FINAL
ENVIRONMENTAL ASSESSMENT

DEDICATED DREDGING ON THE BARATARIA BASIN LANDBRIDGE BA-36

JEFFERSON PARISH, LOUISIANA

U.S. FISH AND WILDLIFE SERVICE

ECOLOGICAL SERVICES

LAFAYETTE, LOUISIANA

November 2005

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DEDICATED DREDGING ON THE BARATARIA BASIN LANDBRIDGE
CWPPRA Project BA-36
Jefferson Parish, Louisiana

SECTION 1.0 PURPOSE AND NEED FOR PROPOSED ACTION

The purpose of the proposed project is to create emergent wetlands by hydraulically dredging sediments from Bayous Perot and Rigolettes, and depositing that material in shallow open-water areas. In addition, fragmented marsh habitat in the project area would be nourished by adding a layer of sediment to the marsh surface to increase elevation, and improve vegetative health and marsh productivity. The project area has experienced tremendous loss of emergent wetlands. U.S. Geological Survey (USGS) land-loss data indicate a 1978-to-1990 loss rate of 2.5 percent per year (Roy 2001). The causes of marsh loss appear to be primarily from subsidence and wind/wave erosion. The need to address coastal Louisiana's severe wetland loss has been identified in numerous restoration plans, programs, and State and Federal laws; implementation of the proposed project would help to fulfill that need.

SECTION 1.1 INTRODUCTION

Louisiana accounts for 90 percent of the coastal marsh loss in the lower 48 states (Dahl 2000). The most recent assessment of coastal land loss in Louisiana indicates an annual loss rate of nearly 24 square miles per year from 1990 to 2000 (Barras et al. 2003). Previous assessments indicated loss rates from approximately 25 square miles per year (Dunbar et al. 1992) to 35 square miles per year (Barras et al. 1994), and statewide coastal wetland loss is projected to be over 10 square miles per year from 2000 to 2050 (Barras et al. 2003). Causes of Louisiana's coastal wetlands loss include sea level rise, subsidence, sediment deprivation, canalization, saltwater intrusion, and altered hydrology (Turner and Cahoon 1987, Turner 1990).

Concern over Louisiana's loss of coastal wetlands prompted President George Bush to sign into law the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) in 1990. CWPPRA provides over $50 million per year for planning, design and construction of coastal restoration projects in Louisiana. Each year, a list of projects is selected for implementation and funds are approved for engineering and design. That annual list is referred to as the Priority Project List, and the Dedicated Dredging on the Barataria Basin Landbridge Project was funded as part of the 11th Priority Project List.

In 1998, the Louisiana Coastal Wetlands Conservation and Restoration Task Force (LCWCRTF) and the Wetlands Conservation and Restoration Authority (WCRA) developed the Coast 2050 Plan which serves as the official restoration plan for coastal Louisiana (LCWCRTF and WCRA 1998*a*). The Coast 2050 Plan divided the Louisiana coastal zone into four regions encompassing nine hydrologic basins, and restoration strategies were developed for each region. Each basin was also divided into mapping units for which additional strategies were developed. The Coast 2050 Plan would be implemented using a number of different funding sources including the

CWPPRA, the Water Resources Development Act, and the State's Coastal Wetlands Conservation and Restoration Fund.

The Dedicated Dredging on the Barataria Basin Landbridge Project is located within Region 2, which encompasses the Barataria Basin, Breton Sound Basin, and Mississippi River Delta Basin. The project area is located at the southern end of Bayous Perot and Rigolettes in the Barataria Basin, which is bounded by the Mississippi River on the east and Bayou Lafourche on the west (Figure 1). Wetlands in the upper part of the basin include swamp around Lake Des Allemands, fresh marsh around Lake Salvador, and isolated stands of bottomland hardwoods along relict distributary ridges such as Bayou Barataria. Intermediate marsh is encountered south of Lake Salvador, and extends southward to the northern shoreline of Little Lake where brackish marsh becomes the dominant marsh type. Toward the northern edge of Barataria Bay, those marshes grade into saline marsh. A chain of barrier islands and barrier headlands separates the Barataria Basin from the Gulf of Mexico.

SECTION 1.2 PURPOSE OF PROPOSED ACTION

The purpose of the Dedicated Dredging on the Barataria Basin Landbridge Project is to create emergent marsh by hydraulically dredging bottom sediments in Bayous Perot and Rigolettes and placing that material in shallow open water and fragmented marsh areas. Specific goals of the project are to: 1) create 1,217 acres of emergent marsh by filling open-water areas and fragmented marsh with dredged material; 2) maintain 995 acres of marsh at the end of the 20-year project life.

SECTION 1.3 PROBLEM

Historically, wetlands in the Barataria Basin were nourished by the fresh water, sediments, and nutrients delivered via overbank flooding of the Mississippi River and through its many distributary channels such as Bayou Lafourche, Bayou Barataria, and Bayou Grand Cheniere. As the flow of fresh water and sediments from the Mississippi River was restricted by flood protection levees and the closure of Bayou Lafourche, the basin began to gradually deteriorate from saltwater intrusion, subsidence, wave action, and sediment deprivation. Historically, Bayou Perot, and the longer, narrower Bayou Dupont-Bayou Barataria-Bayou Villars channels provided limited hydrologic connection between the upper and lower basin. The hydrologic connections between the upper and lower Barataria Basin are much greater today, due to the Barataria Bay Waterway, Bayou Segnette Waterway, Harvey Cutoff, and substantial erosion and interior marsh loss along Bayous Perot and Rigolettes. From 1932 to 1990, the basin lost over 245,000 acres of marsh (LCWCRTF 1993b) and from 1978 to 1990 it has experienced the highest rate of wetland loss along the entire Louisiana coast (Barras et al. 2003).

The Coast 2050 Plan divides the Barataria Basin into 21 mapping units or subbasins. The project area is located within the Perot/Rigolettes mapping unit (Figure 2), which contains 59,500 acres

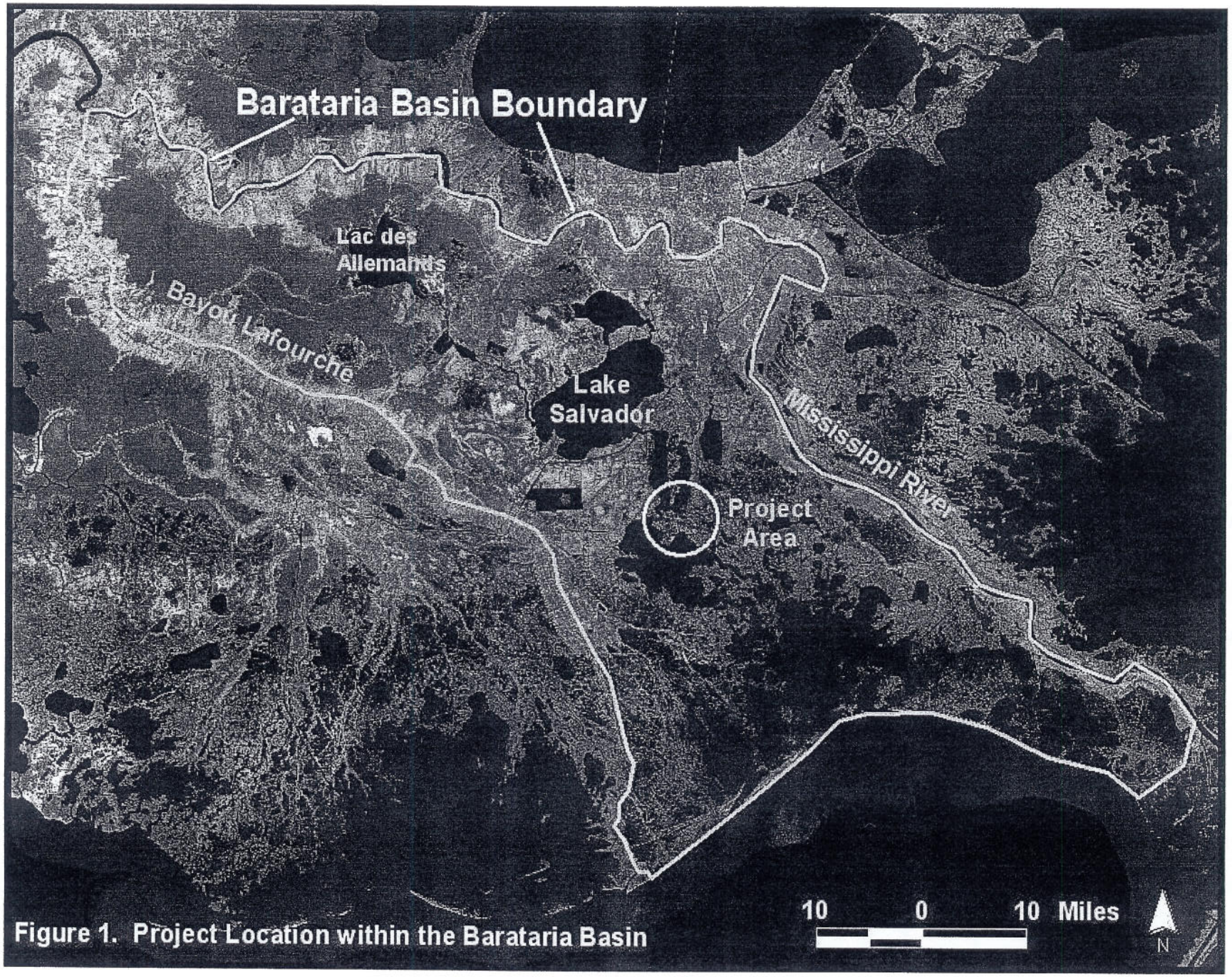

Figure 1. Project Location within the Barataria Basin

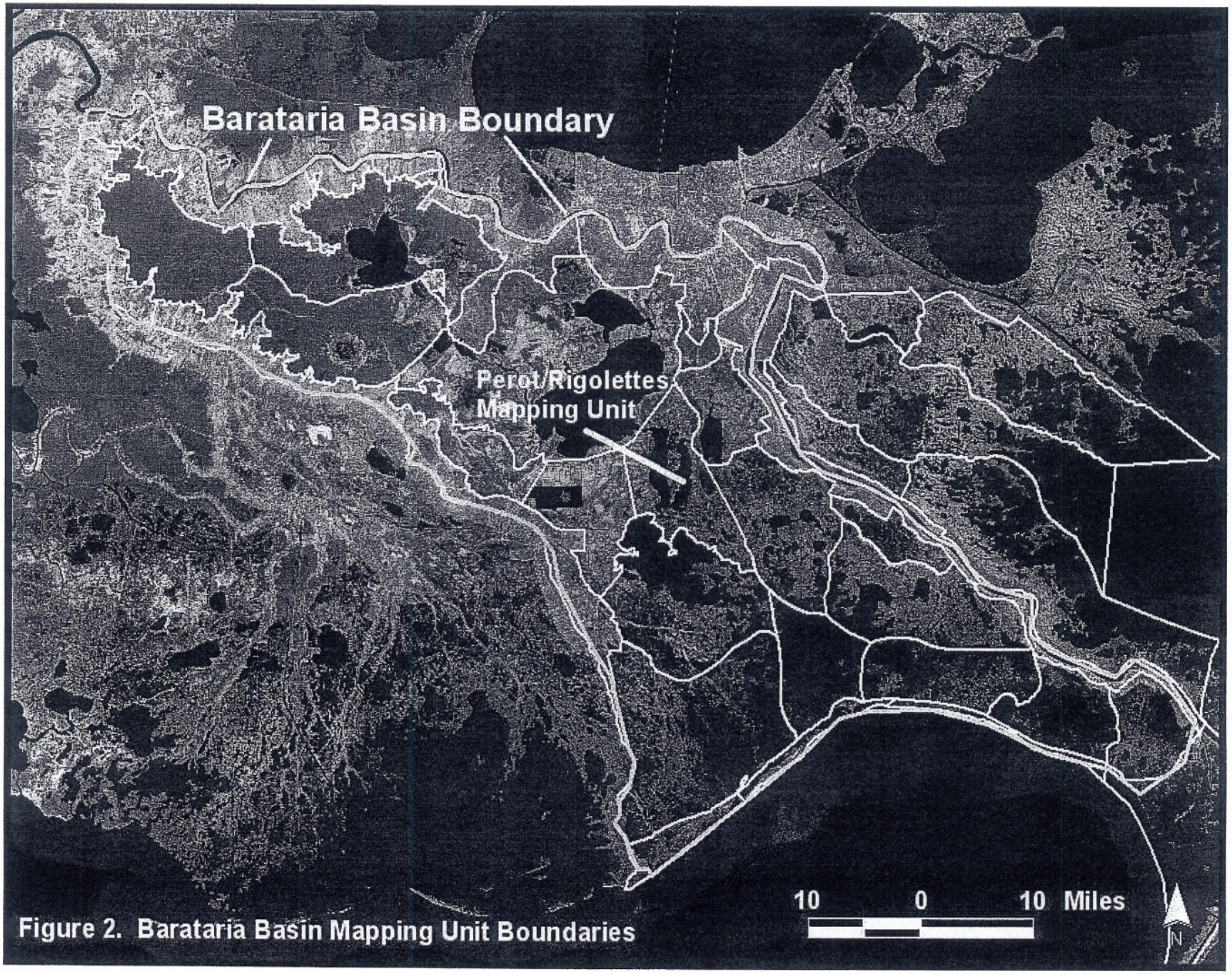

Figure 2. Barataria Basin Mapping Unit Boundaries

of marsh and open water habitats (LCWCRTF and WCRA 1998*b*). Within the Perot/Rigolettes mapping unit, approximately 14,710 acres of emergent marsh were lost from 1932 to 1990. The primary causes of that loss were canal dredging, subsidence, increased tidal exchange, saltwater intrusion, wave action, and the loss of fresh water and sediment introduction from the Mississippi River. The rate of subsidence within this unit is high and ranges from 2.1 to 3.5 feet per century (LCWCRTF and WCRA 1998*b*).

