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W3F1-2004-0074

August 31, 2004

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Subject: Cultural Resources Damage Assessment Report Area 4
Waterford Plantation, St. Charles Parish, Louisiana
Docket No. 50-382
License No. NPF-38
Waterford 3

Reference: Letter Number W3F1-2003-0043, Notification of Disturbances to
Waterford Plantation Workers' Quarters Site, Area 4, dated
June 6, 2003

Dear Sir or Madam:

The purpose of this letter is to provide the Damage Assessment Report to Area 4 within the Waterford Plantation site (16SC41). Letter Number W3F1-2003-0043, Notification of Disturbances to Waterford Plantation Workers' Quarters Site, Area 4, dated June 6, 2003, provided notification that "significant" ground disturbing activities had taken place on a portion of the Waterford 3 property that contains cultural resource remains from the Waterford Plantation pursuant to the Waterford 3 Cultural Resources Protection Plan.

As required by the Cultural Resources Plan, an assessment of the damage and impact to the cultural resource was conducted by a certified archaeologist. Enclosed please find the Damage Assessment Report to Area 4 within the Waterford Plantation site (16SC41). The Waterford Plantation, Area 4, as well as other former structure localities and their associated deposits are still intact and remain eligible for inclusion in the National Register of Historic Places (NRHP).

This occurrence was evaluated under the Entergy Corrective Action program. The following actions have been taken to prevent recurrence.

A001

1. Establishment of permanent markers which identify the locations of the cultural resource areas.
2. Training seminar module WSEM-CADM-CRPA was created to indoctrinate personnel on inspection procedures and requirements for property that contains cultural resource remains from the Waterford Plantation pursuant to the Waterford 3 Cultural Resources Protection Plan. Chemistry and Environmental personnel were trained using this module to perform weekly inspections of property that contains cultural resource remains.
3. Weekly inspections are performed by Chemistry and Environmental personnel of the property that contains cultural resource remains from the Waterford Plantation pursuant to the Waterford 3 Cultural Resources Protection Plan.

This submittal includes no new commitments.

Should you have questions regarding this report please contact Mr. Mark Louque at 504-464-3267.

Sincerely,


KJP/STF/ssf

Attachment: Damage Assessment of Area 4, Waterford Plantation, St. Charles Parish, Louisiana

cc: w/attachment

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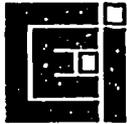
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Attachment

W3F1-2004-0074

**Damage Assessment of Area 4,
Waterford Plantation,
St. Charles Parish, Louisiana**



**Coastal
Environments, Inc.**

**DAMAGE ASSESSMENT OF AREA 4
WATERFORD PLANTATION,
ST. CHARLES PARISH, LOUISIANA**

FINAL REPORT

AUGUST 2004

**PREPARED BY
COASTAL ENVIRONMENTS, INC.
BATON ROUGE, LOUISIANA**

**PREPARED FOR
ENERGY OPERATIONS, INC.
WATERFORD 3 GENERATING PLANT
KILONA, LOUISIANA
CONTRACT No. 10041288**

**DAMAGE ASSESSMENT OF AREA 4,
WATERFORD PLANTATION,
ST. CHARLES PARISH, LOUISIANA**

**By
Stephanie L. Perrault**

Final Report

August 2004

**Prepared for
Entergy Operations, Inc.
Waterford 3 Generating Plant
Kilona, Louisiana**

Contract No. 10041288

**Prepared by
Coastal Environments, Inc.
Baton Rouge, Louisiana**

ABSTRACT

The results of a damage assessment within the Waterford Plantation site (16SC41), located at the Waterford 3 nuclear power plant in St. Charles Parish, are presented. To assess any damage, a program of pedestrian survey and subsurface testing was implemented. During the present investigation a total area of 3.85 acres (1.56 ha) was examined. Forty-four shovel tests were excavated within Area 4. Over 300 artifacts were collected from the ground surface and shovel tests. Stratigraphic profiles were compared between four discrete loci within Area 4. From these comparisons, it was found that the archaeological deposits in the vicinity of the helicopter pad have been disturbed over an area measuring approximately 60-m-by-40-m (2400 m²). However, deposits beyond the area of disturbance remain intact. These deposits do in fact extend beyond what was originally designated as the Area 4 quarters complex. Thus, the Waterford Plantation site remains eligible for nomination to the National Register. Avoidance is the recommended action. Future plans for construction should take into account the possibility of the presence of additional features and structure locations.

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ACKNOWLEDGEMENTS

Several individuals contributed both their time and effort to the completion of this study. Mr. Greg Hood of Entergy Corporation initially coordinated the project and served as the Entergy representative. Mr. Hood also provided maps, digital images of fieldwork, and general knowledge about the project area. Mr. Mark Louque assumed the position of Entergy representative at the end of the project. Mr. John Polk, Sr. visited the project area and furnished information concerning the early European settlements of the region.

Gratitude is also expressed to members of the Coastal Environments, Inc., staff. The field crew consisted of John Hogg and Joshua Boutwell. Patricia Tilley processed the artifacts in the laboratory. Cherie Schwab performed the report layout.

CHAPTER 1

INTRODUCTION

This report presents a damage assessment to cultural resources within the Waterford Plantation site (16SC41). The Waterford Plantation site is located on the grounds of the Waterford 3 Generating Plant, St. Charles Parish, Louisiana (Figure 1-1). To this purpose, Coastal Environments, Inc., (CEI) was contracted by Entergy Operations, Inc., to conduct a cultural resources investigation to determine the extent of damage to the quarters area (Area 4) within the Waterford Plantation site, due to the construction of a helicopter pad (Figure 1-2). A total of 3.85 acres (1.56 ha) were examined during the present investigation.

The primary goal of this investigation was to provide an assessment of the impacted area, and to re-evaluate the site as to its National Register eligibility. The attainment of this goal called for the accomplishment of four basic tasks. The first task entailed a background search, including an examination of literature concerning the archaeology and history of the general area and the Waterford Plantation site specifically, and a review of site records on file with the Louisiana Divisions of Archaeology and Division of Historic Preservation. Included with the background research was an examination of information concerning the history of land use with the site area through the use of historic maps. The information gathered during this phase of work was used as an aid in the assessment of damage within the known site area. The second task consisted of fieldwork in the form of a cultural resources survey, including pedestrian survey and subsurface testing. The third task consisted of the recording of archaeological deposits within the site area and re-evaluating the National Register eligibility of the site. The fourth and final task involved the production of a technical report presenting the findings of this investigation.

Subsequent to the background research and fieldwork, it was concluded that the cultural deposits in the vicinity of the helicopter pad had been disturbed. However, portions of Area 4 outside the helicopter pad remain intact. Additionally, the possible remains of the plantation sugar mill were located. Thus, the determination that the Waterford Plantation site is eligible for inclusion in the National Register of Historic Places (NRHP) still stands. It is also recommended that in the event of future construction all areas of the plantation complex be avoided. A detailed description of the site and the work performed is presented in the following chapters.

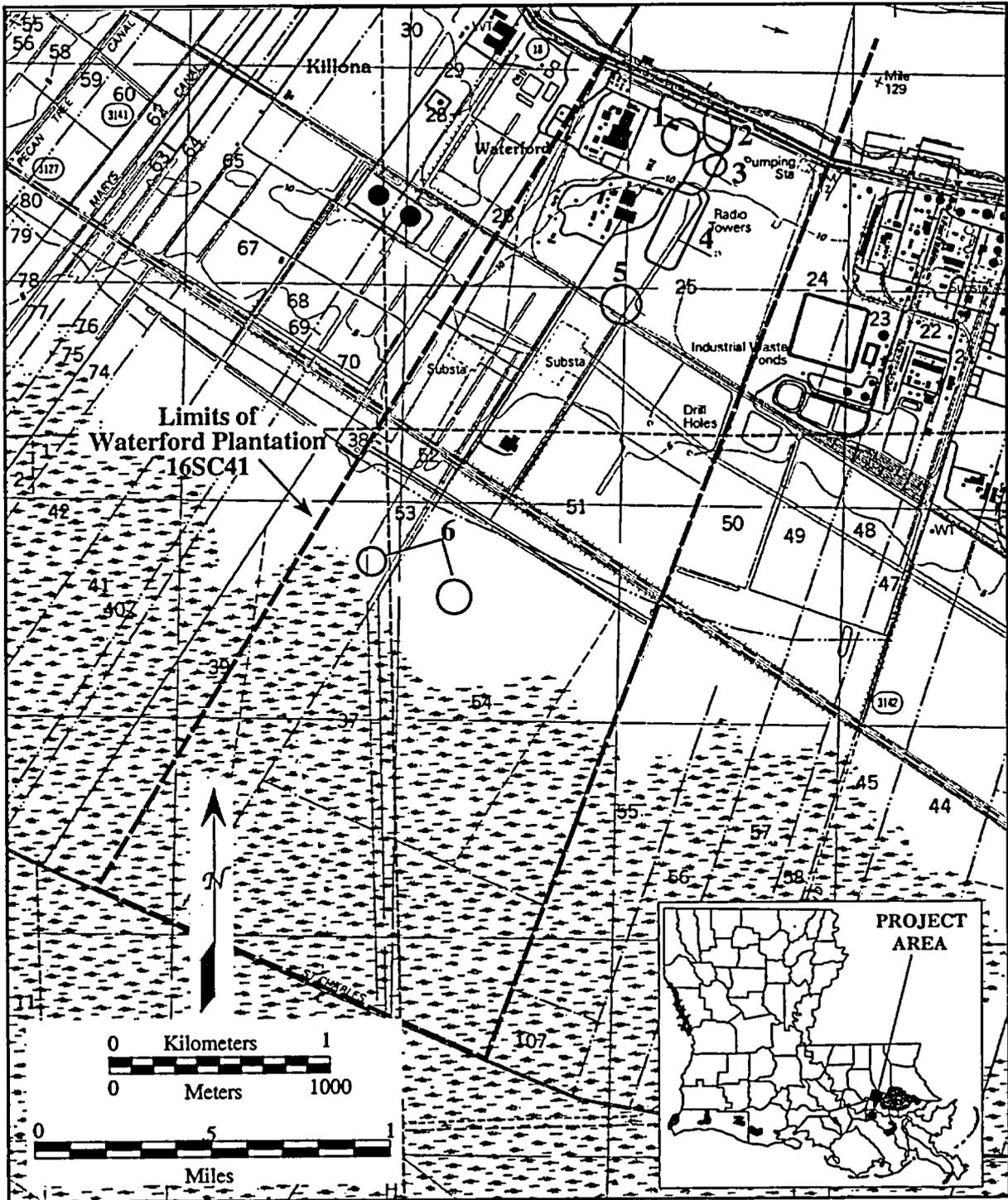


Figure 1-1. Map of the Waterford 3 power plant showing the locations of the former Waterford Plantation structure complexes (U.S.G.S. 1995).



Figure 1-2. Photograph of the helicopter pad constructed within Area 4. Interested parties left to right: John Polk, Brian Fagoust, and Ronald Perry. View to the north.

Report Organization

The remainder of this report is organized the following fashion. Chapter 2 presents an overview of the environmental setting of the project area. Chapter 3 summarizes the regional culture history of settlement and use of the project area. Additionally, a discussion of previous cultural resource-related work that has been conducted in the region is also contained in Chapter 3. Chapter 4 presents a discussion of the field investigations. A summary of findings, assessments, and recommendations for further treatment is presented in Chapter 5.

CHAPTER 2

ENVIRONMENTAL SETTING

This chapter presents a brief overview of the environmental setting of the site locale in order to provide a background for understanding human adaptations in the area. Most predominantly the Waterford Plantation site locale has been extensively impacted by the Mississippi River. The site is located in the extreme northwestern extent of St. Charles Parish (see Figure 1-1). The project area is bounded on the north by the present-day Mississippi River. To the south and west can be found inland freshwater swamps and brackish to saline marsh deposits (Saucier 1994:Plate 14). The site is situated on natural levees associated with the present-day Mississippi River and its distributaries. The following discussion will present a description of landforms present in the area and the chronology associated with their formation, as well as plant, animal, soil associations, and climate of the area.

The geology of this area is dominated by the Mississippi River, its past deltaic processes and present fluvial processes. Over the past 30 years, a considerable amount of geological research that provides the framework for understanding the geologic history and setting of the project area has been conducted (e.g., Fisk 1944; Frazier 1967; Kolb and van Lopik 1958; Kolb et al. 1975; and Russell et al. 1936). Most recently Roger Saucier (1994) has updated the chronology of the Mississippi River and this will serve as the basis for this discussion.

Physiographic and Geologic Setting

In a broader regional view, the Waterford Plantation site is located in the Deltaic Plain portion of the Gulf Basin of the Lower Mississippi Valley segment of the Coastal Plain (Saucier 1994). The coastal plain is an extensive seaward-sloping plain that is bounded by mountain ranges such as the Appalachians, Ozarks, and the Ouachitas on the land-ward side, and extends beyond the shoreline to the edge of the continental shelf in the Atlantic Ocean and the Gulf of Mexico (Figure 2-1). It extends from Cape Cod, Massachusetts (where it is submerged), south and westward to Mexico (Thornbury 1965:30). The Coastal Plain was formed through the deposition of sediments eroded from the landward highlands and carried seaward by major rivers and their distributaries beginning during the Tertiary Period (65 to 1.8 million years ago), and continues to this day (Colquahoun 1968:146). The basement rocks on which the Coastal Plain sediments are deposited vary in age from the Paleozoic (544 to 248 million years ago) to Precambrian Times (45000 to 544 million years ago). The Coastal Plain has been further divided into five segments, three of which are located in

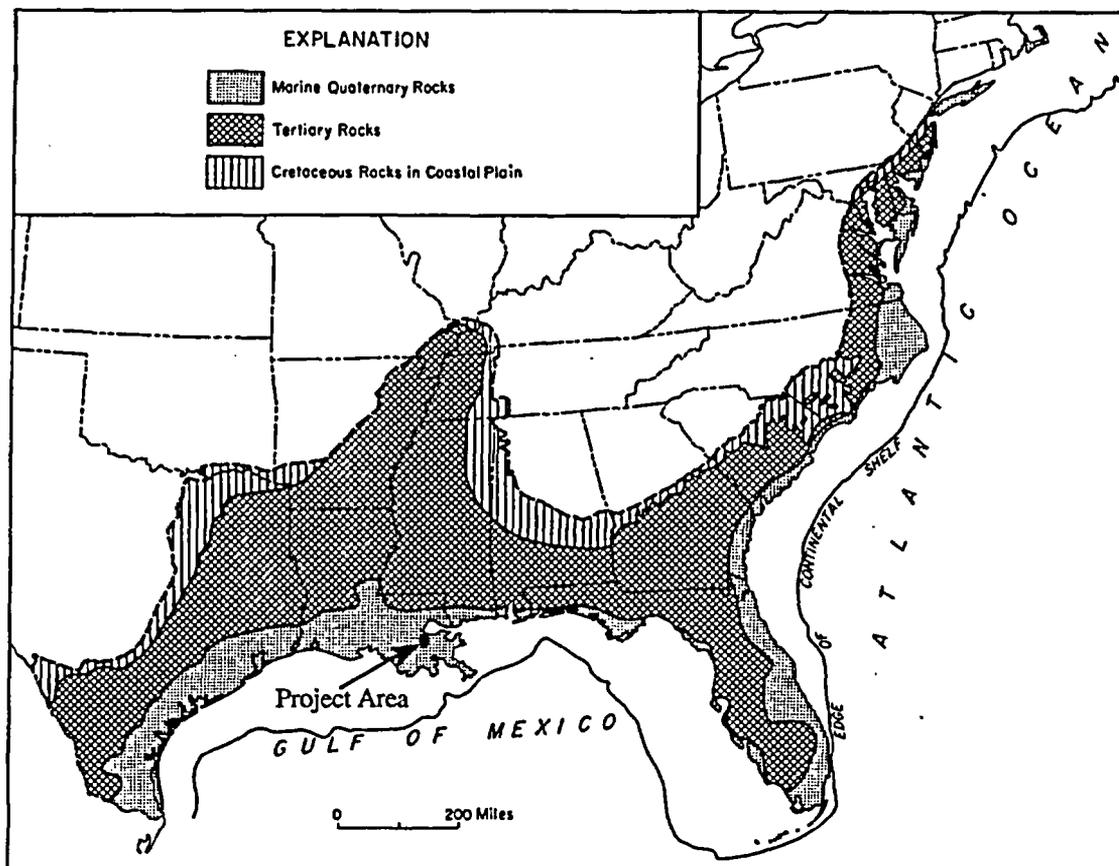


Figure 2-1. Map showing the extent of the Coastal Plain and ages of underlying rocks (Thornbury 1965:Figure 3.1).

Louisiana. The three Louisiana segments include the East and West Gulf Coastal Plains, and the Mississippi River Alluvial Valley segment (Figure 2-2).

The Coastal Plain has been affected by uplifting and downwarping resulting in the creation of the Gulf of Mexico and the Mississippi Embayment. The Gulf of Mexico was created through continental rifting creating the Gulf of Mexico Basin in Late Triassic or Early Jurassic times (Saucier 1994:51). This rifting continued until the basin achieved its present configuration by the Early Cretaceous Period (Buffler 1991). Additional downwarping on the north side of the Gulf Basin during the Cretaceous period formed the Mississippi Embayment. At the end of the Upper Cretaceous, a marine transgression from the Gulf of Mexico inundated the Embayment. Shortly after the initial marine transgression, during Paleocene and Eocene times, the Embayment began filling with thick wedges of noncarbonate clastic sediments. These unconsolidated sediments of fluvial, estuarine, and marine origin have accumulated during the Cenozoic Era to a thickness of tens of thousands of meters. The Gulf Basin is characterized by prevailing subsidence and active faulting.

Lying above the Gulf Basin is the Mississippi River Deltaic Plain, comprised of a mixture of clays, silts, and fine sands laid down by the Mississippi River during the Holocene

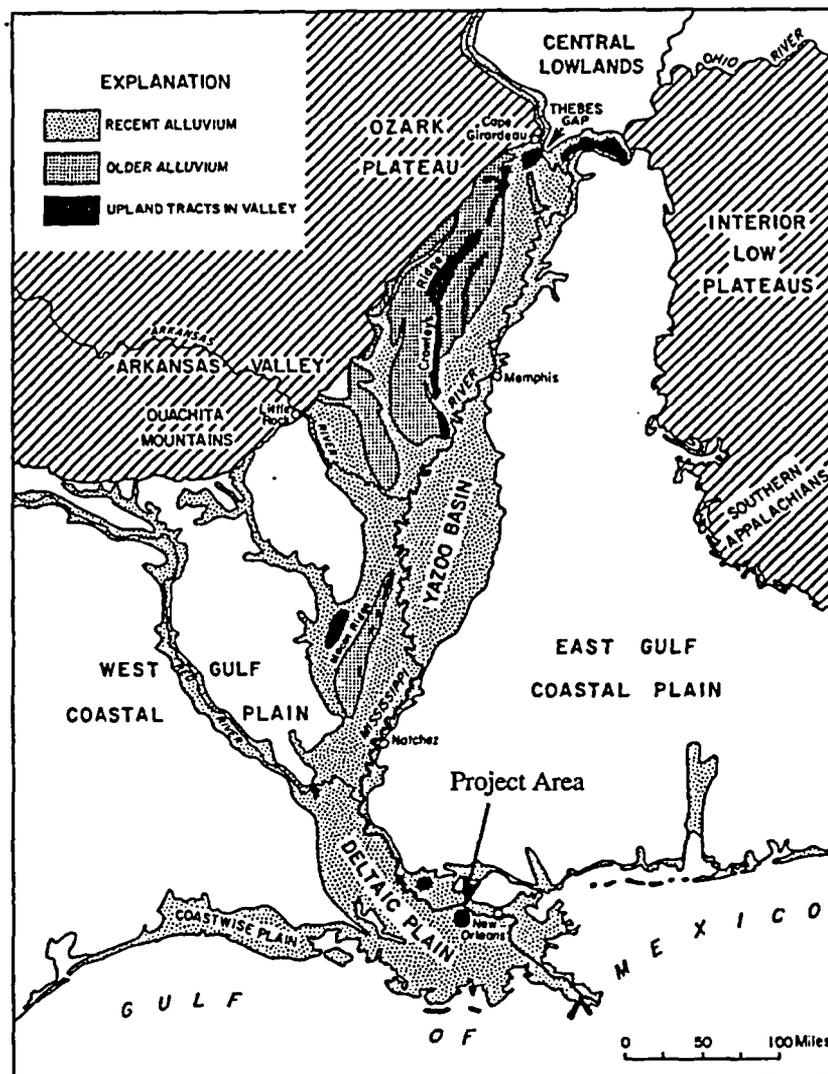


Figure 2-2. Segments of the Gulf Coastal Plain (Thornbury 1965:Figure 3.16).

(Figure 2-3). The deltaic deposits represent a series of on-lapping sedimentary cycles initiated by upstream diversion of the Mississippi River flow, each cycle correlates to a discrete delta complex. Each cycle involves the deposition of sediments laid down in multiple environments that range from freshwater to saline in the dynamic zone of interaction where the river emptied into the Gulf. The cumulative result of multiple cycles has been the net buildup and seaward buildout of the deltaic plain. Each delta complex in turn involves a series of delta lobes, a lobe being defined as a portion of a complex formed during a relatively short period of the time (a matter of centuries) and that can be attributed to a single or discrete set of deltaic distributaries (Figure 2-4) (Saucier 1994:276). Thus each lobe has experienced a constructional and progradational phase and a subsequent destructional or transgressive phase. The present-day land surface is an expression of only the latest elements of a long sequence of delta formation in the region. An outline of the currently accepted sequence of delta formation is presented below.

