ARCHAEOLOGICAL INVESTIGATIONS FOR PROPOSED THREE DIMENSIONAL SEISMIC SURVEY WITHIN AND NEAR THE BARATARIA PRESERVE OF JEAN LAFITTE NATIONAL HISTORICAL PARK AND PRESERVE JEFFERSON AND ST. CHARLES PARISHES, LOUISIANA

by

Aubra Lee

Earth Search, Inc.
P.O. Box 850319
New Orleans, LA 70185-0319

Submitted to

Seitel Data Ltd.
50 Briar Hollow Lane West
Sixth Floor
Houston, TX 77027

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Introduction

Earth Search, Inc. (ESI) conducted archaeological investigations in or near Jean Lafitte National Historical Park and Preserve for Seitel Data, Ltd. Field investigations were conducted on July 9 and August 27, 2001. Forty-nine locations along the seismic grid were examined as well as seven ingress/egress points for machinery to be utilized during seismic operations. Investigations failed to discovered any new or previously unrecorded sites. In addition, field inspection confirmed that the Estelle Canal site (16JE41) will not be adversely affected by the seismic project.

Project Area Description

The proposed three-dimensional seismic survey will encompass approximately 105 sq mi (271.95 sq km) primarily in Jefferson and St. Charles parishes, Louisiana. Archaeological survey was not undertaken for the entire seismic survey area, but was confined to reconnaissance in selected portions of the eastern project area. Generally, this area is bound on the south by Lake Cataouatche, on the west by the LaBranche Canal, on the north by Bayou Segnette State Park and the town of Westwego, and on the east by the community of Estelle. This area is totally contained within Jefferson Parish in Township 14 South, Ranges 22 and 23 East. Approximately 1500 ac (607 ha) of the project area are located within the Barataria Unit of Jean Lafitte National Park and Preserve (Seitel Data LTD 2001:1, 5). This acreage represents approximately 2.2 percent of the entire seismic program and is located in the extreme southeast corner of the project area in Township 14 South, Range 23 East (Figure 1).

The vast majority of the project area is classified as freshwater marsh. Interspersed within this marsh environment are areas classified as scrub-shrub wetlands, swamps, and forested areas along natural levees and spoil banks. Major natural streams courses located in the project area include Bayous Segnette, Boeuf, and Bardeaux. Man-made water sources include the LaBranche, Millaudon, Estelle, and Woods Place canals as well as several unnamed canals excavated for petroleum exploration.

Project Action

The proposed seismic program requires a grid composed of source and receiver lines. Sources lines are oriented east/west and are placed every 2,200 ft (670.52 m). Individual source points (potential shot holes) are placed every 220 ft (67 m) along the source line. Receiver lines are oriented north/south and are placed every 1,760 ft (536.42 m). Geophones are situated along the receiver lines using a 220 ft interval (Seitel Data, Ltd 2001:5).

Three phases of work will be required to complete the seismic study including surveying the source and receiver lines, drilling the shot holes, and recording the reflected energy discharged from the shot hole explosives. Small Jon boats and air boats will be used to transport personnel in open water, canals, and other waterways. Air boats will be used to transport survey crews, recording crews, and other equipment in open marsh areas. Whenever possible, light
Figure 1. Excerpts from the USGS New Orleans East, LA; New Orleans West, LA; Bertrandville, LA; and Lake Cataouatche East, LA (1992) 7.5' quadrangles showing the location of the project area.
weight buggies will be used in the open marsh to transport drilling equipment, whenever possible. Heavier steel swamp buggies will be used to transport personnel and equipment in swamp and forested environments.

Although great attention has been expended to minimize impacts to the natural and cultural environments, the series of tasks described above still have the potential to impact cultural resources. Most archaeological sites recorded near the project area are located on natural levees, lake shorelines, and tributary streams feeding either lakes or larger streams. Therefore, archaeological reconnaissance was undertaken where source and receiver lines crossed areas that have a high potential for site location.

Environmental Setting

The project area is located north of Lake Cataouatche in the northeastern portion of the Barataria Basin. The basin is flanked on the west by the abandoned lobe of the Lafourche Delta and on the east by the abandoned lobe of the Modern Mississippi River delta. The north limit is in the Lac des Allemands swamps, in the vicinity of Donaldsonville, and the south limit is Grand Terre Island (Adams et al. 1976:3). The basin itself encompasses approximately 400,000 ha (988,000 ac) and is approximately 129 km (80.16 mi) long. Lake Cataouatche is one of several large, shallow lakes situated within the basin. These lakes are interconnected by bayous and surrounded by marshland. The marshland itself is bordered by higher ground that is the result of alluvial deposition from formerly active Mississippi River distributaries (White et al. 1983:101-102).

The Barataria Basin is a broad, low-lying region that represents an abandoned Mississippi River delta complex and the adjacent estuarine and offshore waters associated with that complex. It is characterized by a set of ecological parameters that are integrated into a dynamic ecosystem with enormous biological productivity. The prime integrating feature of this ecosystem is water. Primary units of the system are forests, fresh water marshes, brackish marshes, saline marshes and the offshore area. The Basin lies within an area that is, at present, subsiding and eroding (Bahr and Hebrard 1976:1-3).

Geomorphology. The Mississippi River deltaic plain is the composite result of previous and present progradations of the river. Development of the deltaic plain was initiated over 12,000 years ago when the sea was approximately 60 m (196.85 ft) below its present level (Autin et al. 1991). The deltaic plain formed as a result of the Mississippi River shifting its centers of deposition to accommodate the heavy sediment load with a more efficient route to the sea. This has resulted in the formation of four major abandoned delta complexes: the Maringouin, the Teche, the St. Bernard, and the Lafourche. In addition, there is the actively prograding delta, the Plaquemine-Balize, or modern "birds-foot" delta (Fisk 1944; Frazier 1967; Saucier 1994).

Approximately 4,800 years ago, the main shoreline of southeastern Louisiana was located north of Lake Pontchartrain, and the active delta was in central coastal Louisiana. At that time, this meander belt along the western side of the Mississippi alluvial valley was abandoned in favor of one along the eastern side. This extended delta lobes past Baton Rouge into the New Orleans area and created broad intratidal marshes and swamps into what formerly had been shallow Gulf waters (Saucier 1994).

The formation of delta lobes involves a cyclic sequence of sedimentary processes that have been replicated to form the delta lobe complexes comprising the present deltaic plain of the alluvial valley (Russell 1936; Fisk 1944; Scruton 1960; Coleman and Gagliano 1964; Frazier 1967). Frazier (1967) describes the development of a delta complex in four stages. Progradation of the delta lobe (Stage 2A) is initiated when the Mississippi discharges its sediment load into the shallow Gulf of Mexico basin. Sorting of sediment is responsible for the buildup of three dis-
tinctive vertical sedimentary facies. A broad unstable base of prodelta clays is overlain by a distal bar of silts and clays. Following this is the prograding distributary-mouth bar comprised of coarser sands and silts deposited at the mouth of the stream. The weight of the distributary-mouth bar causes the unstable fine-grained prodelta deposits to compress and subside. Continued aggradation of the distributary-mouth bar causes the mouth of the stream to become wide and shallow. This causes flow to be diverted to either side of the distributary-mouth bar at the mouth of the river, initiating the distributary network. Each functioning distributary continues to prograde, increasing the width of the deltaic platform. Overbank flooding deposits sediment between the distributaries, creating the interdistributary bays of the deltaic plain (Stage 2B). As flooding continues, natural levees develop and accrete as the result of coarser sediments (fine sands and silts) being deposited parallel to the stream due to a reduction in discharge velocity. Continued aggradation of the natural levees reduces the frequency of overbank flooding, permitting the establishment of vegetation (van Lopik 1955).

As distributary progradation continues, the stream becomes overextended. This results in a decrease of the slope of the stream, which causes a reduction in available stream energy. Velocity decreases and the stream becomes less efficient at transporting its heavy sediment load, resulting in aggradation of the channel. This causes an increase in stage levels upstream. Eventually the stream overflows its banks, forming a crevasse where the levee has been breached. At this point, the stream may divert its channel (Stage 2C) for a steeper, more efficient route to the gulf, prograding over the interdistributary bays. The abandoned distributary and associated deltaic plain begin to subside as a result of the loss of the sediment supply and the weight of the sediments of the distributary-mouth bar and levee on the unstable base of prodelta clays. Occasionally the abandoned distributary is reoccupied (Stage D), resulting in a repetition of the depositional stages (Frazier 1967).

In 1996, the U.S. Army Corps of Engineers performed geomorphic investigations in the Lake Cataouatche area. The purpose of these investigations was to “define the geomorphology of the project area in order to assist the archaeologist in identifying and evaluating cultural resources in the area” (U.S. Army Corps of Engineers 1996:1).

Three distributary systems are known to have formed in the study area. The earliest system to develop was Bayou Segnette. Apparently, the Bayou Segnette distributary was active prior to 3140 years B.P. This date was obtained from a radiocarbon sample of peat overlying the natural levee deposits. The precise beginning of the Bayou Segnette system is unknown. Deposits from the Bayou Segnette distributary form the near surface sediments of the extreme eastern portion of the study area (U.S. Army Corps of Engineers 1996:10, 13, Figure 6).

The second distributary development occurred in the central portion of the study area. A radiocarbon date of 2950 years B.P. was attained from a peat sample. This sample was taken from a peat deposit that underlay the natural levee of one of the two small unnamed distributaries in the central portion of the study area. The exact origin of these distributaries is unknown, as subsequent Mississippi River deposition has obscured the original crevasse that created the distributary network (U.S. Army Corps of Engineers 1996:10, 13, Figure 6, 14).