The project area is located within an area known as the Barataria Basin Landbridge which extends southwest to northeast across the Barataria Basin between Lake Salvador and Little Lake. The Barataria Basin Landbridge is the landmass that hydrologically divides the fresher wetlands in the upper Barataria Basin from the more saline environment of the lower Barataria Basin. A workgroup, consisting of local, academic, State, and Federal entities, was formed during the mid-1990s to explore opportunities for protecting the Barataria Basin Landbridge. That workgroup identified shoreline protection projects along Bayous Perot and Rigolettes as the first critical step in protecting wetlands in that region (U.S. Department of Agriculture 2000). Subsequently, the LCWCRTF approved four Barataria Basin Landbridge shoreline protection projects on Priority Project Lists 7, 8, 9, and 11. Those four projects are now referred to as "phases" of the Barataria Basin Landbridge Shoreline Protection Project (BBLSPP). Phases 1 and 3 of the BBLSPP would provide shoreline protection along the Bayous Perot and Rigolettes shorelines within the project boundary (Figure 3).

The project area has experienced tremendous loss of emergent wetlands since 1956. USGS land loss data indicates a 1978-to-1990 loss rate of 2.5 percent per year and U.S. Army Corps of Engineers data indicates a 1983-to-1990 loss rate of 2.3 percent per year (Roy 2001). The causes of marsh loss appear to be primarily from subsidence and wind/wave erosion of the Bayous Perot and Rigolettes shorelines. The BBLSPP would protect marsh along those shorelines from the high wave energy of Bayous Perot and Rigolettes, but the interior marshes would continue to deteriorate from subsidence, sea level rise, and tidal exchange. Implementing this proposed project, in conjunction with the BBLSPP, would protect the functional integrity of this critical area of the Barataria Basin. By offsetting the loss of emergent marsh, fish and wildlife habitat quality and detrital production would increase.

SECTION 1.4 REQUIRED DECISIONS

The decision to implement the Preferred Alternative was made only after a thorough public review and full consideration of all comments. Opportunities for public comment occurred at public meetings conducted during the project development and selection stages of the CWPPRA planning process. Opportunity for public comment was also provided through review of the draft Environmental Assessment (EA) which was sent to the appropriate Federal, State, and local agencies, and other interested parties on September 2, 2004. Upon review of public and agency comments, the Service has determined that further environmental documentation (e.g., Environmental Impact Statement) is not necessary and has issued a Finding of No Significant Impact.

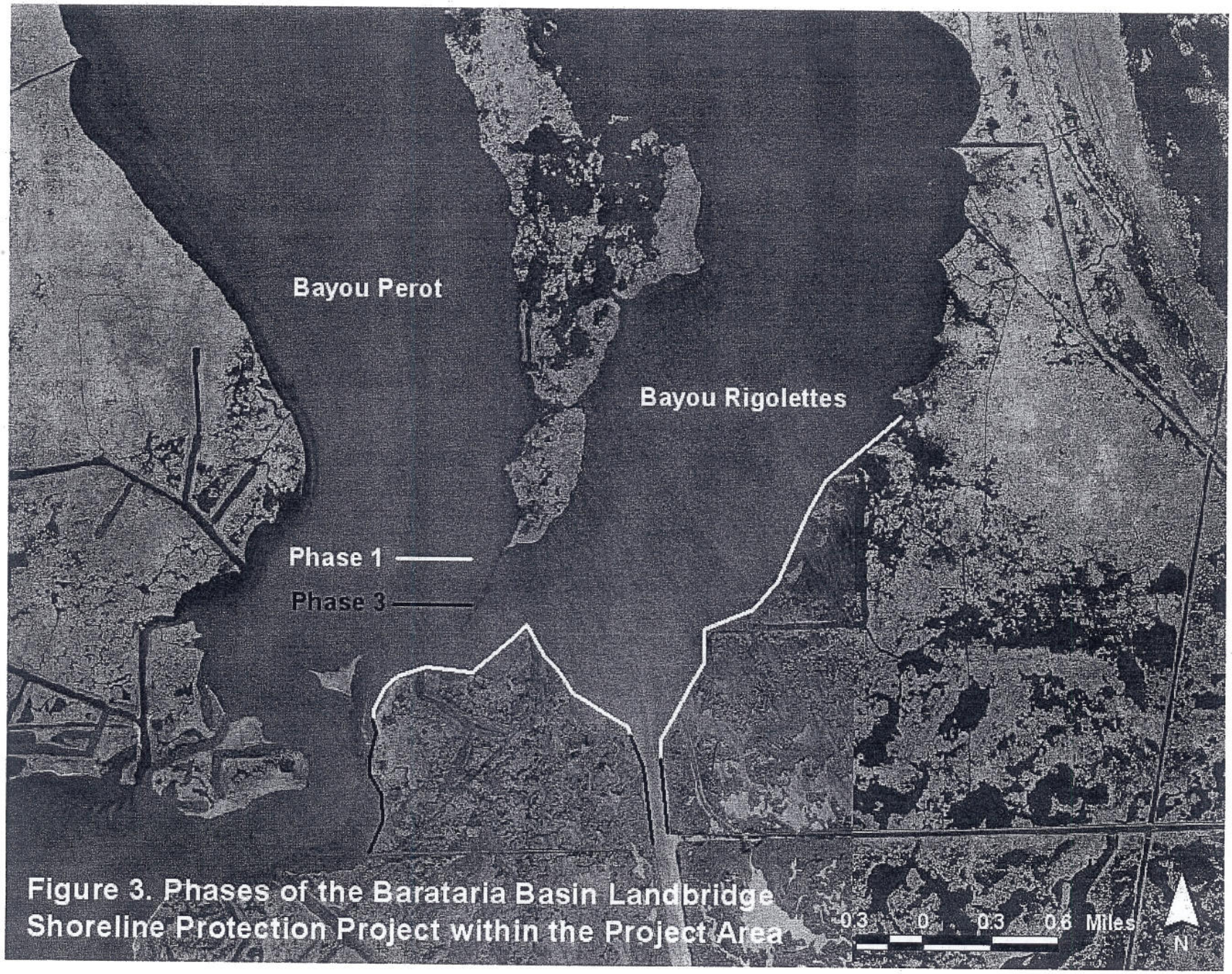

Figure 3. Phases of the Barataria Basin Landbridge Shoreline Protection Project within the Project Area

SECTION 1.5 COORDINATION AND CONSULTATION

Planning, engineering and design of this project was coordinated with all LCWCRTF agencies, the Louisiana Department of Wildlife and Fisheries, the Jefferson Parish Department of Environmental Affairs, other natural resource agencies, and area landowners and lessees. This project was nominated and selected as part of the 11th Priority Project List of CWPPRA. Projects on the 11th Priority Project List were nominated and developed at a series of public meetings held in March of 2001. Meeting participants included the LCWCRTF agencies, members of the CWPPRA Academic Assistance Subcommittee, landowners, environmental groups, Parish officials, and members of the general public. The CWPPRA Technical Committee met publicly on May 30, 2001, to consider preliminary costs and project benefits, and selected 19 projects for further evaluation as candidate projects. Interagency evaluations of those projects occurred from May to November 2001. Upon completion of project evaluations, public meetings were held across the coastal zone on November 27 to 29, 2001, to allow the opportunity for public comment. The CWPPRA Technical Committee again met publicly on December 12, 2001, to select projects for recommendation to the CWPPRA Task Force. The CWPPRA Task Force selected 11 projects, including this one, for funding of engineering and design at a public meeting on January 16, 2002. Details concerning the plan formulation process for the 11th Priority Project List and the CWPPRA Standard Operating Procedures Manual are available at www.mvn.usace.army.mil/pd/cwppra_mission.utm.

Engineering and design review meetings were held on December 17, 2003, and July 29, 2004, and all LCWCRTF agencies were invited to attend. A project status meeting with the Jefferson Parish Department of Environmental Affairs was held on February 9, 2004. In addition, project features were modified to satisfy issues of interest to private landowners and lessees. Support for the project has been expressed by all entities involved.

SECTION 2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

SECTION 2.1 ALTERNATIVE 1 - NO ACTION

Under this alternative, no action would be taken to create marsh within the project area. Construction of Phases 1 and 3 of the BBLSPP would prevent the future loss of some marsh within the project area; however, subsidence and interior marsh loss would continue to occur.

SECTION 2.2 ALTERNATIVE 2 – PREFERRED ALTERNATIVE

This Alternative consists of hydraulically dredging bottom sediments in Bayous Perot and Rigolettes and pumping that material into open-water and fragmented marsh areas in the project area to create approximately 1,217 acres of marsh. Approximately 987 acres of water bottom in Bayous Perot and Rigolettes would be dredged to a maximum depth of -10 feet North American Vertical Datum of 1988 (NAVD 88; all following elevations are reported in NAVD 88). A

magnetometer survey was conducted in the borrow area to identify pipelines and other hazards, and the proposed borrow areas have been configured to avoid those hazards.

The maximum elevation for the placement of all dredged material would be +2.5 feet, with a tolerance of +/- 0.3 feet. That target elevation is based on sediment consolidation curves prepared as part of the geotechnical investigation (Soil Testing Engineers, Inc. 2003). The consolidation curves indicate the amount of settlement and shrinkage of dredged material expected to occur over time as it dewaters, and takes into consideration the physical characteristics of the dredged material, fill area, and borrow area. The geotechnical investigation indicates that the marsh platform should reach the average elevation of healthy marsh (i.e., +1.4 feet) by year 3. Healthy marsh communities also exist at elevations above +1.4 feet in the project area.

Shoreline protection features associated with Phases 1 and 3 of the BBLSPP would be used to contain dredged material along the shorelines of Bayous Perot and Rigolettes, and the banks of the Harvey Cutoff. Shoreline protection features associated with that project consist of a foreshore concrete sheetpile structure, an onshore rock revetment, and a foreshore rock dike (U.S. Department of Agriculture 2000). The design and elevation (+3.5 feet) of those structures are adequate for containment of dredged material. Openings for drainage and fisheries access in those shoreline protection features would be temporarily closed with earthen material to prevent the loss of dredged material. Upon consolidation of fill material, those temporary closures would be removed to restore drainage and fisheries access.

Earthen containment dikes would be constructed along the southern boundary of Fill Sites 1 and 2, portions of the eastern boundary of Fill Site 2, and other locations where existing marsh or spoil banks do not provide adequate elevation to contain the dredged material. A portion of the oilfield access canal in Fill Site 1 would be filled, but containment dikes would be constructed so that the remainder of the canal is left open to allow boat access to a camp. Low-level, interior containment dikes may be built by the construction contractor to compartmentalize the fill sites into manageable units. Containment dikes would be constructed with a bucket dredge to a maximum elevation of +4 feet and the borrow sites would be filled with material dredged for marsh creation. Additional containment would be constructed to prevent filling of three small ponds in Fill Site 1. It is anticipated that the containment dikes would subside and breach naturally to allow tidal connectivity and prevent ponding. If the containment dikes have not naturally breached by year 3, or if ponding becomes a concern, funds have been included within the project budget to breach the dikes where necessary.

Figure 4 displays the boundaries of Fill Sites 1 and 2 and detailed drawings of all project features are found in Appendix A.

