FINAL REPORT
JUNE 2001

PHASE I CULTURAL RESOURCES SURVEY AND ARCHEOLOGICAL INVENTORY OF THE 4.94 HA (12.21 AC) KEYSTONE LOCK AND DAM PROJECT PARCEL, ST. MARTIN PARISH, LOUISIANA

Contract No. DACW29-97-D-0018
Delivery Order 0028

PREPARED FOR:

U.S. Army Corps of Engineers
New Orleans District
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New Orleans, Louisiana 70160-0267

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REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY *(Leave blank)*	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	June 2001	Final Report – June to July 2000

4. TITLE AND SUBTITLE
Phase I Cultural Resources Survey and Archeological Inventory of the 4.94 ha (12.21 ac) Keystone Lock and Dam Parcel, St. Martin Parish, Louisiana

5. FUNDING NUMBERS
DACW29-97-D-0018, Delivery Order 0028

6. AUTHORS
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8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
U.S. Army Corps of Engineers, New Orleans District
P.O. Box 60267
New Orleans, LA 70160-0267

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVALIABILITY STATEMENT
Unclassified/Unlimited

12b. DISTRIBUTION CODE

13. ABSTRACT *(Maximum 200 words)*

This document presents the results of the Phase I cultural resources survey and archeological inventory of the 4.94 ha (12.21 ac) Keystone Lock and Dam project parcel in St. Martin Parish, Louisiana. Fieldwork for this project was completed between June 12 and June 28, 2000 by R. Christopher Goodwin & Associates, Inc. on behalf of the U.S. Army Corps of Engineers, New Orleans District, pursuant to Contract DACW29-97-D-0018, Delivery Order 28. All fieldwork was conducted in accordance with the National Historic Preservation Act of 1966, as amended; Louisiana's Comprehensive Archaeological Plan (Smith et al. 1983); the Scope of Work as drafted by the U.S. Army Corps of Engineers, New Orleans District; with 36 CFR 800, "Protection of Historic Properties;" and with the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (Federal Register 48, No 190, 1983). Separate reports for the Hazardous, Toxic, and Radioactive Waste, the Lock and Dam, and the three standing structures within the Keystone Lock property will be submitted by R. Christopher Goodwin & Associates, Inc., to the U.S. Army Corps of Engineers, New Orleans District.

The terrestrial portion of this investigation included a combination of pedestrian survey, shovel and auger testing, and backhoe trenching. As a result of this survey, a single non-site cultural resources locus (AR2-01) and two archeological sites (16SM93 and 16SM94) were identified. Locus AR2-01 was identified along proposed Access Road 2. This locus produced only two historic period artifacts, a single whiteware bowl fragment with a floral decal and a molded glass "push-up" base shard dating from ca. 1929 to 1954. No evidence of intact cultural deposits or research potential was identified at Locus AR2-01. This non-site locus does not possess the qualities of significance as defined by the National Register of Historic Places (36 CFR 60.4 [a-d]). No additional testing of Locus AR2-01 is recommended.

Site 16SM93 consisted of an isolated prehistoric ceramic sherd and 16 historic period artifacts: a single Baytown Plain var. unspecified sherd, a single .22 caliber lead conical bullet, 5 historic period refined redware body sherds with black glaze, 6 pieces of cinder, and 4 coal fragments. Site 16SM93 contains cultural components dating from the Early Marksville Period and the nineteenth century. The limited cultural assemblage, the low artifact density, and the lack of intact cultural deposits demonstrate that Site 16SM93 does not retain research potential. This site does not possess the qualities of significance as defined by the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). No additional testing of Site 16SM93 is recommended.

Site 16SM94 consists of a scatter of historic period cultural material representing a late nineteenth to mid-twentieth century occupation. This cultural resource may be associated with the construction and maintenance of the Keystone Lock and Dam. The artifact assemblage associated with this site includes 1 ironstone sherd, 1 burnt earthenware sherd, 1 whiteware sherd, 2 melted glass fragments, 1 clevis pin and associated washer, 1 wire nail, and a single machine-cut, stamped head nail. The limited cultural assemblage, the low artifact density, and the lack of intact cultural deposits demonstrate that Site 16SM94 does not retain research potential. Site 16SM94 does not possess the qualities of significance as defined by the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). No additional testing of Site 16SM94 is recommended.

14. SUBJECT TERMS		15. NUMBER OF PAGES
Phase I	Keystone Lock and Dam	123
St. Martin Parish	Historic archeology	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	SAR

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. Z39-18
298-102

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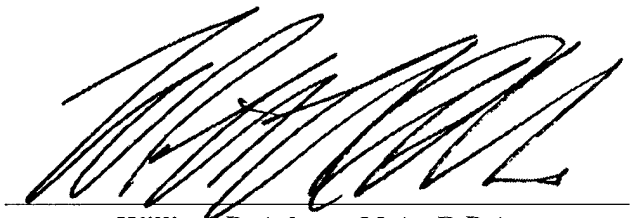
FINAL REPORT



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June 2001

For

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER I

INTRODUCTION

This document presents the results of the Phase I cultural resources survey and archeological inventory of the 4.94 ha (12.21 ac) Keystone Lock and Dam complex in St. Martin Parish, Louisiana (Figure 1). Fieldwork for this project was completed between June 12 and June 28, 2000 by R. Christopher Goodwin & Associates, Inc., on behalf of the U.S. Army Corps of Engineers, New Orleans District, pursuant to Contract DACW29-97-D-0018, Delivery Order 28. All fieldwork was conducted in accordance with the National Historic Preservation Act of 1966, as amended; *Louisiana's Comprehensive Archaeological Plan* (Smith et al. 1983, updated April 2000); the Scope of Work as drafted by the U.S. Army Corps of Engineers, New Orleans District; with 36 CFR 800, "Protection of Historic Properties;" and with the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation* (Federal Register 48, No. 190, 1983).

Project Description

The Keystone Lock and Dam complex currently is owned by the U.S. Army Corps of Engineers, New Orleans District and it is situated on Bayou Teche, midway between New Iberia to the south and St. Martinville to the north (Figure 1). The project parcel straddles the bayou; along the right descending bank of the bayou it is located within Sections 16 and 17 of Township 11S, Range 6E, while on the left descending bankline it is situated within Section 8 of the same township and range (Figures 1 and 2). The project item is located on a relatively flat area positioned within the Gulf Coastal Plain of Louisiana. Spanish Lake is situated approximately 2.3 km (1.4 mi) to the west of the project parcel, the town of St. Martinville is positioned 4.5 km (2.8 mi) north of the Area of Potential Effect, and the town of New Iberia lies approximately 6.0 km (3.7 mi) to the south of the project parcel (Figures 1 and 2). Keystone Lock and Dam also lies approximately 750 m (2,460 ft) north of the confluence of Bayou Teche and Bayou Tortue.

In addition to the terrestrial cultural resources survey and archeological inventory, personnel from R. Christopher Goodwin & Associates, Inc., also conducted a review of hazardous, toxic, and radioactive waste within 1.6 km (1 mi) of the proposed project parcel, an evaluation of the standing structures present within the Area of Potential Effect, and recordation of the Keystone Lock and Dam to the Level II Standard of the Historic American Engineering Record. While these reviews were not the subject of the current investigation, they will be reported in separate documents prepared by R. Christopher Goodwin & Associates, Inc., for the U.S. Army Corps of Engineers, New Orleans District. Thus, the current report describes only the terrestrial cultural resources survey and archeological inventory of the proposed project parcel.

Research Design and Survey Results

The current investigation was designed to identify, record, and assess the distribution of all cultural resources situated within the Area of Potential Effect. A three-step approach was utilized to achieve these objectives. It entailed a review of cartographic, archival, and archeological data relevant to the proposed project parcel;

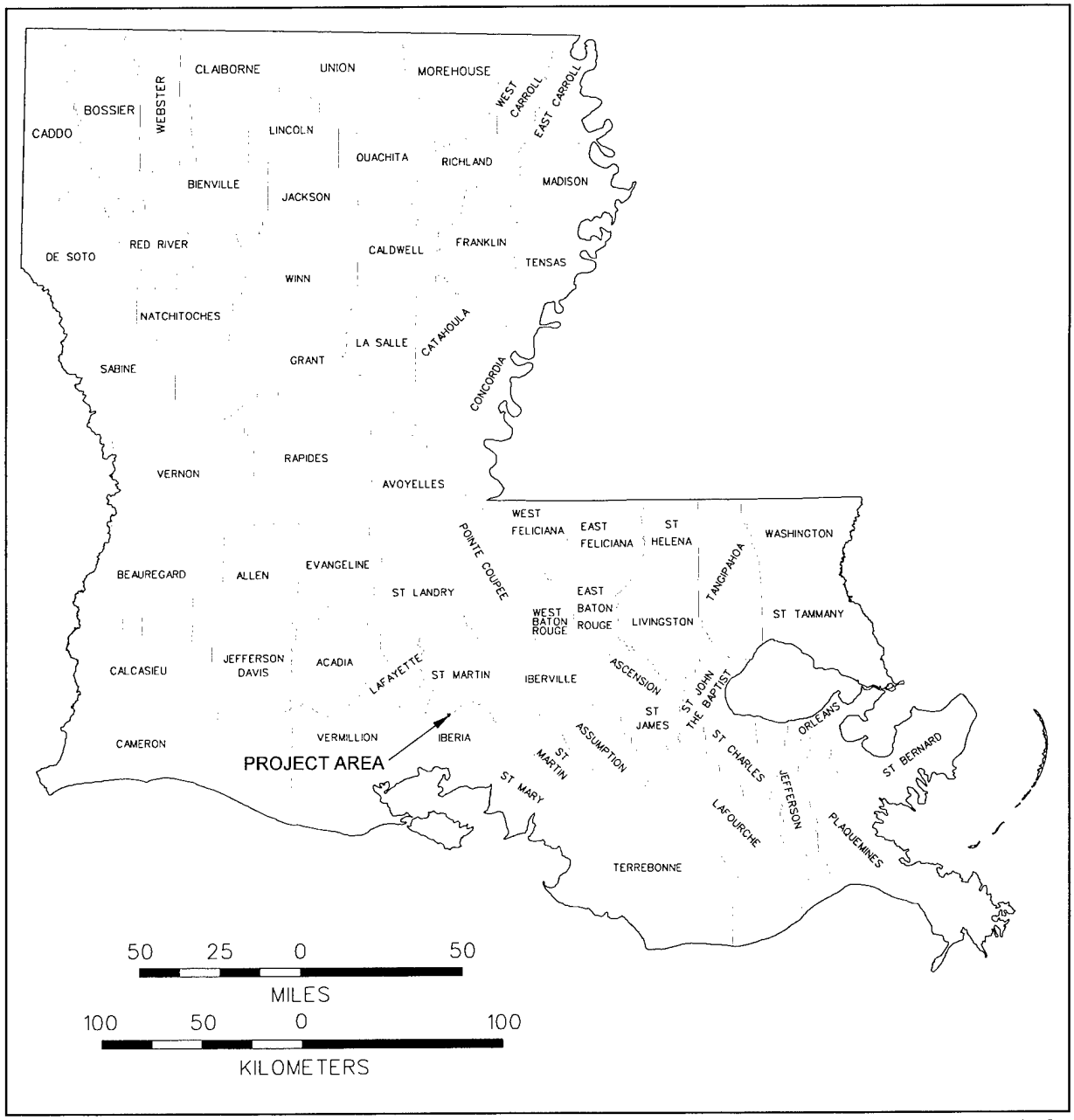

Figure 1. **Map of the State of Louisiana depicting the location of the Keystone Lock and Dam property in St. Martin Parish, Louisiana.**

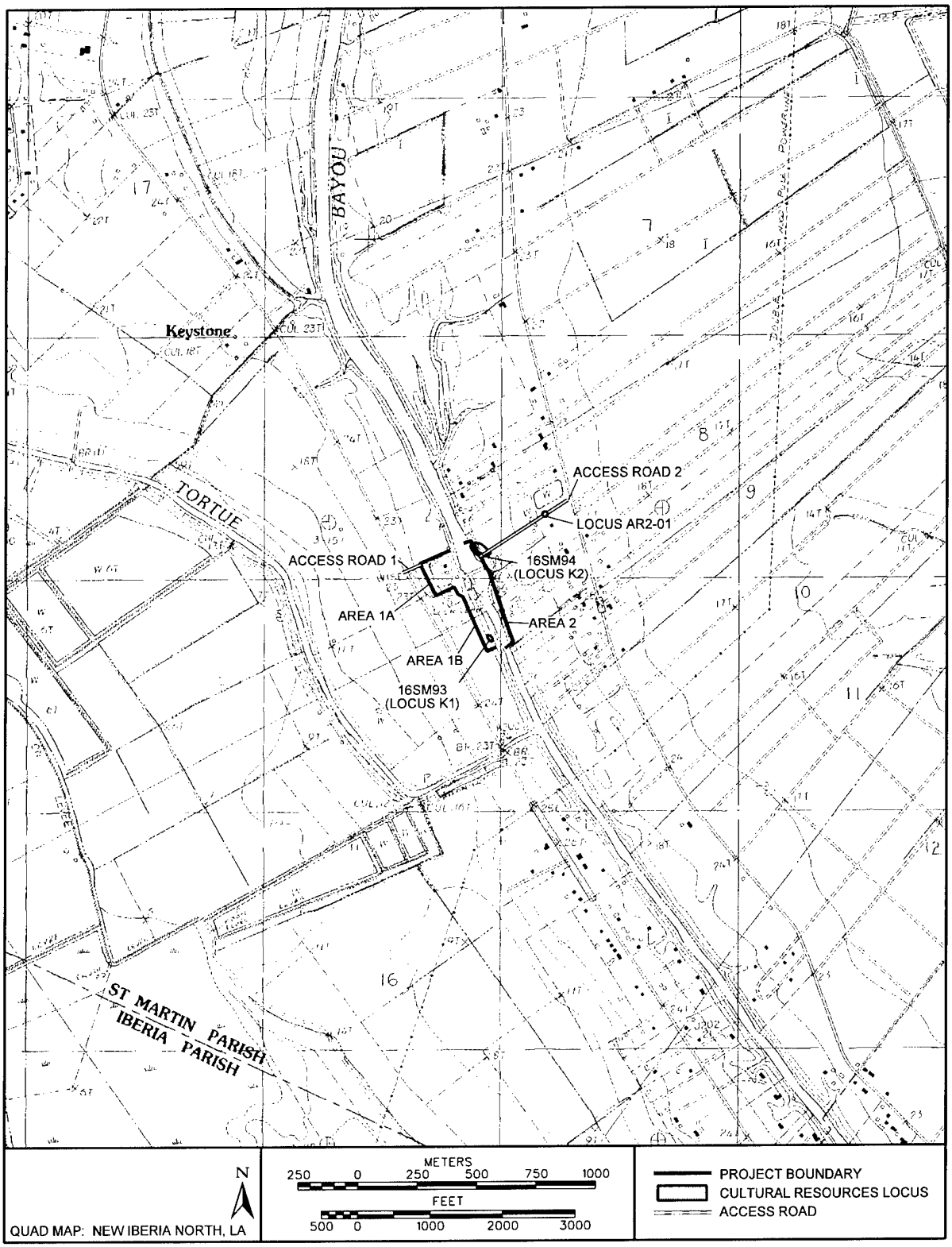

Figure 2. **Excerpt from the 1983 digital USGS 7.5' series New Iberia North, Louisiana topographic quadrangle depicting the location and configuration of the Keystone Lock and Dam property, newly identified cultural resources loci, and previously recorded archeological sites within St. Martin Parish, Louisiana.**

archeological field investigation, including pedestrian survey, and systematic shovel and auger testing throughout the Area of Potential Effect, as well as the excavation of backhoe trenches within the residential compound portion of the proposed project parcel; and, the recordation and preliminary assessment of all cultural resources identified within the proposed 4.94 ha (12.21 ac) project item.

This Phase I cultural resources survey and archeological inventory resulted in the successful excavation of 66 of 80 (83 percent) planned shovel tests, 33 of 38 (87 percent) planned auger tests, and 4 of 4 (100 percent) planned backhoe trenches. A total of four auger tests and 13 shovel tests were not excavated because they fell within areas covered by standing water, man-made obstacles, or in areas where slopes exceeded 15 degrees. During survey, two archeological sites (16SM93 and 16SM94) and a single non-site cultural resources locus (AR2-01) were identified within the confines of the proposed Keystone Lock and Dam project parcel.

Locus AR2-01 was characterized as a small historic period trash deposit; it produced a single whiteware bowl fragment with a floral decal and a molded glass "push-up" base, dating from ca. 1929 to 1954. Despite the excavation of 2 of 2 additional shovel tests during the subsequent site delineation process, no additional cultural material was recovered from the immediate area. The paucity of artifacts recovered from this non-site cultural resources locus demonstrates that Locus AR2-01 lacks research potential. It does not possess the qualities of significance as defined by the National Register of Historic Places criteria of evaluation (36 CFR 60.4 [a-d]). No additional testing of Locus AR2-01 is recommended.

Site 16SM93 produced an isolated prehistoric ceramic sherd and 16 historic period artifacts, representing a disturbed occupation dating from both the Early Marksville period and the nineteenth century. Despite the excavation of 5 of 7 delineation shovel tests throughout the immediate area, no evidence of intact cultural deposits was identified within or around Site 16SM93. These results demonstrate that Site 16SM93 lacks research potential and the qualities of significance as defined by the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). No additional testing of Site 16SM93 is recommended.

Site 16SM94 was characterized as a scatter of historic period cultural material dating from the late nineteenth to mid-twentieth centuries. The site likely was associated with the construction and maintenance of the Keystone Lock and Dam. Despite the excavation of 6 of 6 delineation shovel tests throughout the immediate area, no additional cultural material or evidence of intact cultural deposits was identified at Site 16SM94. These results demonstrate that Site 16SM94 lacks research potential and the qualities of significance as defined by the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). No additional testing of Site 16SM94 is recommended.

Management Recommendations

No potentially significant cultural resources were identified as a result of the current investigation. No additional testing of the Keystone Lock and Dam property is recommended.

Project Personnel

Mr. William P. Athens, M.A., R.P.A., served as Principal Investigator for this project. Mr. David R. George, M.A., R.P.A., acted as Project Manager, while Ms. Kari Krause, M.S., R.P.A., supervised the field investigations. Mr. James Eberwine, B.A., Mr. Michael Seward, M.A., and Ms. Cheraki Williams, B.A., assisted in completing the fieldwork. Ms. Katy Coyle, M.A., A.B.D., served as Historian. Ms. Faith Leech, B.A., compiled the graphics included in this report. Finally, Ms. Heidi R. Post, B.A., and Ms. Jennifer Preisler, B.A., produced this document.

Organization of the Report

An overview of the natural setting of the proposed project parcel is presented in Chapter II; it includes a brief description of the geology and geomorphology of the region, the floral and faunal communities characteristic of the area, and a short description of the climate of the region. The prehistoric cultural development of the region is explored in Chapter III, while the history of the proposed project parcel and significant themes relevant to understanding the historical development of the area are chronicled in

Chapter IV. A review of all previous archeological research completed in the immediate vicinity of the Area of Potential Effect is presented in Chapter V. The field methods used to conduct this Phase I cultural resources survey and archeological inventory are discussed in Chapter VI. The results of the field investigation, including a description of each cultural resource identified during survey, and project recommendations are presented in Chapter VII. A list of the artifacts recovered during survey is presented in Appendix I. Appendix II contains Louisiana State Site Forms.

CHAPTER II

NATURAL SETTING

Introduction

The distribution of human habitation across the landscape is influenced in large part by the environment and by the usable resources found within it. The portion of Louisiana encompassing the proposed project parcel contains a number of exploitable ecosystems. This chapter identifies those processes that characterized the development of the area and it documents how they influenced the settlement and subsistence strategies characteristic of the prehistoric and historic period populations of the region. An overview of the natural setting of the area containing the proposed project parcel, therefore, serves as a useful aid in identifying those areas likely to contain archeological sites, as well as data on the possible types, chronologies, and associations of the archeological deposits contained within them.

Southern Louisiana has one of the most dynamic and active coastlines in the United States. The surface water of more than half of the North American continent drains through the Mississippi River. The silts and clays suspended in the river eventually reach and are deposited either in the Gulf of Mexico or along the Louisiana coastline. In addition, over time, the Mississippi River has abandoned its channel repeatedly to create new meander belts. Between meander belts, the vertical accretion of lacustrine, swamp, and crevasse sediments has created a thick sequence of fine-grained, often organically rich sediments (Fisk 1944; Saucier 1974).

The currently proposed Keystone Lock and Dam project parcel is located within St. Martin Parish, Louisiana and it is positioned approximately 38.6 km (24 mi) north of that portion of the Gulf of Mexico that contains West Cote Blanche Bay and Vermilion Bay. Elevations throughout the vicinity of the Area of Potential Effect range from only 3.0 to 4.6 m (10 to 15 ft) above sea level. The topography of the region can be characterized as flat.

The proposed parcel falls within the Teche Delta complex. The Teche Delta complex served as the major distributary of the Mississippi River between approximately 3,900 to 5,800 years ago. The Red River subsequently occupied this course, keeping the Teche Delta complex active until 1,800 to 1,900 years ago. With the abandonment of this delta, the region began to subside.

The clearing of large log jams within the nearby Atchafalaya River around the turn of the century made that river, with its steeper gradient and shorter distance to the Gulf of Mexico, a more attractive alternative to the current Mississippi River channel. The construction of the Old River Control Structure in 1963, located approximately 438 km (272 mi) north of the proposed project parcel, however, helps to maintain the present course of the Mississippi River and restrict the flow of water into the Atchafalaya River and surrounding drainages, including Bayou Teche, to approximately 30 percent of the total volume of the Mississippi River. The result has been renewed sedimentation throughout the Atchafalaya Basin, including areas contained within the vicinity of the proposed project parcel.

Regional Geomorphology

The sedimentology and geomorphology of the Mississippi Delta in particular and southern Louisiana in general has been studied and described in detail by a large number of investigators. Coleman and Gagliano (1964), Fisk (1955,

1960), Gould (1960), Penland (1990), and Penland et al. (1985) describe the sedimentology and geomorphology of the shoal-water deltas that comprise almost all of the Mississippi delta complexes. In addition, Kosters (1989) and Tye and Kosters (1986) describe the active processes, as well as the sediments, that characterize the interdistributary bays of the delta plains. Finally, Coleman (1982), Frazier (1967), and Kolb and Van Lopik (1966) all summarize important aspects of the ecology, geomorphology, and sedimentology of the Mississippi River Delta.

A delta plain consists of the constructional surface of a delta complex, while a delta complex includes the principle distributaries that are fed from a common river course and the delta lobe that these distributaries have constructed. A delta lobe consists of a set of subdeltas and minor distributaries that develop from a principal distributary. The Mississippi Delta Plain represents a composite geomorphic surface that consists of a series of overlapping relict delta plains. The surface morphology of each delta plain is dominated by an extensive network of distributaries that radiate out either from an abandoned or active Mississippi River course into its delta plain. Each of these distributary networks is separated by a series of connecting interdistributary lakes and ponds. The lakes and ponds increase in size and coalesce towards the coast, forming larger, interdistributary bays that open to the Gulf of Mexico (Coleman 1982; Fisk 1960; Frazier 1967; Kolb and Van Lopik 1958). These formational processes chronicle the development of the stretch of Bayou Teche along which the proposed project parcel is situated.

The following sections describe the subcomponents of the geomorphology contained within the vicinity of the proposed project parcel. These consist of undifferentiated fluvial deposits of the Prairie complex, point bar deposits, backswamp deposits, abandoned river courses, and abandoned channels (Figure 3).

Undifferentiated Fluvial Deposits of the Prairie Complex (Ppu2)

The late Pleistocene coastal plain formation known as the Prairie complex represents several distinctive overlapping sedimentary cycles initiated by upstream diversions of river flow, each cycle being the correlate of a discrete delta complex. Each cycle involves sediments laid down in multiple environments of deposition ranging from fresh water to saline in the dynamic zone of interaction where the river emptied into the Gulf. Geomorphologically, these undifferentiated fluvial deposits of the Prairie complex developed natural levees and backswamps from the sedimentation of the Mississippi and Red Rivers.

Natural levees include the broad, low ridges that flank both sides of streams that periodically overflow their banks. The coarsest and greatest quantities of sediment, mostly silts and silty clays, are deposited closest to the stream channels; consequently, the natural levees are highest and thickest in these areas and they gradually thin away from the channels. In general, the greater the distance from the stream, the greater the percentage of clays. These natural levee sediments are deposited mostly by sheetflow; however, occasionally the flow will be concentrated and crevasse channels will form. In a small number of cases, a small crevasse channel will persist through multiple flood cycles and become an alluvial valley distributary.

Backswamp environments typically have very low relief and a distinctive, anastomosing, and inefficient drainage system in which channels alternately serve as tributaries and distributaries at different times of the annual flood cycle. The broad, shallow basins found beyond distal natural levees represent areas of slow, incremental deposition (vertical accretion) characterized by fine-grained sediments (mostly clays) deposited during times of widespread overbank flooding. Sediment-carrying floodwater may be ponded between the natural levee ridges of separate meander belts, or between natural levee ridges and the uplands that form the valley walls.

Point Bar Deposits (Hpm3-4)

Being by far the predominant environment in a meander belt in terms of both area and volume, the point bar environment includes materials laid down as lateral accretion on the insides of river bends as a result of the meandering of a stream that carries a large sediment load. The deposits extend to a depth equal to the deepest portion or "thalweg" of the parent stream. Associated with this foundation are two types of de-

posits that occur within the point bar topstratum: well-oxidized, brown and gray, silty and sandy sediments in elongate point bars or "ridges" that are laid down during high stages on the stream; and mostly gray, slightly oxidized, silty and clayey deposits in arcuate depressions or "swales" that are laid down during falling river stages. The ridges and swales characteristically form an alternating series (point bar accretion topography), the configuration of which conforms to the curvature of the migrating river channel and it reflects the direction and extent of meandering.

Zones of point bar accretion are most widespread and most evident because of their morphology and sediments in the alluvial valley area. Nearly continuous point bar tracts, sometimes largely uninterrupted for tens of kilometers, exhibit complex patterns of crosscutting relationships due to the meandering of multiple river bends. The accretion topography often is subdued or even completely masked by natural levees near the active and abandoned river channels. Changing nature of the sediment load and the bed and bank materials flowing in a downstream direction, caused much slower rates of meandering. Therefore, zones of point bar accretion flanking the river in the deltaic plain area are much narrower and more heavily veneered with natural levee deposits than within the alluvial valley.

Backswamp (Hb)

Broad, shallow basins positioned beyond distal natural levees represent areas characterized by the slow, incremental deposition (vertical accretion) of fine-grained sediments (mostly clays) during times of widespread overbank flooding. Sediment-carrying floodwater may be ponded between the natural levee ridges on separate meander belts, or between natural levee ridges and the uplands forming the valley walls. Backswamp areas typically have very low relief and a distinctive, anastomosing, and inefficient drainage system in which channels alternately serve as tributaries and distributaries at different times of the annual flood cycle.

During the early and mid Holocene periods, backswamp tracts were much more ubiquitous than at present, having been truncated and eroded by the progressive development of meander belts. The surviving tracts increase progressively in extent and thickness in a downstream direction, i.e., in inverse relationship to the extent of point bar areas. By far the largest contiguous tract in the Lower Mississippi Valley occurs in the Atchafalaya Basin of Louisiana and in the northern part of the deltaic plain.

Backswamp deposits consist of mostly massive sequences of soft, gray to dark gray, poorly oxidized, organically rich, and very poorly drained clays and silty clays. They average well over 30 m (100 ft) in thickness throughout the southern part of the Atchafalaya Basin in Louisiana. In all cases, backswamp deposits overlie glacial outwash deposits (the substratum) or they may be separated from them by backswamp-like deposits laid down by streams that flow in an anastomosing environment.

Abandoned Channel (Hchm)

Abandoned channels are partially or wholly filled segments of meandering streams formed by cutoffs when the stream shortens its course. Soon after formation, they usually are characterized by open water or "oxbow lakes." Later, they may become essentially filled and occasionally completely obscured by various meander belt deposits. The abandoned segment may represent an entire meander loop formed by a neck cutoff, or it may represent only a portion of a loop formed by a chute cutoff when a stream diverts through a point bar swale during high water.

The upper portions of the arms of the loops of neck cutoffs normally are filled with a wedge of fine sand and silty sand that is deposited soon after cutoff. Later, soft, gray, high-water-content clays form a characteristic "clay plug" around the loop of the abandoned channel between the sand wedges as the oxbow lake fills with sediment. From time of cutoff to complete filling, an abandoned channel experiences a characteristic and predictable life cycle, the various stages of which produce different environmental conditions that were very important to humans during prehistoric times. Also, however, the life cycle of a cutoff is strongly influenced by the pattern of channel migration in the meander belt after cutoff takes place. If the active channel remains close to the cutoff, it may be rapidly filled and completely veneered and obscured by natural levee deposits. If the active channel rapidly

moves away, the cutoff may remain indefinitely as an oxbow lake.

The frequency of cutoffs along meandering rivers directly is related to the rates and magnitudes of meandering. The frequency also is a function of the age (duration) of the meander belt -- ones that have been occupied the longest generally have the greatest number of abandoned channels. Cutoff frequencies along the Mississippi River and its tributaries vary greatly from reach to reach because of various factors, and they decline significantly in a downstream direction.

The crests of natural levee ridges immediately flanking abandoned channels in an incompletely filled state were a highly favored setting for prehistoric settlement. In addition to the well-drained and arable soils of the levees, the lacustrine and wetland environments of the abandoned channel provided immediate access to potable water and abundant wildlife and fisheries resources.

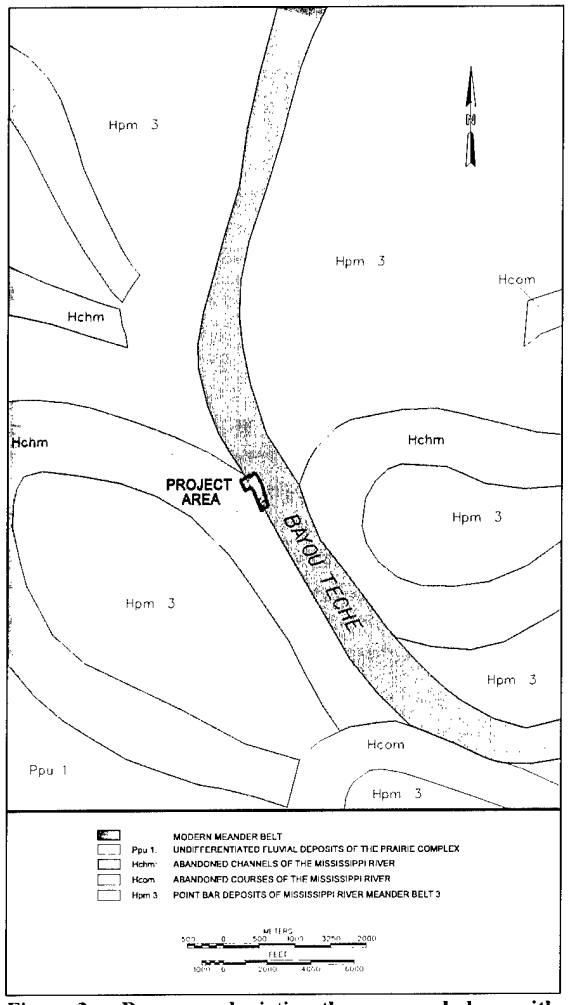

Figure 3. Base map depicting the geomorphology within the vicinity of the proposed project area.

The Proposed Project Parcel within the Context of the Atchafalaya Basin

The Atchafalaya Basin is a very large flood/interdistributary basin that eventually opens to the Gulf of Mexico (Figure 4); the proposed project area is located within the western portion of this basin. The Atchafalaya Basin is bounded by the natural levees of the Mississippi River, Bayou Teche, and Bayou Lafourche (Figure 4). The basin measures approximately 110 km (68 mi) in length and it ranges from 20 to 60 km (12 to 37 mi) in width, and it encompasses approximately 2,830 km^2 (1,093 mi^2) of natural levees, backswamps, and lakes.

Much of the basin consists of a complex network dividing, subdividing, and rejoining distributaries of the Grand and Atchafalaya Rivers, as well as smaller drainages such as Bayou Teche; however, the natural levees associated with these distributaries and the large distributary crevasses of the Mississippi River and Bayou Teche subdivide the Atchafalaya Basin into numerous subbasins (Figure 4). Inflow from the distributaries of these rivers, bayous, and formerly active crevasses empty into large lakes, e.g., Lake Fausse Point, Grand Lake, and Lake Verret. Prior to the modern construction of the Wax Lake Outlet, the surface waters of the basin collected in these lakes and drained into the Atchafalaya Bay through the relatively short, deep, lower Atchafalaya River and associated Berwick Bay (Tye and Kosters 1986). Underlying the lake bottoms and backswamps of the Atchafalaya Basin is approximately 25 to 35 m (82 to 115 ft) of fine-grained flood basin deposits; these deposits overlie fluvial sands and gravel. The fluvial sands and gravels consist of Late Pleistocene braided stream deposits and, possibly, Early Holocene point bar sediments.

Mississippi River Delta Chronology and the Development of the Proposed Project Parcel

The Mississippi River Delta is one of the most intensively studied delta systems in the

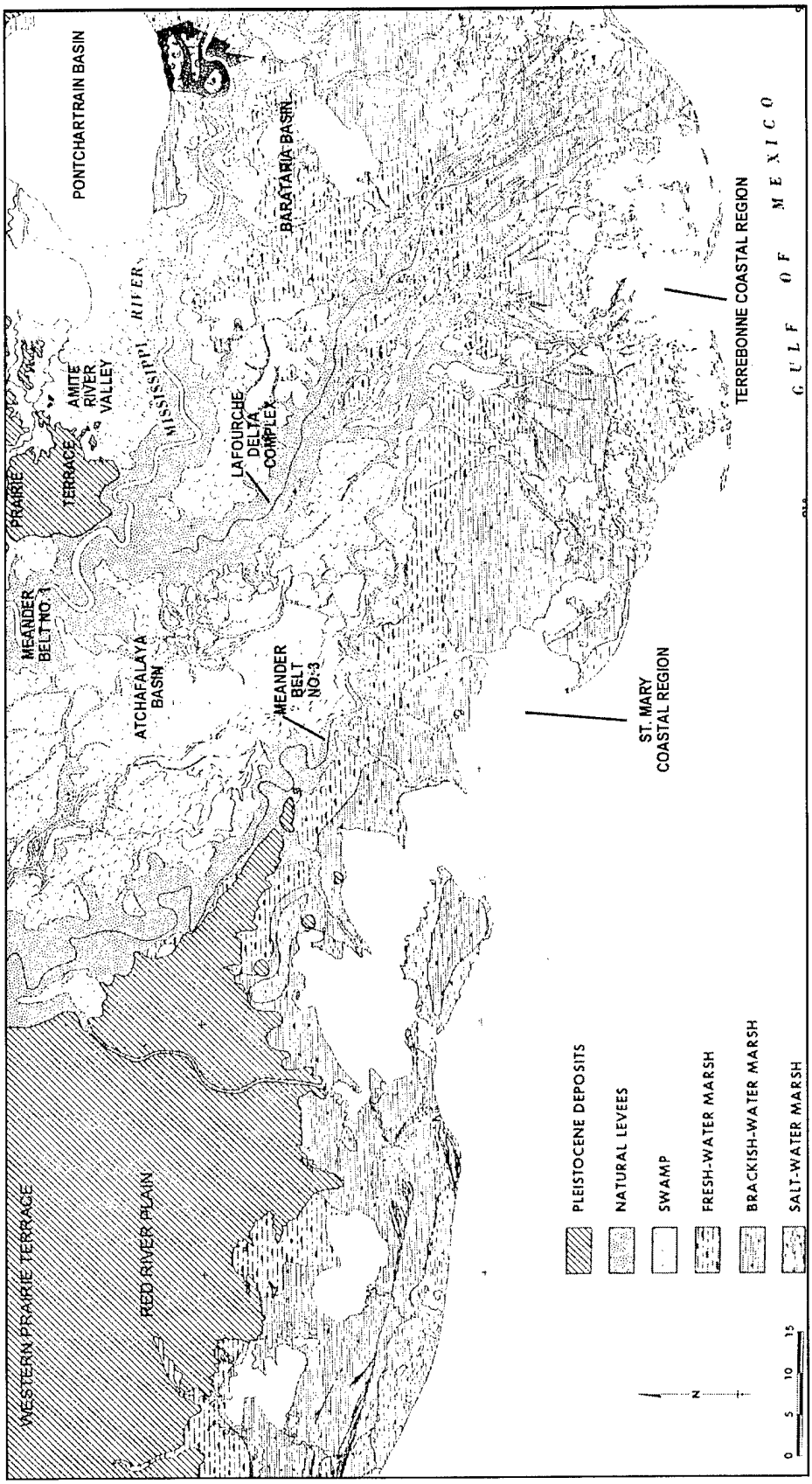

Figure 4. Major geomorphic subdivisions in southeastern Louisiana (modified from O'Neil 1949).

world. A voluminous quantity of data pertaining to its stratigraphy, sedimentology, and history has been published in innumerable publications of various types. The synthesis of these data, most notably by Frazier (1967, 1974), with revisions by Autin et al. (1991) and Weinstein and Gagliano (1985), has resulted in the development of three widely accepted chronologies for mid- to late-Holocene age delta lobe deposition throughout the region (Figures 5 and 6). All three chronologies subdivide the Mississippi River Delta into six major delta complexes: the Maringouin, Teche, St. Bernard (or Metairie and La Loutre), Lafourche, Plaquemines (or Modern), and Atchafalaya delta complexes; however; some delta chronologies do not illustrate the Atchafalaya Delta complex since it is difficult to portray graphically the boundaries of this short-lived delta complex.

Each of the delta complexes is discussed below. Since the proposed project parcel is situated within the boundaries of the Teche Delta complex, this complex is discussed in greater detail.

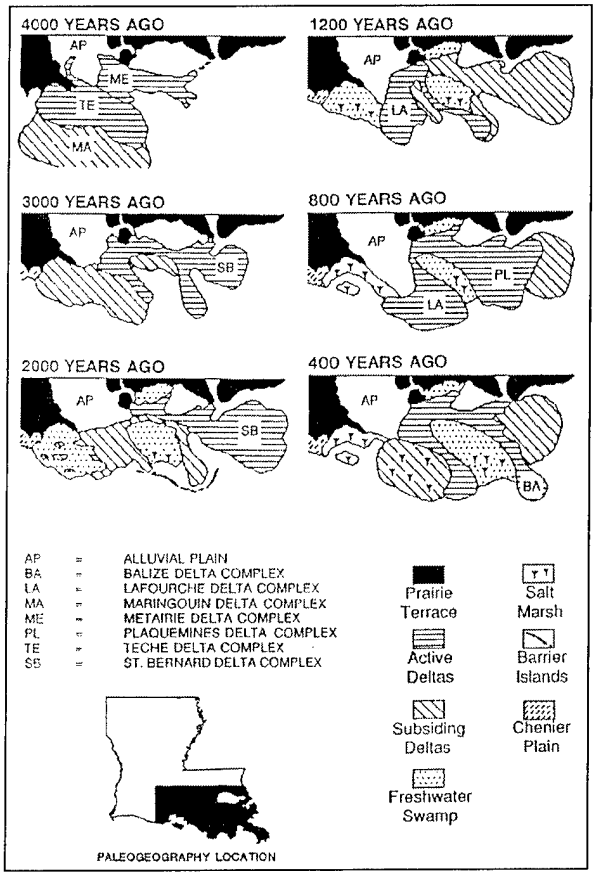

Figure 5. Palegeography of the Mississippi River Delta.

Pre-Holocene Delta Complexes

A cross-section presented by Boyd et al. (1988) depicts additional delta complexes underlying the Outer Shoal Delta complex. Unfortunately, all that is known presently about these pre-Holocene complexes is that they underlie the Outer Shoal Delta complex and that they overlie the presumably Sangamonian surface and sediments of the Prairie complex. Contrary to the interpretations of Boyd et al. (1988), correlation of their cross-sections with data presented by Coleman and Roberts (1988) indicates that these complexes probably date from the Middle Wisconsinan period. Therefore, these delta complexes predate the human occupation of the area.

Holocene Age Delta Complexes

The Pleistocene epoch, which began approximately 1.2 to 2 mya (million years ago), encompasses a number of stages defined by their correlation with glacial events. During a glacial retreat, massive amounts of unconsolidated sediments were subject to erosion, and a great deal of the sediments in North America generated as a result of these glacial events were transported through the Mississippi River drainage system, and deposited in Louisiana and in the Gulf of Mexico. The oldest sedimentary depositions that occurred during the Sangamonian stage, approximately 130,000 - 125,000 B.P., with further deposition occurring during the glacial retreat of the Middle Wisconsin stage, approximately 65,000 - 30,000 B.P. The Holocene epoch (ca. 18,000 years ago - present) also experienced periods of sediment deposition (Saucier 1994).

Outer Shoal Delta Complex

Penland et al. (1985) note that the deposition of deltaic sediments by the Mississippi River began approximately 12,000 years ago. Due to the rapidly rising sea level during the early Holocene, only thin shoal-water deltas could have accumulated, except during a sea level stillstand at approximately 15,000 - 12,000 years ago (Frazier 1967). In addition, the transgressing shoreface associated with rising sea level probably eroded these thin shoal-water deltas, and subsequent marine processes redistributed them into broad sand sheets and marine shoals such as the Sabine Bank

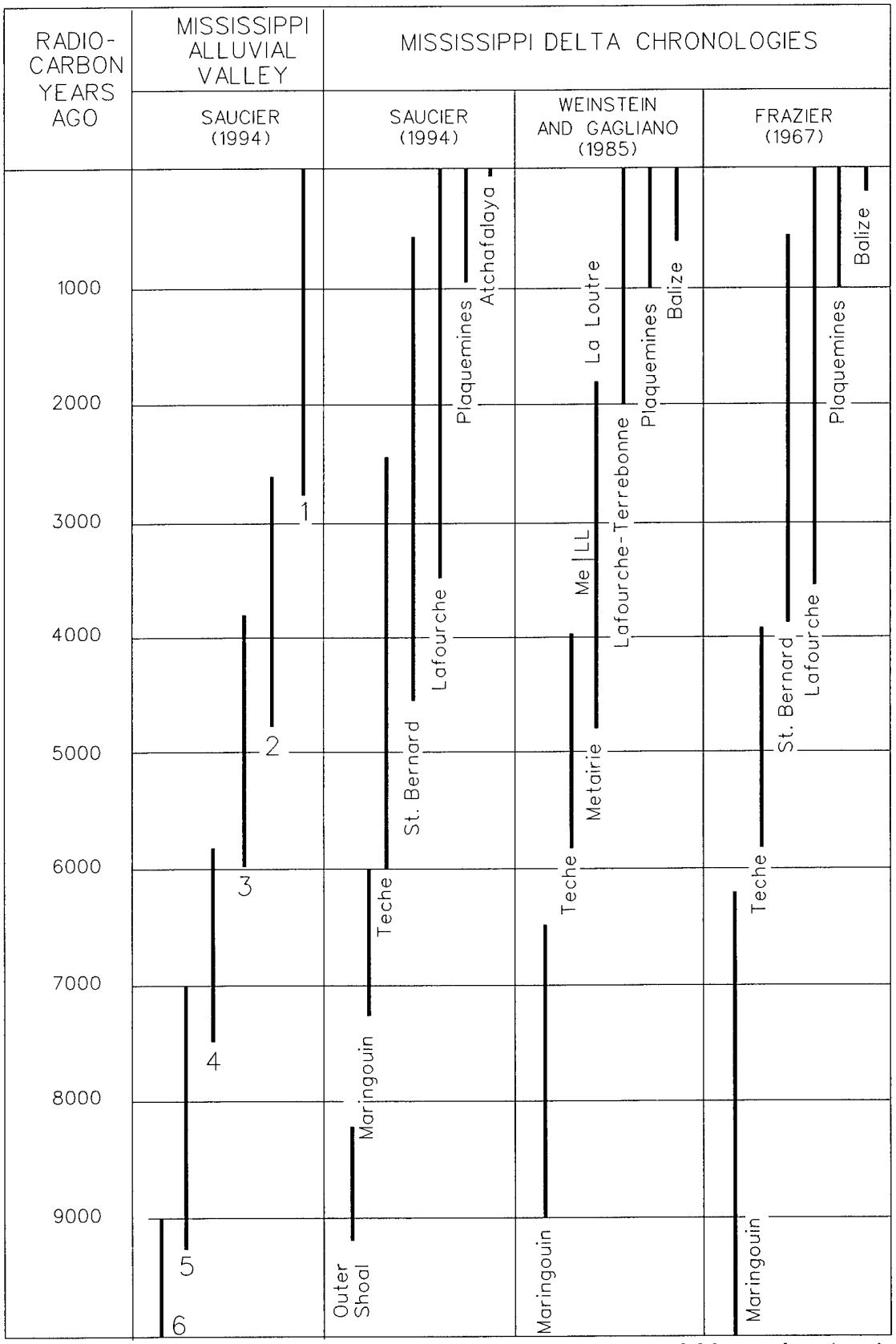

Figure 6. **Estimates of the ages of meander belts of the Mississippi River and delta complexes (ages in years B.P.).**

on the western Continental Shelf (Suter et al. 1987). As a result, it is highly unlikely that the deposition of the Maringouin Delta complex encompassed the entire period stated by Weinstein and Gagliano (1985:122) or by Frazier (1967:269) (Figures 6 and 7).

Penland et al. (1987) and Boyd et al. (1988) document another Late Pleistocene Delta complex lying underneath the Maringouin Delta complex as defined by Frazier (1967:269, 300). Boyd et al. (1988) call this delta complex the "Outer Shoal Delta complex." It forms the "Earlier Holocene Delta Plain" discussed by Penland et al. (1987), on which the Maringouin Delta complex lies. The occurrence of this delta plain at depths of 15 to 25 m (49 to 82 ft) below surface suggests that it may represent the results of deltaic deposition from approximately 9,200 - 8,200 years ago (Frazier 1974). Because very little has been determined or published regarding this delta complex, its actual age and its relationship to sea level fluctuations are unclear.

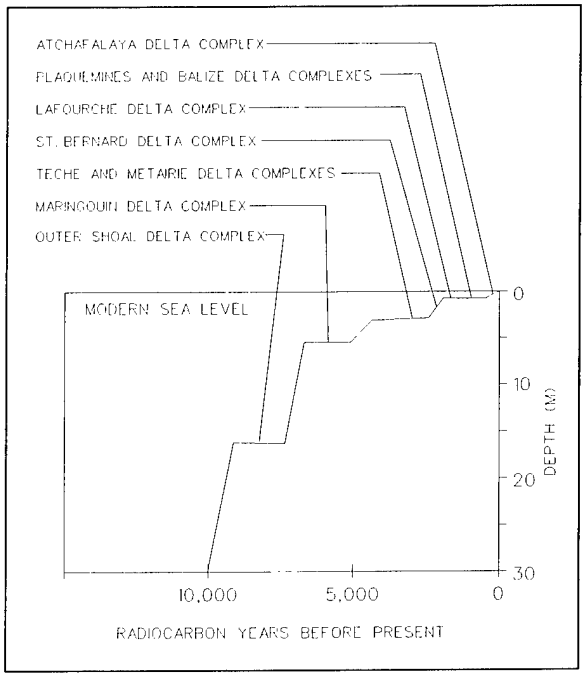

Figure 7. Chronology of delta complexes and relative sea level (modified from Penland et al. 1988).

Maringouin Delta Complex

From approximately 7,500 - 5,500 years ago, a second stillstand occurred during the otherwise rapid rise in sea level, at a depth of 5 to 6 m (16 to 20 ft) below surface (Figure 7). During this time, the Mississippi River built the Maringouin Delta complex (Figures 6 and 7) (Autin et al. 1991). Frazier (1967:269) notes the presence of two stacked, depositional sequences within this delta complex.

By 5,000 years ago, the continued rise of sea level had submerged most of the surface of the Maringouin Delta complex, i.e., the "Late Holocene Delta Plain" (Penland et al. 1987). The transgression of the shoreface across this delta plain formed a well defined ravinement surface that later was buried by the Teche Delta complex. Marine processes reworked the exposed portion of this delta complex into the Tiger, Ship, and Trinity shoals (Autin et al. 1991; Frazier 1967; Smith et al. 1986:68).

At the same time, rising sea level flooded the eastern portion of the Mississippi River Alluvial Valley. This resulted in the movement of the shoreline up the Mississippi River Alluvial Valley to the latitude of Baton Rouge. As a result, a brackish water embayment occupied this part of the Mississippi River Valley approximately 6,000 - 5,000 years ago (Saucier 1963:44-46).

Teche Delta Complex

Approximately 5,800 years ago, the development of the Teche Delta complex began; this occurred after rising sea levels had submerged most of the Maringouin Delta complex. Between 5,800 - 3,900 years ago, the Mississippi River formed the Teche Delta complex by building over the Maringouin Delta complex (Figures 6 and 7). The Teche Delta complex buried the intact delta plain of the Maringouin Delta complex within the vicinity of the proposed project area, while east of the Penchant Shoreline in Terrebonne Parish, the Teche Delta complex prograded into open water over what had formerly been the Maringouin Delta complex. The specific sequence in which the delta lobes developed, however, remains controversial (Smith et al. 1986:61-64; Weinstein and Gagliano 1985:123; Weinstein and Kelley 1989:33-34).

The eastern limit of progradation for the Teche Delta complex also is subject to debate. Smith et al. (1986:61-62) place the easternmost

limit of this delta complex near the city of Houma. In contrast, Weinstein and Gagliano (1985:123) argue that the eastern margin of the Teche Delta complex lies 48.3 km (30 mi) east of Houma. They claim that southwest trending distributaries in the Terrebonne Delta Plain, such as Bayou Du Large and Mauvais Bois, represent Teche distributaries that were reoccupied by the Lafourche Delta complex (Weinstein and Kelley 1989:33).

During its existence, drastic changes occurred within the river courses that fed the Teche Delta complex. First, the Mississippi River switched from Meander Belt No. 4 to Meander Belt No. 3 as defined by Saucier (1981:16). For the first thousand years or so, Meander Belt No. 4 supplied sediment to the Teche Delta, until it was abandoned for Meander Belt No. 3 (Autin et al. 1991). Second, an abrupt aggradation of Meander Belt No. 3 caused it to abandon and bury an older meander belt, and to form the relict river course currently occupied by Bayou Teche and Bayou Black. Finally, the Red River occupied this river course as the flow of the Mississippi River shifted gradually to the east into Meander Belt No. 2 approximately 3,900 years ago. As a result, the Teche Delta complex remained active as the Red River discharged partially its flow directly into the Gulf of Mexico (Figure 7) (Goodwin et al. 1990).

The time at which the Red River abandoned both its Bayou Teche course and the Teche Delta complex has yet to be determined satisfactorily. Autin et al. (1991) suggest that it occurred by approximately 2,500 years ago. Pearson (1986) and Weinstein and Kelley (1989:33-34) both argue, however, on the basis of archeological data, that it occurred approximately 1,800 - 1,900 years ago.

St. Bernard (Metairie-La Loutre) Delta Complex

By approximately 4,800 years ago, the Mississippi River began to shift its course from Meander Belt No. 3 to Meander Belt No. 2 at Marksville, Louisiana, which diverted much of its flow down the eastern and central part of the Mississippi Alluvial Valley (Saucier 1981:16). As a result, a new delta complex called the "early St. Bernard Delta complex" by Frazier (1967) and the "Metairie Delta complex" by Weinstein and Gagliano (1985:122-123) prograded into and through the New Orleans area, leaving much of the region containing the proposed project area to be claimed by backswamps and natural levees that were created by the development of smaller drainages such as Bayou Teche (Figures 6 and 7). The main delta of this complex prograded approximately 70 km (43.5 mi) to the southeast of New Orleans and into the Gulf of Mexico. Another small delta of this complex prograded northeast to connect with a chain of southwest-trending barrier islands, the New Orleans Barrier Island Trend. When this delta joined with the New Orleans Barrier Island Trend, which is attached to the mouth of the Pearl River, it created a brackish water bay ancestral to Lake Pontchartrain (Otvos 1973; Saucier 1963:56-59).

From approximately 3,400 - 1,600 years ago, the Metairie Delta complex developed into the La Loutre Delta complex described by Weinstein and Gagliano (1985:123) or the St. Bernard Delta complex characterized by Frazier (1967). This delta complex formed two major delta lobes that prograded from the New Orleans area. The larger delta, La Loutre Delta, prograded eastward to form most of St. Bernard Parish. By 3,000 years ago, this delta lobe buried the New Orleans Barrier Island Trend, creating Lake Pontchartrain. A smaller delta, the Des Familles Delta, prograded southward from the New Orleans region.