The third and latest of the distributary systems to form is Bayou Verret and its associated channels. The crevasse which created the Bayou Verret distributary system formed in the Davis Pond area to the north and west of the current study area (Britsch 1996; U.S. Army Corps of Engineers 1996:14). Samples of peat and organic clay from the VC-1 boring (on Bayou Verret) yielded radiocarbon dates from 2730 ± 80 to 1990 ± 60 years B.P. (Britsch 1996). Thus, approximately 2500 years B.P., the Bayou Verret distributary system reoccupied and extended beyond channels formed during the earlier Bayou Cypriere Longue system (Britsch and Dunbar 1990:35). Within the study area, Bayous Verret and Gaudin are distributaries related to this system (U.S. Army Corps of Engineers 1996:14). Since the abandonment of the Bayou Verret sys-
tern, no new distributaries have developed in the study area. Any subsequent sedimentation has occurred as a result of overbank flooding and crevassing on the main course of the Mississippi River (U.S. Army Corps of Engineers 1996:14).

Soils. There are three, general soil associations located within the project area and include the Sharkey-Commerce, Barbary, and Kenner-Allemands associations (Matthews et al. 1983:5-6). The Sharkey-Commerce association is located on the natural levees of the Mississippi River and its distributaries. Soils comprising the association are found along the northern and eastern peripheries of the project area corresponding to the natural levees paralleling the south bankline of the Mississippi River and the west bankline of its distributary Bayou de Families. Generally, the Sharkey-Commerce soils are level and are either poorly or somewhat poorly drained and have a clayey or loamy surface layer and a clayey subsoil. These soils are usually found in areas ranging between 1-12 ft (0.3-3.65 m) amsl. Sharkey soils make up approximately 50 per cent of the association. Sharkey soils are usually found along the lower edges and midportion of the natural levees. The surface layer is composed of dark gray or very dark grayish brown silty clay loam or clay and is underlain by a dark gray mottled clay. Commerce soils are found higher up on the natural levees and comprise 40 per cent of the association. The surface layer is composed of either very dark grayish brown silt loam or silty clay loam. Beneath the surface layer is a dark grayish brown silt loam (Matthews 1983:5, 49-50, 53-54, Sheets 6-7, 10-11, 14).

Barbary soils form or occur in swamps that are flooded or ponded most of the time. These soils are located in a discontinuous band beginning at the LaBranche Canal and continuing east to include the upper portion of Bayou Segnette before turning south to incorporate the Estelle and Woods Place canal area. Barbary soils are generally level and very poorly drained. They have a thin surface layer of dark brown, semifluid muck that is underlain by dark gray, semifluid clay and mucky clay. Elevations in these swampy areas range from sea level to about 2 ft (0.6 m) amsl, with a slope of less than 0.2 percent (Matthews 1983:6, 48-49, Sheets 10-11, 14).

The Kenner-Allemands soil association covers most of the project area since these soils form in freshwater marshes. Elevations in these marshy areas range between sea level and 1 ft (0.3 m) amsl with slopes less than 0.5 per cent. These soils are level and very poorly drained and have a moderately thick mucky surface layer that is underlain by mucky and clayey soil. Kenner soils comprise 80 per cent of the association and are specifically located in interbasin areas between natural stream courses. Allemands soils are located near natural streams and comprise 19 per cent of the association. Both soils of this association are covered with native vegetation. These soils are not suited for crops, pasture, woodland or urban development (Matthews 1983:6,47-48, 51, Sheets 10-11, 14).

Climate. All of Louisiana is located within an area of humid meso-thermal climate of the humid subtropical type generally characterizing all of the Southeastern United States. Jefferson Parish is typified by long, hot, and humid summers. Winters are relatively warm, but occasional incursions of cool air do occur (Matthews 1983:2). The mean low in January averages 12° Centigrade (54° Fahrenheit) and a mean high in July of about 27° Centigrade (81° Fahrenheit). The growing season exceeds 260 days (White et al. 1983:103).

The area is located within the Subtropics, and its weather is strongly influenced by the nearby Gulf of Mexico. Rainfall exceeds 150 cm (59 in) annually. Periods of greatest rainfall generally occur in August and September. October is, on average, the driest month (White et al. 1983:103). Hurricanes and storm surges occur intermittently, and these have profound effects on floral, faunal, and human communities within the Barataria Basin.
Plant Communities. Elevation of the land dramatically affects distribution and composition of plant communities within the Barataria Basin. Differences of only a few centimeters of elevation are associated with striking changes in vegetation. This is largely the result of the effects of soil saturation (White et al. 1983:103).

Upland forests were historically confined to only the highest areas. At lower elevations, bottomland hardwood forests, cypress-tupelo swamp forests, and marshes were present. An intermediate swamp may have been present at some locations between these two communities. Large tracts of marsh occur in surrounding areas (White et al. 1983:102).

Prior to cultivation and urbanization of the Mississippi River delta region, upland forests would have occupied most of the natural levee associated with the river itself. Similar plant communities remain present on the Pleistocene terrace north of Lake Pontchartrain. Natural climax vegetation in such forests is dominated by mixed deciduous and evergreen trees that are less tolerant of flooding than are bottomland hardwood species. Woody species in an elevated natural levee forest would have included oaks (Quercus virginiana, Q. alba, Q. nigra), shagbark hickory (Carya ovata), hackberry (Celtis laevigata), sweetgum (Liquidambar styraciflua), pecan (Carya illinoiensis), magnolia (Magnolia spp.), and various pines (Bahr et al. 1983:82).

Bottomland hardwood forests are dominated by the water oak (Quercus nigra). Subdominants include the sweet gum (Liquidambar styraciflua), hackberry (Celtis laevigata), and live oak (Quercus virginiana). Other forest species include the box-elder (Acer negundo), honey-locust (Gleditsia triacanthos), American elm (Ulmus americana) and the Nuttall oak (Quercus nuttallii). The most common shrub species are palmetto (Sabal minor) and green haw (Crataegus viridis), but thickets of possum-haw (Ilex decidua) also occur. Within forest gaps, elderberry (Sambucus canadensis) and French-mulberry (Callicarpa americana) occur. Introduced species such as the camphor tree (Cinnamomum camphora) are also present (White et al. 1983:103-104).

Vines are found throughout the bottomland hardwood forest, and few trees are observed without them. The most common of these include poison-ivy (Rhus toxicodendron var. vulgaris), Virginia creeper (Parthenocissus quinquefolia), supple-jack (Berchemia scandens), pepper-vine (Ampelopsis arborea), muscadine (Vitis rotundifolia), and hemp-weed (Mikania scandens) (White et al. 1983:104).

The cypress-tupelo swamp forests, located a greater distance from distributaries, are dominated by bald cypress (Taxodium distichum) in areas where they have been re-established after logging. Water tupelo (Nyssa aquatica) is often either a sub- or co-dominant species. Red maple (Acer rubrum var. drummondit) and ash trees (Nyssa aquatica) represent the other sub-dominants in this community. Shrubs include wax-myrtle (Myrica cerifera) and button-bush (Cephalanthus occidentalis), while vines are cat-briar (Smilax spp.), trumpet creeper (Campsis radicans), and poison ivy. Herbaceous ground cover includes smart-weed (Persicaria punctata), alligator-weed (Alternanthera philoxeroides), swamp potato (Sagittaria lancifolia), and water hyacinth (Eichhornia crassipes) (White et al. 1983:105).

An intermediate swamp forest sometimes occurs between the bottomland hardwood forest and the swamp forest. The intermediate forest can be extensive due to the gradual slope of the land. Swamp red maple, American elms, and water oaks are common here. Palmettos create a dense understory, which is nearly impenetrable in some locations (White et al. 1983:105).

The other predominant plant community within the Barataria Basin occurs in the marsh areas. Marshes are categorized according to their degree of salinity, and the areas covered by the various marsh communities have certainly changed through the period of prehistoric occupation due to variation in fresh water influx compared to salt water intrusion.
The ecological distinction between a swamp and a marsh is the absence of trees in the latter. Marsh soils are peat and muck, and elevation of these is less than one meter above mean sea level in the vicinity of the study area. This elevation is comparable to that of Lake Salvador. Cord grass (Spartina patens) is dominant in the brackish or intermediate marsh, while swamp-potato (Sagittaria lancifolia) predominates in freshwater marsh. Numerous other species co-occur with these marsh environments (White et al. 1983:106-107).

**Faunal Communities.** Barataria Basin hosts a diverse assemblage of species of fish. They are highly mobile, and seasonal movements of fish populations are widespread. The result is that marine fish penetrate inland to fresh water habitats, while fresh water species are sometimes found in more saline environments. Also, the lower reaches of freshwater streams probably serve as nursery areas for the young of some marine species (Bahr and Hebrard 1976:69).

Barataria Basin hosts at least 26 reptilian species, of which 14 are snakes. The American alligator (Alligator mississippiensis) and various species of turtle are common. At least 14 species of amphibians occur or are likely to occur in the basin. Most of these are frogs and toads (Bahr and Hebrard 1976:74-77).

At least 216 species of birds are known to occur in the Barataria Basin. Approximately 43 percent of these are passerines. Some species of this group are permanent residents, while others are only present seasonally. The remainder of the 216 species are predominantly waterfowl, many of which are migratory. Due to the basin’s location at the terminus of the Mississippi flyway, which is the largest waterfowl migratory route in North America, birds represent a potentially abundant source of food, feathers, and bone for tools (Bahr and Hebrard 1976:6-7,78-115).