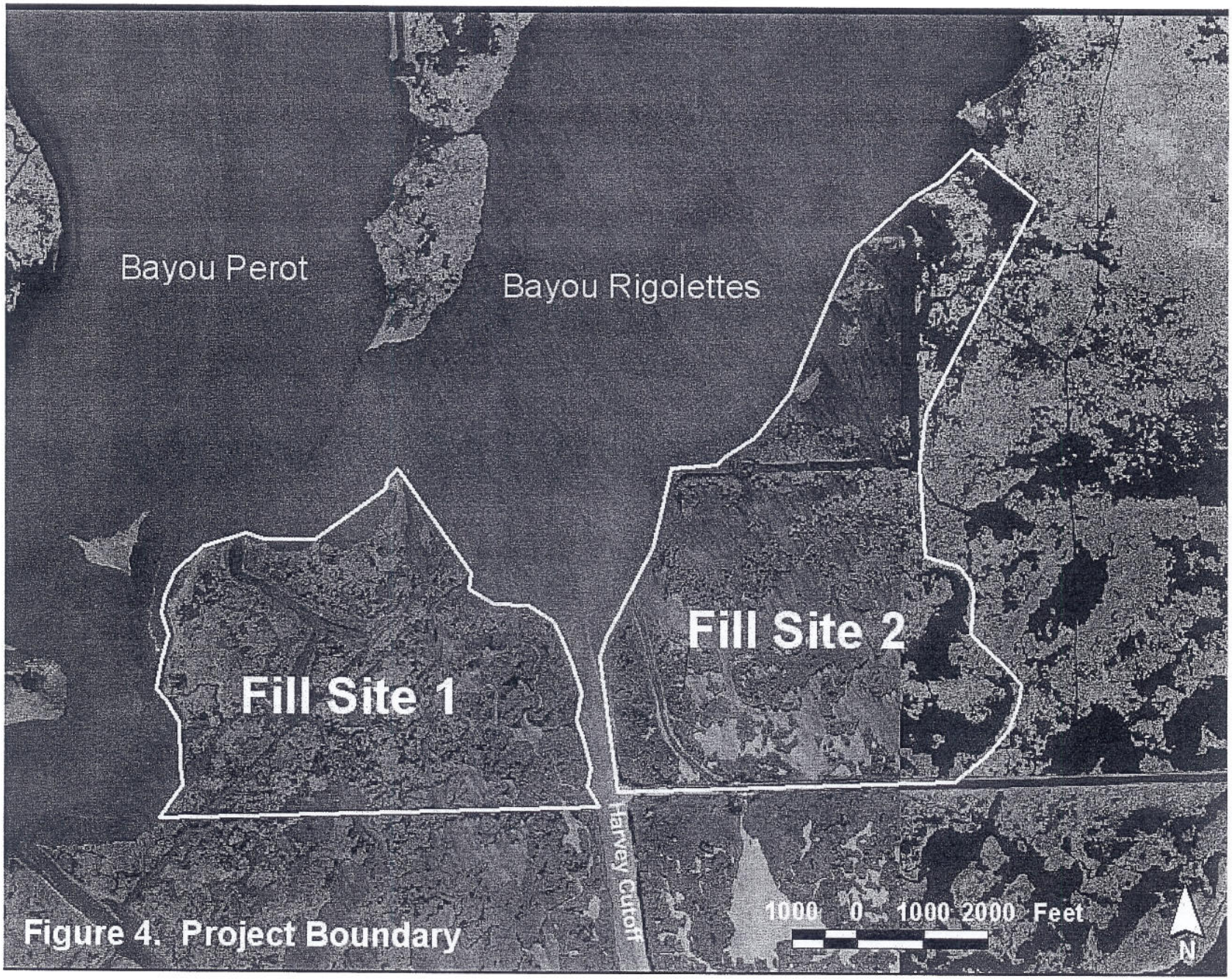

Figure 4. Project Boundary

SECTION 2.3 OTHER ALTERNATIVES CONSIDERED

Increased Fill Height

An increased fill height of +3.0 feet was considered in the early stages of engineering and design. The project management team decided that a fill height of +3.0 feet would substantially increase project costs without significantly increasing project benefits. The geotechnical investigation indicated that future elevations would be very similar for +3.0 feet and +2.5 feet fill heights (Figure 5). The project planning team agreed that a long-term ecological benefit would not result from placing the material at a higher elevation.

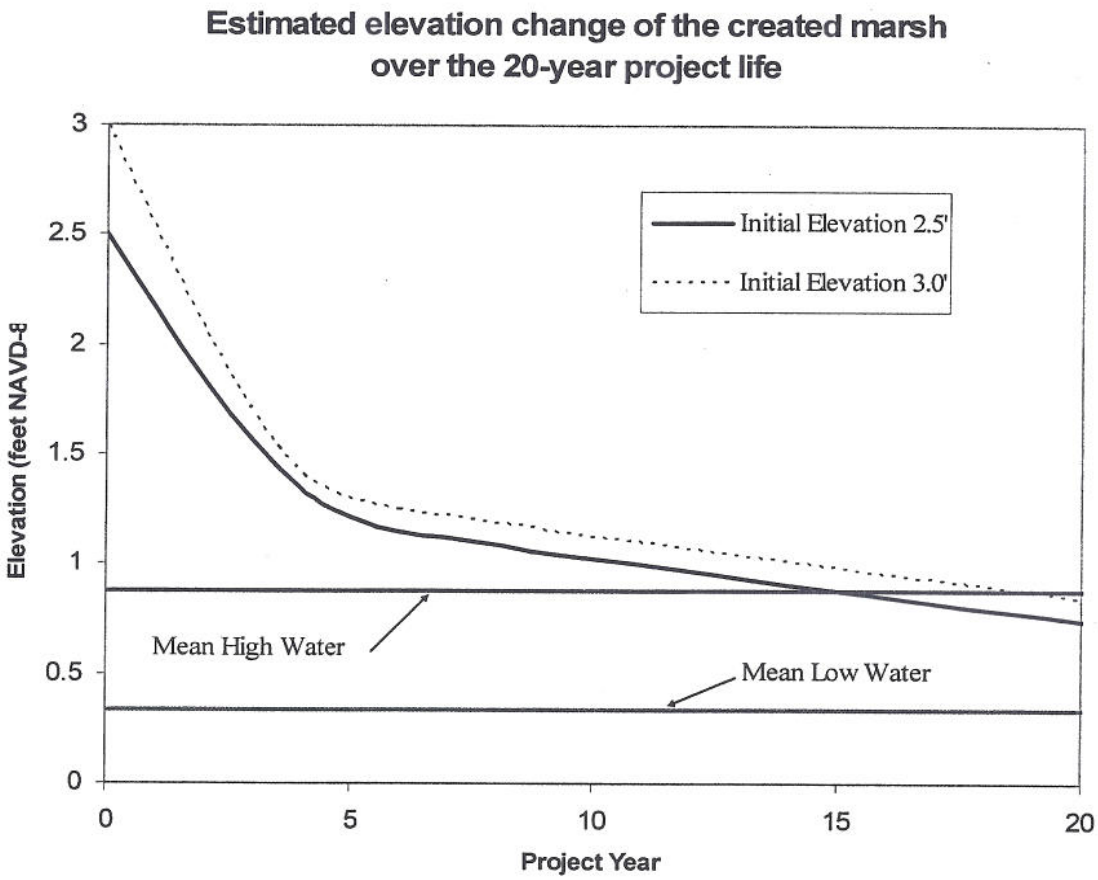

Figure 5. Estimated elevation change of +3.0 feet and +2.5 feet fill heights.

Vegetative Plantings

Three vegetative planting scenarios were also considered during the early stages of engineering and design: 1) vegetative plantings across the entire project area; 2) plantings in critical areas (e.g., large open water areas filled with dredged material); and, 3) aerial seeding of annual vegetation (e.g., browntop millet). The project management team decided that vegetative plantings over the entire project area would substantially increase project costs without significantly increasing project benefits. Because the fill material would be placed over large

expanses of deteriorated/fragmented marsh, a significant "seed" source (i.e., seeds, roots, rhizomes, etc.) already exists within the project area and should allow for successful natural colonization of the dredged material. In addition, marsh creation projects constructed in similar areas through the Louisiana Department of Natural Resources' Dedicated Dredging Program were significantly colonized by natural vegetation within two to three years after construction. The project management team also decided that aerial seeding of browntop millet or other annual vegetation may actually prohibit the establishment of native vegetation through natural colonization.

SECTION 3.0 AFFECTED ENVIRONMENT

SECTION 3.1 PHYSICAL ENVIRONMENT

A. Hydrology

Historically, the hydrology of the Barataria Basin was dominated by springtime flooding of the Mississippi River and its distributary channels, particularly Bayou Lafourche. Bayou Perot, and the longer, narrower Bayou Dupont-Bayou Barataria-Bayou Villars channels provided limited hydrologic connection between the upper and lower basin. However, the hydrologic/tidal connections between the upper and lower basin are much greater today, due to the Barataria Bay Waterway, Bayou Segnette Waterway, Harvey Cut, and substantial shoreline erosion and interior marsh loss that has occurred along Bayous Perot and Rigolettes. The frequency of high salinity events has also increased in the Barataria Basin (Swenson and Turner 1998), probably as a result of the increased tidal connectivity.

The Mississippi River's influence on the basin has now been reduced to freshwater diversion projects (e. g., Davis Pond Freshwater Diversion Project, Naomi Siphon) and the periodic opening of locks which connect the river to navigation channels (e. g., Harvey Canal Lock). The Davis Pond Freshwater Diversion Project (Davis Pond Project), located on the west bank of the Mississippi River near Luling, would most likely have the most significant impact on the hydrology of the Barataria Basin since flood protection levees were constructed along the Mississippi River in the early 1900s. The Davis Pond diversion structure consists of four, 14-foot wide gated box culverts capable of diverting over 10,000 cubic feet per second into the Barataria Basin north of Lake Cataouatche. Operation of that structure, which began in 2002, hinges upon maintaining salinity targets in the basin and is overseen by the Davis Pond Advisory Committee. Flow rates through the structure vary depending on basin salinities which are monitored at several locations. Other diversion projects are located at Naomi and West Point a la Hache where siphons are used to discharge river water into the marsh.

As previously noted, the project area is located along Bayous Perot and Rigolettes, one of the major routes for tidal exchange between the upper and lower Barataria Basin. Tidal exchange between the project area and Bayous Perot and Rigolettes is through a series of small tidal channels, oilfield access canals, and across large, open-water areas which were historically emergent marsh. Extreme events, such as storms, can rapidly elevate water levels to several feet over the marsh surface. Conversely, north winds associated with winter frontal passages can expose large expanses of mudflats and other intertidal habitats.

B. Water Quality

The Louisiana Department of Environmental Quality (LDEQ) surface water monitoring program is designed to measure progress towards achieving water quality goals at the state and national levels, to gather baseline data used in establishing and reviewing the state water quality standards, and to provide a database for use in determining the assimilative capacity of the waters of the State. The surface water monitoring program consists of a fixed station long-term network, intensive surveys, special studies, and wastewater discharge compliance sampling. The LDEQ routinely monitors 29 conventional parameters and fecal coliform bacteria on a monthly or bimonthly basis using a fixed station, long-term network. In addition to the conventional parameters, volatile organic compounds are sampled at each site (Louisiana Department of Environmental Quality 2002).

The U.S. Environmental Protection Agency has recommended that states take a watershed approach with their water quality programs. The LDEQ has focused its water quality monitoring efforts in water bodies where there is a lack of water quality data within target watersheds, or basins. The monitoring program operates on a five-year cycle, with sample collections occurring in two or three basins each year and rotating from year to year. In this manner, the entire state would have been covered by the end of the five years, and then the cycle would start again. The monitoring strategy would be to conduct focused monitoring efforts within the selected basins each year. All sites are sampled on a monthly basis.

The Louisiana Water Quality Standards define eight designated uses for surface waters: primary contact recreation, secondary contact recreation, fish and wildlife propagation, drinking water supply, shellfish propagation, agriculture, outstanding natural resource, and limited aquatic and wildlife use. Each water body is evaluated as fully supporting, partially supporting, or not supporting of each of its designated use(s). A summary of the LDEQ assessment for Bayous Perot and Rigolettes is found in Table 1.

Table 1. Evaluation of water quality for Bayous Perot and Rigolettes (LDEQ 2002).

Water Body Subsegment Code	Water Body Name and Description	Primary Contact Recreation	Secondary Contact Recreation	Fish and Wildlife Propagation	Shellfish Propagation
LA020901	Bayou Rigolettes and Bayou Perot to Little Lake	Full	Full	Full	Full

SECTION 3.2 BIOLOGICAL ENVIRONMENT

A. Vegetation

The upper portion of the Barataria Basin is largely a freshwater-dominated system of natural levee ridges, swamps, and fresh marsh habitats. Marine processes, with barrier islands, brackish marsh, saline marsh, tidal channels, and large bays and lakes, dominate the lower portion of the basin. O'Neil (1949) classified the project area as floating three-cornered grass marsh in 1949. Chabreck and Linscombe (1968, 1978, and 1988) classified the area as brackish marsh until 1997 when the area was classified as intermediate marsh (Chabreck and Linscombe 1997). Depending

on annual rainfall and salinities, the project area may transition between an intermediate and brackish marsh from one year to the next and is located at the historical boundary between intermediate and brackish marsh. Recent field investigations confirm that the project area supports a brackish marsh community dominated by saltmeadow cordgrass. Other species include black needlerush, saltmarsh cordgrass, Olney bulrush, saltmarsh bulrush, deerpea, eastern baccharis, marsh morning-glory, saltgrass, soft rush, foxtail, and pretty dodder. Submerged aquatic vegetation includes widgeongrass, southern naiad, and Eurasian watermilfoil. The overall appearance of the marsh is very fragmented with pedastalled clumps of saltmeadow cordgrass indicative of a deteriorating marsh.

B. Fisheries

The project area supports a diverse assemblage of estuarine-dependent fishes and shellfishes, and species presence is largely dictated by salinity levels and season. During low-salinity periods, species such as Gulf menhaden, blue crab, white shrimp, and striped mullet are present in the project area. During high-salinity periods, more salt-tolerant species such as spotted seatrout, black drum, red drum, Atlantic croaker, sheepshead, southern flounder, and brown shrimp may move into the project area. Wetlands throughout the project area also support small resident fishes and shellfish such as least killifish, sheepshead minnow, sailfin molly, grass shrimp and others. Those species are typically found along marsh edges or among submerged aquatic vegetation, and provide forage for a variety of fish and wildlife.