Between 1,800 - 600 years ago, only the Bayou Sauvage delta of the St. Bernard Delta complex remained active (Frazier 1967: 12). Weinstein and Gagliano (1985) considered this activity to be insufficient to characterize the La Loutre (St. Bernard) Delta complex an active delta complex for their chronology; therefore, they classified this delta complex as inactive after 1,800 years ago. In contrast, Autin et al. (1991) interpret the activity of the Bayou Sauvage delta to be that associated with the waning phase of an active delta complex. As a result, they considered the St. Bernard Delta (La Loutre) complex active until 600 years ago. Autin et al. (1991), however, agree with Weinstein and Gagliano (1985:123) concerning the observations of Frazier (1967) (Figure 6). This difference, as with many differences among the delta chronologies illustrated in Figure 6, results from differences in interpretation regarding what actually constitutes an active delta

complex, rather than from true differences in observed delta activity.

Soils within the Vicinity of the Proposed Project Area

The proposed project parcel can be described as an alluvial plain (Murphy et al. 1977). In general, the alluvial plain represents a level and moderately to a poorly drained area located north of the many coastal marshes that fringe the Gulf of Mexico; elevations in this area range from approximately 3 to 4.5 ft (10 to 15 ft) NGVD (Clark and White 1978). The following is a review of the general soil areas and associated soil series groups that occur throughout the proposed project area.

Soils found within the portion of the alluvial plain that contains Bayou Teche and the proposed project parcel belong to the Sharkey - Baldwin - Iberia soil association. Sharkey soils are situated at low elevations within alluvial plains. The surface layer of this soil series is described as dark gray clay that extends from 0 to 12.7 cmbs (0 to 5 inbs). It is underlain by a deposit of subsoil that consists of dark gray clay and that ranges in depth from 12.7 to 63.5 cmbs (5 to 25 inbs). Finally, the C-horizon of the Sharkey soil series is characterized as a layer of gray clay that extends to approximately 132 cmbs (52 inbs). Sharkey soils are poorly drained and not well suited to agriculture (Murphy et al. 1977).

Murphy et al. (1977) indicate that soils of the Baldwin series vary from very dark grayish brown to gray in color and they range in depth from 0 to 182 cmbs (0 to 72 inbs) (Clark and White 1978). Baldwin soils contain a surface layer ranging in depth from 0 to 15.2 cmbs (0 to 6 inbs); it is described as a layer of dark gray silty clay loam. The underlying subsoil, which consists of a deposit of dark gray silty clay, reaches from 15.2 to 7.9 cmbs (6 to 20 inbs). Finally, the C-horizon of the Baldwin soil series consists of a layer of gray clay and it extends to a basal depth of 94 cmbs (37 inbs). Baldwin soils typically are located on level to nearly level slopes and they range from well drained to very poorly drained. These soil series are suited to cultivation, and both rice and sugarcane are grown regularly on them. In general, however, surface drainage and commercial fertilization are needed to produce crops on a large scale (Murphy et al. 1977).

Finally, Iberia soils extend to a depth of approximately 94 cmbs (37 inbs) and they are characterized by clay. The surface layer of this soil series, a layer of dark gray silty clay, extends from 0 to 35.6 cmbs (0 to 14 inbs). It is underlain by very dark gray silty clay subsoil that ranges in depth from 35.6 to 94 cmbs (14 to 37 inbs). Iberia soils, which are positioned on level terrain, are poorly drained and slowly permeable. Thus, they are not well suited to large-scale agricultural production in the absence of sophisticated drainage mechanisms (Murphy et al. 1977)

Historic Period Impacts to the Proposed Project Area

Within southern Louisiana, historic period utilization of the Mississippi River meander belts, which contain numerous smaller drainages such as Bayou Teche, have impacted severely the archeological deposits that lie within them. Agricultural, urban, and industrial development has disturbed extensive portions of the natural levees and point bars found throughout the region. Each of these disturbance agents is discussed briefly below.

Residential and Industrial Development

Because the natural levees of the modern and ancient courses of the numerous drainages within the vicinity of the proposed project parcel, including Bayou Teche, are still the only dry land within an otherwise flooded or poorly-drained alluvial plain, they have been the focus of both urban and industrial development. Obviously, the construction of housing, commercial buildings, and industrial plants has impacted directly the surface and subsurface of large portions of both modern and relict natural levees in the region. In addition, the excavation and construction of the lock and dam to support continued commercial and residential development has had negative impacts on the preservation of prehistoric and historic period archeological sites in the area.

Agricultural Disturbance

The natural levees of both active and abandoned river and bayou courses within the vicinity of the proposed project parcel have been put to use for agricultural production. As a result, they have been extensively developed for the production of both sugar cane and rice. In fact, several

large sugarcane refinery operations and fields are located downstream of the proposed project parcel in Iberia Parish, e.g., the Iberia Sugar Company and the Cajun Sugar Company. Both rice and sugar farming have disturbed significant portions of the natural levees through plowing and inundation (Goodwin et al. 1990).

Dredging

During canal, lock, and pipeline construction operations, dredging operations often affect archeological deposits situated within and adjacent to the proposed project area. Dredging impacts the integrity and visibility of the archeological deposits and the dumping of spoil buries and conceals archeological deposits once exposed along the banks of the rivers and bayous of the area. The partial burial of sites by spoil often makes it difficult to determine their original characteristics, i.e., their integrity, size, and artifact content. It is known that the stretch of Bayou Teche containing the proposed project parcel was dredged regularly during the historic period.

Bankline Erosion

The abandoned course and the present course of Bayou Teche have carried and the present course continues to carry substantial recreational and/or commercial boat traffic. The frequent use of the waterway creates substantial wave action from riverine traffic. The wave action generated from river traffic, as well as wind and current action, can cause extensive bankline erosion and slumping. A brief examination of the Louisiana Division of Archaeology files demonstrates that bank erosion is an extremely serious threat to archeological deposits situated along the banks of many of the waterways scattered throughout the area.

Flora and Fauna Located within the Vicinity of the Proposed Project Parcel

While the proposed project parcel consists almost entirely of natural levee and riverine habitats, the larger region encompasses a variety of ecozones, including salt marshes, freshwater marshes, backswamps, and alluvial plains. These habitats support very rich floral and faunal communities. Tables 1 - 8 contain the common and scientific names of species associated with the proposed project region (Beavers et al. 1984; Brown 1965, 1972; Chabreck and Condrey 1979; Gosselink 1984; Harrar and Harrar 1946; Lowery 1974; McClane 1974; Reese 1992).

The marshlands and swamps located within the vicinity of the proposed project parcel are highly productive natural environments and they represent important stopping and overwintering points for migratory birds traveling the Mississippi Flyway. The semi-aquatic areas are used by over 5,000,000 birds every winter (Chabreck and Condrey 1979:4). Permanent residents of this habitat include muskrats, raccoons, otters, mink, alligators, rabbits, and a wide array of water birds, turtles, frogs, and fishes.

The composition of the habitats found within the general vicinity of the proposed project parcel has been influenced strongly by both natural and man-made forces. Through time, the changing course of the Mississippi River has controlled the amount of fresh water flowing down the Atchafalaya River and its related tributaries, e.g., Bayou Teche. Currently, almost one-third of the Mississippi River discharge flows through the Atchafalaya River and into the Atchafalaya Bay. This enormous discharge of fresh water into the Atchafalaya Bay causes the salinity of the bay to be somewhat lower than the surrounding waters of the Gulf of Mexico. In turn, the extent of brackish marsh on the shores of the Atchafalaya Bay is limited by the low salinity. Therefore, the extent of brackish and saline marshes may have been greater in this area when the discharge of the Mississippi River was directed elsewhere.

In addition, historic period and modern modifications in the larger region have greatly modified the habitats currently found therein. Brackish and saline marsh has replaced some of the original freshwater marsh. Much of the current loss of freshwater marsh is due to the dredging and straightening of canals; these methods allow for saltwater intrusion from the Gulf of Mexico, which kills the sensitive vegetation of the freshwater marshes. If saltwater-tolerant species do not colonize the area, the marsh reverts to open water (Chabreck and Condrey 1979).

Saline Marsh

Small areas of saline marsh are found to the south of the proposed project parcel and adjacent to the Gulf of Mexico. These marshes are inundated regularly with saltwater. The dominant plants in this habitat include salt grass, rushes, sea

Table 1. Plant taxa characteristic of marshes within the vicinity of the proposed project parcel.

COMMON NAME	LATIN NAME	SALINE	BRACKISH	FRESH
Coast milkweed	*Asclepias lanceolata*		x	
Aster	*Aster* spp.			x
Backbrush	*Baccharis halimifolia*		x	
Water hyssop	*Bacopa monnieri*		x	x
Carex	*Carex* sp.		x	
Centella	*Centella asiatica*		x	
Coontail	*Ceratophyllum demersum*			x
Saw-grass	*Cladium jamaicense*			x
Gulf croton	*Croton punctatus*	x		
Umbrella-sedges	*Cyperus* spp.		x	x
Salt grass	*Distichlis spicata*	x	x	
Walter's millet	*Echinochloa walteri*		x	x
Spikerush	*Eleocharis* spp.		x	x
Sand rush	*Fimbristylis castanea*		x	
Marsh mallow	*Hibiscus moscheutos*		x	
Whorled pennywort	*Hydrocotyle verticillata*			x
Spider lily	*Hymenocallis caroliniana*		x	x
Morning glories	*Ipomoea* spp.		x	x
Marsh elder	*Iva frutescens*		x	x
Rushes	*Juncus* spp.	x	x	x
Virginia saltmarsh mallow	*Kosteletzkya virginica*		x	x
Cutgrass	*Leersia* sp.		x	
Sprangle top	*Leptochloa fascicularis*		x	x
False loosestrife	*Ludwigia leptocarpa*			x
Loosestrife	*Lythrum lineare*		x	
Wax myrtle	*Myrica cerifera*			x
White waterlily	*Nymphea odorata*			x
Maidencane	*Panicum hemitomon*			x
Panicoid grasses	*Panicum* spp.		x	x
Paspalum	*Paspalum* spp			x
Canary grass	*Phalaris* sp.		x	
Common reed	*Phragmites commmunis*		x	x
Camphorweed	*Pluchea camphorata*		x	x
Smartweed	*Polygonum* spp.			x
Sago pondweed	*Potamogeton pectinatus*		x	
Arrowhead	*Sagittaria* spp.			x
Creeping glasswort	*Salicernia virginica*	x		
Black willow	*Salix nigra*			x
Common elderberry	*Sambucus canadensis*		x	x
Bulrush	*Scirpus* spp.	x	x	x
Rattlebox	*Seshania* spp.			x
Yellow foxtail	*Setaria glauca*		x	x
Marsh-grass	*Spartina* spp.	x	x	x
Coast dropseed	*Sporobalus virginicus*		x	
Sea blite	*Sueda tineans*	x		
Gramagrass	*Tripsacum dactyloides*		x	
Cattail	*Typha* spp.			x
Deerpea	*Vigna luteola*		x	x
Giant cutgrass	*Zizaniopsis miliacea*			x

Table 2. Crustaceans and shellfish present within the vicinity of the proposed project parcel.

COMMON NAME	LATIN NAME	FRESH	ESTUARY
Freshwater clam	*Anodonta* sp.	x	
Hooked mussel	*Brachidontes recurvus*		x
Blue crab	*Callinectes sapidus*		x
Oyster	*Crassostrea virginica*		x
Freshwater clam	*Elliptio* sp.	x	
Marsh periwinkle	*Littorinia irrorata*		x
River shrimp	*Macrobrachium ohiome*	x	
Ribbed mussel	*Modiolus demissus*		x
Freshwater mussel	*Mytilopsis leucopuaeta*	x	
Eastern nassa	*Nassarius vibex*		x
Grass shrimp	*Palaemonetes paludosus*		x
Brown shrimp	*Penaeus aztecus*		x
White shrimp	*Penaeus setiferus*		x
Freshwater snail	*Physa* sp.	x	
River crawfish	*Procambarus blandingii*	x	
Red swamp crawfish	*Procambarus clarkii*	x	
Brackish water clam	*Rangia cuneata*		x
Mud crab	*Rithropenopeus harrisii*		x

Table 3. Fishes present within the vicinity of the proposed project parcel.

COMMON NAME	LATIN NAME	FRESH	ESTUARY	SEASONAL ESTUARY
Bowfin	*Amia calva*	x		
Bay anchovy	*Anchoa mitchilli*			x
American eel	*Anguilla rostrata*	x		
Pirate perch	*Aphredoderus sayanus*	x		
Freshwater drum	*Aplodinotus grunniens*	x		
Sheephead	*Archosargus probatocephalus*			x
Sea catfish	*Arius felis*			x
Silversides	Atherinidae family	x	x	
Gafftop catfish	*Bagre marinus*			x
Atlantic threadfin	*Bolydactylus octonemus*			x
Gulf menhaden	*Brevoortia patronus*			x
River carpsuckers	*Carpoides carpio*	x		
Atlantic spadefish	*Chaetodipterus faber*			x
Seatrout	*Cynoscion sp.*			x
Sheepshead minnow	*Cyprinodon variegatus*		x	
Killifish	Cyprinodontidae famlily		x	
Carp	*Cyprinus carpio*	x		
Southern stingray	*Dasyatis americana*			x
Bluntnose stingray	*Dasyatis sayi*			x
Shad	*Dorosoma spp.*	x		
Banded pygmy sunfish	*Elassoma zonatum*	x		
Ladyfish	*Elops saurus*			x
Fringed flounder	*Etropus crossotus*			x
Lyre goby	*Evorthodus syricus*		x	
Gulf killifish	*Fundulus grandis*		x	
Topminnows	*Fundulus spp.*	x		
Mosquitofish	*Gambusia affinis*	x		
Goby	Gobiidae family			x
Naked goby	*Gobiosoma bosci*		x	
Least killfish	*Heterandria formosa*	x		
Freshwater catfish	Ictaluridae family	x		
Brook silverside	*Labidesthes sicculus*	x		
Pinfish	*Lagodon rhomboides*		x	
Gars	*Lepisosteus spp.*	x		

Table 3, continued

COMMON NAME	LATIN NAME	FRESH	ESTUARY	SEASONAL ESTUARY
Sunfishes	*Lepomis spp.*	x		
Atlantic croaker	*Mecropogon undulatus*			x
Tarpon	*Megalops atlantica*			x
Tidewater silverside	*Menidia beryllina*			x
Southern kingfish	*Menticirrhus americanus*			x
Atlantic croaker	*Micropogonais undulatus*			x
Largemouth bass	*Micropterus salmoides*	x		
Basses	*Morone spp.*	x		
Striped mullet	*Mugil cephalus*			x
Golden shiner	*Notemigonus crysoleucas*	x		
Shiners	*Notropis spp.*	x		
Southern flounder	*Paralichthys lethnostigma*			x
Bullhead shiner	*Pimephales vigilax*	x		
Sailfin molly	*Poecilia latipinna*	x		
Black drum	*Pogonias cromius*			x
Paddle fish	*Polydon spathula*	x		
Crappie	*Promoxis sp.*	x		
Red drum	*Sciaenops ocellata*			x
Hogchoker	*Trinectes maculatus*			x

Table 4. Mammals present within the vicinity of the proposed project parcel.

COMMON NAME	LATIN NAME
Fin whale family	Balaenopteridae family
Red wolf	*Canis rufus*
Least shrew	*Cyptotis parva*
Porpoise and dolphin family	Delphinidae family
Southern flying squirrel	*Glaucomys volans*
Red bat	*Lasiurus borealis*
Northern yellow bat	*Lasiurus intermedius*
Seminole bat	*Lasiurus seminolus*
River otter	*Lutra canadensis*
Bobcat	*Lynx rufus*
Long-tailed weasel	*Mustela frenata*
North American mink	*Mustela vison*
Southeastern myotis	*Myotis austroriparius*
Eastern wood rat	*Neotoma floridana*
Evening bat	*Nycticeius humeralis*
White-tailed deer	*Odocoileus virginianus*
Common muskrat	*Ondatra zibethicus*

Table 4, continued

COMMON NAME	LATIN NAME
Marsh rice rat	*Oryzomys palustris*
Cotton mouse	*Peromyscus gossypinus*
White-footed mouse	*Peromyscus leucopus*
Sperm whale family	Physeteridae family
Rafinesque's big-eared bat	*Plecotus rafinesquii*
Northern raccoon	*Procyon lotor*
Fulvous harvest mouse	*Reithrodontomys fulvescens*
Gray squirrel	*Sciurus carolinensis*
Fox squirrel	*Sciurus niger*
Hispid cotton rat	*Sigmodon hispidus*
Swamp rabbit	*Sylvilagus aquaticus*
Eastern cottontail rabbit	*Sylvilagus floridanus*
Brazilian free-tailed bat	*Tadarida brasiliensis*
Gray fox	*Urocyon cinereoargenteus*
Black bear	*Ursus americanus*
Beaked whale family	Ziphiidae family

Note: Nutria (*Myocaster coypus*) is an introduced species

Table 5. Birds present within marshes within the vicinity of the proposed project parcel.

COMMON NAME	LATIN NAME
Spotted sandpiper	*Actitis macularia*
Red-winged blackbird	*Agelaius phoeniceus*
Seaside sparrow	*Ammodramus maritimus*
Pond ducks	*Anas* spp.
Greater white-fronted goose	*Anser albifrons*
Great blue heron	*Ardea herodias*
Short-eared owl	*Asio flammeus*
Diving ducks	*Aythya* spp.
Solidary sandpiper	*Bartramia longicauda*
American bittern	*Botaurus lentiginosus*
Green-backed heron	*Butorides striatus*
Sandpiper	*Calidris* spp.
Snipe	*Capilla gallinago*
Great egret	*Casmerodius albus*
Boat-tailed grackle	*Cassidix major*
Belted kingfisher	*Ceryle alcyon*
Killdeer	*Charadrius vociferus*
Snow goose	*Chen caserulescens*
Black tern	*Childonias niger*
Common nighthawk	*Chordeiles minor*
Northern harrier	*Circus cyaneus*
Wrens	*Cistothorus spp.*
Fish crow	*Corvus ossifragus*
Yellow rail	*Coturnicops noveboracensis*
Heron/egret	*Egretta* spp.
White ibis	*Eudocimus albus*
Merlin	*Falco columbarius*
Artic peregrine falcon	*Falco peregrinsus tundrius*
American kestrel	*Falco sparverius*
Magnificent frigate bird	*Fregata magnificens*
Common snipe	*Gallinago gallinago*
Common moorehen	*Gallinula chloropus*
Common yellowthroat	*Geothlypis trichas*
Bald eagle	*Haliaeetus leucocephalus*
Black-necked stilt	*Himantopus mexicanus*
Swallows	Hirundinidae family
Louisiana heron	*Hydranassa tricolor*
Least bittern	*Ixobrychus exilis*
Gulls	*Larus* sp.
Black rail	*Laterallus jamaicensis*
Hooded merganser	*Lophodytes cucullatus*
Belted sandpiper	*Meaceryle alcyon*
Swamp sparrow	*Melospiza georgiana*
Red-breasted merganser	*Mergas serrator*
Barn swallow	*Mirundo rustica*
Wood stork	*Mycteria americana*
Night-heron	*Nycticorax* spp.
Savannah sparrow	*Passerculus sanwichensis*
American white pelican	*Pelecanus erythorhynchus*
Brown pelican	*Pelecanus occidentalis*

Table 5, continued

COMMON NAME	LATIN NAME
Double crested cormorant	*Pharacrocorax auritus*
Glossy ibis	*Plegadis falcinellus*
Black-bellied plover	*Pluvialis squatarola*
Eared grebe	*Podiceps nigricollis*
Purple gallinule	*Porphycula martinica*
Boat-tailed grackle	*Quiscalus major*
Rails	*Rallus* spp.
Bank swallow	*Riparia riparia*
Terns	*Sterna* sp.
Tree swallow	*Tachycineta bicolor*
Royal tern	*Thalasseus maximus*
Sandpiper/yellow-legs	*Tringa* spp.

Note: Some of these species are only seasonal residents.

Table 6. Reptiles and amphibians present within the vicinity of the proposed project parcel.

COMMON NAME	LATIN NAME
Northern cricket frog	*Acris crepitans*
Copperhead	*Agkistrodon contrortix*
Cottonmouth	*Agkistrodon piscivorus*
American alligator	*Alligator mississippiensis*
Three-toed amphiuma	*Amphiuma tridactylum*
Green anole	*Anolis caroliniensis*
True toads	Bufonidae family
Snapping turtle	*Chelydra serpentina*
River cooter	*Chrysemys concinna*
Painted turtle	*Chrysemys picta*
Pond slider	*Chrysemys scripta*
Racer	*Coluber constrictor*
Newts	*Diemictylus* spp.
Chicken turtle	*Dierochelys reticularia*
Ratsnakes and cornsnakes	*Elaphe* spp.
Mud snake	*Farancia abacura*
Eastern narrowmouth toad	*Gastrophryne carolinensis*
Mississippi mud turtle	*Graptemys komni*
Treefrogs	Hylidae family
Mud turtle	*Kinosternon subrubrum*
Speckled king snake	*Lampropeltis getulus*
Green water snake	*Natrix cyclopion*
Plain-bellied water snake	*Natrix erythrogaster*
Banded water snake	*Natrix fasciata*
Diamond-backed water snake	*Natrix rhombifera*
Water snakes	*Nerodia* spp.
True frogs	Ranidae family
Crayfish snake	*Regina* spp.
Lesser siren	*Siren intermedia*
Stinkpot	*Sternotherus odoratus*
Brown snake	*Storeria dekayi*
Box turtles	*Terrapene* spp.
Garter snakes	*Thamnophis* spp.
Spiny softshell	*Trionyx spiniferus*

Table 7. Plant taxa of swamps and natural levees present within the vicinity of the proposed project parcel.

COMMON NAME	LATIN NAME	SWAMPS	LEVEES
Drummond red maple	*Acer drummondii*	x	x
Box elder	*Acer negundo*	x	x
Wild onion	*Allium canadense*		x
Pigweed	*Amaranthus* spp.		x
Common ragweed	*Ambrosia artemisiifolia*		x
Peppervine	*Ampeopsis arborea*	x	x
Hog peanut	*Apios americana*	x	x
Green dragon	*Arisaema dracontium*	x	
Jack-in-the-pulpit	*Arisaema triphyllum*	x	
Cane	*Arundinaria* spp.	x	x
Rattan vine	*Berchemia scandens*		x
False nettle	*Boehmeria cylindrica*		x
Trumpet creeper	*Campsis radicans*	x	x
Sedges	*Carex* spp.		x
Water hickory	*Carya aquatica*	x	x
Bitternut hickory	*Carya cordiformis*	x	x
Pecan	*Carya Illinoensis*		x
Sugarberry	*Celtis laevigata*	x	x
Buttonbush	*Cephalanthus occidentalis*	x	
Spiny thistle	*Cirsium horridulum*		x
Virginia dayflower	*Commelina virginiana*		x
Dogwood	*Cornus* spp.		x
Swamp dogwood	*Cornus stricta*	x	
Hawthorn	*Crataegus* spp.	x	x
Swamp lily	*Crinum americanum*	x	
Titi	*Cyrilla racemiflora*	x	
Rattlebox	*Daubentonia texana*		x
Persimmon	*Diospyros virginiana*		x
Horseweed	*Erigeron canaddensis*		x
Mistflower	*Eupatorium coelestinum*		x
Swamp privet	*Forestiera acuminata*	x	x
Pumpkin ash	*Fraxinus profunda*	x	
Ashes	*Fraxinus* spp.		x
Bedstraw	*Galium aparine*		x
Water locust	*Gleditsia aquatica*	x	x
Honey locust	*Gleditsia triacanthos*		x
Marshmallow	*Hibiscus* spp.		x
Pennywort	*Hydrocotyle* spp.		x
Possum haw	*Ilex decidua*	x	x
Yaupon	*Ilex vomitoria*		x
Touch-me-not	*Impatiens capensis*		x
Marsh elder	*Iva frutescens*	x	
Wild lettuce	*Lactuca canadensis*		x
Sweetgum	*Liquidambar styraciflua*	x	x
Magnolias	*Magnolia* spp.	x	x
Sensitive plant	*Mimosa strigillosa*		x
Red mulberry	*Morus rubra*		x
Wax myrtle	*Myrica cerifera*		x
Tupelogum	*Nyssa aquatica*	x	
Black gum	*Nyssa biflora*	x	x
Virginia creeper	*Parthenocissus quiquefolia*	x	
Maypops	*Passiflora* spp.	x	x
Swamp bay	*Persea palustris*	x	x
Water elm	*Planera aquatica*	x	x
Sycamore	*Platanus occidentalis*	x	x
Mayapple	*Podophyllum peltatum*		x
Knotweeds	*Polygonum* spp.		x
Ressurection fern	*Polypodium polypodioides*	x	x
Water oak	*Quercus nigra*	x	
Willow oak	*Quercus phellos*	x	
Oaks	*Quercus* spp.		x

Table 7, continued

COMMON NAME	LATIN NAME	SWAMPS	LEVEES
Swamp honeysuckle	*Rhododendron viscosa*	x	x
Poison ivy	*Rhus radicans*	x	x
Snout bean	*Rhynchosia minima*		x
Brambles	*Rubus* spp.		x
Palmetto	*Sabal minor*	x	x
Black willow	*Salix nigra*	x	
Elderberry	*Sambucus canadensis*	x	
Sassafras	*Sassafras albidum*	x	
Skullcap	*Scutellaria ovata*		x
Cat/green briar	*Smilax* spp.	x	x
Wild bean	*Strophostyles helvola*		x
Baldcypress	*Taxodium distichum*	x	
Shield fern	*Thelypteris normalis*		x
Spanish moss	*Tillandsia usneoides*	x	x
American elm	*Ulmus americana*		x
Stinging nettle	*Urtica chamaedryoides*		x
Ironweed	*Veronia altissima*		x
Grapes	*Vitis* spp.	x	x

Table 8. Birds present along natural levees in the vicinity of the proposed project parcel.

COMMON NAME	LATIN NAME
Red-winged blackbird	*Agelaius phoeniceus*
Cedar waxwing	*Bombycilla cedrorum*
Great horned owl	*Bubo virginianus*
Red-tailed hawk	*Buteo jamaicensis*
Red-shouldered hawk	*Buteo lineatus*
Broad-winged hawk	*Buteo platypterus*
Willet	*Catoptrophorus semipalmatus*
Common nighthawk	*Chordeiles minor*
Yellow-billed cuckoo	*Coccyzus americanus*
Common flicker	*Colaptes auratus*
Black vulture	*Coragyps atratus*
Common crow	*Corvus brachyrhynchos*
Yellow rail	*Coturnicops noveboracensis*
Downy woodpecker	*Dendrocapos pubescens*
Acadian flycatcher	*Empidonax varescens*
American kestrel	*Falco sparverius*
Wood thrush	*Hylociehla mustelina*
Wild turkey	*Meleagris gallopavo*
Mockingbird	*Mimus polyglottos*
Common screech owl	*Otus asio*
American woodcock	*Philohela minor*
Barred owl	*Strix varia*
Brown thrasher	*Toxostoma rufum*
Robin	*Turdus migratorius*
Mourning doves	*Zenaida macroura*

blite, and gulf croton (Table 1). The growth of plants within the saline marsh is influenced by a long growing season, high rainfall, soil type, tide differential, and the width of the marsh (Chabreck and Condrey 1979:4).

A variety of crustaceans, shellfish, and fishes are residents of the saline marsh (Tables 2 and 3). Small fishes such as silversides, minnows, killifish, and mullet are important sources of food for predatory marine and estuary fish such as flounders, stingrays, tarpon, and drums. Many other predatory fish feed on the small and immature crustaceans and shellfish in, or from, the saline marsh. Muskrats, otters, raccoons, and geese also exploit the floral and faunal resources of the area (Table 4).

Brackish Marsh

Brackish marsh habitats, with their slightly saline waters, can be found just south of the proposed project area. The salinity level in the brackish marshes range from four to eight millimhos per centimeter (Craft 1984:39). A wide variety of plant species can tolerate the slightly saline conditions of the brackish marsh when compared to species common in the saline marsh environment. The majority of the local plants are marsh-grasses (e.g., *Spartina patens*), bulrushes, panicoid grasses (e.g., *Panicum virgatum*), arrowheads, and other monocotyledonous genera that are well-adapted to this (semi-) aquatic habitat (Table 1). The lack of arboreal plants results in a very open and ecologically productive environment.

The brackish marsh is inhabited by semi-aquatic mammals, birds, reptiles, and amphibians (Tables 4 - 6). Geese often winter in the brackish marshes where the sedges and grasses provide an important source of forage. Muskrats, mink, otter, raccoons, rabbits, nutria, and alligators also populate the brackish marshes, while white-tailed deer sometimes venture into the brackish marshes to graze.

The brackish marsh also is part of the estuary system that provides a nursery for saltwater fishes, shrimp, and crabs (Tables 2 and 3). The seasonal abundance of these species is important for the faunal as well as the human populations of the area. The prehistoric *Rangia* shell middens attest to the importance of brackish water shellfish to the ancient residents of southern Louisiana.

Freshwater Marsh

Freshwater marshes also are located in close proximity to the proposed project parcel. These marshes are characterized by a very low salinity level of zero to four millimhos per centimeter (Craft 1984:40). Common reed, panicoid grasses (e.g., *Panicum hermitomar*), cattail, bulrush, and giant cutgrass are the dominant native plants (Table 1). Although monocotyledonous species still dominate this habitat, there are a few arboreal species such as black willow and wax myrtle.

A wider and more permanent variety of mammals, reptiles, and fishes inhabit the freshwater marsh rather than the more saline marshes (Tables 3, 4, and 6). The freshwater marshes share many of the same inhabitants as those found in the brackish marshes (e.g., raccoons, rabbits, otters, and alligators). Crawfish and greater concentrations of white-tailed deer also can be found in the freshwater swamps. Lesser numbers of geese and ducks, however, can be found in the freshwater marsh (Table 5). A different array of fish lives in the freshwater marshes, ponds, and lakes. Fish species common to the marsh include bowfins, freshwater drum, freshwater catfish, shad, sunfishes, gars, and basses.

Natural Levees

The natural levees along Bayou Teche and its numerous tributaries comprise the majority of the habitat types found within the proposed project parcel (Figure 1). Prehistoric and historic period human habitation of the proposed project parcel was focused on these levees. The natural levees afford ready access to the rich aquatic environments while protecting the residents from frequent flooding. Natural levee soils also were the most productive for modern and possibly prehistoric agriculture.

The natural levees support an array of arboreal and understory species (Table 7). Fruit (e.g., sugarberry, persimmon, hawthorn, and red mulberry) and nut (e.g., oak, hickory, and pecan) trees, for example, can be found concentrated on the levees. The understory contains a variety of

important subsistence (wild onion, pigweed, hog peanut, maypops, knotweed, palmetto, cat/green briar, brambles, elderberry, and grapes) and medicinal (horseweed, marshmallow, yaupon, touch-me-not, mayapple, Spanish moss, and stinging nettle) plants.

Terrestrial mammals such as red wolves, bobcats, white-tailed deer, squirrels, cottontail rabbits, and black bears that may forage in the marshes once were concentrated on the levees (Table 4). Most of the non-aquatic reptiles and amphibians such as snakes, toads, green anole, tree frogs, and box turtles needed the dry levees to survive in an otherwise semi-aquatic region (Table 6). The wading and aquatic birds of the marshes and swamps were common visitors to the levees, but there was an additional group of terrestrial birds limited to the levees (Table 8). Among the more significant birds were the raptors, including owls and hawks, woodpeckers, turkeys, and mourning doves.

Swamps

Backwater swamps occupy many of the areas positioned between the freshwater marshes and natural levees. These swamps are dominated by woody plants and they generally remain flooded throughout the growing season (Table 7). Typical swamp trees include bald cypress, Drummond red maple, swamp bay, sugarberry, and gum species. Many of the swamp trees, however, have developed physiological adaptations (e.g., buttressed trunks of bald cypress) to the seasonal flooding common to the backwater swamps.

The swamps represent an important refuge for populations of mink, raccoon, duck, alligator, and otter (Table 4). In addition, ducks, wading birds, and various songbirds use the swamps during certain seasons. White-tailed deer, rabbits, and turkeys use the swamps during the dry seasons. Fishes such as freshwater catfish, gars, and drums, that can tolerate the low oxygen conditions often encountered in the swamps, are common residents (Table 3). The swamps also are populated with an array of semi-aquatic turtles, snakes, and amphibians (Table 6).

Climate

The proposed project area lies in a region characterized by a humid subtropical climate; long, hot, rainy summers and short, mild winters are common. The average growing season for the St. Martin Parish vicinity is 278 days. The average daily maximum summer temperature for the area is 32.2° C (90° F), but temperatures can reach as high as 38.3° C (101° F). The oppressive summers, however, are sometimes relieved by cool sea breezes along the coast. The winter months are relatively mild; average daily temperatures throughout the area can drop to approximately 18.3° C (65° F) during December, January, and February (Clark and White 1978).

On average, precipitation measures 141.5 cm (55.7 in) annually. July ranks as the wettest month and it receives an average of 19.05 cm (7.5 in) of rainfall. November, the driest month, averages only 7.62 cm (3.0 in) of precipitation. Thunderstorms are common during the summer months, while snowfall occurs only rarely during the winter. Hurricanes and tropical storms represent the most dangerous weather threat to the area; they occur every few years during both the summer and fall months.

CHAPTER III

PREHISTORIC CULTURAL SEQUENCE

Introduction

The proposed Keystone Lock and Dam project area lies entirely within the Coastal Plain and within a portion of St. Martin Parish, Louisiana. St. Martin Parish is one of the 13 southwest Louisiana parishes included in Management Unit III as defined by *Louisiana's Comprehensive Archaeological Plan* (Smith et al. 1983, updated April 2000). Bordered to the west by the Sabine River and to the east by the Atchafalaya River, this management unit includes the sparsely settled prairies and coastal marshes of southern and southwestern Louisiana. The proposed project parcel also lies within the Southeastern Cultural Area of the United States (Muller 1983). As a result, cultural characteristics found within the vicinity of the proposed project parcel resemble those manifested in the Lower Mississippi valley and those exhibited by cultures living along the northern coast of the Gulf of Mexico, as well as other parts of the surrounding region.

The prehistory of Management Unit III extends from ca. 12,000 - 250 B.P. and it can be divided into four general stages. These stages (Paleo-Indian, Archaic, Woodland, and Mississippian) represent developmental segments characterized by dominant patterns of subsistence and technology (Willey and Phillips 1958). Each archeological stage consists of a sequence of chronologically defined periods that can be subdivided into phases based on sets of artifacts and other cultural traits characteristic of a particular geographic region (e.g., Jenkins 1979; Walthall 1980). This chapter presents a brief discussion of each of the cultural units and it provides an overview of the prehistoric sequence associated with the region encompassing the Area of Potential Effect.

Paleo-Indian Stage (ca. 12,000 – 8000 B.P.)

Initial human occupation of the southeastern United States generally occurred sometime between 12,000 - 10,000 B.P. Sites dating from this time period tend to be represented by small clusters of artifacts that include a distinctive assemblage of lithic tools. Common Paleo-Indian tool types include fluted and unfluted lanceolate projectile points/knives, unifacial end- and side-scrapers, gravers, and spokeshaves.

The earliest Paleo-Indian culture identified within North America has been termed "Clovis," named after the type-site identified in Clovis, New Mexico, which was excavated during the 1920s. In the western United States, Clovis sites date from a relatively narrow time range (ca. 11,500 - 10,900 B.P.) (Haynes 1991; Story et al. 1990:178). The smaller, related fluted Folsom and unfluted Midland projectile points knives once were thought to postdate Clovis culture. Radiocarbon dating of numerous Folsom components in Texas, however, has produced dates ranging from ca. 11,000 - 10,000 B.P. (Largent et al. 1991:323-332; Story et al. 1990:189). This suggests that Folsom culture may be partially contemporaneous with Clovis culture and it may simply represent a variation in tool morphology required by different subsistence adaptations.

Paleo-Indian peoples were highly mobile hunter-gatherers, organized into small bands or extended family groups. The formerly prevalent notion that these populations specialized in big game hunting seems less tenable as additional information becomes available from a more in-

clusive set of Paleo-Indian sites. A possible exception to a generalized subsistence system could be the Folsom culture. Folsom artifacts have been associated consistently with bison kill sites on the Great Plains. This culture may represent an adaptation to a specialized hunting strategy associated with the cyclical migration of large herds of bison (Story et al. 1990:189).

Very few archeological sites with good associations of megafauna and Paleo-Indian cultural material have been recorded in the eastern woodlands. One such site is the Kimmswick Site (23JE334) in southeastern Missouri. Excavations at the Kimmswick Site produced Clovis projectile points in direct association with disarticulated mastodon bones (Graham et al. 1981). Paleo-Indian tools also have been recovered in direct association with mastodon bones near Nashville, Tennessee. At the Coats-Hines Site (40WM31), 34 chert artifacts were recovered within the thoracic cavity of a mastodon (Breitburg et al. 1996). These artifacts consisted of 10 formal tools and tool fragments (one bifacial knife, two gravers, one prismatic blade, two unifacial side scrapers, and two scrapers/cores) and 24 resharpening flakes. The presence of artifacts such as these in association with Pleistocene megafauna indicates that large animals comprised at least a portion of the Paleo-Indian subsistence regime (Graham et al. 1981). In contrast, two locations in south central Louisiana, Avery Island (Salt Mine Valley; Site 16IB23) and the Trappey Mastodon Site (16LY63) in Lafayette yielded the remains of Pleistocene fauna; however neither site yielded a clear Paleo-Indian/Megafauna relationship (Gagliano 1964; Gibson and Miller 1973; Neuman 1984).

Louisiana's Comprehensive Archaeological Plan documents 30 sites with a Paleo-Indian component within Management Unit III (Smith et al. 1983, updated April 2000). None of these sites are situated in St. Martin Parish or within 1.6 km (1 mi) of the proposed project parcel. A total of two Paleo-Indian sites, however, are located within nearby Iberia Parish, including the Avery Island Salt Mine Valley Site (16IB23). Situated on the Avery Island salt dome, near the coast of central Louisiana and southwest of the present project parcel, Salt Mine Valley is the only substantial Early Paleo-Indian site that has been identified within Management Unit III. The site produced lithic artifacts, basketry remains, and remains of Pleistocene fauna. In some contexts these items were intermingled; however, no temporally diagnostic artifacts were recovered in association with the Pleistocene fauna (Gagliano 1970; Neuman 1984). Consequently, the relationship of the faunal remains to the artifacts is unclear.

Archaic Stage (ca. 8000 – 3500 B.P.)

The term "Archaic" first was used during the second quarter of the twentieth century as a descriptor for the pre-ceramic cultures that followed the Paleo-Indian stage. The Archaic stage can be divided into three subdivisions or periods: Early Archaic, Middle Archaic, and Late Archaic. A warming trend and a drier climate at the end of the Pleistocene, accompanied by a rise in sea level, may have spurred a combination of technological and social developments that now are associated with the initiation of the Archaic stage (Willey and Phillips 1958). Archaic populations exploited a greater variety of terrestrial and marine species when compared to their Paleo-Indian predecessors.

Early Archaic Period

In the Southeastern United States, the Early Archaic period extended from ca. 10,000 to 8000 B.P. Because of the regional variation and the temporal overlapping of stages, however, the assignment of Late Paleo-Indian and Early Archaic period artifacts to correct temporal stages can be complex. Like the preceding Paleo-Indian stage, Early Archaic period sites are scarce in Louisiana; nevertheless, some broad patterns in settlement location and subsistence patterning are discernible. They are discussed below.

Throughout the Early Archaic period, the subsistence pattern probably resembled that of the preceding Paleo-Indian stage. Early Archaic peoples most likely traveled seasonally in small groups between a series of base camps and extractive sites, hunting and collecting edible plants and exploiting available natural resources (Chapman and Shea 1981; Lentz 1986; Parmalee 1962; Parmalee et al. 1976). The majority of the recorded sites have been identified throughout the uplands and Gulf Coastal Plain, but the extent to which the many microenvironments of the broad Coastal Zone were utilized remains unknown.

It is during the Early Archaic period that pecked and groundstone tools associated with food processing, including manos, milling stones, and nutting stones, are recovered. Commonly utilized plant foods, such as walnuts and hickory nuts, could have been hulled and eaten without cooking or additional processing (Larson 1980). Much of our knowledge regarding Paleo-Indian and Early Archaic lifeways, however, is limited by problems associated with preservation. Lithic tools often are the only artifacts to survive, but they provide only limited information concerning a narrow range of activities (i.e., tool manufacture and maintenance, meat and hide processing, and wood and bone working).

Middle Archaic Period

During the Middle Archaic period, three interrelated events occurred that helped shape subsequent prehistoric cultural traditions in the Eastern Woodlands. First, the effects of continental glaciation subsided, resulting in a warmer and drier climate in which modern climatic and environmental conditions prevailed. Second, technological improvements were made, particularly with respect to groundstone, bone, and antler tool production. Finally, sociopolitical organization changed in some areas; an increased number of ranked societies and related social developments appeared.

Throughout the southeastern United States, the Middle Archaic period is marked by several technological advances and by changes in subsistence patterns. Middle Archaic projectile points/knives tend to be stemmed rather than notched types, e.g., Eva, Morrow Mountain, Sykes, Benton, and Newnan types. In addition, the Middle Archaic is represented by projectile points/knives that include Evans, Morrow Mountain, Johnson, Edgewood, and possibly Calcasieu types (Campbell et al. 1990:96; Green 1991; Perino 1985:195). Excavations at Site 16VN791, located in Vernon Parish, Louisiana (i.e., Management Unit I) produced evidence of a long tradition of corner notched projectile points/knives dating from the late Middle Archaic. It has been suggested that these points, and others in the region, were derived from types originating from central Louisiana (Campbell et al. 1990).

Other technological innovations include the appearance of ground, pecked, and polished stone tools, as well as the use of celts and grooved axes for heavy woodworking, possibly including the manufacture of dugout canoes. The atlatl, or spear thrower, first appeared during the Middle Archaic, as indicated by bone atlatl hooks and the appearance of ground stone bannerstones that apparently were attached to the spear thrower and may have served as atlatl counterweights or as fetishes.

The widespread occurrence of plant processing tools such as milling slabs, manos, and nutting stones suggests an increase in the utilization of plant foods. Comparisons of floral and faunal assemblages from the Early Archaic, however, show little change in the diversity or relative importance of plant species utilized. The Middle Archaic rough milling tools used in plant processing have Early Archaic antecedents (Smith 1986:21).

Acorns and hickory nuts continued to be the most heavily utilized plant foods. Remains of squash (*Curcurbita pepo*) and bottle gourds (*Lagenaria siceraria*) appear for the first time during the Middle Archaic. The earliest occurrence of the bottle gourd dates from 5340 ± 120 radiocarbon years B.C. at the Windover site (8BR246) in Florida (Doran et al. 1990). "Squash" rind dating from 5050 B.C. from the Napoleon Hollow (11PK500) and Koster (11GE4) sites in west-central Illinois initially identified as the cultivar *C. pepo*, now is thought to be representative of the Texas wild gourd (*C. texana*), rather than cultivated squash. Although the seeds of these plants are edible, it appears that their rinds were thin, woody, and inedible. These gourds probably were collected primarily for use as containers rather than as sources of food. Stronger evidence for the domestication of squash gourds occurs after 2350 B.C., i.e., during the Late Archaic (Smith 1987).

In many areas, a major exception to this apparent continuity in earlier subsistence practices was a significant increase in the utilization of fish and shellfish. The rising importance of aquatic resources can be seen in the development of the extensive shell middens found along many of the southeastern rivers. Shell middens first appear between 4550 and 4050 B.C. during the Hypsithermal (Altithermal)

climatic episode, when rivers entered a phase of aggradation and low flow. These climatic changes promoted the development of oxbow lakes and shallow water shoal habitats favorable for mollusk growth and shellfish collection (Stein 1982). Although the food value of mollusks is low, these shellfish can be collected efficiently in bulk and appear to represent the economic focus for semi-sedentary Archaic Stage occupations for many parts of the southeastern United States (Russo et al. 1992).

Extensive, deep shell midden sites presumably represent seasonal reoccupation of favored locations by small social groups with band-type socio-political organization. Large cemeteries at some Middle Archaic sites, such as Carleston-Annis (15BT5) in Kentucky and Little Salt Spring (8SO18) in Florida, represent interments made over long periods of time by groups who seasonally returned to these specific locations (Clausen et al. 1979). Increasing population during the Middle Archaic also may have led to more circumscribed territories, which is evidenced by the repeated occupation of favored locations and increased emphasis on locally available raw materials utilized in stone tool manufacture.

Recent research has demonstrated that earthwork and mound construction occurred at least in isolated instances during the Middle Archaic period (Saunders 1994, 1996, 1997; Saunders et al. 1992, 1997). At present, a total of four possible Middle Archaic mound sites are known in northeast Louisiana, and these include Hedgepeth Mounds (Site 16LI7), Watson Brake Mounds (Site 16OU175), Frenchman's Bend Mounds (Site 16OU259), and Hillman's Mound (Site 16MA201). Of the four, the Watson Brake mound group (Site 16OU175) is the largest and the most securely dated at 5400 B.P. (Saunders et al. 1997:1797). The site consists of 11 mounds and connecting ridges constructed on a terrace above the Ouachita River floodplain. The civic structures at Watson Brake (Site 16OU175), and several other Middle Archaic sites, suggest that hunter-gatherer groups were capable of tasks that required relatively complex social organization and semi-sedentary living. For example, Griffin wrote:

> From our knowledge of the general cultural stage of these early Archaic people we may assume that they lived in groups or bands of closely related people who probably reckoned descent through the father and were probably patrilocal . . . . They probably lived in bands of twenty or thirty or perhaps a few more, ranging over a fairly specific hunting territory (1952:354).

Southern Louisiana reflects a paucity of permanent habitation floodplain sites dating from the Middle Archaic period. Only one Middle Archaic period phase is currently recognized in coastal Louisiana. The Banana Bayou phase, identified in the Petit Anse region along the central part of the Gulf Coast, is represented by the artifact assemblage observed by Gagliano (1964) at Avery Island, near Banana Bayou (Neuman 1984).

Late Archaic Period

The Late Archaic period represents a time of population growth, as demonstrated by an increasing number of archeological sites identified throughout the United States. Stone vessels made from steatite, the occasional recovery of fiber-tempered pottery, and a variety of groundstone artifacts characterize the Late Archaic tool assemblage. Late Archaic projectile point/knife types found throughout Louisiana include a variety of corner-notched and stemmed varieties such as the Benton, Gary, and Ponchatoula types.

In the eastern United States, the Late Archaic period riverine economy was focused on a number of different wild resources, including deer, mussels, fish, and nuts. During the spring, macrobands coalesced to exploit forested riverine areas, while during late fall and winter, these Late Archaic groups fissioned into microbands that subsisted on harvested and stored nut foods, as well as on the faunal species commonly found throughout the upland areas. This pattern of microband/macroband settlement patterning and subsistence likely began to appear during the Middle Archaic period and perhaps even as early as the end of the Early Archaic period.

Archaic period sites typically are located along the boundary of Quaternary and Tertiary

areas with relatively flat or undulating bluff tops that overlook the floodplains. Gibson (1976a:11) notes that most of the Archaic stage sites in south-central Louisiana were situated on the old, elevated landforms of the Lafayette-Mississippi River system and near the lowlands. The Banana Bayou site (16IB104), for example, produced a radiocarbon date calibrated to 5850 - 4805 B.P. (Gibson and Shenkel 1988). This suggests that the landforms associated with the Teche Delta complex may be old enough to contain Archaic period deposits.

The *Louisiana Comprehensive Archeological Plan* (Smith et al. 1983, updated April 2000) lists 125 Archaic period sites within Management Unit III. Of these, two (16SM19 and 16SM79) are located within St. Martin Parish. Site 16SM19 (the Bayou Portages site) consists of a mound center located on a natural levee with an underlying Archaic period component (Smith et al. 1983, updated April 2000). Site 16SM79 is located on a ridge and consists of prehistoric lithic artifact scatter, including Archaic period projectile points.

Poverty Point Culture (ca. 4000 – 2500 B.P.)

The Poverty Point culture represents a transitional culture that originated ca. 4000 B.P., but it did not realize its full potential until much later. As a result, the Poverty Point sphere of influence may not have arrived in the coastal region of south-central Louisiana until ca. 3450 B.P. (Gibson 1979, 1994; Neuman 1984). This culture is best represented by the Poverty Point type site (16WC5) in northeast Louisiana. The Poverty Point Site is best known for exhibiting several fundamental and distinguishing characteristics of a complex society, i.e., the presence of massive public architecture and extensive long-distance trade networks, while maintaining only a hunting and foraging based economy (Jackson 1991).

The material culture of Poverty Point society is distinctive. Artifacts associated with this culture include atlatl weights, plummets, beads and pendants, thin micro flint blades, clay cooking balls, clay figurines, fetishes, and food storage and preparation containers. Container types include steatite vessels, basketry, and untempered ceramic materials. Most ceramic vessels are sand-tempered, although a minority of grit-tempered, clay-tempered, fiber-tempered ceramics, and untempered ceramic sherds and vessels have been recovered from Poverty Point sites. In addition, Webb (1982) reports the recovery of seed processing implements, stone hoe blades, nutting stones, and milling stones; earthen ovens also have been identified.

Possible Poverty Point sites identified within the Coastal Zone of south-central Louisiana consist of camp locations on Avery Island and Belle Isle (Gagliano 1967:98; Gibson et al. 1978:33-34). Both of these islands are located to the south of the proposed project area. While the presence of Poverty Point shell midden sites in southeastern Louisiana suggest seasonal and specialized adaptations to marsh environments, the dearth of similar sites in south-central Louisiana may represent a period in prehistory when the LaFourche deltaic complex was subsiding (Gibson et al. 1978).

In *Louisiana's Comprehensive Archaeological Plan*, 32 Poverty Point period sites/components were documented within Management Unit III (Smith et al. 1983, updated April 2000); three of these (16SM6, 16SM19, and 16SM20) are located in St. Martin Parish. Site 16SM6, the Belle River Landing site consists of a multi-component, shell midden site that includes Poverty Point objects. The Poverty Point component of the site dates from the Rabbit Island phase. Also a multi-component site, 16SM19 is included in the Archaic period discussion. The site's Poverty Point component was not assigned to a particular phase in *Louisiana's Comprehensive Archaeological Plan* (Smith et al. 1983, updated April 2000). Site 16SM20 includes an earth midden and mound (now completely destroyed). Artifacts collected include Poverty Point objects. Smith et al. (1983, updated April 2000) did not assign this site to a specific Poverty Point Phase.

Woodland Stage (ca. 2450 - 750 B.P.)

The Woodland stage often is characterized by the introduction of horticulture, the bow and arrow, and the widespread use of ceramic containers. This cultural stage can be subdivided further into three periods: Early, Middle, and Late. In south-central Louisiana, i.e., throughout the coastal region, the Early Woodland period (ca. 2450 - 1949 B.P.) is represented by Tche-

functe culture, the Middle Woodland period (ca. 1949 - 1550 B.P.) is associated with Marksville culture and to a lesser extent Troyville culture. Finally, the Late Woodland period (ca. 1550 - 750 B.P.) originated with Troyville culture, but it later was dominated by Coles Creek culture. Each of these cultures is described in detail below.

Tchefuncte Culture (ca. 2450 – 1949 B.P.)

The Tchefuncte culture is characterized by the first widespread use of pottery, although within the context of a Late Archaic-like hunting and gathering tradition that maintained a Late Archaic-like tool inventory (Byrd 1994; Neuman 1984; Shenkel 1981:23). Tchefuncte ceramics usually are characterized by a soft, chalky paste, and a laminated cross-section (Phillips 1970). Vessel forms consist of bowls, cylindrical and shouldered jars, and globular pots that sometimes contain podal supports. Many vessels are plain; however, some are decorated with punctations, incisions, simple stamping, drag and jab, and rocker stamping. During the later portion of the Tchefuncte period, red filming also appears in some vessels (Perrault and Weinstein 1994:46-47; Phillips 1970; Speaker et al. 1986:38).

For the most part, the stone and bone tool subassemblages remained nearly unchanged from the preceding Poverty Point culture. Stone tools typical of the culture include boat stones, grooved plummets, chipped celts, and sandstone saws; bone tools included awls, fishhooks, socketed antler points, and ornaments. In addition, some tools such as chisels, containers, punches, and ornamental artifacts were manufactured from shell. Bone and antler artifacts, such as points, hooks, awls, and handles, also became increasingly common during this period.

Tchefuncte sites generally are classified either as coastal middens, or as inland villages or hamlets. Settlements usually occurred along the slack water environments of the slow, secondary streams that drained the bottomlands, floodplain lakes, and littoral zones of the region (Neuman 1984; Toth 1988:21-23). Shell midden sites also are common and they document the exploitation of a wide variety of food resources during this period. Tchefuncte burials and artifacts recovered from southwest and south-central Louisiana suggest an egalitarian type of social organization. The population probably remained focused within macrobands, and hunting, gathering, and fishing remained integral to the Tchefuncte lifestyle.