Important fur-bearing species present within the basin are the muskrat (Ondatra zibethicus), raccoon (Procyon lotor), mink (Mustella vison) and otter (Lutra canadensis). Nutria (Myocastor coypus) are a recent introduction and were not present during the prehistoric or historic periods. Other mammals known to occur in the area include the Virginia opossum (Didelphis virginiana), the nine-banded armadillo (Dasypus novemcinctus), the swamp rabbit (Sylvilagus aquaticus), the fox squirrel (Sciurus niger), the fox (Vulpes fulva), the bobcat (Lynx rufus), the beaver (Castor canadensis), the civet cat or spotted skunk (Spilogale putorius), and the white-tailed deer (Odocoileus virginianus). In addition, several species of terrestrial rodents and bats are endemic (Bahr et al. 1983:118-126). The mammalian faunal inventory would have been even more extensive during the prehistoric period (Speaker et al. 1986:26-29).

**Culture History**

The culture historical and chronological subdivisions of archaeological cultures inhabiting the Barataria Basin portion of the coastal zone are vaguely defined and poorly understood. In general, few sites dating to the Paleo-Indian or Archaic Periods have been reported in southeastern Louisiana. Although land formation was occurring in the study area during the Archaic period, evidence indicates that human occupation occurred subsequent to maximum development of the distributary network. Additionally, Paleo-Indian and Archaic period sites are likely to have been deeply buried or destroyed by subsequent riverine processes (Gagliano 1963; Gagliano and Saucier 1963; Jeter et al. 1989:74-100; Saucier 1994; Smith et al. 1983).

**The Poverty Point Period.** The name Poverty Point is derived from the type site, an area of massive earthwork construction in northeast Louisiana (Ford and Webb 1956; Gibson 1983; Neuman 1984). The Poverty Point Site (16WC5) is believed to have been a cultural center with trade networks and influence extending throughout the Lower Mississippi Valley (Byrd 1991; Gibson 1983). Baked clay balls known as Poverty Point objects are one of the important
traits that mark the period. Other traits include elaborate lapidary and microlithic industry, use of steatite vessels, and the importation and use of exotic non-local stone (Gibson 1983; Neuman 1984).

The earliest known sites in the vicinity of the study area are dated to the Poverty Point period. The Linsley (16OR40) and Garcia (16OR34) sites are located in Orleans Parish (Gagliano and Saucier 1963), and the Bayou Jasmine site (16SJB2) is located at the western end of Lake Pontchartrain (Duhe 1977; Gagliano and Saucier 1963:Figure 1). The Garcia site is situated on a buried natural levee associated with an early course of the Mississippi River. Located at the eastern tip of Orleans Parish, the site consisted of an eroding Rangeia beach deposit. A series of radiocarbon dates, baked clay balls, and a characteristic Poverty Point artifact assemblage consisting principally of microlithic tools and a variety of chipped and polished stonework are evidence that date the site to the Poverty Point period (Gagliano and Saucier 1963:Table 1). Material dredged from the subsided Rangeia shell midden at Garcia was used to define the Bayou Jasmine-Garcia Phase of the Poverty Point period (Gagliano and Saucier 1963; Gagliano et al. 1975:44-47).

Another important site representing this period and phase is the Bayou Jasmine site (16SJB2). Here, the evidence for a Poverty Point period occupation consists principally of baked clay Poverty Point objects quite similar in size and shape to those from the Poverty Point site (16WC5) (Gagliano and Saucier 1963:321). Duhe (1977:35-37) also reports the presence of small numbers of Poverty Point microtools and a relatively minor quantity of non-local lithic material, including unworked quartz crystals, orthoquartzite projectile points, worked hematite, steatite (which was rare) and an unidentified gray-brown chert. The Bayou Jasmine site also supported an extensive Tchefuncte component, along with later Marksville, Coles Creek, and Plaquemine occupations (Duhe 1977; Gagliano and Saucier 1963).

The Tchula Period. Tchula period occupations in the Lower Mississippi Valley are equated with the Tchefuncte culture. The period has also been identified as the Formative (Jenkins and Krause 1986), or Early Ceramic period because, with the exception of fiber-tempered pottery, it was the interval during which initial pottery complexes appeared in the Lower Mississippi Valley (Neuman 1984:113, 122). Sites are few and scattered. Most occupations are found in the coastal zone (Neuman 1984). These data are interpreted to suggest that the peoples of the Tchefuncte culture were largely semi-nomadic hunters and gatherers (Neuman 1984:135). However, within subareas such as South Louisiana, regional artifact markers, primarily Tchefuncte type ceramics, are useful for recognizing occupations (Phillips 1970:7, 8, 15, 76) and possibly for defining regional populations (Shenkel 1981; Weinstein 1986).

Peoples of the Tchefuncte culture were the first to engage extensively in the manufacture of ceramics. Fiber-tempered and some grog-tempered or temperless sherds have been recovered from earlier Poverty Point contexts (Webb 1982). These may represent primarily trade goods from the earliest pottery-making cultures in the east. The basic Tchefuncte ware is temperless or grog-tempered, with accidental inclusions of small quantities a sand and vegetable fiber. Sand-tempered wares represent a minority constituent of Tchefuncte site assemblages (Shenkel 1984:47-48). Ceramic decorations and various percentages of these decorations have been used to create several regional phases of the Tchefuncte culture in the study area (Weinstein 1986). The Pontchartrain phase is considered the earliest Tchefuncte manifestation in the region and is thought to date from ca. 500 B.C. to ca. 250 B.C. Pontchartrain phase sites are moderately common in the Pontchartrain Basin. The most notable of these sites are the Tchefuncte site (16ST1) in St. Tammany Parish, and the Big Oak (16OR6) and Little Oak Island (16OR7) sites in Orleans Parish (Ford and Quimby 1945; Neuman 1984; Shenkel 1981, 1984; Shenkel and Gibson 1974). A later Beau Mire phase has been proposed to encompass the period from ca. 250
B.C. to A.D. 1, although this phase is not accepted by all researchers (Shenkel 1981, 1984; Weinstein 1986; Weinstein and Rivet 1978).

Tchefuncte sites in the vicinity of the study area are confined to the areas around Lake Pontchartrain and appear to be associated with relatively early river channels and lake margins. Tchefuncte subsistence is fairly well known. Excavations at the Big Oak Island and Little Oak Island sites suggest an emphasis on hunting and fishing (Shenkel 1981, 1984). Shenkel (1981:331) argues that these two sites initially had occupations which supported “permanent or semi-permanent villages.” Later, there is evidence that there may have been functionally different occupations, with Big Oak Island evolving into a “specialized” shellfish and fish procurement and processing station (Shenkel 1981, 1984) which was “unquestionably associated with the contemporaneous village component at the Little Oak Island site” (Shenkel 1981:331-332, 1984). Shenkel (1981:333-334) emphasizes the narrow range of exploited foods (primarily *Rangia* clams and marsh-estuarine fish and mammals) in the Pontchartrain phase, noting that many other equally productive resources were virtually ignored.

Social complexity was relatively minimal in the Tchefuncte culture. Settlements are generally small and lack certain evidence of earth works or other complex features. Burials are common, but rarely, if ever, contain grave furnishings. The evidence for earthen structures, such as mounds, is debatable. Low, domed mounds have been associated with Tchefuncte culture sites, but the data for securely attributing these constructions to the Tchefuncte people are limited (Neuman 1984:117, 135; Toth 1988:27). Unlike earlier Poverty Point culture, Tchefuncte people did not import non-local or exotic lithics to their sites, nor did they, to the best of our knowledge, engage in lapidary art.

**The Marksville Period.** The Marksville period is generally subdivided into two sequential temporal units, early Marksville and late Marksville. The early Marksville period is associated with the Hopewellian Tradition manifested throughout the Eastern United States (Phillips 1970:7, 17-18, 886; Toth 1988). The Hopewell Tradition has two major centers of development in Ohio and Illinois; this tradition dates to between 200 B.C. and A.D. 400. Diffusion of aspects of the culture may have resulted from the activity of traders who established a wide-ranging network, sometimes termed the “Hopewellian Interaction Sphere” (Caldwell 1964). In addition to diagnostic pottery types of the Marksville period, conical burial mounds were characteristic of the culture (Toth 1988). Interments are generally associated with grave goods. Some of these artifacts were manufactured from exotic raw materials (Neuman 1984:142-168; Toth 1974, 1988).

The late Marksville period appears to witness an increase in cultural diversity in the Lower Mississippi Valley and possibly on the coast. In much of the Lower Mississippi Valley, the Issaquena culture developed over several centuries beginning around A.D. 200 (Greengo 1964; Gibson 1977; Phillips 1970; Williams and Brain 1983). In the Louisiana coastal zone, the cultural situation is very vague and poorly understood.

Early Marksville occupations in the eastern coastal zone are identified with the Labranche phase (Phillips 1970:898, Figure 444). The definition of Labranche phase sites principally consisted of sites at which the frequency of Crooks Stamped (now Mabin Stamped, *var. Crooks*) was equal to or greater than Marksville Stamped. As noted by Gagliano et al. (1979:4-4), the Labranche phase is “overextended geographically.” Nonetheless, Labranche is still found as the phase name used in regional culture historical summaries (Perrault and Pearson 1994:Figure 6; Weinstein 1994:38, Figure 3-4), but it appears to be used only as a name to fill an otherwise blank space.

Excavations at the Coquilles site (16JE37) at the junction of Bayou des Familles and Bayou Coquilles yielded important evidence concerning the Marksville period occupation in the
Barataria region (Beavers 1982a; Giardino 1984, n.d.). Surveys of the Bayou des Familles channel indicate the possible presence of Marksville period (phase or cultural relationship unknown) sites consisting principally of small shell scatters (Beavers 1982b). Evidently, there is an early Marksville occupation at the Boudreaux site (16JE53) located on the bank of Bayou Barataria near Crown Point (Beavers 1982a:26; 1982b:110).