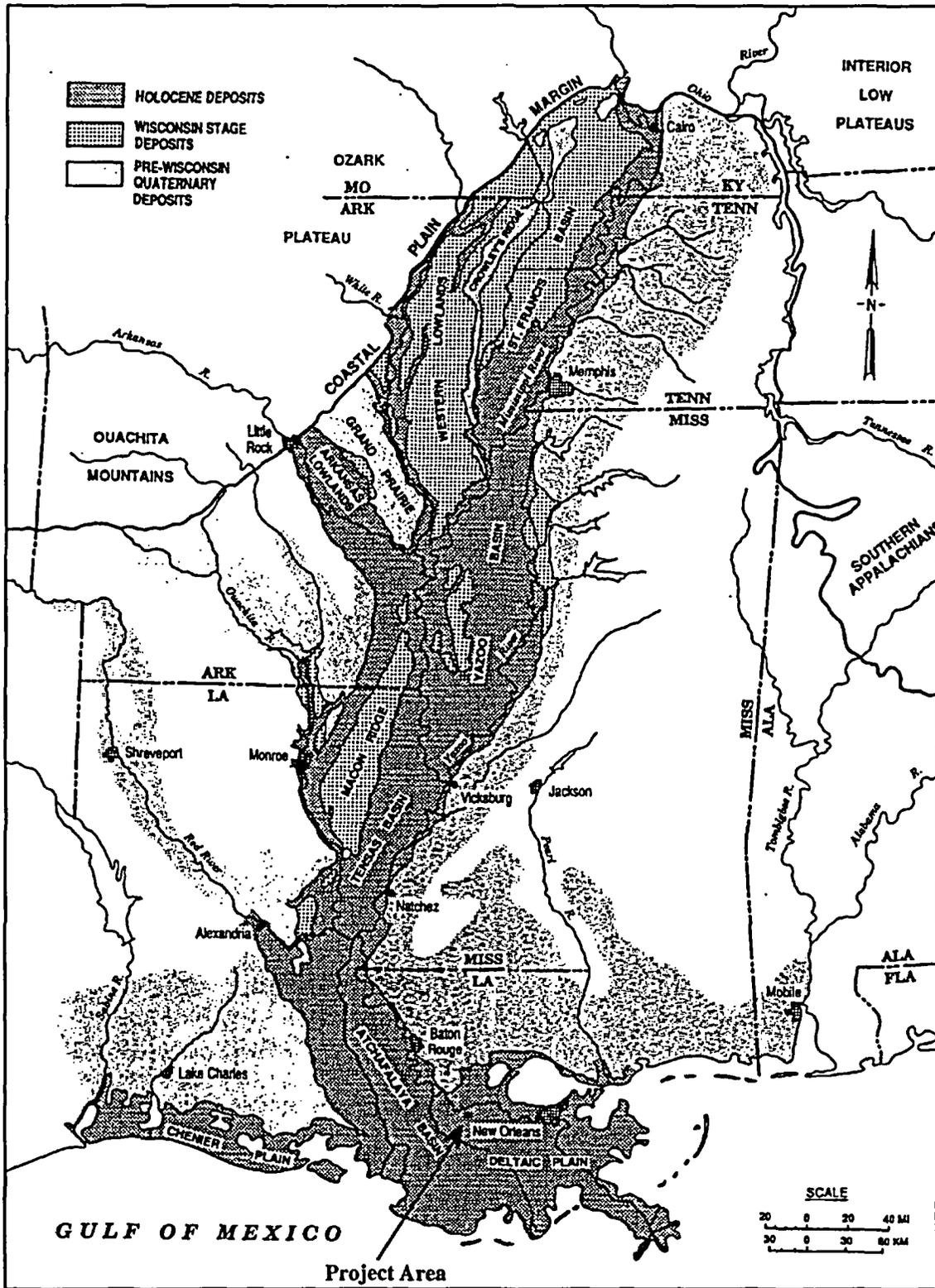


Figure 2-3. Mississippi Alluvial valley, deltaic plain and chenier plain (Saucier 1994:Figure 1).

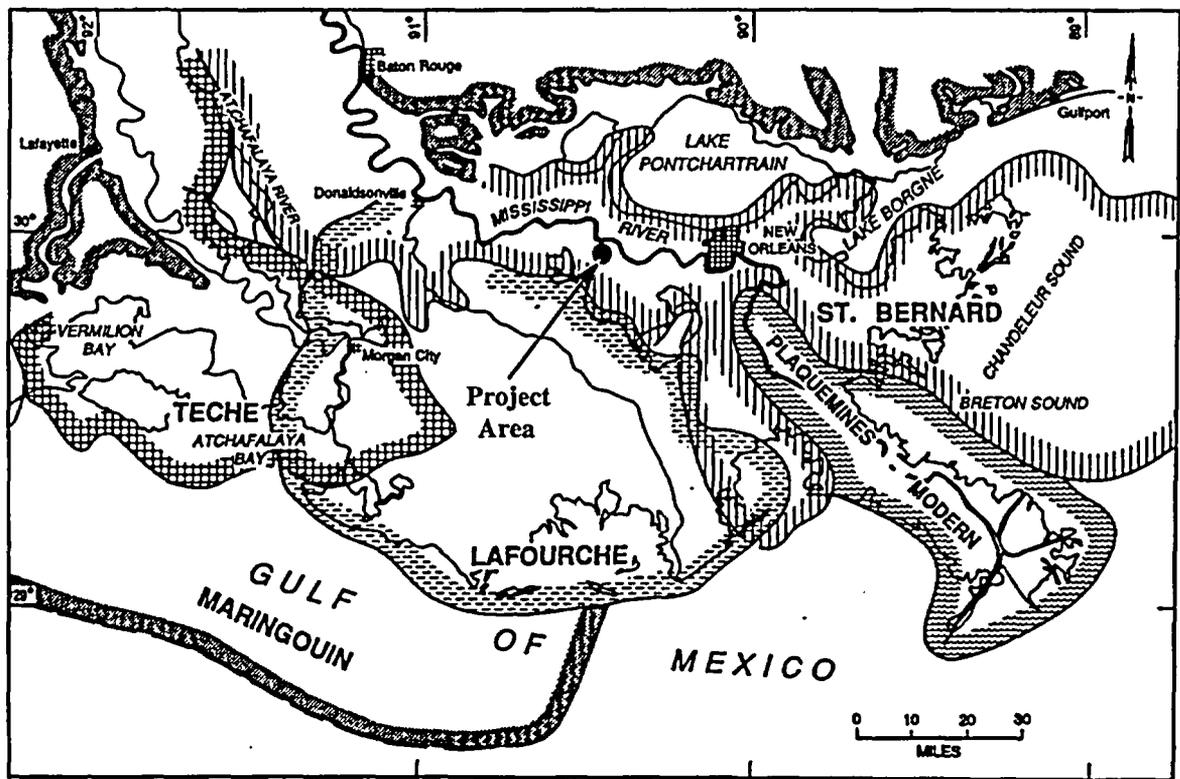


Figure 2-4. Holocene delta complexes (Saucier 1994:Figure 31B).

Prior to 12,000 years B.P. the rate of postglacial sea level rise was so rapid that the development of a deltaic plain analogous to that of today was not able to form. The earliest identified delta complex is the Outer Shoal Complex (Penland et al. 1988). This complex consists of two relict submerged shorelines located offshore of central Louisiana. These shorelines formed during temporary sea level still stands. Additionally, two ravinement surfaces were identified and it is suggested they formed during episodes of relatively rapid sea level rise (Saucier 1994:277). No radiocarbon dates have been reported for this complex. However, Goodwin et al. (1991) has suggested that it may date between 9,200 and 8,200 years B.P.

Above the Outer Shoal Complex is the Marigouin Complex (see Figure 2-4). Radiocarbon dates of this buried deltaic system suggest that it was active between 6,500 and 9,000 years ago (Weinstein and Gagliano 1985:122). The trunk channel of this system was apparently located along the western side of the Mississippi River alluvial valley while this delta complex was active.

Approximately 7,000 years ago, rising sea levels began to erode and inundate the extremities of the Marigouin Delta. In response to the decreasing gradient as a result of sea level rise, the Mississippi River began to form a new delta system known as the Teche Delta complex (see Figure 2-4). Based on Radiocarbon dates and archaeological data, it appears

that the Teche Delta was active about 3,400 to 5,800 years ago (Weinstein and Gagliano 1985:123). Bayous Teche, Boeuf, L'Ourse, and Black now occupy the Teche Delta trunk channel. Although the natural levees of the trunk channel have subsided somewhat, they are still extant as surface features 800 to 1600 m wide in some areas. Major distributaries of this system include Bayous Cocodrie, Piquant, Penchant, Carencro and Little Horn.

A substantial diversion in the flow of the Mississippi River occurred about 35 km north of Baton Rouge about 4,800 years ago, while the Teche Delta was still actively building. This diversion shifted increasing amounts of the river's flow to the central and eastern portions of the Mississippi River alluvial valley. This eastward flow eventually led to the creation and subsequent development of a new delta system known as the St. Bernard Delta Complex (Saucier 1994:280) (see Figure 2-4). As the Mississippi's flow slowly shifted to the east, the Red River occupied the old Teche course and discharged directly into the Gulf through its distributaries. Based on archaeological data and radiocarbon samples, it appears that Bayou Lafourche began to form in present-day Donaldsonville during this period as a distributary of the trunk channel of the Mississippi River. The natural levees of this distributary may have reached as far south as present-day Thibodaux.

Between 3,400 and 1,800 years B.P. the St. Bernard Delta Complex expanded into two major deltaic lobes (see Figure 2-4): the La Loutre and St. Bernard Deltas (Weinstein and Gagliano 1985:123). The sediments carried by the trunk channel of this system, now occupied by Bayou La Loutre, formed much of present-day St. Bernard Parish.

Flow down the Bayou Lafourche distributary continued throughout this period. By about 2,000 B.P., these distributaries captured the majority of the Mississippi River's flow. Increased flow through this distributary system eventually brought about the creation of the Lafourche Delta Complex (Saucier 1994:282) (see Figure 2-4). Sediments laid down by this system led to the creation of the present landforms in Terrebonne and Lafourche Parishes.

The general sequence of events related to the development of the Lafourche deltaic complex are known; however, disagreement over some specifics of chronology and associated individual landforms (i.e., channel/levee segments) still exist. Delineation of the age, spatial extent, and associated landforms of the Lafourche Delta has relied heavily on archaeological data. These have been reviewed and discussed in Beavers et al. (1984), Weinstein and Gagliano (1985), and Saucier (1994).

Frazier (1967), relying primarily on core-log data and associated radiocarbon dates, delineated five separate lobes for the Lafourche Delta. He suggested the initial sedimentation associated with the system began, possibly, as early as 5,600 years ago and, by 4,500 years ago, Bayou Lafourche may have extended natural levees to the vicinity of present-day Thibodaux. Landforms associated with this early delta stage are buried beneath two or more meters of more recent sediments.

Frazier (1967:300) suggested that since about 4,200 years ago Bayou Lafourche has received some type of flow from the Mississippi River. He argued that between approximately 2,500 and 3,500 years ago, the Bayou Terrebonne lobe of the Lafourche

system was developed. This lobe extended south and southwest from Bayou Lafourche at Thibodaux with Bayou Terrebonne as its main distributary. Weinstein and Gagliano (1985: 141-142) have associated a number of prehistoric sites of the Marksville period, dating ca. A.D. 1 to A.D. 400, with landforms of the Bayou Terrebonne lobe; generally supporting Frazier's latest dates for this feature.

Subsequently, Bayou Terrebonne was reoccupied and what Frazier (1967:300) identified as a third Lafourche delta lobe developed. This lobe extended south-southwest, lengthening Bayou Black and eventually reoccupying the distal portions of the much earlier Teche system. Progradation of this system resulted in the development of the landforms in the lower Terrebonne system along Bayous Grand Couteau, Little Couteau, and Blue.

The fourth deltaic lobe of the Lafourche complex is the most extensive and was formed along a number of distributaries (Frazier 1967:301). Landforms called by Frazier the "Lafourche and Terrebonne," form a considerable portion of the present-day deltaic plain of Lafourche and Terrebonne Parishes. Frazier (1967:301) dated this formation between 400 and 1,200 B.P.

Frazier (1967:301) suggested that the fifth and final lobe associated with the Lafourche Delta complex, which he called the "Lafourche," prograded Bayou Lafourche southeast from Thibodaux. His radiocarbon dates on organics underlying or associated with levee features of this final delta lobe suggest that it was active from approximately 400 years B.P. until recent times. According to Frazier, the delta lobe, with Bayou Lafourche as the main channel, prograded into and almost completely filled the low flood basin (the Barataria Basin), then existing between Bayou Grand Coteau and the Mississippi River. Lac des Allemands and Lake Salvador are remnants of the large, brackish-water lake that once existed in this area.

Weinstein and Gagliano (1985:143-154) proposed that, at least, a portion of the Bayou Lafourche distributary system below Thibodaux had been formed by about 1,500 years ago, considerably earlier than is evidenced by the dates collected by Frazier. Support for their early date is provided by the presence of several prehistoric, Coles Creek Period occupations along lower Bayou Lafourche and other distributaries associated with Frazier's final Lafourche Lobe. These sites suggest dates for Lafourche Lobe landforms of at least 900 years B.P. and, possibly, as early as 1,200 years B.P. Thus, the archaeological data argue that the Lafourche Lobe may be twice as old as had been postulated by Frazier.

Approximately 1,000 years ago, flow into the Lafourche system began to decrease and an increase in flow occurred in the old St. Bernard system. The former St. Bernard-Mississippi course was partially reoccupied at this time, and a significant amount of flow occurred in the Bayou des Familles area, producing deposition into the upper Barataria region. The delta complex associated with this diversion is known as the Plaquemines and was responsible for producing much of the land surface in Plaquemines and St. Bernard Parishes (Saucier 1994:284) (see Figure 2-4). The Plaquemine delta lobe prograded rapidly into late prehistoric times (500 to 400 years B.P.), at which time the delta front advanced towards the edge of the continental shelf. This contact with deep water altered the

physiographic character of the delta lobe. The present delta lobe of the Plaquemines complex has been termed the Balize or Modern delta (or subdelta) (Saucier 1994:284).

The natural levee ridges and basins form several important physiographic subsections. The present project area lies in the Barataria Basin. North and east of the project area are the present-day Mississippi River Meander Belt and the Pontchartrain Basin. To the east can be found the Bayou des Familles distributary and the Mississippi River. No Streams enter the basin. All runoff flows to Bayou des Allemands into Lake Salvador, eventually making its way into Barataria Bay, thence into the Gulf of Mexico (Saucier 1994:31).

Across the area, elevations vary less than 2.0 m (6.5 ft) above mean sea level (NGVD). Elevations at the natural levee ridges range from 2.0 m (6.5 ft) to just over 6 m (20 ft) NGVD along the levee crests of Bayou Lafourche and the present Mississippi River. In ancient times floodwaters from the river seasonally overtoped the riverbanks and continued the process of natural levee growth. In modern times, flooding of the river has been controlled by levee construction and only local precipitation flows across the natural levees to the adjacent wetlands. This flow is confined almost totally to drainage ditches and canals.

Soils

In the vicinity of the present project area three soil associations can be found, Commerce-Sharkey, Convent-Commerce, and Sharkey-Commerce (McDaniel 1987). A soil association is made of different soils that lie near each other in uniform patterns. Soils of the Commerce-Sharkey association are found on natural levees of the Mississippi River and its distributaries, but on the landward side of the artificial levees. The commerce soils of this association are found at the intermediate and high positions on the natural levees. Commerce soils are somewhat poorly drained, and are comprised of silt loam or silty clay loam. Sharkey soils are found on the lower portions of natural levees and are comprised of silty clay loam or clay. Both soils are poorly drained, but the Sharkey soils are more so due to a higher clay content.

The soil association found between the artificial levees and the river is the Convent-Commerce association. These soils are subject to scouring and deposition by floodwaters. Convent soils are somewhat poorly drained and are found at the tops of low ridges. They are comprised of silt loam or fine sandy loam deposits that overlie mottled silt loam deposits. The commerce soils of this association are found in swales between the ridges. These soils consist of silt loam or very fine sandy loam on the surface, below which lie mottled silt loam. Minor pockets of Vacherie soils can also be found. These soils have a loamy surface layer, beneath which lies a deposit of clay.

The final soil association found in the vicinity of the project area is the Sharkey-Commerce association. These soils lie beyond the Commerce-Sharkey association furthest from the river, and are found the extreme backslopes of natural levees and deltaic fans of the Mississippi River and its distributaries. Sharkey soils are found in the lower portions of

natural levees. They are poorly drained, and consist of a surface layer of brown clay that overlies a deposit of gray clay. Commerce soils are found on deltaic fans. These soils consist of alternating deposits of silty clay loams. Small deposits of clay Fausse soils are found in depressions and abandoned stream channels.

Flora

Prior to extensive clearing of the higher natural levees for agriculture beginning in the late eighteenth century, the study area supported a vast bottomland hardwood forest. The forest was characterized by a relatively low species diversity, but it exhibited a complex mosaic of plant communities whose distribution was controlled primarily by landforms and hydrology. Batture communities were dominated by species such as willow (*Salix* spp.) and cottonwood (*Populus deltoides*), which could tolerate frequent inundation and burial by sand and silt. The lower slopes of natural levees and the better-drained portions of backswamps included communities dominated by overcup oak (*Quercus lyrata*), sugarberry (*Celtis laevigata*), American elm (*Ulmus americana*), and green ash (*Fraxinus pensylvanica*). The higher and better-drained natural levees supported communities dominated by sweetgum (*Liquidambar styraciflua*) and water oak (*Quercus nigra*). Backswamp vegetation best characterizes that which is found at the western extent of the Waterford property. Swamp red maple, American elms, and water oaks are common here. Portions of the backswamp that are permanently flooded or intermittently exposed are dominated by communities of baldcypress (*Taxodium distichum*) and water tupelo (*Nyssa aquatica*) (Craig et al. 1987).

Fauna

Wildlife population density in the area is moderate. Decreased habitat from agricultural and industrial clearing activities have worked against a high bird and mammal population. Woodland species of game and nongame animals however, do thrive in the area. White-tailed deer (*Odocoileus virginianus*), gray squirrel (*Sciurus carolinensis*), swamp rabbit (*Sylvagus aquaticus*), and fox squirrel (*Sciurus niger*) are present in moderate numbers. Other furbearers such as muskrat (*ondata zibithicus*), raccoon (*Procyon lotor*), otter (*Lutra canadensis*), and nutria (*Myocastor coypus*) are also present (Lowery 1974).

The most common predatory birds found in the area include the great horned owl (*Bubo virginianus*), barred owl (*Strix platypterus*), marsh hawk (*Circus cyaneus*), red tailed hawk (*Buteo jamaicensis*) and the bald eagle (*Malaieetus leucocephalus*). Non-predatory birds include several species of egret (*Casmerodius albus*), ducks (*Anas* spp.), woodpeckers (Picidae), and quails (*Cilinus virginianus*) (Bahr and Hebrard 1976).

The river, streams, and ditches sustain numerous types of aquatic life. Types of fish include gar (*Lepisosteus* spp.), catfish (*Ictalurus* spp.), drum (*Apolodinotus grunniens*), and perches (Percidae) (Douglas 1974). Amphibians are represented by salamanders (*Ambystone texanum*), newts (*Notophthalmus videscens Louisianensis*), toads (*Bufo* spp.), tree frogs (*Hyla* spp.), and true frogs (*Rana* spp.). A number of reptilian species are present in the study area, including alligators (*Alligator mississippiensis*), snapping turtles (*Chelydra sperpentina*), box turtles (*Terrapene carolina triunguis*), and the cottonmouth/water

moccasin snake (*Agkistrodon piscivorus piscivorus*). Crawfish, both river (*procambrus blandingii*) and red swamp (*P. clarkii*), can be found in the many ditches, streams, and bayous (Bahr and Hebrard 1976).

Climate

The climate of St. Charles Parish is typical of any location along the Gulf Coast (McDaniel 1987:2). Generally, the summers are long and hot, while the winters are warm with a few episodes of cold air intruding from the north. The average daily temperature varies by 30° during the year (McDaniel 1987:Table 1). The yearly average maximum temperature is 77.7° F (25.4° C), and the yearly average minimum is 91.2° F (14.2° C). The hottest temperatures occur in July averaging 91.2° F (32.8° C). The coldest temperatures occur in January averaging lows of 40.7° F (9.7° C). Today's technology allows for factoring heat indexes and wind-chill into the temperature. Thus maximum temperatures can feel well over 100° F (37.7° C), and minimum temperatures well below freezing (32° F and 0° C).

Precipitation in the form of rainfall is frequent throughout the year, averaging 64 inches (162.5 cm) (McDaniel 1987:2-3). Fifty percent of precipitation falls between the months of April and September. Thunderstorms occur most often during the summer, averaging 70 days over the year. In 95 percent of winters there is no measurable snowfall. In the remaining 5 percent, snowfall can measure just over 2 inches (50 mm), and is of short duration. Occasionally, severe storms including tornadoes affect the area (McDaniel 1987:3). Every few years, a tropical depression or hurricane enters the area resulting in very heavy rains.