According to *Louisiana's Comprehensive Archaeological Plan* (Smith et al. 1983, updated April 2000), 37 Tchefuncte period sites or components have been documented within Management Unit III; however, only two these sites were identified within St. Martin Parish, the location of the proposed project area.

Marksville Culture (ca. 1949 – 1550 B.P.)

Marksville culture often is viewed as a localized version of the elaborate Midwestern Hopewell culture that filtered down the Mississippi River from Illinois (Toth 1988:29-73). A more organized social structure than their Tchefuncte predecessors is implied by the complex geometric earthworks, conical burial mounds constructed for the elite, and the unique mortuary ritual systems that characterize Marksville culture. Some items, such as elaborately decorated ceramics, were manufactured primarily for inclusion in burials. Other burial items include pearl beads, carved stone effigy pipes, copper earspools, copper tubes, galena beads, and carved coal objects. Toward the end of the Marksville period, Hopewellian influences declined, and mortuary practices became less complex (Smith et al. 1983, updated April 2000; Speaker et al. 1986).

The presence of ceramic decorative motifs such as cross-hatching, U-shaped incised lines, zoned dentate rocker stamping, cord-wrapped stick impressions, stylized birds, and bisected circles suggest interaction between the Marksville and Hopewell cultures (Toth 1988:45-50). Additional Marksville culture traits include a chipped stone assemblage that includes knives, scrapers, celts, drills, ground stone atlatl weights and plummets; bone awls and fishhooks; and baked clay balls. Projectile points recovered from Marksville culture sites are dominated by the Gary type.

In addition, a variety of artifacts made from exotic materials are commonly found at Marksville sites and their presence suggests the existence of and participation in a variety of extensive trade networks, as well as the emergence of a possibly ranked, non-egalitarian society

whereby elites received goods of a higher quality. Some exotic items commonly recovered from Marksville culture sites include imported copper ear spools, panpipes, platform pipes, figurines, and beads (Neuman 1984; Toth 1988:50-73). Despite the infusion of exotic materials into the Marksville economy, the utilitarian material culture remained essentially unchanged. This seems to reflect an overall continuity in subsistence systems (Toth 1988:211). Marksville peoples probably employed a hunting, fishing, and gathering subsistence strategy much like those associated with earlier periods. Gagliano (1979) suggests that food procurement activities were a cyclical, seasonal (transhumance) activity that revolved around the utilization of two or more shifting camps.

Recent investigations in nearby Terrebonne and St. Mary Parishes have identified additional Marksville period sites in the southern portion of Louisiana, including mound sites, hamlets, and shell middens (Weinstein and Kelly 1989). The authors, after a review of a number of Marksville period ceramics recovered from sites identified throughout the region, concluded that the entire sequence of early through late Marksville period sites can be found within the region. According to *Louisiana's Comprehensive Archaeological Plan* (Smith et al. 1983, updated April 2000), 38 Marksville sites have been documented within Management Unit III (Smith et al. 1983, updated April 2000); only one of these sites was situated within St. Martin Parish, the location of the current study area.

Troyville-Coles Creek Period (ca. 1550 - 750 B.P.)

Troyville culture, also referred to as Baytown elsewhere in the region, represents a transition from the Middle to Late Woodland period that culminated in the emergence of the ensuing Coles Creek culture (Gibson 1984). Though distinct, these two cultures are sufficiently similar that many researchers combine them into a single prehistoric cultural unit. The continuing developments of agriculture and the refinement of the bow and arrow during this time radically altered subsequent prehistoric lifeways. During the Troyville cultural period, bean and squash agriculture may have become widespread based on the appearance of large ceramic vessels. This shift in subsistence practices probably fostered the development of more complex settlement patterns and social organizations.

The Late Woodland Coles Creek culture emerged from the Troyville culture by approximately 1200 B.P. and it represented an era of considerable economic and social change throughout the Lower Mississippi Valley. By the end of the Coles Creek period, communities had become larger and more socially and politically complex. In addition, there is a great deal of evidence that large-scale mound construction occurred, and that long-distance trade resumed on a scale not seen since Poverty Point times (Muller 1983). These changes probably initiated the transformation of Coles Creek cultural traits into what is now recognized as the Plaquemine culture sometime before 750 years ago (Jeter et al. 1989; Williams and Brain 1983).

Ceramics of this period are distinguished by their grog or grog and sand tempers, as opposed to the chalky, sand-tempered paste associated with the previous ceramic series. Sites dating from the Coles Creek cultural period primarily were situated along stream systems where soil composition and fertility were favorable for agricultural production. Natural levees, particularly those situated along old cutoffs and inactive channels, appear to have been desirable settlement locations (Neuman 1984). Most large Coles Creek period sites, usually are located inland, and they often contain one or more mounds.

Within the Louisiana Coastal Zone, agriculture probably represented only a minor portion of the subsistence pattern in operation during Troyville-Coles Creek times. Gibson et al. (1978:41) note that the tidal fluctuations, saline conditions, and the restricted amount of elevated ground on which to grow crops precluded large-scale cultivation within the Coastal Zone.

The greatest number of prehistoric period sites or components in Management Unit III represent the Troyville-Coles Creek. A total of 400 sites from this period are documented for this management unit in *Louisiana's Comprehensive Archaeological Plan* (Smith et al. 1983, updated April 2000). There are 20 Troyville-Coles Creek located within St. Martin Parish. Of these, the Janet Washburn site (16SM7), which contains a

Troyville component, is located within 1.6 km (1 mi) of the currently proposed project area.

Mississippian Stage (ca. 750 - 300 B.P.)

The Mississippian stage represents a cultural climax in population growth and social and political organization for those cultures that occupied the southeastern United States (Phillips 1970; Williams and Brain 1983). Formalized site plans consisting of large sub-structure "temple mounds" and plazas have been noted throughout the Southeast (Hudson 1978; Knight 1984; Walthall 1980;Williams and Brain 1983). In the Lower Mississippi Valley, the Mississippian stage is characterized by the Plaquemine or Emergent Mississippian period (750 - 500 B.P.) and by the Late Mississippian period (500 - 250 B.P.). Evidence of historic period Mississippian culture is found only in limited parts of the coastal zone of south-central Louisiana and it may never have reached the southwest portions of the state (Jeter et al. 1989; Brown 1981; Brown and Brown 1978). Within the vicinity of the proposed project corridor, the Plaquemine culture may have flourished until after the period of European contact (Gibson 1976a, 1976b; Jeter et al. 1989).

Emergent Mississippian Period (ca. 750 - 500 B.P.)

The Emergent Mississippian period - Plaquemine culture represents a transitional phase representing evolution of the Coles Creek culture into a pure Mississippian culture (Kidder 1988). Plaquemine peoples continued the settlement patterns, economic organization, and religious practices established during the Coles Creek period; however, sociopolitical structure and religious ceremonialism intensified, suggesting a more complex social hierarchy. Large sites often are characterized as ceremonial sites, and these sites typically contain multiple mounds constructed around a central plaza. Smaller dispersed villages and hamlets also formed part of the settlement hierarchy (Neuman 1984).

Although it is clear that Plaquemine ceramics are derived from the Coles Creek tradition, they exhibit distinctive features that mark the emergence of a new cultural tradition. In addition to incising and punctating pottery, Plaquemine craftsmen also decorated their vessels with brushed and engraved designs (Phillips 1970). By ca. 500 B.P., Plaquemine culture throughout much of the Lower Mississippi Valley apparently had evolved into a true Mississippian culture (Kidder 1988:75).

Plaquemine sites have been recorded only rarely in south-central Louisiana. Those identified along Bayou Teche, the Vermilion River, and the Lower Atchafalaya Basin do not exhibit the cultural traits found in the nearby Lower Mississippi and Lower Red River Valleys (Gibson 1976a:20; Gibson et al. 1978:44). Most of the emergent Mississippian period sites recorded within the vicinity of the proposed project parcel consist of shell middens or small villages that are less elaborate than their more inland counterparts. Rectangular mound sites with centralized plazas are not altogether unknown in the region, but they occur much less frequently than in other areas of the state (Gibson 1976a:20). In addition to these shell middens and villages, other more specialized sites have been identified within the vicinity of the proposed project area. The Salt Mine Valley site (16IB23) situated on Avery Island in Iberia Parish is one such specialized site. Prehistoric salt production in the United States gained importance primarily during the Mississippian period, post ca. A.D. 900 and it continued into the historic period (Brown 1981:1).

In 1997, R. Christopher Goodwin & Associates, Inc., completed data recovery excavations at Site 16LF66, a Plaquemine period site, in Lafourche Parish, Louisiana. Excavations at the site resulted in the identification and sampling of intact, stratified prehistoric period cultural deposits that produced ceramic sherds, bone tools, faunal remains, and human burials. These data suggest that Site 16LF66 represented the remains of a perennial occupation by Plaquemine culture peoples dating primarily to the fifteenth century A.D. (Miller et al. 1999).

The substantial midden identified at Site 16LF66 produced a variety of important information about Plaquemine subsistence in the marshes of southeastern Louisiana. Faunal remains were numerous and they indicated a focus on the use of aquatic species, especially fish. While macrobotanical remains generally were sparse, the site did yield evidence of maize agriculture in the form of maize kernels. Further-

more, cultural features, including hearths, pits, postmolds, and wall trenches, also provided information about the range and spatial distribution of activities conducted at the site, including the construction of dwellings and data on subsistence-related facilities. Finally, both primary and secondary burials identified within the midden yielded important information regarding prehistoric demography and burial patterns throughout the region (Miller et al. 1999).

The presence of a large number of burials and the thickness of the midden both suggest that the site was occupied continuously or discontinuously over a number of years. Site 16LF66 seems to be a clear example of a long-term village whose occupants focused on the procurement of aquatic resources; however, the consumption of maize at the site also suggests that agriculture may have played some role in the daily life of the prehistoric residents of the site.

According to ethnographic accounts, Coastal Plaquemine culture in south-central Louisiana, unlike groups located further inland and to the east, possibly remained unchanged until as late as ca. A.D. 1750. *Louisiana's Comprehensive Archaeological Plan* identified 83 Plaquemine period sites in Management Unit III (Smith et al. 1983, updated April 2000). Of the 83 Plaquemine sites recorded, three were located within St. Martin Parish.

Late Mississippian Period (ca. 500 - 250 B.P.)

During this time, several traits distinctive of the Mississippian period spread across most of the southeastern United States. Diagnostic cultural traits dating from this period include well-designed mound groups, a wide distribution of sites and trade networks, shell-tempered ceramics, and a revival in the ceremonial burial of the dead (Griffin 1990:7-9). Late Mississippian period subsistence was based on the cultivation of maize, beans, squash, and pumpkins; despite this focus on maize agriculture, the collection of local plants, nuts, and seeds, as well as and fishing and hunting continued to supplement the subsistence base. A typical Mississippian settlement consisted of an orderly arrangement of village houses, surrounding a truncated pyramidal mound. These mounds served as platforms for temples or as houses constructed for the elite.

Late Mississippian ceramic types frequently are characterized by shell tempering, an innovation that enabled potters to create larger vessels with thinner walls (Steponaitis 1983). Shell-tempered ceramic vessels included such forms as globular jars, plates, bottles, pots, and salt pans; in addition, loop handles are found on many Late Mississippian vessels. Although utilitarian plainware was common, decorative techniques included engraving, negative painting, and incising; modeled animal heads and anthropomorphic images also adorned ceramic vessels dating from this time period. Other types of late Mississippian period artifacts included chipped and groundstone tools; shell items such as hairpins, beads, and gorgets; and mica and copper artifacts. Projectile point styles such as Alba and Bassett also were common at this time.

In south-central Louisiana, the Late Mississippian period is defined less clearly than in other areas of the state. As previously stated, some continuity may have existed between earlier Plaquemine occupation and later occupations found throughout the region. Recent investigations tend to support the position that the Plaquemine culture continued to dominate the region throughout the Mississippian period. Evidence for this argument derives from research conducted in the Terrebonne Marsh in south-central Louisiana. This research revealed that shell-tempered "Mississippian" ceramics were in the minority, while Plaquemine ceramics were heavily represented at most sites in the area (Weinstein and Kelley 1992:378).

Louisiana's Comprehensive Archaeological Plan documented only 17 Mississippian cultural period sites components within Management Unit III (Smith et al. 1983, updated April 2000); two of these sites were located within St. Martin Parish. While not reported, hybrid Mississippian-like artifacts may be found in association with Plaquemine, Attakapan, or Chitimacha sites that date from either the protohistoric or early historic cultural periods.

Protohistoric and Early Historic Period (ca. 411 - 220 B.P.)

An understanding of protohistoric and historic period Native American cultures of the southeastern United States is limited severely by our frequent inability to recognize the ancestral

cultures from which these historic groups were derived. This is due in part to the waning influence of the Mississippian culture and, to a lesser degree, the Plaquemine culture, but primarily it is a result of the social disruption initiated by the legacy of the Hernando de Soto entrada of 1539 - 1543. In addition, the subsequent French and Spanish exploration and colonization of the Southeast has affected the clarity to which the Protohistoric period can be brought into focus. During this period, Native American population upheavals and depletions were related to warfare, disruptive migrations, and epidemics introduced by European contact (Davis 1984; Smith 1987).

Villages apparently were similar to those reported for the preceding Plaquemine and Mississippian periods. The larger villages generally featured one or more truncated pyramidal mounds surmounted by chiefs' houses and temples; the remaining villagers lived in the area surrounding the mounds and in satellite hamlets. The houses were rectangular in shape and they were constructed of poles placed in the ground that supported wattle and daub walls, and thatched roofs (Swanton 1946). The French learned cultivation techniques for corn, squash, potatoes, tobacco, and other indigenous crops from the Chitimacha and they apparently lived in the nearby Native American communities during times of famine.

Gibson (1976a:21) states that early colonists arriving in the region "found the Plaquemine culture still flourishing" during the 1700s. These inhabitants reportedly belonged to the Vermilion band of the Attakapa tribe and to the Chitimacha tribe. According to contemporary accounts, the Chitimacha occupied the lower Bayou Teche region, the Grand Lake area, and the lower stretch of the Atchafalaya River.

The Attakapa originated in southeast Texas, but, following varying degrees of interaction, began migrating to southwest Louisiana during the Late Prehistoric period. Swanton (1953:197-199) recounts that the easternmost Attakapa resided on the Mermentau River and in the vicinity of Vermilion Bay. In 1760, the Attakapa sold the land located between Bayou Teche and the Vermilion River, where their village was located, to a French settler, Fusilier de la Clair (Swanton 1946). The village, however, continued to be occupied by the band until the early nineteenth century.

According to Kniffen et al. (1987:53) and Swanton (1946:119, 1953:202-204), the Chitimacha originally were located on Bayou Lafourche, Grand Lake, and the lower portion of Bayou Teche. In 1702, however, Louis Antoine Juchereau de St. Denis took several members of the Chitimacha tribe as slaves. He was ordered immediately by Jean Baptiste le Moyne, Sieur de Bienville to return the captured Chitimacha to their people. In 1706, the alliance between the French and the Chitimacha was broken when the Chitimacha attacked and killed four Frenchmen in retaliation for a raid carried out by the Teansas earlier that same year. For the next 12 years, the Chitimacha fought the French and their Native American allies.

In 1718, peace terms were stipulated and agreed upon between the French and the Chitimacha. According to those terms, the Chitimacha were to relocate to the Mississippi River near the present-day town of Plaquemine. Within a short period, however, the Chitimacha, once the strongest and most "cultured" of the south Louisiana tribes, was reduced greatly in numbers and they were forced to merge with other tribes in the area. Only a few Chitimacha remained by 1881 and they were living on a reservation situated near the town of Charenton, Louisiana (Kniffen et al. 1987:75).

CHAPTER IV

HISTORIC OVERVIEW

Introduction

The currently proposed project parcel, located within St. Martin Parish, Louisiana, consists of the Keystone Lock and Dam facility, and portions of the surrounding area (Figure 2). The project item is located approximately midway between the towns of St. Martinville and New Iberia. Historically, the region containing the project parcel has been associated with the development of both these cities, and with the growth of cane cultivation and sugar manufacture along Bayou Teche. This chapter provides a general overview of the area as well as the history of the region spanning the colonial era to the present. Since the Teche itself, and consequently the project parcel, has been central to the social and economic development of life along its banks, the development of New Iberia and St. Martinville and the evolution of these two urban areas are examined.

Colonial Era

During the French and Spanish colonial periods, the project area fell within that part of the Louisiana colony known as the Attakapas region, or district, so-named for one of the Native American tribes indigenous to the area. French trappers and concessionaires were joined in the Attakapas region by Acadians, many of whom migrated from the Chignecto Isthmus of Nova Scotia as a result of their forced removal during the French and Indian War; by Spanish settlers, mostly Málagans, emigrants from the Costa del Sol in southern Spain; and by slaves, many of whom originated from the Senegambian region of Africa.

French Colonial Period, 1699-1769

Nearly 140 years following the last of the unsuccessful sixteenth century Spanish expeditions through the Louisiana region, the French began exploration of the lower Mississippi River Valley. On April 9, 1682, Réné Robert Cavelier, Sieur de la Salle claimed all lands drained by the Mississippi River for Louis XIV, King of France. Approximately 16 years later, in 1698 and 1699, Pierre le Moyne, Sieur d'Iberville, led an expedition to explore the lower "Colbert or Mississippi River, from its mouth to the Natchez Nation," and to "establish a colony in Louisiana" (French 1875:29, 31).

Shortly after the founding of the Louisiana colony in 1699, the French established permanent settlements along the Mississippi River and the Gulf Coast; however, colonization of the southwestern portions of Louisiana was not supported by the French government. In addition, settlers were reluctant to leave the security of the Mississippi River posts for "the west," as the territory was known to French colonists. This area was uncharted and populated by Native Americans. Despite these trepidations, Spanish missionaries reported secluded groups of colonists in the Attakapas as early as 1713, probably French trappers, engaging in trade throughout the Mississippi River Valley. The Native Americans of the Attakapas-Opelousas region initiated trade with the colonial government, offering pelts, tallow, and horses in exchange for French goods. By the 1740s, a profitable deerskin and fur trade had been established with the "Attakapas Country," whose name had replaced "the west" as the common designation for southwestern Louisiana

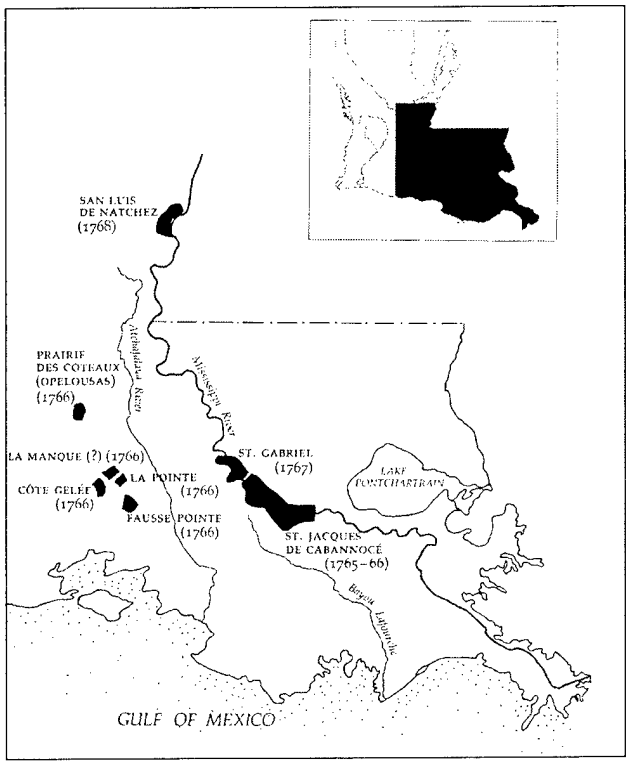

Figure 8. Adaptation of 1760 French map, from Brasseaux, *The Founding of New Acadia.*

(Figure 8) (Bergerie 1962:3; De Ville 1973:24-31, 1986:4; Fontenot and Freeland 1976:1; Iberia Parish Development Board ca. 1948:12).

By the mid-eighteenth century, the French had discovered that the southwestern Louisiana prairies were well suited for cattle ranging, and they thought that tobacco cultivation might succeed throughout this rich marshland of the region (De Ville 1973:31-33, 1986:4). Edouard Masse, one of the earliest documented colonial settlers in the area of present-day St. Martinville (situated approximately 4.4 km [2.75 mi] northwest of the project item), probably arrived during the 1740s. Masse owned 20 slaves, many of whom he freed in his will, as well as a partnership in a cattle ranch. Masse lived in rather crude frontier conditions:

> [He] lived in an open shack, slept on bearskin stretched on boards, and dressed in deerskins. His only utensils were a knife and horn, both of which he carried with him. He lived this way for nearly twenty years, extending hospitality to anyone asking for it; but there were few comforts to induce any travelers to linger there (Bergerie 1962:4).

In 1760, Masse and his partner, retired military officer Antoine Bernard Dauterive [or D'Hauterive], were granted an Attakapas concession upon which they established a cattle ranch, or *vacherie* (Figure 9). This grant was situated on the east side of Bayou Teche near the present-day site of Loreauville (less than 10.5 [6.5 mi] km downstream from the proposed project parcel). The Dauterive-Masse concession later developed into the first Acadian settlement in the region, *Fausse Pointe* (Brasseaux 1987:75, 91-92).

Shortly thereafter, the French government proposed a military post for the Attakapas country as part of its plan to protect and secure the boundaries of the developing Louisiana colony from both Native Americans and foreign colonial powers. The *Poste des Opelousas* was established under the command of Louis Pellerin in 1763, after France officially transferred western Louisiana to Spain. The Opelousas Post, situated in the vicinity of modern-day Port Barre (St. Landry Parish), also became known as Attakapas, after the region it served; however, that name was discontinued with the establishment of the *Poste des Attakapas* at present-day St. Martinville in the early 1760s (Brasseaux 1987:94; De Ville 1973:32-34; Fontenot and Freeland 1976:19; Pittman 1973:36).

Spanish Colonial Period, 1769-1803

On November 3, 1762, under terms of the Treaty of Fontainebleau, France secretly ceded the Isle of Orleans and the Louisiana colony west of the Mississippi River to Spain. Not only did France relieve itself of the heavy financial burden of administering and supporting the colony, but the transfer also prevented a sizeable portion of the territory from falling under British control as a result of the impending English victory in the French and Indian War. Although the transfer was announced publicly in 1764, it was not until 1769 that the French colonial government finally was abolished and Spanish control was established under the governorship of Alejandro O'Reilly (Chambers 1898:48; Davis 1971:69-70, 97-105).

The Acadians

Throughout the eighteenth century, European powers struggled for colonial dominance in the New World. France and Great Britain, in

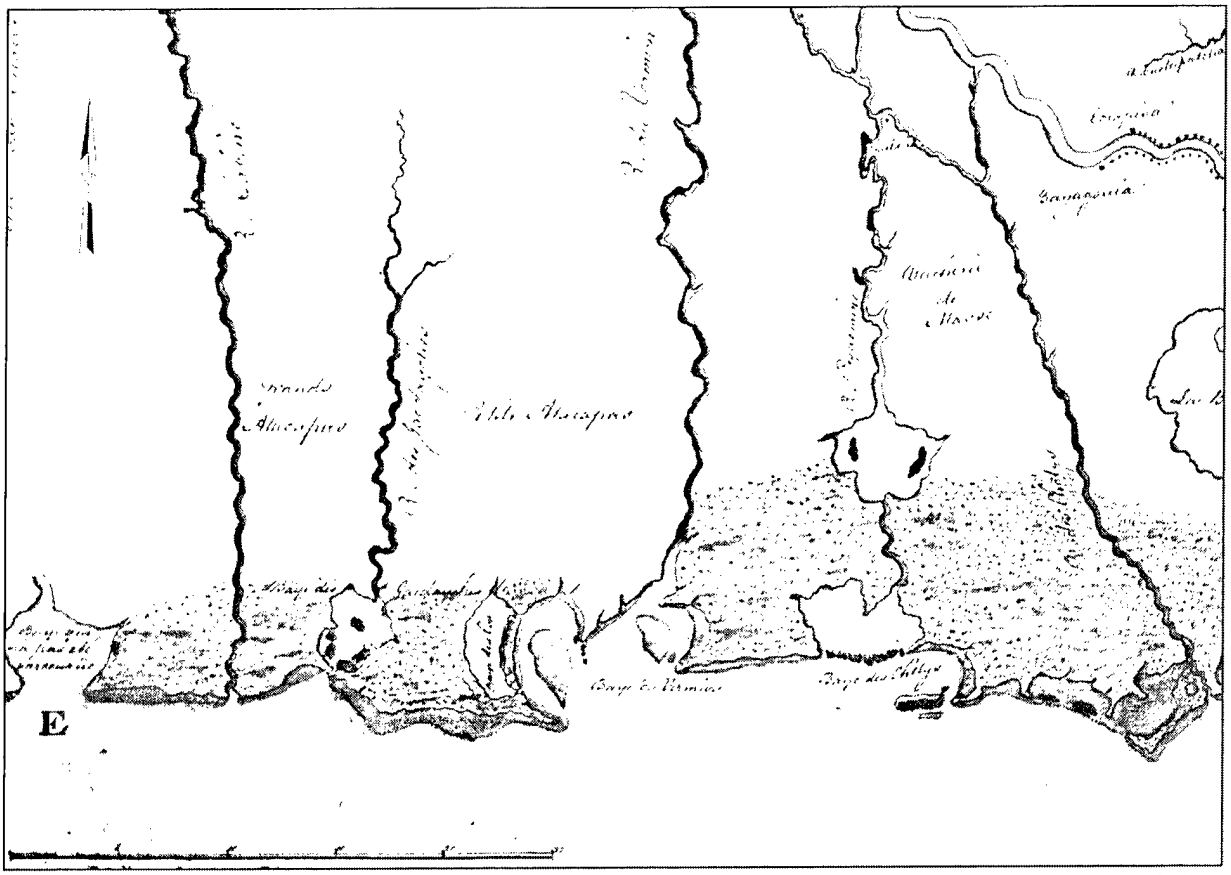

Figure 9. **[1760] Excerpt from an untitled map of Louisiana, in reference to the project vicinity. Excerpt depicts the *Atacapas* [Attakapas] region and the *Vacherie de Masse* [Masse's cattle ranch].**

particular, fought over New France (Canada) and control of the Mississippi River. In 1713, France ceded "Acadie", i.e., Nova Scotia and New Brunswick, to Britain in the Treaty of Utrecht. These lands, populated by the French colonists known as the Acadians, were important strategically, located halfway between Boston and the mouth of the St. Lawrence River. Britain required the Acadians to swear an oath of allegiance to the royal crown. Independent, largely Catholic, and convinced of their right to participate in the political process, the Acadians refused, and they struggled with British authorities for decades. On September 5, 1755, approximately 6,000 to 7,000 Acadians, half the total Acadian population, were imprisoned, and shortly thereafter deported to dozens of different colonial settlements. This mass deportation became known as *Le Grand Dérangement,* The Great Deportation (Figure 10) (Brasseaux 1987:25-27; Encyclopedia of Cajun Culture 2000:1).

At least two small groups of exiled Acadians arrived in Louisiana, by way of Santo Domingo (present-day Haiti). The French government in New Orleans sent the emigres to the Attakapas and Opelousas regions. Just a few years later, the Spanish defined the boundaries of the Attakapas District; it extended "along the sea coast between the Delta of the Mississippi and the Western boundary" (the Sabine River), while the Opelousas District adjoined Attakapas to the north (Sibley 1806:97). Several Acadian settlements were established ca. 1765-1766 within these southwestern districts. First and southernmost was *Fausse Pointe*, originally called "*le dernier camp d'en bas*" (roughly, "the last camp of the lower side"). The *Fausse Pointe* community originally extended along both sides of Bayou Teche and it was situated roughly between the present-day communities of Loreauville and Morbihan, (less than 10.5 [6.5 mi] km downstream from the proposed project area). To the

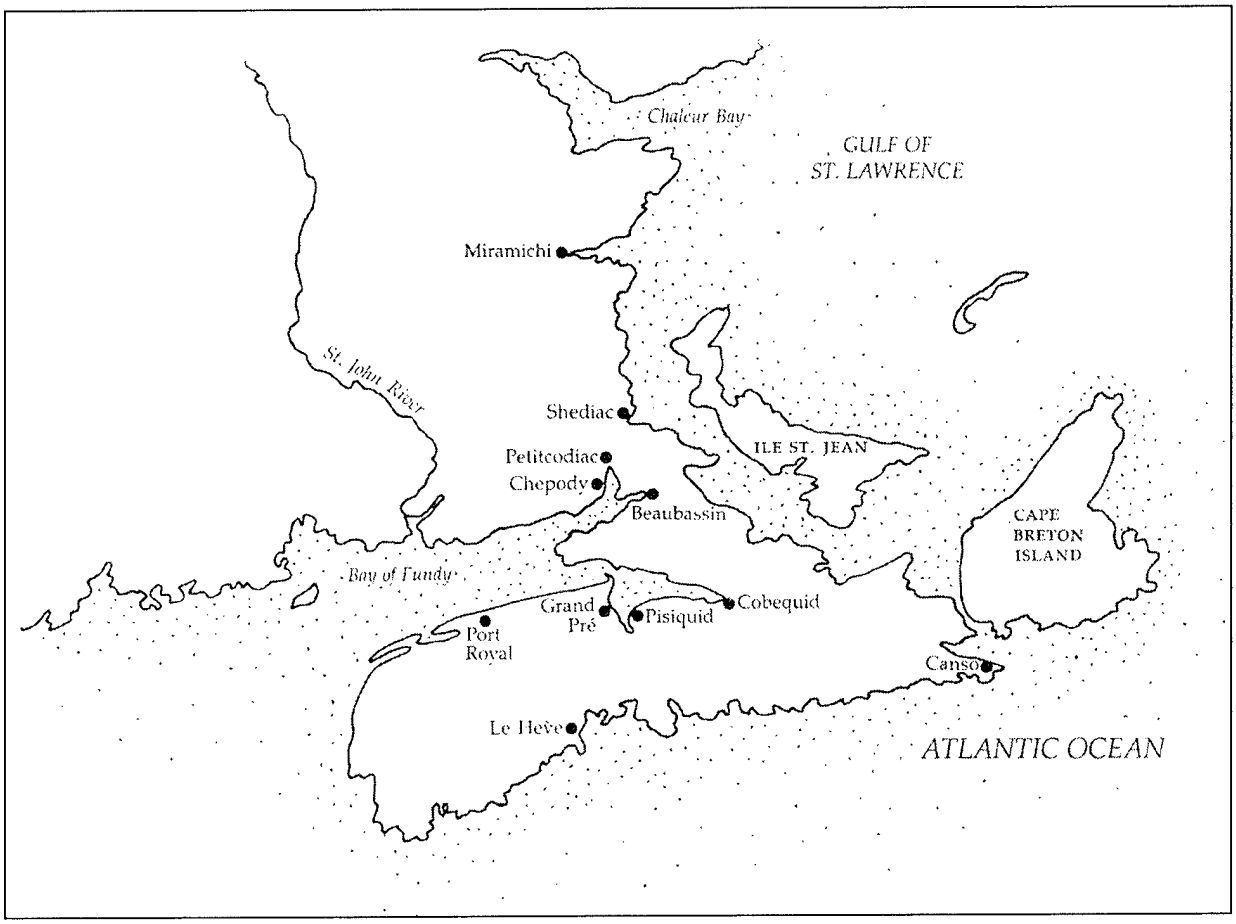

Figure 10. Acadian Settlements, from Brasseaux, *The Founding of New Acadia.*

northwest, along Bayou Teche between present-day Parks and the original site of the Opelousas Post, were *La Pointe de Repos*, *La Manque*, and *Prairie des Coteaux* (Opelousas). *Côte Gelée* was established on the west bank of Bayou Tortue, i.e., to the west of *Fausse Pointe* and *La Pointe* settlements (Brasseaux 1987:92-95).

On April 4, 1765, eight Acadian "Chieftains" (or family leaders) agreed to settle in the Attakapas region on lands owned by Antoine Bernard Dauterive and Edouard Masse at *Fausse Pointe,* i.e., along the east bank of Bayou Teche, just a few miles from the proposed project parcel. In return for tending the cattle of the Dauterive-Masse *vacherie* for a period of six years, Dauterive promised to supply each family with "five cows and their calves, one bull, and one half-interest in the produce grown and cultivated on his lands in the Attakapas Country" (Rees 1965:25). In addition, the Acadians would receive the concession granted to Dauterive and Masse five years earlier. They further agreed that the livestock would be delivered when the Acadians arrived at the Attakapas. The French colonial government supplied the Acadians with seed rice, seed corn, tools, and "sufficient flour, hardtack, hulled rice, and salt pork and beef to support them for six months" (Brasseaux 1987:75). The eight Acadian "Chieftains" included Joseph Broussard (who was called "Beausoleil"), Alexandre Broussard, Joseph Guilbeau, Jean Dugas, Olivier Tibaudau, Jean-Baptiste Broussard, Pierre Arceneau, and Victor Broussard (Bergerie 1962:5-6; Brasseaux 1987:74-76; Rees 1965:25).

Despite the attractive offer, the eight families soon abandoned their arrangement with Dauterive:

> . . . within days of their arrival at the [Attakapas] post, the Acadians were denounced as

> trespassers by Dauterive's neighbors. Moreover, in 1771 Dauterive, who had recently become sole proprietor of the ranch, donated a large portion of the designated settlement site to St. Martin de Tours Catholic Church. Finally, rather than raise cattle on shares for Dauterive, the exiles purchased an undetermined number of cattle from Jean-Baptiste Grevemberg shortly after their arrival at Fausse Pointe. These settlers immediately sought patents to the land, thereby invoking the wrath of their neighbor, Jean-Baptiste Grevemberg, who claimed the area between Fausse Pointe and the Vermilion River as his personal fiefdom. In mid-July, Grevemberg addressed a memorial to Governor [Charles-Philippe] Aubry and Commissaire-ordonnateur [Denis-Nicolas] Foucault, asserting his right to the land and requesting a patent to his fourteen-year-old *vacherie*. Despite the cattle baron's tenuous legal claim to the campsite . . ., Aubry and Foucault permitted the Acadians to remain on their new farmsteads; Grevemberg could console himself with a concession of 7.5 square leagues (18.75 square miles [30 sq km]) (Brasseaux 1987:92).

Part of the land Grevemberg retained, also known as Flamand, included the Keystone Lock and Dam project parcel. Both Grevemberg and Broussard had a significant impact on the development of the overall project area. "Beausoleil" Broussard, who had been the militia captain of a "highly effective guerrilla unit" in Nova Scotia, obtained a Spanish land patent just below the proposed project parcel in 1772 (Figure 11) (Taylor 1980). Grevemberg held the patent immediately west of the Broussard holdings. The Acadians who colonized this region, especially around *Fausse Pointe*, settled in widely separate communities, rather than establishing a central town. This pattern was in keeping with their tradition, and it aided them in establishing livestock areas, as well as developing farm acreage. Most of these Acadian families settled on lands positioned adjacent to one another, so that extended family structures remained intact, and grew through intermarriage (Brasseaux 1987).

The Attakapas Acadians anticipated their reunion with other exiled Acadian immigrants and they believed that a "New Acadia" would emerge from the Attakapas post. Insufficient support from the French colonial government, though, prevented other Acadians from settling in the Attakapas region. In order to protect the area against Native American raids, a group of exiles that arrived in May of 1765 was forced to settle along the lower Mississippi coast, rather than in the Attakapas region (Brasseaux 1987:76-77). Moreover, during the early Spanish period, colonial government officers prevented new Acadian exiles from settling with family members in the Opelousas and Attakapas regions, in an effort to enforce new settlement areas (Brasseaux 1987).

By April of 1766, the Attakapas Acadians had dispersed into three or four settlements. The census of April 25, 1766 listed an estimated 150 inhabitants in the district: 16 households at the "District of the Pointe" (*Fausse Pointe*), 17 households on Bayou Tortue (*Côte Gelée*), 14 households at *La Manque* (probably located between present-day Breaux Bridge and Parks), and 2 households under the category "Allibamont Established at the Attakapas" (the "*Allibamont*," or *Alabamons*, were French nationals who left Fort Mobile in 1763 to escape British rule). This last "Allibamont" entry included Edouard Masse's 20 slaves, who were the only slaves recorded in the Attakapas District; the remaining 130 inhabitants consisted entirely of free white settlers (Brasseaux 1987:94; Taylor 1980:16 fn.14; Voorhies 1973:124-125).

Nearly four years later, in early 1770, Don Eduardo Nugent and Don Juan Kelly journeyed through western Louisiana. Their report to the Spanish governor recorded a white population of 166 inhabitants in the Attakapas District. The account also listed 33 slaves, of whom 26 were at least 12 years of age and, therefore, "able to work." The livestock included 1,323 oxen and bulls, 18 calves, 14 "carts with oxen", 266 horses and mares, and 565 pigs (Martin 1976:187, 191-192). The conclusion of the district survey noted:

> This district is quite similar to the district of Opelousas with regard to pastures and food production [corn, rice, and sweet potatoes].
>
> Considered as a whole, it stretches over twenty leagues of longitude by six of latitude with population scattered throughout the district.
>
> The Attakapas are favored with a better situation. More lands are cleared [there] than in the Opelousas District. The Acadians have settled there and raised cattle. They are extremely industrious and eager to work. Their

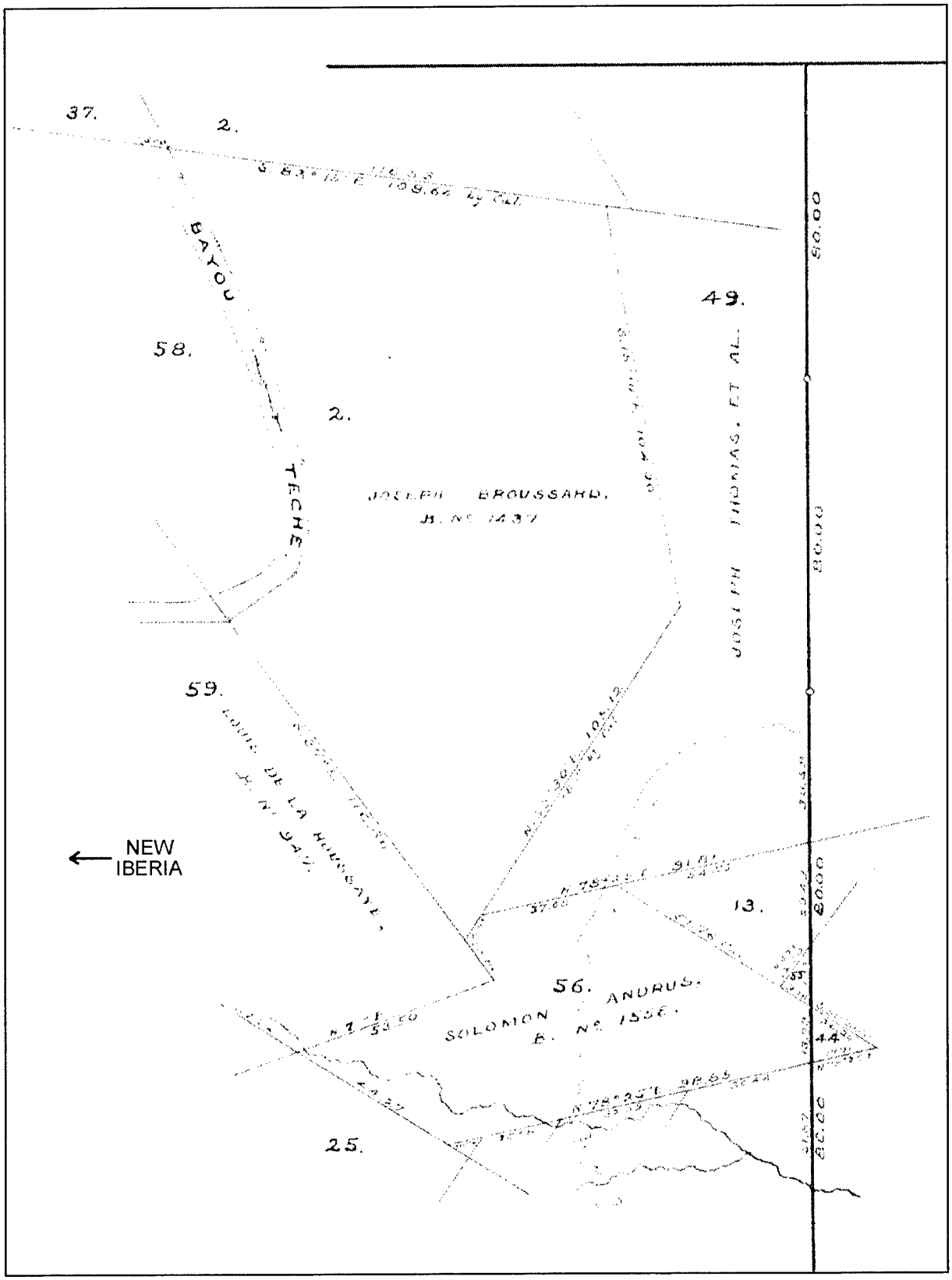

Figure 11. **Adaptation of Spanish land grant maps, along Bayou Teche, ca. 1849, from the Louisiana Surveyor General's map, 1849.**

> women weave cotton which they turn into excellent cloth. They use it to make clothes for everyone. They also make stockings and cloth which they use as linen, but they were discouraged from cultivating cotton and manufacturing it, not knowing if the government would permit them to do so (Martin 1976:192).

In these early settlement years, both the French and Spanish provisional governments refused to honor the French-Canadian paper currency held by the Acadians. As a result, few of these settlers could afford to purchase slaves. This, in turn, prevented most first-generation farmers from cultivating cash crops such as cotton, tobacco and sugar, all of which were labor-intensive forms of agriculture. Within a generation, however, the Acadians began to purchase bondsmen to work their lands; but throughout the late eighteenth century, most of the Acadian settlers held only between two and four slaves. Consequently, most practiced subsistence farming and cattle ranching (Brasseaux 1987:192-93).

By 1774, the general census of the Attakapas region (dated October 30, 1774) documented significant growth: 323 white settlers, 129 adults, and 194 children. In addition, a small settlement of *gens de couleur libre*, free people of color, had been established along Bayou Teche; it was comprised of 12 adults and 6 children. These families who once had been enslaved, were set free by the original concessionaires Masse and Fuselier. In just four years, the slave population had grown dramatically. A total of 155 slaves now worked the plantations of the region. Despite this increase, three planter families, the DelaHoussayes, the deVaugines, and the Fuseliers, owned most of these bondsmen. In fact, only 19 of the 73 white households owned any slaves at all. Even before the turn of the nineteenth century, wealth was becoming concentrated along the Teche, foreshadowing the plantocracy that would soon evolve.

Regardless of these few early successes, colonial settlers struggled to find a staple crop to sustain the colony. The first cash crop that planters developed was indigo, which became important during the Spanish colonial period. Indigo was a particularly labor-efficient crop; a single slave could plant and tend 0.8 ha (2.0 ac) of the crop and still have time to attend to his own provisions (Holmes 1967:340). Each plantation or farm usually had its own indigo processing facility, since the manufacture of dye from indigo required little expensive machinery. The cut plant was placed in a vat called a "steeper," and the indigo then was covered with water until fermentation occurred. The liquid by-product then was drawn off into another vat, called a "beater," where it was agitated much like the churning of butter (Figure 12). A precipitate then was formed in the solution by adding lime-water. The water was drawn off, and the indigo solids were placed in cloth bags to dry (Holmes 1967:344). Because indigo was fairly easy to cultivate, it could be produced with equal efficiency on large plantations and small farms.

While the cultivation of the crop was easier than that of cotton or sugar, the processing was not. Indigo as a staple thrived in the young colony largely because many slaves from the Senegambia region of Africa brought with them the knowledge of how to build the vats, beat the leaves, and gauge the timing of the process. No other ethnic group in the area – French, Spanish or Native American – had any experience in indigo manufacturing. Unlike failed tobacco crops, which were unsuited to the soil, planters knew indigo would grow in the marshy Louisiana soil; after all, it grew wild throughout the colony. While the locally produced indigo was inferior to that produced in the West Indian colonies, it became one of the few export staples of eighteenth century Louisiana (Hall 1992).

During this period, the majority of the land holdings along the Teche was dispersed under Spanish patents. Most of the claimants owned land along both banks of the Teche, providing access to agricultural lands along the west bank and to pasturage on the east bank. The size of the landholdings varied greatly. There were several small concessions of 243 ha (600 ac) or less, but most of the claims were in excess of 405 ha (1,000 ac) of land. The largest landholdings in the vicinity of the Keystone Lock and Dam project parcel were overwhelmingly those of the Grevemberg family. Augustin Grevemberg, Jean-Baptiste Grevemberg and Anne Judith Chenal, the widow of one of the Grevembergs, each owned more than any other concessionaire along Bayou Teche between St. Martinville and New Iberia. They owned 854 ha (2,111 ac),

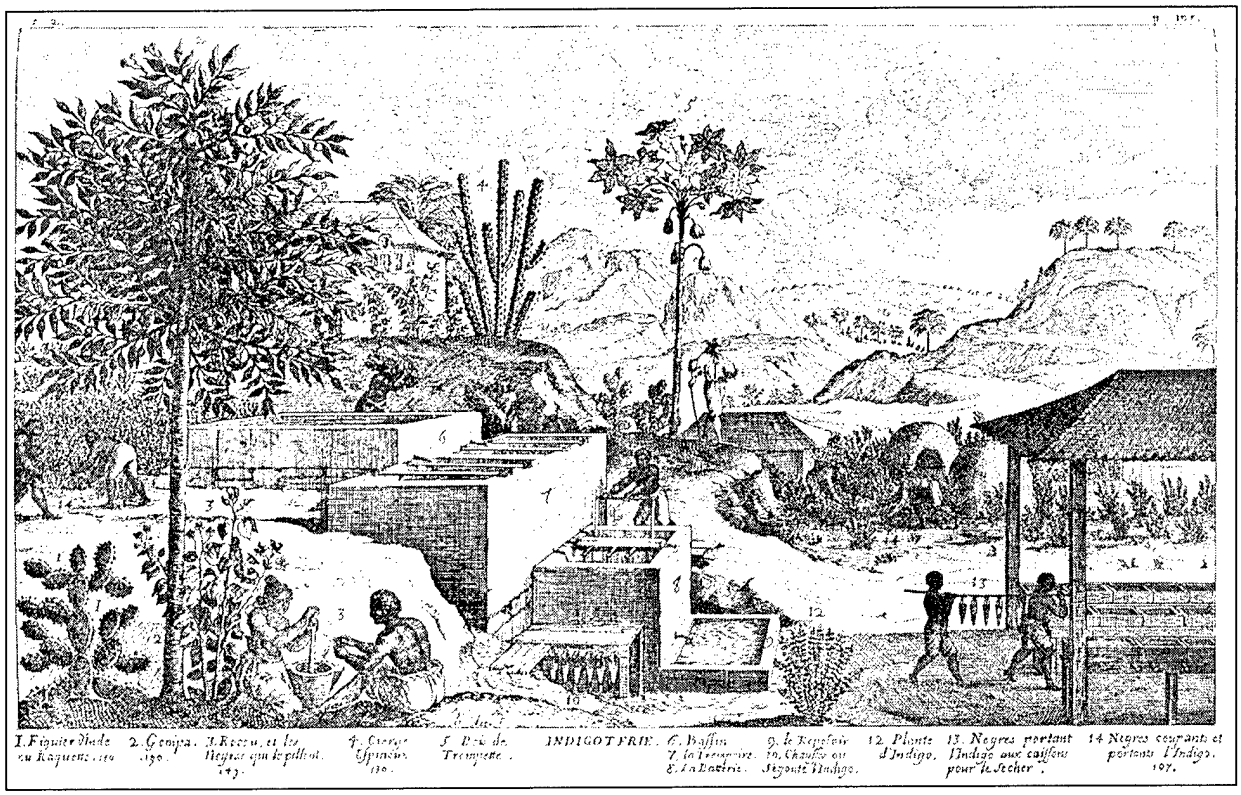

Figure 12. **This depiction of a seventeenth-century Indigotiere in the French West Indies depicts the process used in Louisiana, from Hall, *Africans in Colonial Louisiana.***

1,042 ha (2,577 ac), and 1,701 ha (4,203 ac) of land, respectively (Figure 13). It also should be noted that the Chitimacha held land positioned along both banks of Bayou Teche in the area of their present reservation, i.e., downstream from the proposed project parcel. The tribe once held an additional upriver parcel, i.e., 20 arpents front on both banks of the bayou, but they sold that parcel in 1804 to Hyacinth Bernard (Original Conveyance A-2, #455, St. Mary Parish).

The land held by Etienne deVaugine spanned both sides of Bayou Teche at Fausse Pointe, i.e., 7.6 km [4.75 mi] from the proposed project parcel. A 1773 inventory of his indigo estate, performed by a neighbor, Claude Boutté, and witnessed by other nearby concessionaires, Paul DelaHoussaye and Louis Grevenberg, documented his holding to be a good forerunner of the large slave-owning plantation system that would evolve along the Teche during the nineteenth century. Self-contained and self-sufficient, the deVaugine land housed himself and his wife (Mrs. Pelagie Petit de Livilliers, recently deceased), as well as 33 slaves. These slaves, valued *in toto* at 4,210 piastres (a silver coin roughly equal to an American dollar), were worth significantly more than the land, houses, indigo processing material, furniture and all other items included in the inventory combined, which together totaled only 2,534 piastres. As these numbers suggest, planters with either liquid capital or connections to willing creditors had a significant advantage over the subsistence farmers of the region (Dart 1926:571-577).

The value of a slave to a concessioner, both as a cash investment and in labor potential, must have made runaways a primary concern for men such as deVaugine. In addition to the slaves listed on the plantation, the inventory notes that two slaves named Jasmin and Guillaume were "fugitives for fifteen months at New Orleans and without any news of them" (Dart 1926). It seems likely that Jasmin and Guillaume joined one of the many "maroon" communities (groups of runaway slaves, African and Native American) living in the New Orleans area, such as St.

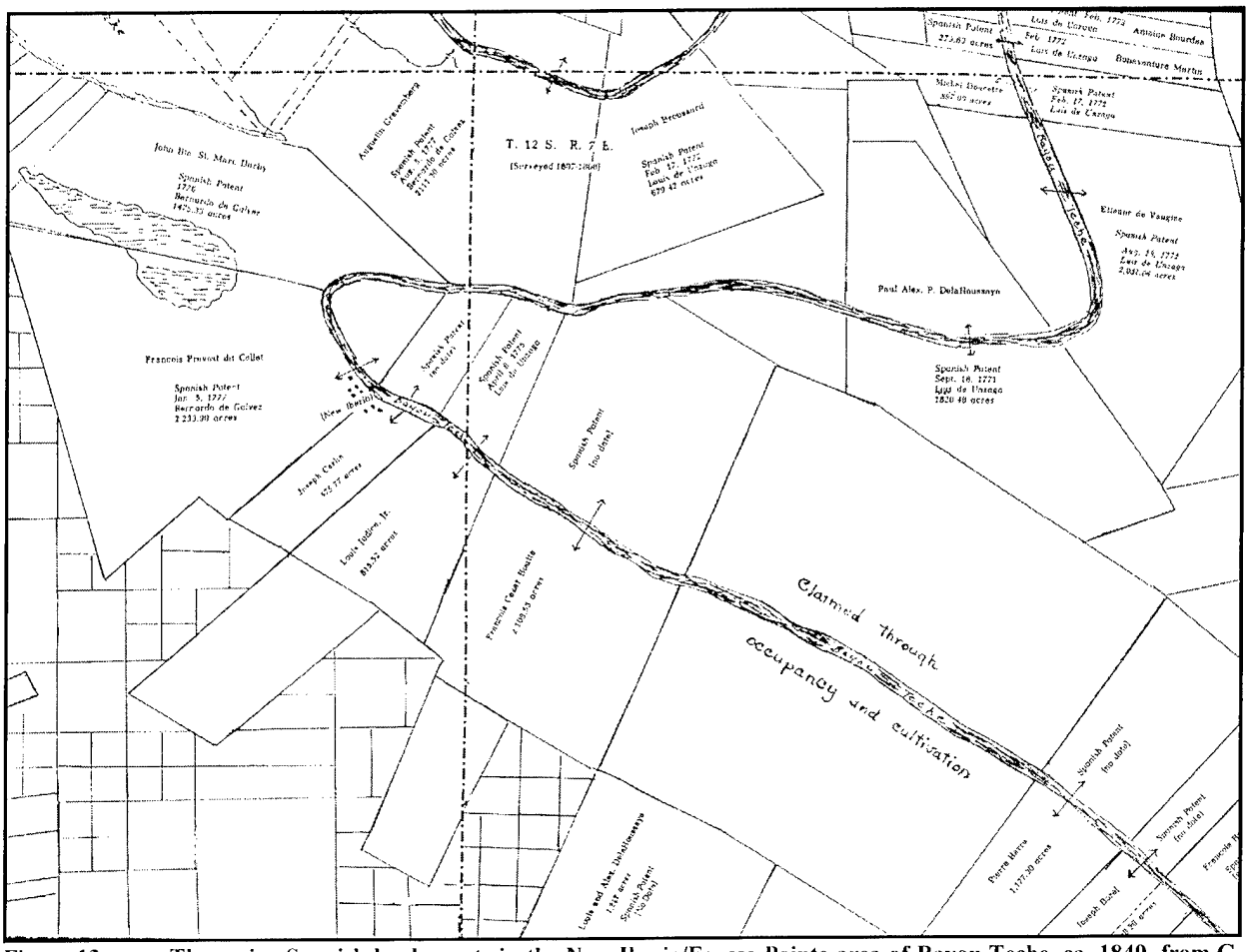

Figure 13. **The major Spanish land grants in the New Iberia/Fausse Pointe area of Bayou Teche, ca. 1849, from G. Taylor, 1980.**

Malo's community by the mouth of the river, close to present-day Venice (Hall 1992:97-99, 214). Such communities made it all the more remarkable that deVaugine trusted another of his slaves, "Big Louis," so much that he sent Louis to New Orleans to collect several debts for him.