Additional early Marksville occupations in the lower Barataria region include Kenta Canal (16JE51), Dupree Cutoff I (16JE8), Dupree Cut Off II (16JE9), Three-Bayou Field (16JE98), Isle Bonne (16JE60), and Bayou Cutler (16JE3) (Gagliano et al. 1979:4-8-4-19). The early Marksville occupation at Bayou Cutler is evidently the best representation of this time period outside of Coquilles (and possibly Boudreaux). Surface collected sherds from this site include Baytown Plain, var. Marksville, consisting principally of small shell scatters (Beavers 1982b). Evidently, there is an early Marksville occupation at the Boudreaux site (16JE53) located on the bank of Bayou Barataria near Crown Point (Beavers 1982a:26; 1982b:110).

The late Marksville period occupation in the eastern Louisiana coastal zone is assigned to the Magnolia phase without attribution as to its cultural (as opposed to temporal) affiliation (Phillips 1970:898-899). The Magnolia phase is generally dated to the period ca. A.D. 200 -400 (Perrault and Pearson 1994:Figure 6). Magnolia phase components were identified by the presence of specific rim modes and by the absence of Mabin Stamped, var. Crooks (formerly Crooks Stamped), and the presence of later Marksville markers, including Marksville Stamped, ("probably but not necessarily" var. Troyville), Yokena Incised, and unspecified variants of Churupa Punctated (Phillips 1970:899). Based on the radiocarbon dates from the Coquilles site, it is evident that there was a late Marksville occupation associated with the midden deposits to the west of the mound area (Giardino 1984). Ceramics from the late Marksville component of the site included examples of Baytown Plain identified as being like vars. Marksville and Satartia (including rim modes similar to those associated with Issaquena, such as “Arcadia,” “DeSha,” and “Peak”); Marksville Incised, vars. Marksville and Yokena; Marksville Stamped, vars. Manny, Newsome, and Troyville; Churupa Punctated, vars. Churupa and Thornton; and rare examples of Catahoula Zoned Red (Giardino 1984:16-32). Radiocarbon dates identify this assemblage from ca. A.D. 319-650 at two standard deviations.

Late Marksville ceramics have also been recovered from sites farther down the Barataria waterway. Most notably, there is a small but well-defined component at the Bayou Cutler site (Gagliano et al. 1979:4-19 -- 4-27, Figures 4-17 and 4-18, Appendix A). Additional components include Isle Bonne (16JE60), Kenta Canal, Fleming (16JE36), Bayou Villars (16JE68), Rosethorn School (16JE50), Shipyard (16JE85), and Bayou Dupont-Dupre Cut Off (16JE91). Ceramics from these sites include classic modes on Baytown Plain, var. Satartia, and Marksville Incised, vars. Goose Lake, Liest, and Yokena (Gagliano et al. 1979: Figures 4-17 and 4-18).

The Baytown Period. The Baytown period has been defined as the interval between the end of Hopewellian inspired Marksville culture and its later Issaquena and related descendants, and the emergence of Coles Creek culture. The Baytown period is often referred to as the “Troyville period” by Delta archeologists. Due to the perceived lack of diagnostic markers for the period in southeastern Louisiana, it is often assimilated with the subsequent Coles Creek period, and the two are together referred to and discussed as “Troyville-Coles Creek cultures” (e.g., Neuman 1984).

Historically, the interval between roughly A.D. 400 to 700 has been one of the most difficult to understand from a culture historical perspective (Kidder 1995:33-34). When Phillips (1970:911-912) established the Whitehall phase to encompass the Baytown period in the Louisiana coastal zone, he specifically noted that the phrase “would be more accurately described... as a
collection of widely dispersed sites” (1970:911) rather than a coherent archeological manifesta-
tion. Kidder (1994a) has argued that Whitehall is not an appropriate phase for this region.  
Whitehall is better represented in the areas north of the Barataria Basin (Weinstein 1994).  
Furthermore, Kidder (1994a) argues that the Baytown period in the Barataria Basin, and probably all  
of coastal Louisiana, may be subdivided temporally into early and late phases. The earliest  
phase of the Baytown period in coastal Louisiana has been termed the Grand Bayou phase, and  
the later phase is the Des Allemands phase (Giardino 1993; Kidder 1994a).

The “type” site for Baytown period occupations in the lower Barataria region is the Isle  
Bonne site (16JE60) (Beavers 1982b; DeMarcay n.d.; Holley and DeMarcay 1977). Amateur  
excavations at this site revealed a stratified Baytown period occupation associated with two low  
rises formed by the accumulation of Rangia shell (DeMarcay n.d.; see also Gagliano et al.  
1979:Appendix A). Ceramics recovered included Larto Red, var. Larto (often with bulbous  
thickened rims); Coles Creek Incised, var. Phillips; French Fork Incised, var. Brashear; Wood-
ville Zoned Red, var. Woodville; Evansville Punctated, var. Unspecified (probably similar to var.  
Duck Lake); Indian Bay Stamped, var. Unspecified; Marksville Incised, var. Unspecified (Vick-
like); and Mazique Incised, vars. Bruly and Mazique.

The Grand Bayou phase is marked by the presence of the so-called terminal Marksville  
ceramic tradition, characterized elsewhere by local analogs to Marksville Incised vars. Anglim  
and Vick, and Marksville Stamped, var. Bayou Rouge. Larto Red pottery is evident, as are late  
variants of Churupa Punctated, especially something similar to var. Watson. Rim modes include  
characteristic early Baytown thickened rim modes and rim and lip notching. Plain pottery con-
sists of relatively thick, coarse grit-grog tempered plain pottery. This later phenomenon, the use  
of very thick coarse plain ware, may be diagnostic of the Grand Bayou phase, at least along  
Grand Bayou. Grand Bayou phase components have been identified at Bruly St. Martin, Shell  
Beach, Gibson Mounds, 16SC42, 16SC43, and 16SC45.

Des Allemands phase components can be identified in stratigraphically unmixed con-
texts, but are difficult to separate from the early Coles Creek Bayou Cutler phase (Giardino  
1993). The use of the “six mile” treatment may be one of the best and most consistent diagnostic  
hallmarks of the Des Allemands phase, although it certainly is continued into the Coles Creek  
period. A characteristic of the Des Allemands phase is single- and possibly double-lined exam-
ple of Coles Creek Incised, often with incisions on thickened rims. Early Mazique Incised vari-
ants are found for the first time, and are especially notable for the initial appearance of Mazique  
Incised, var. Bruly. Thick, coarse grit-grog tempered plainwares dominate collections, but sand  
added to the paste achieves a brief period of popularity. The Isle Bonne site is essentially the  
type site for the Des Allemands phase.

Evidence for Baytown period occupations within the study area is scarce. The Gheens  
Crevasse system, on the east side of Bayou Lafourche, appears to have seen the beginning of ex-
tensive human occupations during the late Coles Creek period (Hunter et al. 1988:154; Pearson  
et al. 1989). A few of the sherds recovered during the survey of the Golden Ranch area suggest  
occupations prior to A.D. 1000; however, these are “questionable” (Hunter et al. 1988:154).

Grand Bayou and Des Allemands should be considered phases of the so-called “Coastal  
Troyville” culture. Grand Bayou demonstrates ceramic affinities to phases up the Mississippi  
River, especially the Troyville culture phases at Greenhouse and in the Tensas Basin. Grand  
Bayou is not the same culturally as the Troyville peoples living in the Mississippi River Valley  
proper, however. Absent on the coast are the distinctive site plans, site hierarchies, burial  
mounds and mortuary patterns, and the total ceramic repertoire. This “Coastal Troyville” culture  
seems to represent a hunting and gathering society widely distributed across the habitable parts  
of the coastal zone (Giardino 1993). Although farther north and to the east contemporary groups
constructed mounds and earthen platforms (Blitz and Mann 1993; Kidder and Wells 1992), there are not certain data to substantiate this practice in the Delta.

In contrast to the Grand Bayou phase, the Des Allemands phase peoples seem to have a more eastern orientation (Giardino 1993). It is at this time that we see the beginnings of what appears to be relatively intensive interaction with Weeden Island or Weeden Island-related groups along the eastern gulf Coast (Belmont 1967; Belmont and Williams 1981). Although these external connections are notable, the peoples of the Louisiana coastal zones were developing their own unique adaptations to the delta environment of the Mississippi River. Des Allemands phase ceramics mirror a broad trend in Lower Valley prehistory marking the origins of later Coles Creek patterns.

The coastal pattern of intensive exploitation of fish, deer, and muskrat is in place by the end of the Baytown period. Shellfish harvesting or exploitation continues, but little evidence for settlement differentiation exists at present. The data recovered from the Pump Canal site hint at a series of relatively brief occupations, and the *Rangia* seasonality data indicate a late spring or early summer occupation (Jones et al. 1994). Perhaps at this time, populations living in the Barataria Basin were making seasonal trips to the distal ends of distributary courses to hunt, fish, and exploit the *Rangia* beds in the nearby brackish water environments. If this was a part of a seasonal round that involved living in larger, more established villages, such sites have not yet been found. Possibly Bruly St. Martin, located well into the interior of the Barataria Basin, might qualify for such a village location.

Given our limited data, it is difficult to establish any socio-political patterning with confidence. It appears that the Des Allemands phase peoples were egalitarian hunter-gatherers. The data are at present too equivocal to determine whether or not mound-building was occurring during the Baytown phase on the coast (Weinstein et al. 1978), and no strong site hierarchy has yet been identified. Site differentiation may exist, but what evidence there is indicates that site function plays the determining role in the size and nature of site occupation.

**The Coles Creek Period.** The Coles Creek period is the interval that begins with the emergence of Coles Creek culture in the southern part of the Lower Mississippi Valley and ends with the establishment of Mississippian culture in the northern part of the Valley (Phillips 1970:18). Although it appears to represent a population zenith in the eastern coastal zone, many sites tentatively classified as Coles Creek may actually be from the Baytown period (Wiseman et al. 1979:3/5).