CHAPTER 3

PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS AND CULTURAL SETTING

This chapter will provide data both on previous archaeological investigations and the cultural chronology in the vicinity of the project area. The present investigation is focused only with the Waterford Plantation, thus the discussion of the culture history chronology will begin with the European colonization of the area.

Culture History

European Exploration (1519-1717)

Initially, the Gulf coast was claimed for the King of Spain in the sixteenth century by Spanish explorers. Their sole interest in the territory lay in its potential for providing treasure. Although scholars disagree who first discovered the mouth of the Mississippi, Alonso Alvarez de Piñeda in 1519, or the survivors of the Pánfilo de Navarez expedition in 1528, it is generally agreed that Hernando de Soto was the first Spaniard to explore the Louisiana interior. De Soto led an expedition across the present southeastern United States, crossing the Mississippi River near the modern Tennessee/Mississippi state border in 1541. The explorers traveled west, perhaps as far as Oklahoma, before returning to the Mississippi. De Soto died somewhere along the river between Memphis and Baton Rouge in May of 1542. The expedition survivors attempted an overland route through Texas to Spanish settlements in Mexico, but turned back and journeyed down the Mississippi and across the Gulf of Mexico reaching Vera Cruz in September of 1543. Following these disastrous expeditions, Spain took no further action to strengthen her claim to the lower Mississippi Valley, leaving the region undisturbed by Europeans for nearly 140 years (Davis 1917:27-28; McLemore 1973:1:91-100).

La Salle, and a small group of French explorers, were the second Europeans to lay claim to the area which would become St. Charles Parish, although the survivors of Hernando De Soto's party had passed by on their journey down the Mississippi River in 1542. LaSalle, intent on finding a trade route from Canada to China, traveled to the mouth of the Mississippi, arriving there on April 7, 1682. His attempt to settle the region was unsuccessful; it was not until 1699 that the French were able to occupy the region that later

became Louisiana. In that year, Pierre Le Moyne, Sieur d'Iberville, accompanied by his brother, Jean Baptiste Le Moyne, Sieur de Bienville, established a French settlement on Biloxi Bay and began to explore the lower Mississippi River area. Exploration and travel through Lake Pontchartrain and the St. Charles Parish area continued throughout the first two decades of the eighteenth century, but it was not until about 1719 that settlement of the region began.

French Colonial Period (1717-1767)

The settlement history of the east bank of St. Charles Parish is complex because it was eventually settled by two distinct groups of people moving into the area from opposite directions. From upriver came the Germans from the area of present-day Edgard in St. John the Baptist Parish. These settlers were primarily small-farm owners who sold their vegetables and other farm goods to New Orleans consumers and merchants (Davis 1971:71). From downriver came the wealthy plantation-owning French and French creoles whose land holdings in the east bank area known as *Cannes Brulées* were often quite vast as compared to the German farms. Although St. Charles Parish came to be known as part of the "German Coast" because of the number of Germans residing there, the French plantation owners held the real wealth and power of the parish and, of the whole colony of New Orleans.

The settlement of the German Coast is closely tied to the career of the Scottish financier, John Law. Law organized the General Bank of Finance in 1716 after convincing Philippe, duc d'Orléans, that France would become a very wealthy country by printing paper money. In 1717, Law's paper money was accepted in France and his bank was made the Royal Bank of France the following year. During this same period, Law organized the Company of the West in order to use some of the bank deposits to develop the French colony of Louisiana. In 1717, the Company of the West was given the proprietorship of Louisiana in return for settling the territory at the company's expense (Davis 1971:52, 53).

To attract settlers of good character, the Company of the West and its successor, The Company of the Indies, distributed pamphlets and handbills throughout Germany and the surrounding areas extolling the virtues of Louisiana. The Germans responded positively to the advertisements, and in 1719 many made their way to the colony. Large numbers of these eager immigrants died enroute to French ports and many more died on the transatlantic voyage to the Louisiana colony (Deiler 1969:17). Once in Louisiana, more of the surviving Germans died of disease and hunger after being disembarked at the settlement of New Biloxi (Davis 1971:58; McWilliams 1953:235).

The first of the German settlements on the Mississippi, *Le premier ancien village allemand*, was founded in 1719, just one year after the establishment of New Orleans (Adams in Gianelloni 1965:ix; O'Neil et al. 1984:21). This village, about 30 mi above New Orleans, was located about 1.5 mi inland on the west bank of the Mississippi River. The German immigrants were given this land on the west bank partly because the French believed it to be mostly worthless swamp (Maduell 1972:vii). The remaining 1719 German immigrants were settled on John Law's concession in Arkansas.

When news reached Europe that Louisiana was not as idyllic as had been advertised, French businessmen began withdrawing their holdings from the Royal Bank of France. Gold and silver became scarce, paper money flooded the market, and the French government was forced to devalue their paper money. The bank soon collapsed and Law was forced to flee France for his life in December 1720 (Davis 1971:61).

Shortly after the bank's collapse, a second group of Germans arrived in Louisiana under the leadership of Karl Friederich d'Arensbourg. D'Arensbourg and his fellow colonists settled near the earlier settlement of *Le premier ancien village allemand*, but closer to the river (Deiler 1969:52). The two villages later became known collectively as "Karlstein." Both were abandoned in 1721 in favor of higher ground nearer the river after a September hurricane inundated the area (Deiler 1969:51).

The size of the German settlement on the German Coast grew rapidly in 1722 with the arrival of the German colonists from the abandoned Arkansas settlement. By 1722 the Arkansas Germans realized that their fate as a colony was doomed without the financial support of John Law. Early in that year they descended the Mississippi to New Orleans and requested that Governor Bienville give them return passage to Europe. Bienville was able to persuade the Arkansas Germans to join their compatriots on the German coast rather than return to Europe. These German *engagés* settled along the banks of the river amongst the earlier settlers. By May 1722 the population of the German coast was 257 (Deiler 1969:37, 38, 74).

It was not until after 1728 that the east bank of the German Coast began to be settled. Prior to this time a number of large concessions had been made along the Mississippi to individuals who were to improve and settle their property. However, the concessionaires in many places failed to improve their lands. As a result, a royal edict was passed in 1728 that cancelled many of the large concessions along the Mississippi River between Bayou Manchac and the Gulf of Mexico (Deiler 1969:76). This measure was undertaken as a means of forcing landholders to improve their holdings and of breaking up large, unimproved holdings. It was hoped this would increase the number of settlers in the colony, thereby dissuading the Spanish and English from encroaching on French lands. The 1728 edict effectively opened the east bank up for settlement and by 1731 several German habitations had been established there (Deiler 1969:76, 77).

The growth of German settlements on the east bank of the river was hampered by sporadic Indian attacks that continued until the mid-eighteenth century. In April 1747 a Choctaw raid resulted in the killing of one German settler and the kidnapping of seven others. French troops were sent to the area to protect the colonists but were soon removed. The Germans, fearing for their welfare, fled to the west bank for safety. A similar raid occurred on November 9, 1748, when two Frenchmen and two negroes were killed on the east bank of the river (Deiler 1969:60, 61).

While the German Coast residents were primarily involved in truck farming, plantations in surrounding areas were engaged in cultivation of cash crops such as indigo and tobacco, and, to a lesser degree, silk and the candleberry tree (Davis 1971:73). However,

both corn and rice were grown throughout the area. Rice agriculture was developed in Louisiana very early in the colony's history, as corn, a native cultigen, was not particularly favored by the Europeans. Le Page Du Pratz reported that rice was introduced into the colony shortly after 1712 (Davis 1971:72). Rice was competing with corn as a staple crop in the young colony by 1720, and it became more important with the introduction of Black slaves in 1723 (Giraud 1991). Soon, rice-hulling mills were introduced to process the crop (Giraud 1991).

In 1732 Louisiana, reverted to the French crown as the Company of the Indies found that it could no longer support the colony. By the 1750s France realized that Louisiana was a financial burden and that there had been little return for the millions of *livres* spent on the development and supply of the colony. In 1762 France ceded Louisiana and the Isle of Orleans to Spain in the secret Treaty of Fountainbleau. While France saw Louisiana as a financial drain, Spain saw the colony as a defensive mechanism against British expansionism. Although the legal transfer of the colony took place in November 1762, it was not until October 1764 that the colonists actually found out that the transfer had taken place (Davis 1971:61, 62, 69, 70).

Spanish Colonial Period (1762-1800)

Although the transfer of Louisiana from France to Spain occurred in 1762 and was made public in 1764, it was not until March 1766 that Don Antonio Ulloa, the first Spanish governor of Louisiana, arrived in the colony to take possession of the territory. The French and Francophile German residents of the colony did not want their government transferred to Spain and hoped that the slow transfer reflected lack of Spanish resolve in taking over the colony. In October 1768 Nicholas Chauvin de Lafreniere, attorney general of the province, presented a list of grievances to Governor Ulloa (Moore 1976:149) which had been signed by many of the German Coast. In October 1768, approximately 500 Germans and Acadians arrived in New Orleans to express their dissatisfaction with Governor Ulloa. The Acadians had been falsely told that Ulloa was withholding specie that was to be used to redeem their worthless Acadian script and the Germans had been informed that Ulloa had no intention of paying them for their goods that had already been shipped to New Orleans (Moore 1976:151). In fact, Ulloa had no specie for exchange and had sent Gilbert de St. Maxent to the German Coast to pay off Spanish debts (Moore 1976:150, 151). St. Maxent, however, had been abducted by cohorts of Lafreniere and was unable to make the payment (Moore 1976:150).

Once in New Orleans the Acadians and Germans were convinced to support the Superior Council in an effort to rid the colony of Governor Ulloa. Realizing that he had little popular support, Ulloa was forced to evacuate Spanish civil authorities from New Orleans on November 1, 1768 (Moore 1976:163). Although this temporarily rid the colony of Spanish authority, a new Spanish Governor, General Alejandro O'Reilly, arrived in August 1769 to take formal possession of Louisiana for Spain. O'Reilly found Lafreniere and five of his cohorts guilty of conspiracy and had five of them executed by firing squad; the sixth had already died of natural causes.

By the 1770s most of the land facing the Mississippi River in the German Coast had been claimed (Conrad 1981:vii). While many grants along the river were large, some had a depth of only 40 arpents. Some of these smaller landholders had second depth grants of 40 arpents made by the Spanish government; however, this was not a common practice until the American period (Conrad 1981:vii). Some of the larger landholdings in the German Coast began to break up in the 1770s, as the original owners divided their holdings among their children (Conrad 1981:vii).

German Coast planters continued to grow vegetables for sale in New Orleans as their primary crops until the end of the eighteenth century (Conrad 1981:viii). Francisco Bouligny's 1776 account of the area notes that most planters cultivated only the 600 to 800 *varas* nearest the river and reserved the rest for pasture and timber (Din 1977:45). Apparently little use was made of the lakeshore in the vicinity of the project area, as most activities and settlement were confined to the high levee lands near the river. Indigo, one of the predominant cash crops, became unprofitable to grow in Louisiana during the 1790s because of high production costs, soil exhaustion, pollution, and crop infestation (Holmes 1967:346-348). After a 1793 St. Dominique slave revolt, many residents of the island moved to Louisiana, bringing an interest in sugarcane agriculture with them (Conrad 1981:viii). Etienne de Boré's introduction of a profitable method of growing sugarcane along with Antoine Morin's refinement of the granulation process allowed large landholders to begin large-scale production of sugarcane, which soon became the dominant crop in St. Charles Parish. An 1802 account of the colony by Berguin-Duvallon noted that by that time indigo was only rarely grown, while sugar and cotton were the main cash crops (Davis 1806:131).

Early American Period (1800-1861)

Louisiana remained under Spanish control only until October 10, 1800, when the unprofitable colony was returned to France under the Treaty of San Ildefonso. On May 2, 1803, Louisiana was transferred from France to the United States in the Louisiana Purchase even though France did not take formal possession of the colony until November 30, 1803. The Americans took formal possession of Louisiana on December 20, 1803. St. Charles Parish was one of 19 parishes formed in May 1807.

The agriculture of the newly formed parish remained similar to what it had been during the earlier colonial period, although sugarcane became increasingly important as time passed. As sugarcane was such a lucrative crop, many planters sought to form sugar plantations. Economically viable sugar plantations, however, require a great deal of land and many smaller farms in St. Charles Parish were gradually consolidated into larger and larger plantations.

Rice continued to be grown well into this period and St. Charles Parish became a major rice producer in the state. An early-nineteenth-century account of rice agriculture on the German Coast notes that the rice fields were flooded during high river stages by trenches cut through the river levee (Robin 1966:112). These trenches, while providing necessary irrigation for the fields, represented weak spots in the river levee system and were the culprit of many crevasses during the eighteenth and nineteenth centuries.

Civil War and Reconstruction (1861-1912)

While several small Civil War skirmishes were fought in St. Charles Parish, all occurred on the west bank. Numerous buildings were destroyed on both sides of the river by Union gunships (Yoes 1973:79, 80). Other buildings, including several in the vicinity of the project area, were confiscated for use by the Union government. The closest the fighting to the project area occurred on August 1862 near present-day Hahnville after Federal troops learned of a Confederate attempt to gather cattle on that bank of the river (Yoes 1973:80). Several gun emplacements were constructed along the shores of Lake Pontchartrain, but none seem to have been built in the near vicinity of the project area.

Sugar production declined during the Civil War and Reconstruction as planters lost their financial resources and their labor supply (Ginn 1940:34). In response to these difficulties, area sugar planters turned their attention increasingly towards rice cultivation, as it was less expensive and less labor-intensive. The rice industry expanded so rapidly during the early post-bellum years that it became the most important crop of the state (Ginn 1940:35), and it remained important in St. Charles Parish into this century. There were only four sugar plantations on the east bank of St. Charles Parish in 1890 (Bouchereau 1892) and only three in 1900 (Bouchereau 1902). Prospect Plantation was the last sugar plantation on the east bank of St. Charles to produce cane, ceasing production in 1912 (Bouchereau 1917:47).

Industrialization (1912-Present)

The east bank of St. Charles Parish underwent extensive change during the early years of the twentieth century. Plantations and truck farms began to give way to industrial complexes, particularly those related to petroleum, during the second decade of the century. Destrehan Plantation became the home of the Mexican Petroleum Company in 1914, although production did not commence at the plant until 1916 (Elfer 1936). The Mexican Petroleum Company was later taken over by the PanAmerican Petroleum Company and continued operations until 1958. In 1920 the Petroleum Import and Export Corporation began construction of a refinery in St. Rose. The St. Rose refinery was opened in 1921 and was later taken over by Cities Services Oil Company (Elfer 1936:8).

What was to become the largest refinery in the parish began with the construction of the Marine Terminal, a refinery of several 55,000-barrel storage tanks, near the town of Sellers in 1916. This facility, built by the Roxana Petroleum Company, began operations in 1918. Following World War I, an asphalt refinery was built by the New Orleans Refining Company near the Marine Terminal. This refinery became so important to the local economy that the town of Sellers was renamed Norco, the acronym of the New Orleans Refining Company. In the spring of 1929, Shell Petroleum Corporation (formerly Roxana Petroleum Company) took over the Norco plant and began modernizing the facility. The plant resumed operations in 1930 with 650 workers (Elfer 1936).

During the middle of the twentieth century, the Good Hope Oil and Gas Field, north of the town of Good Hope, was established as a major oil field. Expansion of the oil industry

during this period brought an increased need for oil and chemical refineries, several of which were built along both banks of the Mississippi River in St. Charles Parish.

In the late twentieth century nuclear power came of age. In 1969 Louisiana Power and Light announced plans for construction of a nuclear power plant near Taft, Louisiana. Construction subsequently began of the Waterford 3 Nuclear Plant on the grounds of the former Waterford and Kilona plantations. The plant began commercial operation in 1985 (Entergy 2004)

History of Waterford Plantation

Settlement along the Mississippi River above New Orleans has been an ongoing process for over 250 years. Rich alluvial soils, a "road" which never fails, an abundance of raw materials with which to build homes, and an abundance of wildlife have rendered the riverbanks a prime area for settlement. Foremost among the areas chosen for settlement and development were the natural levees formed by overbank deposition of the river. Because of its elevation, the natural levee crest provided a relatively safe place for habitation within the floodplain. Since the coming of the first settlers, the natural levee crest along the Mississippi River has been considered one of the most desirable areas for settlement in the lower Mississippi Valley.

The initial date of settlement for the land comprising the present Waterford 3 site is believed to be around 1721. At that time, a group of German immigrants began settling along the banks of the Mississippi River several kilometers above New Orleans. The area of German settlement came to be known as the German Coast, later subdivided into St. Charles and St. John the Baptist parishes (Figure 3-1). These German settlers formed several small villages along the river. The study area is located in the vicinity of the second German villages, which was settled by a group of immigrants led by a man named Karl Frederic. Since Frederic was from Arensbourg, Germany, the French called him Charles Frederic d'Arensbourg. The family name soon became Darensbourg. Karl served for more 40 years as commander and judge of the German Coast (Deiler 1974:39-42). Several large land grants were awarded to Karl Darensbourg and his family during the early eighteenth century. Either all or a large portion of the later Waterford Plantation was formed from land originally owned by the Darensbourg family. By the 1780s, Pierre-Frederic Darensbourg, the younger of Karl's two sons, was the landowner. Nothing is known about the first date of settlement or the location or physical layout of the earliest Darensbourg domicile.

In 1791, Charles Perret married Louise Darensbourg, daughter of Pierre Darensbourg and Elizabeth Deselle Duclos (Conrad 1974:215). In 1797, Pierre's widow sold a tract of land 10 "arpents deface" to Charles Perret. The main house, its immediate dependencies, and garden were excluded from the transfer and were reserved for Widow Darensbourg (Conrad 1974:285). Sometime during the late eighteenth or early nineteenth century, additional property was obtained immediately downstream from the former Darensbourg estate. The adjacent property was transferred to Charles Perret, Jr., sometime prior to 1828, and is apparently not included in the tract that became Waterford Plantation.

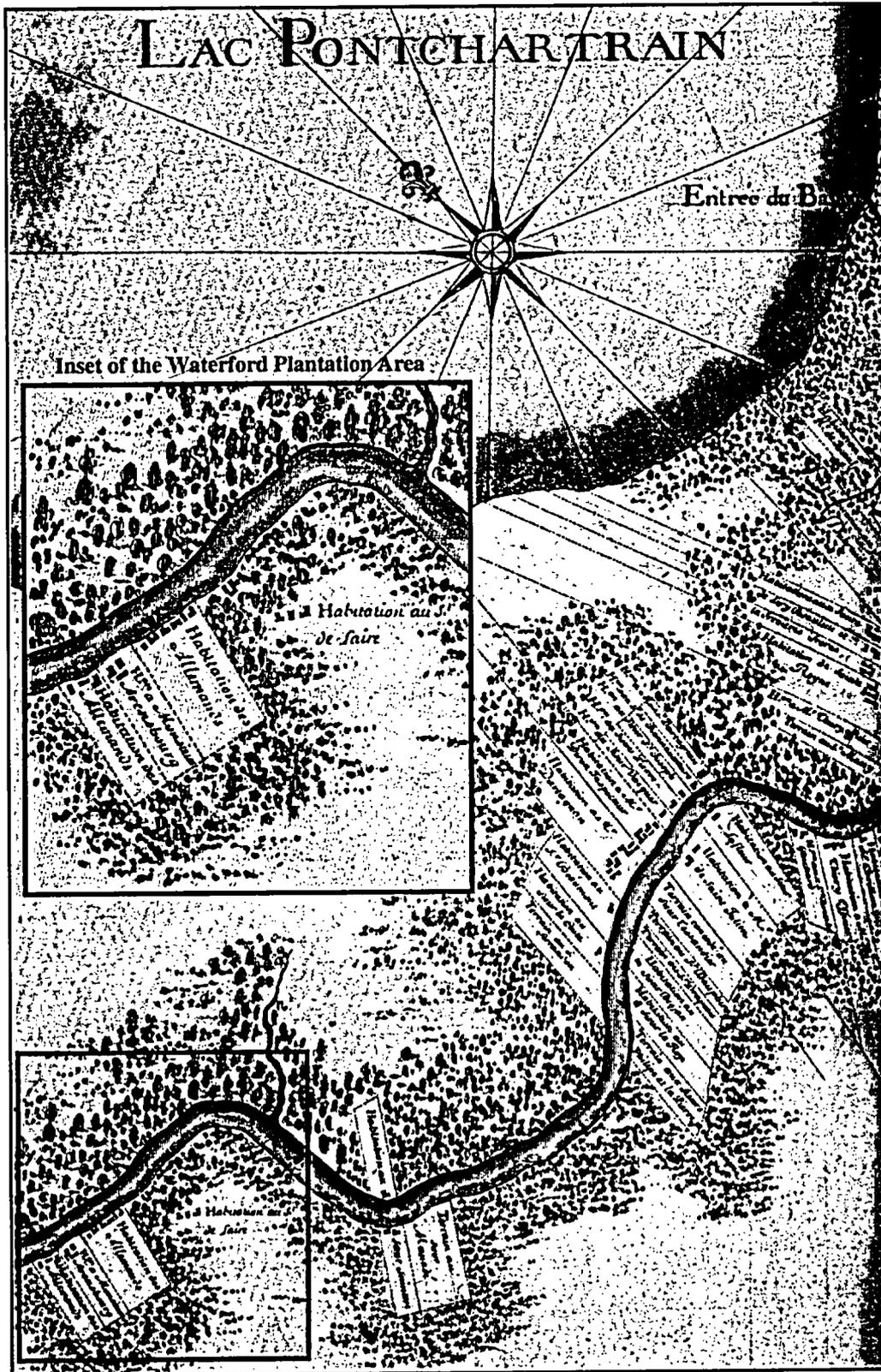


Figure 3-1. Portion of a map showing early settlement along the Mississippi River in the vicinity of Waterford Plantation (Newberry Library 1723).