The deVaugines' house was not remarkable by plantation standards, but it was quite elaborate for an early Teche settlement. The principal house consisted of a raised cottage on sleepers (piers); it contained three rooms. Galleries enclosed the house on two sides, allowing ventilation during the long, hot summers. The only other buildings mentioned were the two indigo warehouses. This is notable, in that no housing for bondsmen existed. Moreover, while the planter and his wife apparently shared a "walnut bedstead on roe-buck (stag) feet," as well as a feather bed and linen sheets, no provisions for slave bedding existed (Dart 1926).

A few other clues about slave life can be gleaned from the inventory. A total of two married slave couples were listed, including "Sauvier...and his lawful wife Izabelle" (Dart 1926:572). The other couple, l'Eveille "The Lively," and his wife Minerva, apparently were not married legitimately. It is interesting to note that while an able-bodied man was estimated to be worth 240 piastres and an able-bodied woman at 160 piastres, the legitimate couple, Sauvier and Izabelle, were estimated at only 300 piastres together. Evidently, a married couple, appraised together, was "worth" less, perhaps because of the limited resale possibilities of a legitimate slave couple. In addition to keeping married couples together, four bondswomen were listed with their children, suggesting perhaps that the separation of young slave children from mothers was not yet practiced on the Teche.

Except for the few large planters like deVaugine, most white inhabitants engaged primarily in livestock farming. Collectively, they owned 5,208 head of cattle, 701 horses and mules, 1,126 pigs, and 96 sheep. The small community of free people of color also raised livestock, owning 87 head of cattle, 33 horses and mules, and 45 pigs (Voorhies 1973:280-283). The preponderance of cattle reflects the economic importance of animal husbandry within the Attakapas region. Most of the Attakapas Acadians emigrated from the Chignecto region of Nova Scotia, "a sparsely wooded sea marsh and prairie that for half a century before the Grand Dérangement had supported small cattle ranches" (Brasseaux 1987:122). A description of the Chigneto beef economy concludes: "In view of their background, it is hardly surprising that the 1765 Acadian immigrants, whose leaders were drawn exclusively from the Chignecto Isthmus, selected home sites in South Louisiana's prime grasslands and immediately engaged in ranching" (Brasseaux 1987:122). The Acadians were successful, and the size of their herds increased rapidly. In addition to raising cattle, the Attakapas Acadians also farmed enough corn, cotton, and vegetables to be self-sufficient (Brasseaux 1987:122-125).

The size of the parcels claimed suggests that by the early nineteenth century farming and livestock tending had increased in scale. Indeed, major economic changes occurred during the 1790s and into the early 1800s throughout Louisiana. These changes were spurred partly by the economic failure of indigo production, the major cash crop during the colonial period. In terms of quality, indigo grown in Louisiana could not compete in the world market with indigo produced in the West Indies. Indigo also was susceptible to insect blights and it was sensitive to weather. Consequently, crop losses could be, and often were, severe. Furthermore, the crop exhausted the soil. In addition, increase in the price of slaves in Louisiana made it difficult to obtain the labor necessary for large-scale indigo production on the plantations. Finally, the terrible smell associated with indigo production attracted disease-carrying insects, and the processing of indigo polluted nearby streams (Holmes 1967:346-348). This toxicity also may have contributed to the high death rates seen among young male slaves, traditionally the age group who worked the indigo (Hall 1992:301).

Technological advances also contributed to the decline of indigo, and the subsequent rise of cotton and sugar. During the 1790s, Eli Whitney invented the cotton gin, thereby reducing significantly the time and labor involved in processing cotton. During this same decade, Etienne de Boré developed a process that enabled the commercially successful extraction of sugar from cane. In 1795, the Haitian sugar maker Morin introduced refining processes and equipment that helped to make the sugar industry profitable. As a result of these inventions, cotton and sugar rapidly became major money making crops throughout the area. Berguin-Duvallon, in his 1802 narrative on the status of agriculture in Louisiana, stated: "sugar and cotton are the staple commodities of the colony" (Davis 1806:131).

In addition to Acadian settlers, the area surrounding the project parcel and between New Iberia and St. Martinville, was settled by native French and Spanish settlers, as well as by "Creoles," i.e., settlers born in the colony to immigrant parents. Among these colonial settlers, August and Jean-Baptiste Grevemberg, François Prevost, François Cézar Boutté and Jean-Baptiste St. Marc Darby all held large land grants along Bayou Teche. Boutté, a Creole son of French concessionaires André Claude Boutté and his wife Françoise, and Prevost, a large landowner throughout the state, probably did not settle on their land grants. The Darbys, however, did build a home on their concession in 1813. John Baptiste had died by 1805, but his widow, Françoise, continued to own the large land grant, including the area just west of the Keystone Lock, though the boundaries of the plantation had changed (Figure 14) (Surveyor General's Map, October 1849). The huge house, once called Coteau, which eventually became known as Darby, faced Spanish Lake on the North end of the plantation. Noted artist Adrien Persac painted the home, cistern house, garçonnieres, and slave quarters on the eve of the Civil War (Figure 15). The structure, built with bricks, was erected by slaves on site, using large cypress timbers (National Register of Historic Places eligibility form, Darby Plantation 2000:1)

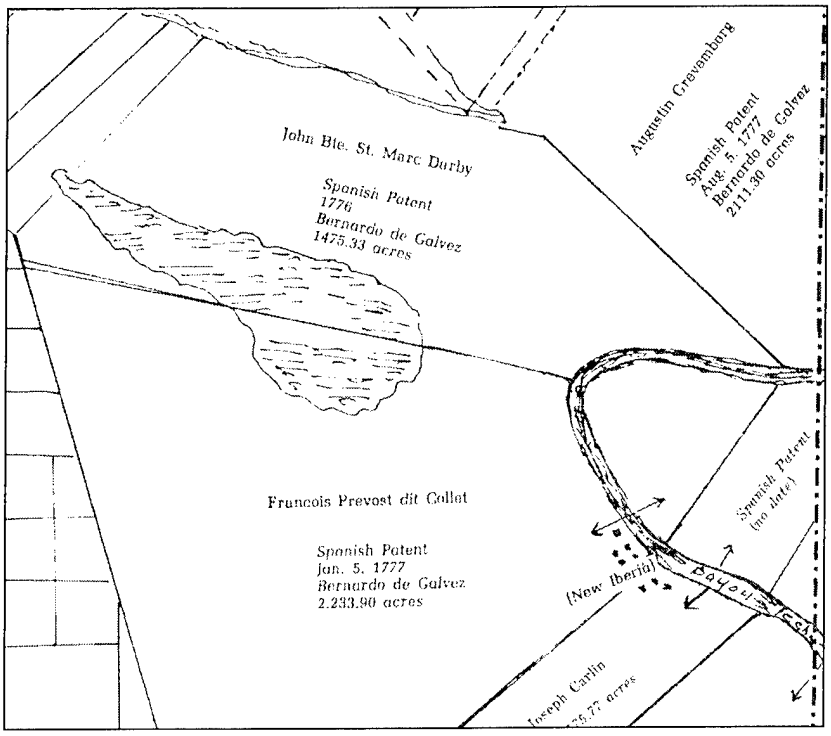

Figure 14. The Darby Plantation area, 1849, from G. Taylor, 1980.

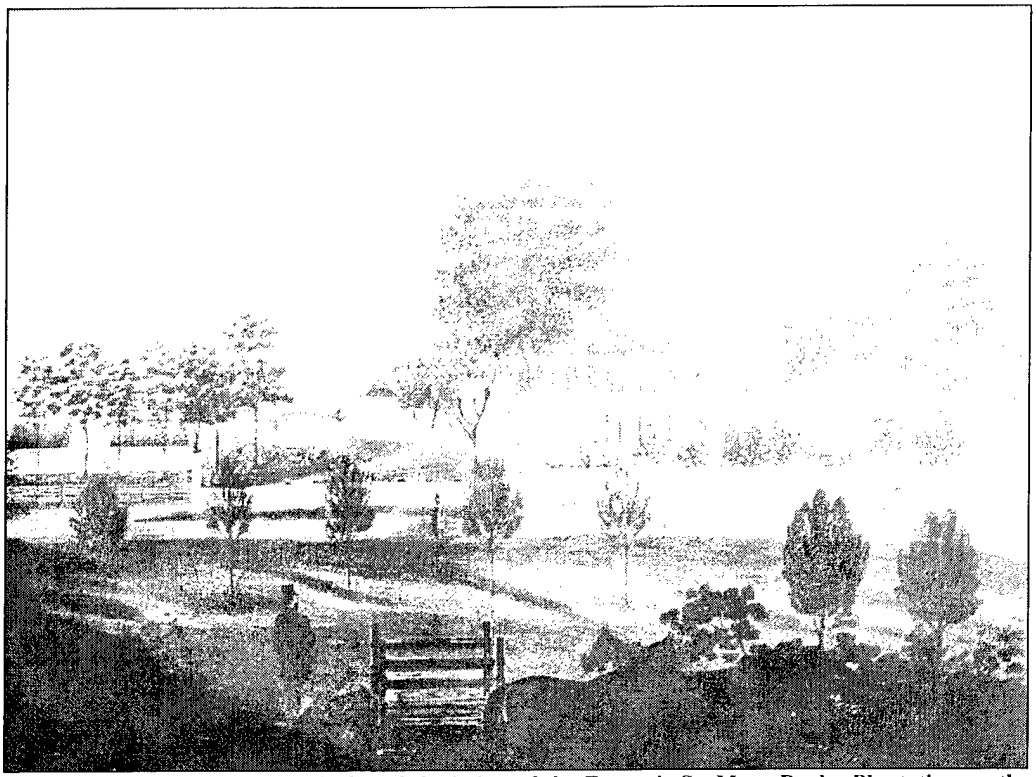

Figure 15. Adrian Persec's famed depiction of the Francois St. Marc Darby Plantation on the eve of the Civil War. Adapted from Bergerie, *They All Tasted Bayou Water.*

Darby, like most other Attakapas concessions in the early years of settlement, was first a cattle ranch; however, it had been converted to a sugar plantation by 1810. This shift to staple crop agriculture required a significant increase in labor. Conveyance records from New Orleans show that M. Francois St. Marc Darby, son of John Baptiste and Françoise, purchased 20 slaves from a slave trader in May, 1828, to meet that growing need for plantation labor (Tolle 1975:89). In 1828, Darby produced 101 hogsheads of sugar, by far the most in the St. Martinville-New Iberia area (*Louisiana Planter & Sugar Manufacturer* 1892:67). Several other concessionaires settled on their property in this immediate area, including Baron Bayard, and the prominent Olivier family. By 1819, Olivier had built, on the west bank of the Teche, "the best house . . . on the river since . . . Franklin, . . . " (Gibson 1980:74, 78).

The Founding of New Iberia

Don Francisco Bouligny established the town of New Iberia. He was commissioned to go to the Attakapas region in 1779 to establish a settlement for families from Málaga, of the Costa del Sol in southern Spain. Bouligny arrived in Louisiana with Governor Alejandro O'Reilly in 1769 and he spent several years in the colony before returning to Spain. By 1778, Bouligny returned to Louisiana as Lieutenant Governor under Governor Bernardo de Galvez (Allain 1979a:79).

Galvez instructed Bouligny to choose a suitable place on Bayou Teche to settle the Málagan families. Galvez also expressed support for bringing Irish, German, and French immigrants to the region. Surnames associated with these early settlers include Romero, Villatoro, de Aponte, Ortiz, Balderas, Lagos, Segura, and Porras (Allain 1979a:80; Bergerie 1962:9; St. Martin Parish Development Board 1950:9).

Bouligny arranged for an elaborate array of supplies for the settlers of *Nueva Iberia*. These provisions included: salt, rum, powder, bullets, shot, flints, cutter's knives, beads, cloth, work clothes, chisels, posts, shingles, two-handled knives, nails, pliers, pincers, scythes, hammers, clamps, pots, saws, drills, hatchets, cranes, axes, mortars and pestles, fishing equipment, hinges, locks, hooks, trowels, iron hoops, iron (for making hatchets, hoes, and ploughshares), chains, ropes, soap, pitch, thread, needles, chalk, files, compasses, pencils, paper, shovels, weights, manacles, pulleys, tar, shoes, sharpening stones, and a variety of specialized tools for coopers, woodworkers, and blacksmiths. The government also procured slaves for the colonists, to undertake the heavy labor of clearing the ground and for construction (Allain 1979a:81-82).

Bouligny chose a site for the settlement several miles downstream of the current town of New Iberia in February of 1779. The two families of *gens de couleur libre* who already lived at this location -- perhaps the same former slaves released by Masse and Fuselier a few years earlier, however, were removed. Bouligny wrote of his plans for settling the Málagan families:

> I intend to assign each settler six arpents of land fronting the Teche on the right bank going up for cultivation. I will also grant them six on the left bank where I will found the town and where I will leave the land in common for grazing, allowing each settler to build a fence around the land which belongs to him on that side should he wish to cultivate it (Allain 1979a:83).

By March 1779, modest huts and warehouses had been built. In addition, fields were cleared, and hemp, flax, wheat and barley were planted. By April, though, a disastrous flood forced Bouligny to abandon the site and to search for higher ground. Bouligny bought land, at the current site of New Iberia from Joseph Prevost (who was called "Colet") and he settled the Málagan families there:

> . . . I purchased from him a piece of land, thirty arpents frontage by eight arpents of depth, seven or eight leagues above my first establishment on the west bank of the Teche, out of the concession he established. I paid him 400 pesos and promised to grant him, subject to your lordship's good pleasure, two islands near the same place that he will be able to settle as he pleases, a piece of land near the same place for an orchard, and in a remote area that his cattle could reach . . . (Allain 1979b:127).

The new location apparently suited the settlers. They planted corn, rice, potatoes, and tobacco, and felled trees for use in construction (Trammell 1987:246). Royal surveyor Thomas Berviquet [Berwick] was assigned the task of planning the town site. Besides constructing the

town roads, Berwick was responsible for building the structures for the settlement:

> . . . houses for the blacksmith, the families of the Artache, Prados, Migas y Vida, and Ybañez; two houses for the Germans and two for the soldiers; and houses for Mr. Flammand and Mr. Henderson, who also had a warehouse built. They constructed a royal warehouse, a great shed in which to make bricks and lime, and a large enclosure for the oxen (Trammell 1987:246).

By 1785, there were 125 inhabitants settled along the west bank of Bayou Teche (the east bank usually was reserved for pasture). Approximately three years later, the census recorded an increase in population to 190 colonists at *Nueva Iberia* (Bergerie 1962:10-13, 27, 48).

Unlike their Málagan neighbors, Acadian settlers did not organize a significant town around a central location. Hence, St. Martinville experienced a somewhat different trajectory of development. The area settled early in the colonial area as the *Poste des Attacapas*, served as the headquarters for the French military, while the region underwent rapid development; the town remained quite small. When the Acadians arrived, the town contained "a small church, shabby barracks for the handful of soldiers garrisoned there, and a small store where the scattered settlers of the neighborhood traded" (Bradshaw 1994:39). Shortly after the Acadian immigration, a 1769 census documents a free population of 97 men and 69 women, as well as 21 male and 5 female slaves in the Attakapas region. The Acadians dispersed along the bayou, but the Church, at the time called the *L'Eglise de la Nouvelle Acadie aux Attakapas*, served as the nexus of the community.

Antebellum Era

As part of the negotiations leading to the 1803 Louisiana Purchase, Spain restored western Louisiana to France, who shortly thereafter conveyed the Louisiana Territory to the United States. On March 26, 1804, that portion of the Louisiana Purchase located below the thirty-third parallel was designated the Territory of Orleans. The following year, Orleans was partitioned into 12 counties, including the county of Attakapas, which encompassed present-day Iberia, St. Mary, and Vermilion, and St. Martin Parishes, as well as portions of Cameron, Iberville, and Lafayette Parishes. In 1807, the territorial legislature reorganized the county system, further dividing the Territory of Orleans into 19 parishes. Attakapas County was superseded by St. Martin Parish, which encompassed roughly the same territory as its predecessor. In 1811, southeastern St. Martin Parish was re-designated St. Mary Parish, which included Marsh Island and part of what later would become the southern part of Iberia Parish. The following year, i.e., on April 30, 1812, the State of Louisiana was admitted to the Union (Figure 16). Throughout this period, the proposed project tract remained in St. Martin Parish (Bergerie 1962:14-15; Davis 1971:157-164, 167-169, 176; Goins and Caldwell 1995:41-42).

The Federal Government wasted no time in surveying their new territory. They sent James Leander Cathcart and John Landreth to the Attakapas region to conduct a survey of timber resources. From their journal entries recorded during 1818-19, it may be concluded that the western coastal environs of the Attakapas country probably were uninhabited. On the higher grounds of the "salt islands" (i.e., to the south of the proposed project area) and the chenieres, settlers hunted and trapped, grazed cattle, and burned the marshes to clear ground for small subsistence farms. Away from the marshlands, larger plantations developed along the higher ground fronting the major waterways, especially along Bayou Teche (Glass 1898:18; Prichard et al. 1945; Vermilion Historical Society 1983:6).

Livestock tending continued to be a profitable industry, though cotton production became more widespread in the Attakapas region during the late eighteenth and early nineteenth centuries. Planters had experimented with cotton in the Attakapas District early during the colonial period; therefore, it is not surprising that its cultivation increased following the introduction of the cotton gin. Nevertheless, cotton, like indigo, did not surpass animal husbandry in economic importance.

During the early nineteenth century, the average yield of a superficial arpent of land (roughly 0.4 ha [1.0 ac]) was approximately 400 pounds of cotton, worth approximately $100.00. A skilled slave could cultivate three arpents of cotton (Robertson 1911:155), as compared to

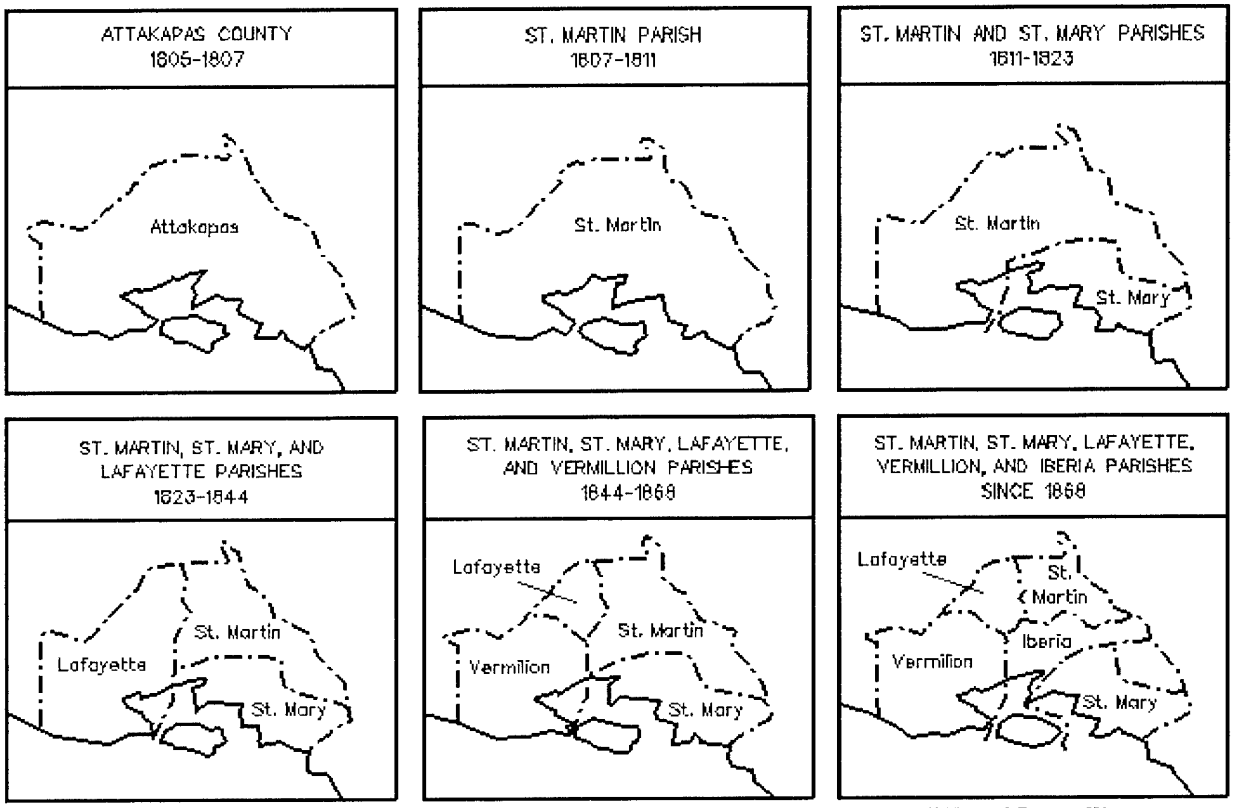

Figure 16. Divisions of the original Attakapas country. Adapted from Bergerie, *They All Tasted Bayou Water.*

two arpents of indigo. Estimates of daily cotton yields picked by an adult slave ranged from 60 pounds of cotton per day, which, when cleaned, would yield about 20 pounds of usable fiber (Robertson 1911:156), to 150 pounds picked per day (Taylor 1976:67). The yearly cycle of cotton production began with plowing the fields in late winter or early spring. Corn planting was followed by cotton, and the fields were hoed to destroy weeds. Around the Fourth of July, the crop was strong enough to be "laid by." Slaves then turned their attention to gathering firewood and harvesting corn. The cotton bolls began to open in August, and the cotton-picking season soon followed. Ginning began with the accumulation of 1,400 pounds of cotton. The cotton then was pressed into bales weighing 400 pounds each, and then they were transferred to the New Orleans market (Taylor 1976:66-67).

Development of the Sugar Plantations

Despite the continued profitability of the cattle industry and the addition of a profitable cotton industry, the tremendous success of sugar cultivation in southeastern Louisiana during the early nineteenth century eventually attracted the interest of the Attakapas planters. Although sugar was grown in the district during the late eighteenth and early nineteenth centuries, sugar agriculture has not dominated the Teche region. In 1810, St. Marc Darby was the only sugar planter situated near the present project parcel, i.e., it was located just west of the Keystone Lock and Dam property, and his holdings extended to Lake Tasse, now Spanish Lake (also known as Lake Flamand, named after the original colonial owner of the current project parcel). The transfer of the Louisiana Territory to the United States, however, and the opportunities afforded by the nascent sugar industry clearly stimulated American immigration into the area. Some incoming Americans brought large amounts of capital with them for the purpose of financing sugar plantations, which required substantial capital outlays for mills, levees, and slaves. The majority of American immigrants, however, were ambitious men who saw an opportunity to advance themselves through the

newly developing sugar industry. Land along the Teche was inexpensive; undeveloped land could be had for as little as $4.00 to $10.00 per arpent (Sitterson 1953:24).

The influx of Americans to the area largely was responsible for the shift to sugar cultivation along the Teche. Because both stock raising and cotton cultivation were profitable, there was no economic imperative to force the Creole and Acadia planters living along Bayou Teche to shift to sugar cultivation. Moreover, the capital outlays to outfit a sugar plantation far exceeded those required for a cotton plantation. According to Schmitz (1977:108), by 1860 the average investment in sugar producing machinery on a Louisiana plantation was $9,900.00. This contrasted sharply with the $830.00 average investment for equipment required to run a cotton plantation. Even in the early antebellum years, when sugar manufacturers used horse-drawn sugarhouses, rather than steam-powered houses, the investment in converting cane to crystal was high. Because of the relatively low expense of cotton production, it could be cultivated both by owners of large plantations and by yeoman farmers who worked their own land (Taylor 1976:65); however, the total investment in a sugar plantation could exceed $200,000.00 (Taylor 1976:65), making sugar cultivation beyond the reach of small farmers. The attractiveness of cane cultivation derived from around a nine percent return on the planters' investment, while the return on a cotton plantation of the same acreage was about seven percent (Taylor 1976:67).

Incoming Americans encouraged the shift to cane cultivation both by buying land along the Teche, which they then converted to sugar estates, and by demonstrating to the wealthier resident Creoles and Acadians the advantages of sugar agriculture. Additional encouragement was found in the protection of domestic sugar under the tariffs of 1816 and 1828. Finally, between 1818 and 1830 cotton prices fell sharply, which further induced planters to consider sugar cultivation. Because sugar agriculture was most efficient on a large scale, it only was a question of time before livestock pasturelands were converted to cane fields. Similarly, small farms along the Teche were purchased and consolidated into sugar estates. By 1828, there were 99 sugar plantations in St. Mary, St. Martin, and Lafayette Parishes (which then included present day Iberia and Vermilion Parishes). The following year, that number had increased to 162 (Sitterson 1953:25). By 1835, the vast majority of the plantations situated along Bayou Teche were engaged in sugar production, although small amounts of indigo still were produced as late as the early 1830s (De Grummond 1949:21).

Settlement within the Attakapas region proceeded rapidly. The soil was rich, and inland waterways such as Bayou Teche provided a convenient means of transportation. Describing the region to Americans unfamiliar with Louisiana, William Darby wrote: "Nature has been more than usually beneficient to the Attacapas [sic], the fertility of the land is excessive, and the facility of navigation is seldom exceeded. It demands comparatively but little from the hand of art, to complete the benefits of this favored spot" (Darby 1816:73). Since lands were not difficult to clear, farms could be transformed easily into plantations, and cotton farming soon gave way to sugar cane cultivation. In addition, the region abounded with valuable timber and other natural resources.

Before 1850, the majority of sugar planters were busy expanding and developing their holdings. Using borrowed capital, they purchased new lands and they acquired plantations, slaves, and equipment (Sitterson 1953:70). By the 1850s, the developmental phase had ended. The sugar plantation regime had become firmly established, dominating the economy of both St. Mary and St. Martin Parishes.

To make a sugar crop, the seed cane was planted in furrows and lightly covered with soil:

> as soon as the cane comes up generally they begin to work it with the Hows [hoes] until it gets about a foot in height they commence plowing it and generally plow it about twice and how it afterwards until it gets to about two feet in height then they let it stand until it is fit to cut if the land is good and the Season favorable it will often bear a second cutting and will produce a Saving crop the second time one hand on an average is allowed twenty three arpents or acres of Sugar cane to tend it (Gibson 1979:106; sic throughout).

In October, when the cane grew tall enough for harvest, field hands cut the stalks:

> The slaves who did the cutting used special cane knives, basically machetes with a hook on the end. Cane cutters are a rare sight today, but men and women skilled at this work developed a rhythm and economy of motion that might aptly be compared with a ballet. Seemingly never halting the movement of the knife, they lopped off the tip of the cane, stripped the blades away, and cut the stalk down as close to the ground as possible, knowing well that the last joint held the most sugar. Other workers, practically all of them slaves, gathered the cane and loaded it on the ubiquitous two-wheeled carts: they then hauled it to the sugarhouse (Wall et al. 1984:157).

During the antebellum era, sugar planters did not utilize centrally located mills or refineries. Every sugar cane plantation had to be both farm and factory, necessitating the construction of a sugarhouse, regardless of the size of the plantation (Roland 1957:3). Thus, sugar cane cultivation and sugar production favored the larger planters who could afford to construct and maintain a sugarhouse. At the sugarhouse, the cane was processed into brown sugar, and the molasses was drawn off. Hogsheads then were filled with the wet sugar. To market a sugar crop, a planter had several options. He could ship it down Bayou Teche for sale in New Orleans; "he could sell it from his plantation wharf to the various sugar merchants assigned to buy for northern markets;" or, he could sell it to a speculator (Broussard and Broussard 1955:11; Wall et al. 1984:157-58).

Although in the early years of the antebellum period, much of the riverine traffic could travel as far up the Teche as St. Martinville, by the 1840s, the true commercial endpoint of the stream was New Iberia. As the region developed, and larger quantities of crops had to be moved to New Orleans for sale, the ships required for commercial transportation grew larger. Unfortunately for St. Martinville, many steamers could not navigate the obstacles that blocked the channel near what is now the Keystone Lock. Hence, flat boats were used for commercial transport in the upper Teche region. This development resulted in New Iberia becoming the "real terminus of deep water navigation on the Teche . . . these steamers, not being able to ply above New Iberia landed their large cargoes, destined for all points south and west on the Vermillion and Calcasieu at New Iberia" (Bergstresser et al. 1997:19-20; Conrad 1986:73-113).

Bayou Teche was the most significant waterway in the lower Attakapas in terms of sugar cultivation. Before the Civil War, the average price of land along Bayou Teche had risen to $16.00 per arpent of improved land, while some parcels sold for as much as $30.00 to $40.00 per arpent. Unimproved first quality lands often sold for $10.00 per arpent. Land of lesser quality, as well as government lands, could be acquired for prices ranging from $2.00 to $10.00 per arpent inland (Gibson 1979:107).

The wealth of the local planters increased rapidly as a result of sugar agriculture. With improved transportation, both necessity and luxury goods became more readily available. The acquisition of imported goods helped to transform Bayou Teche from the frontier region described by Landreth and Cathcart in 1819, into a comfortable, visibly prosperous area. Planters abandoned their former adobe dwellings, and built larger plantation houses. Even these newer houses, though, were generally less than pretentious. Many of the plantation great houses were simple, raised cottages.

Other structures usually found on residential plantations included a kitchen, offices, garconnieres, pigeonniers, and carriage houses. The overseer had his own house, and the slaves lived in spartan one or two-room cabins set in rows. Often there was a separate kitchen for the slaves' use (Sitterson 1953:92). Barns, stables, storage sheds, and privies also were found on most sugar plantations. The major industrial structure and the major investment on a sugar plantation was the sugarhouse. During the early nineteenth century, these structures generally were made of wood. By 1850, however, many of the sugarhouses were constructed of brick. In addition, some of the former gin houses situated along the Teche had been converted into sugar mills (Richardson 1886). Sugarhouses generally measured 30.5 to 45.7 m (100 to 150 ft) in length by 15.2 m (50 ft) in width (Sitterson 1953:137). During the earlier years of the industry horses powered the mills, by the eve of the Civil War, most sugar works in St. Mary Parish had been converted to steam power.

The mill pressed juice from the cane. The mill normally was housed within the sugarhouse,

but some detached structures also existed on Louisiana plantations (Goodwin et. al. 1985:43). The most common method of cane juice clarification and evaporation was the open pan method. This method used a set of four kettles of decreasing size called, respectively, the grande, the flambeau, the syrup, and the battery. The kettles were set into a masonry structure usually about 9.1 m (30 ft) long by 2.1 m (7 ft) wide, within which was a furnace and a flue for conveying heat to the kettles. The furnace was located under the battery, and an ash pit would have been located outside of the sugarhouse, adjacent to that structure. Both coal and wood were used to fuel the furnaces. The flue, positioned at the opposite end of the kettle set, would have been turned at a right angle to the set and passed to the outside of the sugar house, where it connected to the chimney (Sitterson 1953:141).

Furnishings on plantations often were simple, but usually a house contained a large number of chairs for entertaining large groups (De Grummond 1949:29-33). F. D. Richardson, the builder of Bayside Plantation, provided a description of an elaborate gathering at Nicolas Loisel's plantation (situated just a few miles below New Iberia) ca. 1836. He wrote:

> The feast began in earnest with their far-famed Creole dish, not national, but state souvereign, gumbo, of African descent. I did not count the courses, they were "distinct as the bellows, yet one as the sea," and each bellow was enough to drown a common appetite (Richardson 1886).

The nascent sugar aristocracy was divided, however, into distinct Creole and American groups:

> Very few of the Creoles of that day spoke English, or spoke it very imperfectly, which was no doubt the main cause of the little social intercourse there was between them and their American neighbors, planters of the same social position who settled among them (Richardson 1886).

The leading Creole planters along the Teche were Colonel Charles Olivier, M. DelaHoussaye, Mr. Malus, Nicholas Loisel, St. Marc Darby, Dr. Solange Sorrel (who later was murdered by his slaves), Frederic Pellerin, and Charles Pecot. American planters of similar social and economic standing included Thomas H. Thompson, Colonel J. G. Richardson, Judge Moore, D. Bonin, J. W. Jeanerette, and William Weeks (Cayton 1881:85-87; Richardson 1886). Thus, by the late 1830s, sugar agriculture had created a plantocracy along the banks of Bayou Teche that was similar to the society along the Mississippi River (Figure 17).

There were 613 ha (1,515 ac) in cane cultivation in St. Mary Parish in 1824; during that year, the crop yielded 1,586 hogsheads of sugar; it was collected and processed by 644 slaves. The next year, 204 ha (504 ac) were added to the total acreage planted, with a total harvest of 2,254 hogsheads. By 1828, there were 74 sugar producers in St. Mary Parish, harvesting a total crop of 4,528 hogsheads (Broussard and Broussard 1955:3; Degelos 1892:67).

Although not as prosperous as St. Mary Parish, adjacent St. Martin Parish also experienced growth in sugar agriculture during the antebellum years. In 1828, there were 19 sugar producers in St. Martin Parish, with a total sugar crop of 1,684 hogsheads. Just one year later, the parish counted 46 sugar producers; however, the yield had dropped to 1,486 hogsheads. As new planters had to weather a growing season Although most of these St. Martin Parish planters held title to plantations located along Bayou Teche, three men, David Weeks, John C. Marsh, and John Hayes, began to develop Weeks and Avery Islands, two of the south Louisiana "salt islands," positioned just to the southwest of the proposed project area (Degelos 1892:67).

St. Mary Parish led the state in cane production during the 1850s. During that decade, however, two harvests (1853 and 1857) suffered from adverse weather conditions: in 1853, the parish crops were affected by the continuing consequences of a severe freeze and snowfall, and a few years later, an August 1856 a hurricane disrupted parish sugar production for 1857. St. Mary Parish rebounded the following season, though, when planters produced 44,634 hogsheads of sugar (Broussard and Broussard 1955:11; Champomier 1857:v-vii; De Grummond 1949:37, 43).

The slave population in St. Mary Parish served as an indicator of the dominance of the plantation economy throughout the region. During the decade of the 1850s, the population of the parish grew from 13,697 inhabitants in 1850, to

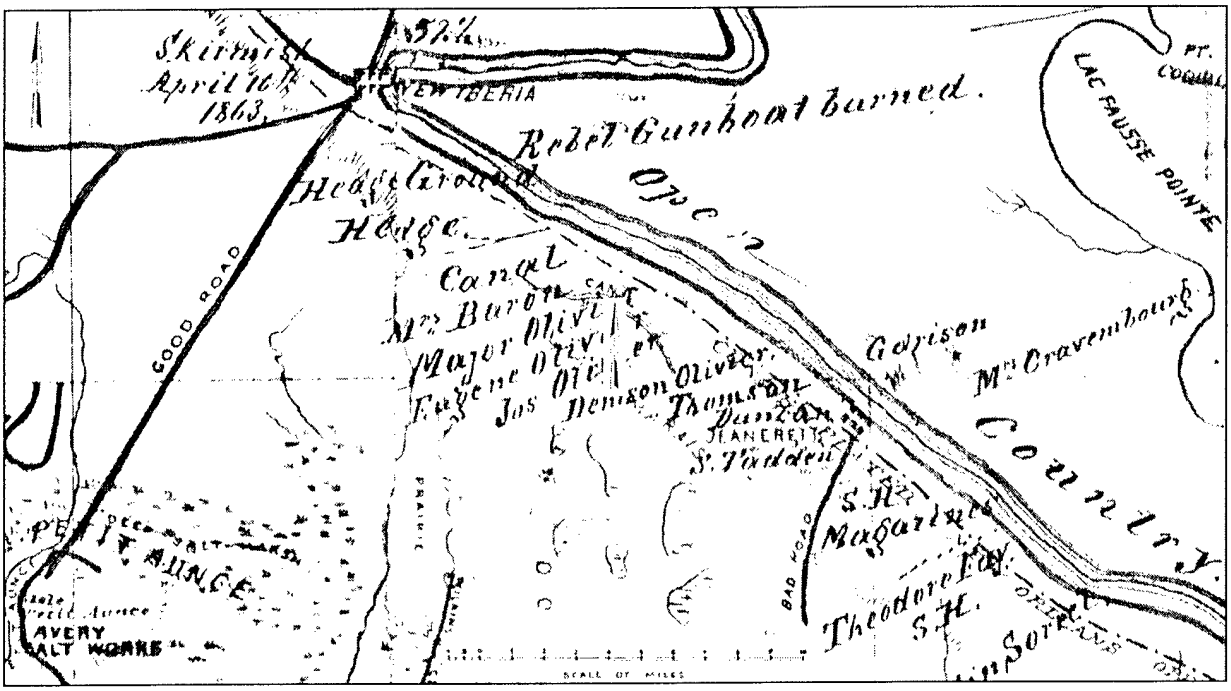

Figure 17. **[1863] Adaptation from Abbot's Department of the Gulf, Map No. 8, Atchafalaya Basin, prepared by Order of Maj. Gen. N. P. Banks. Excerpt depicts plantation owners downstream of New Iberia, as well as Petite Anse Island and Camp Bisland.**

16,816 in 1860, an increase of 3,119 people, only 85 of whom were white. The rest of the population growth in the parish came from the addition of slaves; in 1850, the slave population had numbered 9,850. By 1860, it had risen to 13,057. The white population remained stable, numbering 3,423 in 1850 and 3,508 in 1860. Only the free black population declined during this period, from 424 in 1850 to 251 in 1860 (Broussard and Broussard 1955:4).

As a result of the increase in slave labor, and the shift in slave control under the American government, slave communities underwent dramatic changes during the antebellum period. As plantations grew in size, slave communities expanded. By early in the nineteenth century, the slave population held a significant majority in St. Mary Parish. Planters increased slave control, dispensing harsher punishments for smaller infractions. Louisiana, along with most other Southern states, passed laws prohibiting private manumissions and slave education. Fewer slaves were allowed to develop artisan skills, and even fewer were permitted to travel freely, as deVaugine's charge "Big Louis" had done just a few years earlier.

On the eve of the Civil War, the majority of the planters in the region had converted their sugar houses from horse to steam power (De Grummond 1949:44), and harvests were measured in hogsheads. The contemporary chronicler of the sugar crop, Champomier, wrote in 1857: "It is well known that our planters do not make hogsheads of the same size, and there is a wide margin in some of them"; nevertheless, he estimated the average hogshead contained 1,150 pounds of sugar (Champomier 1857:43).

Just before the war, the proposed project area was dedicated entirely to sugar planting. Included among the upper Bayou Teche properties were Jonas Marsh's Marshfield Plantation owned and operated by Jonas Marsh; the Deblanc/Delacroix, Dubuclet, and François Darby sugar plantations, located upstream from New Iberia (and probably including the current proposed project area); and the St. Marc Darby Plantation, sometimes called St. Maur's Plantation. Below New Iberia were the Bayard property, which apparently became known as Mintmere; the Mestoyer [sic] Plantation; and Hawthorn Plantation of S. O. Nelson (Bergerie

1962:24-47; Champomier 1844-1860; Glass 1898:18; La Tourrette 1845, 1853; unidentified surveyor ca. Civil War).

Riverine Transportation

Throughout the antebellum period, riverine transportation formed the primary means of travel throughout the Attakapas region, including the vicinity of the proposed project parcel. The use of numerous lakes and bayous impeded development of overland routes between the district and the Mississippi River. While local traffic utilized a public road that followed the west bank of Bayou Teche (Conrad 1979), travel and commerce over long distances was dependent on the successful navigation of Bayou Teche.

During the early nineteenth century, commerce in the Attakapas region was focused on the production of beef, vegetable, and agricultural products, and on the distribution of these goods to New Orleans. Many of these products required rapid transportation to prevent spoilage during shipment. In response to this transportation need, commercial vessel routes between the district and New Orleans, via the Teche and the Mississippi River, were established beginning in the late 1810s. These routes initially extended from Bayou Teche, through the Atchafalaya Basin and Bayou Plaquemine, to the Mississippi River. Various steamers, including the 217-ton cattleboat, the *Volcano*, and the 48-ton *Louisville*, were used to transport agricultural commodities produced along the Teche. By the 1840s and 1850s, such steamboats as the *St. Helena*, the *Kentucky*, the *St. Mary*, the *Judge*, the *McLean*, and the *Billow* traveled frequently along the Teche (Goodwin et al. 1985). Low water levels, however, generally made them impassible during the summer and fall months. A few vessels, such as the *Teche*, transported goods to New Orleans via the Gulf of Mexico, although numerous snags along lower Bayou Teche hindered navigation to the Gulf, resulting in high operational costs (Brasseaux 1979).

Despite these problems, as early as the Cathcart and Landreth expedition in 1819, the schooner *James Lawrence* made regular trips from New Orleans, along Bayou Teche, as far upstream as New Iberia. By 1821, the Attakapas Steam Boat Company had constructed the 295-ton steamer, the *Teche*, and monopolized steam navigation on the bayou. High operating expenses and frequent snags, however, led to the failure of the firm in 1825 (Conrad 1979:211; Goodwin et al. 1985). Increased agricultural production required improved transportation, and in 1825, 40 planters donated $1,200.00 each to clear Bayou Teche for steamboat navigation between St. Martinville and New Iberia, thereby extending the route further upstream, the monies also were used to keep the lower Teche route navigable (Goodwin et. al 1985:41).

The completion of the New Orleans, Opelousas, and Great Western Railroad Company spurred riverine commerce and travel along Bayou Teche in 1857. The railroad ran between Algiers, situated across the Mississippi River from New Orleans, and Brashear City (modern-day Morgan City), located at the mouth of the Atchafalaya River. This 129 km (80 mi) long rail link with New Orleans permitted rapid, reliable transportation of passengers and cargo from the plantations along Bayou Teche to New Orleans on a year-round basis. This resulted in a considerable increase in the volume of cargo carried by steamers down Bayou Teche from St. Martinville and New Iberia to the railroad depot in Brashear City. The rail link proved so successful, that during the same year, 45 prominent St. Mary Parish planters and merchants petitioned the general assembly to erect a dam across Bayou Plaquemine to inhibit flooding of the new tracks (Brasseaux 1979; Millet 1983).

Establishment of the Avery Island Salt Mine

Ironically, other than sugar, the only major commodity available in the region was salt. Avery Island is part of southern Louisiana's "Five Islands," a chain of coastal salt domes that roughly parallel the west bank of Bayou Teche, some 13 to 19 km (8 to 12 mi) below the waterway. In descending order, these land formations are known today as Jefferson Island, Avery Island, Weeks Island, Côte Blanche, and Belle Isle. The upper three "islands" are located in present-day Iberia Parish; the southeastern two can be found in St. Mary Parish. Avery Island was the only one of the five "islands" to commercially produce salt during the nineteenth century (Chisholm 1952; Hansen 1971:8-9). Salt was a crucial preservative used throughout the eighteenth and nineteenth centuries, to prepare meats and fish. With no means of refrigeration

to extend the viability of these staple foods, curing meat with salt was the only option. As such, it was a very desirable and valuable commodity.

During the antebellum period, Avery Island was known as Petite Anse Island, and it probably was named for Bayou Petite Anse ("Little Creek"), which ran southwestward to Vermilion Bay. It should be noted that Petite Anse Island was called various names, including Thomas Island, Salt Island, and Marsh, or Marsh's, Island, until it finally became known commonly as Avery Island. Early settlers on the island included John Hayes, Jesse McCaul, and John Craig Marsh, all of whom arrived there during the Spanish colonial period. Not only was Marsh the man who made the first serious efforts at salt extraction, but he also was the progenitor of the family that remains associated with Avery Island to the present day (Chisholm 1952:175; Hansen 1971:428; Lonn 1933:32).

Brine springs had been discovered on Petite Anse Island during the previous century, ca. 1790 - 1791, by early settler John Hayes (Native American use of the springs apparently ended prior to historic discovery). Salt production first began at Petit Anse strictly as a household operation, i.e., buckets of briny water were boiled down for the salt residue. During the War of 1812, property holder John Marsh constructed a salt extraction plant near the springs (for U.S. military supply); however, it never was exploited fully and the operation was shut down shortly thereafter. The outbreak of the Civil War motivated subsequent landowner Judge Daniel D. Avery (son-in-law of John Marsh) to revive the salt operation to help support the Confederate cause (Chisholm 1952:176-179; Lonn 1933:32-33; Meek and Gulledge 1986:4; Raphael 1976:54-55).

The Civil War

In late 1862, war descended on the Bayou Teche region, bringing disruption and death to families, turmoil to fields, and devastation to homes, crops, sugarhouses, plantation outbuildings, bridges, and vessels. The Teche Campaign, undertaken during the spring of 1863, was planned as part of the Federal strategy to split the Confederacy by gaining control of the lower Mississippi River. Union command of the western tributaries of the Mississippi River was considered necessary to the success of this objective. In addition, Federal occupation of the Teche country would help terminate the southwestern Louisiana supply line that connected Texas and the Attakapas region to the Confederate forces situated east of the Mississippi River.

Due to its proximity to the Avery Salt Works on Petite Anse Island, St. Martinville and New Iberia were important strategically to both Confederate and Union forces. The resulting skirmishes and looting throughout the St. Martinville-New Iberia area was part of a large campaign to control the riverine traffic in the Atchafalaya River Basin. The Confederate gunboat *Stevens* (formerly called the *Hart*) was burned and scuttled 3 km (2 mi) below New Iberia in order to obstruct Union passage up Bayou Teche; however, both the town and the salt mine fell to Federal troops during April of 1863, cutting off an important supply of salt, and therefore meat, to the Confederacy (Davis 1971:256-257; Raphael 1976; Winters 1963).

The Battle of Bisland or Bethel's Place

The Confederates had established a position known as Camp Bisland on Bayou Teche, downstream of the proposed project area, i.e., just outside of Franklin, Louisiana. The camp was located on a plantation owned by Dr. Thomas Bisland and on Ricohoc Plantation, owned by William T. Palfrey. When a Federal force led by General Nathaniel Banks began an invasion up the Teche, the Confederates and Federals clashed primarily on the Bethel plantations.

According to a military historian, the Confederates had built:

> between Pattersonville and Centreville . . . a line of simple breastworks across the narrow necks of dry land which extended on both sides of the Teche. Impenetrable cypress swamps and canebrakes flanked the short line on either extremity, and a strong redoubt served each side as an observation and command post. Along the Teche, which ran through the right center of the Confederate line, fields of knee-high sugar cane, laced with deep drainage ditches, stretched on either side back to the swamps (Winters 1963:223-224).

The battle, which took place on April 13, 1862, consisted of a powerful artillery duel combined with short forward infantry movements. When heavy fog lifted at 10 a.m., Federal infantry advanced on Confederate positions along both banks of the bayou.

On the right bank, the 75th New York and the 114th New York infantries moved to the far left in an attempt to flank the Confederate right. The New York troops twice tried to break through the Confederate lines but each time they were held in check. At 3 p.m., the Confederates positioned along the right bank began a counterattack. Startling the enemy with rebel yells, General H. H. Sibley and the Texas Brigade attempted a flanking movement through the canebrake. The Texans fought the New Yorkers in the soft swampland. Unable to see each other or strike directly, each side fired in the general direction of its enemy, without producing significant results. By nightfall, the Federals were preparing for a general assault along the entire Confederate works along the right bank. Nevertheless, for strategic reasons, the Confederates that evening withdrew quietly and effectively from all their positions before Camp Bisland, on both the right and left banks. The Federals realized, too late to pursue, that the enemy had abandoned the breastworks (Winters 1963:223-226).

Military Engagements along the Bayou Teche During the Civil War

Because New Orleans was the south's largest city, and the controlling port of the Mississippi River, it, and regions that supplied it, became targets of Union assault. Federal troops successfully took over New Orleans in April of 1862.

In the autumn of 1862, Union forces attacked Confederate troop concentrations in western Louisiana. Brashear City (Morgan City) was occupied in early November of 1862, and it became the base of operations for Federal forces in the Bayou Teche region. Franklin was used as the staging area for the three Union offensives (April 1863, October 1863, and March 1984).

In early 1863, federal troops, commanded by General Grover, were transported by steamers up Grand Lake and to a landing near Irish Bend. They were instructed to march to Bayou Teche, seize the plantation bridges across the bayou and then advance to Franklin. One of Grover's vessels, the *Arizona*, ran aground at Cypress Pass (Raphael 1975:103). The Union drive at Irish Bend had been arrested, and Rebel troops withdrew toward Franklin while the Confederate gunboat *Diana* provided covering fire. The withdrawal of the Confederate Army from Irish Bend in April, 1863, resulted in the loss of the remaining Confederate vessels on Bayou Teche: the gunboat *Diana* was blown up along with eight other vessels that either were burned or scuttled (Raphael 1976:117) (Figure 18).

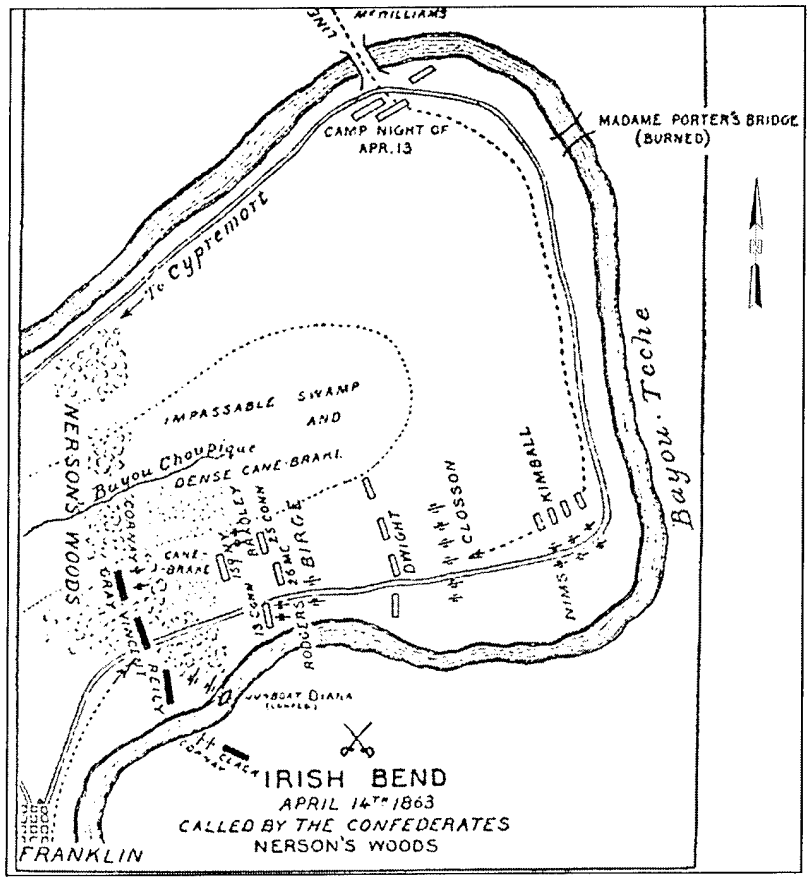

Figure 18. **Excerpt from Irwin's 1893 map *Irish Bend*, in Raphael's *The Battle in the Bayou Country*.**

Military engagements during the Civil War in the Bayou country, after the fall of New Orleans in May 1862, left the banks and channel of the Teche strewn with wrecks. The consequences of war left the Teche hampered with obstructions that impeded trade, transportation, and communication through the main water artery throughout the region. After the war, the U.S. Army Corps of Engineers was assigned the task of reopening Bayou Teche (Wilby 1991:1).