Coles Creek culture in the central Lower Mississippi Valley is characterized by small ceremonial centers with mounds. These were surrounded by villages of varying size. The culture developed in the area between the mouth of the Red River and the southern part of the Yazoo Basin. A distinctive coastal variant of Coles Creek culture emerged at the same time, and no doubt there was a dynamic relation among Coles Creek period populations on the coast and in the interior (Brown 1984:95; Jeter and Williams 1989).

Mounds associated with the Coles Creek culture generally are larger and exhibit more construction stages than those found at earlier Marksville period sites. A more significant difference is that Coles Creek mounds are pyramidal and flat-topped, and they were used as substructures for religious and/or civic buildings (Ford 1951; Williams and Brain 1983). In contrast, Marksville peoples generally built conical burial mounds (Neuman 1984:167).

The advent of the Coles Creek period in the Louisiana coastal zone is marked by changes in ceramic frequencies and, to a lesser extent, by the appearance of new types or varieties and the disappearance of others. More fundamental patterns of economic and social behavior also change, but at a seemingly slower rate. Unlike previous periods, Coles Creek is well known, at
least in terms of the ceramics. Typical ceramics include Pontchartrain Check Stamped, Coles Creek Incised, French Fork Incised, Mazique Incised, Chevalier Stamped, Beldeau Incised, Chase Incised, Rhinehart Punctated, and "Coles Creek rims" (Phillips 1970:921). In the Lower Mississippi Valley, Coles Creek has been divided into early, middle, and late phases (Phillips 1970; Williams and Brain 1983). More recently, however, a fourth, usually "transitional" Coles Creek (or in some cases early Plaquemine) phase has been added (Brown 1985; Kidder 1994b; Weinstein 1987).

The archeological record of south Louisiana is sufficiently detailed so that the Coles Creek period is divided into spatially discrete geographic areas. In the coastal zone, there are at least three geographic areas with two Coles Creek phases each. In the eastern portion of the coastal zone, from roughly the Atchafalaya eastward to the St. Bernard marshes, the Coles Creek is defined to include the Bayou Cutler, Bayou Ramos, and St. Gabriel phases (Weinstein 1987).

The settlement patterns of the Coles Creek period are not well understood at this time. There is a general sense that populations were organized into a relatively loosely arranged hierarchy of site types. The best defined model comes from the Terrebonne marsh area west of the Barataria Basin. Here, Weinstein and Kelley (1992) hypothesize a pattern of major mound sites, satellite villages, and seasonal camps or shellfishing stations. The mound sites consist of one or more earthen mounds, presumably supporting the structures of elite chiefs and/or priests. They suggest that the Gibson Mounds may have served as the major Coles Creek period mound center in this area, although the precise chronology of all the mounds is yet undetermined. Most, if not all of Mound C at Gibson Mounds appears to have been constructed during the Bayou Cutler phase. Smaller village sites are found along stable levee segments, usually at the junction of one or more tributaries.

In the Barataria Basin, the archeological data are not adequate to fully address the nature of settlement and social organization. Excavations at the Fleming site (16JE36) indicate that Coles Creek period occupations comprise a considerable portion of the vertical extent of this site (Holley and DeMarcay 1977). Along with the Bayou Villars and Isle Bonne sites, Fleming makes up one of the important "Barataria complex" occupations (Gagliano et al. 1979; Holley and DeMarcay 1977). This locality is presumed to be the major center for Coles Creek and Mississippi period settlement in the lower part of the Barataria Basin. All three of these sites support earthen or shell mounds, although none can be solely assigned to the Coles Creek period (Gagliano et al. 1979).

There were major Coles Creek occupations at both the Sims (16SC2) and Bowie (16LF17) sites, and numerous Coles Creek period occupations can be found in the interdistributary basin between bayous Lafourche and Barataria (Hunter et al. 1988; Pearson et al. 1989). The density of Coles Creek occupation in this area is remarkable and suggests that this region was one of the central loci of activity during this period. Sims and Bowie are presumed to be major villages dating to the Coles Creek period (Davis and Giardino 1981; Jackson 1977). Numerous Coles Creek occupations are found on Bayou Barataria and its distributaries south of the confluence with Bayou Villars. The Pump Canal site can also be hypothesized to be an important village occupation during the Coles Creek period (Giardino 1993; Jones et al. 1994). It may have been an important locality serving as a "base camp" for exploiting the resources of the surrounding marshes and lakes.

In the eastern section of the coastal zone, from the Atchafalaya Basin eastward, Weinstein (1987) observed that the Transitional Coles Creek/Plaquemine occupations were best defined as an extension of the St. Gabriel phase. This phase was first defined by Brown (1985) based on excavations at the type site (16IV128) (Woodiel 1980). St. Gabriel or contemporary occupations are found at Mulatto Bayou (16SB12), Thibodaux (16AS35), and Bergeron School
Ceramic varieties such as Mott and Plaquemine are absent in the eastern delta.

The available data from surrounding areas suggest that the Transitional Coles Creek/Plaquemine occupation of the Barataria Basin was largely unchanged from earlier Coles Creek times. The major settlements continue to be located along Bayou Barataria or farther inland on the distributary channels of Bayou Lafourche or at the edges of large crevasse splays. The largest site of this time appears to be the Bowie site (Jackson 1977). A contemporary component is also found at the Sims site. The concentration of sites at the junction of Bayous Barataria and Villars is the best candidate for regional center in the Barataria Basin, but the precise chronology of these sites is still unknown.

Although Brown et al. (1979) note that important changes in settlement are initiated during Transitional Coles Creek/Plaquemine times in the Petit Anse region, no such evidence is found in regions to the east. In the Terrebonne marshes, the settlement pattern evidently continues unbroken from earlier times (Weinstein and Kelley 1992:353-355). The quantity of mounds constructed appears to increase through time, but the number that date to this interval cannot be determined at present. A clear mound center and subsidiary village hierarchy developed during the Coles Creek period and probably continue into these transitional times. The trend in the coastal zone is one of gradual, but steady evolution within the region. External influences may be present, but they do not appear to be notable in terms of the process of culture change. The origins of the Mississippi period cultures of the coastal zone seem to be wholly local. Later events, though, seem to suggest that this region witnessed a significant influence from Mississippian groups farther eastward along the coast.

The Mississippi Period. The beginning of the Mississippi period is marked by the appearance of emergent Mississippian culture in the northern part of the Lower Mississippi Valley and throughout much of the interior Southeast. Mississippian culture characteristics, such as shell tempering and the use of maize agriculture, did not penetrate into much of the central Lower Valley until after ca. A.D. 1200. Plaquemine culture is the term used to denote the indigenous late prehistoric populations of most of the Lower Mississippi Valley and adjacent coastal regions. Archeological evidence suggests that Plaquemine culture emerged from a Coles Creek base and was later influenced by Mississippian intrusions from farther up the Mississippi River Valley. Multi-mound construction and artifact assemblages are evidence that link the two. Absence of European trade goods indicates that the Plaquemine culture reached its zenith prior to European contact (Neuman 1984:258-259).

The late prehistoric culture history and chronology of the eastern portion of the Louisiana coastal zone is not well understood at present (Jeter and Williams 1989:191). The data indicate that local Plaquemine populations in the region developed out of the Transitional Coles Creek/Plaquemine beginning at roughly A.D. 1200 (Jeter and Williams 1989:191-195; Weinstein 1987). At roughly the same time, however, Mississippian ceramics, which are identified with the Pensacola variant of Mississippian culture, enter into the area from the east, presumably via the Gulf Coast. Sites in the eastern coastal zone with shell tempered pottery in large quantities are identified with the Bayou Petre phase, while late prehistoric sites in the area without shell tempered pottery, and which show evidence of more Lower Valley ceramic characteristics, are identified with the so-called Delta-Natchezan phase. Although these Mississippian ceramics tend to be found primarily in the easternmost part of the region, Mississippian Bayou Petre phase pottery is not wholly confined to this region (McIntire 1958). To further complicate the picture, there is increasing evidence that the late prehistoric populations in the Barataria Basin integrated some of the Mississippian designs and styles into the local ceramic repertoire (Davis and Giardino 1981).

The Plaquemine occupation of the Barataria Basin and adjacent parts of the coastal zone is designated the Barataria phase. This phase was defined by Holley and DeMarcay based on
amateur excavations conducted at the Fleming site (Holley and DeMarcay 1977; Manuel 1984). Fleming consists of at least one earth and shell mound, and a shell midden (Holley and DeMarcay 1977:4; Weinstein 1987:96). The Fleming site is one of three apparently contemporary occupations at the junction of Bayou Barataria and Bayou Villars. The Isle Bonne and Bayou Villars sites also consisted of earth and shell middens and mounds (Gagliano et al. 1975:24, 58, 1979; Holley and DeMarcay 1977; Weinstein 1987:96). As noted by Weinstein (1987:96), “this large mound complex forms the hub of the Barataria phase.”

The Barataria phase is differentiated from the contemporary Medora phase of the Mississippi Valley by the absence of Plaquemine Brushed pottery and by the extensive use of so-called Southern Cult motifs in association with typically Lower Valley pottery such as Anna Incised and L'Eau Noire Incised (Holley and DeMarcay 1977; Weinstein 1987:96). The Barataria phase ceramics, however, are otherwise Plaquemine in composition. Major types and varieties associated with this phase include L'Eau Noire Incised, var. L'Eau Noire and Bayou Bourbe; Carter Engraved; Maddox Engraved; and Mazique Incised, var. Manchac (Holley and DeMarcay 1977:14-18).

