from that of food consumption at a shell midden. However, 22JA564 is a unique shell midden site; the recovery of burials and a wide variety of decorated types and vessel forms suggest special use. The burial is dated to the Graveline Phase and the small jars to Tates Hammock, suggesting that unique activities took place at the Ford Site throughout these two phases. Unfortunately, the two narrow orifice jar rims were not recovered in stratigraphic context and relating these jar rims to a burial event or large feast is difficult, if not impossible.

Jars manufactured during the Tates Hammock Phase follow a bimodal distribution, indicating two morphological vessel types within the jar vessel shape class; small jars appear to have been used for serving liquid and medium sized jars for storage or possibly cooking. Jars manufactured at 22JA564 during the Mississippian appear to have been used for cooking. Regarding the temporal context of these jar rim sherds,
vessel size gets larger later in the cultural sequence. Jars manufactured and used early in the cultural sequence evidence mechanical uses (e.g., serving, to a lesser extent storage) over utilitarian (e.g., cooking). Despite the small sample size, available data shows a trend that size and function of jars appear to change at the Ford Site during the onset of Mississippian adaptation.

Figure 18. 22JA564 distribution collared globular bowl rims by orifice diameter measurements.

Orifice measurements recorded for collared globular bowl rims are unimodally distributed and concentrated in a narrow size range. This tendency for collared globular bowl rims to concentrate in a narrow size range implies the existence of culturally standardized classes within the collared globular bowl shape class and that functional variation is low within the vessel shape class. These vessels were likely involved in food processing indicated by features such as flared and everted rims that facilitate transfer of contents; constricted orifices also guard against spills, and the wide globular shape would allow manipulation of the vessel’s content. These collared globular bowl rims are associated with Graveline Phase occupation at 22JA564. Figure 18 displays the sample
size and orifice diameter measurements for collared globular bowl rims collected from 22JA564.

The possible tendency for orifice diameters of flattened globular bowl rims to concentrate in a narrow size range implies the existence of culturally influenced vessel size standardization. Aspects of these flattened globular bowls suggest storage as a possible function; stability, large capacity, and constricted orifice that limited spills argue for storage. Both rims were surface collected, and the sample size is small. These factors limit the ability to gather data relating to site activity during a particular period of occupation. One rim is identified as Marksville Incised, var. Yokena, this decorated type is indicative of the Godsey Phase, evincive of flattened globular bowl use during the Godsey Phase.

![22JA564 distribution of open bowl rims by orifice diameter measurements.](image)

*Figure 19.* 22JA564 distribution of open bowl rims by orifice diameter measurements.
Figure 20. 22JA564 distribution of orifice measurements from open bowl rims recovered of Graveline Phase deposits.

Orifice measurements of open bowl rims depicted in Figure 19 are bimodally distributed, or possibly trimodal if the largest diameter is representative of a large open bowl morphological vessel type. Four rims represent the strongest concentration of measurements for the smaller size range group; orifice diameter measurements produced from these rims range between 20 and 23 cm. These rims were collected from Graveline
Phase deposits. Orifice measurements of open bowl rims recovered from Graveline Phase deposits are depicted in Figure 20. The largest open bowl rim diagnostic of the Graveline Phase is identified as Weeden Island Plain and is 39 cm in diameter. It was probably used for cooking. The smaller vessels were also likely used for cooking. However, one of the smaller open bowl rims has fine temper opposed to coarse temper. This difference suggests serving applications. Six of the recovered open bowl rims have orifice measurements between 28 cm to 30 cm in diameter. These six open bowl rims represent the larger of the two established size ranges. Figure 21 displays orifice measurements of open bowl rims collected from Tates Hammock Phase deposits at 22JA564. At 22JA564 it is evident that open bowl size increases from the Graveline Phase into the Tates Hammock Phase. However, open bowl orifice diameters are bimodally distributed in both the Graveline and Tates Hammock assemblage, suggesting two open bowl morphological vessel types were in operation during both phases. Popularity of the smaller open bowl morphological type during the Graveline Phase may illustrate importance of small scale intimate food consumption. Yet large scale food consumption is evident by the recovery of a large open bowl rim from Graveline Phase deposits. However, the opposite is true for the Tates Hammock Phase. Large scale food consumption takes precedence over small scale intimate food consumption. An increased use of medium sized vessels in the 28-30 cm range could be a reaction to subsistence demands of a larger household size.
Figure 22. 22JA564 distribution of restricted bowl rims by orifice diameter measurement.

Figure 23. 22JA564 distribution of restricted bowl rims by orifice measurement recovered from Graveline Phase deposits.
Measurements of restricted bowl rim orifice diameters range from 14 cm to 40 cm and appear trimodally distributed, or possibly quadmodally distributed if a distinction is made between the 18-22 cm and 25-28 cm diameter groups. This indicates that three, possibly four, morphological vessel types were manufactured within the restricted bowl vessel class during occupation of 22JA564. Figure 22 displays orifice diameters of restricted bowls from the Ford Site.

Ten of the 17 measurable restricted bowl rims signal Graveline Phase site activity (Figure 23) Measurements follow a bimodal distribution, or possibly a trimodal distribution if the single 15 cm orifice diameter measurement represents a third morphological vessel type. The most variation between these vessel size classes is vessel capacity. Aside from possibly the 18 to 22 cm vessel class size, the amount of functional variation within each vessel size class is small. The smallest restricted bowl rim sherd may have been used for food processing (mixing) and serving. The thickened incurving
rim would eliminate spills, resist heat loss, and support a lid for covering. Restricted bowl rims occupying the 18 to 22 cm size class could have been utilized for food processing, evidenced by thickened incurving rims and constricted orifices. However, it is the author’s opinion that medium temper particle size, spill control, and the ability to seal the vessel make storage a more plausible function of medium sized restricted bowls. Both of the larger restricted bowl rims and one medium size bowl rim evidence involvement in food processing. The 22 cm diameter rim would have facilitated covering and safeguarded against spills, and the coarse temper particles would permit reheating, all factors suggesting utilitarian vessel functions. The 28 cm diameter rim has an exterior bevel, which would aid in the transfer of contents, and the rim is thickened, allowing for covering during cooking. The largest restricted bowl rim is excurvate, flattened, and thickened. A large amount of food was likely cooked in this vessel and then served from the vessel in individual portions.

Five of the measurable restricted bowl rims are associated with Tates Hammock Phase site activity. Orifice measurements for these rims follow a bimodal distribution. Both size classes consist of vessels tempered with coarse material, round or flattened lips, and constricted orifices. Restricted bowls produced during the Tates Hammock Phase were used for cooking. Differences between the size classes reflect vessel capacity. Function of restricted bowls has little variation between the Graveline and Tates Hammock Phases. However, temper particle size increases during the Tates Hammock Phase. Increased particle size may indicate cooking as primary vessel function during the Tates Hammock Phase, and the medium sized vessels used during the Graveline Phase may have served functions other than cooking, e.g., storage.
The ceramic assemblage produced by 22JA575 included measurable rims of jars, open bowls, restricted bowls, and unidentified bowls. Seven rims were identified as jars, and four were large enough to record orifice measurements. Orifice diameters for these four rims average 20.5 cm. Six open bowl rims were identified—three of which were measurable and produced an average orifice diameter of 34.3 cm. Three restricted bowl rims produced an average orifice diameter of 23.6 cm. Twelve rims collected from 22JA575 were not able to be sorted into a vessel classification. Of them, only one rim was measurable, with a 26 cm orifice diameter.

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*Figure 25.* 22JA575 distribution of jar rim sherd by orifice diameter measurement.