C. Essential Fish Habitat

The project is located within an area identified as Essential Fish Habitat (EFH) by the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA). The 1998 generic amendment of the Fishery Management Plans for the Gulf of Mexico, prepared by the Gulf of Mexico Fishery Management Council, identifies EFH in the project area to be estuarine emergent wetlands, submerged aquatic vegetation (SAV), estuarine water column, and mud substrates. Under the MSFCMA, wetlands and associated estuarine waters in the project area are identified as EFH for postlarval/juvenile and subadult brown shrimp; postlarval/juvenile and subadult white shrimp; and postlarval/juvenile, subadult, and adult red drum. Table 2 provides a more detailed description of EFH within the project area.

Table 2. EFH Requirements for Managed Species that Occur in the Project Area.

Species	Life Stage	Essential Fish Habitat	Occurrence in Project Area
Brown shrimp	postlarval/juvenile	marsh edge, SAV, tidal creeks, inner marsh	All habitats are found throughout the project area
	subadult	mud bottoms, marsh edge	All habitats are found throughout the project area
White shrimp	postlarval/juvenile subadult	marsh edge, SAV, marsh ponds, inner marsh, oyster reefs	All habitats are found throughout the project area (excluding oyster reefs)
Red drum	postlarval/juvenile	SAV, estuarine mud bottoms, marsh/water interface	All habitats are found throughout the project area
	Subadult	mud bottoms, oyster reefs	Mud bottoms are found within open-water areas
	Adult	Gulf of Mexico & estuarine mud bottoms, oyster reefs	Estuarine mud bottoms are found within open-water areas

D. Wildlife

The project area provides important habitat for several species of wildlife, including waterfowl, wading birds, shorebirds, mammals, reptiles and amphibians. The project area provides wintering habitat for migratory puddle ducks including gadwall, blue-winged teal, green-winged teal, American widgeon, and northern shoveler. Diving duck species which utilize the project area include lesser scaup and ring-necked ducks. The red-breasted merganser is also a common wintering waterfowl species in the Barataria system. The resident mottled duck, which nests in fresh to brackish marshes, is found throughout the year.

Common wading bird species which utilize the project area include the great blue heron, green heron, tricolored heron, great egret, snowy egret, yellow-crowned night-heron, black-crowned night-heron, and white ibis. Mudflats and shallow-water areas provide habitat for numerous species of shorebirds and seabirds. Shorebirds include the American avocet, willet, black-necked stilt, dowitchers, common snipe, and various species of sandpipers. Seabirds include the white pelican, black skimmer, herring gull, laughing gull, and several species of terns.

Non-game birds, such as the boat-tailed grackle, red-winged blackbird, seaside sparrow, northern harrier, belted kingfisher, and marsh wrens, also utilize the project area. Important gamebirds found in the area include the clapper rail, sora rail, Virginia rail, American coot, common moorhen, and common snipe in addition to resident and migratory waterfowl.

Mammals found within the project area include nutria, muskrat, mink, river otter, and raccoon, all of which are commercially important furbearers. Reptiles and amphibians are fairly common in the low-salinity brackish marshes found within the project area. Reptiles include the American alligator, western cottonmouth, water snakes, speckled kingsnake, rat snake, and eastern mud turtle. Amphibians expected to occur in the area include the bullfrog, southern leopard frog, and Gulf coast toad.

E. Threatened and Endangered Species

Endangered brown pelicans may occur within the project area; however, no known brown pelican colony locations occur therein. Brown pelicans may occasionally feed in the shallow estuarine waters found within the project area. Major threats to this species include chemical pollutants, colony site erosion, disease, and human disturbance.

SECTION 3.3 CULTURAL AND RECREATIONAL RESOURCES

Various cultural resources occur throughout the Louisiana coastal zone, including both prehistoric and historic sites. The Louisiana Department of Culture, Recreation and Tourism maintains catalogues of cultural resource sites, but many areas remain unsurveyed and the significance or eligibility of some sites for inclusion in the National Register of Historic Places has not been determined. A review by the Louisiana Office of Cultural Development, Division of Archeology indicates that two archaeological sites, JE145 and JE20, are located within the project area (Figure 6). Neither of those sites is eligible for the National Register of Historic Places. The Louisiana Office of Cultural Development has indicated, by letter dated January 21, 2004, that they have no objections to project implementation. In addition, the Chitimacha Tribe

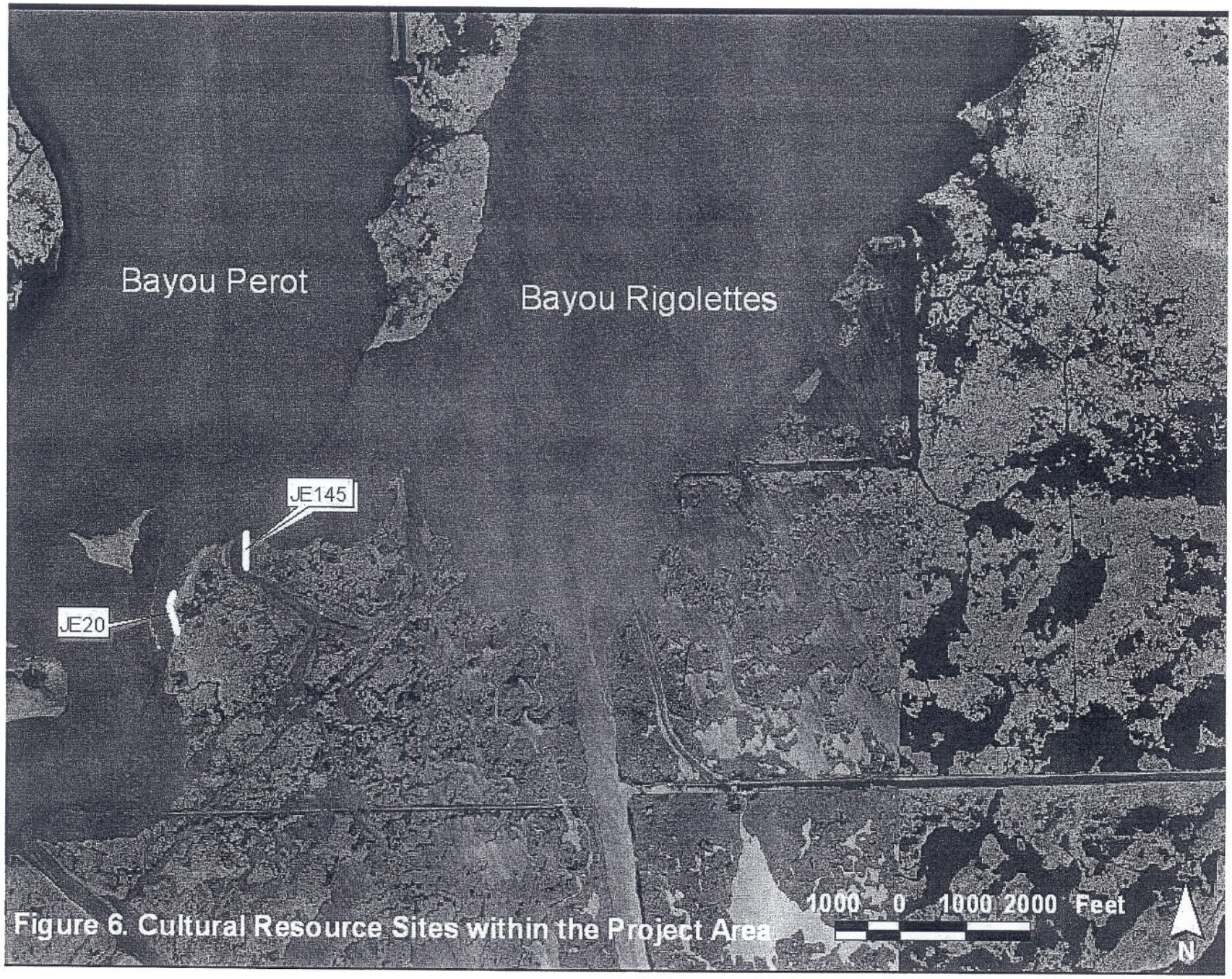

Figure 6. Cultural Resource Sites within the Project Area

of Louisiana had indicated, by letter dated August 10, 2004, that they have no objections to project implementation.

Recreational use of the project area is oriented primarily toward hunting, fishing, and crabbing. Access to the project area is by boat only, as no roads or highways are present. Boat access is provided by boat launches and marinas north of the project area in Lafitte and Barataria, and to the west in Larose and other communities along LA Highway 308.

SECTION 3.4 ECONOMIC RESOURCES

Project-area wetlands provide essential nursery habitat for commercially and recreationally important fishes and shellfishes such as Gulf menhaden, red drum, spotted seatrout, southern flounder, brown shrimp, white shrimp, blue crab and others. National Marine Fisheries Service statistics for the last 20 years indicate that coastal Louisiana contributes approximately 20 percent of the nation's total commercial fisheries harvest (LCWCRTF and WCRA 1998*a*). In 2001, commercial fishery landings in coastal Louisiana exceeded 1 billion pounds with a dockside value of $343 million (U.S. Department of Commerce 2001). Additionally, Louisiana's shrimp and oyster harvests comprise approximately 35 to 40 percent of the national total for those species (LCWCRTF 1993a).

Louisiana's coastal wetlands also produce more wild furs and alligator skins than any other State in the nation. Nutria, muskrat, and raccoon constitute 94 percent of the value of the Louisiana fur industry, valued at approximately $1.3 million annually (Louisiana Fur and Alligator Advisory Council 1997). The wild alligator harvest is also an important economic resource in coastal Louisiana. The wild harvest from 1972 to 1997 produced one million skins with an estimated value of $128.6 million. The annual harvest averaged 26,742 from 1992 to 1997, and the value of skins and meat was worth over $9.3 million (Louisiana Fur and Alligator Advisory Council 1997) during that period.

Recreational fishing in Louisiana's coastal marshes has an estimated annual economic impact of $500 million (LCWCRTF 1993*a*). Coastal marshes also provide substantial economic value associated with waterfowl hunting.

Two natural gas/oil pipelines occur in the project area as well as several inactive wells (USGS/LDNR GIS database, Map ID:2002-04-324). There are also two oilfield access canals within the project area, however, wells located within those canals are inactive. Those canals are also used by commercial and recreational fishermen and hunters to access the project area and surrounding marshes.

SECTION 4.0 ENVIRONMENTAL CONSEQUENCES

SECTION 4.1 ALTERNATIVE 1 - NO ACTION

A. Physical Environment

Hydrology
Under the No Action Alternative, no changes to the regional hydrology are expected. It is anticipated that the Davis Pond Project, and other existing projects, would continue to provide fresh water, sediments, and nutrients to the Barataria Basin. Impacts to the regional hydrology could occur as a result of either modifying the Davis Pond operation schedule, or if other large-scale diversion projects (e.g., Myrtle Grove Freshwater Diversion) are implemented under CWPPRA or the Water Resources Development Act. Such actions are beyond the scope of this EA.

With the No Action Alternative, the local hydrology in the project area would likely be altered by the ongoing processes of marsh deterioration and loss. As marsh loss continues, tidal connectivity with Bayous Perot and Rigolettes could increase as more tidal channels form and tidal exchange increases. Implementation of Phases 1 and 3 of the BBLSPP could, however, reduce the tidal connectivity of the project area with Bayous Perot and Rigolettes by only allowing tidal exchange through openings in the shoreline protection structures.

Water Quality
Under the No Action Alternative, water quality in the project area may change as the result of operating the Davis Pond Project. If operated as currently planned, the Davis Pond Project would result in a decrease in average salinities and, depending on discharge, could result in an increase in suspended sediments within and around the project area. However, changes in water quality resulting from the Davis Pond Project are beyond the scope of this EA.

B. Biological Environment

Vegetation
Under the No Action Alternative, vegetation in the project area could potentially convert from a brackish to an intermediate marsh community if the Davis Pond Project is operated as currently planned (i.e., to maintain the 5 parts per thousand isohaline south of the project area). Saltmeadow cordgrass would likely remain as the dominant plant species, but species diversity would increase with species such as bulltongue, cattail, and California bulrush becoming more prevalent.

Although the project area may transition to a fresher environment under the No Action Alternative, marsh loss would likely continue. Marsh loss from subsidence would continue and would not likely be offset by the input of fresh water from the Davis Pond Project. The Wetland Value Assessment (WVA) prepared by the CWPPRA Environmental Work Group projected that land loss would continue in the project area at a rate of 2.0 percent per year, resulting in the loss of 60 acres of intermediate marsh (Roy 2001).

Fisheries
Although marsh loss would continue under the No Action Alternative, the project area would continue to support a diverse assemblage of estuarine-dependent fishery species. If the project area experiences a freshening trend as a result of the Davis Pond Project, usage by species tolerant of low salinities (e.g., blue crab, Gulf menhaden, red drum) may increase with a subsequent decrease in usage by those adapted to higher salinities (e.g., brown shrimp, spotted

seatrout). However, the loss of intertidal, emergent wetlands to shallow, unvegetated openwater would result in decreased fishery productivity. As a marsh complex exceeds 70 percent unvegetated open water, shrimp and blue crab populations may decline (Minello and Rozas 2002). Under the No Action Alternative, the project area is projected to be nearly 70 percent open water at the end of the project life.