With the decline of Moundville and its influences across the Gulf Coast in the later part of the fifteenth century, the deltaic part of the coastal zone again saw a renewed emphasis on indigenous styles in ceramics. The so-called Delta Natchezan phase represents the final late prehistoric phase in the region. Ceramics of this phase show a strong continuity from the Barataria/Bayou Petre phase occupations in the region, with the addition of pan-Lower Valley varieties such as Fatherland Incised, var. Fatherland and Bayou Goula. Shell tempering continues as an important, but not unique, characteristic in the ceramics from the region (Giardino 1985).

The largest excavated late prehistoric site in the deltaic portion of the coastal zone is the Sims site (Davis 1981; Davis and Giardino 1981; Giardino 1985). Excavations in areas 1 and 3 at Sims revealed Mississippi period deposits attributable to the Bayou Petre and Delta Natchezan phases. Excavations in area 3 at Sims revealed a late Mississippi period component thought to be related to the terminal occupation at the Bayou Goula site and possibly dating to the protohistoric or early historic period (Giardino 1985).

The Bowie site also contained a minor Bayou Petre or Delta Natchezan phase occupation (Jackson 1977). During this late prehistoric period, archaeological sites are found across much of the marsh and levee lands of the eastern coastal zone. Collections from the Buras Mounds (16PL13) and from the Bayou Ronquille site (16PL7) demonstrate that there were important mound occupations located near the modern day coast and associated with recent distributary channel courses (see Kniffen 1936; Weinstein 1987).

The Bayou des Familles channel appears to witness an increase in occupation frequency during the late prehistoric and into the historic periods (Beavers 1982b; Franks and Yakubik 1990; Fuller 1991; Yakubik 1989). Mississippi period sherds at a number of small shell middens along the bayou suggest that either larger populations were exploiting the region, or that they were visiting the area more frequently. None of the Mississippi period sites are large, nor do they show evidence of the building of typically Mississippian site plans or features (mounds, mound-plaza arrangements). The radiocarbon dates from the Bayou Des Familles site (16JE218), in conjunction with the ceramic assemblage, however, demonstrate that both shell tempered and clay/Addis pottery were being used at the same time.

In contrast to the Petit Anse region, the eastern coastal zone does not witness very dramatic changes in settlement during the post-Coles Creek era. However, several important trends become evident. First, we see an expansion of settlement into more recently formed marsh areas and along peripheral distributary channels adjacent to the essentially modern course of the Mis-
The subsistence and sociopolitical organization of the late prehistoric period is not well documented. A small amount of corn was recovered from uncertain contexts at the Fleming site. Analysis of the fauna from Sims indicates that the later prehistoric inhabitants of the site exploited a narrower range of animals, and placed less emphasis on marsh species, notably alligator and muskrat. At Pump Canal, however, the post-Coles Creek occupants appear to have carried on with a marsh oriented subsistence patterns, focused on muskrat, raccoon, deer (to a lesser extent), fish, and amphibians (Misner and Reitz 1994; Smith 1996). This late prehistoric occupation (or occupations) appears to have been relatively transient and may represent the shift from village type occupations to more temporary, possibly seasonally occupied, camps. Changes in faunal exploitation and settlement type at Pump Canal appear to correlate with changes in local environments (Jones et al. 1994). Ethnohistorical data from the region suggest that the Chitimacha Indians practiced a mixed fisher-farmer-collector subsistence strategy. Maize and other cultigens were planted on elevated plots of land, frequently along bayous, with populations periodically (perhaps seasonally?) ranging out to marshes and lakes to gather shellfish and to fish. In the early historic period, the Chitimacha evidently moved in mixed-sex family groups, and they may have spent much of the summer away from their garden plots.

There is little doubt that the late prehistoric Indians of the eastern coastal zone lived in stratified chiefdom level societies at the time of early European contact. Weinstein and Kelley (1992) suggested a hierarchically organized settlement pattern for the late prehistoric communities in the Terrebonne marsh area, which involved mound communities, lesser villages, and seasonal resource collecting stations or camps. Along Bayou Lafourche, Altschul (1978) identified two temporally distinct patterns, that corresponded to what were identified as Plaquemine and Mississippian cultural occupations. The earlier, Plaquemine pattern evidently involved a seasonal pattern of movement focused on a centralized fall/winter community located on interior forested levees. Spring/summer occupations consisted of dispersed habitations spread across most major landforms, which especially emphasized the exploitation of marsh and coastal resources (Altschul 1978:184-186). Evidence for status differentiation in and among these communities was minimal (Altschul 1978:186). The second pattern described by Altschul was associated with the “Mississippian” occupation of the region (1978:186), with large, sedentary mound communities occupying elevated levees. Altschul hypothesized that “a sizable proportion of the villagers lived in dispersed homesteads” (1978:186). He further inferred that, “While there is no definitive evidence, the location and complexity of these sites indicates that plant domesticates were heavily utilized” (Altschul 1978:186).

The archeology of the eastern coastal zone is only now beginning to come into focus. Truly, we are just starting to develop an appreciation for the complexity evident in the region. There is a strong correlation between the regional culture history and changes in the environment caused by shifts in the Mississippi River’s course. Native Americans in the region adapted themselves to these changing environments in a number of ways. The initial occupation of the eastern coastal zone was during the Poverty Point period. We know little about these occupations in terms of subsistence or social organization. Evidently some of these coastal populations were participating in the widespread Poverty Point interaction sphere.
The first well-recognized occupation of the region occurred during the early Woodland and is associated with the Tchefuncte culture. Tchefuncte occupations are especially common along Lake Pontchartrain, but are infrequent farther south. Some tentative evidence suggests that it was at this time that humans began to move into the lower Barataria region.

The succeeding Marksville period witnessed an expansion of human populations into newly formed lands within the study area and marks the first extensive colonization of the lower Barataria Basin. Excavations at the Coquilles and Boudreaux site indicate the presence of an extensive and perhaps intensive early Marksville period occupation. However, neither site has yielded evidence for the complex mortuary programs, trade contacts, or social complexity normally associated with Marksville culture. Late Marksville occupations are also evident in the eastern coastal zone. Based on the ceramics, these appear to be similar to those identified with the Issaquena culture farther north, but specific cultural connections have not been illuminated due to a lack of well-controlled excavations. Several important components of this time period have been suggested, most notably at Coquilles and Bayou Cutler, but once again, specific data and exact chronologies are lacking.

During the Baytown period, the coastal zone witnesses an increase in population or at least habitation. The lower Barataria Basin is home to several sites of this period, notably Isle Bonne, which appears to date to the later part of the Baytown sequence. We can speculate that at this time there was a movement of peoples out from the interior part of the basin towards the marsh and coast to the south. The pattern noted in the Baytown period continues in the Coles Creek period. Populations continue to expand along the coastal zone, especially along channels extending into the marsh. Some parts of the Barataria region see fairly intense occupations. This is especially notable south of the confluence of Bayou Barataria and Villars, and to the west in the Bayou Des Allemands region extending to Lake Salvador. Coles Creek peoples seem to be very intensively exploiting marsh habitats. They do not appear to have been cultivating domesticated plants.

During the Mississippi period, we see a gradual shift from the Coles Creek pattern of marsh exploitation towards one evidently oriented towards agricultural practices. There is little change during the early part of the period. By the Barataria phase, there may be some contraction in the number of sites and the range of exploitation. There is an increasing emphasis on larger, possibly more permanent settlement along well-drained levees. A distinctly bimodal settlement pattern evolves by ca. A.D. 1300-1400, with large villages, frequently with mounds, being located on well drained soils, and with small, dispersed communities scattered across most of the major landforms. By the late prehistoric period, this pattern seems to be emphasized, especially along the major tributaries and waterways. Major mound centers were probably the locations of ruling civic and religious elite, and small dispersed settlements are likely to have been dependent on the larger centers in an economic or political sense.

Previous Investigations

This section summarizes the research results of investigations of the Lake Cataouatche region. Most of the identified archeological sites in the Lake Cataouatche region have been recorded during archeological surveys. Very little excavation data exists for most of these sites except the Pump Canal site (16SC27). Therefore, the stratigraphic information from the Pump Canal site, in conjunction with additional archeological data from the Bayou des Familles/Bayou Barataria region to the east provides the best guide to the area's prehistory. One previously recorded archaeological resource, the Estelle Canal site (16JE41), is located within the project area.

Beavers (1978). This report details a pedestrian survey of the proposed Marion Corporation oil well site location. During the permit application process for dredging of an access canal,
an objection was filed due to the proximity of the Bayou Gaudin site (16JE133) to the proposed construction. The construction area was surveyed. No cultural resources were observed in the well location or in the area to be dredged. The Bayou Gaudin site was outside the area to be impacted by construction. It was decided that planned construction would not impact significant archeological resources. No further work was recommended, except on the chance that archeological remains were uncovered during dredging and construction. No description is given of the archeological deposits at the Bayou Gaudin site.

Gagliano et al. (1979). Coastal Environments, Inc. (CEI), conducted archeological research in the eastern portion of the Lake Cataouatche region and in the adjacent Bayou des Familles/Bayou Barataria region. This work entailed the intensive archeological survey of the bankline and dredge spoil disposal areas along portions of the Bayou Segnette, Barataria, and Rigaud waterways (Gagliano et al. 1979:1/1). Survey crews utilized small boats to inspect banklines and spoil disposal areas. Systematic surface collections were made at identified sites.