Orifice measurements of four jar rims were recorded from 22JA575 and appear trimodally distributed; measurements are depicted in Figure 25. The smallest vessel size class is represented by a rim of 10 cm in diameter. This rim is tempered with fine sand and has decoration identified as Carrabelle Incised, *var. unspecified*. This rim’s orifice measurement is consistent with the size range established for small jars recovered from 22JA564. As with the two rims recovered from 22JA564, this small, decorated, fine ware
jar may have been used for the consumption of individual servings of liquid. The small orifice diameter of this jar may be a mode reflective of jars used as drinking glasses. The second size class is represented by two jar rims with orifice diameters measuring 20 cm and 22 cm. A third class is represented by a jar rim with a 30 cm orifice diameter. Vessels subsumed within the second and third size classes were used for cooking.

Orifice diameters of three open bowl rims collected from 22JA575 were able to be recorded. A concentration of orifice measurements is not apparent among these open bowl rims. One rim produced an orifice measurement of 23 cm, and it is likely that the vessel was used for cooking. Two rims have decoration identified as Mound Place Incised, var. Walton’s Camp. One rim is 32 cm in diameter and the other is 48 cm in orifice diameter; it is likely that these open bowls were used to cook large portions of food.

The three restricted bowl rims collected from 22JA575 were recovered from the surface. Given the small sample size of restricted bowl rims recovered from 22JA575, it is difficult to detect standardization of vessel size or define morphological vessel types. Two rim sherds, one measuring 23 cm in diameter and the other measuring 20 cm in diameter, conform to the medium vessel size class established for restricted bowls recovered in Graveline Phase deposits from 22JA564 (see Figure 23). Restricted bowls in the 18 to 23 cm size class collected from 22JA575 were probably used for cooking and not storage. However, storage is a probable function of restricted bowls in the 18 to 23 cm size class recovered from 22JA564. Only one vessel from 22JA575 is tempered with coarse temper particles and the thick walls which could provide insulation, both of these aspects suggest storage as a possible function.
Among rim sherds collected from 22JA633, the following vessel forms were identified: jars, flattened globular bowls, open bowls, restricted bowls, carinated bowl, and unidentifiable bowls. Thirteen ceramic fragments from 22JA633 are designated as jars; seven jar rim sherds permitted orifice estimation, producing an average orifice diameter of 28 cm. A single flattened globular bowl had an orifice diameter of 9 cm. Twenty-three rims were identified as open bowls, and orifice estimation was possible on 18 of them, producing an average orifice diameter of 24 cm. Thirteen rims were sorted as restricted bowls, and ten of these sherds permitted orifice estimation, with average orifice diameter calculated at 22 cm. A base fragment articulated with a corner point and lower portion of the rim is the only fragment designating the carinated bowl. The sherd was broken below the lip, so orifice estimation was not possible.

![Graph](image)

**Figure 26.** 22JA633 distribution of jar rims by orifice diameter measurements.

Orifice diameter measurements recorded from Mississippian jar rims recovered from 22JA633 are trimodally distributed (Figure 26). A single sherd measuring 29 cm represents the Tates Hammock Phase, possibly indicating a unimodal distribution. This
vessel was used for cooking. Possibly representing the largest size class is a jar rim sherd recorded with a 41 cm orifice diameter; it is tempered with coarse lamellar shell which is resistant to thermal stress, the constricted orifice would avoid spills, and the wide orifice would allow for the vessel’s contents to have been manipulated. It is probable that this vessel was use for cooking large portions of food. Jar rims subsumed within the 26 cm to 28 cm vessel size class have flared or excursive rims with flattened or rounded flattened lips. These traits would safeguard against spills, allow covering, and facilitate the transfer of liquid. Vessels occupying this size class were likely used for the preparing and serving of soups. The jar rim denoting the smallest size class measures 22 cm in diameter, has notching on a flattened lip, and is tempered with fine particles. These traits suggest that jars in this size class were involved in storage, transfer, or possibly serving.

Only one flattened globular bowl rim was recovered from the surface of 22JA633. The orifice measurement produced from this vessel is a narrow 9 cm. Both flattened globular bowls collected from 22JA564 have orifice diameters much larger than the rim collected from 22JA633. Both rims collected from 22JA564 are tempered with grog and the rim collected from 22JA633 is tempered with sand. These differences between flattened globular bowls recovered from 22JA564 and 22JA633 indicate variability within the flattened globular bowl shape class. When both sites are considered, a bimodal distribution of flattened globular bowl rim measurements becomes apparent. The flattened globular bowl recovered from 22JA633 is probably a product of the Godsey or Graveline Phase and used for storage.
**Figure 27.** 22JA633 distribution of open bowl rims by orifice diameter measurements.

**Figure 28.** 22JA633 distribution of Godsey and Graveline Phase open bowl rims by orifice diameter. A single vessel represents Godsey Phase deposits and is 21 cm in diameter.
Figure 29. 22JA633 distribution of Tates Hammock Phase open bowl rims by orifice diameter measurements.

Figure 30. 22JA633 distribution of open bowl rims by orifice diameter measurement recorded from Mississippi Period deposits. This figure includes Pinola and Singing River Phase deposits together.

Orifice diameters for open bowl rims recovered from 22JA633 range from 13 cm to 44 cm, with the majority falling between 19 cm and 33 cm (see Figure 27-30).

Measured orifice diameters of open bowl rims recorded from 22JA633 indicate size variability within this vessel shape class. This variability is evident during each phase of
occupation. Orifice diameters appear bimodally distributed during the Godsey and Graveline Phase (Figure 28) trimodally distributed during the Tates Hammock Phase (Figure 29), and bimodally distributed during the Mississippian Period (Figure 30). Open bowls become larger throughout occupation of 22JA633. However, small open bowls were produced until the Mississippian Period. This indicates the performance of small scale food production and consumption during the Woodland Period. Then, during the Mississippian the focus shifts towards larger vessels to meet the needs of larger households or in reaction to an increased importance of large communal food consumption. Larger vessels used during the Mississippian Period would allow for food processing at an accelerated rate compared to the Woodland Period.

![Graph](image.png)

*Figure 31*. 22JA633 distribution of restricted bowl rims by orifice diameter measurements.

Measured orifice diameters of restricted bowls produced a trimodal distribution of measurements for rims recovered from 22JA633 (Figure 31). Orifice diameters of measureable rim sherds collected from Godsey and Graveline Phase deposits occupy small to medium size classes. The vessel recovered from Godsey Phase deposits is 20 cm
in diameter and the vessel collected from Graveline Phase deposits is 14 cm. A slight increase of vessel size between the Middle and Late Woodland assemblages at 22JA633 is witnessed. Two rims diagnostic of the Tates Hammock Phase measured 19 cm and 29 cm. Unlike 22JA564, it is unclear whether or not restricted bowl rim size dramatically increased during the Mississippian period. The only rim sherd collected from the Mississippian deposits is 19 cm in diameter.

Results of rim sherd orifice diameter measurements from all three sites are compiled and displayed by vessel shape class in Figures 32 through 34. Rim sherds represented in these figures are considered diagnostic by virtue of either decoration or temper material (see temper discussion, p. 76). Figure 32 illustrates orifice diameter measurements of all recorded jar rim sherds, Figure 33 depicts orifice diameter measurements of restricted bowl rim sherds, and Figure 34 shows the open bowl rim sherd orifice measurements. These figures essentially illustrate the number of vessel size classes within each vessel shape class and depict phases in which they were used.

Figure 32. Dateable and measurable jar rim sherds from all three sites. Distinction between each phase is shown by color coding: blue designates Graveline Phase, red...
designates Tates Hammock Phase, and green designates the Pinola and Singing River Phases.