In 1804, the General Census of St. Charles Parish listed Charles Perret as a sawyer with a wife, four sons, and two daughters. Charles has two white engagés, one black engagé, 11 male slaves, six female slaves, one free male Negro, and one free female Negro (Conrad 1974:400). The property that later became Waterford Plantation included all of Section 25 and half of Section 26, Township 12S, Range 20E. In 1804, Charles Perret, Sr. owned Section 25. In 1804, Pierre B. St. Martin and Madam Widow Ranson owned the adjacent section, Section 26 (Official Township Plat, Louisiana State Land Office). The Waterford Plantation, therefore, was formed through consolidation of lands owned by more than one individual.

For the years between 1828 and 1917, some aspects of the history of Waterford Plantation can be traced through several sugar production publications (Bouchereau 1869, 1870, 1871, 1872, 1873, 1876, 1877, 1879, 1880, 1881, 1882, 1890, 1892, 1895, 1898, 1917; Champomier, 1850, 1851, 1852, 1853, 1854, 1855, 1856, 1857, 1858, 1859; Degalos 1892). By 1828, the earliest record of sugar production in Louisiana, Charles Perret's plantation produced 550 hogsheads of sugar. Mr. P.B. St. Martin, owner of the farm upstream from Perret, produced 210 hogsheads. The 1829 production for Perret and St. Martin was 250 and 130 hogsheads, respectively. Due to a gap in the existing sugar production records, the next known production is listed in 1844. By this time, the Perret and St. Martin landholdings had been consolidated into the property that was later called Waterford Plantation. Charles Perret & Company was listed as the property owner or sugar producer in 1844. By 1845, the partnership of C. Perret, Sr., St. Martin, Delhonde, and Peroux is listed, and by 1849, the plantation was owned by W.B. Whitehead and Company (Figure 3-2). Although Killona Plantation is located outside the study area, Killona and Waterford plantations were consolidated under one owner in the late nineteenth century.

By 1852, Whitehead had become the sole proprietor of the plantation, and maintained control until 1877 when Richard Milliken became his partner (Figure 3-3). During the last nine years that Whitehead was in control, the plantation had a brick sugarcane mill with steam kettles and an open strike pan for processing sugar. The sugarcane mill construction and sugar apparatus are not listed before 1868. In 1878, Richard Milliken became Whitehead's partner and by 1879, Milliken had become the sole owner of the plantation. Prior to Milliken's possession, the plantation had remained unnamed. After 1879, it was known as Waterford, and the name has continued until this day. The name Waterford perhaps came from Waterford, Ireland, and possibly the origin of the Milliken family. In 1882, Milliken improved the production of his sugarcane mill by adding a steam strain, vacuum strike pan, and centrifugals. By 1888, the sugarcane mill roof had been covered with slate, and by 1890 the vacuum strike pan apparatus was replaced by an open strike pan. According to the sugar reports, Richard Milliken died between 1895 and 1897. The plantation was owned or operated by the Milliken estate until 1900, when Mrs. D.A. Milliken took control. In 1904, the sugarcane mill apparatus was improved again. Mrs. Milliken died between 1912 and 1915, and the Milliken estate maintained control until 1917, the last date of the available sugar production records. Between 1890 and 1917, Richard Milliken and his family controlled both Waterford and Killona plantations (Figure 3-4). The Waterford Plantation mill ceased its grinding operation sometime between 1917 and 1953 (Castille 1980a). Waterford

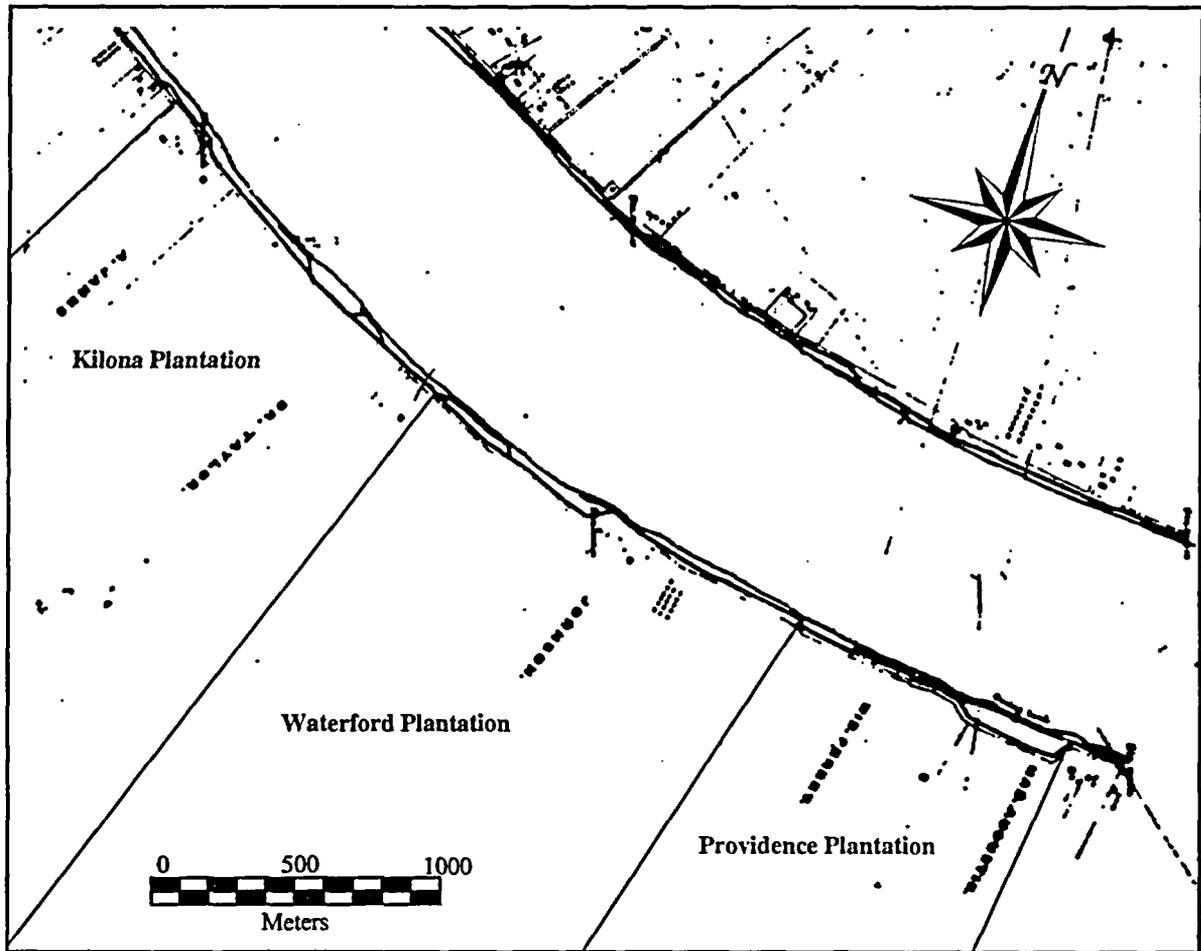


Figure 3-2. 1851 map showing the structure locations on the Kilona and Waterford Plantations (Humphreys and Abbot 1851:Sheet 24).

remained a sugar plantation into the 1960s and 1970s during which it was sharecropped and tenant farmed (Figure 3-5) (Furness 2002:2).

Presently, Waterford Plantation is the site of Waterford 3 Nuclear Generating Plant. However, plant construction has not impacted the entire area. Portions of the former plantation are still under sugarcane cultivation or have been left fallow.

Previous Investigations

The majority of archaeological investigations conducted in the area to date, generally consist of small reconnaissance surveys. Because the present investigation focuses specifically with the Waterford area, only those investigations conducted in the near vicinity will be discussed.

In 1977, J. Richard Shenkel, performed a cultural resources survey of the proposed Montz Revetment on behalf on the U.S. Army Corps of Engineers, New Orleans District

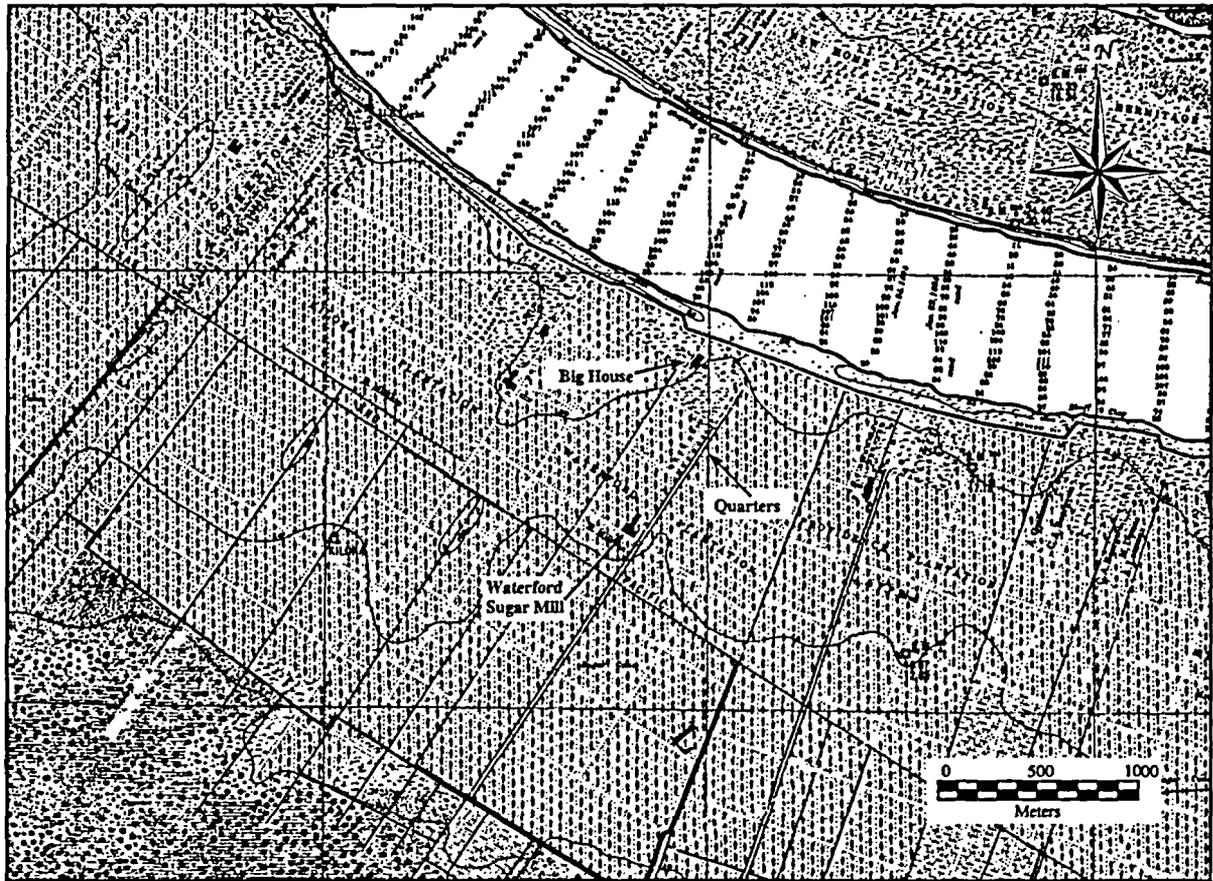


Figure 3-3. 1894 map showing structure locations at the Kilona and Waterford Plantations (Mississippi River Commission 1894:Chart 74),

(Shenkel 1977). The project area was located on the east bank of the Mississippi River between river miles 133 and 131 in St. John the Baptist and St. Charles parishes. Fieldwork was comprised of pedestrian survey. No cultural resources were identified during this survey. A recommendation of additional testing was submitted if cultural material or deposits were uncovered during construction of the proposed revetment.

Robert Neuman (1977) first investigated the Waterford area prior to the construction of a transmission line and intake and discharge structure at the riverbank. This study determined that the potential for prehistoric remains occurring on the property was very small. No cultural resources were located within the study area at that time.

In 1978 a cultural resources survey was conducted at the proposed site of a steel recycling plant located near LaPlace, Louisiana on the east bank of the Mississippi River. Fieldwork consisted of pedestrian survey only (Gibson 1978). One standing structure was recorded. This structure was identified as an early to mid-twentieth century bungalow type house. Additionally, evidence of two structures that had been recently removed was identified. One of these structures was thought to be a bungalow and the other an Acadian

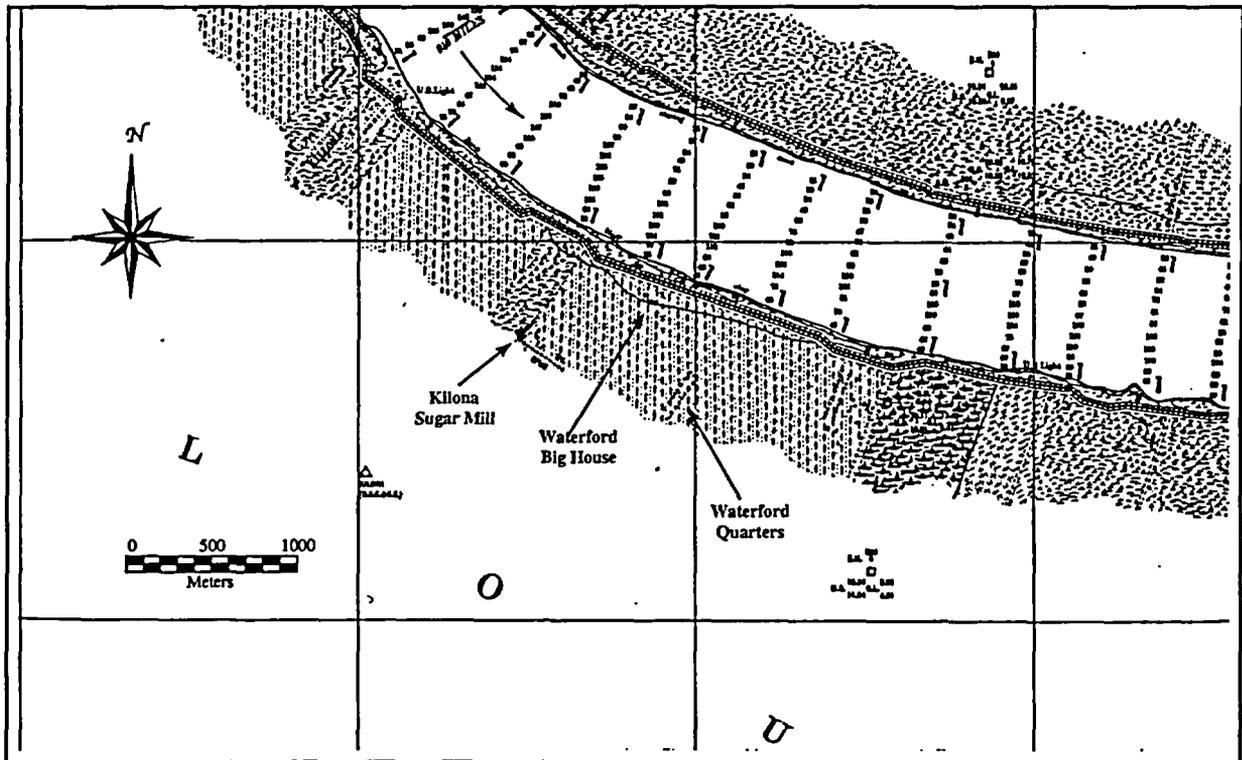


Figure 3-4. 1921 map showing structure locations at the Waterford Plantation (Mississippi River Commission 1921:Chart 74).

style cottage. Recovered artifacts consisted of two ceramic whiteware sherds. These historic properties were assessed as not significant and no additional testing was recommended.

In 1979, McIntire (1979) conducted a cultural resources survey of a pipeline corridor extending from the city of Norco to the Marathon Oil Company facility near Garyville, on the east side of the Mississippi River. The fieldwork consisted of pedestrian survey and shovel testing. No cultural resources were identified.

In July 1980 a cultural resources survey of the proposed Waterford 3 Electric Generating Plant site was conducted by Coastal Environments, Inc. (Castille 1980a). This investigation utilized cartographic data to delineate areas of high probability for the occurrence of cultural material. Six areas of potential cultural deposits were identified. Subsequent fieldwork located intact material in the former post-bellum quarters area. Two years later, the two areas within the site were nominated to the National Register of Historic Places (MacDougal 1982a and 1982b). The two eligible areas were the Overseers House site (Area 3) and the Workers Quarters site (Area 4).

Iroquois Research Institute (1980) performed a pedestrian survey of six areas along the Mississippi River: Convent Levee Enlargement and Borrow area; Marchand Revetment area; Willow Bend area; Kenner Revetment area; Montz Revetment area; and the Waterford

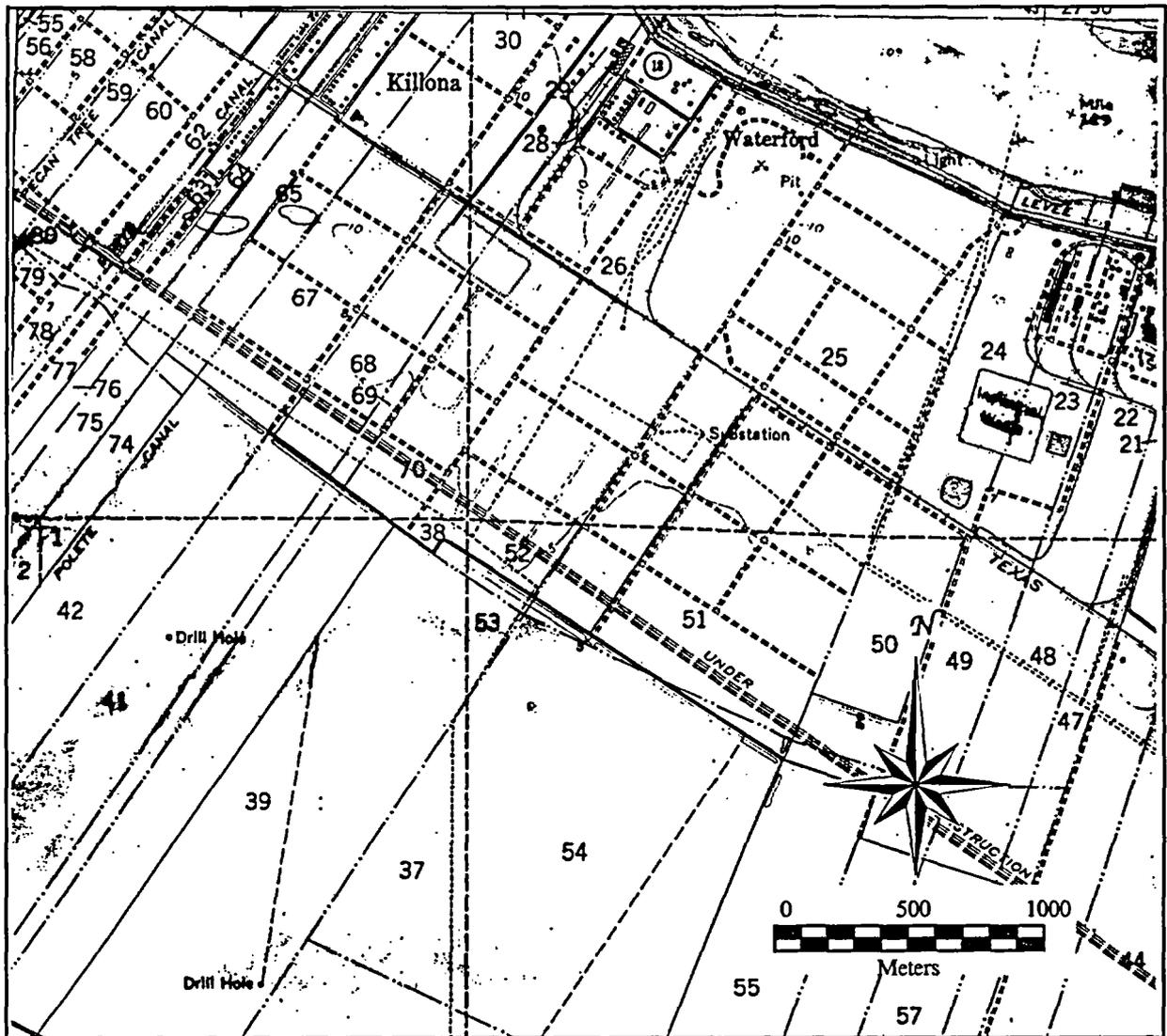


Figure 3-5. Map of Waterford Plantation and its environs in the late 1960s (U.S.G.S. 1967).

Revetment area. This investigation examined three archaeological sites, and two spot finds. No historic properties were identified in the Waterford area.

The National Park Service completed a cultural resources survey of the proposed LaPlace Destrehan Levee Enlargement project in 1983 (Stuart and Greene 1983). This work was performed on behalf of the U.S. Army Corps of Engineers. The project area was located on the east bank of the Mississippi River between river miles 133-L and 121-L. The width of the study area was not described in the report. Fieldwork consisted of pedestrian survey only. No cultural resources were identified and no additional testing of the project area was recommended (Stuart and Greene 1983).

A cultural resources investigation was conducted directly across the river from the Waterford Plant in the community of Montz (Franks et al. 1986). Extensive archival and historical research was performed in addition to pedestrian reconnaissance and standing structure surveys. Although no significant cultural features were identified within and surrounding the Montz community, the study provided a model for changing patterns of land use.