One site was recorded within the Lake Cataouatche region, east of Bayou Bardeaux. Site 16JE82 is described as a *Rangia* shell midden located on a subsided natural levee. The site is on the south bank of a small unnamed tributary of Bayou Bardeaux, and on the east bank of the Bayou Segnette Waterway. The waterway is a modern canal between Bayou Segnette and the Gulf Intracoastal Waterway. Most of the site probably was destroyed when the waterway was excavated. In 1977, a 10 cm (3.9 in) thick lens of shell was observed at the water line. However, a modern fishing camp had been constructed over the site. In addition, a bulkhead had been constructed across the site along the eastern bankline of the Bayou Segnette Waterway. The modern fishing camp is now within the Jean Lafitte National Historical Park Barataria Unit core area. A site update prepared in 1992 by James Wojtala of the U.S. Army Corps of Engineers suggests that the surviving portion of the site is protected by the bankline bulkhead. No artifacts were observed at the site.

Beavers et al. (1980). Beavers, Kelley, and Lamb prepared an archeological review and assessment for a projected highway on the West Bank of Jefferson Parish. This research entailed the documentation of sites to the Lake Cataouatche shoreline. Two additional sites were recorded in the Lake Cataouatche region.

The Isle de Puet site (16JE81) is on the east bank of Bayou Bardeaux, about 300 m (984.24 ft) north of its entrance into Lake Salvador. The site is 900 m (2952.72 ft) southwest of 16JE82. Site 16JE81 dimensions were determined to be 48.77 x 18.29 m (160 x 60 m), with *in situ* midden and a possible mound area on the natural levee deposit. A bank of spoil dirt is also present within the site boundaries. Plaquemine sherds (*Leland, var. Leland*) were collected on the surface in 1979. The site is now within the Jean Lafitte National Historic Park Barataria core area.

The Bayou Bardeaux site (16JE46) is 500 m (1640.4 ft) south of the Isle de Puet site. The Bayou Bardeaux site is an extensive shoreline scatter approximately 1.5 km (0.93 mi) long and located along the east shore of Lake Salvador. The center of 16JE46 may lie on a subsided natural levee of a Bayou des Familles distributary, perhaps the lower course of Bayou Coquille. The distributary would have entered Lake Salvador south of Bayou Bardeaux. Shell and artifacts may have been redeposited northward along the retreating lakeshore as far as the former course of Bayou Bardeaux, but site 16JE46 is only tenuously linked with that watercourse.

The Bayou Gaudin site (16JE133) is at the northern end of a wellhead canal that extends 400 m (1312.32 ft) north from the shore of Lake Cataouatche. The mouth of the canal is 1 km (0.62 mi) east of the mouth of Bayou Gaudin. The end of the wellhead canal is separated from the south bank of the Outer Cataouatche Canal by a narrow strip of marsh. Stone rip-rap has been placed along part of this bankline to block formation of an outlet channel to the lake.
through the wellhead canal. Two pipelines, oriented northwest/southeast, cross the north end of
the wellhead canal. The site is partially covered by spoil along the western arm of the wellhead
channel, but extends westward beyond the spoil bank. The site dimensions were determined to be
12.19 x 45.72 m (40 x 150 ft), with an intact shell midden (LA State Site Files). The period of
occupation and cultural affiliation of the site are unknown. Michael Comardelle (personal com-
munication to Jones 1997) states that prehistoric sherds and human remains are present on the
ground surface.

Greene et al. (1983). An inventory of cultural resources along the Mississippi River’s
banklines included the Seven Oaks Plantation site (16JE139). This is the only recorded archeo-
logical site within the city of Westwego. The plantation faced the River Road (Highway 541).
The Old Spanish Trail (Highway 18) runs east/west south of the plantation great house. The
building complex area was estimated as 30.48 x 30.48 m (100 x 100 ft). Seven Oaks was a sugar
cane and rice plantation in the nineteenth and early-twentieth centuries. The site has been heav-
ily disturbed by the construction of a modern oil storage tank farm.

Shafer et al. (1984). Shafer et al. conducted an archeological survey of the Bridge City
levee in 1984. They recorded Avondale Plantation just upriver from the Avondale shipyard.
Testing revealed late-nineteenth-century material in an area measuring 20.15 x 11.89 m (66 x 39
ft). The artifacts are associated with structural remains of the historic plantation.

Goodwin et al. (1985). This site inventory of Jefferson Parish entailed an updated listing
of previously recorded archeological sites and the field survey of impact of development corri-
dors. A probability sampling strategy was employed to assess the impact corridors, utilizing
square kilometer quadrants keyed to UTM grid coordinates. Only one of the randomly chosen
survey blocks lies along the West Bank Hurricane Protection Levee, Lake Cataouatche segment.
This block was one of two survey blocks judged to be “inaccessible to pedestrian survey,” and
no fieldwork was conducted there (Goodwin et al. 1985, vol. 1:225, 227). The block lies south
of the Churchill Farms reclamation tract.

This overview also lists several historic West Bank sites which had not been entered in
the state site files at that date. These sites included the Cedar Grove Plantation Great House in
Avondale, the Huey P. Long Bridge in Bridge City, Magnolia Lane Plantation and Derbigny
Plantation on Nine Mile Point, and Seven Oaks Plantation in Westwego (Goodwin et al. 1985,
vol. 1:280; 1985, vol. 3:164, 166). Only Magnolia Lane Plantation (16JE156) and Seven Oaks
Plantation (16JE131) have been assigned state site numbers. The study recommended that the
Huey P. Long Bridge is eligible for inclusion on the National Register of Historic Places, and
that the Nine Mile Point area (from the northern end of the point downriver to the former align-
ment of the Company Canal in Westwego) be nominated to the NRHP as an archeological and

Goodwin et al. (1986). This survey by Goodwin and Associates examined construction
items on the West Bank of Jefferson Parish, from Waggaman downriver to Gretna. A nine-
teenth-century great house and cabins survive at the Magnolia Lane Plantation site on Nine Mile
Point. Archeological testing at this locale exposed late-nineteenth- to mid-twentieth century arti-
facts to a depth of 30 cm (11.81 in). Shovel tests, a 1 x 2 m (3.28 x 6.56 ft) unit, and a 2 x 2 m
(6.56 x 6.56 ft) unit were excavated at the site. The site area measures 70 m x 40 m (229.66 x
131.23 ft).

Speaker et al. (1986). This study presents an overview of archeological sites within the
Jean Lafitte National Park, Barataria Unit, for planning purposes. It provides UTM coordinates
for recorded sites and lists impacts to the sites. The bankline of Bayou Bardeaux and the north-
eastern shoreline of Lake Cataouatche (the lakeshore within Jefferson Parish) were identified as
areas of potential archeological resources (Speaker et al. 1986:83). Sites 16JE81 and 16JE82
have been recorded along the east bank of Bayou Bardeaux and on one of its side channels. As no archeological sites have been reported along Bayou Segnette, that waterway is not listed among the zones of archeological sensitivity.

The study also identifies an area of potential archeological resources within the park protection zone in the Bayou Boeuf watershed, west of Bayou des Familles. Bayou Boeuf originates near a western bend in the course of Bayou des Familles near the community of Estelle, and may represent the lower course of a former distributary of that bayou. Bayou Boeuf flows westward into an eastern bend of Bayou Segnette. The Bayou Segnette Waterway cuts across the base of this bend. The area delineated in the 1986 assessment is largely wooded terrain that was partially drained and planted during the nineteenth century. Most of this zone lies east of a levee erected by the parish.

*Jones et al. (1994).* This study examined portions of St. Charles Parish impacted by the Davis Pond Freshwater Diversion project. The project will divert water from the Mississippi River east of Luling and channel it through the marshland west of Bayou Verret to the northwestern end of Lake Catahouatche. The portions of the project area south of the Southern Pacific Railroad include the marshlands near the lake. A small part of the Davis Pond project area lies on the West Bank of the river north of the Southern Pacific Railroad. This area has less significant ties to the lacustrine marsh environment and will not be included in this discussion of the Catahouatche region. The project area extends west to the vicinity of the Mimosa Park subdivision south of U.S. Highway 90. This vicinity is the head of the Bayou Cypriere Longue and Bayou Bois Piquant drainages. Prior to the excavation of drainage and navigation canals in this region, these bayous were the westernmost tributaries of Lake Catahouatche. The swamp and marsh farther west drain to Bayou des Allemands or the northern side of Lake Salvador. The Davis Pond study entailed pedestrian survey with shovel testing within construction corridors at the northern end and along the western margin of the diversion area, auger testing along the westbank of Bayou Verret and by canals along the northern and southern boundaries of the project area, and excavation at the Pump Canal site.

One historic plantation canal (the Lanaux Canal) intersects the north side of the lakeshore within the Davis Pond project area. An east/west swamp forest access canal, the Louisiana Cypress Lumber Canal, intersects the west side of the lakeshore. That turn of the century waterway allowed exploitation of the cypress forests west of the lake.

The present western shoreline of Lake Catahouatche has retreated rapidly during the twentieth century. An agricultural reclamation project in the marshland west of the lake, the Winter Garden or New Orleans Netherlands Farms, failed after damage from the great hurricane of 1915. The waters of the lake now cover the drained and subsided field plots. The Pump Canal site lies within the flooded farm tract. No historic sites were recorded within the Lake Catahouatche region of the project area, although an extensive network of early drainage and navigation canals survives here.