Measurements of jar rims produced by 22JA564, 22JA575, and 2JA633 show a quadmodal distribution, representing four different vessel size classes (Figure 32). No more than three size classes were operating during any one phase. Evidence suggests that jar rims made during the Graveline Phase were only produced in small sizes. The small jar size class was also made during the Tates Hammock Phase; this morphological vessel type or size class functioned as a serving vessel. The Tates Hammock Phase jar rim assemblage also includes medium and large vessel sizes. The medium size jar was probably used for storage and the large jar for cooking/boiling. Pinola Phase and Singing River Phase deposits are considered together to bolster results. Jars used during later occupation of the sites likely functioned as cooking vessels. However a Pinola/Singing River Phase medium size jar rim was possibly used for storage. When considered together, primary jar function seems to shift from serving early in the cultural sequence to cooking later in the sequence. Over time jar size increases, possibly reflecting an additional value placed on vessel capacity during late occupation at the sites.
Figure 33. Dateable and measurable restricted bowl rim sherds from all three sites. Distinction between each phase is shown by color coding the Figures: blue designates Graveline Phase, red designates Tates Hammock Phase, and Green designates the Pinola and Singing River Phase.

Orifice measurement results produced by restricted bowl rims create a quadmodal distribution. The smallest size class is used only during the Graveline Phase and consists of restricted bowls possibly used for serving or preparing small amounts of food. Graveline Phase restricted bowl rims in the 18 to 22 cm size class were likely storage vessels. Tates Hammock Phase restricted bowl rims occupying the same size range were involved in food processing. The third vessel size class measures 26 to 29 cm and is characterized Graveline and Tates Hammock Phase rims that indicate cooking use. The fourth vessel size class consists of large restricted bowls used for cooking. Restricted bowl rims signaling Graveline Phase are designated in each of the four vessel size classes, Tates Hammock Phase rim sherds are present in three, and the Pinola/Singing River Phase category is indicated by one angular shell rim that is most likely a Pinola Phase marker and served as a cooking vessel. Graveline Phase restricted bowl rim assemblage served the most diverse amount of functions, possibly reflective of a
residential population. Vessel size increased from the Graveline Phase into the Tates Hammock Phase. Cooking seems to have been the focus of restricted bowls used during the Tates Hammock Phase and likely the Pinola Phase. A sharp decrease in frequency of restricted bowls during the Mississippian Period could reflect waning importance of restricted bowls resulting from a change in settlement or replacement by new vessel shapes and/or styles.

Figure 34. Dateable and measurable open bowl rim sherds from all three sites. Phases are coded as follows: blue designates the Apple Street Phase, green designates Graveline Phase, purple designates Tates Hammock Phase, and red designates the Pinola and Singing River Phases.

Orifice diameter measurements of open bowls produced a quadmodal distribution, but no more than three size classes were operating during any one phase. A Marksville Stamped, *var. Godsey*, rim sherd with a 21cm orifice diameter is included with the Graveline Phase rim sherds. The smallest size class is represented by Graveline and Tates Hammock Phase markers and was likely used for serving. The next size class designates
rims measuring between 18 and 25 cm; each phase is represented, and aside from a single 23 cm Graveline Phase rim used for serving, these vessels were involved with cooking. Graveline Phase rims are absent from vessels measuring between 27 and 32 cm. This size class performed cooking related tasks aside from a single Tates Hammock Phase rim likely used for serving. The largest vessel shape class is marked by Graveline and Singing River Phase rims used for cooking large amounts of food. A trend in increasing vessel size is seen among open bowls collected from 22JA575, 22JA564, and 22JA633. Functional demands of open bowl rims appear to change over time. Graveline and Tates Hammock Phase occupation produced open bowls for the purpose of serving and cooking. Later, in the Pinola and Singing River Phases the vessels are used strictly for cooking.

Several trends are observed in correlation between vessel size and vessel function. Jar and open bowl rim sherds within the smallest vessel size class between 9 and 14 cm are serving vessels and produced only during the Graveline and Tates Hammock Phases. Included in the smallest vessel size class are restricted bowl rim sherds, which were only used only during the Graveline Phase for preparing or processing small amounts of food. Another pattern is the tendency of medium size restricted bowls, between 18 and 23 cm, from the Graveline Phase and medium sized jars, between 19 and 22 cm, from the Tates Hammock and Pinola Phases to evidence storage. Activities involving serving and storage appear to decrease over time. By 1200 AD the ceramic assemblage is largely geared for food processing, with some evidence of storage. This shift is noticeable in the Tates Hammock assemblage by fewer serving vessels, greater amounts of cook ware or utilitarian vessels, and an increase in vessel size (Johnson 2003).
Measured orifice diameters of rims collected from 22JA564, 22JA575, and 22JA633 range from 9 cm to 48 cm. This wide range of orifice sizes indicates that a variety of vessels were brought to and used at the tested sites (Sims 1997:84). Morphological variability is accomplished by manufacturing a small number of vessel shapes in multiple sizes, and full assemblages typically consist of between eight and 20 morphological vessel types or vessel size classes (Hally 1986:275). A full assemblage could possibly reflect a residential/base camp settlement versus a partial assemblage, plausibly indicating procurement sites or logistical settlement. To address the nature of occupation at a particular site during a certain phase, the number of morphological vessel types is calculated to show assemblage stylistic diversity and functional variation. When considering the number of morphological vessel types recorded for each phase of occupation at 22JA564, differences between each phase become apparent. The Graveline Phase assemblage has eight recorded morphological vessel types, the Tates Hammock Phase assemblage contains seven, and the Pinola/Singing River Phase assemblages produced only one. Based on these results, 22JA564 has a full assemblage during the Graveline, the Tates Hammock Phase is just shy by one, and Pinola/Singing River Phase occupation is indicated by one morphological vessel type. Eight morphological vessel types are present in Graveline Phase assemblage produced by 22JA633, seven are recorded for the Tates Hammock Phase, and six are distinguished among Pinola/Singing River Phases. These results possibly reflect the longevity of residential settlement at 22JA633. However, these results could be a product of more intensive occupation at 22JA633 than 22JA564 and 22JA575 experienced. The assemblage produced by 22JA575 is considered far from a full assemblage; one morphological vessel type is
recorded from the Graveline Phase, one morphological vessel type designates the Tates Hammock Phase, and three morphological vessel types mark the Pinola/Singing River Phases. This data shows that 22JA575 had the least complete assemblage, indicating focused activities at the site which could possibly be the result of a procurement loci or logistical camp.

Wall Thickness

Thickness of the vessel wall is related to the size of the container and its intended use; the larger and heavier the vessel, the thicker the walls. Thick walls are believed to be beneficial for storage since they add stability and insulation (Rice 1987:227). Thin walls conduct heat more efficiently than thick walls, suggesting a functional advantage during cooking. Thick walls and qualities associated with them may be achieved by thin-walled vessels through size, consistency, and the amount of temper used. Finer temper material would allow the construction of thin-walled vessels that are strong, insulated, and able to withstand thermal stress (Rice 1987:227-228,230). However, thick walls may be better suited to absorb stress and abuse sustained during food processing. Medium to coarse particle size is associated with thick walls. Some 42.7% of rim sherd vessel walls measured from the Grand Bay assemblages range from 7 to 11 mm thick. Of these rims, 10% are tempered with fine particle size, 34% are tempered with medium size particles, and 56% are tempered with coarse particles. Fifty-seven percent of rim sherd vessel walls ranged from 4 mm to 6 mm thick. Fifteen percent of these rims are tempered with fine particles, 60% are tempered with medium size particles, and 25% are tempered with coarse particles. Based on this comparison of vessel wall thickness and temper particle size, it is evident that coarse wares tend to have thicker walls than fine wares.
The tendency of wall thickness measurements to concentrate within one or more relatively narrow size range for a given vessel shape class is reflective of either environmental constraints, i.e., clay composition, physics, or the existence of culturally determined wall thicknesses within each vessel shape class (Hally 1986:273, Rice 1987:227). Sims (1997) suggests that a consistency of wall thickness is reflective of enduring vessel production objectives and/or capabilities. The wall thickness data from all three sites is compiled and considered together to increase sample size for standard deviation calculations. Table 12 shows the average and standard deviation of wall thickness measurements produced by 22JA564, 22JA633, and 22JA575. In an effort to observe correlations between vessel form and wall thickness through time, measurements produced by each vessel shape class are organized by phase (Figures 35-40).