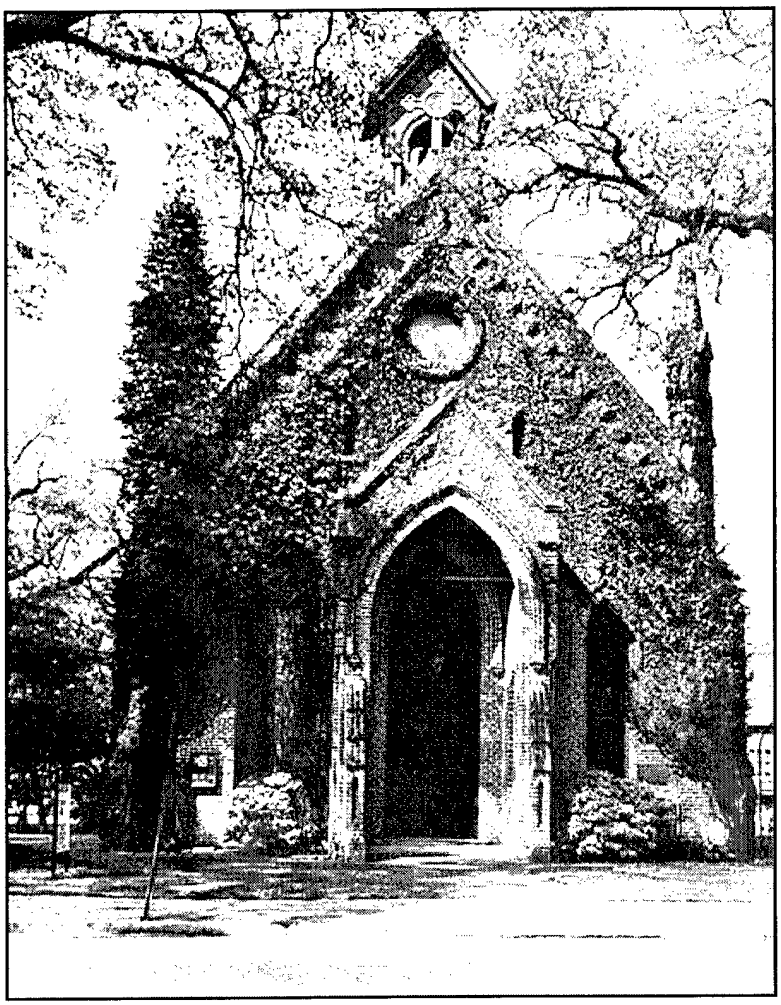

Figure 19. **Modern picture of the Episcopal Church of the Epiphany, which Union troops used as a prison during the Federal occupation of New Iberia. From the Louisiana National Register of Historic Places, www.crt.state.la.us.**

The Teche Campaign and the Federal Destruction of the Avery Salt Works

The Teche Campaign had a significant effect on the area around St. Martinville and New Iberia. Several skirmishes took place just outside the New Iberia town limits, as both sides scrambled for additional rations and provisions. The city housed a packing plant, which cured meat for the Confederate troops. In addition, Governor Thomas Moore opened a workshop where workers tanned leather, made harnesses and built cartridges and wagons. Confederate General Taylor established Camp Pratt in the town, and he immediately enforced the Conscription Act, drafting all men from 18 to 35. The stronghold did not last long. New Iberia fell to the Federals in early April of 1863. They placed over 150 residents under arrest, holding them in the Episcopal Church before moving them to Franklin (Figure 19). According to local tradition, the scuffmarks can still be seen on the old pews from the Union horse hooves. Union troops used the town as their headquarters for the campaign to destroy the Avery Salt Works (Bergerie 1962:20-21).

Salt was of primary importance to the Confederacy; although used as a seasoning and a chemical agent, it also was vital for preserving meat, maintaining healthy livestock, and tanning leather. With the fall of New Orleans and the coastal blockade of Louisiana, the South lost its chief port for salt shipped from its major supplier, England (Lonn 1933:13-18; Raphael 1976:54). Southerners became so desperate for a meat preservative that "They were collecting salt by going into smokehouses and taking the drippings from the sides of pig and beef, using the dirt that absorbed those drippings and mixing it with water to put on the meat" (Schweid 1980:60).

The outbreak of the Civil War motivated Petite Anse Island landowner Judge Daniel D. Avery to revive the salt operation to support the Confederates. On May 4, 1862, slaves on the Avery plantation discovered an enormous vein

of rock salt, the first such discovery in the continental United States. Judge Avery accelerated the development of the mine and contracted with various Southern states to provide them with salt. The Avery Salt Works produced an estimated 22,000,000 pounds of salt for the Confederacy between May of 1862 and mid-April of 1863 (Chisholm 1952:176-179; Lonn 1933:32-33; Meek and Gulledge 1986:4; Raphael 1976:54-55; Winters 1963:232).

A Confederate report dated November 9, 1862, noted that defensive measures should be taken regarding "the rich district bordering on the Teche, including the salt mines on Marsh Island, of incalculable value to the Confederacy" (U.S. Secretary of War [*OR*] 1886:15:175). The Federal command soon realized the importance of the Avery Salt Works to the Confederacy and it set about employing measures, first, to stop the salt shipments and, second, to end the salt-processing operations altogether. Although the Union blockade initially was a hindrance to salt transports from Petite Anse Island, Confederate forces quickly found a "back door" to their strongholds. From Bayou Teche, the salt shipments were conveyed to the Atchafalaya River, then over land to Alexandria and to the Red River, where they were loaded on steamboats for transport to the Mississippi River and on to Port Hudson, Vicksburg, and other Southern-held ports. In anticipation of a Union attack, two infantry companies and an artillery unit were placed both on Petite Anse Island and on Bayou Teche (Chisholm 1952:179; Hansen 1971:428; Lonn 1933:34; Raphael 1976:55-56).

In mid-November 1862, General Benjamin Butler, in charge of Federal troops in Louisiana, ordered the destruction of the Avery Salt Works. As a result, two Union gunboats and a transport steamer approached Petite Anse Island from the Gulf of Mexico, through Vermilion Bay, and up Bayou Petite Anse (Figure 20). As soon as news

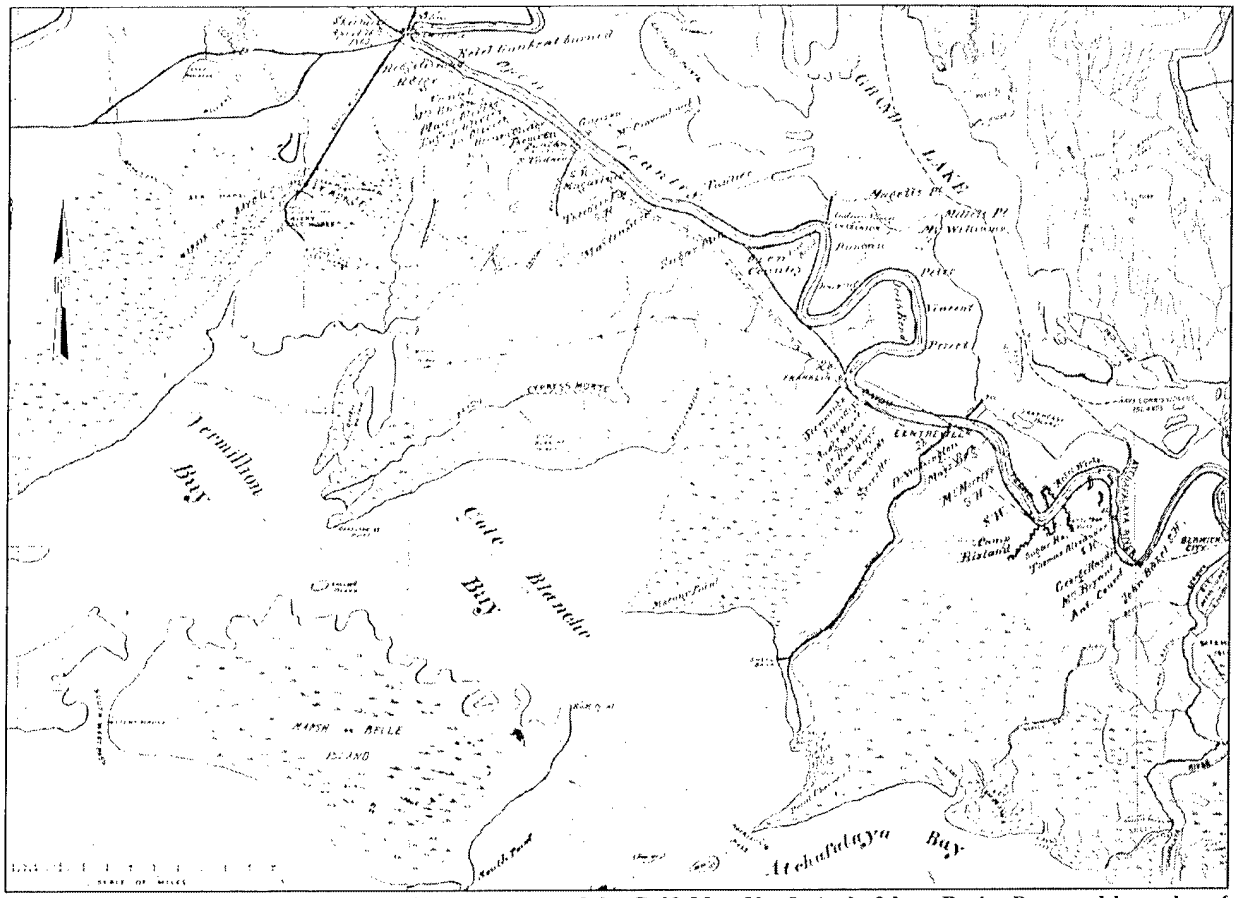

Figure 20. **Adaptation from Abbot's Department of the Gulf, Map No. 8, Atchafalaya Basin, Prepared by order of Maj. Gen. N. P. Banks. Excerpt depicts location of Petite Anse Island and Camp Bisland.**

of the Federal naval movement was reported, Confederate forces were dispatched from Camp Bisland on Bayou Teche to intercept the Federals. On November 21, Captain T. A. Faries' and his Louisiana Artillery engaged the enemy at the lower end of Petite Anse Island, within sight (but out of howitzer range) of the gunboats positioned at the mouth of the bayou. The Federal forces retreated to their vessels and returned via their previous route. While the wind had aided their approach to Petite Anse Island, it worked against them during their retreat, creating a low tide that grounded the three boats for 15 to 20 days (Hansen 1971:428; *OR* 1886:15:1088; Raphael 1976:60-61).

Federal forces at last succeeded in destroying the Avery Salt Works on April 18, 1863. Colonel William K. Kimball arrived early that morning with his New England troops to discover that the Confederates had abandoned the facility (Raphael 1976:137; Winters 1963:232). In his report, Colonel Kimball described the scene as follows:

> I . . . found the enemy had evacuated his works and removed his guns. I proceeded at once to destroy all the buildings, 18 in number, connected with the saltworks, steam-engines, windlasses, boilers, mining implements, and machinery of all kinds; also 600 barrels of salt, ready for shipment. About one ton of powder and one ton of nails, found in the magazine, I caused to be transported to New Iberia . . . . The bomb-proof magazine connected with the fortification I caused to be blown up and the works destroyed, so far as they could be with the means at my command (*OR* 1886:15:382).

As the structures went up in flames, the Federals flooded the salt mine and ruined the Avery sugar plantation and grounds (Meek and Gulledge 1986:4; Schweid 1980:60). Following the destruction of the Avery Salt Works, the vicinity of the current project parcel remained relatively quiet through the end of the Civil War.

Postbellum Era

The years following the end of the Civil War were difficult for southern Louisiana. The economy throughout the state had been destroyed; plantations and farms, railroads and levees, businesses and homes all had been affected by the war, both physically and financially. The emancipation of slaves, which accompanied Federal victory, not only destroyed the plantation labor system, but it also eliminated the millions of dollars planters in the region had invested in human bondage. According to one authority, abolition swept away one-third of Louisiana's wealth (Winters 1963:428). The postbellum period proved to be an era of recovery for the entire state.

Historians suggest that, in many ways, Louisiana during the war was an experimental model for postbellum Reconstruction. In fact, as noted above, the Union soldiers and occupation government had many choices to make regarding the status and role of freed African Americans during the period of control in the Pelican State. Louisiana did prove to be a sticky constitutional model, given its specific exemption from the Emancipation Proclamation. In 1863, a new state debate emerged between the "radical" reformers and the Planters, over the legitimacy of the 1852 constitution, which included all the provisions protecting slavery. The Planter party argued that since the state had been exempted from emancipation, slavery remained legal in Louisiana, and, hence, the old constitution remained valid. By November of 1863, Lincoln openly advocated a new constitutional convention, which he hoped would independently endorse emancipation. The next month, Lincoln announced his "ten percent" plan for Reconstruction, whereby when one-tenth of the voting population of any Confederate state swore an oath of allegiance to the United States, a new state government could be formed (Ripley 1976:159-162).

The Planter party agreed to ratify the Emancipation Proclamation, but argued forcefully for the reinstitution of all other aspects of the 1852 constitution. This calculated concession on the part of the planters was designed to keep the franchise solely in the hands of the white minority. Knowing, at this point, that the South was losing the war, and that some form of restructuring would be required of them, Louisiana planters sought to retain their monopoly on government by prohibiting any form of African American suffrage. The radicals, meanwhile, furiously registered African Americans throughout the state, in anticipation of some form of

suffrage. Many of these men, such as free man of color P.B S. Pinchback, were veterans of the war and still commissioned. They argued that if the franchise was refused to them, certainly they should be exempted from the draft as well (Ripley 1976:164)

Lincoln's military commander, General Nathaniel Banks, intervened in the ensuing election, successfully thwarting radicals on both sides of the suffrage issue. With a moderate government seated, the constitutional convention of 1864 balked at universal male suffrage, extending the right only to white men over 21 years and "citizens of the United States, as by military, by taxation...or by intellectual fitness, may be deemed entitled thereto" (Ripley 1976:173). While the convention did pass a crucial law establishing African American education, Lincoln's lack of a sure stand on the suffrage issue assured the exclusion of African Americans from the franchise during wartime Reconstruction in Louisiana.

The Civil Rights Act of 1866, combined with the Fourteenth Amendment, secured the ideal of equality before the law. Unfortunately, that phrase was interpreted in many different ways by states and municipalities, not to mention the Freedmen's Bureau agents responsible for representing the rights of former slaves. The most definitive step toward actual equality came with the Reconstruction Acts of 1867. Touted for the next century as a travesty of justice throughout the white South, these acts treated the South in general, and Louisiana in particular, as a "conquered territory." Not surprisingly, the controversial section enfranchised African American men over the age of 21, while it disenfranchised anyone who had been loyal to the Confederacy.

Despite the racial polemics that swirled around "Radical Reconstruction," the enfranchisement of former slaves changed Louisiana politics permanently. Black officials were elected to hundreds of public offices, including constitutional delegates, state Representatives, state Senators, and even as Lieutenant Governor. The contemporary popular mythology of the Reconstruction government in Louisiana centered on the fallacies that the newly elect were former slaves, were from the north, were illiterate, and were "contemptuous of property owners." In fact, the vast majority of African American politicians who served in the Reconstruction legislature in Louisiana had been free men of color before the war, were literate and primarily native-born. Moreover, "black legislators in the 1868-70 legislature actually listed an average of $991.25 in assets in the 1870 census" (Vincent 1979:96).

The political boundaries of the area encompassing the proposed project parcel changed in 1868, when Iberia Parish was created from portions of southern St. Martin and western St. Mary Parishes. As early as 1848, legislative measures and surveys were taken to organize this new parish. The groundwork was not completed before the Civil War, which, of course, further delayed the process. Finally, on October 30, 1868, the Louisiana State Legislature approved the establishment of Iberia Parish (Bergerie 1962:22-23; Pourciaux 1985:6).

The period immediately after the close of the war was one of political and social unrest. Violence against freedmen erupted throughout the state. Even the pro-Union politicians, who had occupied Louisiana until the end of the war, were opposed to African American suffrage. Consequently, at the end of the War, freedmen still did not have the right to vote. When pro-Union politicians lost control of the state at the end of the Civil War, the extension of suffrage to African Americans became a Republican cause, partially as a means to regain power. A state constitutional convention for this purpose was called in July, 1866, in New Orleans. The session never opened, however, because of a lack of a quorum. During the delay, a riot broke out between freedmen and the police. As a result, 3 white Republicans and 34 African Americans were killed and 136 reconstructionists were wounded. This violence, one incident of many against African Americans, drew U.S. Congressional attention to the status of freedmen in the South. Congress acted to secure the civil and political rights for African Americans.

The first of the Military Reconstruction Acts passed Congress in early 1867. Louisiana and Texas were named the fifth military district, and they were placed under the command of General Philip Sheridan. The act permitted voter registration of only those adult males who could swear that they never had aided voluntarily and abetted the Confederacy. Because of the resul-

tant disenfranchisement of most the Confederate sympathizers, and consequently most Louisiana voters, Democratic victory in the 1868 presidential election depended on keeping African American voters from exercising the franchise. This was of particular concern in St. Mary Parish, where newly enfranchised blacks outnumbered whites three to one. The infamous Knights of the White Camelia, which was listed officially as a subversive organization by the United States government, was organized in 1867 in Franklin, Louisiana (several miles downstream of the project area), primarily to keep freedmen away from the polls. Judge Alcibiades de Blanc, whose family lived along the Teche in or just next to the land which became the Keystone Lock, served as the chairman of the group, which claimed to be a "strictly peaceful, law abiding and loyal order; as much so as Freemasons or Odd Fellows" (Brown 1970).

Despite this claim, however, the intent of the organization was similar to that of the Ku Klux Klan. They sought to intimidate African Americans away from the polls, out of newly elected office and solidify white dominance through fear. To this end, councils formed rapidly all over Louisiana. By the end of the decade, there were 10 councils and 800 Knights of the White Camelia in St. Mary Parish alone. Members of these councils were armed, reportedly, "for the protection of white people against lawlessness and violence, riots and blood shed" (Brown 1970).

The Knights of the White Camelia also threatened white, Northern "carpetbaggers." Republican rule in parish government, often by these Northern immigrants, spurred further violence in St. Mary Parish. Locals directed tremendous hostility toward the Northerners, who were widely blamed for all racial tensions:

> . . . the [African Americans] and white people of the parish would have been harmonious and friendly, had it not been for about a half a dozen carpetbaggers and scalawags who organized and stirred up hell in our midst (Brown 1970).

Daniel Dennet, a local journalist, suggested in 1869 that the "carpetbaggers" were responsible for all the problems of the area:

> The white people and conservative [African American] people have every reason to take courage, and work for the over-throw of the carpetbagger, who, if elected, will overwhelm both planter and laborer in ruin. If we defeat them, we hope to see a good degree of peace, prosperity, and good feeling between the two races in this state. In no part of the world is the [African American] race treated better or more kindly than in Louisiana. We want peace in this state, and we wish to give no encouragement to disturbers of the peace and mischief-makers of the carpet-bag persuasion (Brown 1970).

Notwithstanding this statement, and white popular belief to the contrary, violence was frequent. Colonel Henry H. Pope, an African American from New York, settled in Franklin following the war, and he was elected sheriff in 1868. On October 18 of that very year, both Sheriff Pope and a newly elected African American judge were murdered in the presence of Pope's family in O'Neill's Hotel in Franklin. The murderers were disguised, and the involvement of the Knights of the White Camelia could never be established.

Besides repairing the considerable physical damage to their holdings, sugar planters in the region who wished to resume operations had to deal for the first time with a labor supply that was not enslaved. Before labor could be hired, many obstacles had to be overcome, not the least of which was the complete lack of trust exhibited on both sides in the bargaining. Nevertheless, by 1869, planters in the area were hiring workers at $15.00 to $20.00 a month for first class hands, which included a rudimentary cabin, scant rations, and fire wood (Sitterson 1953:244). As might be expected, the cabins, originally slave quarters, were insubstantial structures. Down the Teche from New Iberia, William T. Palfrey hired a carpenter to build some structures at Ricohoc in the 1850s for $25.00 each (Sitterson 1953:67).

The economic devastation that followed in the wake of the war encouraged a number of speculators to purchase land along the Teche. Colonel William H. Brown, a native of York, Pennsylvania purchased the proposed project parcel. Brown had served as an officer in the Federal forces, and, following the end of the war he purchased several tracts of land along the Teche. He consolidated these tracts into the Keystone Plan-

tation, named after his native state (Bergstresser et al. 1997:27)

The Civil War severely disrupted both the transportation system and the market for sugar. In 1869, when Bouchereau resumed the chronicle of the sugar crops that Champomier had written during the antebellum period, only a few plantations were operating along Bayou Teche. Several of the smaller planters operating in the Loreauville area switched from sugar to cotton cultivation. Not until the 1880s did the sugar growers of the Teche equal their output from the eve of the war. During these years, there also was a change in the old antebellum system whereby each plantation was designated a factory as well as a farm. The development of large processing plants made it uneconomical and unnecessary for each plantation to have its own sugarhouse. The Central Factory System evolved, virtually separating the cultivation of cane from the manufacturing of sugar. The renewed importance of the postbellum sugar industry to the region is reflected in the fact that a New Iberia newspaper of the period was called the *Louisiana Sugar Bowl* (Bergerie 1962:40-45; Bouchereau 1869-1876; Heitmann 1987).

Surveying the Bayou Teche

The importance of Bayou Teche had been realized in 1811, when a Congressional document summarized the Teche as "understood to afford the greatest depth of water of any harbor near, and west of the western extremity of the swamp, or Delta, of the Mississippi" (U.S. Congress 1811). Since then, Bayou Teche has been the subject of numerous pieces of legislation providing for survey, assessment, clearing, and maintenance of the channel. The first piece of legislation, provided under the Rivers and Harbors Act of March 2, 1829, provided authorization for a study to examine the feasibility of improving and shortening navigation of the channel. That survey was completed. Subsequent legislation in May 1870 approved a survey assessing the cost of removing obstructions to navigation within the Teche (Athens and Saltus 1991) (Figure 21).

This assessment was conducted under the direction of Major C. W. Howell of the United States Army Corps. In a letter by Captain C.W.

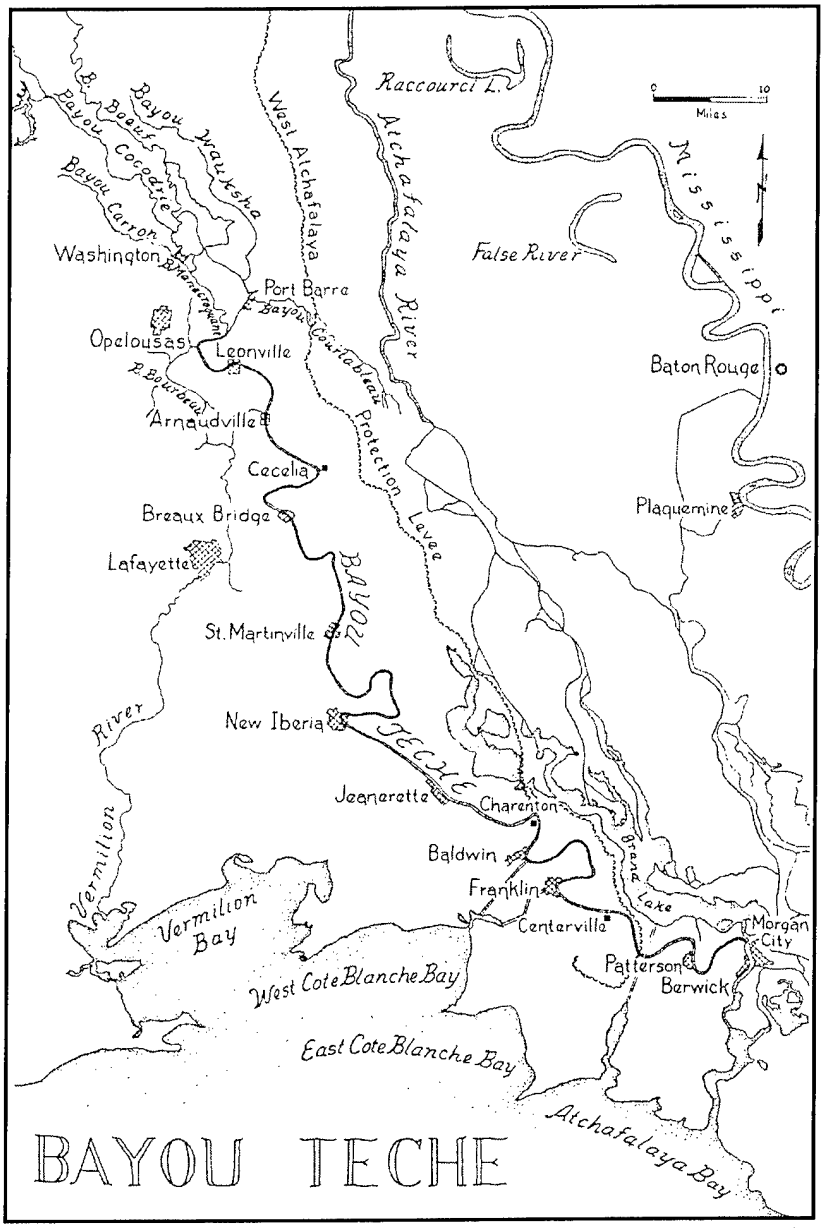

Figure 21. **Map of Bayou Teche and surrounding localities, from Davis's *The Rivers and Bayous of Louisiana.***

Howell of the U.S. Army Corps, dated January 22, 1870, and addressed to his superior Brigadier General A.A. Humphreys, Howell mentions a printed sketch in existence in Louisiana (possibly the one produced in 1868 by Captain E.B. Trinidad) that showed the location of obstructions in Bayou Teche, with explanatory notes. The sketch was being used in order to argue for appropriations from the State of Louisiana, which was in session at that time, to be used for improvements to the Teche. Howell also quotes a couple of eyewitnesses to the condition of navigability of the Teche. Their testimonies were contradictory as to the severity of obstructions found there. Howell, therefore, decided that a survey was needed to ascertain the true condition of obstructions in the Bayou Teche (U.S. Army Corps of Engineers RG77, Entry H720, January 29, 1870).

Mr. W. D. Duke, a civil engineer from St. Martinsville, and two assistants completed this assessment. As part of this investigation, the field party identified two classes of obstructions: (1) obstructions located in the bed of the bayou, including wrecks, snags, piles, and sunken logs and, (2) obstructions located on the banks of the bayou, including overhanging trees, projecting logs, and overhanging undergrowth (ARCE 1870:348). The notes compiled by Duke were used to produce a map of lower Bayou Teche documenting the distribution of the various obstructions from the mouth of Bayou Teche to approximately River Mile 75.5 - basically, to the boundary of St. Martinville (Figure 22).

Despite these changes to try to boost the productivity of the Teche area, changes in the labor structure slowed recovery. The relationship between planters and slaves, now freedmen, had changed radically. Formerly successful planters had lost their cheap, abundant supply of labor and they were forced to pay workers in order to continue operations. In addition, despite their new status as freed persons, immediately following the war most former slaves remained in the agricultural fields of the South, both to stay near families and due to lack of industrial skills. Thus, the tenant farming land tenure system was born (Aiken 1978).

Under this tenure system, tenant farmers supplied their labor for the production of crops, which in the case of southern Louisiana included sugar, rice, and, in some areas, indigo. Planters, now functioning in their new roles as landlords, provided the land, seed crops, farm implements, and sometimes dwellings. They also extended a line of credit, either in the form of cash or commodities, from an inflated plantation commissary or store to the tenant farmers. As payment for their labor, the tenant farmers received a portion of the crops, usually 50 percent or less. In some few cases, the landlord paid the tenant farmer in cash for his portion of the crop. The proceeds, however, were never enough to allow the tenant farmer to pay off the debt he had accrued at the plantation store. This was a cyclical pattern between the landlord and the tenant farmer and it insured that the labor supply remained on the plantation, and that, in the long term, the plantation would remain solvent. Only the planter profited as a result of this relationship.

Commerce Along the Bayou Teche

The towns of St. Martinville, New Iberia, Jeanerette, and Franklin, Louisiana were the principal merchant centers on Bayou Teche, which handled all commerce in the area, in part related to the plantations along the banks. In a discussion pertaining to the commercial value of the Teche, Major Stickney wrote:

> The commerce of the Teche is considerable, and is probably greater than that of any stream of the same length in Louisiana. The lands bordering the bayou are very rich and are all under cultivation, principally in sugar cane. It may be said to be the center of the sugar industry of the State. Cotton, cattle, hides, wool, moss, lumber, &c., are also produced in quantities. The trade supports a line of steamers which make regular trips to New Orleans about three times in two weeks, besides steamers which make daily trips to Morgan City and other small steamers in local trade (ARCE 1884:1273).

In 1899, 273,000 tons were carried to and from market along the Teche. By 1909 shipments exported and received totaled 999,125 tons. The largest items were logs; they comprised three-quarters of the total shipments. By 1912, a boat and barge line, e.g., the Plaquemine route, already had been established between New Iberia

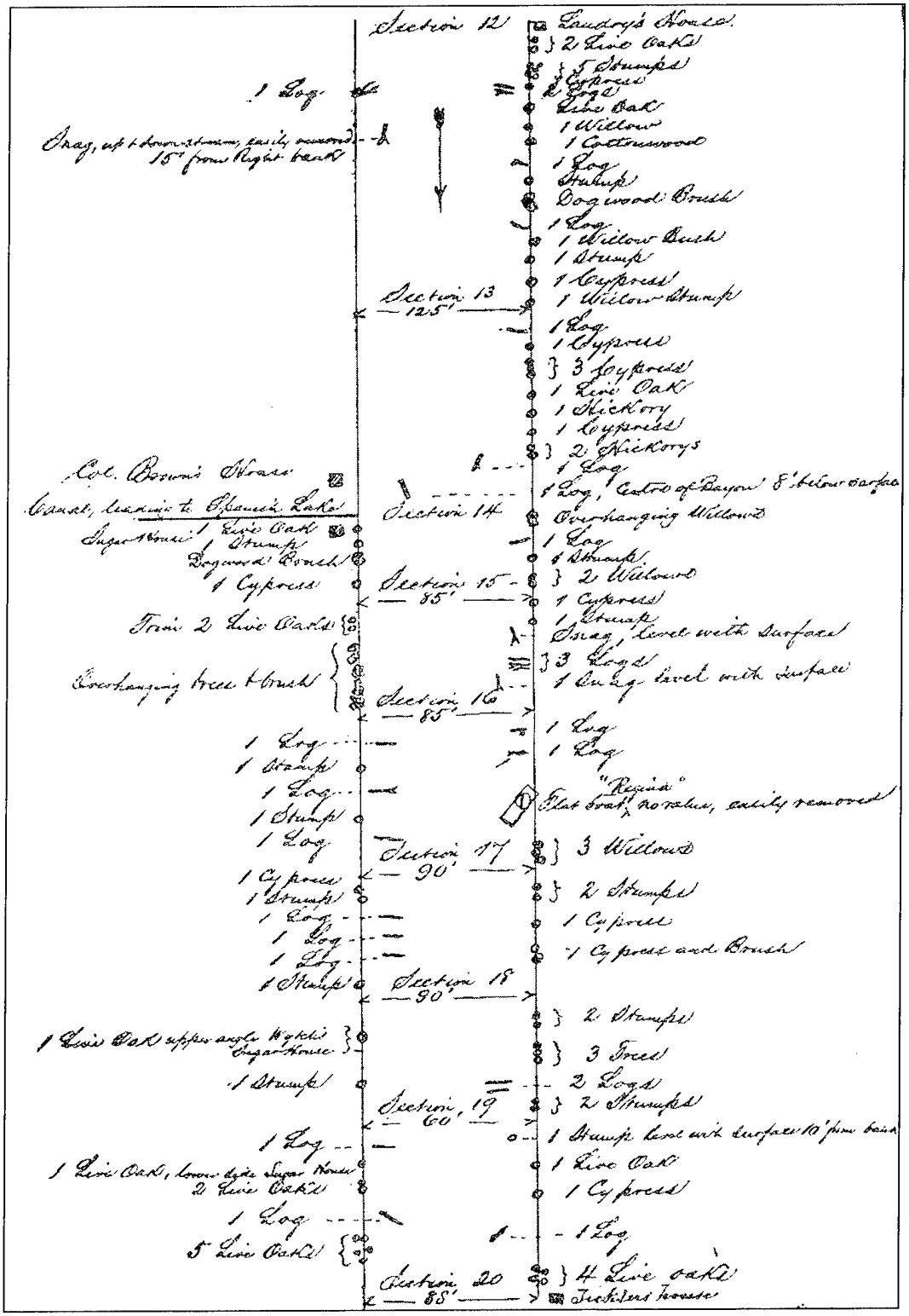

Figure 22. **Excerpts From Duke's 1870 Field Maps *Survey Of The Bayou Teche, May 1870*, Depicting The Project Area, where "Col. Brown's House" was located.**

and New Orleans. Cotton, cottonseed products, rice, sugar, sugar cane, cord wood, brick, machinery, shingles, potatoes, crossties, and molasses were shipped from various points along the Teche. There were numerous sawmills operating along the Teche, as well as sugar plantations and sugar factories. Almost the entire tonnage of sugar being grown along the banks of the Teche was cultivated within 1.6 km (1.0 mi) of the bayou. Goods received from outside of the area included machinery, fertilizers, cooperage, coal, fuel oil, cane, logs, lime, cement, gravel, sand, corn, oats, ground feed, and brick (U.S. Documents 1913:6-8,12).

At the turn of the century, the commerce of the Teche was transported principally along the 121 km (75 mi) below St. Martinville, primarily by stern-wheel steamboats and barges. In 1909, the number was 32 steamboats and 89 barges. Other vessels included gasoline boats that carried small cargoes of oysters, fish, and the like that made many short term jaunts (U.S. Documents 1913:12).

Commercial activity along Bayou Teche before the Civil War was dominated by plantation agriculture, as well as by bayou traffic and trade. Franklin, situated several miles south of the proposed project parcel, became a major port of sugar export as shipping along Bayou Teche took on major economic importance. The town also served as a distribution center for goods entering the region. From 1847 to 1853 sugar shipments from Franklin increased three-fold and molasses five-fold. New York, Richmond, and Baltimore became the three top importers of goods originating from St. Mary Parish (De Grummond 1949:53-54).

Significant increases in trade, brought in by ship, occurred during the early 1850s. A total of 71 domestic and 9 foreign vessels landed in Franklin in 1847. Approximately five years later, 24 foreign and 98 domestic ships imported goods into Franklin. Steamboat navigation between Franklin and New Orleans, however, frequently was troublesome and irregular, due in part to problems associated with low water, swift currents, or flooding (Thorpe 1853:766). Franklin continued to grow during the final decade before the Civil War, which was a boom time for the region.

The 1890s and Beyond

While this system of production was fairly successful at the outset, some basic changes in agricultural techniques introduced during the early twentieth century led to its disintegration. These changes included the introduction of the tractor, the mechanization of the harvest, and improved weed control methods (Aiken 1978). The development of the tractor for use as an agricultural tool began during the nineteenth century; however, with the abundance of cheap labor, planters were at first reluctant to purchase expensive farm tractors. Over time, however, industrial employment in the North, combined with severe Jim Crow laws in the South, drew African Americans away from the fields and into the factories. As the labor supply dwindled, the use of tractors increased. The tractor provided a reliable source of power, and a larger scale of coverage (Aiken 1978).

In addition, several new methods mechanized the harvest of agricultural crops such as sugar, rice, and cotton. While at first they were not very reliable or widespread, new machines to cull cotton, cut cane and gather rice were quickly adapted for use with the new farm tractors. The coupling of these two technologies mitigated investments in labor and reduced harvest times dramatically. The net effect of this new technology was a dramatic reduction in the number of tenant farmers needed to sow, maintain, and harvest crops.

Significant advances in weed control were made during the early parts of the twentieth century. While weeding of crops previously had been done by hand, eventually new machines and herbicides became popular (Aiken 1978). Rotary hoes and weeders that could be attached to the tractor significantly reduced the time and labor needed to keep agricultural fields clear of weeds that so often choked crops and resulted in low productivity. In addition, major advances in chemistry aided in the development of several new herbicides that controlled weeds. Large-scale weed control reduced planters' need for tenant labor and it also helped to boost crop productivity.

The same period that witnessed the centralization of the sugar factories, also saw rise to the lumber industry along the Teche. Like the

sugar industry, lumbering was assisted by an influx of northern capital:

> . . . you got people looking at government surveys, and bam! It hits them right in the middle of the eye, look at the cypress, look at the timber, look at the lumber! And I'm sure we must have had a hell of a lot of influx of capital... like Williams and Patterson, or Hughes: Hughes is in Jeanerette. Hughes is not a native of Louisiana, he's some Yankee that saw a government survey. That damn timber was there for $2.00 an acre, and he knew how to market it . . . (Goodwin et al. 1985).

Nineteenth century lumber mills, like the sugar factories, utilized steam engines for power, so the new lumber industry had the need for individuals with knowledge of boilers, steam engines, and machinery maintenance. Larroque believed that the skilled laborers who no longer could find employment in the sugar industry filled this need (Goodwin et al. 1985). This permitted rapid growth of the lumber industry, because the labor base in the region was preadapted to its technology. The burgeoning lumber industry became one of the major commercial transporters along Bayou Teche below St. Martinville around the turn of the century.

The sugar and the lumber industries also prompted other industrial development in the region. Both encouraged the growth of local foundries to manufacture processing machinery. The sugar industry, in particular, needed local suppliers of machinery parts, since the mill rollers wore out and they had to be replaced on a regular basis. Antoine Moresi, a native of Switzerland, settled on Bayou Teche late in the antebellum period and he operated a small blacksmith and machine shop that repaired local sugarhouse equipment. By 1890, local demand for machinery and parts was so great that Moresi opened a foundry and machine shop that still is in operation today. Although the foundry initially was established to meet the needs of the sugar industry, similar machinery and parts were utilized by sawmills. Like the lumber industry, the foundry was able to draw on a pool of skilled personnel who were familiar with sugar processing machinery, thus helping to insure the success of his venture.

The postbellum sugar and lumber industries also encouraged the expansion of regional transportation systems, since their continued growth was dependent on the efficient transport of processed goods. The New Orleans, Opelousas, and Great Western Railroad had been completed as far west as Morgan City prior to the Civil War. Morgan's Louisiana and Texas Railroad resumed westward expansion of this line in the late 1870s. By 1879, tracks for this line had been laid through Franklin, Jeanerette, and New Iberia. Regular freight and passenger service began in November of that year.

The speed and reliability of rail service eventually resulted in a decline in the importance of river travel. Fewer steamboats operated on the Teche after the completion of Morgan's Line through the region. Steamboats increasingly were utilized on a charter basis, delivering supplies to and receiving outgoing products from local plantations. Thus, the bayou primarily functioned as a short-distance transportation corridor during the late nineteenth and early twentieth centuries. As such, it provided an alternative shipping route to the local roads, facilitating the transport of agricultural products and supplies between the plantations and factories of the centralized sugar industry.

All of these changes in farming methods and equipment led to a more streamlined plantation effort. Where once hundreds of workers were necessary for the successful operation of the plantation, now agricultural surpluses, and by extension profits, could be produced with fewer individuals. Consequently, the tenant farming land tenure system largely had collapsed by the end of the first half of the twentieth century.

By the turn of the century, further consolidation of farms and plantations had occurred in the project area, and the planting of cane had been separated from the manufacture of sugar (Figure 23). Shadyside, located at some distance downstream of the current study area along Bayou Teche, had emerged as a giant sugar processor. This firm controlled a series of plantations that in 1898 encompassed more than 2,023.5 ha (5,000 ac) of land, of which 1,214.1 ha (3,000 ac) were in cultivation. This acreage would increase during the twentieth century. A private tramway joined the

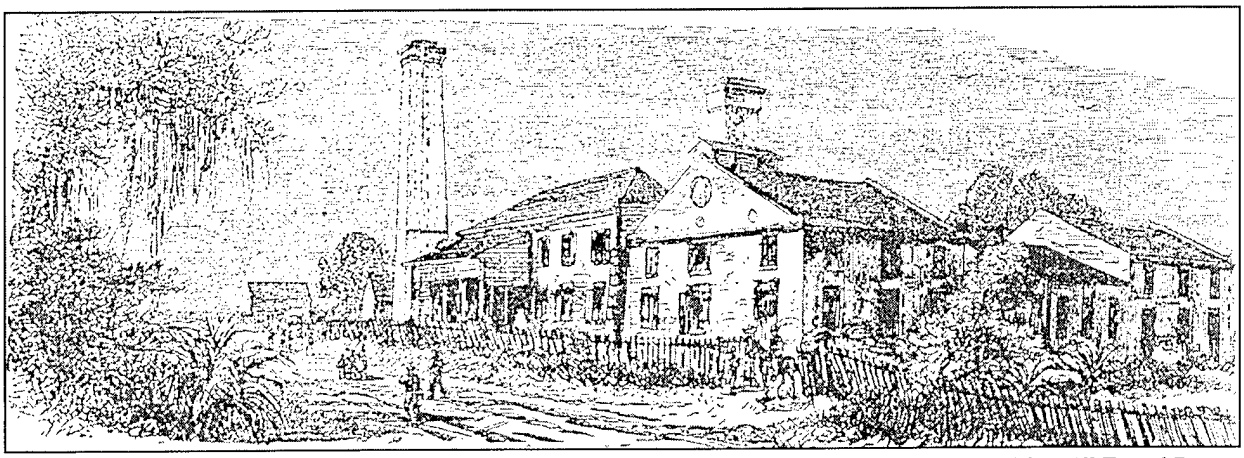

Figure 23. **Harper's Weekly sketch of sugar houses along the Teche, ca. 1866. From Bergeric, *They All Tasted Bayou Water.***

different plantations; the railroad line used a locomotive and 60 cars to haul cane during the height of the harvesting season. At the Shadyside refinery, equipment included a Krajewski crusher, a six-roller mill, one 2.7 m (9 ft) and one 3.1 m (10 ft) vacuum pan, 10 centrifugals, a 150,000 pound double effect, the Deeming system of clarification, and numerous pumps and boilers (Glass 1898:71). In 1902, Shadyside manufactured more than 9,000,000 pounds of sugar.

The Twentieth Century

The twentieth century was marked by major changes in the regional economy. Reliance on sugar cane agriculture decreased, while exploitation of mineral resources increased. Technological advances brought tremendous growth to the area of salt mining operations, to the new petroleum industry, and even to sugar agriculture and refining. The Central Factory System now dominated the region, and it was quite successful; in 1893 Bouchereau remarked:

> Gradually the cultivation of cane and the manufacture of sugar from it are becoming separate and distinct industries. Men of means invest their capital in equipping first class factories furnished with all the modern improvements that the genius of the inventor has produced; small planters pursue the cultivation on the general lines . . . . More sugar is now produced per acre than ever before" (Bouchereau and Bouchereau 1874:xii-xiii).

A severe decline in sugar production occurred in the years after 1911, and in the 1920s, the sugar industry was confronted with extinction. Bad weather contributed to the troubles of the planter. In 1911, there were severe early frosts, and in 1912, floods damaged crops. Furthermore, plant disease, particularly mosaic, swept through the cane fields with devastating effects. Another problem was the higher cost of labor, especially after the wartime economy offered better paying jobs to cane field workers. Prices for sugar were unusually low, and the new Democratic administration led by Woodrow Wilson, passed a bill that abolished the tariff on sugar.

World War I brightened the outlook of sugar planters temporarily. Congress repealed the free sugar bill, and an international shortage raised sugar prices to their highest levels since 1889. Furthermore, in 1916, Louisiana planters produced a bountiful crop. Nevertheless, the federal government issued wartime controls that limited profits during the war.

After the removal of governmental controls, the sugar market entered a period of chaos. The expectation was that the price of sugar would rise on the world market. Instead, it collapsed and caught planters, manufacturers, and bankers by surprise. Louisiana sugar planters and manufacturers entered the 1920s in a severe depression from which many of them would not recover. This economic decline increased the

movement toward consolidation of sugar factories, but at the same time it brought about a countermovement in the breakup of large cane plantations. Some plantations were abandoned, while others were subdivided into smaller holdings (Sitterson 1953:343-360).

Despite the problems of the early twentieth century, sugar cane cultivation has remained an important part of the area economy. On both sides of the Teche, several sugar and syrup factories, or refineries, influenced the St. Martin and Iberia Parish economies during the twentieth century. Among these Bayou Teche facilities, active and inactive, are the Vida Sugar Factory, Cajun Sugar, the Iberia Sugar Cooperative, and the Orange Grove Factory (Bergerie 1962:75; Iberia Parish Development Board ca. 1948:18, 29-32, 132-147; Louisiana Planter & Sugar Manufacturer Co. 1924:92, 1929:47).

New Iberia grew with manufacturing after the turn of the century. In 1903, the town housed several factories: the Trainor & Sons sash and blind factory, the Bernard Wagon Factory, the Pharr lumber mill and planing factory, and the New Iberia Foundry and Machine Shop. Several sugar manufacturers, cotton gins, and rice mills flanked the Teche, and the first oil company opened an office along the Southern Pacific Railroad line. The growing commercial center even supported an opera house. The population of the town had grown to 12,000 people, with enough residential diversity to warrant an African American Baptist church (Sanborn Maps 1903:index).

Lumbering was an important industry in both Iberia and St. Martin Parishes during the latter half of the nineteenth century and it continued into the twentieth century. The Timber Act of 1879 opened the cypress swamps of the Atchafalaya Basin, including the northeastern section of the parish, for sale (Norgress 1947). The Timber Act allowed the sale of the remaining unclaimed cypress stands for as little as 12.5 cents per acre (Norgress 1947). Innovations in the cypress lumber industry during the late 1800s, such as the "overhead skidder," the "pull boat," the rotary saw, then the band saw, increased lumbering exploitation, and the clearing of cypress stands in the basin between 1880 and 1920 progressed at a phenomenal rate (Gibson 1982). Lumber settlements, or mill towns, grew up near sawmill processing centers. "Portables" or communities established near harvest sites, also were referred to as "skidder towns" (Roberts 1974). "Swampers" consisted of seasonal laborers who worked the temporary lumber camps of south Louisiana. The cypress industry, however, declined as rapidly as it had developed. By the middle of the 1920s, the great cypress stands in the Atchafalaya Basin were being exhausted and the mills were forced to close (Roberts 1974). The cultural and ecological changes caused by the deforesting of the basin are still being felt. According to Comeaux (1978), the innovative swamper culture degenerated with the passage of the great lumbering era.

Since the early 1930s, speculators have scoured both St. Martin and Iberia Parishes for any sign of "black gold." Oil and natural gas wells have harvested millions of barrels of energy from reserves found on Marsh and Avery Islands, just south and east of the current project area, currently employing as many workers as the Tabasco plant and salt works combined.

Modern petroleum exploration brought great changes to the physical landscape of Marsh Island, Avery Island, as well as Iberia and St. Martin Parishes in general. By the early 1960s, flotation canals traversed the islands in order to facilitate the barge transport of oilfield equipment. In 1963, the Louisiana Wild Life and Fisheries Commission described this "most perplexing problem" presented by "the management of mineral operations . . . in a manner consistent with the wildlife preservation and development program" as follows:

> Although seismograph operations have been relatively simple to handle, the prevention of damage to valuable wild-life marshes is difficult during the period that the mineral lessee begins development. The general approach used by most mineral operators along the Louisiana Coast in reaching drilling sites has been to dredge out a flotation canal some eight feet in depth and sixty to eighty feet in width and barge in the drilling rig and other heavy equipment. Such operations as this not only cause direct losses of many acres of marsh in the excavation of the canals, but also creates water management problems involving drainage of the marshes, increased tidal flow, and some rapid changes in water levels and salinities. This generally tends to reduce the quality of the marsh for wildlife by

> bringing about changes in vegetative types, particularly in the brackish areas (LWLFC 1963:176).

This problem continues to plague Louisiana today, especially in the coastal regions where oil is, once again, king. While less-damaging roads have been constructed to drilling sites in some coastal areas, water-bound wells, such as those on Avery Island and the rigs in the Gulf of Mexico, generally are too isolated for that method of entry. State officials hoped to lessen the potential damage by "requiring the lessees to confine their access as much as possible to existing waterways. When it is necessary to cross a marsh area with a drilling rig it will be specified that the canal will be completely enclosed by means of a levee constructed from material dredged out of the access channel" (LWLFC 1963:176-177).

Although sporadic mineral exploration began in St. Martin and St. Mary Parishes during the late nineteenth century, it wasn't until the 1920s that major exploitation of Iberia Parish petroleum resources began. By the early 1960s, flotation canals traversed the marshlands to facilitate the barge transport of oilfield equipment, and New Iberia emerged as a center for petroleum industry suppliers. The oil boom brought a flood of new residents to the parish, and to New Iberia in particular. Along with the boom, came a shift in the economic focus of the parish. Oil dominated industrial concerns between the 1920s and the 1980s. In 1964, Iberia Parish produced over 11,500,000 barrels of oil. Today, several pipelines and petroleum facilities are located through or near the project area, above and below the town of New Iberia (Draughon et al. 1998:4; DTC Cartographic Services 1992; Hansen 1971:301-302). When the bottom fell out of the oil market in the late 1980s, the wildcatters moved to new jobs, again changing the demographic base of the parish.

Several new factories opened in Iberia parish during the last half of the twentieth century, these included the Jeanrette underwear mill and Universal Fabricators, a vibrant ship building industry. Morton Salt Company now mines the Avery salt works, although the Tabasco Hot Sauce Factory employs almost as many workers. According to the 1996 Census Bureau reports, over 71,000 residents live in Iberia Parish, roughly half in New Iberia. Parish-wide about 25,000 are part of the labor force. Over 5,000 residents work in industrial jobs, the largest employment category. Only 381 farms remain in the parish, most of them consist of very large cane cultivators, and only 985 Iberia Parish residents work on a farm (Agriculture Census, Iberia Parish 1997:1; Economic Census, Iberia Parish 1992-96:1; Regional Economic Information, Iberia Parish 1996-97:1).

St. Martin Parish has positioned itself at the center of the growing tourist industry, marketing the town as the "Home of the real Evangeline," "at the heart of Acadian Country." Indeed, the Evangeline monument and oak tree alone draw thousands of tourists each year. The state park service operates the Longfellow-Evangeline State Park, commemorating both the author and the poem. The St. Martin de Tours Church, once the heart of the Acadian community in the eighteenth century, is now a stop on several different walking tours.

Keystone Lock and Dam Complex

The growth of the lumber and oil industries, ironically, contributed to the decline of riverine commerce along the Teche. A railroad line from Brashear City to Vermilionville (Lafayette) drew commercial transportation away from St. Martinville. At just the moment when there was an increase in commodities to transport, the Teche was losing its prominence as the primary commercial artery. Consequently, local businesses in St. Martinville and Arnaudville (upstream of St. Martinville) sought to maintain their centrality by increasing the navigability of the Teche above New Iberia.

In 1907, the descendants of Colonel William Brown, offered the land once owned by the Union veteran to the U.S. Army Corps of Engineers, for the purposes of improving the Teche in any way they saw fit. The heirs, Robert Pettibone and Kate Pettibone Dickson of Wilkes-Barre, Pennsylvania, donated land on both sides of the Teche to the Corps. The land formerly owned by Colonel Brown included:

> 3.7 acres [1.5 ha] on the east bank of Bayou Teche, extending from Louisiana Hwy. 347 to the bayou bank, in Township 11 South, Range 6 East, section 8; 7.29 acres [3 ha] on the west bank of Bayou Teche, in Township 11 South, Range 6 East, section 16; and a

> strip of land '24 feet in width and 416 feet in length, containing 0.24 acre [0.1 ha], more or less, in Section 17, Township 11 South, Range 6 East' (Bergstresser et al. 1997:25).

Adjacent to the Brown-Pettibone tract, another east bank tract was needed to complete the lock. Desire Boudreaux and Eulalie Lagrange Boudreaux donated the 0.42 ha [1.04 ac] tract on the east bank of the Teche. In total, the entire property for the lock measured almost 5 ha [12.27 ac] in size. Ownership of the property was formally conveyed to the federal government on May 1, 1909.

Utilizing the congressional acts of September 19, 1890 and March 2, 1907, the U.S. Army Corps of Engineers inspected the upper Teche, and determined that the stream was navigable as far upstream as St. Martinville, "although at low water it [was] considerably obstructed by snags, fallen trees, and sunken logs" (Bergstresser et al. 1997:25, quoting the War Department, 1889). In 1909, under the Rivers and Harbors Act, the federal government approved more than $111,000 for the creation of a six-foot channel in Bayou Teche extending from the mouth of the stream up to Arnaudville (Bergstresser et al. 1997:25-26).

Work on the lock complex began on November 21, 1910. The area for the lock itself was dredged, and the over 15,000 cubic yards of dredged material was distributed across the residential compound of the lock complex, raising the level of the land in excess of 1.5 m (4.9 ft) above the natural levee surface. Pilings then were driven for the lock foundation, followed by a steel and cement frame and floor. Levee work in the area delayed the progress of the lock, which was not completed until June 30, 1913. When the lock was completed, the complex included a 51.8 m (175 ft) wide dam across the Teche, and a lock that measured 10.9 m (36 ft) wide by 48.8 m (160 ft) long, capable of raising a ship 2.4 m (8 ft) vertically. The only building initially constructed on the property was the lockkeeper's residence, on the northeast corner of the west bank property. The entire compound cost $257,720.48 (Bergstresser et al. 1997:26-27) (Figure 24).