In the fall of 1997 and the summer of 1998 R. Christopher Goodwin and Associates, inc. performed a Phase I cultural resources survey and inventory along a proposed pipeline ROW (Robblee et al. 1998). The pipeline route extended from Belle Rose in Assumption Parish, crossing through St. James, St. John the Baptist, St. Charles Parishes, then crossed Lake Pontchartrain to a location near Mandeville in St. Tammany Parish. During the survey a total of 12 archaeological sites, two spot finds, and one standing structure were recorded. Of the 12, only one archaeological site, 16SC31, was located within St. Charles Parish. Site 16SC31 produced evidence of intact cultural deposits. It was deemed to possess the qualities of significance. Avoidance or additional National Register testing was recommended at this site.

Plantation Archaeology

There have been numerous archaeological investigations of plantations located along the lower reaches of the Mississippi River. The vast majority of these are located outside of St. Charles Parish. However, a brief discussion will allow for a clearer understanding of the findings derived from investigations that have taken place at Waterford Plantation.

Coastal Environments, Inc (Gagliano et al. 1977) performed one of the earliest of the plantation investigations. This investigation consisted of pedestrian survey, surface collecting and backhoe trenching along a proposed Mississippi River revetment site near Romeville, Louisiana. Included in this area was one recorded site, 16SJ5, that contained the remains of several plantations, including Lilly Plantation. A total of five features were identified, including a well, an oyster concentration, a brick scatter, a postmold and a borrow pit. Site 16SJ5 was determined not eligible for inclusion in the NRHP, and no additional work was recommended.

Two years later, the location of a proposed barge slip and dock, and grain loading facility was investigated (Kennedy 1979). This investigation consisted of pedestrian survey, shovel testing, unit excavation, and a standing structure survey. Four areas of cultural deposits associated with the former Rapidan Plantation were identified. Three of the four areas were determined to be potentially significant. However, no recommendations as to further treatment were presented.

Coastal Environments, Inc. as part of an evaluation of the St. Alice revetment investigated the Welcome Plantation site (16SJ17) in St. James Parish (Castille 1979). The investigation included pedestrian survey, surface collecting, bankline profiling, mechanical trenching, and limited unit excavation. *In situ* cultural deposits associated with the plantation were identified. Mitigation in the form of data recovery, especially for two privy features,

was recommended. Later that year, Coastal Environments, Inc (1979) conducted data recovery of the two privy features, and one board lined well. It was found that the two privies dated to the mid-nineteenth century. The well was found to predate 1902.

Also in 1979, Coastal Environments, Inc conducted an Intensive survey of portions of the Wilton (16SJ20) and Helvetia (16SJ21) Plantations in St. James Parish. Within the plantation limits 56 loci were identified. Additionally, evidence of per-plantation German or Acadian settlements were also recovered. Both sites were determined to be potentially eligible for listing in the National Register (Pearson et al. 1979).

The St. Rose Plantation was examined twice in the Early 1980s (Carpenter et. Al 1981; Goodwin et al. 1981). During these investigations the NRHP property, the Colomb Plantation house, was examined, as was an 1890 Creole cottage. Preservation in place and mitigation of visual impacts were recommended for these two properties. Twelve additional loci were identified within the limits of the plantation, but were determined to be not significant.

A cultural resources survey and National Register testing investigation was conducted at Oak Alley Plantation (16SJ53) in Vacherie, Louisiana (Boggess 1990; Boggess and Lovelly 1991). These investigations identified various features associated with the plantation including several outbuildings, a wine cellar, a latrine, a detached kitchen with associated refuse deposit, roads, and garden/orchard plots. Subsequent to the testing program, it was determined that Oak Alley was eligible for inclusion in the National Register.

A cultural resources survey of the Whitney and Mialaret Plantations in St. John the Baptist Parish by Coastal Environments, Inc., located at total of 19 archaeological sites and eight standing structures (Hunter et al. 1991). Two of the sites, 16SJB42 and 16SJB41, were associated with the initial German settlement of the project area. Six of the sites were associated with the Mialaret Plantation, including the main house (16SJB9), the quarters (16SJB44), the sugar mill (16SJB57), a tenant/overseer's house (16SJB45), and two refuse sites (16SJB46 and 16SJB54). Sites associated with Whitney Plantation included the main house (16SJB11), a mill and quarters area (SJB43), a second set of quarters (16SJB51), four dwellings (16SJB47, 16SJB48, 16SJB49, and 16SJB55), and the remains of a bousillage Creole cottage. These sites were determined to be potentially eligible for the National Register, and additional testing was recommended. Three of the eight standing structures were assessed as potentially significant. These structures included the Mialaret main house and quarters (16SJB 44 and 16SJB56), and a bousillage creole cottage (16SJB56). Additional architectural recordation was recommended.

Earth Search, Inc., conducted an intensive archaeological survey of 16.5 acres within the Destrehan Plantation (16SC18) in the spring and winter of 1992 (Yakubik, 1993). A program of shovel testing and the excavation of seven 1-m-by-1-m units was conducted across the area. It was found that eighteenth and nineteenth century deposits centered primarily in the vicinity the great house. Out site the area of the great house, two additional eighteenth century deposits were identified. Additional testing of the site was recommended.

In 1995, AR Consultants conducted a Phase I cultural resources survey of a pipeline corridor in St. Charles Parish (Skinner and Whorton 1995). The pipeline right-of-way passed through the Pelican Plantation (16SC72). No cultural deposits or features associated with the plantation were identified.

The Wilton and Helvetia Plantations were revisited in 1995, during which a Phase II cultural resources investigation by Coastal Environments, Inc., examined 39 loci (Hahn et al. 1996). These loci grouped into eight areas associated with various areas of the plantation: Helvetia Plantation Front, Helvetia Plantation Postbellum quarters, Wilton Plantation Main House, Wilton Plantation Quarter Area, West Wilton Road, East Wilton Road, Wilton Plantation Sugar House, and portions of the Helvetia Sugar Coop(erative) property. Three areas were determined to be significant: Helvetia Plantation Front, Wilton Main House, and the Wilton Sugar Complex. Data recovery was the recommended course of action.

CHAPTER 4

FIELD INVESTIGATIONS AND RESULTS

Waterford Plantation (16SC41) was identified as an historic archaeological site dating to the early nineteenth and early twentieth centuries. The present investigation focuses on Area 4, the former location of 14 quarter-houses located 25 m south of River Road (LA 18) and extends for 300 m further to the south (see Figure 1-1). Today, a paved access road bisects the area. The northwestern portion of Area 4 is comprised of an open grassy area. Southwest of the access road is a wooded area where rows from sugarcane cultivation can be seen. A sugarcane field marks the eastern boundary of Area 4. Additionally, ditches run parallel to the access road bisecting the site. The former quarters area measures about 273-m-by-57-m (Figure 4-1). Located just south of the access road, is a helicopter pad measuring approximately 13 m in diameter. As stated in Chapter 1, it is the purpose of this investigation to determine the extent of disturbance due to the construction of this helicopter pad.

A brief archaeological and historic background study was conducted to aid in the development of field strategies for the present investigation. This information provided insights on the expected types and location of cultural resources that may be present in Area 4. The State of Louisiana Site Record Form on file at the Louisiana Division of Archaeology (DOA) for the Waterford Plantation site (16SC41), and the associated cultural resources technical report, were consulted to determine the number and location of archaeological components within or immediately adjacent to the present area of investigation (Castille 1980a, 1980b). Additional cartographic data was also utilized to aid in the interpretation of the archaeological deposits.

1980 Investigations

Robert Neuman (1977) performed the first archaeological investigation of the Waterford Plantation site. That investigation was small in scope and focused in an area where water intake valves for the plant are now presently located. No cultural deposits were found in that area. Subsequently, Coastal Environments, Inc. revisited the Waterford site in 1980 (Castille 1980a). The purpose of the 1980 investigation was to locate possible cultural remains within undisturbed areas of the Waterford 3 property. Fieldwork was guided through the use of historic map data. Prime sources of background data included an 1894 Mississippi River Commission (MRC) map, Public Works levee survey maps, and a 1953

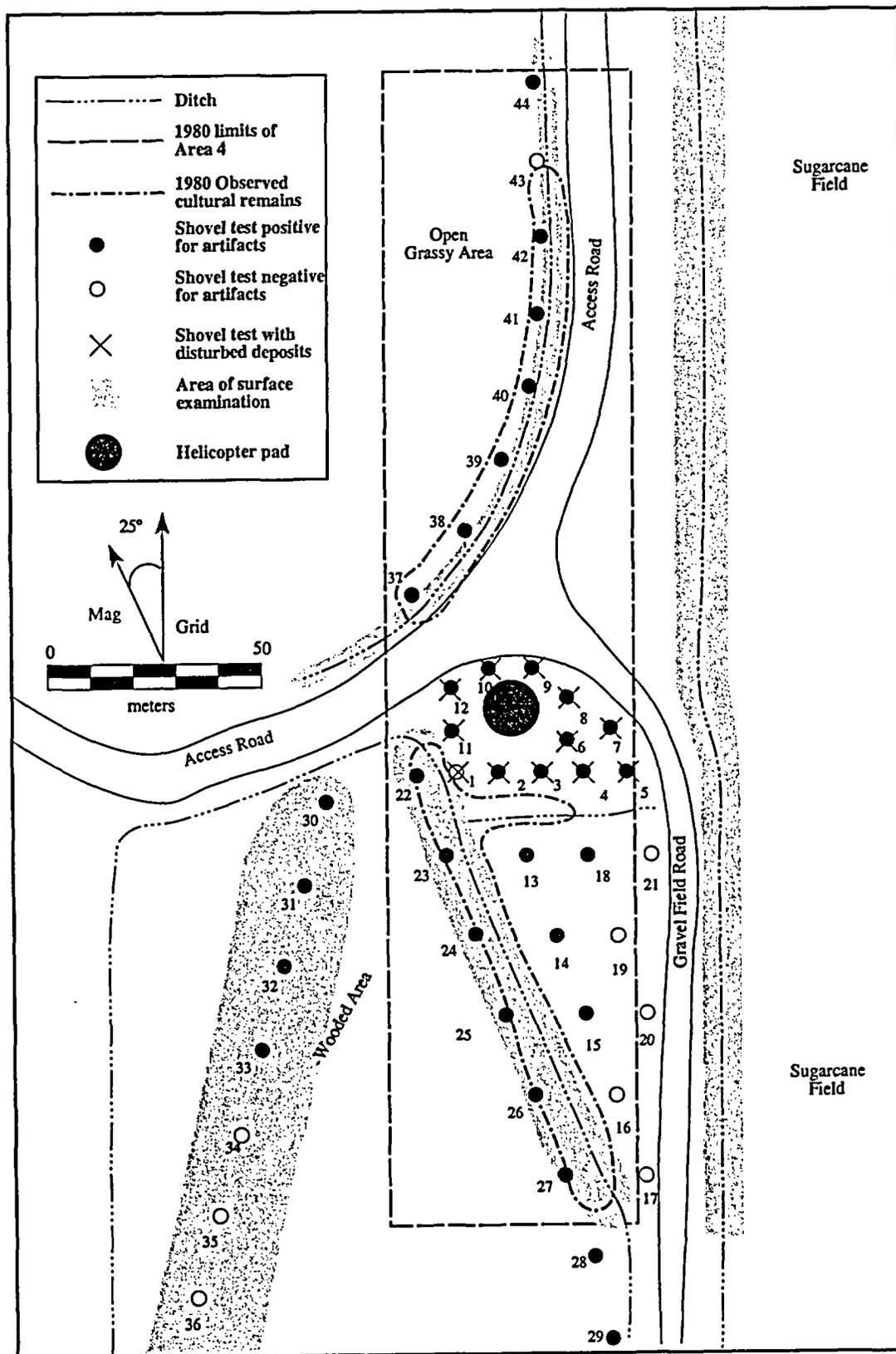


Figure 4-1. Sketch map of Area 4 at site 16SC41 showing shovel test locations and areas surface collected during the present investigation.

aerial photograph (Castille 1980a:Figure 2 and Figure 3). Data from these maps was compiled and presented on an engineering diagram of the plant property (Castille 1980a:Figure 4). This background research resulted in the delineation of six areas of potential historic deposits. The areas were identified as follows: 1) possible big house; 2) a cluster of nine small structures of unknown function; 3) possible overseer house or store; 4) double row of 14 quarter houses; 5) sugar house and support structure; 6) two structures of unknown function (see Figure 1-1).

The 1980 field investigations attempted to locate cultural remains in all six areas where map data indicated locations of former structures. Field methodology included pedestrian survey, subsurface testing through the excavation of shovel tests, and the clearing of bankline profiles. Area 1 (possible big house) was eliminated prior to fieldwork in that cartographic data indicated that any cultural deposits in that area would have been impacted by the construction of the energy plant and Louisiana Highway 18 (Castille 1980a:18). During the examination of Area 2, no in situ deposits were found, only occasional brick fragments were noted in disturbed soil (Castille 1980a:18).

Midden deposits were located in Areas 3 and 4 (Castille 1980a:18-24). A single shovel test pit was placed in the center of Area 3 revealing midden deposits that extended to a depth of 26 cmbs. The recovered artifacts included ceramic sherds of pearlware suggesting a potential initial date of occupation in the early nineteenth century. Artifacts recovered during the 1980 investigation are presented in Appendix A. Area 4 was examined through the excavation of a single shovel test pit and two profiles exposed along an adjacent ditch. These tests located a buried midden deposit and recovered artifacts dating to the mid-nineteenth century to early twentieth century (see Appendix A).

Examination of Areas 5 and 6 located structural remains (Castille 1980a:24-29). At Area 5 structural debris including brick and mortar fragments were observed on the ground surface. The single shovel test unit excavated in this area revealed no midden deposits and recovered no dateable artifacts (see Appendix A). In Area 6 an irrigation pump and gate structure consisting of two-tiered brick foundations were found located on either side of a small drainage canal. No artifacts were recovered from this area.

Cultural material was observed along a ditch located west of the access road and another ditch south of the same road. Two profiles were examined along the ditch banklines, and intact midden was found to extend from the surface to a depth of 42 cmbs.

The data collected during the 1980 field investigation led to the conclusion that cultural deposits were indeed present within and in the immediate vicinity of the Waterford 3 Electric Generating Plant. The artifactual data indicated a range of occupation between the early nineteenth and early twentieth centuries. No recommendations concerning preservation or treatment of these cultural deposits were offered within the report (Castille 1980a:31).

Subsequent to the field investigations and the production of the technical report (Castille 1980), the Nuclear Regulatory Commission submitted a Determination of Eligibility Form indicating that former locations of the overseers house and quarters area (Areas 3 and

4) met the criteria for archaeological site significance and should be considered potentially eligible for inclusion in the National Register (MacDougal 1982a and 1982b). Both forms indicated that the Overseer's House site (Area 3) and the Worker's Quarter site (Area 4) were eligible under Criteria D. Both locations possessed intact deposits, which could yield important information on the lifeways of the individuals occupying each area. The Keeper of the National Register in turn concurred with the NRC evaluations. Shortly after the 1980 investigation, a helicopter pad measuring 13 m in diameter was constructed within Area 4 (see Figure 4-1). Thus, Area 4 is the main focus of the present investigation.

Present Investigations

To aid in defining the archaeological deposits present within and surrounding the present project area, additional map data was collected. These maps are presented in Chapter 3 and include an early French map of settlements along the Mississippi River dating to the eighteenth century (Newberry Library 1723); a Mississippi River Survey map dating to the mid-nineteenth century (Humphreys and Abbot 1851); two Mississippi River Commission (MRC) maps dating to the late nineteenth and early twentieth centuries (MRC 1894, 1921); and a mid-twentieth century map produced just prior to the purchase of the property by the Entergy Corporation (U.S.G.S. 1967) (see Figures 3-1 through 3-5). This series of maps show changes in the configuration of structures across the site area. Although it appears that the location of the big house did not change, the location of the quarter's houses is shown differently on maps dating to antebellum and postbellum times. The mid-nineteenth century Humphreys and Abbot(1851) map shows the slave quarters can be seen near the northern extent of the property, in the area that was later defined as the overseer's house (Area 3) (see Figure 3-2). As was generally the case after the Civil War, it appears that the slave quarters were removed and a complex of tenant/sharecroppers quarters were constructed further to the south in what was identified as Area 4 (see Figure 3-3). This configuration remained intact until the early twentieth century (see Figure 3-4). Although the Waterford sugar mill is shown only on the 1894 MRC map, it is known from historic documents that sugar was produced at Waterford between 1828 and 1917 (see Chapter 3 for discussion). Thus, it is reasonable to state that the deposits present in Area 4 represent remains of the postbellum tenant houses that were occupied between the late nineteenth and early twentieth centuries.

Field Examination of Waterford Plantation (16SC41) Area 4

Fieldwork commenced on September 9, 2003, and was completed on September 10, 2003. Fieldwork consisted of intensive pedestrian survey and subsurface testing comprised of the excavation of shovel tests. A crew of three people excavated shovel tests at 10-m intervals along four transects surrounding the helicopter pad (see Figure 4-1). Within portions of Area 4 outside the vicinity of the helicopter pad, the intervals were increased to 20 m. All shovel tests were approximately 30 cm in diameter and excavated to a depth of at least 50-cm below the surface. When soil conditions permitted, the fill of each shovel test was screened through 1/4-inch wire mesh. Soils with high clay content were carefully hand-trowelled and inspected for artifacts. Additionally, all exposed ground and ditch-banklines

were visually examined, as was the edge of the sugarcane field located immediately east of Area 4.

The present investigation was designed to determine the extent of damage caused by the construction of the helicopter pad. The best and most accurate method to determine subsurface disturbance is through the examination of soil profiles. Disturbance characteristically manifests as discontinuities in soil color, texture, and thickness of strata across a specified area. Additionally, the depths at which artifacts are found can be used to discern disturbance. A total of 44 shovel tests were excavated across Area 4 (see Figure 4-1). In the following discussion they have been grouped into four discrete areas: the helicopter pad; the open area south of the helicopter pad; the wooded area south of the helicopter pad; and the open area north of the access road.

Thus, a series of 12 shovel tests was excavated at 10-m intervals around the helicopter pad (Figure 4-2). No two shovel tests in the vicinity of the helicopter pad possessed the same stratigraphic profile (Figure 4-3). Additionally, none of the profiles matched the profiles found during the 1980 investigation. Those shovel tests located on the south side of the helicopter pad, Section A₀-A₁, possessed multiple strata. The profiles are generally comprised of an upper deposit of humus consisting of grayish brown (10YR5/2) to brown (10YR4/3) silty clay measuring 10-to-15-cm in thickness. Beneath the humus lay alternating deposits of dark grayish brown (10YR4/2) to light grayish brown (10YR6/2) clays, silts, and sands. The final stratum encountered consists of an alluvial deposit of dark grayish brown (10YR4/2) to grayish brown (10YR5/2) silty clay. One shovel test, Shovel Test 2, did possess a 15 cm thick deposit of very dark grayish brown (10YR 3/2) silty clay. This deposit may represent the remains of the midden observed in 1980. Artifacts were recovered from most of the strata. However, it should be noted that artifacts were absent from the uppermost stratum in Shovel Tests 2 and 5.

The shovel tests excavated on the east and north sides of the helicopter pad, Section B₀-B₁, reflect the same type stratigraphic profile as those excavated south of the helicopter pad, in that they possess multiple, discontinuous strata (see Figure 4-3). These strata also lacked consistency of color, texture and thickness. One shovel test, Shovel Test 9, excavated on the north side of the pad, encountered an impenetrable deposit of concrete. Again, artifacts were recovered from most strata. However, in Shovel Test 6 artifacts were absent from the upper two strata. In Shovel Test 10 artifacts were recovered from the first and third strata, but were absent in the second. Due to the inconsistency of soil profiles and artifact occurrence across this portion of the helicopter pad area, it is reasonable to state that significant disturbance has occurred owing to construction of the helipad.