Table 12

<table>
<thead>
<tr>
<th>Vessel Form</th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>carinated bowl</td>
<td>7.3500</td>
<td>1</td>
<td>.</td>
</tr>
<tr>
<td>collared globular</td>
<td>7.9450</td>
<td>2</td>
<td>.50205</td>
</tr>
<tr>
<td>bowl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>flattened globular</td>
<td>5.5233</td>
<td>3</td>
<td>.54354</td>
</tr>
<tr>
<td>bowl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>jar</td>
<td>6.0733</td>
<td>21</td>
<td>1.25178</td>
</tr>
<tr>
<td>open bowl</td>
<td>6.3624</td>
<td>42</td>
<td>1.01818</td>
</tr>
<tr>
<td>restricted bowl</td>
<td>6.3525</td>
<td>28</td>
<td>1.15762</td>
</tr>
</tbody>
</table>
Carinated bowls, collared globular bowls, and flattened globular bowls are the least frequent vessel shape classes recovered in the assemblage. Small sample size could reduce the statistical significance of standard deviation and mean calculations by groups being compared. Carinated bowls and collared globular bowls both have thick vessel walls, while flattened globular bowls have thin vessel walls. Jars, open bowls, and restricted bowls are all well represented. Wall thickness measurements produced by jars have the greatest amount of variation. This may possibly reflect changing production objectives within the jar vessel shape class. Open bowls have the largest average vessel wall thickness and the smallest variation within measurements. Mean and standard deviation values recorded for restricted bowls fall between open bowls and jars. Without factoring in time, wall thickness measurement results of jars, open bowls, and restricted bowls appear similar.
Results produced from jar vessel wall thickness measurements indicate a slight increase of thickness over time. Wall thickness during the Tates Hammock, Pinola, and Singing River Phases are fairly consistent. However, thickness averages for Pinola and Singing River Phases are slightly larger. The greatest amount of wall thickness variation within the jar vessel shape class occurred during the Tates Hammock Phase and Pinola Phase. This could be the result of multiple functional demands placed on jars during the Tates Hammock and Pinola Phases.
Figure 36. Jar vessel wall thickness standard deviation by phase from all three sites.

Restricted bowls produced consistent wall thickness measurements throughout the Graveline and Tates Hammock Phases. Then, during the Mississippian restricted bowls exhibit a sharp decline in frequency and thickness. The standard deviation of wall thickness measurements produced by Graveline and Tates Hammock Phases restricted bowls is almost identical. This data suggests that restricted bowls had enduring vessel production objectives and/or capacities from the Graveline Phase into the Tates Hammock.
Figure 37. Restricted bowl vessel wall thickness measurements by phase for all three sites.

Recovery of a Mandeville Stamped, var. Mandeville, rim evidences production of open bowls as early as the Apple Street Phase, and recovery of open bowls identified as Mound Place Incise, var. Walton’s Camp, evidence production as late as the Singing River Phase. Wall thickness measurements of open bowls appear to decrease from the Apple Street Phase to the Pinola Phases, at which point a slight increase is observed during the Mississippi Period. Based on the small Apple Street and Godsey Phase assemblages open bowls were very thick during early occupation. During the Graveline Phase wall thickness remains similar to preceding phases. Then, during the Tates
Hammock Phase mean wall thickness decreased and variation increased. A decrease of wall thickness continues into the Pinola Phase and variation of wall thickness decreased. Following the Pinola Phase an increase of wall thickness is evident during the Singing River Phase. The decrease and then increase of open bowl vessel wall thickness over time is a trend evident only among open bowl wall thickness measurements. This fall and rise could reflect a gradual directional change of open bowl production objectives throughout Woodland Period into the emergent Mississippian Period when production objectives or capacities shift back against the decreasing wall thickness trend.

Data suggests that during early occupation open bowls and restricted bowls were much thicker than jars. This could possibly be reflective of functional differences between these vessels: open bowls and restricted bowls were possibly produced for utilitarian tasks versus jars manufactured for serving or mechanical purposes. Flattened globular bowls are associated with the Godsey Phase and also produce thin wall thickness measurements, possibly reflecting production objectives similar to jars or suggesting that these vessels were manufactured to perform tasks neglected by thick walled open bowls and restricted bowls. Collared globular bowls are associated with the Graveline Phase and have thick vessel walls, as does the carinated bowl sherd diagnostic of the Tates Hammock Phase.
Figure 38. Restricted bowl vessel wall thickness standard deviation by phase for all three sites.

During the Tates Hammock Phase open bowl wall thickness declined and jar wall thickness increased. Restricted bowl wall thickness measurements recorded for the Tates Hammock Phase are more concentrated than earlier Graveline Phase measurements; however, mean thickness is fairly constant. Then during the Pinola Phase open bowl wall thickness begins to increase, as does the wall thickness measurement recorded for jars. During the Mississippian Period restricted bowls are produced as a minority vessel shape class. Restricted bowls produced during the Pinola and Singing River Phases have thin
vessel walls. Open bowls associated with the Pinola and Singing River Phases begin to increase in wall thickness, as do jars.

Figure 39. Vessel wall thickness of open bowls from all three sites by phase.
Bases

A total of five base sherds were recovered from the tested sites. Three bases were collected from 22JA633, and two bases were obtained from 22JA564. Each sherd was examined for traces of soot, signs of pitting, and severe clouding caused during firing or reheating. Surface texture was examined for abrasion and surface treatments. Thickness measurements were also recorded and are considered separately from the rim sherds. Two measurements were recorded: one measurement was of the base and, if a sizable portion of the vessel wall was present, a second measurement was recorded. Although each base sherd is relatively sizeable, vessel shape class was not determined. When possible,
geometric shape of the vessel to which the base belonged was inferred from the curvature and angle of the still attached vessel wall.