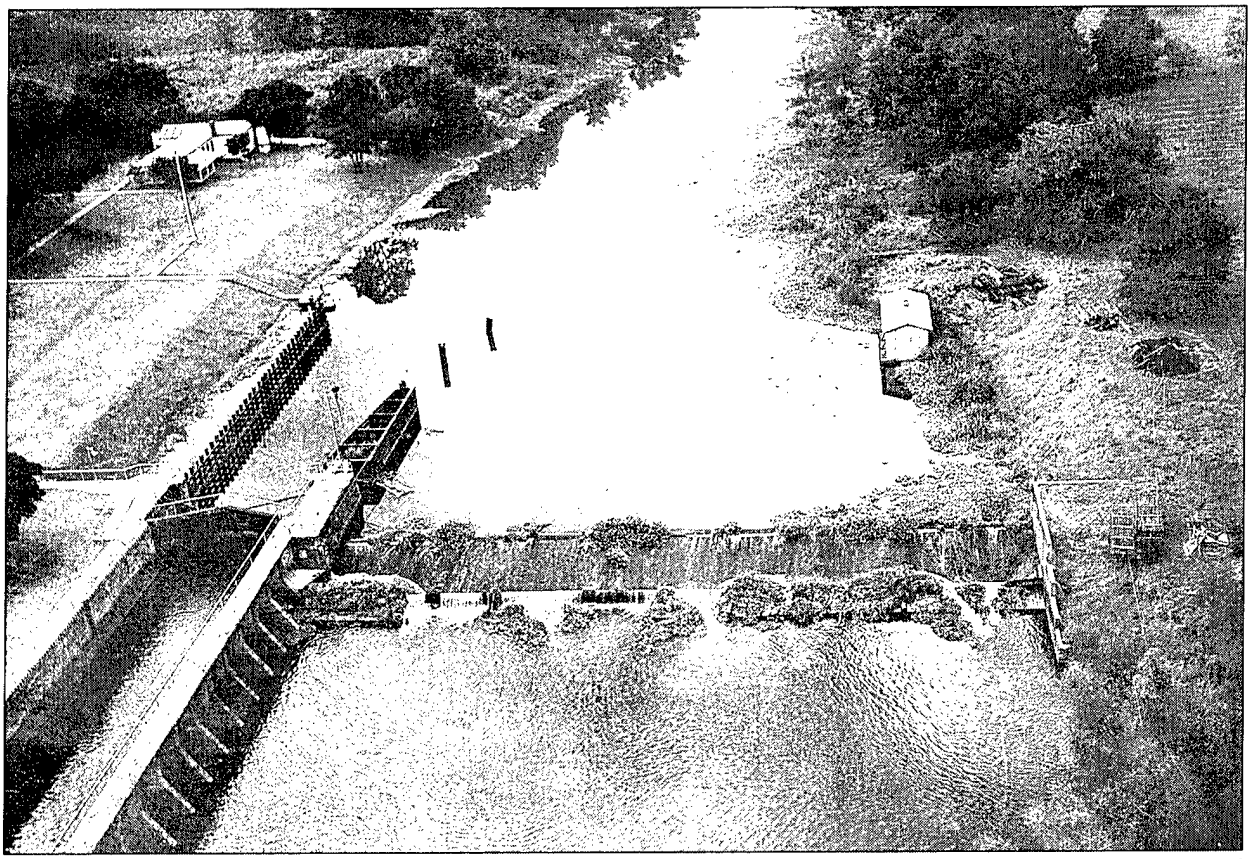

Figure 24. **Aerial photograph from 1947, depicting the original lockkeeper's residence, in the northeast corner of the property.**

Over the next decade, several additional buildings were constructed on the property. Another residence, called the "lock tender's quarters," presumably for the use of the assistant to the lockkeeper, was built in 1918. A blacksmith's shop, with a "new workbench and forge stand, tool lock, and forge," was built the same year, undoubtedly to maintain and construct parts for the lock itself (Bergstresser et al. 1997:39). Finally, several outbuildings, including two storage sheds, a boat house on the east bank, wash houses, an oil room, outhouses, barn and henhouse were constructed within the residential compound.

The lock and dam complex seems to have peaked in size between the late 1930s and the 1940s. Engineering drawings for improvements in 1938 depict nine buildings on the property: the lockmaster dwelling, lock tender's quarters, blacksmith shop, barn, henhouse, oil house, garage, office, and an east bank tool shed (Figures 25 and 26). Nearly a decade later, the U.S. Army Corps of Engineers, New Orleans District commissioned a series of low altitude aerial photographs, (September 1947) which depict 10 buildings within the compound. These were the same buildings depicted in the 1930s drawings, with one additional outbuilding attached to the lock tender's quarters (Figures 27 and 28).

By the 1950s, several new buildings had been built, including a large office (83.6 m^2 [900 ft^2]) in the northwest corner of the west bank property. Several other original buildings were in such disrepair that they were sold or demolished. These included the lock tender's quarters, the boathouse and the washhouses. The residence, a frame house on concrete piers, which included a wrap-around porch, was sold to Robert Babineaux for $750.00 in 1955, and he moved the structure to St. Martinville. The "derelict" boathouse was sold that same year to Marcel Hebert of Breaux Bridge for $25.00, and he presumably moved it as well, since photographs dating from after 1955 do not depict the east bank building (Figure 29) (Bergstresser et al. 1997:42).

As daily operations continued through the 1960s and 1970s, several more buildings were constructed, others torn down, and some rearranged. The original lockkeeper's quarters, in the northeast corner of the west bank property, had been transformed into storage, and it was torn down by 1965. The main properties remained the lockkeeper's residence, the lock tender's residence, the office, and the former blacksmith shop (by then, used primarily for storage). Curiously, a new storage building was erected on the spot of the original lockkeeper's residence after 1989. Currently, only three buildings remain on the Keystone Lock complex: the original lock tender's residence, the large office building ca. 1949, and the new storage building, ca. 1989.

Construction of the Keystone Lock and Dam enabled large barges and deep-drafting transport ships to travel upstream beyond New Iberia. Consequently, an examination of the commodities traveling through the lock offers a window into what commerce originated in St. Martinville and Arnaudville - the only two industrialized areas on Bayou Teche positioned above New Iberia. When the lock opened in 1913, the overwhelming majority of tonnage transported upstream through the lock and dam complex was sugar and timber; however, throughout the next 75 years, the commodities and the volume varied greatly.

Even those staple commodities, such as sugar and timber, varied in volume. For example, in 1914, 2,478 tons of sugar traveled through the lock in 1914, but none at all in 1920. Beginning in 1936, there was dramatic increase in the amount of crude oil and liquid gasses transported along the upper Teche. No fossil fuels were transported in 1929, while 44,739 tons were recorded 1936. Not only does this coincide with the nascent oil industry in St. Martin Parish, but it also mirrors national fuel trends. By 1936, the New Deal programs, structured by President Franklin Delano Roosevelt had begun to lift the country out of the Depression, and the personal use of automobiles increased, creating a demand for gasoline. The only other significant commercial change in transported goods also occurred in 1936, with a rise in the transportation of marine shells; they were used largely for drainage and road surfacing. Almost 8,000 tons of shells were shipped that year, compared to no shells just seven years earlier.

The statistics on the overall volume of cargo transported through the Keystone Lock, however, were so variable, it calls the documentary records into question. For example, the change from 18 overall tons in 1933 to 58,714 total tons just three years later, an increase of 326,000 percent seems incorrect. Surely, not even the rise of the oil and

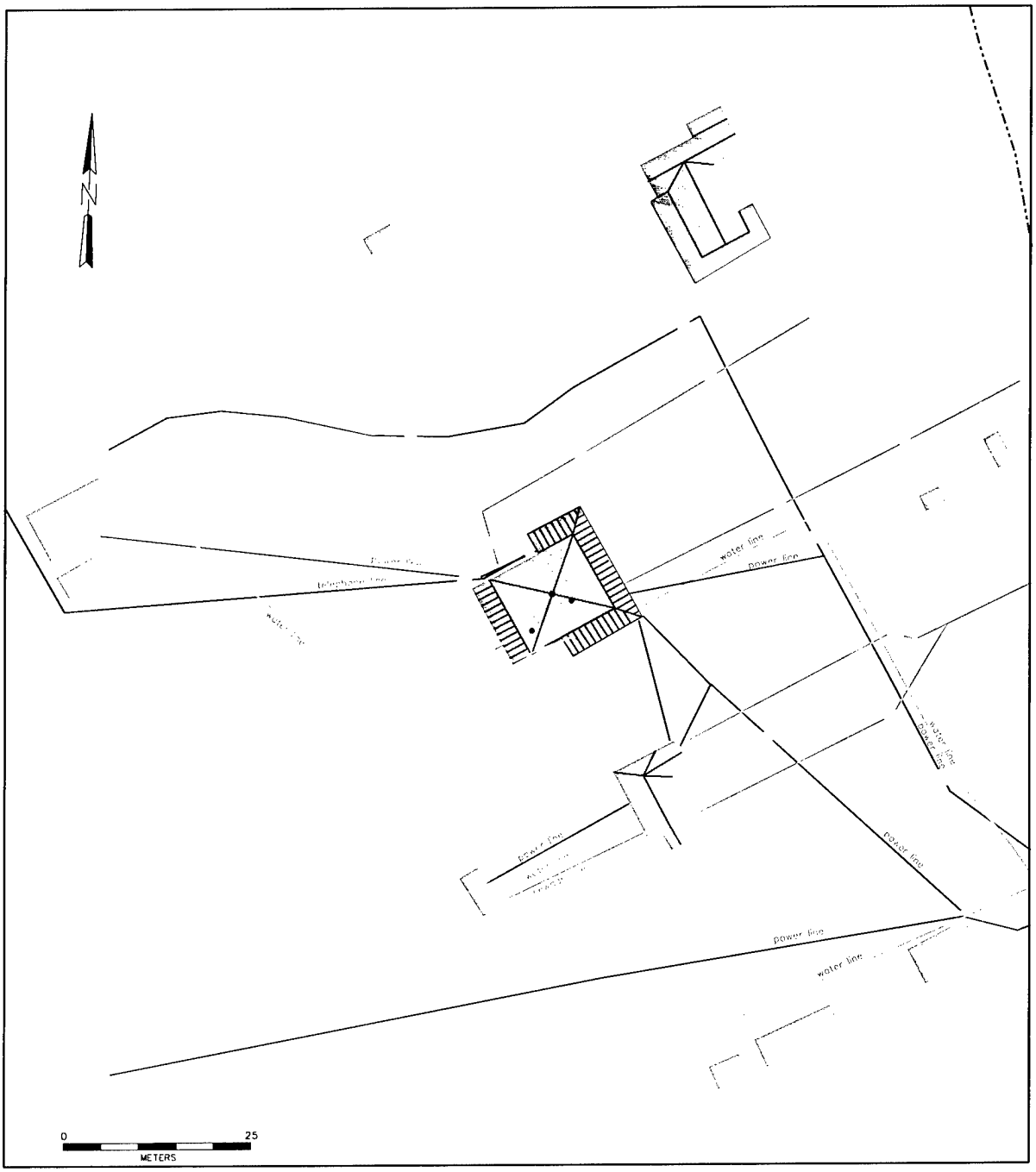

Figure 25. **Line drawing excerpted from 1938 engineering plans, showing eleven buildings on the property (U.S. Army Corps of Engineers 1938).**

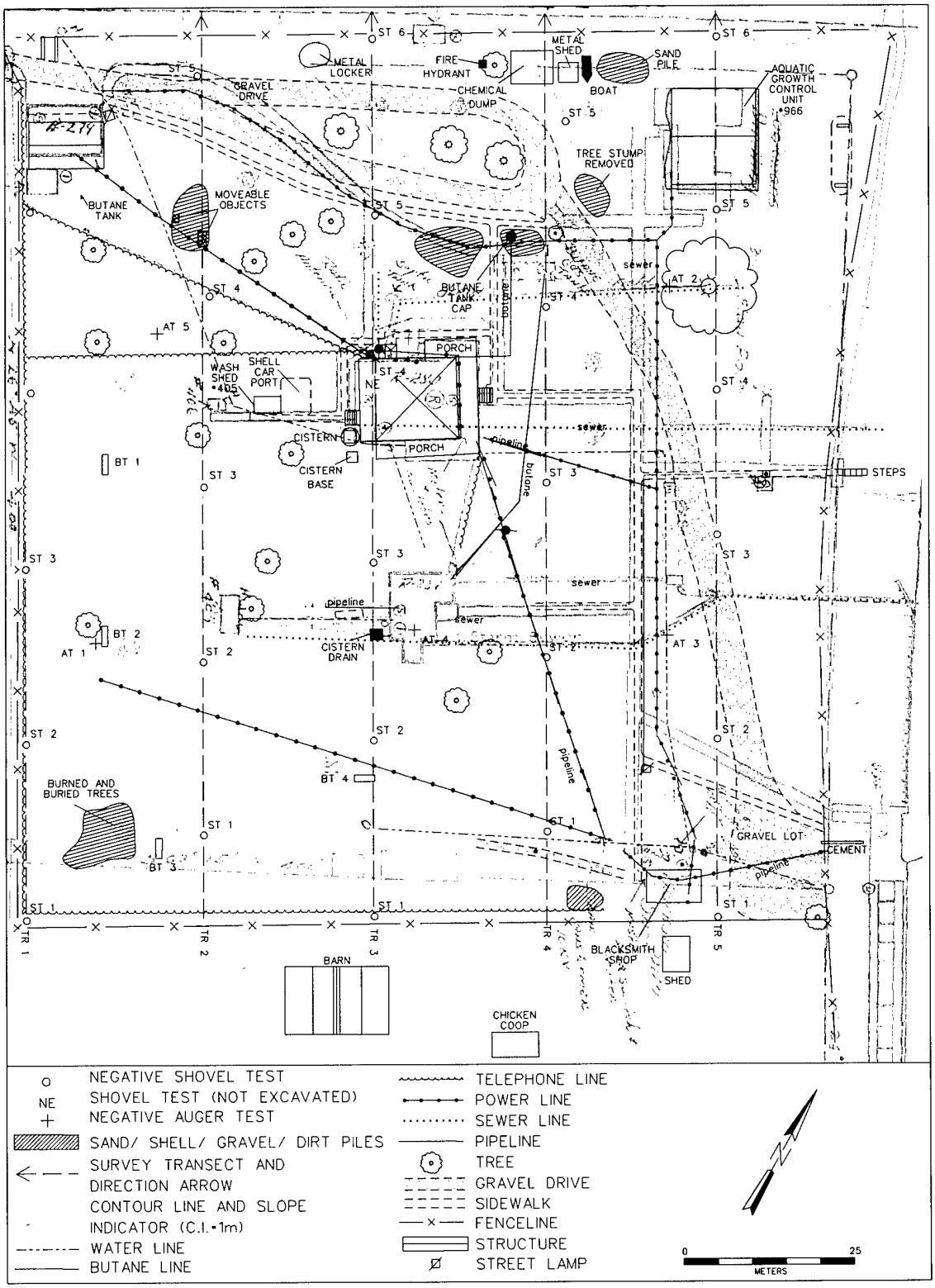

Figure 26. **Overlay of engineering drawing from 1938 and site plan from current project. Note the expansion of buildings, including a barn, chicken coop, sheds and additional lockkeeper' house. (U.S. Army Corps of Engineers 1938).**

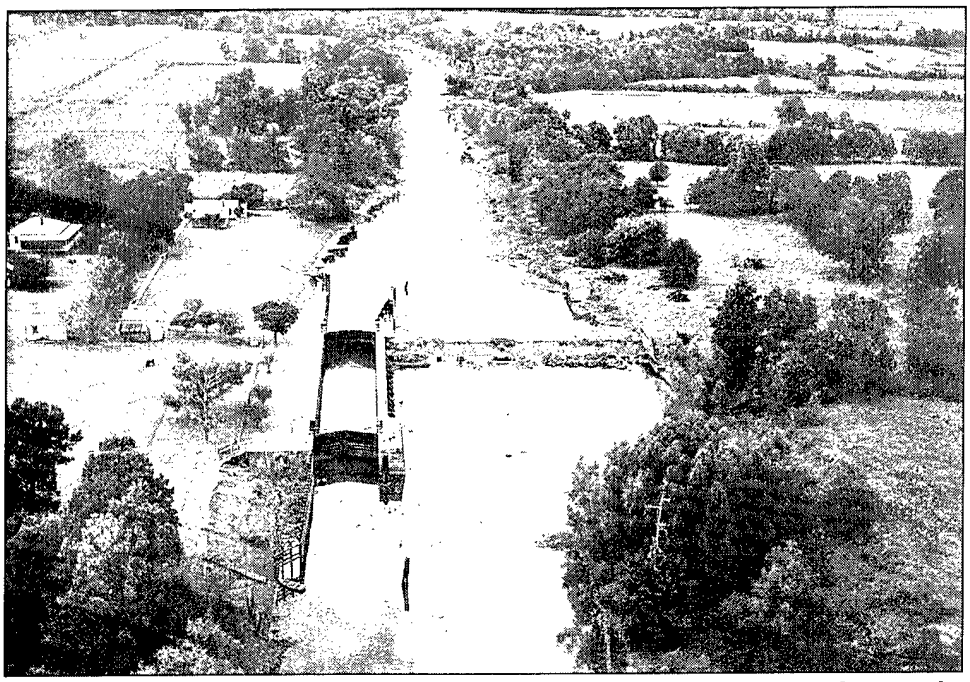

Figure 27. **1947 aerial photographs of the Keystone Lock and Dam area, from north and south view.**

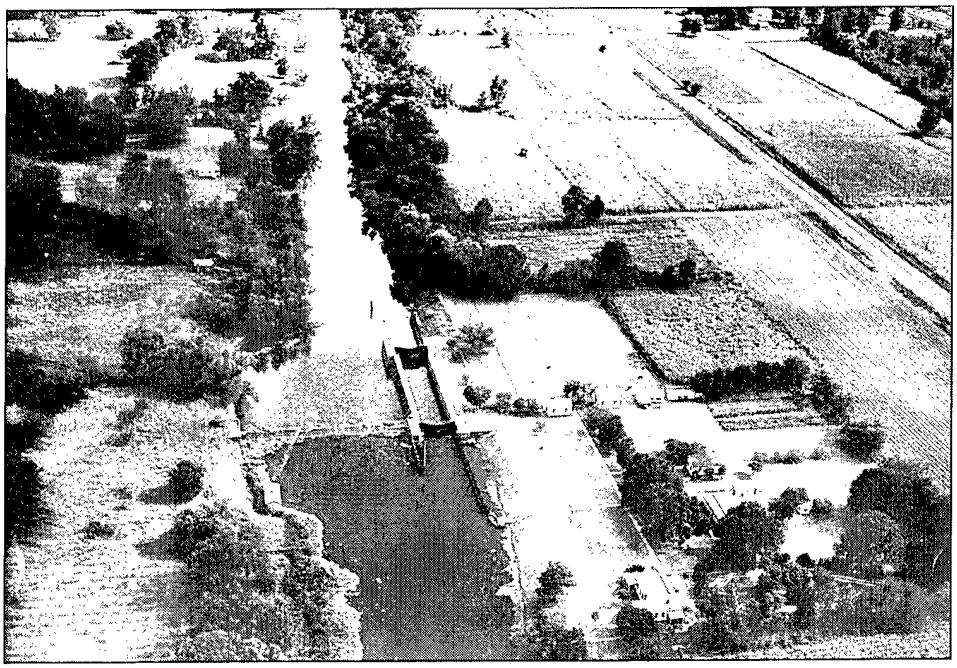

Figure 28. **1947 aerial photographs of the Keystone Lock and Dam area, from north and south view.**

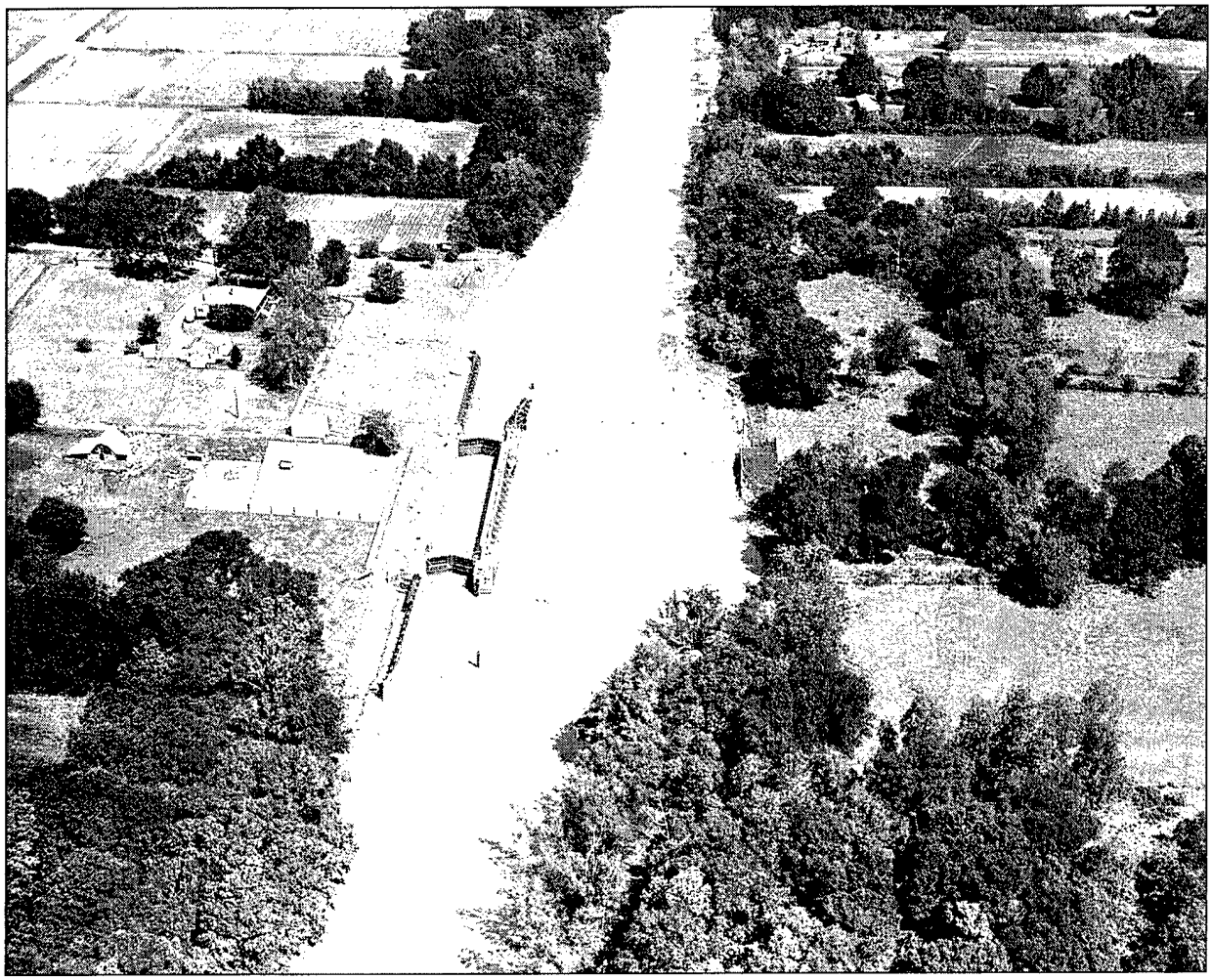

Figure 29. **Aerial photograph of the site, looking north ca. 1965. The boathouse on the east bank had been moved or torn down by this date.**

shell industries, even coupled with the Great Depression, can account for such a disparity. Another problem with the commercial statistics is the lack of data between 1937 and 1967.

Currently, the bulk of commercial products originating from areas along the upper Teche is transported overland by trucks. They remain primarily sugar, and (after the crash in the late 1980s), once again, crude oil. The Lock has been placed on an "on-call" status since 1989, and currently, it sees very little traffic.

St. Martin and Iberia Parishes currently suffer from the economic troubles so familiar to many agricultural areas in Louisiana. The economy of the area still revolves around sugar cane production, although the oil and chemical industries account for a significant percentage of regional income statistics. Still, in both parishes, over 20 percent of the population lives below the poverty level. The median household income languishes at around $25,000 per year. Harvesting, processing and transporting sugar cane can no longer support the majority of the population, and it accounts for only one in five jobs in the area. St. Martin and Iberia parishes are agricultural areas, with few industries, not enough farm jobs to support the population, and no large commercial enterprises on the horizon to fill the employment void.

Summary

There is a saying along the Teche, that once a person has "tasted bayou water," they must ever return to the area. Natives of Iberia and St. Martin Parishes, now working in fishing, tourism, support industries, as well as new manufacturing efforts, still live by the rhythm of the cane season. The largest event in Iberia Parish, which brings thousands of tourists each year, is the Sugar Cane Festival, still held in the fall when the cane is ready for harvest. While the area around the proposed project item has remained part of an agricultural region from its earliest tenure to the present, the reality of economic life along the Teche no longer turns on the fate of the crops. Though much of the land around the project area were surveyed under colonial rule and farmed throughout the nineteenth and twentieth centuries, agriculture no longer determines the seasons. Now, New Iberia and St. Martinville serve as the economic centers of the two parishes, where half the residents live, and employment opportunities are most plentiful. Sugar cane is but one commodity among many found along the banks of the Teche. Trucks and trains now carry the sugar cane to the mill, and then on to the northern markets, bypassing Bayou Teche entirely. The Keystone Lock and Dam complex, once truly the key to facilitating commercial traffic along the Teche, now sits idle and serves as a reminder of the waterborne traffic that used to crowd the Bayou.

CHAPTER V

PREVIOUS INVESTIGATIONS

Introduction

This chapter provides background information regarding previous archeological and architectural investigations completed within the immediate vicinity of the proposed Keystone Lock and Dam project parcel in St. Martin Parish, Louisiana. This discussion provides the comparative data necessary for assessing the results of the current cultural resources survey and archeological inventory. In addition, it insures that impacts to all previously recorded cultural resources located within the general vicinity of the currently proposed project parcel are taken into consideration.

Specifically, this chapter reviews all previously completed cultural resources surveys conducted within 8 km (5 mi) of the proposed project parcel, as well as previously recorded archeological sites and historic period standing structures located within 1.6 km (1 mi) of the Area of Potential Effect. In addition, a search of the National Register of Historic Places files was conducted to determine if any National Register properties are located within 1.6 km (1 mi) of the project parcel; however, no National Register properties were identified within the vicinity of the proposed project parcel. The discussion presented below is based on information currently on file with the Louisiana Department of Culture, Recreation and Tourism, Office of Cultural Development, Divisions of Archaeology and Historic Preservation, in Baton Rouge.

Cultural Resources Surveys Completed within 8 km (5 mi) of the Currently Proposed Keystone Lock and Dam Project Parcel

A total of eight previously completed cultural resources surveys and archeological inventories were identified within 8 km (5 mi) of the proposed Keystone Lock and Dam project parcel (Table 9). These investigations resulted in the identification of two archeological sites (16SM7 and 16SM30) within 1.6 km (1 mi) of the currently proposed Area of Potential Effect; neither site is located within the limits of the proposed project parcel. The eight surveys examined are presented below in chronological order by parish; those surveys extending through more than one parish are discussed at the end of the section under the heading of "Multiple Parishes."

Iberia Parish

On September 27, 1975, Richard Marshall conducted a Phase I cultural resources survey and archeological inventory of several areas located within the vicinity of the town of Loreauville in Iberia Parish, Louisiana. The survey, conducted prior to construction of a proposed sewage treatment system, was completed at the request of Sellers, Dubroc, and Associates, Inc., of Lafayette, Louisiana (Marshall 1975). Fieldwork consisted of the inspection of the proposed treatment plant and an effluent discharge location. In addition, portions of the proposed sewer line right-of-way also were examined for cultural deposits. Marshall (1975) did not report the overall size of the examined project items.

Table 9. Previously completed cultural resources surveys located within 8 km (5 mi) of the currently proposed project parcel.

FIELD DATE	REPORT NUMBER	TITLE/AUTHOR	METHODS	RESULTS AND RECOMMENDATIONS
Iberia Parish				
1975	22-217	*Archaeological Assessment of the Proposed Sewerage System, Loreauville, Louisiana* (Marshall 1975)	Records review, windshield survey, and pedestrian survey	Relocated previously recorded Site 16IB40, as well as identified a prehistoric mound (Mound B) for which no site number was reported. While no statement as to the significance of Site 16IB40 or Mound B was made, it was reported that Mound B would be impacted by proposed construction and additional testing was recommended. Site 16IB40 reportedly would not be impacted and no additional testing was recommended.
St. Martin Parish				
1977	22-85	*Cultural Resources Survey of the Sewerage System, Town of St. Martinville, St. Martin Parish, South Louisiana* (Gibson 1977)	Records review, windshield survey, and pedestrian survey	No cultural resources were identified within survey area. No additional testing was recommended.
1977	22-452	*Bayou Teche Bridge Route LA 94 & LA92 Extension* (Rivet 1977)	Records review and pedestrian survey	No significant cultural resources were identified and no additional testing was recommended.
Not reported	22-1002	*Longfellow-Evangeline State Commemorative Area: Project of Task – 9 Archaeological Research* (Whelan and Pearson 1983)	Pedestrian survey, shovel testing, auger testing, magnetometer survey, and unit excavation	Reported results of investigations into the archeological potential of the area surrounding the Acadian House, located within the Longfellow-Evangeline State Commemorative Area. Historical foundations, a trash pit and historical period artifacts were reported. Pedestrian survey revealed features associated with a nearby World War II, German Prisoner of War (POW) camp. Additional excavation was recommended for Feature 1 (a detached kitchen foundation), Feature 10 (a trash pit), Test Unit 4, and the POW camp. Additional magnetometer survey was recommended for the area between the original survey and the house.
Not reported	22 -2132	*National Register Evaluation of the Keystone Lock and Dam, St. Martin Parish, Louisiana* (Bergstresser et al. 1997)	Records review and pedestrian survey	Following review, the Keystone Lock and Dam was found to be potentially eligible for listing to the national Register and preservation of the lock was recommended. If preservation was not possible, it was recommended that a Level 1 Historic American Engineering Record recording of the lock and dam be completed.
Multiple Parishes				
1975	22-105	*Archeological Survey of Bayou Teche, Vermilion River, and Freshwater Bayou, South Central Louisiana* (Gibson 1975)	Records review and boat survey augmented by limited pedestrian survey and subsurface investigations with the use of a trowel	Identified 37 sites of which a total of 16 (16IB2, 16LY5 – 16LY7, 16LY14, 16LY23, 16LY61, 16SL2, 16SM13, 16SM15, 16SM17, 16SM20, 16SM24, 16VM7, 16VM11, and 16VM127) were assessed as potentially significant. Various recommendations, ranging from no additional testing to mitigation, were reported for each of the 38 identified sites.
1978	22-366	*The Texas-Louisiana Ethylene (TLP) Project: Archeology* (McIntire n.d.)	Helicopter survey, windshield survey, boat survey, pedestrian survey, shovel testing, and auger testing	Identified two sites (the O'Brien Site located in Texas and Site 16AC21). Neither site was assessed; however, additional testing or avoidance of these sites was recommended.
1990	22-1494	*Level II Archeological Investigation of the Proposed Erath-South Section 28 Pipeline Right-of-Way, Vermilion, Iberia, and St. Martin Parishes, Louisiana* (Goodwin et al. 1990)	Records review, pedestrian survey, shovel testing, auger testing, probing, and unit excavation	Identified or relocated Sites 16VM141, 16VM142, 16IB63, 16IB114 – 16IB119, 16SM7, 16SM9, 16SM13, and 16SM28 – 16SM30. In addition, three loci for which no site numbers were assigned also were noted. Of these, only Site 16SM7 was assessed as potentially significant; however, it was reported that the proposed pipeline had been rerouted around the site and no additional testing was recommended. The remaining sites and loci were assessed as not significant and no additional testing was recommended.

Windshield survey augmented by limited pedestrian survey of the immediate study area resulted in the relocation of previously recorded Site 16IB40, a prehistoric period mound. In addition, Marshall (1975) identified a second prehistoric mound located an unspecified distance to the north of Site 16IB40. Marshall (1975) designated this feature "Mound B;" however, no official site number was reported for the second mound.

Site 16IB40 was described as a conical mound that measured 18.3 to 21.3 m (60 to 70 ft) in diameter at its base by 2.1 to 2.4 m (7 to 8 ft) in height. No cultural material was recovered from the site. Marshall (1975) did not assess the National Register significance of Site 16IB40; however, he noted that the proposed sewer line construction would not impact the site. No additional testing of Site 16IB40 or the proposed project area was recommended.

Mound B was described as a flat-topped mound that measured approximately 13.7 to 15.2 m (45 to 50 ft) in diameter by approximately 0.9 m (3 ft) in height (Marshall 1975). Pedestrian survey of the mound and the surrounding area also failed to produce any cultural material. While Mound B was not assessed applying the above-mentioned criteria for evaluation, Marshall (1975) reported that construction of the proposed sewer line would impact the southern portion of the mound and that avoidance of the mound was recommended. If avoidance was not possible during the construction process, Marshall (1975) recommended additional testing within this portion of the Area of Potential Effect. Other than the two mounds, no additional cultural resources were identified during survey. No additional testing of the various project items associated with the proposed sewer system was recommended. Neither Site 16IB40 nor Mound B is located within 1.6 km (1 mi) of the currently proposed project items.

St. Martin Parish

On June 17, 1977, Jon Gibson conducted a records review and pedestrian survey of the municipal sewer system of St. Martinville in St. Martin Parish, Louisiana (Gibson 1977). This survey, also conducted on behalf of Sellers, Dubroc, & Associates, Inc., of Lafayette, Louisiana, as well as the Town of St. Martinville, was designed to assess the potential impact of sewer installation on cultural resources within the Area of Potential Effect. New service areas associated with the sewer system, which were of an unspecified size and location, as well as the site of a proposed oxidation pond, were examined visually for cultural resources. No archeological sites were identified within the limits of the proposed project area.

On November 17, 1977, Philip G. Rivet of the State of Louisiana, Department of Highways conducted both records research and pedestrian survey of areas to be affected by the then-proposed construction of two bridges across Bayou Teche (Rivet 1977). The proposed bridges were designed to link Louisiana Highway 94 to Louisiana Highway 328 and Louisiana Highway 92 to Louisiana Highway 347, respectively. Rivet (1977) did not report the size of the areas examined. Pedestrian survey of the two proposed project areas failed to produce any cultural material or evidence of intact cultural deposits. No additional testing of the proposed project items was recommended.

Coastal Environments, Inc., conducted an archeological investigation of the area surrounding the Acadian House in the Longfellow-Evangeline State Commemorative Area at some unspecified date prior to November of 1983 (Whelan and Pearson 1983). The survey, completed at the request of the State Commemorative Area, was initiated to identify the remains of all outbuildings associated with the plantation's main house. The survey resulted in the examination of a 5.6 ha (13.9 ac) parcel of land. Fieldwork for this project consisted of pedestrian survey augmented by auger and shovel testing, and unit excavation.

Although no new subsurface cultural features were identified as a result of both shovel and auger testing throughout the area, a single cultural feature (brick pavement [Feature 4]) was relocated and three previously unrecorded cultural features (Features 1-3) were located as a result of pedestrian survey and unit excavation within the Area of Potential Effect. These features were associated with the main house and they consisted of brick foundations, pavements, and rubble, respectively. In addition, four cultural features (Features 5-9) were identified in the vicinity of a nearby WWII German Prisoner

of War camp. They consisted of a stretch of brick pavement, two concrete slabs, a collection of concrete footings, and a flagpole base, respectively. Magnetometer survey conducted within the Area of Potential Effect resulted in the identification of a tenth cultural feature (Feature 10). This feature was associated with a nearby Acadian house and it was characterized as a trash pit. All of the cultural resources recorded as a result of this survey dated from the early nineteenth century to the early twentieth century.

Whelan and Pearson (1983) recommended complete excavation of Feature 1, which they described as a possible detached kitchen foundation dating from ca. 1830. Additional testing also was recommended for Feature 2, Feature 10, and the cultural features associated with the prisoner of war camp. Neither the Acadian house nor the features identified during the Coastal Environments, Inc., 1983 survey were identified within 1.6 km (1 mi) of the currently proposed project parcel.

Prentice Thomas and Associates, Inc., of Fort Walton Beach, Florida conducted a National Register of Historic Places evaluatory assessment of the Keystone Lock and Dam, i.e., the currently proposed project parcel, at an unspecified date prior to December of 1997 (Bergstresser et al. 1997). The Keystone Lock and Dam, constructed during the early twentieth century, is situated along Bayou Teche and between the towns of Martinville and New Iberia, Louisiana. Following both background research and pedestrian survey of the lock and dam area, Bergstresser et al. (1997) assessed the Keystone Lock and Dam as significant applying the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). The authors recommended that the lock and dam be preserved in place; however, if preservation was not possible, they recommended Level I Historic American Engineering Recordation of the extant structure. The Keystone Lock and Dam and the associated caretaker's house are the objects of the current survey.

Multiple Parishes

During 1975, the University of Southwestern Louisiana, in Lafayette, Louisiana conducted a Phase I cultural resources survey and archeological inventory of portions of Bayou Teche, the Vermilion River, and Freshwater Bayou prior to the initiation an unspecified amount of operation and maintenance work (Gibson 1975). The survey, conducted at the request of the U.S. Army Corps of Engineers, New Orleans District, encompassed portions of Iberia, Lafayette, St. Landry, St. Martin, and Vermilion Parishes, Louisiana. During survey, Gibson (1975) examined a 100 m (328.1 ft) wide corridor that extended along both banks of Bayou Teche, the Vermilion River, and Freshwater Bayou. The proposed project area measured approximately 352 km (218.7 mi) in length and it included the entire lengths of the aforementioned waterways. Bankline survey augmented by limited pedestrian survey and minimal subsurface testing resulted in the identification of 37 archeological sites (Sites 16IB2, 16LY5 - 16LY7, 16LY10, 16LY12 - 16LY14, 16LY22 - 16LY26, 16LY28, 16LY29, 16LY55, 16LY61 - 16LY63, 16SL2, 16SL31, 16SM6, 16SM13, 16SM15, 16SM17, 16SM18, 16SM21, 16SM24 - 16SM26, 16VM7, 16VM11, 16VM15, 16VM16, 16VM127, and the Indian Mound Road Site).

Gibson (1975) reported that 33 of the 37 sites (Sites 16IB2, 16LY5, 16LY7, 16LY10, 16LY12 - 16LY14, 16LY22 - 16LY26, 16LY28, 16LY29, 16LY55, 16LY63, 16SL2, 16SL31, 16SM6, 16SM13, 16SM15, 16SM17, 16SM18, 16SM21, 16SM24 - 16SM26, 16VM7, 16VM11, 16VM15, 16VM16, 16VM127, and the Indian Mound Road Site) dated only from the prehistoric period, while Sites 16LY6, 16LY14, 16LY61, and 16LY62 produced evidence of both prehistoric and historic period cultural components. A total of 16 of the 37 sites (16IB2, 16LY5 - 16LY7, 16LY14, 16LY23, 16LY61, 16SL2, 16SM20, 16SM13, 16SM15, 16SM17, 16SM24, 16VM7, 16VM11, and 16VM127) were assessed as potentially significant applying the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). Avoidance of or Phase II National Register testing and evaluation of these sites was recommended. The remaining 21 sites did not possess research potential or the qualities of significance as defined by the above-referenced criteria for evaluation (36 CFR 60.4 [a-d]); however, archeological monitoring was recommended for all construction activities taking place within the immediate vicinity of these 21 archeological

sites. None of the aforementioned sites were located within 1.6 km (1 mi) of the currently proposed Keystone Lock and Dam project parcel.

Between January and February, 1978, William McIntire completed a Phase I cultural resources survey and archeological inventory of the proposed Texas-Louisiana Ethylene Project pipeline corridor. The right-of-way corridor originated near the town of Mont Belvieu, Texas and it extended approximately 239.8 km (149 mi) in an easterly direction, where it terminated near the Napoleonville and Bayou Choctaw salt domes in an unspecified Louisiana parish (McIntire n.d.). McIntire (n.d.) did not report the width of the proposed pipeline corridor, nor did he state for whom the survey was conducted. He did report, however, that the entire length of the proposed pipeline corridor was examined as a result of a helicopter fly over, and portions of the corridor were examined more intensively through pedestrian, windshield, and boat survey, as well as shovel and auger testing of selected portions of the proposed right-of-way corridor. McIntire (n.d.) reported that two sites (the O'Brien Site located within Texas and Site 16AC21 in Louisiana) were identified within the proposed pipeline corridor. McIntire (n.d.) indicated that both sites represented small prehistoric shell midden deposits; no additional data were provided in the survey report. Although additional testing of the O'Brien Site and Site 16AC21 was recommended, neither site was assessed applying the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). Both of these sites are situated well beyond the vicinity of the currently proposed project parcel.

Between March and June, 1990, R. Christopher Goodwin & Associates, Inc., conducted a Phase I cultural resources survey and archeological inventory of the proposed Southern Natural Gas Company Erath-South Section 28 Pipeline right-of-way located within portions of Vermilion, Iberia, and St. Martin Parishes, Louisiana (Goodwin et al. 1990). The survey, conducted at the request of Southern Natural Gas Company of Birmingham, Alabama, included pedestrian survey and shovel testing of a proposed right-of-way corridor that measured approximately 45.1 km (28 mi) in length by 18.3 m (60 ft) in width. Pedestrian survey augmented by shovel testing and limited auger testing, probing, and unit excavation resulted in the identification of Sites 16IB63, 16IB114 - 16IB119, 16SM7, 16SM9, 16SM13, 16SM28 - 16SM30, 16VM141, and 16VM142. In addition three non-site cultural resource loci (Loci 3, 4, and 14) were identified during survey.

A majority (n=11) of the recorded sites (16IB114 - 16IB116, 16IB118, 16IB119, 16SM9, 16SM13, 16SM28 - 16SM30, and 16VM141) were described as historic period artifact scatters that dated from the late nineteenth to early twentieth centuries. Site 16IB117, as well as Loci 3, 4, and 14, all were described as abandoned railroad grades. Site 16SM7 was described as a prehistoric period artifact scatter, while the remaining two sites (16IB63 and 16VM142) produced evidence of both prehistoric and historic period cultural components. Only one of these sites (16SM7) was assessed as potentially significant applying the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]); however, Goodwin et al. (1990) reported that the proposed pipeline was rerouted to avoid the site and that no additional testing of the Site 16SM7 was recommended. The remaining sites and loci (Sites 16IB63, 16IB114 - 16IB119, 16SM9, 16SM13, 16SM28 - 16SM30, 16VM141, Loci 4, 4, and 14) were assessed as not significant applying the abovementioned criteria for evaluation. No additional testing of these cultural resources was recommended. None of these sites is situated within 1.6 km (1 mi) of the currently proposed Keystone Lock and Dam project parcel.

Previously Recorded Archeological Sites Located within 1.6 km (1 mi) of the Currently Proposed Keystone Lock and Dam Project Parcel

Only two previously recorded archeological sites (16SM7 and 16SM30) were identified within 1.6 km (1 mi) of the currently proposed Keystone Lock and Dam project parcel (Table 10). Site 16SM7 was described as a prehistoric period occupation represented by intact midden deposits. Site 16SM30 was characterized as a plowzone scatter of historic period cultural material. Both sites are discussed in turn below.

Site 16SM7 was recorded in 1990 by James Wojtala (Goodwin et al. 1990). The site is located in Section 16 of Township 11S, Range 6E

Table 10. Previously recorded sites located within 1.6 km (1 mi) of the currently proposed project parcel.

SITE NUMBER	USGS 7.5' QUAD	SITE DESCRIPTION	CULTURAL AFFILIATION	FIELD METHODOLOGY	NRHP ELIGIBILITY	RECORDED BY
St. Martin Parish						
16SM7	New Iberia North	Prehistoric period middens	Possible Marksville or later Baytown	Pedestrian survey, shovel testing, and unit excavation	Potentially significant	R. Christopher Goodwin & Associates, Inc. 1990
16SM30	New Iberia North	Historic period artifact scatter	19th to 20th century historic period	Pedestrian survey and shovel testing	Not significant	R. Christopher Goodwin & Associates, Inc. 1990

and it was described as two distinct areas of dense prehistoric period cultural deposits. These areas, bisected by a drainage ditch, were designated as Areas A and B. Area A measured approximately 25 x 45 m (82 x 148 ft) in size and it included an intact 18 cm (7 in) thick, 5 x 35 m (16 x 115 ft) buried midden deposit. Area B measured approximately 10 x 35 m (33 x 115 ft) in extent and it was identified within the plowzone. Prehistoric ceramic artifacts recovered from these artifact scatters indicated that Site 16MS7 dated from the Marksville or Baytown periods. Site 16MS7 possessed the qualities of significance as defined by the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). Wojtala noted that continued plowing or expansion of the nearby St. Martin Parish landfill would impact greatly or destroy the remaining intact deposits at the site (Goodwin et al. 1990). Avoidance of the site was recommended.

Site 16SM30 also was recorded by James Wojtala in 1990 (Goodwin et al. 1990). The site, located in the western half of Irregular Section 10 of Township 11S, Range 6E, was described as an approximately 50 m (164 ft) long linear deposit of historic period artifacts, all of which were recovered from the plowzone. Cultural material recovered from Site 16MS30 consisted of undecorated whiteware, machine cut nails, and clear glass shards. Wojtala indicated that Site 16MS30 had been disturbed by previous powerline construction and that no intact cultural deposits remained within the site area. Wojtala determined that Site 16MS30 did not retain intact cultural deposits or evidence of substantial research potential. Thus, Site 16MS30 did not possess the qualities of significance as defined by the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). No additional testing of the site was recommended.

Historic Period Standing Structures Located within 1.6 km (1 mi) of the Currently Proposed Keystone Lock and Dam Project Parcel

A total of three previously recorded historic period standing structures (50-262, 50-263, and 50-264) were identified within 1.6 km (1 mi) of the currently proposed Keystone Lock and Dam project parcel (Table 11). All three of these properties were residential in nature. In addition, these three structures were situated within the vicinity of St. Martinville in St. Martin Parish, Louisiana. They are discussed below in the order that they were recorded with the Louisiana Division of Historic Preservation. None of these structures currently is listed on the National Register of Historic Places.

Table 11. Previously recorded standing structures located within 1.6 km (1 mi) of the currently proposed project parcel.

STRUCTURE NUMBER	USGS 7.5' QUAD	DATE OF CONSTRUCTION	TYPE	STYLE	NRHP ELIGIBILITY	RECORDED BY
50-262	New Iberia North	ca. 1860s-1870s	Residential	Vernacular Raised Creole Cottage	Not significant	Johnson 1988
50-263	New Iberia North	ca. 1906	Residential	Traditional French with Creole influence	Potentially significant	Johnson 1988
50-264	New Iberia North	1870	Residential	Colonial Revival influences	Potentially significant	Johnson 1988

Standing Structure 50-262 was identified by S.E. Johnson in 1988; it is located along Louisiana Highway 31 and within Section 16 of Township 11S, Range 6E. It consists of a vernacular raised creole cottage that was built sometime during the 1860s to 1870s. During the 1930s, however, many alterations were made to the original structure; these included the addition of stairs to the second level, front dormers, and a rear covered porch. According to the submitted standing structure form, the alterations compromised the architectural significance of the structure, thus Standing Structure 50-262 was assessed as not significant applying the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). No additional recordation of this historic period standing structure was recommended.

The Keystone Lock and Dam Caretaker's house (Standing Structure 50-263) is located along Louisiana Highway 31 and within Section 17 of Township 11S, Range 6E. This standing structure was recorded by S.E. Johnson in 1988. While an exact date for its construction was not recorded on the submitted standing structure form, Johnson (1988) reports that the Keystone Lock and Dam was constructed in 1906, and that the house predated the building of the lock and dam facility. The structure was described as traditional French style with minor Creole cottage influences. The caretaker's house currently is owned by the U.S. Army Corps of Engineers, New Orleans District and it is now used as an office, and not as a full time residence.

Structure 50-263 has been altered by the addition of a new roof, kitchen and bathroom, and changes to the galleries surrounding the house. Johnson (1988) noted that the Keystone Lock and Dam retains architectural significance as defined by the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]); however, the integrity of the structure has been compromised somewhat by the above mentioned alterations. Johnson (1988) described the structure as potentially significant in part because of its association with the lock's role in the development of the region. Additional recordation of the structure was recommended.

Standing Structure 50-264, also was recorded by S.E. Johnson in 1988; it consists of a Colonial Revival plantation that is known historically as Keystone Plantation or Keystone Oaks. The structure was built in 1870 and then remodeled in 1932. It is located within Section 17 of Township 11S, Range 6E and it was described as a two-story house with a central hall, a hipped and gabled roof covered with asbestos shingles, and clapboard siding on the exterior. The house contained 6/6 double hung sash windows and a full gallery across the front, which was supported by large columns. Despite remodeling of the building, Johnson (1988) described the structure as potentially significant applying the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). The structure was assessed as potentially significant applying the above-mentioned criteria for evaluation because of its association with the Pennsylvania Sugar Company, as well as the agricultural history and land use of the region (Johnson 1988).

CHAPTER VI

METHODS

Objective

The objective of this investigation was to evaluate the impact that the proposed U.S. Army Corps of Engineers, New Orleans District undertaking will have on terrestrial cultural resources located within the limits of the Keystone Lock and Dam project parcel. The proposed Area of Potential Effect is located along the right descending bank of Bayou Teche within Irregular Sections 16 and 17, and on the left descending bank of Bayou Teche within Irregular Sections 8 and 9 of Township 11S, Range 6E in St Martin Parish, Louisiana. As part of the terrestrial cultural resources component of this investigation, a Phase I cultural resources survey and archeological inventory was conducted within three separate tracts (1A, 1B, and 2), which totaled approximately 4.5 ha (11.12 ac) in size. Area 1A encompassed approximately 0.32 ha (4.8 ac) of land, while Area 1B measured approximately 0.93 ha (2.3 ac) in size. Area 2 was the longest of the three parcels and it encompassed approximately 1.6 ha (4.02 ac).

During survey, two proposed access roads totaling 0.44 ha (1.09 ac) in length also were examined for cultural resources. Each of the existing access roads consisted of an open dirt and/or gravel, thoroughfare. Archeological survey along each access road consisted of the visual inspection of the entire length and width of the roadbed along two parallel survey transects (TR1 and TR 2) placed to either side of the access road centerline. Visual examination encompassed both the road surface and the sidewall of the road. Where surface visibility dropped below 75 percent, or where the possibility of identifying intact cultural deposits was deemed likely shovel tests were excavated. Shovel tests were excavated at 20 m (65.6 ft) intervals during survey of the proposed access roads.

Field methodology utilized to complete the terrestrial portion of the cultural resources investigation consisted of shovel and auger testing, and backhoe trenching within the Area of Potential Effect. These methods, as well as the laboratory methods employed to analyze the recovered cultural material, are discussed in detail below.

Shovel Testing

In an effort to identify any cultural resources situated within the proposed project parcel, systematic shovel testing was conducted throughout those portions of the Area of Potential Effect not covered with fill i.e., Access Roads 1 and 2, and Areas 1B and 2. Shovel tests were excavated along two survey transects, with shovel tests spaced 20 m (65.6 ft) apart. Each shovel test measured approximately 50 cm (19.7 in) in diameter, and each was excavated to a minimum depth of 100 cmbs (39.4 inbs), to sterile clay/clay-like subsoil, or until the accumulation of water impeded further excavation. Each shovel test was excavated in 10 cm (3.9 in) artificial levels within natural strata, and the fill from each level was screened separately. All shovel test fill was screened through 0.64 cm (0.25 in) hardware cloth; extremely wet soils and clay were hand-sifted, troweled, and examined visually for cultural material. Munsell Soil Color Charts were used to record soil color; texture and other identifiable characteristics also were recorded using standard soils nomenclature. All shovel tests were backfilled immediately upon completion of the archeological recordation process.

A total of 66 of 80 (83 percent) planned shovel tests were excavated successfully during the Phase I cultural resources survey and archeological inventory of the Keystone Lock and Dam project parcel. The remaining 14 shovel tests were not excavated because they fell within areas covered by standing water or steep slopes.

Auger Testing

During survey, auger tests were excavated systematically throughout that portion of the Area of Potential Effect covered by fill, i.e., within the residential compound of the Keystone Lock and Dam property (Area 1A). Auger testing was used to assess this area because the layer of fill deposited within this portion of the Area of Potential Effect measured up to 165 cm (65 in) in thickness, i.e., too deep to penetrate using shovel testing. During survey, auger tests were excavated along six survey transects with the interval between auger tests set at 25 m (82 ft). All auger tests were excavated by hand using 2-1/2 in diameter "Dutch" augers, and each extended to an approximate depth of 200 cm (78.7 in) below surface. Each auger test was excavated in 20 cm (7.9 in) levels within natural strata, and the fill associated with each level was screened separately through 0.64 cm (0.25 in) hardware cloth. Extremely wet soils and clay were hand-sifted, troweled, and examined visually for cultural material. Munsell Soil Color Charts were used to record soil color; texture and other identifiable characteristics also were recorded using standard soils nomenclature. Each of the excavated auger tests was backfilled immediately upon completion of the archeological recordation process.

A total of 33 of 38 (87 percent) auger tests were excavated successfully as a result of this Phase I cultural resources survey and archeological inventory; one auger test was not excavated because it fell within the foundation of extant Lockmaster's House (Standing Structure 50-263). The remaining four auger tests were not excavated since they were located within Bayou Teche.