Artifacts were recovered from 11 shovel tests within the helicopter pad area (see Figure 4-1), as well as the ground surface. The recovered artifacts consist of various types of historic ceramic sherds, glass fragments, pieces of metal, construction material, plastic, coal, animal bone, shell, and bagasse (Table 4-1). Although brick fragments were the most frequently recovered artifact type, ceramics and glass are most useful in determining the date of occupation of an area. Early- to mid- nineteenth century ceramics include annular, hand painted and stamped, and transfer printed varieties of whiteware (Lofstrom 1976; Moir 1987;

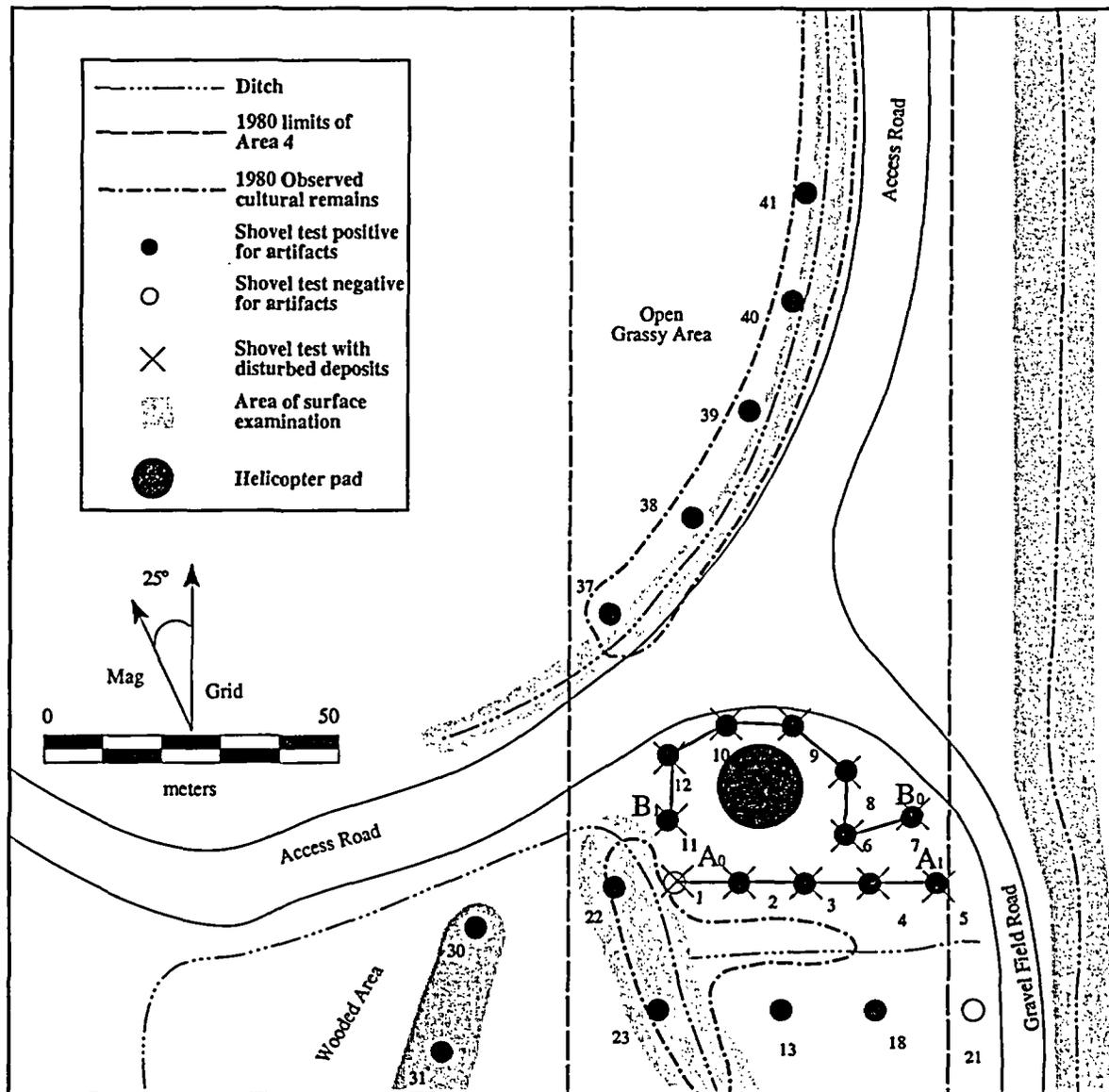


Figure 4-2. Sketch map of helicopter pad in Area 4 showing location of shovel test section lines.

Price 1982). Yellowware and Ironstone were manufactured during the mid- to late-nineteenth century (Liebowitz 1985; Moir 1987). Stoneware has a wide date range for manufacturing, between 1800 and 1900 (Greer 1981). Manufacturing technique could not be determined for most of the glass artifacts. However, some glass shards exhibit characteristics of having been molded and lipping-tooled. This technique was used to manufacture glass vessels during the mid- to late-nineteenth century (Miller and Sullivan 1984; Munsey 1970). Of interest is the presence of clear purple glass. This color first introduced around 1880 and discontinued in 1914, was attained by adding manganese to the glass. The recovered nails were too corroded to determine their method of manufacture, and thus their age also could

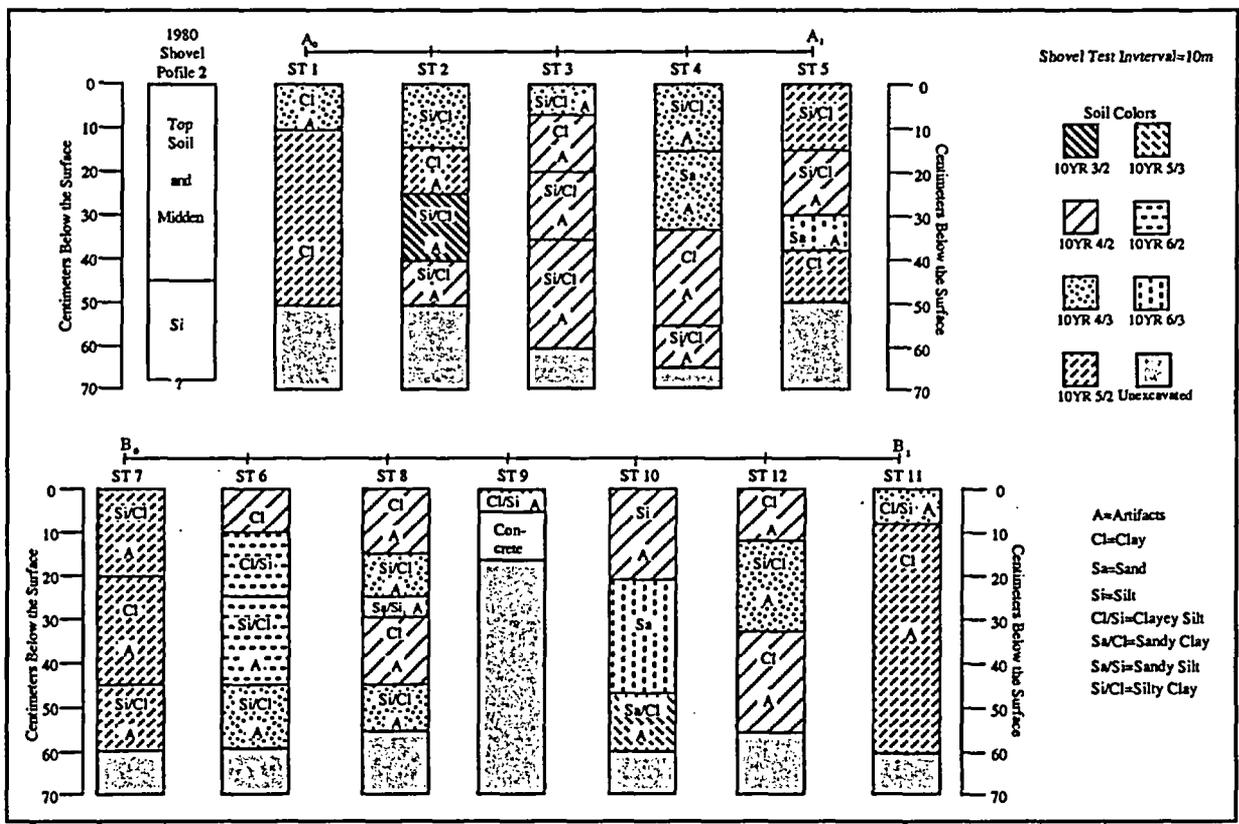


Figure 4-3. Shovel test soil profiles in the vicinity of the helicopter pad in Area 4.

not be determined. Selected artifacts collected from the helicopter pad area are shown in Figure 4-4.

A total of eight shovel tests was excavated in the open area north of the helicopter pad (see Figure 4-1). Shovel tests excavated within the wooded area and the ditch south of the access road generally consisted of three strata. Shovel Tests 14 and 15 are shown in Figure 4-5 as representative profiles. Those shovel tests excavated in this area possessed very consistent soil profiles. The uppermost stratum is comprised of a dark grayish brown (10YR4/2) clay or silty clay that measures 10-to-25-cm in thickness. The second stratum measures 20 cm in thickness and consists of a grayish brown (10YR5/2) to brown (10YR4/3) clay or silty clay. The third stratum consists of a dark grayish brown (10YR4/2) clay. generally artifacts were recovered from all three strata, but always from stratum 2.

Artifacts were recovered from four shovel tests in the open area south of the helicopter pad (see Figure 4-1). No artifacts were found on the ground surface. The most frequently recovered artifact type was brick. In addition to brick, historic ceramic sherds, glass and metal fragments, a piece of plastic, coal, and non-human bone were also found (Table 4-2). Historic ceramics included early to mid-nineteenth century transfer-printed whiteware, and mid- to late-nineteenth century yellowware and ironstone. The method of

Table 4-1. Artifacts Recovered from the Ground Surface and Shovel Tests within the Helipad Area of Area 4.

	HELIPAD SURFACE	ST2	ST3	ST4	ST5	ST6	ST8	ST7	ST9	ST10	ST11	ST12	TOTAL
HISTORIC CERAMICS													
Semi-Refined Earthenware													
Yellowware													
Undecorated	—	—	—	—	—	—	1	—	—	—	—	—	1
Refined Earthenware													
Whiteware													
Annular													
Brown and Black	1	—	—	—	—	—	1	—	—	—	—	—	2
Hand Painted and Stamped	—	—	—	—	—	—	—	—	—	1	—	—	1
Transfer Printed													
Black	—	—	—	—	—	—	—	—	—	—	—	1	1
Undecorated	5	4	2	—	—	—	1	—	—	—	—	3	15
Ironstone													
Undecorated	—	—	—	—	—	—	—	—	1	—	2	—	3
Stoneware													
Albany/Albany	—	—	—	—	—	—	—	—	—	—	1	—	1
GLASS													
Molded													
Clear	—	—	1	—	—	—	—	—	—	—	—	1	2
Clear Purple	—	—	1	—	—	—	—	—	—	—	—	—	1
Molded and Lipping Tooled													
Clear Blue													
Bottle	1	—	—	—	—	—	—	—	—	—	—	—	1
Clear Green													
Bottle	—	—	—	—	—	1	—	—	—	—	—	—	1
Machine Made													
Clear													
Unidentified	1	—	—	—	3	—	—	—	—	—	—	—	4
Green													
Unidentified	—	—	—	—	1	—	—	—	—	—	—	—	1
Pressed													
Milk (white)	1	—	—	—	—	—	—	—	—	—	—	—	1
Unidentified Manufacturing Technique													
Brown	—	1	—	—	—	—	—	—	4	—	—	—	5
Clear	—	1	—	2	2	—	—	2	—	—	—	3	10
Clear Blue	—	—	—	—	—	—	—	—	—	—	—	—	0
Clear Green	—	—	—	—	—	—	1	—	—	—	—	1	2
Clear Purple	—	—	—	—	—	—	—	1	—	—	—	1	2
Cobalt	—	—	—	—	—	—	1	—	—	—	—	—	1
Green	—	—	—	1	2	—	—	2	—	—	—	—	5
Light Blue	—	—	—	—	—	—	—	—	—	—	1	—	1
Light Green	1	—	—	—	—	—	—	—	—	—	—	—	1
Window Glass													
Clear Blue	—	—	—	—	1	—	—	—	—	2	—	—	3
METAL													
Iron													
Nail	—	—	—	—	—	—	4	—	—	1	—	2	7
Spike	—	—	—	—	1	—	—	—	—	—	—	—	1
Unidentified	—	5	1	—	6	2	—	1	2	—	5	3	25
Aluminium													
Pull-tab	—	—	—	—	—	—	—	—	—	1	—	—	1
CONSTRUCTION MATERIAL													
Brick	1	21	47	38	21	16	19	77	22	2	10	15	289
Mortar	—	—	—	—	—	—	—	—	3	—	—	—	3
Slate	—	1	—	—	1	1	1	—	—	—	—	—	4
PLASTIC													
Slate	—	1	—	—	1	—	1	—	—	—	—	1	4
COAL													
Slate	—	12	2	1	—	2	—	1	—	—	—	1	19
CHARCOAL													
Slate	—	—	—	1	—	—	—	—	—	—	—	—	1
FAUNA													
Bone													
Non Human													
unidentified	—	4	1	—	3	—	—	—	—	2	2	4	16
Shell	—	—	—	—	3	1	—	—	—	—	—	—	4
BAGASSE													
Slate	—	—	—	—	—	—	1	—	—	2	1	—	4
PEBBLE													
Slate	—	—	—	—	1	1	—	—	—	2	—	—	4
TOTAL	11	50	55	43	46	24	31	84	32	13	22	36	447

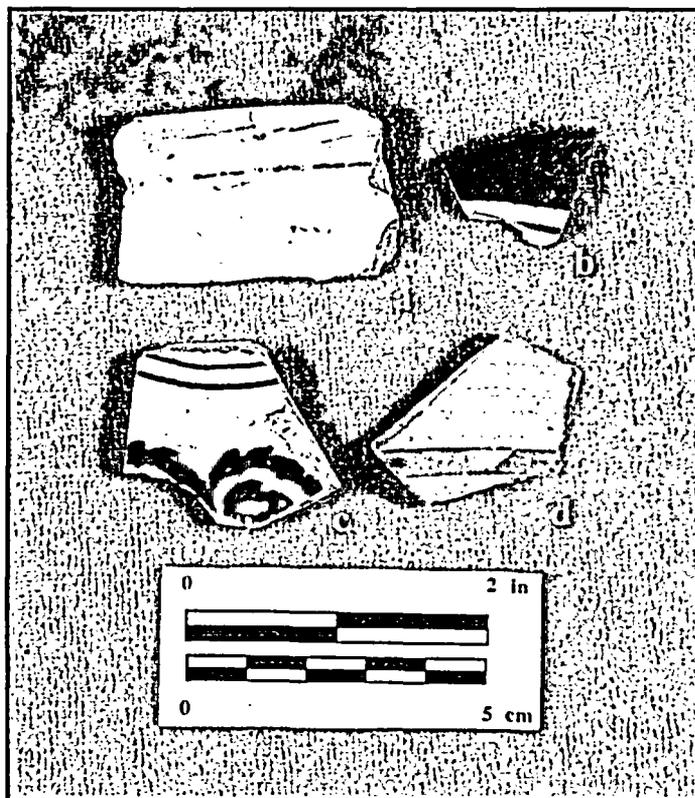


Figure 4-4. Selected artifacts recovered from the surface collected in the area of the helicopter pad: a) Annular stoneware; b) Annular whiteware; c) Hand-painted whiteware; d) Annular yellowware.

manufacture could not be determined for the majority of recovered glass artifacts. However, mid- to late-nineteenth century molded and twentieth century machine-made glass was identified.

A total of 15 shovel tests was excavated within the wooded area along two transects (see Figure 4-1). One transect was located along the eastern edge of the woods while the second was oriented northeast to southwest and bisected the wooded area. The stratigraphic profiles found in these shovel tests generally consisted of two strata. Representative soil profiles from Shovel Tests 23, 25, 31, and 32 are shown in Figure 4-5. The uppermost stratum consisted of a grayish brown (10YR5/2) to dark grayish brown (10YR4/2) silty clay, measuring 20-to-30-cm in thickness. The second stratum measured about 20-to-35-cm in thickness and was comprised of a very dark grayish brown (10YR3/2) to yellowish brownish (10YR5/4) silty or sandy clay. This second stratum most likely represents the possible midden identified during the 1980 investigation. In this area, artifacts were found in the uppermost stratum.

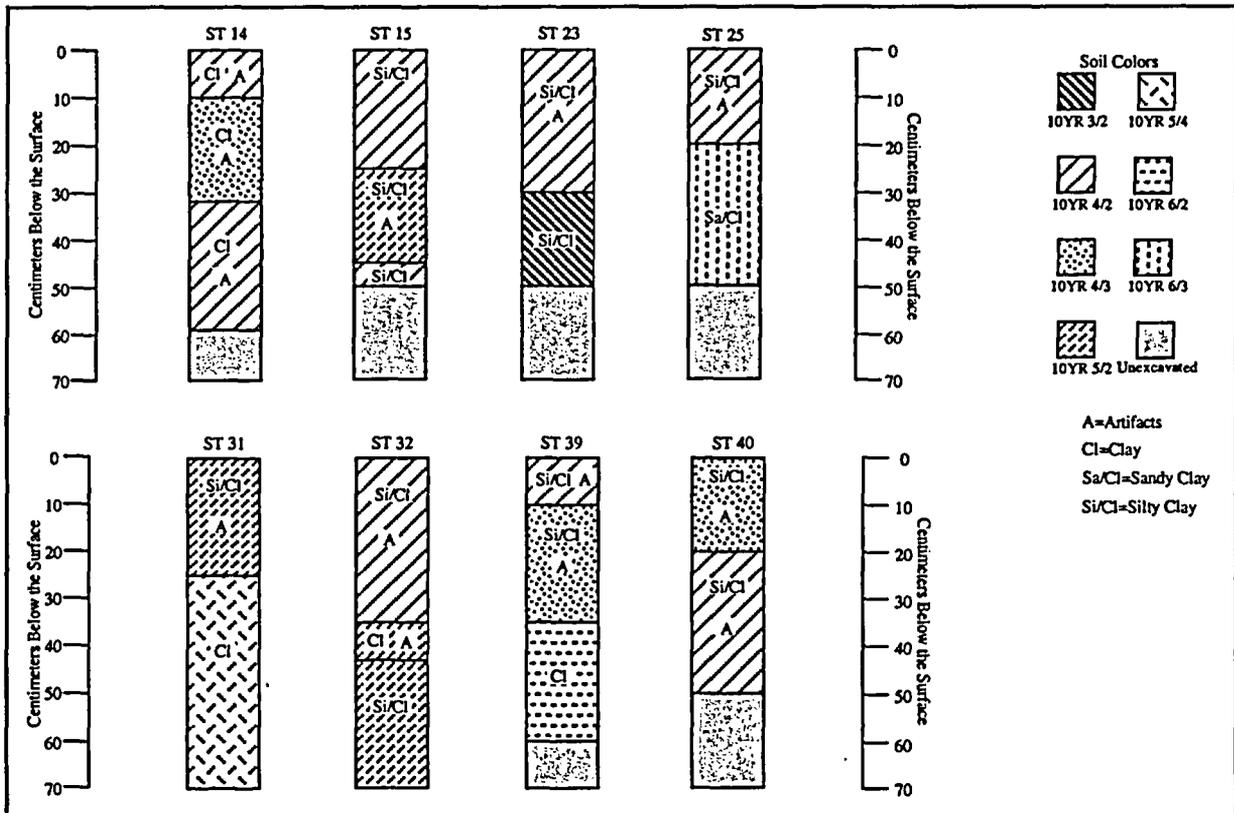


Figure 4-5. Shovel test soil profiles of selected shovel tests beyond the helicopter pad area.

Artifacts were recovered from the ground surface and 12 shovel tests within the wooded area south of Area A. More artifacts were recovered in this area by far, than any other in Area 4 (Table 4-3). Again the most numerous artifact type found was brick. In this area the number of historic ceramic varieties increased significantly. Ceramic varieties dating to the early- to mid-nineteenth century include Rockingham yellowware, early whiteware, and annular, edged, and hand painted whiteware (Leibowitz 1985; Lofstrom 1976; Moir 1987). Mid- to Late nineteenth century ceramics are represented by annular yellowware and all types of ironstone (Moir 1987; Leibowitz 1985). Reposéé whiteware and all varieties of ironstone were manufactured during the late nineteenth and early twentieth centuries (Moir 1987). Ivory-tinted whiteware was popular during the early twentieth century (Moir 1987). Dating any type of porcelain is problematical in that it was produced over a long period of time, 1812 to the present (Miller 1980). In addition to late nineteenth century molded and lipping tooled and machine made glass artifacts similarly found in other portions of Area 4, portions of pressed glass jars were also recovered from the ground surface (Miller and Sullivan 1984). Surprisingly the number of recovered metal artifacts did not increase significantly. And again, the recovered nails, although potentially dateable, were too corroded to determine a method of manufacture or even size. Selected artifacts from the wooded area are shown in Figure 4-6).

Table 4-2. Artifacts Recovered from Shovel Tests in the Open Area South of the Helipad in Area 4.

	ST13	ST14	ST15	ST18	TOTAL
HISTORIC CERAMICS					
Semi-Refined Earthenware					
Yellowware					
Annular					
Polychrome	1	—	—	—	1
Refined Earthenware					
Whiteware					
Transfer Printed					
Black	—	1	—	—	1
Undecorated	—	3	—	—	3
Ironstone					
Undecorated	4	—	—	2	6
GLASS					
Molded					
Clear	—	1	—	—	1
Machine Made					
Clear					
Unidentified	—	—	1	—	1
Unidentified Manufacturing Technique					
Brown	1	—	—	1	2
Clear	1	3	10	1	15
Clear Green	1	1	—	—	2
Clear Purple	—	1	—	—	1
METAL					
Iron					
Nail	—	2	—	—	2
Unidentified	5	3	1	—	9
CONSTRUCTION MATERIAL					
Brick	8	15	9	4	36
PLASTIC	—	1	—	—	1
COAL	1	1	1	—	3
FAUNA					
Bone					
Non Human					
unidentified	1	4	—	—	5
PEBBLE	1	—	—	—	1
TOTAL	24	36	22	8	90

A total of eight shovel tests was excavated along the ditch in the open grassy area north of the access road (see Figure 4-1). Representative soil profiles from Shovel Tests 39 and 40 are shown in Figure 4-4. The uppermost stratum generally consists of a 10-to-20-cm thick dark grayish brown (10YR4/2) to brown (10YR4/3) silty clay, overlying a deposit of dark grayish brown (10YR4/2) to brown (10YR4/3) silty clay measuring 20-to-30-cm in thickness. The final stratum encountered consisted of culturally sterile light brownish gray (10YR6/2) clay that extended to the bottom of the shovel test. Generally, artifacts were found in the upper two strata, extending to a maximum depth of 50 cmbs in Shovel Test 40. Although there is some variation between shovel tests, the stratigraphic profiles in this area

Table 4-3. Artifacts Recovered from the Ground Surface and Shovel Tests in the Wooded Area South of Area 4.