Base sherds recovered from 22IA564 are morphologically similar. One base was surface collected and shows only minor amounts of visible surface abrasion and no sign of sooting. However, exterior pitting is evidenced by two dimples larger than 2 mm wide and deeper than 0.5 mm. This sherd has a flat base averaging 4.8 mm thick, which is connected to a vessel wall measuring 5.9 mm thick. Flat bases are not conducive for cooking but do offer stability, and it is likely that this base represents a storage vessel or serving vessel (Hally 1986:272). Not enough of the vessel wall is present to determine geometric vessel form. Exterior pitting and no surface treatment suggest this sherd had utilitarian-related uses, while its thin vessel walls (relative to other base sherds), fine temper, and no sign of soot indicate involvement in non-utilitarian tasks. The second base was recovered between 25-40 cm from level 2 in STP N495E500; this sherd is tempered with coarse grog and is slightly rounded. Not enough vessel wall was available to conduct measurements and a 5 mm measurement was recorded from the base. A dark-charcoal, 10YR 2/1 color identified on the exterior of the base sherd is interpreted as sooting. Exterior soot deposits are a sign of heating with an open flame (Hally 1986:281). Clouding is also visible throughout the sherd. Aside from the small thickness measurement, the considered attributes imply that this sherd is utilitarian in nature. A lack of podal supports indicates that both sherds were produced during the Middle Woodland Period. The rim recovered from STP N495E500 was collected a level above the Bayou La Batre Cord Marked Dowell Impressed sherd, possibly indicating mixing of components in the STP or shallow deposits in this site’s location.
Base sherds collected from 22JA633 vary morphologically. A fine-medium, grog-tempered sherd was surface collected. This sherd has a roughened surface and is spherically shaped. A small, dark, silty deposit located on the exterior of the vessel was identified as sooting. Nine mm thick vessel wall measurements and 10 mm thick base measurements were recorded from the sherd. Presence of sooting, surface abrasion, rounded base, and thick wall measurements are indicative of cooking, maybe boiling (Hally 1986:271-275). The relationship between the curvature and angle of the vessel wall and base suggests that this vessel has a spherical geometric shape. Not enough of the rim is available to certify vessel shape class. However, the best speculation is that this sherd was part of open bowl or possibly a restricted bowl. A base tempered with medium-fine sand was excavated from TU N499E480 in level 2. This sherd has a large conical shaped podal support that measures 26.4 mm from the interior to the point of the podal support. Size of the conical podal support obscured base thickness measurements, but the vessel wall measured 10 mm thick. The exterior surface is roughened and has pitting manifested as dimples less than 0.5 mm deep and wide. Data collected from this sherd suggests possible utilitarian functions and use no later than the Godsey Phase—at which point podal supports began to dramatically wane in frequency. TU N491E563 produced a medium-fine grog-tempered base sherd. This sherd has small amounts of surface abrasion and appears to have been burnished or smoothed. The base is flat and measured 7 mm thick while the vessel wall measured 5.4 mm thick. Wedding of the vessel wall with the base forms a corner point. The walls appear straight-sided and slope slightly outward. Characteristics of this sherd indicate that this base belonged to a vessel used for serving-related activities (Hally 1986:274).
Discussion

Based on ceramics recovered during the 2010 Grand Bay project, the earliest occupation of the studied estuary occurred during the Apple Street Phase (800-100 BC). No evidence of site activity during the Late Gulf Formational Period was produced from 22JA575; however, decorated types recovered from 22JA564 and 22JA633 signal site activity during the Late Gulf Formational Period. 22JA633 produced a rim sherd attributed to the Apple Street Phase identified as Mandevil Stamped, *var. Mandeville*. A base sherd was also recovered from 22JA633. This sherd has a large conical shaped podal support, which is a common trait during the Apple Street Phase. Podal supports become small during the succeeding Greenwood Island Phase, and based on the size and sand/grit temper, this base sherd it is likely a product of the Bayou La Batre ceramic series produced during the Apple Street Phase. Despite the small sample size, data gleaned from the assemblages implies that food processing and cooking occurred early in the occupation of 22JA633 and 22JA564 and site occupants were participating in the Circum-East tradition (Fuller 1998:8).

Godsey Phase assemblages produced from 22JA564 and 22JA633 share similarities and differences. Similarities between the sites are that flattened globular bowl rims were recovered from both sites, grog and grog/sand are the dominant temper particles used, and restricted orifice vessels (restricted bowls and flattened globular bowls) are the most common vessel form. Differences between Godsey Phase assemblages produced from 22JA564 and 22JA633 include the fact that 22JA633 has a greater diversity of vessel shapes. However, 22JA564 has a larger diversity of decorated types diagnostic of the Greenwood Island and Godsey Phase than 22JA633 and a burial
was encountered in a Godsey Phase deposit excavated in TU N503E497. The Godsey Phase ceramic assemblage of both sites is indicative of food processing and serving. A Marksville Stamped, var. Godsey, open bowl has performance characteristics suggestive of serving, and a fine grog Franklin Plain bowl is also suspect of serving, storage, or any variety of activities not involving covering, thermal stress, or transfer of contents particularly liquid.

The Graveline Phase is strongly represented by ceramics recovered from the 2010 Grand Bay excavations. Vessel shape class diversity increased at 22JA564 during the Graveline Phase to include collared globular bowls, open bowls, and restricted bowls. Restricted bowls are the most prevalent vessel shape in Graveline Phase assemblages at 22JA564. The Graveline Phase assemblage indicates that food processing, cooking, serving, and possibly storage were frequently performed activities at 22JA564. The assemblage produced by 22JA633 tells a similar story, namely open bowls reflect food processing and certain open bowls (Figure 6 F; Figure 7C and F) evidence serving.

During the Graveline Phase 22JA564 and 22JA633 produced similar assemblages. Both have eight morphological vessel types reflective of a full vessel assemblage (Hally 1986:275). Open and restricted bowls were recovered from both sites. However, collared globular bowls were recovered only at 22JA564 and restricted bowls are more prevalent at 22JA564, while open bowls are more prevalent at 22JA633. An increase of open bowl frequency from the Godsey Phase to the Graveline Phase is observed at both sites. Recovery of unique vessel shapes like collared globular bowls and a larger variety of vessel types could be a reflection of residential/multi-seasonal settlement. Fewer vessel shape classes were identified at 22JA633 than at 22JA564; however both, assemblages
had the same number of morphological vessel types, suggesting that functional diversity of the 22JA633 and 22JA564 assemblages was equivalent. Graveline Phase deposits were the oldest encountered at 22JA575. Small jars presumably used for serving individual size portions of soup, water, or other beverages were found at both 22JA564 and 22JA575. It may be speculated that Graveline Phase assemblages at 22JA575, 22JA564, and 22JA633 were more similar to each other than time allows us to decipher (Jackson and Huey 2013:66).

Ceramics recovered from Later Late Woodland deposits at 22JA564 represent three different vessel shape classifications including, jars, open bowls, and restricted bowls. Restricted bowls lost popularity over open bowls, and jars are present for the first time in the assemblage. Seven morphological vessel types were identified among the Tates Hammock Phase vessel assemblage recovered from 22JA564. A single Carrabelle Incised jar rim collected from 22JA575 and two jar rims from 22JA564—one is identified as French Fork Incised, var. Iberville, and the second lacks decoration and association with dateable deposits—are all suspected to have been used for the consumption of individual servings.

Food processing, cooking, and to a lesser extent serving and storage are characteristic of the Later Late Woodland occupation at 22JA564. This could also be said for 22JA633; however, the vessel shape classes recovered from 22JA633 are more diverse. Despite differences in vessel shape class diversity, Tates Hammock Phase assemblages produced by 22JA564 and 22JA633 have the same number of morphological vessel types. Open bowls are the most popular vessel form and the Tates Hammock Phase marks the initial appearance of jars in the 22JA633 assemblage.
Compared to earlier occupation, site activity increases at 22JA575. Food processing was an activity taking place at 22JA575 during the Later Late Woodland Period. There is not any evidence to suggest storage or serving at 22JA575 during the Tate Hammock Phase.

Increased number of vessel shape classes may be reflective of an increase in activities taking place at 22JA633 during the Tates Hammock Phase. The carinated bowl sherd is sorted as Evansville Punctated; this vessel was involved with food processing. A single rim designating Tates Hammock Phase occupation at 22JA633 was identified as a jar rim. Eight open bowl sherds from 22JA633 were recovered in Later Late Woodland Tates Hammock Phase deposits. Ware characteristics indicate that restricted bowl vessels were used in food processing-related activities during Tates Hammock Phase occupation at 22JA633.