Essential Fish Habitat Assessment

Under the No Action Alternative, estuarine marsh is the primary type of EFH impacted by continued wetland loss and deterioration. According to the WVA conducted by the CWPPRA Environmental Work Group, 103 acres of emergent marsh would be converted to shallow open water (i.e., mud bottom) over the project life. Although an increase in some types of EFH (i.e., mud bottom and estuarine water column) would occur, adverse impacts would occur to more productive types of EFH (i.e., estuarine emergent wetlands). The loss of estuarine emergent wetlands would result in negative impacts to postlarval/juvenile and subadult brown shrimp; postlarval/juvenile and subadult white shrimp; and postlarval/juvenile red drum.

Coverage of submerged aquatic vegetation, another important type of EFH, is not projected to change (Roy 2001) under this alternative, because freshwater input from the Davis Pond Project is expected to maintain current densities.

Wildlife

Under the No Action Alternative, the project area would continue to provide habitat for a multitude of species including migratory waterfowl, wading birds, shorebirds, mammals, reptiles, and amphibians. However, the continued loss of emergent wetlands would negatively impact those species which utilize the project area. The intertidal marsh and shallow, isolated ponds and associated submerged aquatic vegetation are utilized by those species for foraging, resting, or nesting habitat. Conversion of that habitat type to large, unvegetated open-water areas would diminish habitat value for all wildlife species.

Threatened and Endangered Species

The endangered brown pelican may feed in the shallow, open-water habitat of the project area and use by that species would likely continue under the No Action Alternative. However, over the long term, the loss of emergent wetlands could result in a reduction in the forage base (small, estuarine-dependent fishes) for that species.

C. Cultural and Recreational Resources

The two archeological sites (i.e., JE145 and JE20) located within the project area would remain undisturbed under the No Action Alternative. Shoreline protection features associated with the BBLSPP would afford those sites some protection from wave energy. Recreational opportunities within the project area, such as hunting and fishing, may decrease somewhat with the ongoing loss of emergent marsh and diminished capacity of the area to support fish and wildlife populations.

D. Economic Resources

Commercial and recreational activities within the project area are important components of the local economy. Waterfowl hunting and recreational and commercial fishing contribute greatly

toward the economies of Lafitte, Barataria, Larose, and surrounding communities. The continued loss of emergent wetlands would decrease the project area's ability to support those activities. In addition, oil and gas infrastructure within the project area would be more susceptible to storm damage with the continued loss of emergent wetlands, which serve as a protective buffer against wind and wave damage.

SECTION 4.2 ALTERNATIVE 2 - PREFERRED ALTERNATIVE

A. Physical Environment

Hydrology

Under the Preferred Alternative, no changes to the regional hydrology are expected. The Davis Pond Project, and other diversion projects, would provide fresh water, sediments, and nutrients to the Barataria Basin. Impacts to the regional hydrology could occur as a result of modifications to the operation schedule of those projects. However, those events are beyond the scope of this EA.

Hydrologic conditions within the project area, however, would be impacted by the creation of marsh. The large, open-water areas and many of the tidal waterways through which water exchange now occurs would be filled with dredged material. However, tidal connectivity between the project area and Bayous Perot and Rigolettes would be maintained. Tidal channels are anticipated to form as differential settlement of dredged material occurs throughout the project area. Numerous tidal channels, boat trails, and trenasses occur throughout the project area, and higher settlement of dredged material is anticipated in those areas, because they are deeper than the adjacent open-water areas to be filled. Those areas would be the lowest points on the marsh platform, so water exchange would naturally occur at those sites. In addition, the marsh platform is anticipated to settle to an intertidal elevation within the first three years after construction. As the marsh platform subsides, more tidal connections and other open-water areas would form throughout the project area.

Water Quality

Under the Preferred Alternative, dredging activities in Bayous Perot and Rigolettes, the placement of dredged material in the project area, and the construction of containment dikes would increase turbidity as bottom sediments are disturbed. However, the increased turbidity would only occur during periods of active dredging and is expected to dissipate rapidly upon completion of construction. In addition, turbidities may increase after rainfall events as water runs off the unvegetated marsh platform, especially immediately after dredged material deposition.

As with the No Action Alternative, changes in water quality may occur within the project area with operation of the Davis Pond Project or other diversion projects. If operated as currently planned, the Davis Pond Project may decrease average salinities and, depending on discharge, could result in an increase in suspended sediments within and around the project area.

B. Biological Environment

Vegetation

Under the Preferred Alternative, approximately 1,217 acres of marsh would be created. Very little emergent vegetation would be present immediately after construction as most of the project area would be unvegetated dredged material. Those areas of marsh which are nourished would likely revegetate more rapidly than the large, open-water areas which are filled. Marsh vegetation nourished with 6 to 12 inches of material has been shown to respond favorably and revegetate quickly (Mendelssohn and Kuhn 1999). Large, open-water areas which are filled with dredged material would likely revegetate slowly, and complete revegetation of the marsh platform may take 3 to 5 years. Vegetative communities would likely be very similar to those currently found within the project area. If the Davis Pond Project is operated as currently planned, saltmeadow cordgrass would likely be the dominant species and an intermediate marsh community could develop. Plant diversity would also increase, with species such as bulltongue, cattail, and California bulrush becoming more prevalent.

Under the Preferred Alternative, marsh loss would continue in the project area. The WVA prepared by the CWPPRA Environmental Work Group projected that land loss would continue in the project area at a rate of 1.0 percent per year, compared to 2.0 percent per year under the No Action Alternative (Roy 2001). Within the project area, 995 acres of marsh would remain at the end of the 20-year project life compared to only 390 acres under the No Action Alternative, and a substantial acreage of marsh would remain within the project area for many years after the project life.

Submerged and floating-leaved species are expected to be the same as those currently found in the project area. As mentioned earlier, those species include widgeongrass, southern naiad, and Eurasian watermilfoil, however, should the area freshen with operation of the Davis Pond Project, other species typical of fresh and intermediate marsh (e.g., coontail, watercelery, fanwort, and bladderwort) may become more common. The WVA indicates that the coverage of submerged aquatic vegetation is projected to increase from 30 percent of the open-water areas to 70 percent (Roy 2001). The smaller, shallower ponds which would form within the marsh platform would be more conducive for the establishment of submerged aquatic vegetation. Those smaller waterbodies would be less susceptible to increases in turbidity from wind-generated waves.

Fisheries

Under the Preferred Alternative, the project area would continue to support a diverse assemblage of fishes and shellfishes. The creation and nourishment of intertidal marsh would ensure that the project area continues to provide important nursery functions well beyond the 20-year project life. Several studies indicate that vegetated habitats (i.e., emergent marsh and submerged aquatic vegetation beds) generally support higher densities of fish and crustaceans than unvegetated habitat (Castellanos and Rozas 2001, Rozas and Minello 2001, Minello and Rozas 2002). Population declines of shrimp and blue crabs may become evident when a marsh complex exceeds 70 percent unvegetated, openwater (Minello and Rozas 2002). Under the No Action Alternative, the project area is projected to be 69 percent open water at the end of the project life compared to only 20 percent under the Preferred Alternative. Compared to the No Action

Alternative, an additional 605 acres of marsh would result from project implementation (Roy 2001). Much of that habitat would exist within the intertidal zone and would provide foraging and nursery habitat for a number of estuarine species.

Essential Fish Habitat Assessment

Estuarine emergent wetland is the primary type of EFH that would increase significantly under the Preferred Alternative; such habitat would be created in open-water areas and deteriorated marsh. According to the WVA, 605 additional acres of emergent marsh would exist at the end of the project life under the Preferred Alternative, compared to the No Action Alternative. Coverage of submerged aquatic vegetation is also expected to increase. Increases in those habitat types would benefit postlarval/juvenile and subadult brown shrimp; postlarval/juvenile and subadult white shrimp; and postlarval/juvenile red drum.

The creation of estuarine emergent wetlands would result in the loss of mud bottom and estuarine water column as emergent marsh would replace those habitat types. Loss of mud bottom EFH could result in negative impacts to subadult brown shrimp and postlarval/juvenile, red drum. Although adverse impacts would occur to some types of EFH, more productive types of EFH (i.e., estuarine emergent wetlands) would be created under the Preferred Alternative. In addition, open-water habitat would form within the marsh platform as ponds and other waterbodies develop as a result of natural marsh loss processes. Open-water habitats are expected to contain dense coverage (i.e., 70 to 80 percent per the 2001 WVA) of submerged aquatic vegetation compared to only 30 percent under the No Action Alternative. Therefore, the Preferred Alternative would result in a net positive benefit to all managed species that occur in the project area.

Wildlife

The Preferred Alternative would result in improved habitat conditions for several species of wildlife including migratory and resident waterfowl, shorebirds, wading birds, and furbearers. Migratory waterfowl utilizing the project area would benefit from a greater food supply resulting from the increased abundance and diversity of emergent, submerged, and floating-leaved species. Habitat for the resident mottled duck would also improve considerably as the marsh platform would provide more desirable nesting habitat.

Intertidal marsh and marsh edge would also provide increased foraging opportunities for shorebirds and wading birds. Small fishes and crustaceans are often found in greater densities along vegetated marsh edge (Castellanos and Rozas 2001, Rozas and Minello 2001), and many of those species are important prey items for wading birds such as the great blue heron, little blue heron, great egret, black-crowned night-heron, and snowy egret. Mudflats and shallow water habitat created by the deposition of dredged material would provide increased foraging opportunities for shorebirds such as least sandpipers, killdeer, and the American avocet. Those species feed on tiny invertebrates and crustaceans found on mudflats which are exposed at low tide and in shallow-water areas of the appropriate depth.

Furbearers (such as the nutria and muskrat) which feed on vegetation would benefit from the increased marsh acreage in the project area. Representative furbearers such as the mink, river otter, and raccoon have a diverse diet and feed on many different species of fishes and

crustaceans. Those species often feed along vegetated shorelines which provide cover for many of their prey species.

Threatened and Endangered Species
The Preferred Alternative would have minimal impacts on endangered brown pelicans which may feed in the shallow estuarine waters of the project area. Any displacement of brown pelicans during project construction would be temporary because of the immense amount of suitable habitat in the vicinity of the project area. The Service has conducted an Intra-Service Section 7 Endangered Species Act consultation and determined that the Preferred Alternative is not likely to adversely affect threatened and endangered species or their critical habitat.

C. Cultural and Recreational Resources
Two archeological sites (i.e., JE145 and JE20) are located within the area of potential project effects. By letter dated January 21, 2004, the Louisiana Department of Culture, Recreation and Tourism indicated that neither of those properties is eligible for listing on the National Register of Historic Places and, therefore, they have no objection to implementation of the Preferred Alternative. In addition, the Chitimacha Tribe of Louisiana had indicated, by letter dated August 10, 2004, that they have no objections to project implementation.

Recreational opportunities within the project area, such as hunting and bird watching, may increase with the increased formation of emergent marsh and other fish and wildlife habitats. An increase in habitat value would likely result in increased fish and wildlife usage of the project area.

D. Economic Resources
By increasing emergent wetlands, and subsequently fish and wildlife resources, the Preferred Alternative would help to maintain that portion of the local economy dependent on recreational and commercial fish and wildlife resources found within the project area. Project-area waterfowl hunting, trapping, and commercial and recreational fishing are important components of the local economy, and creation of emergent marsh and other fish and wildlife habitats could increase the ability of the project area to support those activities. The increased acreage of emergent wetlands would also act as a storm buffer for oil and gas facilities in the area.

SECTION 5.0 RATIONALE FOR SELECTING PREFERRED ALTERNATIVE

Currently, marsh elevations across the project area, particularly in areas of fragmented marsh, are not conducive to the continued existence of the dominant plant species, saltmeadow cordgrass, which prefers higher elevations. Ponding and prolonged inundation, due to subsidence, have resulted in the deterioration of those areas and the formation of shallow, open-water habitat. Continued subsidence would result in the future deterioration of the remaining stands of healthy, unfragmented marsh. Elevation surveys conducted at six sites within the project area indicate an average marsh elevation of +1.0 feet (SJB Group, Inc. 2003). However, it should be noted that those surveys were conducted in sites supporting relatively unfragmented, healthy stands of marsh and do not represent average marsh elevations across the entire project area. An average marsh elevation for the entire project area, which would include fragmented areas of marsh,

would be somewhat lower than +1.0 feet. Field investigations indicate that the healthiest stands of marsh average approximately +1.4 feet. With the current design elevation of +2.5 feet, the marsh platform would reach +1.4 feet within 3 to 4 years after construction (Figure 5). Elevations supporting emergent vegetation would persist throughout the 20-year project life.