	East Surface	ST22	ST23	ST24	ST25	ST26	ST27	ST28	ST29	West Surface	ST30	ST31	ST32	ST33	TOTAL
HISTORIC CERAMICS															
Coarse Earthenware															
Sewer Pipe	—	—	—	—	—	—	—	—	—	1	—	—	—	1	2
Semi-Refined Earthenware															
Yellowware															
Annular															
Polychrome	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Rockingham	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Undecorated	2	1	—	—	—	—	—	—	—	—	—	—	—	—	3
Refined Earthenware															
Early Whiteware															
Undecorated	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1
Whiteware															
Annular															
Brown and Black	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Edged															
Blue	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1
Hand Painted															
Blue	—	—	—	1	—	—	—	—	—	—	—	—	—	—	1
Repossé	—	—	—	—	—	—	—	—	—	1	—	—	—	—	1
Undecorated	—	—	—	—	—	3	—	1	1	—	—	—	—	—	5
Ivory-Tinted Whiteware															
Hand-Painted															
Polychrome	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Undecorated	2	—	—	—	—	—	—	—	—	—	—	—	—	—	2
Ironstone															
Decalcomania	2	—	—	—	—	—	—	—	—	—	—	—	—	—	2
Gilded	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Molded	2	—	—	—	—	—	—	—	—	—	—	—	—	—	2
Repossé	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Stencil	4	—	—	—	—	—	—	—	—	—	—	—	—	—	4
Transfer Printed	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Undecorated	43	1	—	5	—	—	—	—	—	2	—	—	—	—	51
Stoneware															
Molded															
Bristol (int.) and Bristol (ext.)	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Blue on White	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Plain															
Bristol (int.) and Bristol (ext.)	4	—	—	—	—	—	—	—	—	—	—	—	—	—	4
Albany (int.) and Bristol (ext.)	2	—	—	—	—	—	—	—	—	1	—	—	—	—	3
Blue on White	—	—	—	—	—	—	—	—	—	2	—	—	—	—	2
Porcelain															
Decalcomania	4	—	—	—	—	—	—	—	1	1	—	—	—	—	6
Molded	2	—	—	—	—	—	—	—	—	—	—	—	—	—	2
Repossé	2	—	—	—	—	—	—	—	—	—	—	—	—	—	2
Transfer Printed															
Blue	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Undecorated	14	—	—	—	—	—	—	—	1	1	—	—	—	—	16
Button	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Semi-Porcelain															
Insulator	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
GLASS															
Molded and Lipping Tooled															
Clear															
Bottle	—	—	—	—	—	—	—	—	—	11	—	—	—	—	11
Clear Purple															
Bottle	—	1	—	—	—	—	—	—	—	—	—	—	—	—	1
Machine Made															
Brown															
Bottle	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Clear															
Bottle	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Unidentified	1	—	—	—	—	—	—	1	1	—	—	—	—	—	3
Cobalt															
Jar	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Clear Green															
Bottle	2	—	—	—	—	—	—	—	—	—	—	—	—	—	2
Clear Purple															
Bottle	—	—	—	—	—	—	—	—	—	—	2	—	—	—	2
Cobalt	—	—	—	—	—	—	—	—	—	2	—	—	—	—	2

(continued)

Table 4-3. Concluded.

	East Surface	ST22	ST23	ST24	ST25	ST26	ST27	ST28	ST29	West Surface	ST30	ST31	ST32	ST33	TOTAL
GLASS (cont'd)															
Pressed															
Milk (white)	1	—	—	—	—	—	—	—	—	3	—	—	—	—	4
Unidentified Manufacturing Technique															
Brown	3	1	—	—	—	1	—	—	—	—	—	—	—	—	5
Clear	10	—	1	—	1	2	—	3	2	2	1	1	—	1	24
Clear Blue	3	—	—	—	1	—	—	—	—	3	—	—	—	—	7
Clear Green	2	1	—	—	—	—	—	1	1	—	—	—	—	—	5
Clear Purple	3	—	—	—	—	—	—	—	—	2	—	—	—	—	5
Cobalt	—	—	—	—	—	—	—	2	1	—	—	—	—	—	3
Green	2	—	—	—	—	—	1	—	—	—	—	1	—	—	4
Light Blue	1	—	—	—	—	—	—	—	—	1	1	—	—	—	3
Milk (white)	3	—	—	—	—	—	—	—	1	—	—	—	—	—	4
Olive	—	—	—	1	—	—	—	—	—	—	—	—	—	—	1
METAL															
Iron															
Axhead	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Nail	—	1	—	—	—	3	—	—	—	—	—	—	—	—	4
Unidentified	—	2	1	1	1	1	—	—	—	—	—	—	1	—	7
CONSTRUCTION MATERIAL															
Brick	—	20	7	14	2	16	5	15	4	—	6	4	—	—	93
Slate	—	—	—	—	—	—	—	1	—	1	—	—	—	—	2
COAL	—	—	1	—	2	—	1	2	2	—	—	—	—	—	8
FAUNA															
Bone															
Non Human unidentified	—	—	—	—	—	—	—	—	—	—	—	—	—	5	5
BAGASSE	—	—	—	—	—	—	—	—	—	1	—	—	—	—	1
PEBBLE	—	—	—	—	—	—	—	1	—	—	—	—	—	—	1
TOTAL	130	28	11	22	7	26	7	27	15	35	8	9	1	7	317

exhibit a higher degree of consistency in color, thickness, and texture than those found in shovel tests excavated in the vicinity of the helicopter pad.

In the open grassy area north of the access road artifacts were recovered from seven shovel tests and from within the ditch adjacent to the road (see Figure 4-1). Again, brick was the most numerous artifact type recovered. However, glass artifacts far outnumbered historic ceramics (Table 4-4). Of note is an increase in the number of recovered metal artifacts. Mid- to late-nineteenth century ceramics recovered in this area consists of yellowware, and slipped whiteware (Leibowitz 1985; Moir 1987). Late nineteenth and early twentieth century artifacts at this location are comprised of molded and machine-made glass (Miller and Sullivan 1984).

In addition to the shovel test excavations, examination of the ditches in Area 4, the western edge of the sugarcane field was examined (see Figure 4-1). A total of 19 artifacts were recovered from the ground surface (see Table 4-4). The recovered artifacts included early- to mid- nineteenth century early whiteware, and edged and hand painted whiteware (Leibowitz 1985; Lofstrom 1976; Moir 1987). Mid- to late-nineteenth century artifacts consisted of several types of ironstone and stoneware (Leibowitz 1985; Moir 1987).

Summary of Field Investigations

During the present investigation of Area 4 within the Waterford Plantation site (16SC41) a total area of 3.85 acres (1.56 ha) were examined through a program of pedestrian

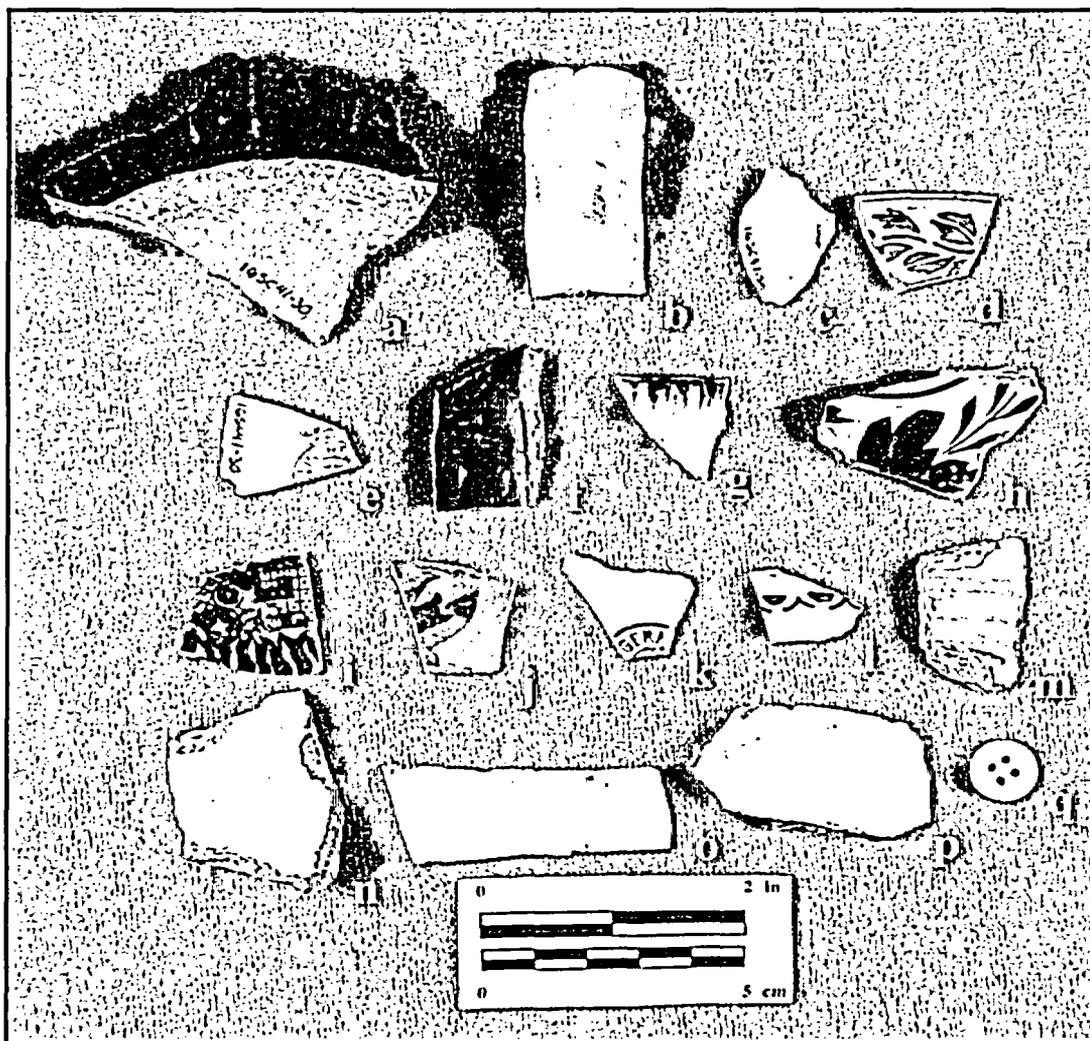


Figure 4-6. Selected artifacts recovered from the surface, collected in the wooded area west of the helicopter pad: a) Blue on white stoneware; b) Ironstone pitcher handle; c) Porcelain doll body part; d) Annular and stenciled whiteware; e) Partial makers mark on whiteware; f) Rockingham yellowware; g) Revival edge blue whiteware; h) Hand-painted whiteware; i) Transfer printed porcelain; j) Transfer printed ironstone; k) "Ger" makers mark on whiteware; l) Stenciled whiteware; m) Annular yellowware; n) Pink slipped whiteware; o) Transfer printed porcelain; p) Repoussé ivory tinted whiteware; q) Prosser button.

survey and subsurface testing. Forty-four shovel tests were excavated within Area 4. Over 300 artifacts were collected from the ground surface and shovel tests. The stratigraphic profiles were compared between four discrete loci within Area 4. From these comparisons it was found that the archaeological deposits in the vicinity of the helicopter pad have been disturbed over an area measuring approximately 60-m-by-40-m (2400 m²). However, deposits beyond the area of disturbance remain intact (see Figure 4-1). These deposits appear to extend beyond the 1980 designated limits of the Area 4 quarters complex for an unknown

Table 4-4. Artifacts Recovered from the Ground Surface and Shovel Tests in the Open Grassy Area North of the Helipad in Area 4.

	Ditch Surface	North Area 2 Shovel Tests						Canefield Surface	TOTAL
		ST37	ST38	ST39	ST40	ST41	ST42		
HISTORIC CERAMICS									
Semi-Refined Earthenware									
Yellowware									
Annular									
Polychrome	1	—	—	—	—	—	—	—	1
Refined Earthenware									
Early Whiteware									
Undecorated	—	—	—	—	—	—	—	1	1
Whiteware									
Edged									
Blue	—	—	—	—	—	—	—	1	1
Hand Painted									
Green	1	—	—	—	—	—	—	—	1
Slipped									
Blue	1	—	—	—	—	—	—	—	1
Undecorated	2	—	2	—	1	—	—	3	8
Ironstone									
Molded and Edged	—	—	—	—	—	—	—	1	1
Repoussé and Decalcomania	—	—	—	—	—	—	—	1	1
Undecorated	—	—	—	—	—	—	—	2	2
Stoneware									
Plain									
Bristol (int.) and Bristol (ext.)	—	—	—	—	—	—	—	1	1
Porcelain									
Decalcomania	—	—	—	1	—	—	—	—	1
Undecorated	—	—	—	1	—	—	1	1	3
GLASS									
Molded									
Amber	1	—	—	—	—	—	—	—	1
Machine Made									
Clear									
Bottle	—	—	—	—	—	—	—	1	1
Unidentified	—	1	—	—	—	—	—	—	1
Clear Green									
Bottle	1	1	—	—	—	—	—	—	2
Clear Purple									
Bottle	—	—	—	—	—	—	—	1	1
Cobalt	—	—	—	—	—	—	—	1	1
Unidentified Manufacturing Technique									
Amber	1	—	—	—	1	—	—	—	2
Brown	—	—	1	—	—	—	—	—	1
Clear	4	4	1	2	1	—	—	2	14
Clear Green	3	—	—	1	—	—	—	—	4
Clear Purple	—	—	—	—	1	—	—	1	2
Light Green	2	—	—	—	—	—	—	—	2
Milk (white)	—	—	—	1	—	—	—	—	1
Olive	2	—	—	1	—	—	—	—	3
Window Glass									
Clear Green	1	—	—	—	—	—	—	—	1
METAL									
Iron									
Horseshoe	—	—	—	—	—	—	—	1	1
Nail	2	—	—	1	1	—	—	—	4
Unidentified	2	10	3	—	1	2	—	—	18
CONSTRUCTION MATERIAL									
Brick	5	9	12	15	20	1	5	1	68
Mortar	—	—	—	—	1	—	—	—	1
Slate	—	—	1	—	—	—	—	—	1
PLASTIC	1	—	—	—	—	—	—	—	1
COAL	3	—	2	—	1	—	—	—	6
FAUNA									
Bone									
Non Human unidentified	—	—	—	—	2	—	—	—	2
TOTAL	33	25	22	23	30	3	6	19	161

distance. Cartographic data indicates that this locale was occupied between the late-nineteenth century mid-twentieth centuries. Artifact data suggests a possible earlier initial date of occupation during the early nineteenth century, but most intensive during the mid- to late-nineteenth century.

CHAPTER 5

SUMMARY AND RECOMMENDATIONS

Summary

The purpose of this investigation was to determine the extent of disturbance due to the construction of a helicopter pad within Area 4 of the Waterford Plantation site (16SC41). To attain this goal a program of pedestrian survey and subsurface testing was implemented. The field data was then compared to background information gathered concerning the history of the plantation and previous archaeological research.

Historical documents indicated the Waterford Plantation may have been initially occupied in the early eighteenth century and was continuously inhabited into the twentieth century. The plantation was most intensively utilized for the cultivation of sugarcane. The spatial organization of buildings within the limits of the plantation varied little over time. Prior to the Civil War structures were organized like other typical river plantations: a big house positioned near the banks of the river with a small grouping of outbuildings nearby. Slave quarters were also situated near the river bank in the vicinity of the big house. After the Civil War the spatial organization changed, the slave quarters were removed and tenant/sharecropper quarters were erected. This arrangement of structures remained in place almost until the mid-twentieth century.

Previous archaeological investigations indicated that deposits associated with the postbellum tenant/sharecropper quarters remained intact (Castille 1980a). This area was designated Area 4. Subsequently, this area within the plantation was found to be eligible for inclusion in the National Register of Historic Places (MacDougal 1982). However, between the time of the 1980 fieldwork and the site's eligible determination, a helicopter pad was constructed within the limits of the tenant/sharecropper quarters area. Thus, the present owners of the property were asked to assess the extent a damage to archaeological deposits caused by this construction.

A pedestrian survey including shovel test excavation was conducted across the extent of Area 4. During the present investigation a total area of 3.85 acres (1.56 ha) were examined. Forty-four shovel tests were excavated within Area 4, 34 of which were positive. Over 300 artifacts were collected from the ground surface and shovel tests. The stratigraphic profiles were compared between four discrete loci within Area 4. From

these comparisons it was found that the archaeological deposits in the vicinity of the helicopter pad have been disturbed over an area measuring approximately 60-m-by-40-m (2400 m²). However, deposits beyond the area of disturbance remain intact. These deposits do in fact extend beyond what was originally designated as the Area 4 quarters complex.

Recommendations

The present investigations have determined that although some disturbance has occurred within Area 4 of the Waterford Plantation, other portions of Area 4 as well as other former structure localities and their associated deposits are still intact and remain eligible for inclusion in the National Register. Thus, avoidance of all known locations of former structures is recommended. These former structure locations include those designated during the 1980 investigation: Areas 3, 4, 5, and 6. Additionally, it should be noted that the 1980 investigation delineated only structure locations. Archaeological features such as a sheet midden, refuse deposits, or foundations for structures not shown on historic maps, may exist outside the limits of presently designated cultural properties. If these areas are to be impacted in the future, a plan for additional investigation should be made. This additional investigation could include monitoring during construction, additional background research, subsurface testing in the form of shovel testing or soil coring to determine the presence or absence of features and loci boundaries. Mechanical stripping of topsoil can also be utilized to identify features. After all areas have been identified, if avoidance is not feasible, a data recovery plan should be devised to mitigate any adverse effects.

REFERENCES

Bahr, L.M. and J.J. Hebrard

- 1976 *Barataria Basin: Biological Characterization*. Center of Wetland Resources, Louisiana State University, Baton Rouge.

Beavers, Richard C., Teresia R. Lamb, and John R. Greene

- 1984 *Archaeological Survey of the Upper Lafourche Delta: Lafourche, Terrebonne Parishes, Louisiana*. Research Report No. 8. Archaeological and Doctoral Research Program, University of New Orleans, Louisiana.

Boggess, Elizabeth

- 1990 *A Survey of Archaeological Resources at Oak Alley Plantation, 16SJ53, Vacherie, Louisiana*. Archaeologists Unlimited. Submitted to Oak Alley Foundation and the Preservation Resource Center of New Orleans, New Orleans.

Boggess, Elizabeth, and Blanche Lovelly

- 1991 *National Register Testing of the Archaeological Components at Oak Alley Plantation, 16SJ53, Vacherie, Louisiana*. Archaeologists Unlimited. Submitted to Oak Alley Foundation and the Preservation Resource Center of New Orleans, New Orleans.

Bouchereau, Alcé

- 1877 *Statement of the Sugar and Rice Crops Made in Louisiana in 1876-77, with an Appendix, Also a Country Directory or Guide for Business Men*. Pelican Steam and Job Printing, New Orleans.

-
- 1879 *Statement of the Sugar and Rice Crops Made in Louisiana in 1878-79, with an Appendix*. Pelican Steam and Job Printing, New Orleans.

-
- 1880 *Statement of the Sugar and Rice Crops Made in Louisiana in 1879-80, with an Appendix*. Pelican Steam and Job Printing, New Orleans.

-
- 1881 *Statement of the Sugar and Rice Crops Made in Louisiana in 1880-81, with an Appendix*. F.F. Hansell, New Orleans.

Bouchereau, Alcé

1882 *Statement of the Sugar and Rice Crops Made in Louisiana in 1881-82, with an Appendix.* L. Graham & Son, New Orleans.

1892 *Statement of the Sugar and Rice Crops Made in Louisiana in 1890-92, with an Appendix.* A. Bouchereau, New Orleans.

1895 *Statement of the Sugar and Rice Crops Made in Louisiana in 1894-95, with an Appendix.* A. Bouchereau, New Orleans.

1898 *Statement of the Sugar and Rice Crops Made in Louisiana in 1897-98, with an Appendix.* A. Bouchereau, New Orleans.

1902 *Statement of the Sugar Crop Made in Louisiana in 1900-01, with an Appendix.* A. Bouchereau, New Orleans.

1912 *Statement of the Sugar and Rice Crops Made in Louisiana in 1907-08, ERRATA.* A. Bouchereau, New Orleans.

1916 *Statement of the Sugar and Rice Crops Made in Louisiana in 1915-16, with an Appendix.* A. Bouchereau, New Orleans.

1917 *Statement of the Sugar and Rice Crops Made in Louisiana in 1911-12, with an Appendix.* A. Bouchereau, New Orleans.

Bouchereau, Louis

1872 *The Louisiana Sugar Report 1871-1872, with an Appendix.* Pelican Book and Job Printing Office, New Orleans.

1873 *The Louisiana Sugar Report Made in Louisiana in 1872-1873, with an Appendix.* Pelican Book and Job Printing Office, New Orleans.

1876 *The Louisiana Sugar Report Made in Louisiana in 1875-1876, with an Appendix.* Pelican Book and Job Printing Office, New Orleans.

1890 *The Louisiana Sugar Report Made in Louisiana in 1889-1890, with an Appendix.* Pelican Book and Job Printing Office, New Orleans.

Buffler, Richard T.

1991 *Early Evolution of the Gulf of Mexico Basin.* In *and Introduction of Central Gulf Coast Geology*, edited by D. Goldthwaite, pp. 1-15, New Orleans Geological Society, New Orleans.