During the Tates Hammock Phase ceramic assemblages produced by 22JA564 and 22JA633 grow increasingly similar. Both sites have an increased number of open bowls and a decreased number of restricted bowls compared to the earlier Graveline Phase. The late Graveline/Tates Hammock Phase marks the appearance of jars at 22JA575, 22JA633, and 22JA564. Leading up to the Later Late Woodland restricted bowls increase in size and decrease in popularity and open bowls slightly decrease in size and thickness but increase in popularity. Jars are recovered only from Late Woodland and Later Late Woodland deposits and show an increase in both size and thickness over time. All of these factors reflect the adaptation of long term trends of subsistence and settlement patterns, which appear to have abruptly changed at some point during the Later Late Woodland. This change is reflected by differences between Tates Hammock and Pinola Phase assemblages, such as dramatic increase in jar frequency, a marked
decrease of restricted bowls, a decline in open bowl frequency, an increase of open bowl wall thickness, a decrease in morphological vessel classes, and increasingly larger and thicker jars. These changes recorded in the ceramic assemblage occur simultaneously with changes in subsistence practices observed through faunal analysis interpreted by species diversity and fish size.

Site activity during the Mississippian Period varies in intensity between sites. Following the Later Late Woodland, site activity at 22JA564 dramatically decreased, reflected by a decline of morphological vessel types from seven during the Tates Hammock to one during the Mississippi Period. One body sherd indicative of site activity during the Mississippian Period, and another signaling the Gulf Historic Period, are the only ceramics signaling site occupation following the Woodland Period. Site activity during the Mississippi Period at 22JA575 is the time of most intense occupation. The number of morphological vessel types increases from one during the Tates Hammock to three morphological vessel types during the Mississippi Period. During the Mississippi Period, site activity at 22JA633 remained consistent with the preceding Later Late Woodland Period, producing six morphological vessel types compared to seven morphological vessel types by the Tates Hammock Phase assemblage. Assemblages produced during the Mississippi Period are less diverse than the preceding Later Late Woodland Period and Mississippi Period Assemblages are dominated by jars.

In sum, during the initial 2000 years of occupation the estuary was exploited by small sedentary groups. These people lived in the estuary year-round and were more than likely organized along the lines of kinship. Trade and intermarriage with neighboring groups located to the east and west was facilitated by convenient transportation provided
by the Gulf and surrounding waterways. During the initial occupation of the estuary subsistence practices remained largely unchanged until the Mississippi Period. Prior to the Mississippi Period during the Early Late and Later Late Woodland Periods intensity of site use in the estuary reaches an all time high. Vessel shape class, morphological vessel types, and type-varieties identified in the assemblages are the most diverse during the Late Woodland. Then, at the end of the Tates Hammock Phase and for the duration of the Pinola Phase an abrupt change is apparent in the ceramic assemblage. Restricted bowls become an extreme minority, jars increase both in size and popularity, open bowls begin to increase in size and popularity, and a decrease of both morphological vessel types and vessel shapes is witnessed. This change in the assemblage correlates with a change of subsistence practices detected in the faunal assemblage marked by a change in species diversity and fish size. At the macro level, distinction between an early ceramic assemblage indicative of a sedentary residential settlement and a late ceramic assemblage characteristic of focused activities relating to the procurement of resources is apparent. The dividing point between these two different settlement patterns is blurred because, during the emergent Mississippian Coastal Mississippi, inhabitants were selectively adopting Mississippian technology while simultaneously producing Woodland Period material culture, the change in the assemblage likely occurred during the late Tates Hammock Phase and early Pinola Phase.
CHAPTER VI
CONCLUSIONS

Introduction

Chronological assignment, cultural affiliation and performance characteristics of ceramics recovered from the 2010 Grand Bay excavations have been outlined and discussed in Chapters III, IV, and V. Orifice diameter, temper, vessel wall thickness, vessel shape, and decoration are the variables employed in this thesis to infer vessel function, while paste, temper, and decorative techniques permit the assemblages to reveal the chronology of site use. In combination, chronological assignments and function characteristics shed light on site use and how sites were part of a larger settlement system. What follows is a proposed chronology of site use and settlement patterns for 22JA575, 22JA564, and 22JA633. A final topic addressed is the strengths and directions of cultural influences displayed in the ceramic assemblages from each site over the course of time.

Late Gulf Formational Period

series and the Santa Rosa series represent local coastal developments of style. Santa Rosa Stamped and Santa Rosa Punctated are considered for the Late Gulf Formational Apple Street Phase but are also present in Greenwood Island and Godsey Phase deposits. These ceramics evidence that at 22JA564 and 22JA633 earliest occupation occurred during the Apple Street Phase.

Middle Woodland Period

Greenwood Island occupation of Grand Bay is signaled by two unspecified Basin Bayou Incised body sherds surface collected from 22JA564. However, the Basin Bayou Incised Type persists into the succeeding Godsey Phase. Basin Bayou Incised type is incorporated into the Gulf tradition and is a marker of the Santa Rosa series centered to the east of the Mississippi Sound. A stronger Godsey Phase component is represented at 22JA564 than at 22JA633. A radiocarbon date with a two-sigma range of 130-260 AD from 22JA633 lends support for Godsey Phase presence on the site (Jackson et al. 2013:111). Pottery diagnostic of the Middle Woodland Period is incorporated into the Gulf tradition, and the Godsey Phase ceramic complex consists of strictly the Marksville ceramic series.

Early Late Woodland

Graveline Phase deposits were excavated from 22JA564 and 22JA633 and are similar to assemblages produced during the earlier Godsey Phase in that both are expressions of the long-lived Marksville ceramic series continuum. The majority of decorated types recovered from Graveline Phase deposits are products of the Late Marksville Issaquena series and Coastal Troyville culture. Eastern influences from Weeden Island culture and Santa Rosa culture are also evident at 22JA564 and 22JA633.
A wide variety of decorated types are recovered from Graveline Phase deposits. The variety of decorated types is a reflection of the clear overlap here of the Lower Mississippi Valley-Louisiana Delta and Weeden Island stylistic zones and associated differences in ceramic ware recipes (Jackson and Huey 2013:112).

Later Late Woodland

Ceramic diversity increases during the Tates Hammock Phase; decorated types indicative of the Coastal Coles Creek, Miller, and Weeden Island series are recovered from the tested sites. The Coastal Coles Creek series represents a pan-regional fusion of the South Appalachian Check Stamped pottery tradition into the Gulf tradition. Check-stamped pottery, like Pontchartrain Check Stamped and Wakulla Check Stamped, represents this cultural fusion. High frequencies of check-stamped and cord-marked pottery recovered from 22JA564, 22JA633, and 22JA575 signal continuity with cultures north, east, and west of Grand Bay Mississippi during the Later Late Woodland Tates Hammock Phase. The lowest levels of 22JA575 date to the latter half of the Tates Hammock Phase (1060-1080 and 1150-1240 AD, at the two-sigma calibrated range) (Jackson et al. 2013:12). A major shift marking a clear division between the Early Late Woodland and Later Late Woodland is evidenced by the decline of ornate decoration associated with Weeden Island I vessels, the decline of Late Marksville Issaquena Series Continuum types, and the predominance of check-stamped and cord-marked pottery signaling the influence of Miller culture permeating from the North.