One small prehistoric site (16SC76) was recorded between the channels of Bayou Cypriere Longue and Bayou Bois Piquant, within the Salvador State Wildlife Management area. The site is along a jeep trail near the confluence of the two bayous, on the natural levee of Bayou Bois Piquant, a relict distributary channel. *Rangia* fragments were recovered on the ground surface and to a depth of 20 cm (7.87 in) in test units. Shell was recovered in four 50 x 50 cm (19.69 x 19.69 in) excavation units. A single *Rangia* shell was recovered in an auger test placed between the site and the bayou confluence. A single small, highly eroded sherd of Baytown Plain, var. *Unspecified,* was found in one of the 50 x 50 cm (19.69 x 19.69 in) units at 20-30 cm (7.87-11.81 in) depth. The site was recommended as being ineligible for nomination to the NRHP (Jones et al. 1994:243).
The Pump Canal site is the most extensively researched prehistoric site in the Cataouatche region, and one of the most significant sites for our understanding of prehistoric subsistence patterns in the Barataria Basin. The stratified deposits are associated with the Troyville, Coles Creek, and Plaquemine cultures. A small amount of historic material, largely dating to the nineteenth century, was recovered from the uppermost strata of the site. Postmolds, hearths, and ash lenses were exposed within the prehistoric strata. Faunal analysis indicates that fish and wetland species constituted the majority of vertebrate food species during all prehistoric periods. Although the site is not classified as a shell midden, large amounts of *Rangia* shells are present at the site. Small quantities of corn appear in the Incipient Coles Creek period. Squash begins to appear in the Plaquemine period. Possible cultigens including *Vitis* spp., and *Chenopodium* also were recovered. The site provides significant data on the food resources and dietary changes.

A portion of the Pump Canal site lies below a spoil bank deposit on the north bank of an east/west drainage canal excavated for marshland reclamation. Due to the flooding of the abandoned farm tract, the spoil deposit above the site now forms an island within Lake Cataouatche. In 1991-1992, the dimensions of the site island were 33 m x 9 m (108.27' x 29.53') (Jones et al. 1994:248). The extent of the site below lake level is uncertain. As a result of continued erosion by wave action on the lake, the island undoubtedly will diminish in size and probably disappear with time.

*Jones et al. (1997)*. Earth Search, Inc., performed field investigations for the West Bank Hurricane Protection, Lake Cataouatche area during February, 1997. Archaeological survey was conducted within the project borrow right-of-ways and in an associated 39 acre reforestation tract. Most of the survey area consisted of a linear borrow right-of-way on the north side of the Inner Cataouatche Canal. This linear corridor varied in width from 115 ft (35.1 m) to 155 ft (47.2 m). As the field crew utilized parallel transect lanes 20 m apart, they generally conducted shovel tests along two lanes where the corridor was less than 40 m wide and along three lanes where the corridor was more than 40 m wide.

Transects west of Lake Cataouatche Pumping Station No. 1 were designated A1-A3. This area is largely open pasture, with small wooded areas by stream bottoms and well-head canals. No cultural material was recovered in this area. Transects east of the enclosure around the pumping station were designated No. 1-3. The area is wooded, with some inundated areas. No cultural material was recovered.

An additional borrow area adjacent to the linear corridor and the state park was surveyed on February 24. A total of nine transects (No.3-11) parallel to the linear corridor were placed here, between the southwestern side of the borrow area at E5850 (levee station 496 + 92) and a clear-cut parallel to the park boundary. This area is marshy terrain largely covered by a dense canebrake. The edge of the borrow area farthest form the canal is generally inundated. No cultural material was recovered in this area.

The 39-acre reforestation tract is wooded pasture, with extensive inundation along its southern and eastern sides. The parcel lies within an early-twentieth-century marshland reclamation project named Churchill Farms. No cultural material was recovered within the tract, but an historic equipment complex was found at an east/west oriented canal forming the parcel’s southern boundary. The complex lies in Township 14S, Range 23E, Irregular Sections 19 and 22. The canal runs along the section line.

The industrial equipment was designated the Reforestation Tract site (16JE26). The equipment complex includes a firebox and attached steam boiler at the western end, a partially submerged gear complex, and a large rectangular wood plank platform supporting chain spools and pulleys at the eastern end. The equipment complex is surrounded by a rectangular enclosure.
of upright wood posts 5.4 m wide and 23.8 m long. The posts probably upheld the partially collapsed platform or platforms. The eastern end of the rectangular platform is anchored by steel-plated wooden beams attached to a support block on each canal bank. Fragments of steel cable and substantial lengths of heavy steel chain are present on the platform. This complex probably constitutes a log-pulling station (pullboat or skidder) utilized for lumbering in this reclamation area earlier in this century. The equipment probably was brought here by boat, and may rest on a submerged boat hull or raft. This site is associated with the Louisiana lumber industry, and is potentially eligible for nomination to the National Register of Historic Places.

**Estelle Canal site (16JE41).** In 1995, the Estelle Canal site (16JE41) was recorded by James Wojtala and Michael Stout. It is a prehistoric site with intact midden in the Bayou Boeuf drainage east of Bayou Segnette. The site lies west of the modern West Bank Hurricane Protection Levee but inside (east of) the older parish levee, within the Jean Lafitte Nation Historical Park and Preserve, Barataria Unit, park protection zone. The site is located between the Estelle Canal and the Woods Place Canal, on a tongue of higher ground extending westward from Bayou des Familles. The site is bisected by an abandoned field ditch which was probably a feature associated with Pecan Grove Plantation. The Estelle Canal site has a surface scatter of *Rangia* and prehistoric sherds in several discrete concentrations measuring 25 x 70 m (82.02 x 229.66 ft). Shell was found to a depth of 26 cm (10.23 in) in a positive shovel test. The site appears to be relatively undisturbed and offers research potential (LA State Site Files).

**Field Investigations**

The project area was divided into five survey blocks corresponding to major natural and man-made landscape features (Figure 2). Individual locations within the survey blocks were inspected by pedestrian reconnaissance to determine if any sites were present. Access to all survey areas was by airboat. No subsurface tests were excavated at any of these locations. However, the bankline and surrounding area were carefully examined in an effort to determine if any archaeological sites were present. If any evidence of prehistoric and/or historic occupation was noted, Global Positioning System (GPS) data were to be collected so that the location of the resource could be accurately plotted on project maps. This information was to be forwarded to appropriate National Park Service personnel and Seitel Data, Ltd. so the receiver or source point could be moved to a less sensitive location.

**Lake Cataouatche Survey Block.** This survey block is bound on the south by the lake, on the west by the LaBranche Canal, on the north by the Outer Cataouatche Canal, and on the east by Bayou Segnette. Fresh water marsh covers the entire survey block except for the lake shoreline. Six locations were examined; five were interspersed along the lake shoreline and the last was located in the marsh along a small, unnamed stream course flowing into the lake (Figure 3). No archaeological sites were discovered in this survey block (Table 1).

**Bayou Segnette Survey Block.** This survey block is restricted to the bayou from its junction with Lake Cataouatche and Bayou Bardeaux on the south and progresses north until Bayou Segnette ends just south of LA Highway 90. Twenty-four locations were examined; 15 of these were situated on natural levees paralleling Bayou Segnette. Eight locations were situated on oxbow natural levees while the remaining location was along a petroleum canal (Figure 3). No archaeological sites were discovered in this survey block (Table 1).

**Millaudon Canal Survey Block.** This survey block begins just east of the junction of the canal and Bayou Boeuf and continues east/northeast along the canal to end at the New Ames Pumping Station (Figure 3). Most of this survey block is fresh water marsh, but swamp and natural levee deposits associated with Bayou de Familles occur in the extreme eastern end of the area. Ten locations were inspected, all along the canal banklines. No archaeological sites were discovered in this survey block (Table 1).
Figure 2. Survey blocks within the project area.
A page could not be scanned due to the size of the map
Table 1. Results of Archaeological Reconnaissance.

<table>
<thead>
<tr>
<th>Survey Block</th>
<th>Landform</th>
<th>Receiver Point</th>
<th>Source Point</th>
<th>Cultural Resources</th>
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<td>IP 1</td>
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<td>84277</td>
<td>n/a</td>
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<td>84372-85372</td>
<td>148156</td>
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<tr>
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Bayou Boeuf Survey Block. This survey block begins at the junction of Bayou Boeuf and an oxbow located on the east bankline of Bayou Segnette. The survey block continues east/northeast to end at Estelle Canal. It should be noted that the survey switches from Bayou Boeuf to an unnamed canal in Section 77, Township 14 South, Range 23 East (Figure 3). Seven locations were inspected during the course of investigations. Four of the locations were situated on natural levee deposits associated with Bayou Boeuf, while the remaining three were situated on unnamed canal banklines. No archaeological sites were discovered in this survey block (Table 1).

Estelle Canal Survey Block. This survey block corresponds to the area bound by the Estelle and Woods Place canals. Of primary importance was to determine if any of the receiver or source lines would affect the Estelle Canal site (16JE41). Inspection determined that the 84,000 receiver line was approximately 300 ft (91.43 m) west of the site while the 85,000 receiver line was approximately 1200 ft (365.74 m) east of the site (Figure 3). Seismic activity will be restricted to surveying these lines and placing geophones along them during the recordation phase. Since these lines are oriented north/south, the seismic activity will not directly affect the site. No other archaeological sites were located in this survey block (Table 1).

Ingress Points Survey Block. This survey block is generally confined to that area contained in Township 14 South, Range 23 East, Irregular Sections 78-80. All of this survey area is covered by fresh water marsh except for the banklines of several canals. Seven ingress points were scattered across the survey block and are located on the banklines of two unnamed canals (Figure 3). These ingress points were usually not directly associated with either a receiver or source line, therefore, the points noted in Table 1 indicate the closest known reference point. No archaeological sites were discovered in this survey block.

Summary

ESI conducted archaeological investigations in and near Jean Lafitte National Historical Park and Preserve for Seitel Data, Ltd. Forty-nine locations along the seismic grid were investigated as well as seven ingress/egress points for machinery utilized during seismic operations. Archaeological reconnaissance failed to discovered any new or previously unrecorded sites. In addition, field inspection confirmed that the Estelle Canal site (16JE41) will not be adversely affected by the seismic project. Therefore, no further archaeological investigations are warranted for this project.
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