Chapommier, P.A.

1850 *Statement of the Sugar Crop Made in Louisiana in 1849-1850.* Cook, Young & Co., New Orleans.

Chapommier, P.A.

1851 *Statement of the Sugar Crop Made in Louisiana in 1850-1851.* Cook, Young & Co., New Orleans.

1852 *Statement of the Sugar Crop Made in Louisiana in 1851-1852.* Cook, Young & Co., New Orleans.

1853 *Statement of the Sugar Crop Made in Louisiana in 1852-1853.* Cook, Young & Co., New Orleans.

1854 *Statement of the Sugar Crop Made in Louisiana in 1853-1854.* Cook, Young & Co., New Orleans.

1855 *Statement of the Sugar Crop Made in Louisiana in 1854-1855.* Cook, Young & Co., New Orleans.

1856 *Statement of the Sugar Crop Made in Louisiana in 1855-1856.* Cook, Young & Co., New Orleans.

1857 *Statement of the Sugar Crop Made in Louisiana in 1856-1857.* Cook, Young & Co., New Orleans.

1858 *Statement of the Sugar Crop Made in Louisiana in 1857-1858.* Cook, Young & Co., New Orleans.

1859 *Statement of the Sugar Crop Made in Louisiana in 1858-1859.* Cook, Young & Co., New Orleans.

Carpenter, Vickie, Jill-Karen Yakubik, Marco J. Giardino, and Dave D. Davis

1981 *Level I Cultural Resources Survey and Assessment for the Proposed Peabody Coal Terminal, St. James Parish, Louisiana.* Department of Anthropology, Tulane University, New Orleans. Submitted to Waldemar S. Nelson & Company, New Orleans.

Castille, George J., III

1979 *Survey and Evaluation of the St. Alice Revetment, St. James Parish, Louisiana.* Coastal Environments, Inc. Submitted to New Orleans District, U.S. Army Corps of Engineers.

1980a *Cultural Resources Evaluation of the Waterford 3 Electric Generating Plant St. Charles Parish, Louisiana.* Coastal Environments, Inc. Submitted to EBASCO Services Incorporated, New York.

1980b *State of Louisiana Site Record Form, Waterford Plantation 16SC41.* Ms. on file at the Louisiana Department of Culture, Recreation, and Tourism, Division of Archaeology, Baton Rouge.

Coastal Environments, Inc.

- 1979 *Summary Report: Privy Excavations, St. Alice Revetment*. Coastal Environments, Inc. Submitted New Orleans District, U.S. Army Corps of Engineers.

Colquhoun, Donald J.

- 1968 Coastal Plains. In *The Encyclopedia of Geomorphology*, edited by Rhodes W. Fairbridge, pp.144-149. Encyclopedia of Earth Sciences Series, vol. III, Reinhold Book Corporation, New York.

Conrad, Glenn R.

- 1970 *The First Families of Louisiana, Volume II*. Claitor's Publishing Division, Baton Rouge

-
- 1974 *St. Charles: Abstracts of the Civil Records of St. Charles Parish, 1770-1803*. University of Southwestern Louisiana, Lafayette.

-
- 1981 *The German Coast: Abstracts of the Civil Records of St. Charles and St. John the Baptist Parishes, 1804-1812*. University of Southwestern Louisiana, Lafayette.

Craig, Nancy Jo., Latimore M. Smith, Nelwyn M. Gilmore, Gary D. Lester, and Alanea M. Williams

- 1987 *The Natural Communities of Coastal Louisiana: Classification and Description*. Louisiana Department of Wildlife and Fisheries. Submitted to the Louisiana Department of Natural Resources, Baton Rouge.

Davis, Edwin A.

- 1971 *Louisiana: A Narrative History*. Claitor's Publishing Division, Baton Rouge.

Davis, John

- 1806 *Travels in Louisiana and the Floridas in the Year 1802, Giving a Correct Picture of Those Countries*. I. Riley, New York.

Deiler, J. Hanno

- 1969 *The Settlement of the German Coast of Louisiana and the Creoles of German*
[1909] *Descent*. Genealogical Publishing Company, Inc., Baltimore.

DeGalos, Pierre A.

- 1892 *Statement of Sugar Made in 1828 and 1829*. Louisiana Planter and Sugar Manufacturer, vol. IX.

Din, Gilbert C. (editor)

- 1977 *Louisiana in 1776: A Memoir of Francisco Bouligney*, Louisiana Collection Series III, New Orleans.

Douglas, Neil H.

- 1974 *Freshwater Fishes of Louisiana*. Claitor's Publishing Division, Baton Rouge.

Elfer, Melba

- 1936 A Case Study of St. Charles Parish. Term Paper for School of Social Work, Tulane University, New Orleans. Ms. on file, Louisiana and Lower Mississippi Valley Collections, Hill Memorial Library, Louisiana State University, Baton Rouge.

Entergy

- 2004 "Entergy Corporate History." <<http://www.energy.com/corp/about/history.asp>> June.

Fisk, Harold N.

- 1944 *Geological Investigations of the Alluvial Valley of the Lower Mississippi River*. Mississippi River Commission, Publication No. 52. Mississippi River Commission, Vicksburg District, U.S. Army Corps of Engineers.

Franks, Herschel A., Jill-Karen Yakubik, Jeffery E. Treffinger, R. Christopher Goodwin, and Paul C. Armstrong

- 1986 *Cultural Resources Inventory of the Montz Freshwater Diversion Project Corridor, St. Charles Parish, Louisiana*. R. Christopher Goodwin & Associates, Inc. Submitted to the New Orleans District, U.S. Army Corps of Engineers.

Frazier, David E.

- 1967 Recent Deltaic Deposits of the Mississippi: Their Development and Chronology. *Transactions of the Gulf Coast Association of Geological Societies*. 17:287-315.

Frazier, David E., and Alec Osanik

- 1965 Recent Peat Deposits: Louisiana Coastal Plain. In *Environments of Coastal Deposition*, edited by E.C. Dapples and M.E. Hopkins, pp. 63-85, Special Paper no. 114, Geological Society of America, Bolder.

Furness, Amanda

- 2002 "News That Matters To Us: We Can't Forget." *The Louisiana Weekly*. Archived Stories <http://www.louisianaweekly.com/cgi-bin/weekly/news/articlegate.pl?20021118> 18 November 2002.

Gagliano, Sherwood M., Richard A. Weinstein, Katherine Brooks, Eileen K. Burden, Susan Fulgham, Wayne P. Glander, and Charles Wax

- 1977 *Cultural Resource Testing along the Proposed Mississippi River Revetment Site Near Romeville, Louisiana*. Coastal Environments, Inc. Submitted to Louisiana Department of Culture, Recreation and Tourism, Division of Archaeology, Baton Rouge.

Gianelloni, E.B.

- 1965 *Calendar of Louisiana Documents*, vol. 3. Louisiana State Archives and Records Commission, Baton Rouge.

Gibson, Jon L.

- 1978 *Cultural Resources Survey of the Proposed Site of a Steel Recycling Plant on the Mississippi River Near LaPlace, Southeastern Louisiana*. Submitted by Archaeology, Inc., Lafayette. Submitted to Dr. Gerald McLindon, Baton Rouge.

Ginn, Milred K.

- 1940 A history of Rice Production in Louisiana to 1896. *The Louisiana Historic Quarterly* 23(2).

Giraud, Marcel

- 1991 *A History of Louisiana: The Company of the Indies, 1723-1731*, vol. V. Brian Pearce, translator. Louisiana State University Press, Baton Rouge.

Goodwin, R. Christopher, Laura A. Landry, and William H. Spencer

- 1981 *Cultural Resources Survey, Peabody Coal Terminal, St. Rose Plantation, St. James Parish, Louisiana*. Southern Archaeological Research, Inc., Baton Rouge. Submitted to Waldemar S. Nelson, & Co., Inc., New Orleans.

Goodwin, R. Christopher, Stephen Hinks, William P. Athens, Ralph Draughton, Jr., Jennifer A. Cohen, William A Morgan, and Paul V. Heinrich

- 1991 *Cultural Resources Investigations of Larose to Golden Meadow Hurricane Protection Levee Section D, Lafourche Parish Louisiana*. Cultural Resources Series Report No. COELMN/PD-90-15. R. Christopher Goodwin and Associates, Inc. Submitted to New Orleans District, U.S. Army Corps of Engineers.

Greer, Georgeanna H.

- 1981 *American Stonewares, the Art and Craft of Utilitarian Potters*. Schiffer Publishing, Exton, Pennsylvania.

Hahn, Thurston H.G., III, and Charles E. Pearson

- 1988 *A Cultural Resources Survey of the St. Charles Parish Hurricane Protection Levee, St. Charles Parish, Louisiana*. Coastal Environments, Inc. Submitted to C-K Associates, Inc., Baton Rouge.

Hahn, Thurston H.G. III, Charles E. Pearson, Cherie A. Schwab, Elizabeth L. Davoli, and Donald G. Hunter

- 1996 *A Phase II Cultural Resources Evaluation of a Portion of Helvetia and Wilton Plantations, St. James Parish, Louisiana*. Coastal Environments, Inc. Submitted to C-K Associates, Inc., Baton Rouge.

Hunter, Donald G., Summer L. Shuman, Brenda Rykels, and Wayne Lawrence Coco

- 1991 *Whitney Plantation: Archaeology on the German Coast, Cultural Resources Investigations in St. John the Baptist Parish, Louisiana*. Coastal Environments, Inc. Submitted to Walk, Haydel & Associates, New Orleans.

Holmes, Jack D.

1967 Indigo in Colonial Louisiana and the Floridas. *Louisiana History* 8:329-349.

Humphreys, A.A. and H.L. Abbot

1851 Mississippi River from Red River Landing to Carrollton (New Orleans). Map on file, U.S. National Archives, Record Group 77, MD1-30.

Iroquois Research Institute

1982 *Cultural Resources Survey of Six Revetment and Levee Items Above New Orleans*. Iroquois Research Institute, Fairfax, Virginia. Submitted to New Orleans District U.S. Army Corps of Engineers.

Kennedy, William G.

1979 *Proposed Barge Slip, Ship, and Barge Dock Grain Loading Facilities*. Pyburn & Odom, Inc. Submitted to Zen-Noh Grain Corporation, New Orleans.

Kolb, C. R., Smith, F. L., and Silva, R. C.,

1975 *Pleistocene sediments of the New Orleans-Lake Pontchartrain Area*: U.S. Army Engineers Waterways Experiment Station, Technical Report S-76-6, 56 p.

Kolb, C.R., and J.R. van Lopik

1958 *Geology of the Mississippi River Deltaic Plain, Southeastern Louisiana*. Technical Report No. 3-438. Waterways Experiment Station, Vicksburg District, U.S. Army Corps of Engineers.

Liebowitz, Joan

1985 *Yellowware: The Transitional Ceramic*. Schiffer Publishing, West Chester, Pennsylvania.

Lofstrom, Edward

1976 A Seriation of Historic Ceramics in the Midwest, 1780-1870. Paper presented at the Joint Plains-Midwest Anthropological Conference.

Lowery, George H.

1974 *The Mammals of Louisiana and its Adjacent Waters*. Louisiana State University Press, Baton Rouge.

MacDougal, Bruce

1982a E.O. 11593: Determination of Eligibility Notification, National Register of Historic Places for Waterford Plantation Overseers House Site (Area 3). Ms. on file, Louisiana Department of Culture, Recreation and Tourism, Baton Rouge.

1982b E.O. 11593: Determination of Eligibility Notification, National Register of Historic Places for Waterford Plantation Workers Quarters Site (Area 4). Ms. on file, Louisiana Department of Culture, Recreation and Tourism, Baton Rouge.

- Maudel, Charles R.
 1972 *The Census Tables for the French Colony of Louisiana and Assessment of Destrehan Plantation, St. Charles Parish, Louisiana.* Department of Anthropology and Geography, University of New Orleans.
- McDaniel, Donald
 1987 *Soil Survey of St. Charles Parish, Louisiana.* Soil Conservation Service, U.S. Department of Agriculture. U.S. Government Printing Office, Washington, D.C.
- McIntire, William G.
 1979 *Cultural Resources Survey, Shell Pipe Line Corporation's Proposed Norco to Marathon 24" Pipeline.* On file, Louisiana Department of Culture, Recreation and Tourism, Baton Rouge.
- McLemore, Richard Aubrey
 1973 *A History of Mississippi.* University & College Press of Mississippi, Hattiesburg.
- McWilliams, Richebourg G.
 1953 *Fleur de Lys and Calumet.* Louisiana State University Press, Baton Rouge.
- Miller, George L.
 1980 Classification and Economic Scaling of 19th century Ceramics. *Historical Archaeology* 14:1-40.
- Miller, George L., and Catherine Sullivan
 1984 Machine-Made Glass Containers and the End of Production for Mouth-Blown Bottles. *Historical Archaeology* 18(2):81-96.
- Mississippi River Commission (MRC)
 1881 Map of the Lower Mississippi River from the Mouth of the Ohio River to the
 -1897 Head of the Passes. 32 sheets, Vicksburg, Mississippi.
-
- 1921 Map of the Lower Mississippi River from the Mouth of the Ohio River to the Head of the Passes. Waterways Experiment Station, Vicksburg District, U.S. Army Corps of Engineers.
- Moir, Randall W.
 1987 Refined Earthenwares and Rural Ceramic Traditions. In *Historic Buildings, Material Culture and People of the Prairie Margin*, edited by David H. Journey and Randall W. Moir, pp. 97-120. Richland Creek Technical Series, vol. 5. Institute for the Study of Earth and Man, Southern Methodist University, Dallas.
- Moore, John P.
 1976 *Revolt in Louisiana: The Spanish Occupation 1766-1770.* Louisiana State University Press, Baton Rouge.

- Munsey, Cecil
1970 *The Illustrated Guide to Collecting Bottles*. Hawthorn Books, New York.
- Neuman, Robert
1977 *An Archaeological Survey of the Waterford Station, Unit Number 3, St. Charles Parish, Louisiana*. Submitted to EBASCO Services, Inc., New York.
- Newberry Library
1723 *Carte Paritculiere Du Flevue St. Louis dix lieues au dessus et ou dessous De La Nouvelle Orleans ou sont marque les habitations et les terrains concedes a Plusieurs Particuliers AU MISSISSIPY*. Newberry Library, Chicago.
- O'Neil, Charles E., Joe G. Taylor, William Ivy Hair, Mark T. Carleton and Michael L. Kurtz
1984 *Louisiana: A History*. The Forum Press, Inc., Arlington Heights, Ill.
- Pearson, Charles E., George J. Castille, Kathleen G. McClosky, Laura A. Landry
1979 *Cultural Resources Survey of Wilton and Helvetia Plantations, St. James Parish, Louisiana*. Coastal Environments, Inc. Submitted to Envirosphere, New Orleans.
- Penland, Shea, Karen E. Ramsey, Randolph A. McBride, John T. Mestayer, and Karen A. Westphal
1988 *Relative Sea Level Rise and Delta Plain Development in the Terrebonne Parish Region*. Coastal Technical Report No. 4. Louisiana Geological Survey, Baton Rouge.
- Price, Cynthia R.
1982 *19th Century Ceramics in the Eastern Ozark Border Region*. Monograph Series No. 1. Center for Archaeological Research, Southwest Missouri State University, Springfield.
- Robblee, Patrick P., Roger T. Saucier, Susan Barrett Smith, Dave D. Davis, and William P. Athens
1998 *Phase I Cultural Resources Survey and Inventory of a 78.0 KM (48.5 MI) Segment of the Proposed 159.0 KM (98.8 MI) Koch Pipeline Southeast, Inc., Pascagoula Pipeline Project, Assumption, St. James, St. John the Baptist, St. Chalres, and St. Tammany Parishes, Louisiana*. R. Christopher Goodwin & Associates, Inc., New Orleans. Submitted to New Orleans District, U.S. Army Corps of Engineers.
- Robin, Claude C.
1966 *Voyage to the interior of Louisiana, 1802-1806*. Stuart O. Landry, translator. New Orleans.
- Russell, Richard J., Henry V. Howe, James H. McGuirt, Christian F. Dohm, Wade Hadley, Jr., Fred B. Kniffen, and Clair A. Brown
1936 *Lower Mississippi River Delta: Reports on the Geology of Plaquemines and St. Bernard Parishes*. Geological Bulletin N. 8. Geological Survey, Louisiana Department of Conservation, New Orleans.

Saucier, Roger T.

1963 *Recent Geomorphic History of the Lake Pontchartrain Basin, Louisiana*. Coastal Studies Series No. 9. Louisiana State University, Baton Rouge.

1994 *Geomorphology and Quaternary Geologic History of the Lower Mississippi Valley*. U.S. Army Engineer Waterways Experiment Station, U.S. Army Corps of Engineers, Vicksburg District.

Shenkel, Richard J.

1977 *Cultural Resources Survey of the Mississippi River Bank Protection Item Mi 132.5-L, St. John the Baptist and St. Charles Parish*. Richard J. Shenkel. Submitted to New Orleans District, U.S. Army Corps of Engineers.

Skinner, S. Alan, and Brenda B. Whorton

1995 *Cultural Resources Survey Through Pelican Plantation, Louisiana, Phase I Survey of the NORCO-Taft Butadiene Pipeline, St. Charles Parish, Louisiana*. AR Consultants. Submitted to Global Environments, Inc., Houston.

Stuart, David R., and Jerome A. Green

1983 *An Archaeological Survey of the Proposed LaPlace-Destrehan Levee Enlargement (M-133.1 to 121.1-L), St. John the Baptist and St. Charles Parishes, Louisiana*. National Park Service. Submitted to New Orleans District, U.S. Army Corps of Engineers.

Thornbury, William D.

1965 *Regional Geomorphology of the United States*. John Wiley & Sons, Inc., New York.

U.S. Geological Survey (U.S.G.S.)

1967 *Hahnville, LA. 7.5 minute series (topographic)*. U.S. Department of the Interior, Geological Survey, Denver, Colorado.

1995 *Hahnville, LA. 7.5 minute series (topographic)*. U.S. Department of the Interior, Geological Survey, Reston, VA.

Weinstein, Richard A., and Sherwood M. Gagliano

1985 *The Shifting Deltaic Coast of the Lafourche Country and its Prehistoric Settlement*. In *The Lafourche Country: The People and the Land*, edited by Philip D. Uzee, pp.122-149. /the Center For Louisiana Studies, University of Southwestern Louisiana, Lafayette.

Yakubik, Jill-Karen

1993 *Archaeological Investigations at Destrehan Plantation (16SC18), St. Charles Parish, Louisiana*. Earth Search Inc. Submitted to River Road Historical Society and the National Park Service through the Department of Culture, Recreation and Tourism, Baton Rouge.

Yoes, Henry E., III
1973 *A History of St. Charles Parish to 1973.* St. Charles Herald Publishers, Norco,
Louisiana.

APPENDIX A

**ARTIFACTS RECOVERED DURING
1980 INVESTIGATION OF WATERFORD
PLANTATION (16SC41)**

PROVENIENCE	DESCRIPTION	QUANTITY		
AREA 3 Surface	Kitchen Ceramic	Blue-edged pearlware, <i>var. embossed dot</i>	1	
		Slipped stoneware, <i>var. brown</i>	1	
		Plaine pearlware, <i>var. unspecified</i>	1	
	Glass	Olive amber fragments	2	
		Miscellaneous	Iron spike	1
	Area 3 Surface Total		6	
	Area 3 Test Pit	Kitchen Ceramic	Plain pearlware, <i>var. unspecified</i>	1
			Plain porcelain <i>var. unspecified</i>	1
		Fauna	Oyster shell	1
			Structural Debris	Road gravel
Brick fragments		2		
Area 3 Test Pit Total		7		
AREA 4 Surface		Kitchen Ceramic	Plain porcelain, <i>var. unspecified</i>	1
			Plain whiteware, <i>var. unspecified</i>	11
	Embossed whiteware, <i>var. unspecified</i>		2	
	Plain pearlware, <i>var. unspecified</i>		2	
	Plain yellowware, <i>var. unspecified</i>		1	
	Salt-glazed stoneware, <i>var. gray</i>		1	
	Glass		Clear fragments	6
		Purple bottle stopper	1	
		Olive amber fragments	2	
	Fauna	Cut bone	1	
		Oyster shell	3	
	Architecture	Square cut nails	3	
		Structural Debris	Brick fragments	2
			Ceramic sewer pipe fragment	1
	Miscellaneous	Unidentified iron Fragments	1	
		Area 4 Surface Total		38

PROVENIENCE	DESCRIPTION	QUANTITY
AREA 4 Profile 1	Kitchen	
	Ceramic	
	Plain whiteware, <i>var. unspecified</i>	3
	Blue-edged whiteware, <i>var. shell plain</i>	1
	Glass	
	Clear fragments	1
	Structural Debris	
	Brick fragments	1
	gravel	1
	Miscellaneous	
Unidentified brass pipe	1	
Iron spike	1	
Area 4 Profile 1 Total		9
AREA 4 Profile 2	Kitchen	
	Ceramic	
	Plain whiteware, <i>var. unspecified</i>	2
	Glass	
	Olive amber fragment	1
Miscellaneous		
Unidentified metal	1	
Coal Slag	1	
Area 4 Profile 2		5
AREA 5 Surface	Structural Debris	
	Brick fragments	5
	Miscellaneous	
Iron bolt with nut	1	
Total Area 5 Surface		6
SITE TOTAL		71