Mississippian Period

In Grand Bay, the emergence of the Mississippian Period is marked by a sharp decline in the recovery of check-stamped pottery and Weeden Island types. Mixed shell
and grog-tempered ceramics recovered from the sites tested mark a fusion of the Gulf tradition with the Middle Mississippian tradition. This temper combination is indicative of the Pinola Phase. Decorated types recovered from tested sites that designate this time interval include an Anna Incised and a Barton Incised sherd collected from 22JA575 and a Carter Engraved, var. Carter, and a Carter Engraved, var. Sara, collected from 22JA633. A strong Singing River Phase occupation is evident in the ceramic assemblages collected from 22JA575 and 22JA633. Ceramics signaling Mississippian activity at 22JA564 are present in low frequencies. Decorated types recovered from Singing River deposits signal the Pensacola and Moundville ceramic series.

Settlement Patterns

Information gleaned from 22JA564, 22JA575, and 22JA633 illuminates site use and its variation over time through a functional analysis of the ceramic assemblages. This study has identified types and varieties of containers brought to and used at each site. Methods employed in this research have illuminated changes of site use over time and between sites during coeval occupation. During the Middle Woodland Period both 22JA564 and 22JA633 are believed to have functioned as residential camps; this is indicated by the types of containers used and the diversity of decorated ceramics (Jackson and Huey 2014:113). The vessel types recovered from 22JA564 and 22JA633 indicate long term trends in subsistence practices. 22JA575 was likely a logistical processing site characterized by its small sample size, paucity of decorated sherds, and limited variety of containers (Jackson and Huey 2013:66).

Activities at 22JA564 involved food processing and consumption. However, recovery of unique vessel shape classes, small narrow orifice jars, and burials are
characteristic of an archaeological record formed by people engaging in a wide variety of activities other than just procuring and eating foodstuffs. Data gathered from vessels recovered from 22JA564 suggests consistent multi-seasonal residential occupation beginning as early as the Godsey Phase, or possibly as early as the Greenwood Island Phase, and lasting into the Tates Hammock Phase. 22JA633 was also a residential site or base camp, but it differs from 22JA564 by evidence of a more pronounced Mississippian component and a less intensive Greenwood Island and Godsey occupation. Year-round occupation of 22JA564, 22JA633, and even 22JA575 is corroborated by data collected from otolith analysis. Results of thin sectioning otolith conducted by Jackson and Butz were determined to indicate that the sites tested were occupied throughout the year (Jackson and Butz 2013:106). Species identified among the fauna assemblage produced by the Grand Bay project indicate year-round occupation with a possible increase during warmer months (Scott 2013:98).

Data gleaned from the ceramic assemblage produced by 22JA575 indicates that the site may have been a specialized harvesting locus during the Late Woodland and Mississippian Periods. This observation is supported by the utilitarian ware characteristics of the recovered sherds, limited variety of decorated types, small sample size, and the limited kinds of containers used at 22JA575. However, a small percentage of pottery produced from Mississippian deposits at 22JA575 did exhibit mechanical performance characteristics suggestive of storage. A shift during the Later Late Woodland Period in the types and variety of containers used at 22JA575 and 22JA633 may reflect a change in foodstuffs processed at these sites. Scott notes a shift towards increasing reliance on fish at the expense of mammals through time and that fish size also increases
(Scott 2013:97). By examining otoliths Sam Butz and Jackson also detected a shift in fishing methods during the Mississippi Period.

Restricted bowls evidence a gradual increase in vessel size from the Graveline Phase into the Tates Hammock Phase; mean wall thickness measurements recorded for restricted bowls remain basically the same differing only by less variation within size during the Tates Hammock Phase. Size increase could reflect the need to feed more people and, therefore, the need to cook larger portions requiring larger pots. The difference of wall thickness variation between the Graveline and Tates Hammock Phases suggests more focused production objectives during the Tates Hammock Phase, leading to the possible conclusion that restricted bowls served a wider variety of functions during the Graveline Phase. These findings lend credence to the inference that restricted bowls were used for cooking, storage, and possibly serving during the Graveline Phase, as opposed to the Tates Hammock Phase when restricted bowls were used nearly entirely for cooking (see discussion on pages 107 and 108).

Open bowl size appears to be consistent between periods; both large and small open bowls were produced at similar rates during each period, with the exception of slight emphases on the production of larger open bowls during the Graveline Phase and smaller open bowls during the Tates Hammock Phase. Open bowls would have been advantageous for indirect heating and steaming of shell fish. Vessel wall thickness of these open bowl vessels slowly decreases over time, with their thinnest measurements occurring during the Pinola Phase followed by a slight increase during the Singing River Phase; this decrease of thickness could be a response to technological innovations or changing production objectives of the pottery. Jar size increases in both wall thickness
and orifice measurements; this increase over time could reflect a gradual change in subsistence practices from Middle Woodland occupation through Mississippi Period occupation or that production objectives changed for jars, as these vessels increasingly became used for cooking over serving or storage.

Restricted bowls associated with Mississippian occupation were not recovered at 22JA575, and restricted bowls recovered from 22JA564 and 22JA633 decreased in frequency during later portions of the sites’ occupation. Jar rim sherds were recovered from all three sites and comprise the majority of the vessels identified at 22JA575. The rate at which jar rim sherds are recovered apparently increased during later occupation of the sites. This data suggests that jars may have been used in place of restricted bowls during later occupation of the sites. As previously noted, production of restricted bowls nearly stops during the Mississippian Period. Sims (1997:130) also notes that restricted bowl shapes appear to decrease during later Mississippian occupations. He surmises that this could indicate a shift to standard Mississippian jars, a utilitarian vessel, which might have been functionally similar to restricted bowls.

Early indigenous peoples of the Grand Bay area took full advantage of the local environment, which provided ample resources to support a small, relatively sedentary population. This observation is supported by ceramic assemblages at 22JA564 and 22JA633. Then, late in the Tates Hammock and the emergent Mississippi Phases, sites located in Grand Bay apparently shifted from residential locations to harvesting procurement camps. During the Late Woodland and Mississippi Periods 22JA575 was characterized by intense short term occupations, serving as a logistical site where shellfish and fish were collected and processed. During this time period 22JA633 may
have served as a base camp for 22JA575, and was occupied by people ascribing to aspects of Woodland culture amidst an emerging Mississippian culture. Contrary to Barry Lewis’s (1988) hypothesis that post-Poverty Point period sites were seasonal occupations by task groups engaged in harvesting littoral resources, the present research shows that these sites were occupied year round and occupants exploited terrestrial as well as littoral resources. Lewis (1988) and David Morgan (1992) noted a population increase (based on component totals) through the Middle Woodland, followed by a subsequent reduction in component numbers in the Late Woodland. Morgan noted more Mississippian sites on the coast than any other period. Excavation of 22JA564, 22JA633, and 22JA575 produced evidence that most intense occupation occurred during the Late Woodland Phases and a decrease in site activity and duration of occupation occurred during the subsequent Mississippi Period.

This conclusion is corroborated by Blitz and Mann (2000). Blitz and Mann (2000:91) witnessed a steady increase in occupation intensity throughout late prehistory, followed by a sharp decline in the colonial period. Data generated by Blitz and Mann (2000) did not illustrate a decline in occupation intensity during the Late Woodland; instead, a general increase was observed, which supports the present research (Jackson et al. 2012, Jackson et al. 2013) and is contrary to Morgan (1992 and Lewis 1988). Furthermore, Grand Bay shell midden sites and Plash Island evidence multi-seasonal residential occupation, which was most pronounced during the Graveline and Tates Hammock Phases and not seasonal occupations by task groups to exploit littoral resources, a hypothesis offered by Lewis (1988). A similar pattern is witnessed by
Milanich (1994:145) in Swift Creek coastal settlements; he notes the occurrence of larger, annular middens that were possibly occupied year-round by sedentary populations.