Dedicated dredging to create marsh in shallow, open-water areas has been successfully used as a restoration technique across coastal Louisiana. Since CWPPRA was authorized in 1990, several marsh creation projects have been constructed and many more are authorized for engineering and design, or construction, by the LCWCRTF (Table 3) (Belhadjali and Stead 2003). Also, several barrier island restoration projects have been constructed which utilize hydraulic dredging to create dune and marsh habitats. In addition, many other marsh creation projects have been constructed by the State of Louisiana through its Coastal Restoration Program as mitigation for wetland impacts under Section 404 of the Clean Water Act, and by the Corps of Engineers under other authorities such as Sections 204 and 1135 of the Water Resources Development Act.

Table 3. Marsh Creation Projects Constructed/Authorized under CWPPRA.

Project Name	**Acres Benefited**	**Construction Completion Date**
Bayou Labranche Wetland Creation	203	1994
Atchafalaya Sediment Delivery	2,232	1998
Big Island Mining	1,560	1998
West Belle Pass Headland Restoration	474	1998
Lake Chapeau Sediment Input and Hydrologic Restoration, Point Au Fer Island	509	1999
Sabine Refuge Marsh Creation	993	Increment 1 completed in 2002. Increments 2-5 are pending.
Barataria Waterway Wetland Restoration	9	1996
East/West Grand Terre Islands Restoration	472	Pending
Little Lake Shoreline Protection/Dedicated Dredging near Round Lake	713	Pending
Mississippi River Sediment Delivery System	400	Pending
Castille Pass Channel Sediment Delivery	589	Pending
North Lake Mechant Landbridge Restoration	604	Pending
West Lake Boudreaux Shoreline Protection and Marsh Creation	145	Pending

Scientific studies in coastal Louisiana also provide support for the use of dedicated dredging to restore coastal wetlands. Most research conducted on dedicated dredging projects in coastal

Louisiana has occurred in saline marsh habitats. Although the project area supports a brackish marsh community, the response should be somewhat similar to that observed in saline marsh. Marshes created at the correct elevation take only a few years to develop vegetative communities similar to those in natural marshes (Edwards and Proffitt 2003). Percent vegetative cover also equals that found in natural marshes, but only after several years of growth (Proffitt and Young 1999). However, soil characteristics between created and natural marshes are often very different, with created marshes being lower in organic matter and higher in bulk density (Edwards and Proffitt 2003).

Thin-layer sediment deposition to the marsh surface (i.e., marsh nourishment) has also been investigated as a restoration technique in coastal Louisiana. Mendelssohn and Kuhn (1999) studied the impacts of sediment addition to a deteriorating saline marsh dominated by saltmarsh cordgrass. Sediment addition ranging from trace amounts to nearly 24 inches above natural marsh elevations produced increases in plant cover and plant height. Sediment addition reduced flooding, allowed for better soil aeration, and lowered concentrations of phytotoxins which provided better conditions for plant growth. Ford et al. (1999) investigated the effects of thin-layer deposition of dredged material via spray dredging in a deteriorated saline marsh. One year following the addition of approximately 9 inches of sediment, percent cover of saltmarsh cordgrass increased three-fold over pre-project conditions with no lasting negative impacts on the native marsh plant community.

The Preferred Alternative is supported by the LCWCRTF, which approved funding for engineering and design at their January 2002 meeting. The Preferred Alternative would create emergent marsh in the project area, increase its habitat value for fish and wildlife resources, and result in a net gain of 605 acres of marsh at the end of the project life compared to the No Action Alternative. The Preferred Alternative also supports the restoration strategies recommended for this region in the Coast 2050 Plan. It is not anticipated that land rights issues would preclude construction of project features.

SECTION 6.0 COMPATIBILITY WITH CWPPRA AND COMMUNITY OBJECTIVES

The Preferred Alternative would help to achieve CWPPRA objectives for protection and restoration of Louisiana's coastal wetlands. The cumulative impact of all CWPPRA projects approved to date would result in the protection/creation/restoration of over 117,000 acres of coastal wetlands. Cumulative impacts of the CWPPRA Program are addressed in the Louisiana Coastal Wetlands Restoration Plan Main Report and Environmental Impact Statement (1993a).

Community objectives would likely be enhanced by the proposed project. Common socioeconomic goals include the conservation of sustainable fishing, shrimping, crabbing and hunting opportunities in the region. The general public also supports wetland restoration and preservation for fish and wildlife habitat, and for recreational, aesthetic, and other non-consumptive uses.

SECTION 7.0 COMPLIANCE WITH LAWS, REGULATIONS AND POLICIES

This Environmental Assessment was prepared in compliance with the National Environmental Policy Act of 1969 (NEPA). It is consistent with the NEPA-compliance procedures contained in the Fish and Wildlife Service Manual (550 FW 1-3), and employs a systematic, interdisciplinary approach. The proposed action alternative involves disposal of fill material into waters or wetlands; therefore, an evaluation under Section 404(b)(1) of the Clean Water Act of 1977, as amended, is required, as well as State of Louisiana water quality certification under Section 401. A Clean Water Act Section 404 permit has been received from the U.S. Army Corps of Engineers as well as Water Quality Certification from the Louisiana Department of Environmental Quality. In addition, the Louisiana Department of Natural Resources has determined that the project is consistent with the Louisiana Coastal Resources Program.

Under the MSFCMA, the Service initiated consultation with the National Marine Fisheries Service upon submission of the draft Environmental Assessment, and has evaluated project-related impacts to EFH within the project area. The Preferred Alternative would result in adverse impacts to some categories (i.e., mud bottom and estuarine water column) of EFH; however, more productive categories of EFH, such as estuarine emergent wetlands, would be created. Therefore, the Service finds that the Preferred Alternative would not result in net adverse impacts to habitats designated as EFH under the MSFCMA.

Two cultural resource sites are located within the footprint of the proposed action. By letter dated January 21, 2004, the Louisiana Department of Culture, Recreation and Tourism indicated that neither of those sites is eligible for listing on the National Register of Historic Places and, therefore, they have no objection to implementation of the Preferred Alternative. In addition, the Chitimacha Tribe of Louisiana had indicated, by letter dated August 10, 2004, that they have no objections to project implementation.

Pursuant to Executive Order 12898 (Environmental Justice for Minority Populations), the Service has determined that the Preferred Alternative would not result in disproportionately high and adverse human health or environmental impacts on minority and low-income populations.

The proposed action was reviewed for compliance with the Endangered Species Act of 1973, as amended; the Archeological and Historic Preservation Act of 1974; Executive Order 11988 (Floodplain Management); Executive Order 11990 (Protection of Wetlands); and Executive Order 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds).

SECTION 8.0 PREPARER

This Environmental Assessment was prepared by Kevin J. Roy, Senior Field Biologist with the U.S. Fish and Wildlife Service, Lafayette Field Office, Lafayette, Louisiana.

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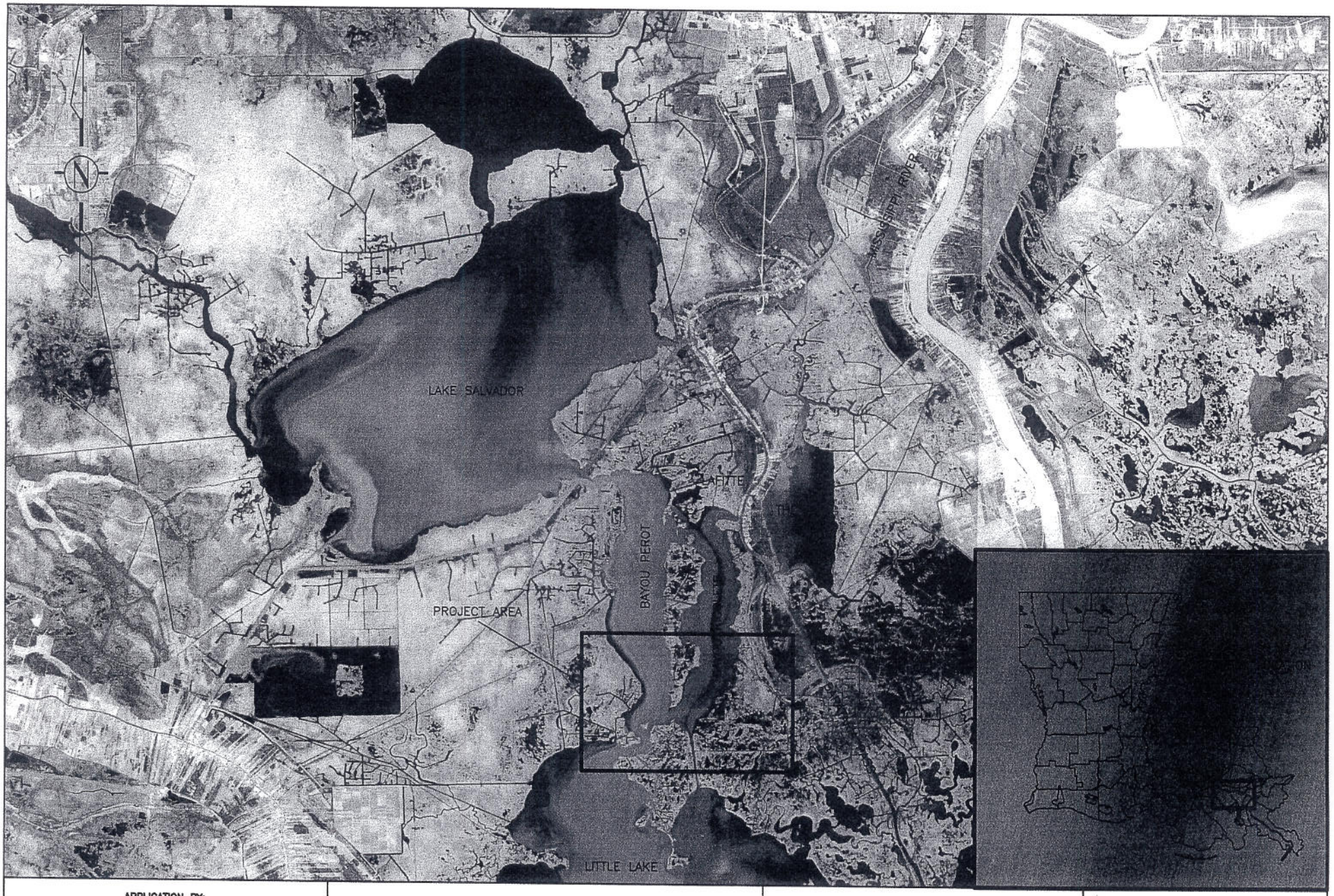
U.S. Department of Commerce, National Oceanic and Atmospheric Administration, and National Marine Fisheries Service. 2001. Fisheries of the United States, 2001. Washington, D.C.

APPENDIX A - Detailed Illustrations of Project Features



APPLICATION BY: U.S. FISH AND WILDLIFE SERVICE 646 CAJUNDOME BLVD., SUITE 400 LAFAYETTE, LA. 70506	LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802	DEDICATED DREDGE ON THE BARATARIA BASIN LANDBRIDGE	VICINITY MAP
		STATE PROJECT NUMBER: BA-36	DATE: MAY 2004
DRAWN BY: SHANE FAUST	DESIGNED BY: SHANNON HAYNES, P.E. / APPROVED BY: LUKE LEBAS, P.E.	FEDERAL PROJECT NUMBER: N/A	SHEET 1 OF 11

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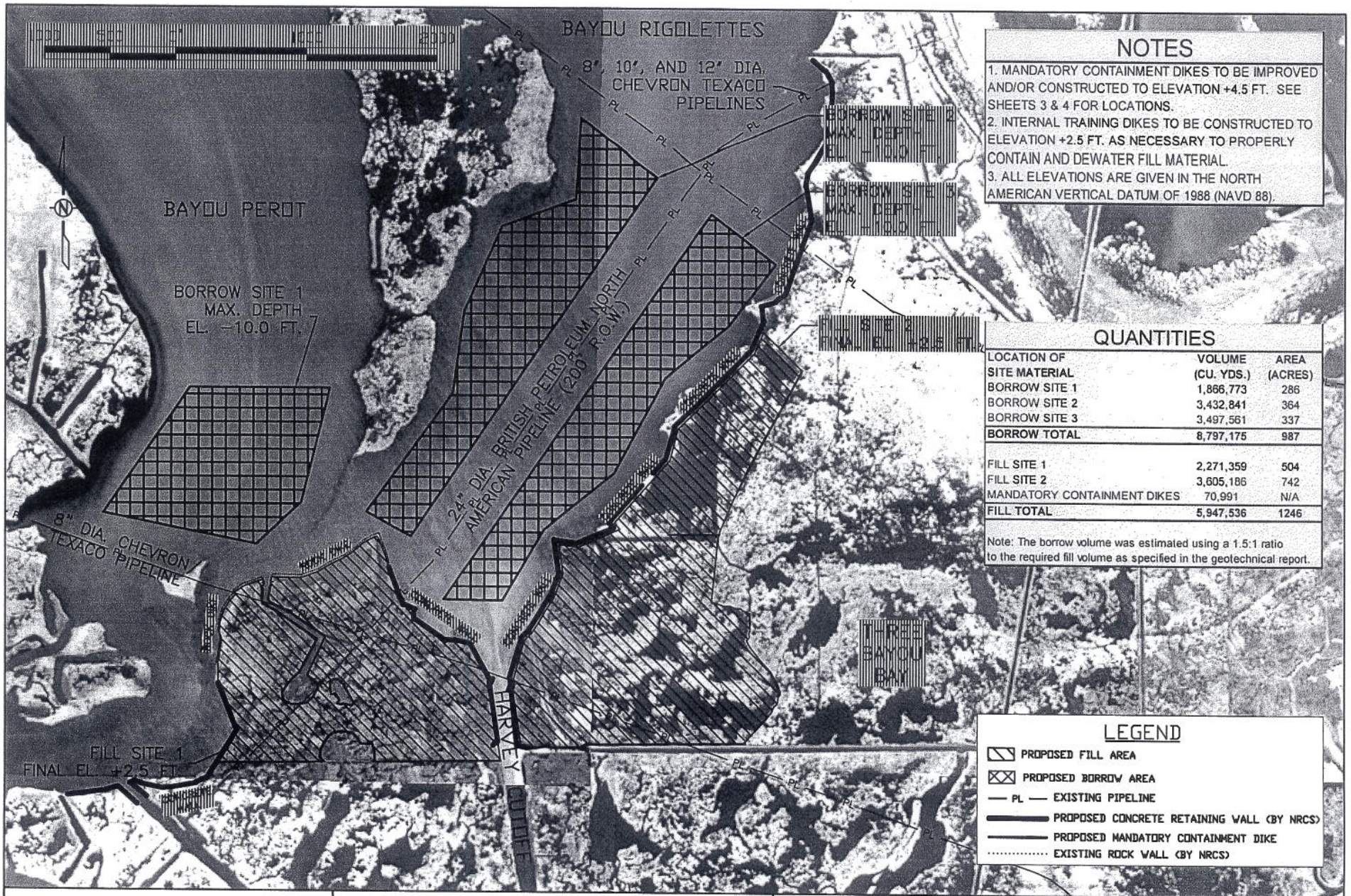