Backhoe Trenching

Backhoe trenching also was utilized to identify any intact cultural deposits that might lie within the Area of Potential Effect, specifically within Area 1A. Each backhoe trench measured approximately 1 x 2 m (3.3 x 6.6 ft) in size and each was excavated to a depth of approximately 220 cmbs (86.7 inbs) or until the inflow of water impeded further excavation. Each backhoe trench was excavated in 20 cm (7.9 in) levels within natural strata. Screening of backhoe trench fill was not undertaken; however, monitoring of the backhoe trench excavation was conducted and artifacts were collected from the resultant backdirt piles. Once excavated, all backhoe trenches were profiled, with the vertical location of all strata breaks and cultural materials plotted in the correct position. Profiling was conducted from the surface of each backhoe trench; for safety purposes, personnel from R. Christopher Goodwin & Associates, Inc., did not enter any of the deeper backhoe trenches. Finally, each of the backhoe trenches was photographed after excavation was completed. Photographs were taken with 35 mm cameras using both black and white and color film. All backhoe trenches were backfilled immediately upon completion of the archeological recordation process. A total of four of four (100 percent) planned backhoe trenches were excavated within the Area of Potential Effect.

Application of the Criteria for Evaluation (36 CFR 60.4 [a-d])

All cultural resources loci identified during fieldwork were examined to ascertain, if possible, the nature, size, depth, integrity, age, and affiliation of the cultural deposits. Delineation also was used to assess the stratigraphic placement, density, and research potential of each identified locus. This information was gathered to assist in the subsequent assessment of whether a locus was significant or not significant applying the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]).

Delineation of each cultural resources locus consisted of a combination of the following: (1) establishment of a datum labeled N1000 E1000; (2) intensive surface reconnaissance throughout the immediate area; (3) excavation of tightly spaced shovel or auger tests to delineate both locus size and configuration; and (4) mapping and photographing of each locus under investigation. Both black and white and color photo-

graphs were taken of each locus identified during fieldwork.

Laboratory Analyses

Laboratory analyses consisted of a detailed study of all of the data collected as a result of this investigation. It included the analysis of all cultural material recovered during survey and the compilation of locus descriptions for all cultural resources loci identified as a result of the current survey effort.

The laboratory analysis provided information regarding both locus type and chronology. All of the cultural material recovered during survey was washed and sorted by material category, and it subsequently was encoded into computerized catalogs that allowed for further manipulation of the data. The nature and structure of the analyses was guided by the goals of the project.

The first requirement of the research was to determine whether or not a cultural resources locus had the potential to meet the legal definition of an historic period property. Therefore, particular care was taken to observe and record chronologically sensitive attributes of historic period artifacts, and to evaluate, for example, whether or not the material is more than 50 years in age.

Beyond the determination of minimum age, the artifact analysis consisted of making and recording a series of observations for each recovered specimen. The observations were chosen to provide the most significant and diagnostic information about each specimen. A total of two separate databases were required to store, organize, and manipulate data generated by the analytical process. Separate databases were used to analyze the prehistoric ceramic and historic/modern period artifacts recovered during survey. The use of these different databases reflected the differences in the analytical protocols required to study thoroughly the different types of materials.

During the data analysis phase, locus descriptions were compiled for all cultural resources loci identified during survey. Minimally, these descriptions included data on locus type, size, and cultural/temporal affiliation. In addition, data pertaining to landform, elevation, distance to water, and soil type were recorded. These descriptions also included an assessment of archeological integrity and significance applying the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]).

Historic/Modern Period Material Analysis

The analysis of the historic/modern period cultural material was organized by class, functional group, type, and subtype. The first level, class, represented the material category, e.g., ceramic, glass, or metal. The second level, functional group, e.g., architecture, kitchen, or personal, was based on classifications established by South (1977) and it referred to the presumed function of the material recovered. The remaining levels, type and subtype, described the temporal or culturally diagnostic attributes of an artifact. The identification of artifacts was aided by consulting standard reference works, including Coates and Thomas (1990), Fike (1987), Florence (1990), Kovel and Kovel (1986), Miller (1980, 1991), Nelson (1968), South (1977), Speer (1979), Switzer (1974), Toulouse (1969, 1971) and Wilson (1981).

Prehistoric Ceramic Analysis

The prehistoric ceramic taxonomy was organized by type, variety, surface decoration, aplastic inclusions, and vessel portion. The database was designed to allow the analyst to record established ceramic types, as well as ceramic modes and attributes. The first level, type, represented the established named ceramic types according to published sources such as Aten (1983), Frank (1976), Phillips (1970), Suhm and Jelks (1962), Thomas et al. (1980), and Webb (1963). The second level, variety, was used to identify the named ceramic variety according to the published typologies. Decoration was used to describe the basic type of surface decoration present on the sherd, e.g., plain, brushed, engraved, ridged, or incised. The aplastic inclusion category lists the principal temper types observed in the paste of each sherd. Aplastic inclusion combinations, e.g., sand/grog, were used to denote only the presence of those inclusions, not the numerical predominance of one over the other. The vessel portion

column lists the portion of the ceramic vessel from which the sherd was derived. Possible values in this field included body, rim, base, neck/collar, and so forth. The "additional description" column of the database was used to record other observations.

Faunal Analysis

The faunal database was organized by type and subtype. The biological class according to conventional systematics, e.g., mammal and bird, will be listed under "type." The subtype column listed the family, genus, or species when identifiable. When generic or specific identification were not possible, each skeletal element was be placed into a general descriptive category, e.g., large mammal, large to medium mammal, medium to small mammal, small mammal, bird, reptile, fish, etc. The orientation of recovered skeletal element also was identified when possible. In addition, for the purposes of recordation, thermal modification to each recovered bone was noted as burned, charred, or ashed. The presence of cut marks, butchering, and/or sawing also was identified when possible, as was fragmentation.

Vertebrate remains recovered from the cultural resources loci located during fieldwork were examined using standard zooarcheological methods. Identifications were made using the comparative reference skeletal collections of R. Christopher Goodwin & Associates, Inc. These collections are housed at our New Orleans laboratory. In addition to reference specimens, guidelines and manuals were used to aid identification procedures. These guidelines and manuals included those compiled by Gilbert (1980), Hillson (1986), and Olsen (1968, 1979).

Curation

Following acceptance of the final report, all archeological materials, records, photographs, and field notes will be curated with:

State of Louisiana
Department of Culture, Recreation, and Tourism
Division of Archaeology
P.O. Box 44247
Baton Rouge, Louisiana 70804-4247
(225) 342-8170

CHAPTER VII

RESULTS OF INVESTIGATIONS

The currently proposed Keystone Lock and Dam project parcel is located approximately 6.4 km (4 mi) south of the town of St. Martinville, in St. Martin Parish, Louisiana and 5.6 km (3.5 mi) north of New Iberia, Louisiana. It is irregular in configuration and it encompasses an area that measures approximately 4.94 ha (12.21 ac) in size. The property is accessed via two dirt/gravel roads (Figure 2). The proposed project item straddles Bayou Teche and it lies within Irregular Sections 16 and 17 along the right descending bank, and within Irregular Section 8 along the left descending bank of Bayou Teche of Township 11S, Range 6E in St. Martin Parish, Louisiana. The confluence of Bayou Teche and Bayou Tortue is located approximately 750 m (2,460.6 ft) south of the Keystone Lock and Dam.

Topography throughout the project parcel is dominated by a nearly level plain that is situated at an approximate elevation of 4.5 m (15 ft) NGVD; it drops off sharply, however, to form the bankline of Bayou Teche. The currently proposed project item contains two distinct areas of vegetation. Groundcover within the northwestern one-third of the project parcel consists of a large manicured lawn and several extant structures, while a mixed hardwood forest and wetland environment, i.e., species of oak and cypress, characterizes the remaining two-thirds of the Area of Potential Effect.

During fieldwork, the proposed project parcel was divided into three smaller tracts (Areas 1A, 1B, and 2) to facilitate control during the survey process (Figure 2). Area 1A encompassed approximately 0.32 ha (4.8 ac) of land, while Area 1B measured approximately 0.93 ha (2.3 ac) in size. Area 2 consisted of a linear parcel of land located along the east bank of Bayou Teche and it measured approximately 1.6 ha (4.02 ac) in size. In addition, two access roads were examined as a result of this investigation; together they totaled 0.44 ha (1.09 ac) in area (Tables 12 and 13). Field methods utilized to complete the terrestrial portion of this cultural resources investigation included pedestrian survey, shovel and auger testing, and backhoe trenching throughout the Area of Potential Effect. A total of 66 of 80 (83 percent) planned shovel tests were excavated as a result of this investigation; 33 of 38 (87 percent) planned auger tests also were excavated (Tables 12 and 13). Finally, 4 of 4 (100 percent) planned backhoe trenches were excavated successfully as a result of this Phase I cultural resources survey and archeological inventory.

The current Phase I cultural resources survey and archeological inventory resulted in the identification of one non-site cultural resources locus (AR2-01) and two archeological sites (16SM93 and 16SM94). Site 16SM93, Site 16SM94, and Locus AR2-01 do not possess the qualities of significance as defined by the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). The results of this investigation are presented in detail below. These discussions include in-depth descriptions of Site 16SM93, Site 16SM94, and Locus AR2-01, as well as management recommendations for the archeological sites and the non-site cultural resources locus recorded during survey.

Table 12. Areas examined during the survey of the Keystone Lock and Dam project parcel in St. Martin Parish, Louisiana.

AREA NUMBER	HECTARE/ ACRE	SHOVEL TESTS (Excavated / Planned)	AUGER TESTS (Excavated / Planned)	BACKHOE TRENCHES (Excavated / Planned)	SITES/LOCI IDENTIFIED
1A	0.32 ha/4.8 ac	0/0	33/38	4/4	None identified
1B	0.93 ha/2.3 ac	13/17	0/0	0/0	Site 16SM93 (Locus K-01)
2	1.6 ha/4.02 ac	33/42	0/0	0/0	Site 16SM94 (Locus K-02)
Total	**4.5 ha/11.12 ac**	**46/59**	**33/38**	**4/4**	

Table 13. Access roads examined during survey of the Keystone Lock and Dam project parcel in St. Martin Parish, Louisiana.

ACCESS ROAD	HECTARE/ACRE	SURFACE TYPE	SHOVEL TESTS		SITES/LOCI IDENTIFIED
			EXCAVATED	PLANNED	
AR1	0.10 ha/0.24 ac	Improved gravel	0	0	0
AR2	0.34 ha/0.85 ac	Unimproved dirt	20	21	Locus AR2-01 and Site 16SM94 (Locus K-02)

Area 1A

Area 1A consists of a manicured lawn and residential complex that encompasses the northwestern portion of the proposed project parcel. It is enclosed on all sides by fence lines and it is bounded by Bayou Teche to the east (Figures 2 and 30). This portion of the proposed project area is situated along the right descending bank of Bayou Teche within Irregular Section 17 of Township 11S, Range 6E. It occupies a nearly flat open plain and it lies at an approximate elevation of 4.6 m (15 ft) NGVD. The survey tract is roughly square in configuration and it encompasses approximately 0.32 ha (4.8 ac) of land (Figure 31).

Construction of the Keystone Lock and subsequent dredging of Bayou Teche has resulted in large amounts of fill being deposited throughout the area. Dredge spoil deposits extended to a depth of 165 cmbs (65 inbs), too deep to penetrate using shovel testing. Thus, both auger testing and backhoe trenching were used to examine this portion of the Area of Potential Effect.

Several artificial features also were noted throughout Area 1A; these included a driveway that originated from Access Road 1, several narrow walkways, three standing structures, and two cement foundations of structures that had been removed previously (Figure 30). The extant standing structures included the Lockmaster's House (Standing Structure 50-263), a small office, and a large metal storage shed. These standing structures were recorded and they will be discussed in a separate report submitted by R. Christopher Goodwin & Associates, Inc., to the U.S. Army Corps of Engineers, New Orleans District. In addition, numerous buried utilities and overhead power lines were identified throughout the Area of Potential Effect (Figure 30).

During the cultural resources investigation of Area 1A, pedestrian survey and auger testing was conducted along six survey transects spaced 25 m (82 ft) apart. A total of 33 of 38 (87 percent) planned auger tests were excavated successfully throughout the area (Table 12). A single auger test fell within the foundation of the extant Lockmaster's House (Standing Structure 50-263); it was not excavated. The remaining four auger tests fell within Bayou Teche and also were not excavated.

A typical auger test profile within Area 1A extended to a depth of 200 cmbs (78.7 inbs) and it exhibited three strata in profile (Figure 32). Stratum I was characterized as a layer of dark brown (10YR 3/3) silt that extended from 0 to 22 cmbs (0 to 8.7 inbs); it was identified as the topsoil. Stratum II, identified as fill, consisted of a deposit of strong brown (7.5 YR 5/6) silty clay that ranged in depth from 22 to 126 cmbs (8.7 to 49.6 inbs). Stratum II was underlain by Stratum III, which was described as of a layer of dark red (10R 3/6) clay that extended from 126 to 200 cmbs (49.6 to 78.7 inbs).

In addition to the previously described auger testing, four backhoe trenches were exca-

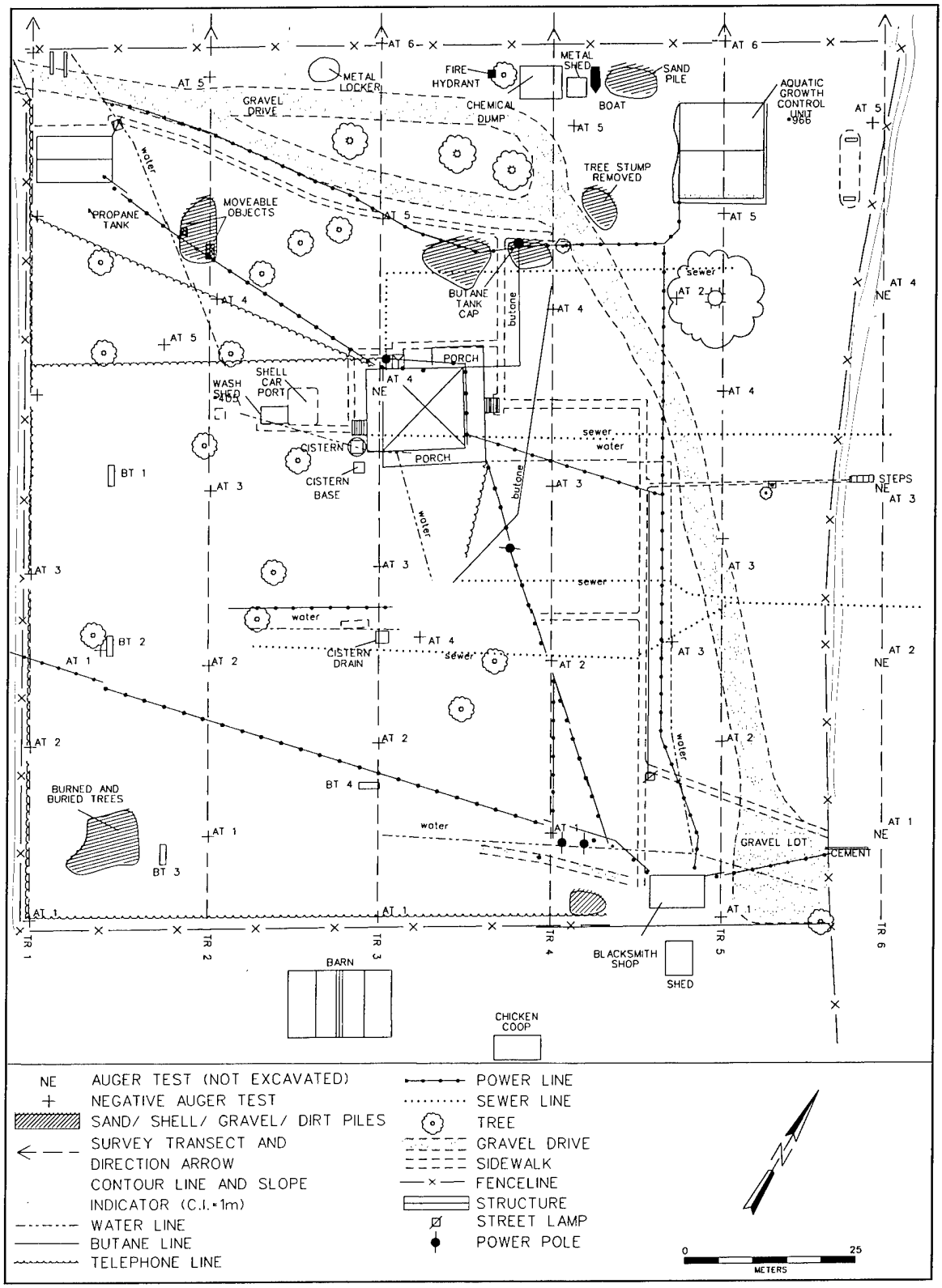

Figure 30. Plan view of Area 1A.

Figure 31. Overview of Area 1A, facing east.

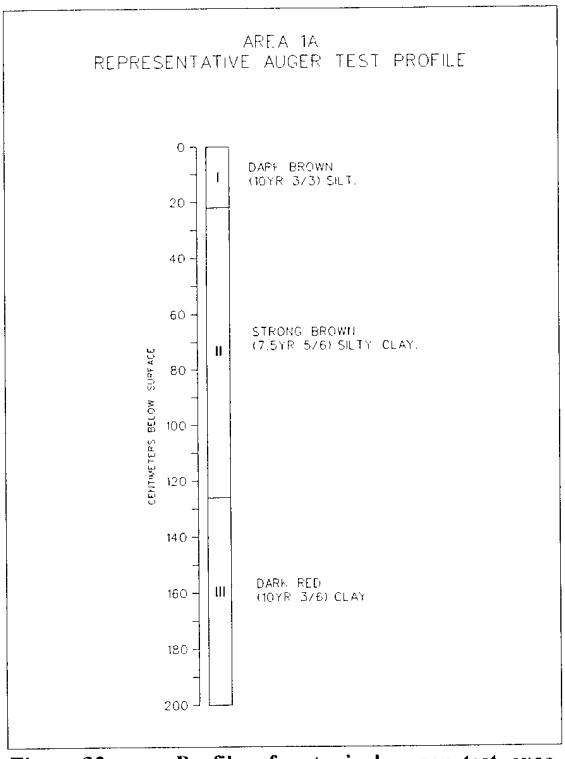

Figure 32. Profile of a typical auger test excavated within Area 1A.

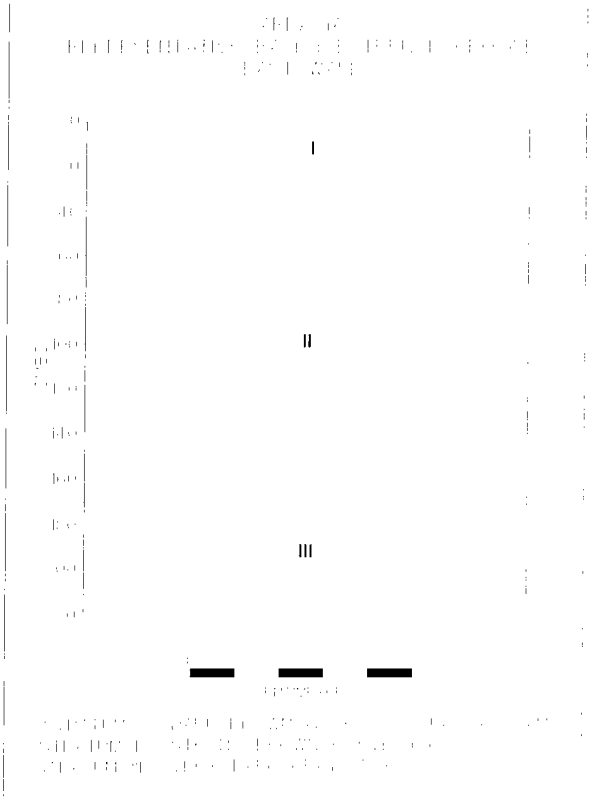

Figure 33. **Profile of a typical backhoe trench excavated within Area 1A.**

vated at various locations across this portion of the project area to confirm the average depth of the fill layer deposits within the Area of Potential Effect and to test for the presence of deeply buried cultural deposits (Figures 33 and 34). A typical backhoe trench profile within Area 1A extended to a depth of 220 cmbs (86.7 inbs) and it exhibited three strata in profile. Stratum I was characterized as a layer of dark brown (10YR 3/3) clayey loam that extended from 0 to 30 cmbs (0 to 11.8 inbs); it was characterized as the topsoil. Stratum II, identified as fill, consisted of a deposit of strong brown (7.5YR 4/6) clay that ranged in depth from 30 to 160 cmbs (11.8 to 63 inbs). Stratum II was underlain by Stratum III, a layer of very dark gray (5YR 3/3) clay that extended from 160 to 220 cmbs (63 to 86.7 inbs). No cultural material was recovered from Area 1A and no additional testing of this portion of the project parcel is recommended.

Area 1B

Area 1B is located on the right descending bank of Bayou Teche within Irregular Sections 16 and 17. Area 1B of the Keystone Lock and Dam project parcel is rectangular in configuration and it measures approximately 0.93 ha (2.3 ac) in size (Figures 2 and 35). Area 1B is situated immediately east of Area 1A, adjacent to the lock, and it extended southward along the Bayou Teche bankline (Figure 36). Mixed hardwoods dominate this portion of the natural levee. Topography throughout the area ranges from level to steep slopes, and it lies at an overall approximate elevation of 1.5 to 4.6 m (5 to 15 ft) NGVD.

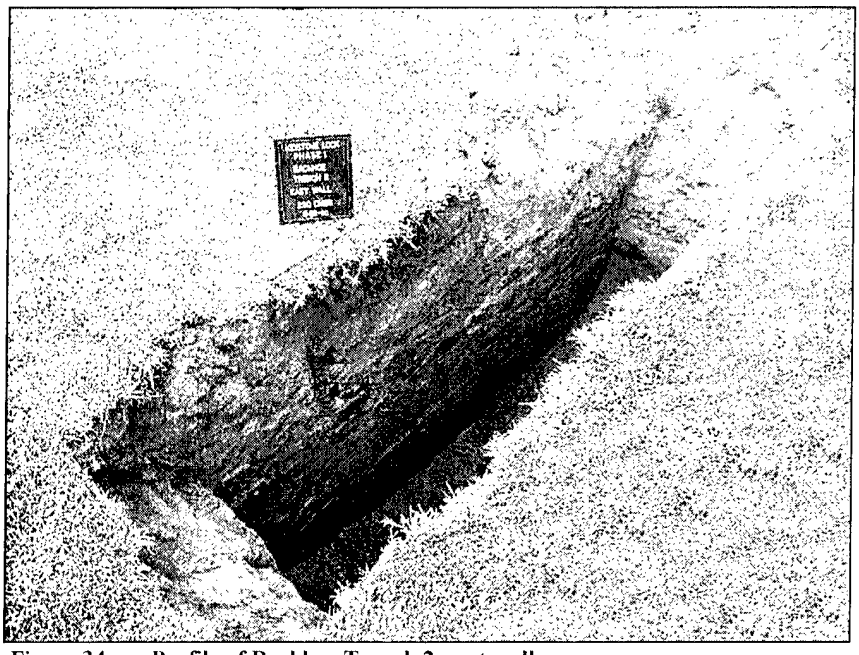

Figure 34. **Profile of Backhoe Trench 2, east wall.**

A total of two artificial drainages intersect within this portion of the proposed project area, thereby providing a water outlet into the bayou for the nearby fields. Due to artificial grading and bankline cutting during construction of the Keystone Lock and Dam, only a single survey transect was utilized to test the relatively undisturbed portions within the Area of Po-

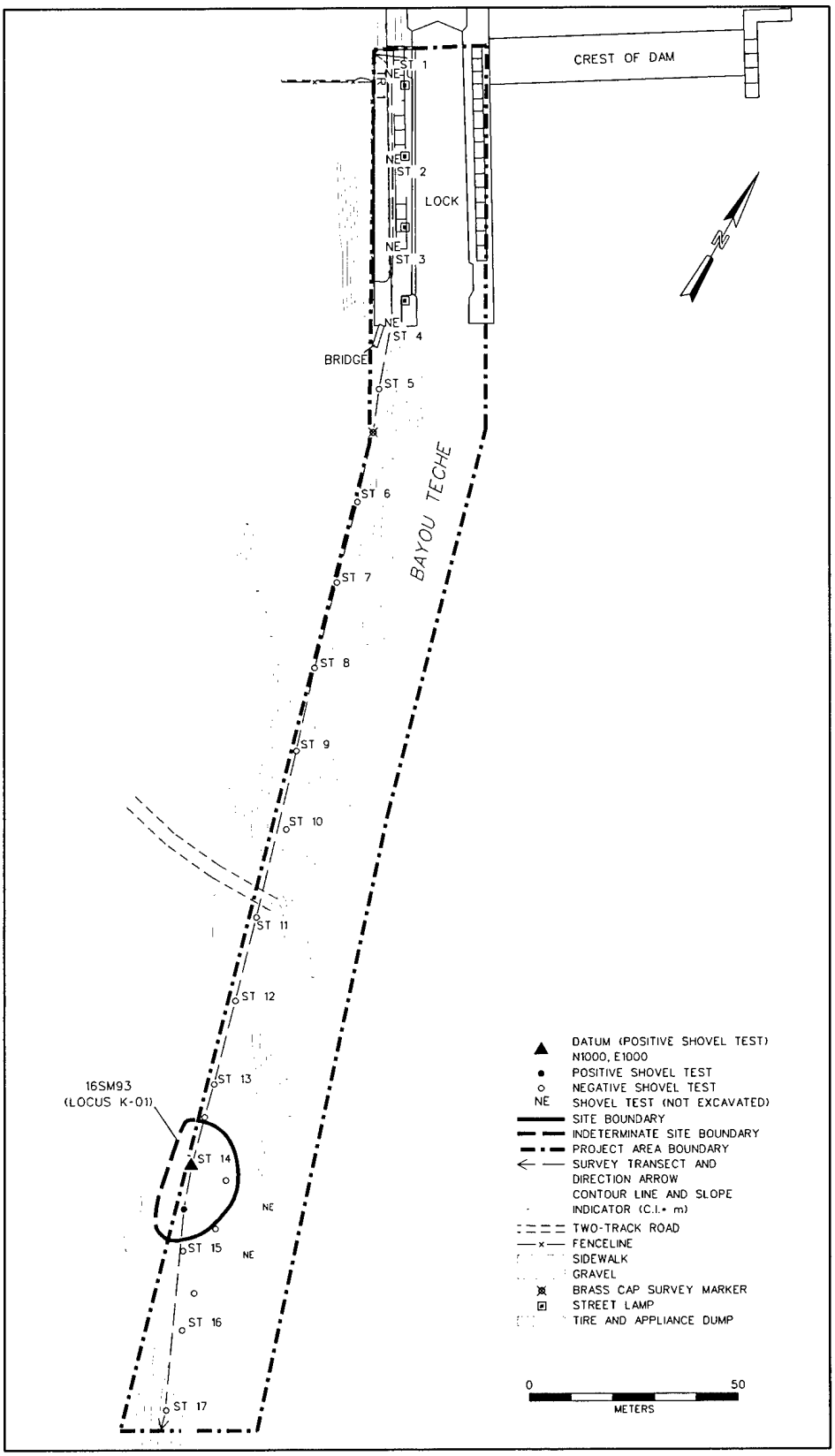

Figure 35. Plan view of Area 1B.

Figure 36. Overview of Area 1B, facing south.

tential Effect. This area measured only 15 m (49.2 ft) in width. A total of 13 of 17 (76.5 percent) planned shovel tests were excavated successfully within the limits of Area 1B (Figure 35 and Table 12). The remaining four shovel tests were not excavated because they fell within areas previously disturbed by the construction of the Keystone Lock.

A typical shovel test excavated within this portion of the project parcel extended to a depth of 100 cmbs (39.4 inbs) and it exhibited two strata in profile (Figure 37). Stratum I was characterized as a layer of very dark brown (7.5YR 3/1) clay that ranged in depth from 0 to 54 cmbs (0 to 21.3 inbs). Stratum II, the subsoil, consisted of a deposit of strong brown (7.5YR 5/8) silty sand that ranged in depth from 54 to 100 cmbs (21.3 to 39.4 inbs). Only one of the shovel tests excavated within Area 1B produced cultural material; it was designated Site 16SM93 and it is discussed in greater detail below. No additional cultural material or evidence of intact cultural deposits was identified within Area 1B. In addition, no historic period standing structures were identified during the cultural re-

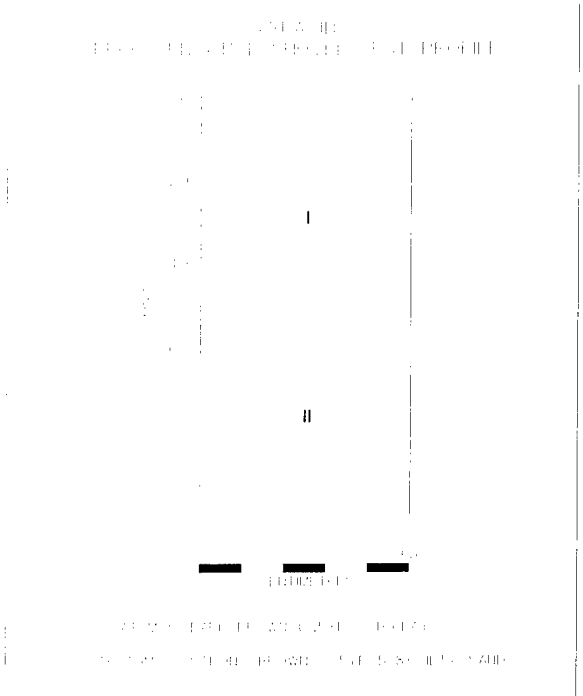

Figure 37. Profile of a typical shovel test excavated within Area 1B.

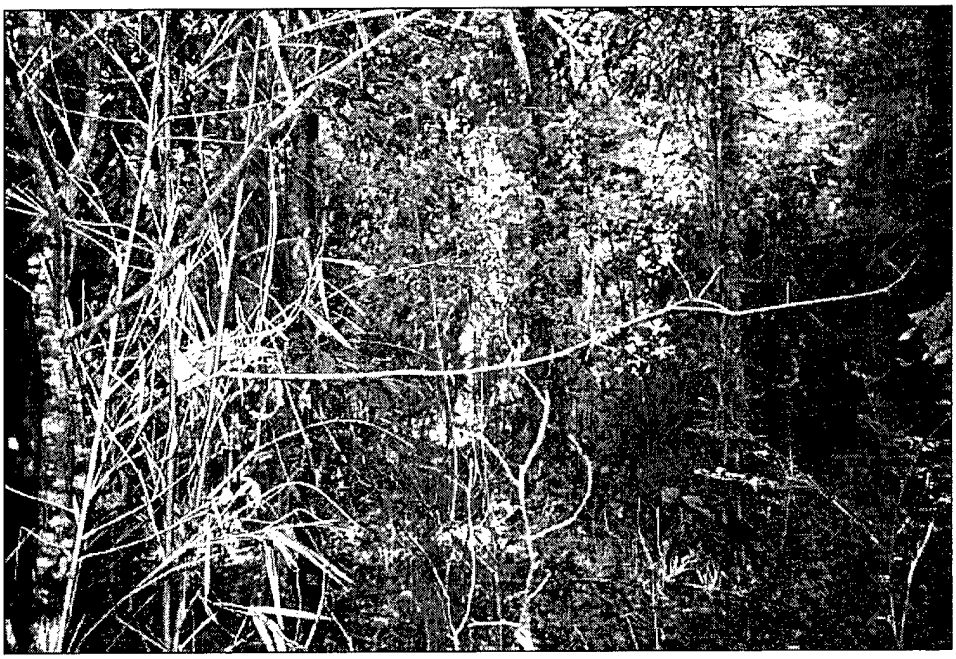

Figure 38. Overview of Site 16SM93, facing south.

sources survey of this portion of the project item. No additional testing of Area 1B of the proposed Keystone Lock and Dam project area is recommended.

Site 16SM93 (Locus K-01)

Site 16SM93 consists of an isolated prehistoric ceramic sherd and 16 historic period artifacts identified during survey of Area 1B (Figure 35). This site is positioned on the natural levee that overlooks Bayou Teche (Figure 38). It is located within Irregular Section 16 of Township 11S, Range 6E and it is situated an approximate elevation of 4.6 m (15 ft) NGVD (Figure 2). Site 16SM93 is circular in configuration and it measures approximately 25 m (82 ft) in diameter.

A total of 10 of 10 planned (100 percent) shovel tests were excavated within the vicinity of Site 16SM93 during the initial examination of this portion of the proposed project parcel (Figure 35). During survey, five historic period ceramic sherds were recovered from this location. During the subsequent site delineation process, 5 of 7 (71 percent) planned shovel tests were excavated successfully within Site 16SM93. The site delineation shovel tests also produced cultural material; it originated from both Stratum I and II. No artifacts were recovered from the surface of the site and no subsurface features were observed within the limits of Site 16SM93.

Site 16SM93 was characterized as multicomponent site. The prehistoric period artifact assemblage consisted simply of a single Baytown Plain var. unspecified sherd; it dates from the Marksville Period. This ceramic sherd was recovered from Stratum I of Shovel Test N990 E1000, i.e., from a depth of 0 to 10 cmbs (0 to 3.9 inbs) (Table 14). In addition, 5 historic period refined redware body sherds with black glaze, 6 pieces of cinder, and 4 coal fragments were recovered from Stratum I, i.e., from depths ranging from 30 to 50 cmbs (11.8 to 19.7 inbs). Also recovered from Shovel Test N990 E1000 was a single .22 caliber lead bullet; it was recovered from Stratum II, at a depth of 30 to 40 cmbs (11.8 to 15.7 inbs) (Figure 39). Faunal remains recovered from the site include 1 turtle carapace fragment and 2 indeterminate vertebrate; they originated from Stratum II (Table 14).

Table 14. Historic period artifacts recovered from Site 16SM93.

STRATUM	CLASS	TYPE	SUBTYPE	GENERAL DATE RANGE	TOTAL
I	Ceramic	Refined Redware	Black Glazed	indeterminate	5
	Stone	Other Miscellaneous Stone	Cinder fragment(s)	indeterminate	6
			Coal fragment(s)	indeterminate	2
I Total					13
II	Metal	Projectile Parts	Lead Bullet(s)	post ca.1856	1
	Stone	Other Miscellaneous Stone	Coal fragment(s)	indeterminate	2
II Total					3
Grand Total					**16**

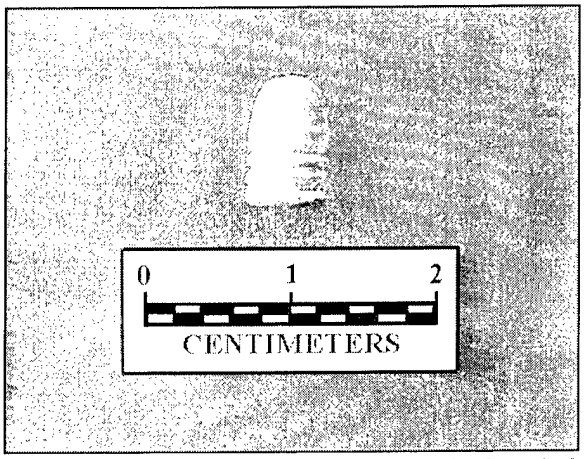

Figure 39. Historic period .22 caliber lead conical bullet (FS #8) recovered from Site 16SM93.

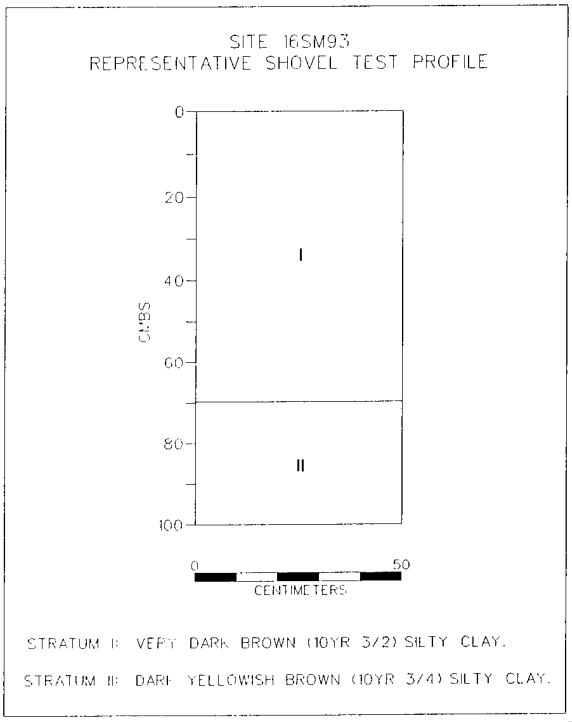

Figure 40. Profile of a typical shovel test excavated at Site 16SM93.

A typical survey shovel test excavated within the vicinity of Site 16SM93 extended to a depth of 100 cmbs (39.4 inbs) and it exhibited two strata in profile (Figure 40). Stratum I was characterized as a layer of very dark brown (10YR 3/2) silty clay that extended from 0 to 70 cmbs (0 to 27.6 inbs). Stratum I was underlain by Stratum II, a deposit of dark yellowish brown (10YR 3/4) silty clay subsoil that ranged in depth from 70 to 100 cmbs (27.6 to 39.4 inbs).

The results of the current archeological investigation suggest that Site 16SM93 represents an ephemeral occupation that dates from both the Early Marksville period and the nineteenth century. The limited cultural assemblage, the low artifact density, and the absence of intact cultural deposits demonstrate that Site 16SM93 does not retain research potential. The site does not possess the qualities of significance as defined by the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). No additional testing of Site 16SM93 is recommended.

Area 2

The third survey tract, Area 2, was rectangular in configuration and it measured approximately 1.6 ha (4.02 ac) in size (Figures 41 and 42). Area 2 encompassed the eastern bankline of the Keystone Lock and Dam project parcel. Bayou Teche bounded the tract to the west and fence lines bordered portions of the eastern and southern edges of this survey area. Area 2 was situated along the left descending bank of Bayou Teche

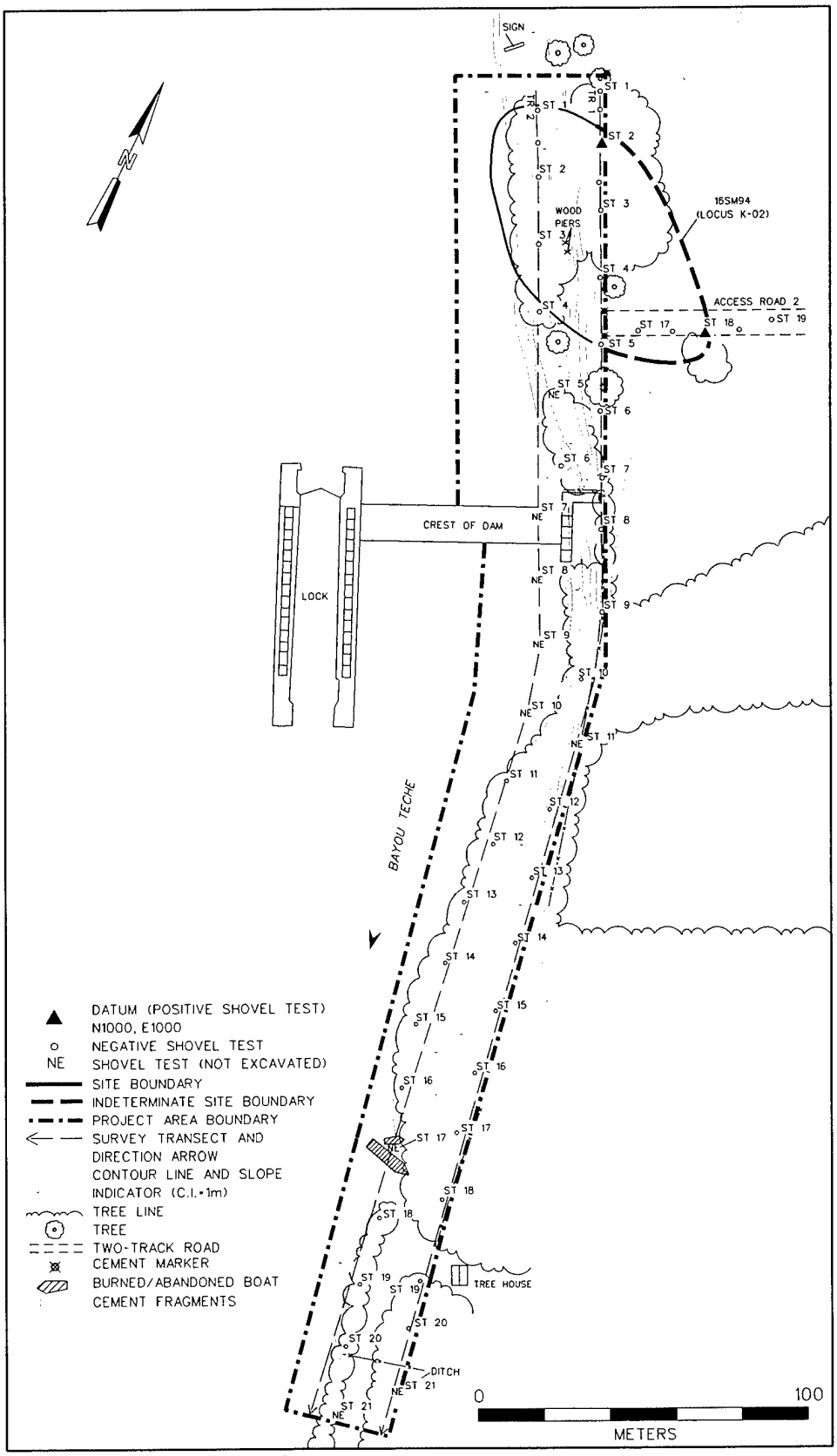

Figure 41. Plan view of Area 2.

Figure 42. Overview of Area 2, facing west.

within Irregular Section 8 of Township 11S, Range 6E; elevations throughout the area range from 0 to 6 m (0 to 20 ft) NGVD (Figure 2).

Area 2 contained several artificial features; these consisted of the aforementioned fence lines, two cut drainages, and impacts to the landscape due to the construction of Keystone Dam. Area 2 also contained two abandoned, burned boats; both were modern in origin. Vegetation in this area varied from large cypress trees and elephant ears located within the floodplain to the mixed hardwoods identified on the nearby natural levee.

During the examination of Area 2, 33 of 42 (79 percent) planned shovel tests were excavated at 20 m (65.6 ft) intervals along two survey transects spaced 20 m (65.6 ft) apart (Table 12). The remaining nine planned but unexcavated shovel tests fell within areas covered by standing water or on steep slopes.

A typical shovel test excavated within the confines of Area 2 extended to a depth of 100 cmbs (39.4 inbs) and it contained two strata in profile (Figure 43). Stratum I was characterized as a layer of dark brown (7.5YR 3/2) silt that extended from 0 to 57 cmbs (0 to 22.4 inbs). Stratum II consisted of a layer of reddish brown

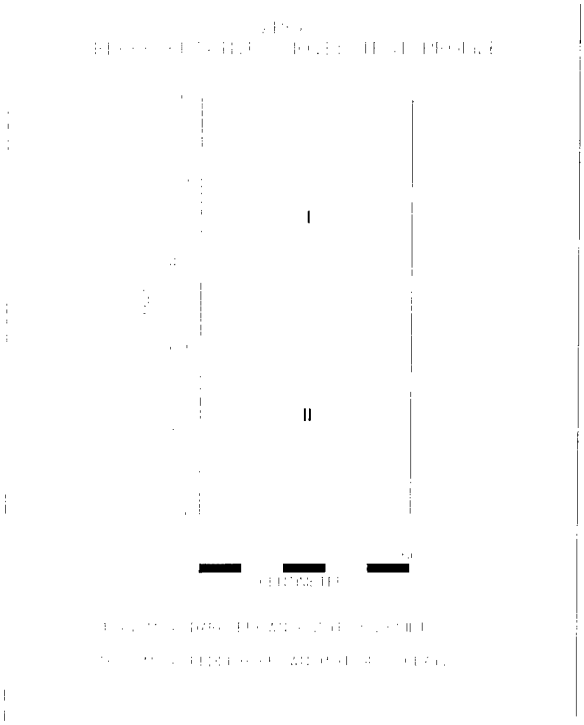

Figure 43. Profile of a typical shovel test excavated within Area 2.

(5YR 4/3) clay subsoil that ranged in depth from 57 to 100 cmbs (22.4 to 39.4 inbs). Only one of the successfully excavated shovel tests within Area 2 produced cultural material; this area was designated Site 16SM94. Site 16SM94 is discussed in greater detail below. No additional testing of Area 2 is recommended.

Site 16SM94 (Locus K-02)

Site 16SM94 consists of a scatter of historic period cultural material identified during survey of Area 2 and near the western end of Access Road 2. This site, positioned on a level terrace that overlooks Bayou Teche, is located within Irregular Section 8 of Township 11S, Range 6E and it is situated an approximate elevation of 4.6 m (15 ft) NGVD (Figure 2). Site 16SM94 is oval in configuration and it measures approximately 50 m (164 ft) in width by 90 m (295 ft) in length (Figure 41 and 44).

Site 16SM94 was characterized as a late nineteenth to mid-twentieth century occupation; it produced 1 ironstone sherd, 1 burnt earthenware sherd, and 1 wire nail from Stratum I (Table 15). Artifacts recovered from Stratum II consisted of a single whiteware sherd, 2 pieces of melted glass, 1 clevis pin and associated washer, and a single machine-cut, stamped head nail.

Table 15. Historic period artifacts recovered from Site 16SM94.

STRATUM	CLASS	TYPE	SUBTYPE	GENERAL DATE RANGE	TOTAL
I	Ceramic	Ironstone	Undecorated White	ca. 1813-1900+	1
		Unidentified Ceramics	Unidentified Burned Earthenware	indeterminate	1
	Metal	Nail(s)	Wire, Common	post ca. 1890	1
I Total					3
II	Ceramic	Whiteware	Plain	ca. 1820-1900+	1
	Glass	Unidentified Fire-damaged or Melted Glass	Colorless	indeterminate	2
	Metal	Miscellaneous Hardware	Clevis Pin	indeterminate	1
			Washer(s)	indeterminate	1
		Nail(s)	Machine-Cut, Stamped Head	ca. 1830s-1890s+	1
II Total					6
Grand Total					**9**

Figure 44. Overview of Site 16SM94, facing east.

Figure 45. View of wood pilings used as foundation supports on boathouse.

During the initial survey of Area 2, a total of 15 of 15 planned (100 percent) shovel tests were excavated within the vicinity of Site 16SM94 (Figure 41). As part of the subsequent site delineation process, 6 of 6 (100 percent) planned delineation shovel tests were excavated throughout the immediate area. Only two shovel tests produced cultural material, which originated from both Strata I and II. In addition, two wooden pilings were observed within Site 16SM94 and it is likely that they are associated with a boathouse that was located in the vicinity during the first half of the 1900s (Figure 45).

A typical shovel test excavated within the vicinity of Site 16SM94 extended to a depth of 100 cmbs (39.4 inbs) and it exhibited two strata in profile (Figure 46). Stratum I was characterized as a layer of very dark grayish brown (10YR 3/2) silty clay that extended from 0 to 25 cmbs (0 to 9.8 inbs). Stratum I was underlain by Stratum II, a deposit of yellowish red (5YR 4/6) compact silt subsoil that ranged in depth from 25 to 100 cmbs (9.8 to 39.4 inbs).

The results of the current archeological investigation suggest that Site 16SM94 represents a late nineteenth to mid-twentieth century oc-

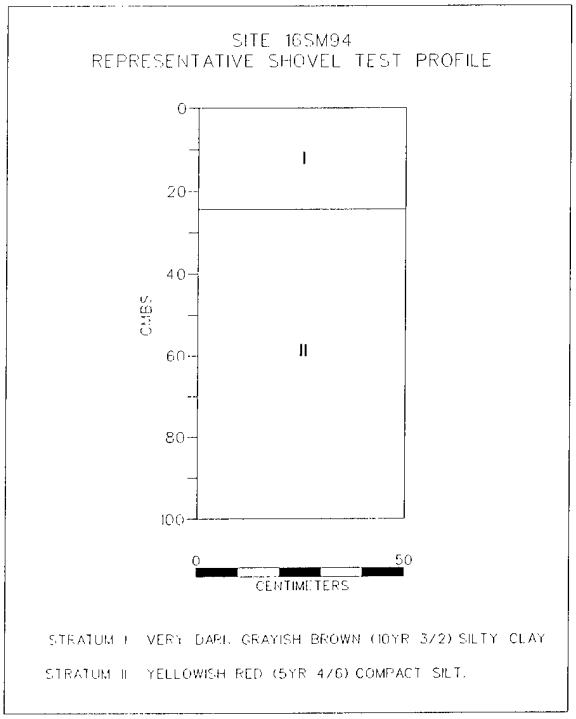

Figure 46. Profile of a typical shovel test excavated at Site 16SM94.

cupation that may be associated with the construction and maintenance of the Keystone Lock and Dam. Aerial photography, archival records, and a previous resident, Mr. Rudi Champlain, identified the locations of several now-destroyed structures in the vicinity of Site 16SM94, including a boathouse, a shipway (a supporting structure or track on which a ship is built and from which it is launched), a tool room or workshop, and a plantation house. The boathouse, shipways, and plantation house are present on aerial photographs dating from prior to 1959, when the structures were removed. No temporally diagnostic artifacts were recovered from secure contexts of the site. The limited cultural assemblage, the low artifact density, and the absence of intact cultural deposits demonstrate that Site 16SM94 does not retain research potential. It does not possess the qualities of significance as defined by the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). No additional testing of Site 16SM94 is recommended.

Access Roads

As a result of this Phase I cultural resources investigation, two proposed access roads totaling of 0.44 ha (1.09 ac) in length also were examined for cultural resources (Figure 2 and Table 13). Access Road 1 consisted of a tree lined, improved, gravel thoroughfare that extended from Louisiana Highway 31 to the entrance to Area 1A of the Keystone Lock property; it measured 110 m (361 ft) in length. Archeological survey along Access Road 1 consisted of the visual inspection of the entire length and width of the thoroughfare, which encompassed both the road surface and the adjoining sidewalls. No cultural resources loci were identified during the cultural resources survey of Access Road 1.

Access Road 2 was characterized as an unimproved dirt road that extended westward from Louisiana Highway 347 to the east bank of Bayou Teche and Keystone Dam; it measured 405 m (1,329 ft) in length. A total of 20 of 21 shovel tests were excavated successfully along a single transect positioned along the centerline of the road. Shovel testing was conducted at 20 m (65.6 ft) intervals throughout this area (Table 13). During survey of Access Road 2, only two of the successfully excavated shovel tests produced cultural material. Locus AR2-01 was identified at the eastern end of Access Road 2 and it is discussed below. The second area was identified at the western end of Access Road 2 and it was combined with Site 16SM94, which was identified within Area 2. Site 16SM94 has been discussed in a previous section. No additional testing of Access Road 2 is recommended.

Locus AR2-01

Locus AR2-01 consists of two historic period artifacts identified during the cultural resources survey of Access Road 2. This locus, positioned on a level terrace that overlooks Bayou Teche, is located within Irregular Section 8 of Township 11S, Range 6E and it is situated at an approximate elevation of 4.6 m (15 ft) NGVD (Figure 2). Locus AR2-01 is circular in configuration and it measures approximately 5 m (16.4 ft) in diameter (Figures 47 and 48). During survey, a single historic period ceramic sherd and 1 glass shard were recovered from this location.

Locus AR2-01 was characterized as an ephemeral historic period trash deposit; it consisted of a single whiteware bowl fragment with a floral decal and a molded glass "push-up" base shard. This light green glass shard dates from ca. 1929 to 1954 and it was manufactured by Owens-Illinois Glass Company. Both artifacts were recovered from Stratum I. A total of 2 of 2 planned (100 percent) delineation shovel tests were excavated successfully in the immediate vicinity of Locus AR2-01 (Figure 47). The delineation shovel tests failed to produce additional cultural material or intact subsurface features. In addition, no artifacts were identified on the surface of Locus AR2-01.

A typical shovel test excavated within the vicinity of Locus AR2-01 extended to a depth of 100 cmbs (39.4 inbs) and it exhibited three strata in profile (Figure 49). Stratum I was characterized as a compact layer of dark gray (7.5YR 4/1) silty clay mottled with strong brown (7.5YR 5/6) clay; it extended from 0 to 35 cmbs (0 to 13.8 inbs). Stratum I was underlain by Stratum II, a deposit of very dark gray (7.5YR 3/1) silty clay mottled with strong brown (7.5YR 5/6) clay that ranged in depth from 35 to 75 cmbs (13.8 to 29.5 inbs). The third stratum consisted of strong brown (7.5YR 5/6) compacted silt that ranged from 75 to 100 cmbs (29.5 to 39.4 inbs).