Directions of Cultural Influences Through Time

Peoples who lived on shell middens in Grand Bay during the initial 1000 years of occupation seem to have been incorporated into the Circum-East tradition and had more frequent interaction with peoples east of Grand Bay living in southwest Alabama. Interaction is supported by ceramics identified as belonging to the Bayou La Batre, Santa Rosa, Alexander, and Santa Rosa-Swift Creek ceramic series. Ceramic assemblages produced during the Apple Street Phase and Greenwood Island Phase closely resemble assemblages excavated from Bryant’s Landing Phase and Blakeley Phase deposits at Plash Island in the Mobile Bay region.

Beginning in the Godsey Phase, assemblages recovered from Grand Bay are dominated by ceramics marking the Marksville-Issaquena continuum; these signal more substantial influence from sources west of Grand Bay centered in Louisiana versus influence from locations east of Grand Bay represented by Weeden Island, Santa Rosa, and Swift Creek variants permeating from Mobile Bay, northern Florida, and south Georgia. Contemporary Porter Phase deposits recovered from the Mobile Bay area are more heterogeneous than Coastal Mississippi Godsey Phase deposits. Porter Phase assemblages have higher frequencies of Santa Rosa pottery types. Another difference between the Porter Phase and Godsey Phase is that one-quarter of the decorated pottery from the Porter Phase assemblage excavated at Plash Island exhibit zoned rocker stamping and 61% of decorated pottery was either zoned or unzoned incised pottery. Decorations including designs made of zoned punctations are minority types in Porter
Phase assemblages (Dumas 2008:161). Incised and rocker-stamped types were recovered from Grand Bay. However, zoned punctations account for about a third of all decorated pottery produced by Godsey Phase site occupation. Godsey Phase designates a point at which Mississippi Sound populations began to follow a trajectory different from peoples living in Southwest Alabama. These findings indicate the extent of the interaction between the Grand Bay inhabitants and their neighbors during the Late Gulf Formational and Middle Woodland Periods.

Recovery of Weeden Island and Santa Rosa ceramic markers from Graveline deposits represents renewed interaction/exchange between peoples located east of Grand Bay. Carrabelle Incised designs adorned on sherds collected from Grand Bay are executed with wide incisions, forming triangular and rectangular patterns limited to the shoulder and neck of the vessel. The style of this design may be related to earlier Basin Bayou Incised designs. Near the end of the Porter Phase (500-600 AD) Basin Bayou Incised began to mirror Weeden Island types, e.g., Carrabelle Incised (Fuller and Brown 1998:148). Eastern influence exerted on peoples living in Grand Bay during the Graveline Phase is not as strong as it was during initial occupation of the shell middens. However, recovery of Weeden Island and Santa Rosa types from Graveline Phase assemblages signals a big increase of eastward cultural influence when compared to the Godsey Phase, during which only westward influence is represented by a strictly Marksville-Issaquena ceramic assemblage. A testament to the autonomy and uniqueness of the Grand Bay residents is the recovery of Weeden Island rim modes on grog-tempered pots classified as a Baytown Plain ware. This mixing of eastern and western modes is also apparent by the recovery of types such as French Fork Incised, Churupa Punctated,
Weeden Island Incised, Weeden Island Punctated, and Carrabelle Incised types, all of which have a cognate ceramic type based in locations outside of their perceived physiographic zone.

Clear overlap of east, west, and northern traditions is evident during the Tates Hammock Phase by the abundance of check-stamped pottery. Appearance of check-stamped pottery coincides with the expansion of Weeden Island Influence throughout the region circa 750 AD to 800 AD as confirmed by the introduction of the Wakulla Check Stamped type. At this same time, northern cultures exerted influence on people living in Grand Bay by the recovery of cord-marked types and check stamping. Western groups also began production of a check-stamped pottery type, Pontchartrain Check Stamped. Paste recipes of check-stamped pottery recovered from Grand Bay reflect the overlap of east and west ideas, as seen by the presence of mixed sand and grog-tempered check-stamped pottery.

The findings of this research show the Mississippi Sound was an area exhibiting influence from neighboring regions at varying degrees during different times. Interestingly, people living in Grand Bay freely combined modes and traits associated with pottery produced by neighboring groups. Production of grog-tempered pots with folded Weeden Island rims, mixed grog and sand-tempered check-stamped ceramics, manufacture of cognate ceramics types during coeval occupation, and construction of mounds beginning as early as the Claiborne Phase persisting through the Mississippi Period show that Mississippi Coastal inhabitants were manifesting their own unique material culture. It is evident and undeniable that populations indigenous to the Mississippi Sound traded and intermarried with outside groups. However, the
assemblages also suggest that these people were following their own trajectory and were probably responsible for influencing neighboring peoples to the east and west as much or more than those surrounding groups are thought to have influenced the Mississippi Sound inhabitants.

Contributions and Future Research

This research has offered the following: 1) chronology of site use, 2) rough scheme of settlement through time, 3) critical analysis of stylistic boundaries associated with pottery style, 4) a determination of site activity as understood through form and functional analysis of ceramics, and 5) the relationship between each site during coeval occupation and between each period has been addressed.

Chronology of site use and cultural history of the Mississippi Sound is now better understood by the work of Blitz and Mann (2000), Dumas (2008), Blitz and Downs (2011), and Jackson et al. (2012, 2013). Work conducted by Blitz and Downs at Graveline Mounds has resulted in amendments to the chronological boundaries of the Godsey, Graveline, and Tates Hammock Phases. Adjusted dates for the Godsey Phase reflect the pervasiveness and influence of early Marksville types and define more accurately the time interval designated by the painted pottery trade network operating during the Middle Woodland Period on the Northern Gulf Coast. The revised dates for the Graveline Phase represent the expansion of Weeden Island II influence throughout the region and better represent the longevity of the Marksville-Issaquena Ceramic Series Continuum.

The later starting date purposed for the Tates Hammock Phase coincides with the drastic increase of check-stamped pottery, the decline of ornate Weeden Island types, and
the appearance of Coastal Coles Creek types on the Mississippi Coast. However, this revised date does not address certain issues inherent to the long Tates Hammock Phase, and it does nothing to help clarify the transition from the Late Woodland cultural adaption into the Mississippi Period adaption. Further work regarding the temporal designation of the Tates Hammock Phase and Pinola Phase is still needed. Trace element analysis of pottery coupled with data gleaned from faunal analysis and radiocarbon dates could help further identify changes in subsistence between Late Woodland and Mississippi Period occupation already outlined by Jackson et al. (2013). This could also help to determine the upper chronological limits of the Tates Hammock Phase.

Future research regarding line character of all incised pottery, not just Marksville Issaquena types as proposed by Belmont (n.d.), could provide tighter chronological control in the region. A more critical look at the occurrence of check-stamped pottery and the disappearance of it could also provide greater insight to the chronological limits of the Graveline, Tates Hammock, and Pinola Phases. Excavations of sites located in the interior of the Coastal Meadows and excavation of sites located on the Barrier Islands would also aid efforts in understanding coastal adaptation by providing assemblages to contrast shell midden occupation in the salt marshes. Despite the contributions of this research, much work could still be conducted in the Mississippi Sound region that would expand our discipline’s understanding of prehistoric people living along the Northern Gulf Coast. Regardless, the results of this thesis have bolstered the database pertaining to prehistoric shell midden occupation, and this study provides the first systematic attempt to understand activity taking place in the eastern subregion of the Mississippi Sound by examining vessel form and function.
### APPENDIX

#### ALL DECORATED POTTERY COLLECTED FROM 22JA564

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