NOTES

1. MANDATORY CONTAINMENT DIKES TO BE IMPROVED AND/OR CONSTRUCTED TO ELEVATION +4.5 FT. SEE SHEETS 3 & 4 FOR LOCATIONS.
2. INTERNAL TRAINING DIKES TO BE CONSTRUCTED TO ELEVATION +2.5 FT. AS NECESSARY TO PROPERLY CONTAIN AND DEWATER FILL MATERIAL.
3. ALL ELEVATIONS ARE GIVEN IN THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

QUANTITIES

LOCATION OF SITE MATERIAL	VOLUME (CU. YDS.)	AREA (ACRES)
BORROW SITE 1	1,866,773	286
BORROW SITE 2	3,432,841	364
BORROW SITE 3	3,497,561	337
BORROW TOTAL	**8,797,175**	**987**
FILL SITE 1	2,271,359	504
FILL SITE 2	3,605,186	742
MANDATORY CONTAINMENT DIKES	70,991	N/A
FILL TOTAL	**5,947,536**	**1246**

Note: The borrow volume was estimated using a 1.5:1 ratio to the required fill volume as specified in the geotechnical report.

LEGEND

- PROPOSED FILL AREA
- PROPOSED BORROW AREA
- PL — EXISTING PIPELINE
- PROPOSED CONCRETE RETAINING WALL (BY NRCS)
- PROPOSED MANDATORY CONTAINMENT DIKE
- EXISTING ROCK WALL (BY NRCS)

APPLICATION BY: U.S. FISH AND WILDLIFE SERVICE 646 CAJUNDOME BLVD., SUITE 400 LAFAYETTE, LA. 70506	LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70804	DEDICATED DREDGING ON THE BARATARIA BASIN LANDBRIDGE	CONSTRUCTION AREA LOCATION
		STATE PROJECT NUMBER: BA-36	DATE: MAY 2004
DRAWN BY: SHANE FAUST	DESIGNED BY: SHANNON HAYNES, P.E. / APPROVED BY: LUKE LEBAS, P.E.	FEDERAL PROJECT NUMBER: N/A	SHEET 2 OF 11

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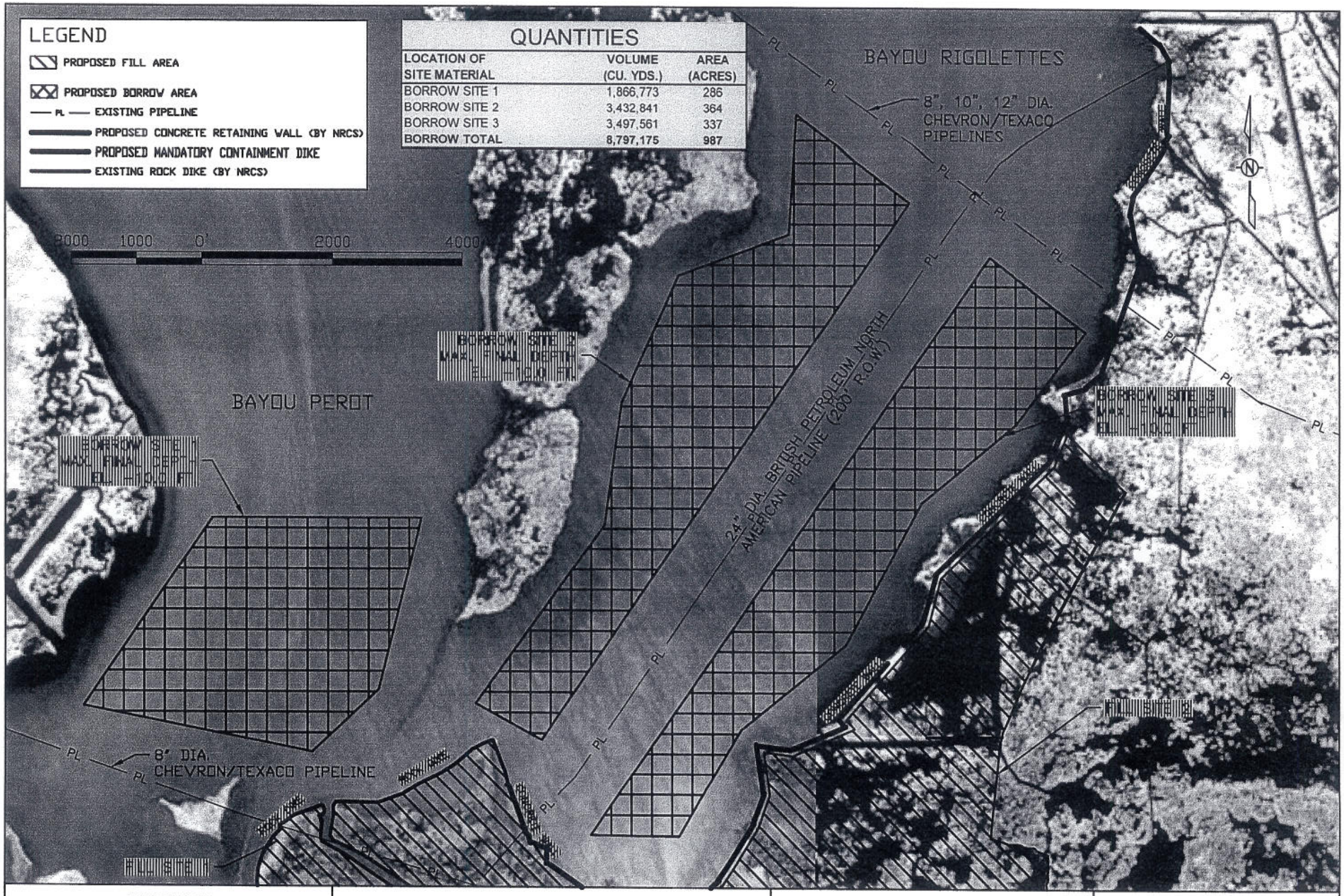

APPLICATION BY: U.S. FISH AND WILDLIFE SERVICE 646 CAJUNDOME BLVD., SUITE 400 LAFAYETTE, LA. 70506	LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70804	DEDICATED DREDGING ON THE BARATARIA BASIN LANDBRIDGE	BORROW SITES
		STATE PROJECT NUMBER: BA-36	DATE: MAY 2004
DRAWN BY: SHANE FAUST	DESIGNED BY: SHANNON HAYNES, P.E. / APPROVED BY: LUKE LEBAS, P.E.	FEDERAL PROJECT NUMBER: N/A	SHEET 3 OF 11

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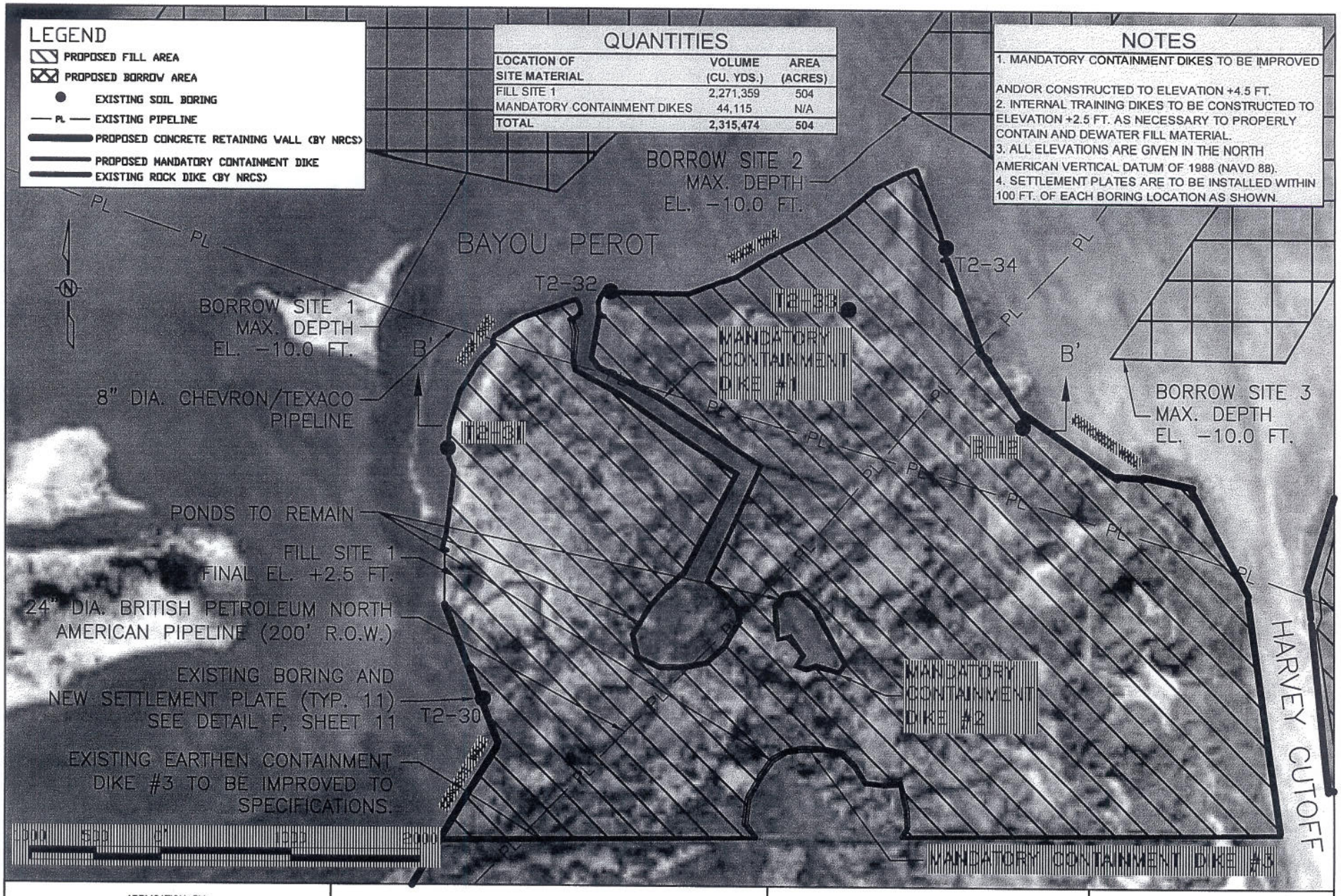

APPLICATION BY: U.S. FISH AND WILDLIFE SERVICE 646 CAJUNDOME BLVD., SUITE 400 LAFAYETTE, LA. 70506	LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70804	DEDICATED DREDGING ON THE BARATARIA BASIN LANDBRIDGE	FILL SITE 1
		STATE PROJECT NUMBER: BA-36	DATE: MAY 2004
DRAWN BY: SHANE FAUST	DESIGNED BY: SHANNON HAYNES, P.E. / APPROVED BY: LUKE LEBAS, P.E.	FEDERAL PROJECT NUMBER: N/A	SHEET 4 OF 11