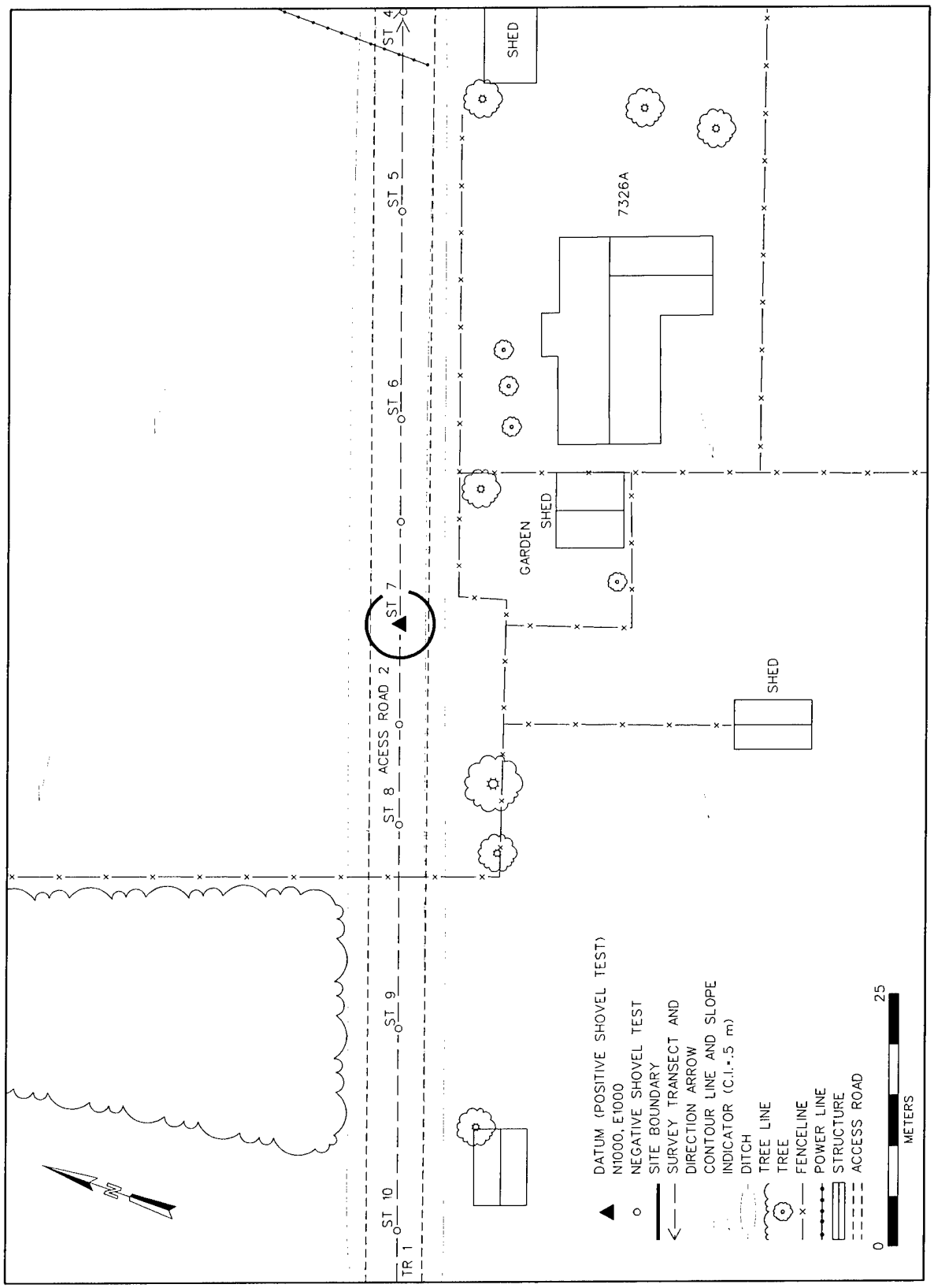

Figure 47. Plan view of Locus AR2-01.

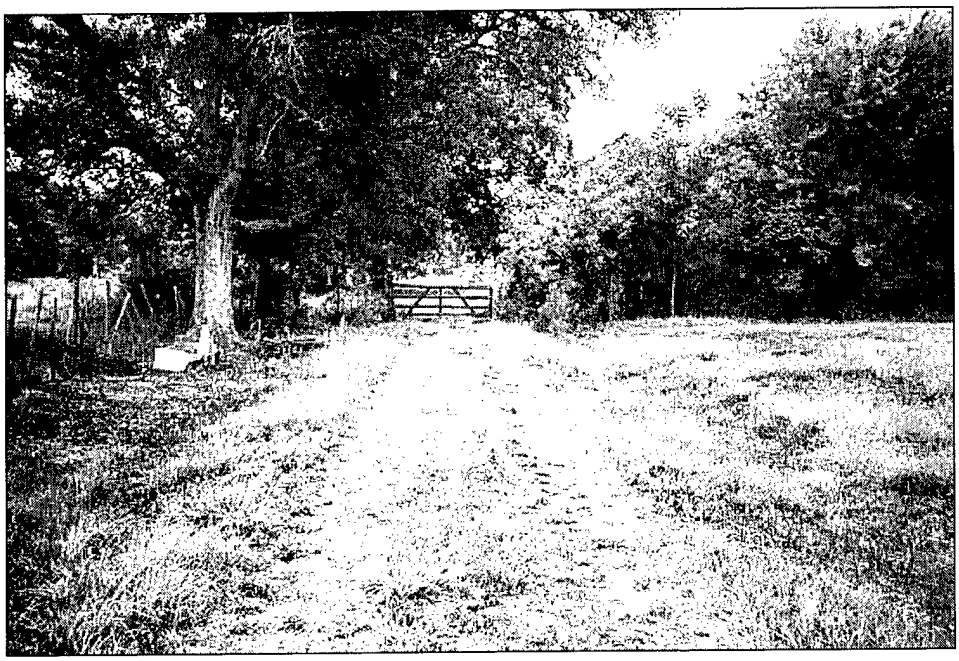

Figure 48. **Overview of Locus AR2-01, facing west.**

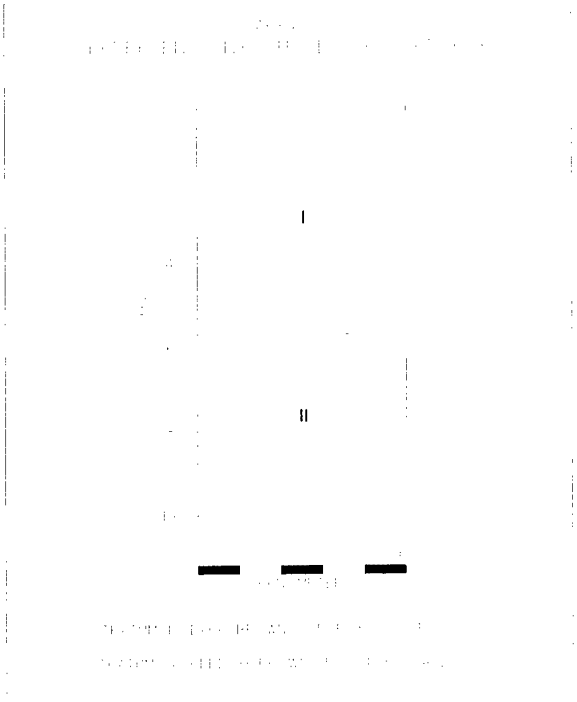

Figure 49. **Profile of a typical shovel test excavated at Locus AR2-01.**

The results of the current investigation suggest that Locus AR2-01 represents a small trash deposit of early twentieth century cultural material. The limited cultural assemblage, the low artifact density, and the lack of intact cultural deposits demonstrate that Locus AR2-01 does not retain research potential or the qualities of significance as defined by the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). No additional testing of Locus AR2-01 is recommended.

CHAPTER VIII

RECOMMENDATIONS

A Phase I cultural resources survey and archeological inventory of the Keystone Lock and Dam project area was completed by R. Christopher Goodwin & Associates, Inc., between June 12 and June 28, 2000. The proposed project parcel incorporated an area that measured approximately 4.5 ha (11.12 ac) in size, with an additional 0.44 ha (1.09 ac) utilized by two access roads that led into the facility. The survey was conducted within portions of Irregular Sections 8, 16, and 17 of Township 11S, Range 6E, in St. Martin Parish, Louisiana.

Background research for this project included an inspection of relevant documents housed at the Louisiana Department of Culture, Recreation and Tourism, Office of Cultural Development, Divisions of Archaeology and Historic Preservation, in Baton Rouge. A total of eight previously completed cultural resources surveys and archeological inventories were identified within 8 km (5 mi) of the proposed Keystone Lock and Dam project parcel (see Chapter V). These investigations resulted in the identification of two archeological sites (16SM7 and 16SM30) within 1.6 km (1 mi) of the currently proposed Area of Potential Effect; neither site is located within the limits of the proposed project parcel. A total of three previously recorded historic period standing structures (50-262, 50-263, and 50-264) were identified within 1.6 km (1 mi) of the currently proposed Keystone Lock and Dam project parcel (see Chapter V). Standing Structure 50-263 was identified as the Keystone Lock and Dam Caretaker's house and it is the only one of these three structures that is situated within the current project area. Therefore, additional research was conducted for the Standing Structure 50-263 and will be discussed in a separate report being prepared by R. Christopher Goodwin & Associates, Inc., to the U.S. Army Corps of Engineers, New Orleans District.

Fieldwork conducted as a result of the current investigation included pedestrian survey, systematic shovel and auger testing, and backhoe trenching throughout the Area of Potential Effect. During survey, 66 of 80 planned shovel tests, 33 of 38 planned auger tests, and 4 of 4 backhoe trenches were excavated successfully throughout the proposed project parcel. This resulted in the identification of one non-site cultural resources locus (AR2-01) and two archeological sites (16SM93 and 16SM94). No evidence of substantive research potential was identified at any of the identified loci. None of these cultural resources (Locus AR2-01, Sites 16SM93 or 16SM94) possesses the qualities of significance as defined by the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). No additional testing of these cultural resources is recommended. Finally, no additional testing of the terrestrial portions of the proposed Keystone Lock and Dam project parcel is recommended.

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APPENDIX I

ARTIFACTS RECOVERED DURING SURVEY

Table 1. Historic period artifacts recovered from the proposed project area.

SITE/ LOCUS	TRANSECT	SHOVEL TEST	METER	NORTH	EAST	STRATUM	LEVEL	TE	BE	CT	CLASS	TYPE	SUBTYPE	DESCRIPTION	GENERAL DATE RANGE
Locus AR02	1	7	140			I	2	10	20	1	Ceramic	Whiteware	Decal-Decorated	Body(s)	post ca. 1880
Locus AR02	1	7	140			I	2	10	20	1	Glass	Machine-Made Bottle Glass	Light Green	Base(s)	post ca. 1898
Site 16SM93 (Locus K01)	1	15	285			I	4	30	40	3	Ceramic	Refined Redware	Black Glazed	Body(s)	
Site 16SM93 (Locus K01)	1	15	285			I	4	30	40	6	Stone	Other Miscellaneous Stone	Cinder fragment(s)		
Site 16SM93 (Locus K01)	1	15	285			I	4	30	40	2	Stone	Other Miscellaneous Stone	Coal fragment(s)		
Site 16SM93 (Locus K01)	1	15	285			I	5	40	50	2	Ceramic	Refined Redware	Black Glazed	Body(s)	
Site 16SM93 (Locus K01)	1	15	285			II	7	53	63	2	Stone	Other Miscellaneous Stone	Coal fragment(s)		
Site 16SM93 (Locus K01)				990	1000	II	4	30	40	1	Metal	Projectile Parts	Lead Bullet(s)	Lead	
Site 16SM94 (Locus K02)	1	2	20			I	2	10	20	1	Metal	Nail(s)	Wire, Common	Iron	post ca. 1890
Site 16SM94 (Locus K02)	1	2	20			II	3	20	30	1	Glass	Unidentified Fire-damaged or Melted Glass	Colorless		
Site 16SM94 (Locus K02)	1	2	20			II	3	20	30	1	Metal	Miscellaneous Hardware	Clevis Pin	Iron	
Site 16SM94 (Locus K02)	1	2	20			II	3	20	30	1	Metal	Miscellaneous Hardware	Washer(s)	Iron	
Site 16SM94 (Locus K02)	1	2	20			II	4	30	35	1	Glass	Unidentified Fire-damaged or Melted Glass	Colorless		
Site 16SM94 (Locus K02)	1	20	380			I	2	10	17	1	Ceramic	Ironstone	Undecorated White	Rim(s)	ca. 1813-1900+
Site 16SM94 (Locus K02)	1	20	380			I	2	10	17	1	Ceramic	Unidentified Ceramics	Unidentified Burned Earthenware	Base(s)	
Site 16SM94 (Locus K02)	1	20	380			II	4	27	37	1	Ceramic	Whiteware	Plain	Indeter.	ca. 1820-1900+
Site 16SM94 (Locus K02)	1	20	380			II	4	27	37	1	Metal	Nail(s)	Machine-Cut, Stamped Head	Iron	ca. late 1830's-1890's+

Table 2. Faunal specimens recovered from the proposed project parcel.

SITE/ LOCUS	TRANSECT	SHOVEL TEST	STRATUM	LEVEL	DEPTH	COUNT	CLASS	FAMILY	COMMON NAME	ADDITIONAL DESCRIPTION
Site 16SM93 (Locus K01)	1	15	II	7	53 - 63	1	Reptilia	Testudinidata	Unidentified Turtle	Carapace fragment
Site 16SM93 (Locus K01)	1	15	II	7	53 - 63	1	Vertebrata		Unidentified Vertebrate	In cinder matrix
Site 16SM93 (Locus K01)	1	15	II	7	53 - 63	1	Vertebrata		Unidentified Vertebrate	In cinder matrix; burned

Table 3. Prehistoric ceramic artifacts recovered from the proposed project parcel.

SITE/ LOCUS	NORTH	EAST	STRATUM	LEVEL	DEPTH	COUNT	DECORATIVE CLASS	TYPE	VARIETY	VESSEL PORTION	APLASTIC INCLUSIONS	PRESUMED ARTIFACT DATE	PRESUMED CULTURAL AFFILIATION
Site 16SM93 (Locus K01)	990	1000	I	1	0 - 10	1	Plain	Baytown Plain	Marksville	Body(s)	Clay/Sand/Mica/ Organic	ca. AD 1-200	Early Marksville

APPENDIX II

STATE OF LOUISIANA SITE FORMS

STATE OF LOUISIANA
SITE RECORD FORM

LOCATIONAL DATA

SITE NAME:_____ **STATE SURVEY NO.:** 16SM93

OTHER SITE DESIGNATIONS: Locus K-01

SITE LOCATION AND APPROACH:
From New Iberia: Highway 31 North for approximately 2 miles. Highway 31 intersects with the driveway to Keystone Lock and Dam Complex. The site lies approximately 305 m (1000 ft) south of the Lock on the west bank of Bayou Teche.

PARISH: St. Martin

N/A **of the** N/A **of Section** 16 **Township** 11S **Range** 6E

USGSQUADRANGLE: New Iberia North, LA

UTM COORDINATES: Zone 15 E 612980, N 3326740

GEOGRAPHICAL COORDINATES: Long. 1° 49' 40.24" west, Lat. 30° 3' 59.62" north

PHYSICAL SETTING

LANDFORM: Site 16SM93 occupies the natural levee along Bayou Teche

GEOMORPHIC PROCESSES: Recent alluvium

ELEVATION AND RELIEF: Site 16SM93 lies at an approximate elevation of 4.6 m (15 ft) NGVD

NEAREST WATER: Site 16SM93 is located approximately 15 m (49 ft) to the west of Bayou Teche.

POSITION WITH RESPECT TO TERRAIN: Site 16SM93 is situated on the natural levee along the west bank of Bayou Teche

SOIL CHARACTERISTICS: Gallion Perry complex, gently undulating. The Gallion part is comprised of silt and silty clay loams and is generally well drained. The Perry part is comprised of silty clay loams and clay and is poorly drained.

FLORAL COMMUNITIES:
Typical natural levee communities.

FAUNAL COMMUNITIES:
Typical natural levee communities

NEAREST KNOWN SITE: 16SM30

SITE DESCRIPTION

SITE DESCRIPTION:
Site 16SM93, a multi-component site containing a single Baytown *var. unspecified* sherd, 1 nineteenth century historic period .22 caliber bullet, 4 coal fragments, 6 cinder fragments, and 5 historic period, redware ceramics were identified during Phase I cultural resources survey and archaeological inventory of the Keystone Lock and Dam and surrounding properties. The site is located on the west bank of Bayou Teche approximately 305 m (1000 ft) to the south of the Lock. It occupies a natural levee and it lies at an elevation of 4.5 m (15 ft) NGVD. Site 16SM93 measures approximately 30 m (98 ft) in length along it major north/south axis and 18 m (59 ft) in width along its minor east/west axis. Currently, the site area is unused with limited surface visibility. The vegetation in this area consists of mixed hardwoods and understory. [Continued]

SITE SIZE: The site measures approximately 18 m (59 ft) east-west by 30 m (98 ft) north-south.

CONFIGURATION: The site is circular in shape.

DENSITY OF CULTURAL MATERIALS: The density of the cultural material is low, 1.9 artifacts per shovel test.

DEPTH OF DEPOSIT/STRATIGRAPHY:
A typical shovel test was excavated to a depth of 100 cmbs (39.4 inbs) and it exhibited two strata in profile. Stratum I was characterized as a layer of very dark grayish brown (10YR 3/2) silty clay that extended to an average depth of 55 cmbs (21.6 inbs). Stratum II was characterized as a layer of dark yellowish brown (10YR 3/4) silty clay that reached from the base of stratum I to a maximum excavated depth of 100 cmbs (39.4 inbs).

FEATURES: None present

DATING/CULTURAL AFFILIATION: Marksville (A.D. 1-200) and middle nineteenth century

PRESENT CONDITION/PRESERVATION:
The site currently is disturbed heavily with a mixture of cultural strata and no intact soils.

PRESENT USE: Wooded

PRESENT AND FUTURE IMPACTS: The site will be impacted by reconstruction and updating of the lock and dam; it also will be impacted by any future dredging of Bayou Teche.

COLLECTIONS

SURVEY/EXCAVATION METHOD:
The site was surveyed using systematic shovel tests at 20 m (65.6 ft) intervals; each shovel test was excavated to 100 cmbs (39.4 inbs). All shovel test fill was then screened through 0.635 cm (0.25 in) wire mesh. A total of four shovel tests were excavated along the transect in conjunction with five delineation shovel tests.

DESCRIPTION OF MATERIAL:
During survey, 1 prehistoric period sherd and 16 historic period artifacts were recovered from Site 16SM93. In addition, 3 faunal fragments were identified. The prehistoric sherd was a Baytown var. unspecified body sherd dating from the Marksville period (ca. A.D. 1-200). The historic period artifacts consisted of a single .22 caliber bullet, 4 coal fragments, 6 cinder fragments, and 5 redware ceramics. The historic .22 caliber bullet can be associated with the middle to late nineteenth century (ca. A.D. post 1856). The ceramics consisted of domestic black glazed refined redware and could not be dated.

SITE EVALUATION

RESEARCH POTENTIAL:
None

STATE OR NATIONAL REGISTER ELIGIBILITY: Not Significant

RECOMMENDATIONS: No additional testing of Site 16SM93 is recommended.

RECORDS

OWNER/TENANT AND ADDRESS:
U.S. Army Corps of Engineers, New Orleans District
P.O. Box 60267
New Orleans, Louisiana 70160-0267

INFORMANTS: None

PREVIOUS INVESTIGATIONS: *National Register Evaluation of the Keystone Lock and Dam, St. Martin Parish, Louisiana* by Prentice Thomas and Associates, Inc., 1997

COLLECTIONS AND AVAILABILITY: State of Louisiana Department Culture, Recreation, & Tourism
Office of Cultural Development, Division of Archaeology
Capitol Annex Building
1051 N. 3rd Street, Room 405
Baton Rouge, LA 70802 (504) 342-8170

PHOTOGRAPHS AND MAPS: Attached.

REFERENCES: *Phase I Cultural Resources Investigation and Archaeological inventory of the Keystone Lock, St. Martin Parish, Louisiana*, Krause, Kari, David George, Katy Coyle, Meredith Snead, Jeremy Pincoske, William Athens

RECORDED BY:
R. Christopher Goodwin & Associates, Inc.
5824 Plauche Street
New Orleans, LA 70123
Tel. (504) 736-9323

DATE: June 29, 2000

State of Louisiana
Continuation Form

Site Name_____ **Site Survey Number** 16SM93

A total of 15 shovel tests originally were excavated in the vicinity of Site 16SM93, as part of the Phase I survey and subsequent delineation. Of these, two produced historic period cultural material. This material was listed as 4 coal fragments, 6 cinder fragments, and 5 redware ceramics, 3 faunal remains, 1 .22 caliber bullet, and 1 prehistoric period Baytown var. unspecified body sherd.

The results of the current investigation demonstrate that Site 16SM93 contains both prehistoric and historic period components. The prehistoric component consists of a Baytown var. unspecified sherd while the historic component consists of a middle nineteenth century bullet, cinder, coal fragments, black glazed redware ceramics, and faunal remains. Both components of the site have been impacted by dredging, lock/dam construction, and alluviation. The prehistoric sherd was recovered from Stratum I, i.e., 0 to15 cmbs (0 to 5.9 inbs) while the historic material was recovered from Stratum II at a depth of 30 to 40 cmbs (11.8 to 15.7 inbs). These results demonstrate that no intact deposits are present within Site 16SM93. Site 16SM93 does not posses the qualities of significance as defined by the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). No additional testing of Site 16SM93 is not recommended.

Site No. 16SM93

CAD CODING SHEET

Landform (1 Entry)

kn	Knoll	**sd**	Saltdome	**bea**	Beach	**nrs**	Nat. Relic Scar
rid	Ridge	**swa**	Swamp	**udw**	Underwater	**bat**	Batture
bn	Bench	**bsw**	Backswamp	**nal**	Natural Levee	**ot**	Other, see form
pm	Pimple Mound	**msh**	Marsh	**chr**	Chenier		

Soil Area (1 Entry)

cp	Coastal Plain	**fw**	Flatwoods	**ral**	Recent Alluvium	**cpr**	Coastal Prairies
cmr	Coastal Marsh	**mtl**	Miss. Terrace, Loessial Hills				

Soil Series Number _____

Cultural Features (4 Entries)

sar	Single Artifact	**psc**	Prehistoric Scatter	**ls**	Lithic Scatter
md1	Mound/Earthwork	**hsc**	Historic Scatter	**bu**	Burials
md2	Mounds/Earthwork	**hst**	Hist. Sheet Midden	**ss**	Standing Structures
her	Hist. Earthwork	**shm**	Shell Midden	**du**	Dump
ote	Other Earthwork	**erm**	Earth Midden	**hr**	Historic ruins
sw	Shipwreck				

Remarks (C.F.) _____

Cultural Affiliation (7 Entries)

pu	Prehis. (Unk.)	**tc**	Tchefuncte	**ms**	Mississippian
hu	Historic (Unk.)	**mar**	Marksville	**cad**	Caddo
ph	Pre./Hist. (Unk.)	**is**	Issaquena	**hi**	Hist. Indian Contact
pal	Paleo-Indian	**ba**	Baytown	**ex**	Hist. Explr. 1541-1803
mi	Meso-Indian/Archaic	**tro**	Troyville	**ant**	Antebellum 1803-1860
ni	Neo-Indian (Unk.)	**cc**	Coles Creek	**war**	War & Aftrm 1860-1890
po	Poverty Point	**pq**	Plaquemine	**in**	Indust. & Modern 1890-

Remarks (C.A.) Based on the recovery of one Baytown sherd *var. unspecified* and one .22 caliber bullet.

Site Function (3 Entries)

pu	Prehist. (Unk.)	**fa**	Farm/Rural res.	**ci**	Commercial/Service Cen.
hu	Historic (Unk.)	**wt**	Watercraft P&H	**it**	Institut. (Rel. & Ed.)
ch	Chipping Station	**pt**	Plantation	**gv**	Governmental
cam	Camp	**hs**	Hist. Town/Vill.	**id**	Industrial
el	Extraction Locale	**ur**	Urban	**du**	Dump
ha	Preh. Hamlet/Vill.	**cr**	Cemetery (Mort.)	**ml**	Military
cer	Ceremonial Center	**ht**	Hist. Transport.		

Remarks (S.F.) Based on the recovery of one prehistoric sherd and one .22 caliber bullet.

Description of Material (6 Entries)

cra	Ceramics, Aborig.	**she**	Shell	**wb**	Worked Bone
hc	Ceramics, Hist.	**ppo**	PPO's	**ub**	Unmodified Bone (Fauna)
cs	Chipped Stone	**gl**	Glass	**fl**	Flora
pp	Projectile Pts.	**me**	Metal	**wo**	Wood
gs	Ground Stone	**cmt**	Construct. Material (Brick, Wattle & Daub)		

Method of Investigation at Site (3 Entries)

gra	Grab Surface Col.	**au**	Auger Testing	**rs**	Remote Sensing
sy	Systematic Col.	**tu**	Test Units	**dv**	Diver Investigation
sht	Shovel Testing	**exc**	Excavation		

Disturbance Agent/Present Use (3 Entries)

unk	Unknown	**ti**	Timber Industry	**cw**	Construction, Water
pd	Potted	**nat**	Natural	**cto**	Construction, Other
nn	None	**di**	Urban Develop.	**uw**	Underwater
ag	Agricltr (Plowing)	**ot**	Other, see site form		

Disturbance Degree (1 Entry)

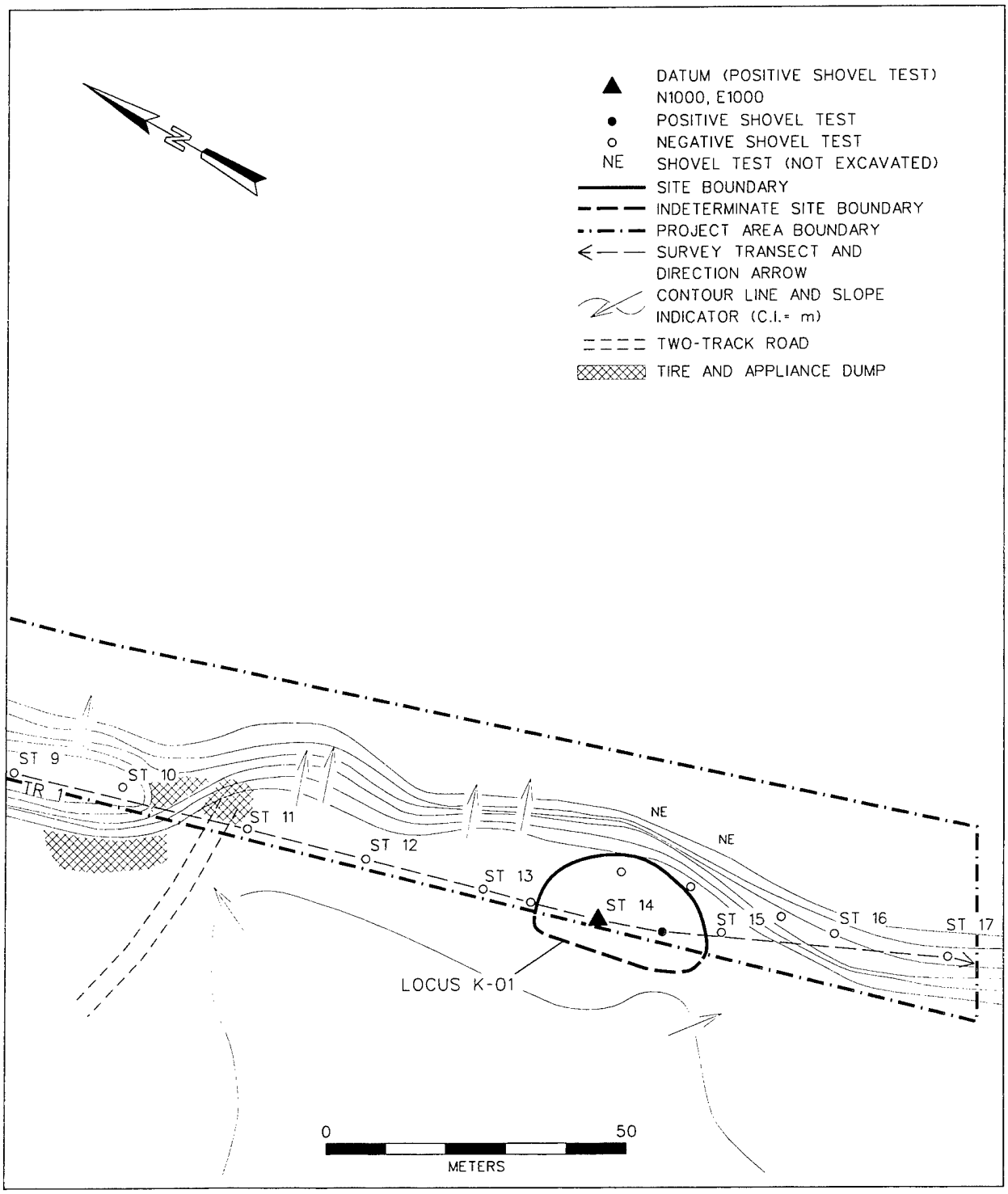
unk	Unknown	**mp**	Minor Impact	**dt**	Destroyed
nn	None	**mj**	Major Impact	**iu**	Inundated

National Register Status (1 Entry)

unk	Unknown	**ld**	Listed	**ps**	Potent. Signif.
ne	Not Eligible	**de**	Declared Elig.	**nd**	National Landmark

References (4 Entries)

1) _____ 2) _____ 3) _____ 4) _____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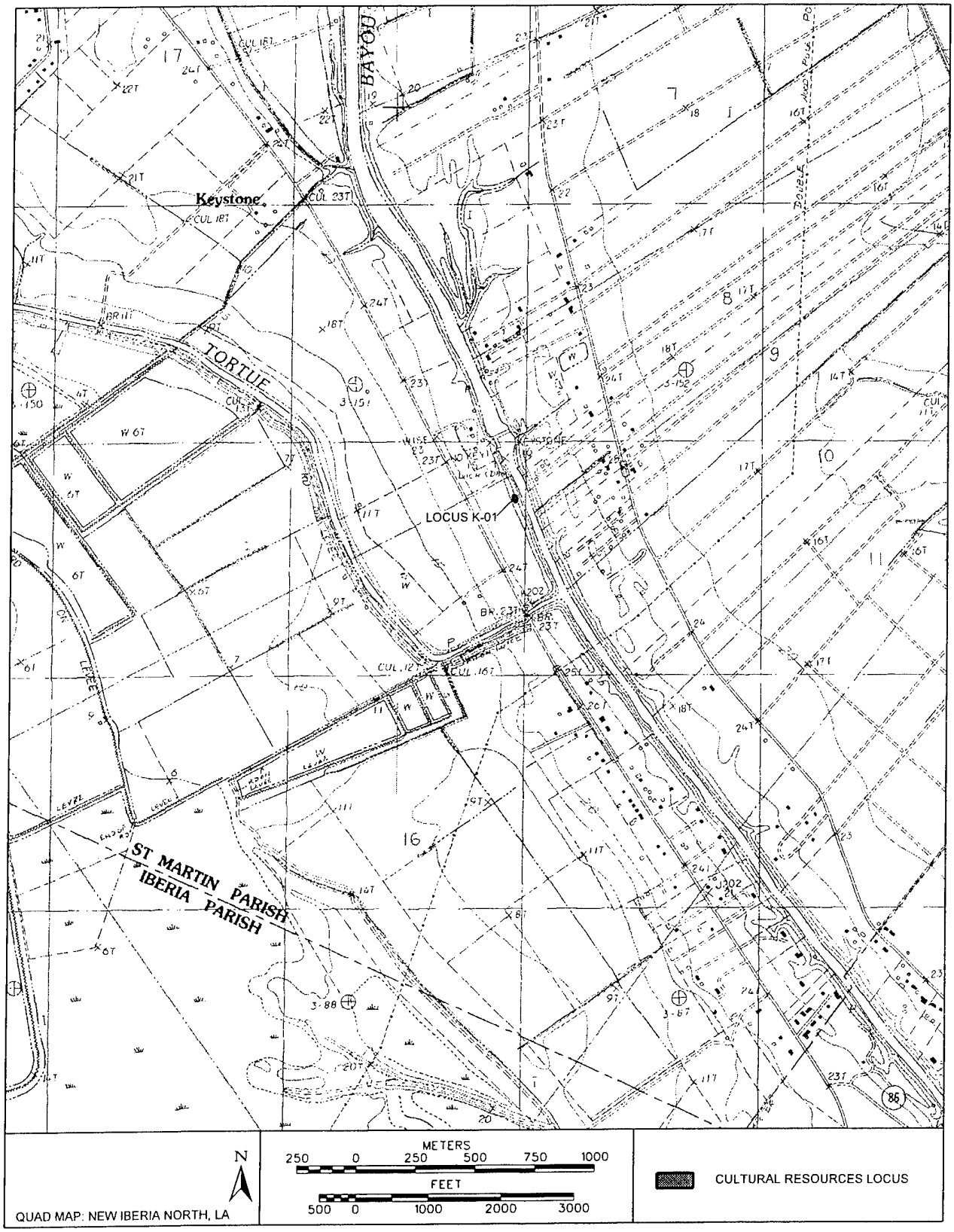
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3-67
N
METERS
250 0 250 500 750 1000
FEET
500 0 1000 2000 3000
CULTURAL RESOURCES LOCUS
QUAD MAP: NEW IBERIA NORTH, LA

STATE OF LOUISIANA
SITE RECORD FORM

LOCATIONAL DATA

SITE NAME: _____ **STATE SURVEY NO.:** 16SM94

OTHER SITE DESIGNATIONS: Locus K-02

SITE LOCATION AND APPROACH:
From New Iberia, LA: Highway 31 North for approximately four miles until intersection with LA 92. Follow LA 92 east until it dead-ends at LA 347. Follow LA 347 south for approximately two miles. Access road to Site K-02 is on right. Site begins approximately 200 m (656 ft) from beginning of access road.

PARISH: St. Martin

N/A **of the** N/A **of Section** 8 **Township** 11S **Range** 6E

USGS QUADRANGLE: New Iberia North

UTM COORDINATES: Zone 15 E 612920, N 3327120

GEOGRAPHICAL COORDINATES: Long. 1° 49' 42.34" west, Lat. 30° 4' 11.98" north

PHYSICAL SETTING

LANDFORM: Site 16SM94 occupies the natural levee along Bayou Teche

GEOMORPHIC PROCESSES: Recent alluvium

ELEVATION AND RELIEF: Site 16SM94 lies at an approximate elevation of 0 to 4.6 m (0 to15 ft) NGVD

NEAREST WATER: Site 16SM94 is located approximately 25 m (82 ft) east of Bayou Teche.

POSITION WITH RESPECT TO TERRAIN: Site 16SM94 is situated on the natural levee along the east bank of Bayou Teche.

SOIL CHARACTERISTICS: Gallion Perry complex, gently undulating. The Gallion part is comprised of silt and silty clay loams and is generally well drained. The Perry part is comprised of silty clay loams and clay and is poorly drained.

FLORAL COMMUNITIES:
Typical natural levee communities

FAUNAL COMMUNITIES:
Typical natural levee communities

NEAREST KNOWN SITE: 16SM30

SITE DESCRIPTION

SITE DESCRIPTION:
Site 16SM94 consists of a historic/modern period artifact scatter and it was identified during Phase I cultural resources survey and archaeological inventory of the Keystone Lock and Dam and surrounding properties. The site is located on the east bank of Bayou Teche and it occupies a natural levee at an elevation of 0 to 4.5 m (0 to 15 ft) NGVD. Site 16SM94 measures approximately 70 m (229.7 ft) in length along it major north/south axis and 60 m (196.9 ft) in width along its minor east/west axis. Currently, the site area is unused with limited surface visibility. The vegetation in this area consists of mixed hardwoods and understory. [Continued]

SITE SIZE: The site measures approximately 70 m (229.7 ft) east-west by 60 m (196.8 ft) north-south.

CONFIGURATION: The site is ovoid in shape.

DENSITY OF CULTURAL MATERIALS: The density of cultural material is low, 1.3 artifacts per shovel test.

DEPTH OF DEPOSIT/STRATIGRAPHY:
A typical shovel test was excavated to a depth of 100 cmbs (39.4 inbs) and it exhibited two strata in profile. Stratum I was characterized as a layer of very dark grayish brown (10 YR 3/2) silty clay that extended from the surface to an average depth of 25 cmbs (9.8 inbs). This was underlain by Stratum II, a layer of yellowish-red (5YR 4/6) compact silt that reached from the base of Stratum I to a maximum excavated depth of 100 cmbs (39.4 inbs). Cultural material was recovered from Stratum I at depths ranging from 0 to 35 cmbs (0 to 13.8 inbs).

FEATURES: None present

DATING/CULTURAL AFFILIATION: Historic/Modern

PRESENT CONDITION/PRESERVATION:
The site currently is disturbed heavily and it contains no intact cultural deposits.

PRESENT USE: Wooded

PRESENT AND FUTURE IMPACTS: The site will be impacted by reconstruction and updating of the lock and dam; it also will be impacted by any future dredging of Bayou Teche.

COLLECTIONS

SURVEY/EXCAVATION METHOD:
The site was surveyed using systematic shovel testing at 20 m (65.6 ft) intervals; each shovel test was excavated to 100 cmbs (39.4 inbs). All shovel test fill was then screened through 0.635 cm (0.25 in) wire mesh. A total of 11 shovel tests were excavated within the area in conjunction with four delineation shovel tests.

DESCRIPTION OF MATERIAL:
During survey, 11 historic/modern period artifacts were recovered. These consisted of 1 earthenware sherd, 1 plain whiteware sherd, 1 white ironstone sherd, 2 machine made nails, 1 bottle glass fragment, 1 burned/melted glass fragments and 2 pieces of miscellaneous metal hardware (a clevis pin and a metal washer). The artifacts dated from post ca. 1898.

SITE EVALUATION

RESEARCH POTENTIAL:
None

STATE OR NATIONAL REGISTER ELIGIBILITY: Not significant

RECOMMENDATIONS: No additional testing is recommended.

RECORDS

OWNER/TENANT AND ADDRESS:
U.S. Army Corps of Engineers, New Orleans District
P.O. Box 60267
New Orleans, Louisiana 70160-0267

INFORMANTS: Rudy Champlain (Son of former Keystone Lock and Dam Lockmaster)

PREVIOUS INVESTIGATIONS: *National Register Evaluation of the Keystone Lock and Dam, St. Martin Parish, Louisiana* by Prentice Thomas and Associates, Inc., 1997

COLLECTIONS AND AVAILABILITY: State of Louisiana Department Culture, Recreation, & Tourism
Office of Cultural Development, Division of Archaeology
Capitol Annex Building
1051 N. 3rd Street, Room 405
Baton Rouge, LA 70802 (504) 342-8170

PHOTOGRAPHS AND MAPS: Attached.

REFERENCES: *Phase I Cultural Resources Investigation and Archaeological inventory of the Keystone Lock, St. Martin Parish, Louisiana*, Krause, Kari, David George, Katy Coyle, Meredith Snead, Jeremy Pincoske, William Athens

RECORDED BY:
R. Christopher Goodwin & Associates, Inc.
5824 Plauche Street
New Orleans, LA 70123
Tel. (504) 736-9323

DATE: June 29, 2000

State of Louisiana
Continuation Form

A total of 21 shovel tests originally were excavated in the vicinity of Site 16SM94, as part of the Phase I survey and subsequent site delineations. Of these nine, two shovel tests produced historic period cultural materials. This material consisted of included 1 earthenware sherd, 1 plain whiteware sherd, 1 white ironstone sherd, 2 machine made nails, 1 bottle glass fragments, 1 burned/melted glass fragments, and 2 pieces of miscellaneous metal hardware (a clevis pin and a metal washer). The temporal range for these artifacts is post 1898 and continuing into modern times. Based on the recovery of these artifacts, four shovel tests were excavated to delineate the horizontal and vertical boundaries of Site 16SM94. While three delineation shovel tests fell within the site boundary, none produced additional cultural material.

The results of the current investigation demonstrate that Site 16SM94 consists of a small, subsurface deposit of historic/modern period artifacts. No intact cultural features were identified during survey. Site 16SM94 does not posses the qualities of significance as defined by the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). No additional testing of Site 16SM94 is recommended.

Site No. 16SM94

CAD CODING SHEET

Landform (1 Entry)

kn	Knoll	**sd**	Saltdome	**bea**	Beach	**nrs**	Nat. Relic Scar
rid	Ridge	**swa**	Swamp	**udw**	Underwater	**bat**	Batture
bn	Bench	**bsw**	Backswamp	**nal**	Natural Levee	**ot**	Other, see form
pm	Pimple Mound	**msh**	Marsh	**chr**	Chenier		

Soil Area (1 Entry)

cp	Coastal Plain	**fw**	Flatwoods	**ral**	Recent Alluvium	**cpr**	Coastal Prairies
cmr	Coastal Marsh	**mtl**	Miss. Terrace, Loessial Hills				

Soil Series Number _____

Cultural Features (4 Entries)

sar	Single Artifact	**psc**	Prehistoric Scatter	**ls**	Lithic Scatter
md1	Mound/Earthwork	**hsc**	Historic Scatter	**bu**	Burials
md2	Mounds/Earthwork	**hst**	Hist. Sheet Midden	**ss**	Standing Structures
her	Hist. Earthwork	**shm**	Shell Midden	**du**	Dump
ote	Other Earthwork	**erm**	Earth Midden	**hr**	Historic ruins
sw	Shipwreck				

Remarks (C.F.) _____

Cultural Affiliation (7 Entries)

pu	Prehis. (Unk.)	**tc**	Tchefuncte	**ms**	Mississippian
hu	Historic (Unk.)	**mar**	Marksville	**cad**	Caddo
ph	Pre./Hist. (Unk.)	**is**	Issaquena	**hi**	Hist. Indian Contact
pal	Paleo-Indian	**ba**	Baytown	**ex**	Hist. Explr. 1541-1803
mi	Meso-Indian/Archaic	**tro**	Troyville	**ant**	Antebellum 1803-1860
ni	Neo-Indian (Unk.)	**cc**	Coles Creek	**war**	War & Aftrm 1860-1890
po	Poverty Point	**pq**	Plaquemine	**in**	Indust. & Modern 1890-

Remarks (C.A.) Based on the recovery of historic period artifacts.

Site Function (3 Entries)

pu	Prehist. (Unk.)	**fa**	Farm/Rural res.	**ci**	Commercial/Service
Cen.					
hu	Historic (Unk.)	**wt**	Watercraft P&H	**it**	Institut. (Rel. & Ed.)
ch	Chipping Station	**pt**	Plantation	**gv**	Governmental
cam	Camp	**hs**	Hist. Town/Vill.	**id**	Industrial
el	Extraction Locale	**ur**	Urban	**du**	Dump
ha	Preh. Hamlet/Vill.	**cr**	Cemetery (Mort.)	**ml**	Military
cer	Ceremonial Center	**ht**	Hist. Transport.		

Remarks (S.F.)

Description of Material (6 Entries)

cra	Ceramics, Aborig.	**she**	Shell	**wb**	Worked Bone
hc	Ceramics, Hist.	**ppo**	PPO's	**ub**	Unmodified Bone
(Fauna)					
cs	Chipped Stone	**gl**	Glass	**fl**	Flora
pp	Projectile Pts.	**me**	Metal	**wo**	Wood
gs	Ground Stone	**cmt**	Construct. Material (Brick, Wattle & Daub)		

Method of Investigation at Site (3 Entries)

gra	Grab Surface Col.	**au**	Auger Testing	**rs**	Remote Sensing
sy	Systematic Col.	**tu**	Test Units	**dv**	Diver Investigation
sht	Shovel Testing	**exc**	Excavation		

Disturbance Agent/Present Use (3 Entries)

unk	Unknown	**ti**	Timber Industry	**cw**	Construction, Water
pd	Potted	**nat**	Natural	**cto**	Construction, Other
nn	None	**di**	Urban Develop.	**uw**	Underwater
ag	Agricltr (Plowing)	**ot**	Other, see site form		

Disturbance Degree (1 Entry)

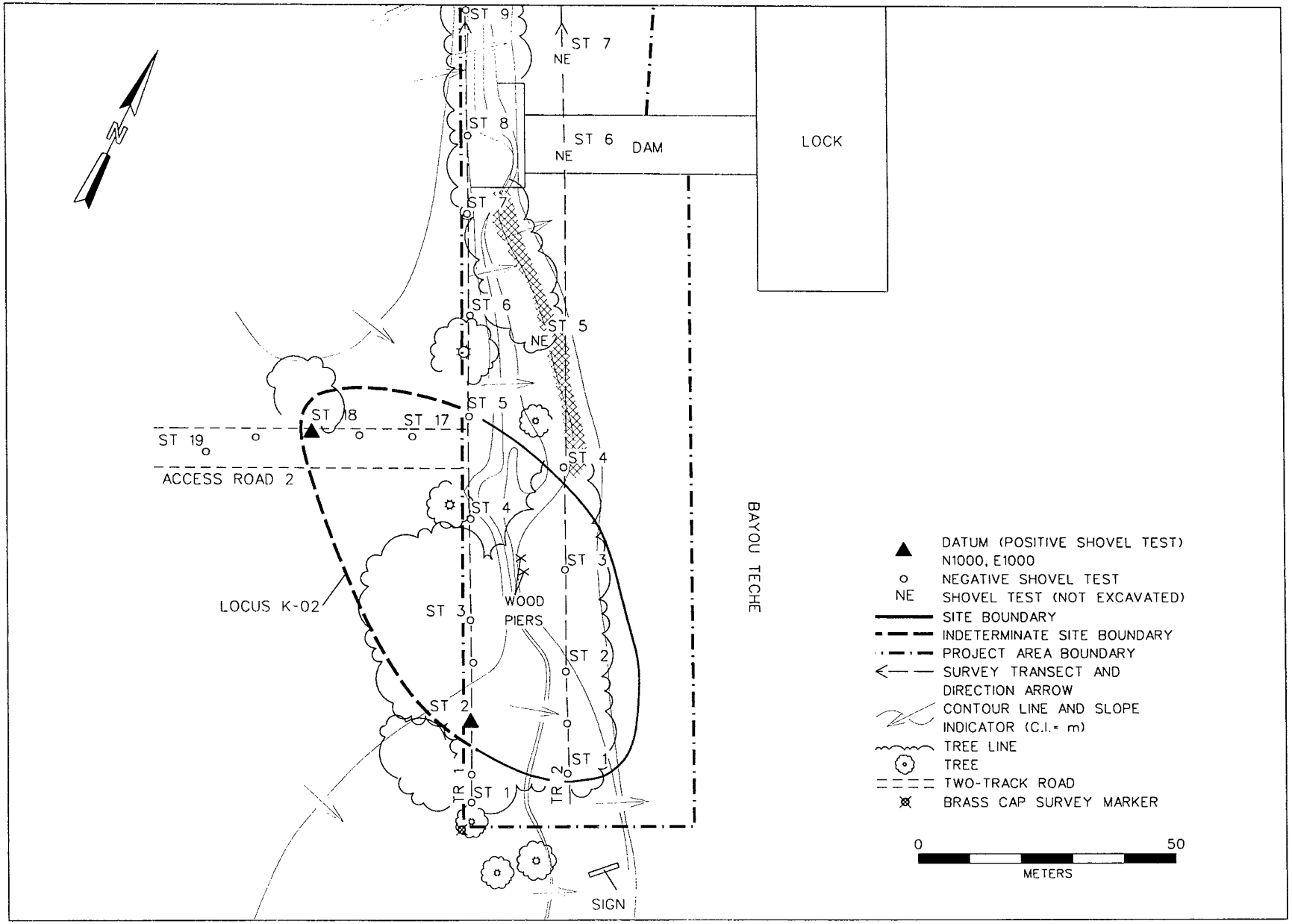
unk	Unknown	**mp**	Minor Impact	**dt**	Destroyed
nn	None	**mj**	Major Impact	**iu**	Inundated

National Register Status (1 Entry)

unk	Unknown	**ld**	Listed	**ps**	Potent. Signif.
ne	Not Eligible	**de**	Declared Elig.	**nd**	National Landmark

References (4 Entries)

1) _____ 2) _____ 3) _____ 4) _____


ST 9
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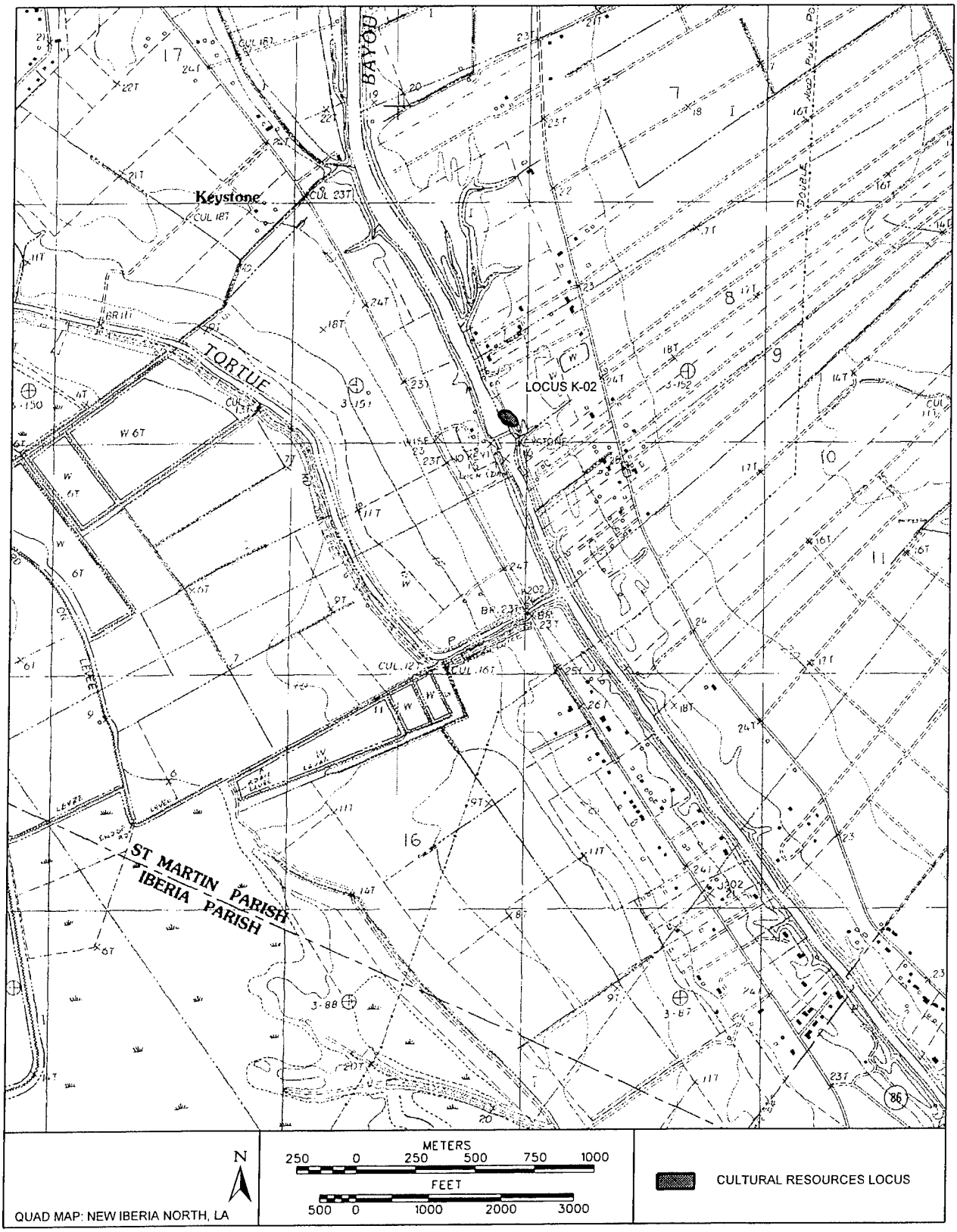
ACCESS ROAD 2
ST 4
ST 4
ST 3
LOCUS K-02
WOOD
PIERS
ST 3
ST 2
ST 2
ST 1
TR 1
ST 1
TR 2
BAYOU TECHE
SIGN
DATUM (POSITIVE SHOVEL TEST)
N1000, E1000
NEGATIVE SHOVEL TEST
NE SHOVEL TEST (NOT EXCAVATED)
SITE BOUNDARY
INDETERMINATE SITE BOUNDARY
PROJECT AREA BOUNDARY
SURVEY TRANSECT AND
DIRECTION ARROW
CONTOUR LINE AND SLOPE
INDICATOR (C.I. = m)
TREE LINE
TREE
TWO-TRACK ROAD
BRASS CAP SURVEY MARKER
0
50
METERS


Keystone
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TORTUE
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IBERIA PARISH
LEVEE
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METERS
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CULTURAL RESOURCES LOCUS
QUAD MAP: NEW IBERIA NORTH, LA