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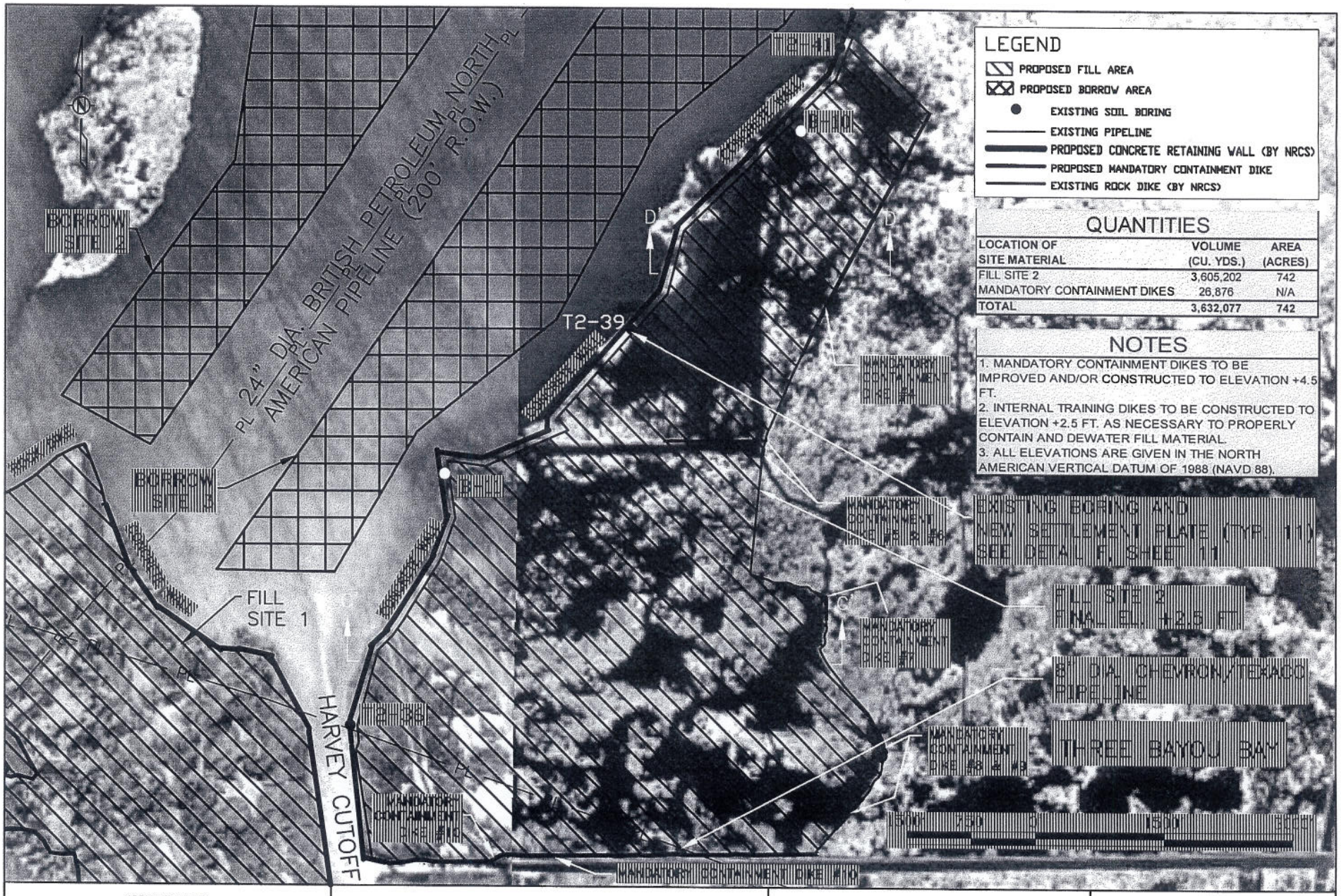

APPLICATION BY: U.S. FISH AND WILDLIFE SERVICE 646 CAJUNDOME BLVD., SUITE 400 LAFAYETTE, LA. 70506	LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70804	DEDICATED DREDGING ON THE BARATARIA BASIN LANDBRIDGE	FILL SITE 2
		STATE PROJECT NUMBER: BA-36	DATE: MAY 2004
DRAWN BY: SHANE FAUST	DESIGNED BY: SHANNON HAYNES, P.E. / APPROVED BY: LUKE LEBAS, P.E.	FEDERAL PROJECT NUMBER: N/A	SHEET 5 OF 11

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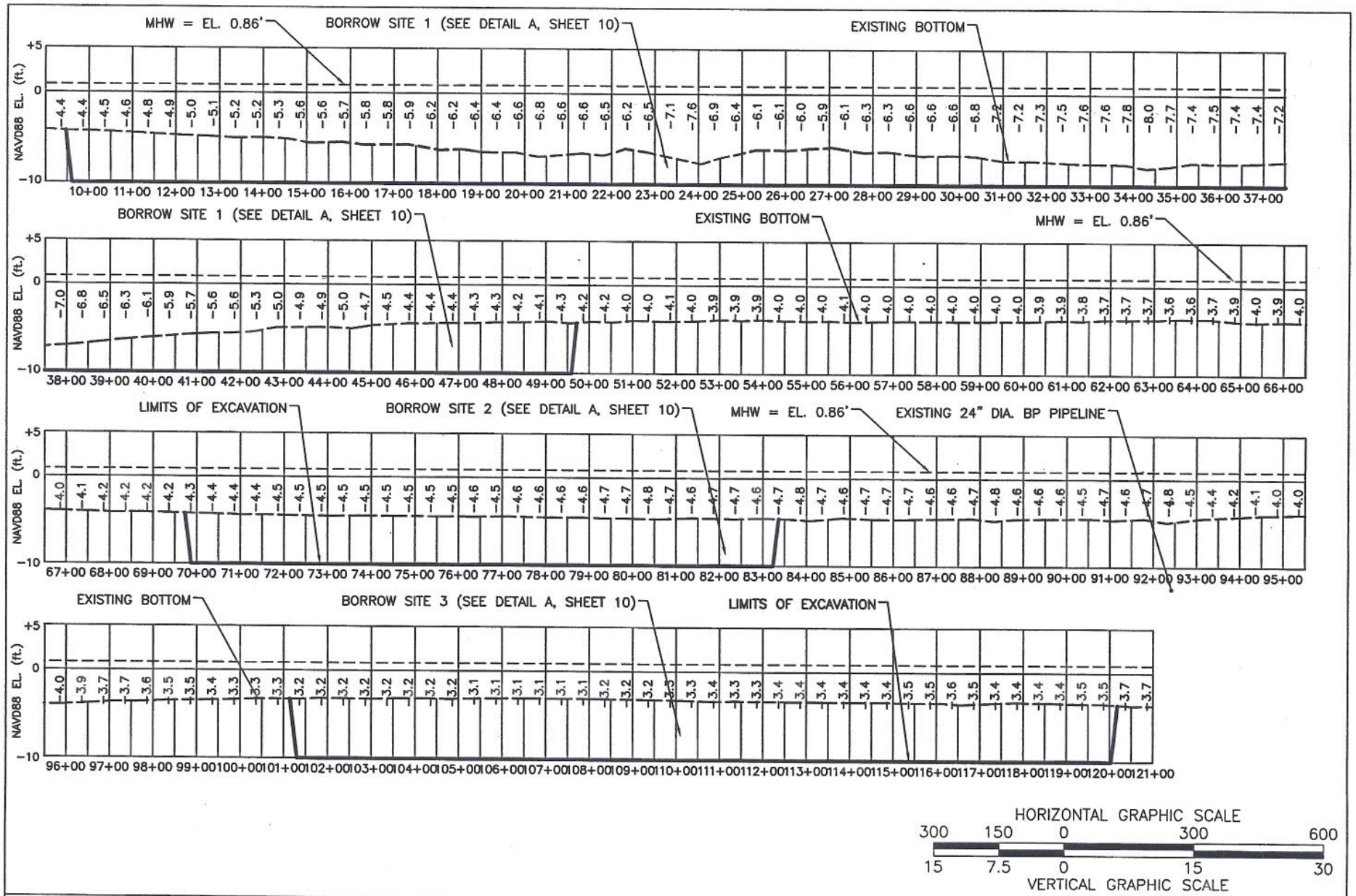

APPLICATION BY: U.S. FISH AND WILDLIFE SERVICE 646 CAJUNDOME BLVD., SUITE 400 LAFAYETTE, LA 70506	LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802	DEDICATED DREDGING ON THE BARATARIA BASIN LANDBRIDGE	BORROW SITES SECTION A–A
		STATE PROJECT NUMBER: BA–36	DATE: MAY 2004
DRAWN BY: SHANE FAUST	DESIGNED BY: SHANNON HAYNES, P.E. / APPROVED BY: LUKE LEBAS, P.E.	FEDERAL PROJECT NUMBER: N/A	SHEET 6 OF 11

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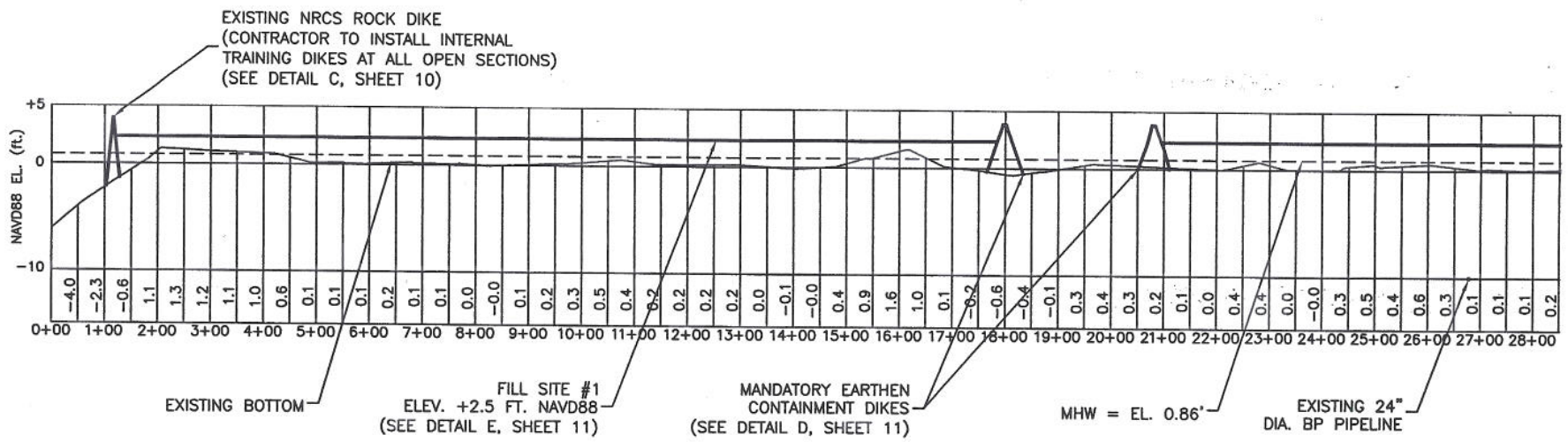

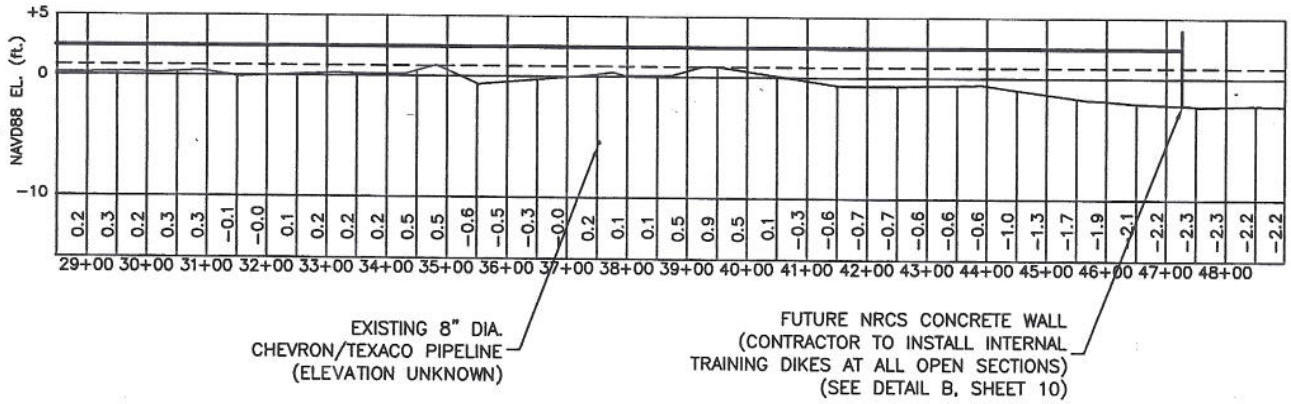

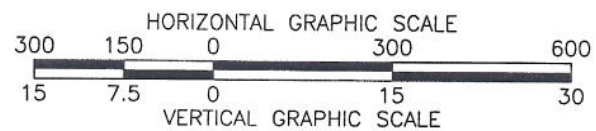

APPLICATION BY: U.S. FISH AND WILDLIFE SERVICE 646 CAJUNDOME BLVD., SUITE 400 LAFAYETTE, LA 70506	LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802	DEDICATED DREDGING ON THE BARATARIA BASIN LANDBRIDGE	FILL SITE 1 SECTION B–B
		STATE PROJECT NUMBER: BA–36	DATE: MAY 2004
DRAWN BY: SHANE FAUST	DESIGNED BY: SHANNON HAYNES, P.E. / APPROVED BY: LUKE LEBAS, P.E.	FEDERAL PROJECT NUMBER: N/A	SHEET 7 OF 11

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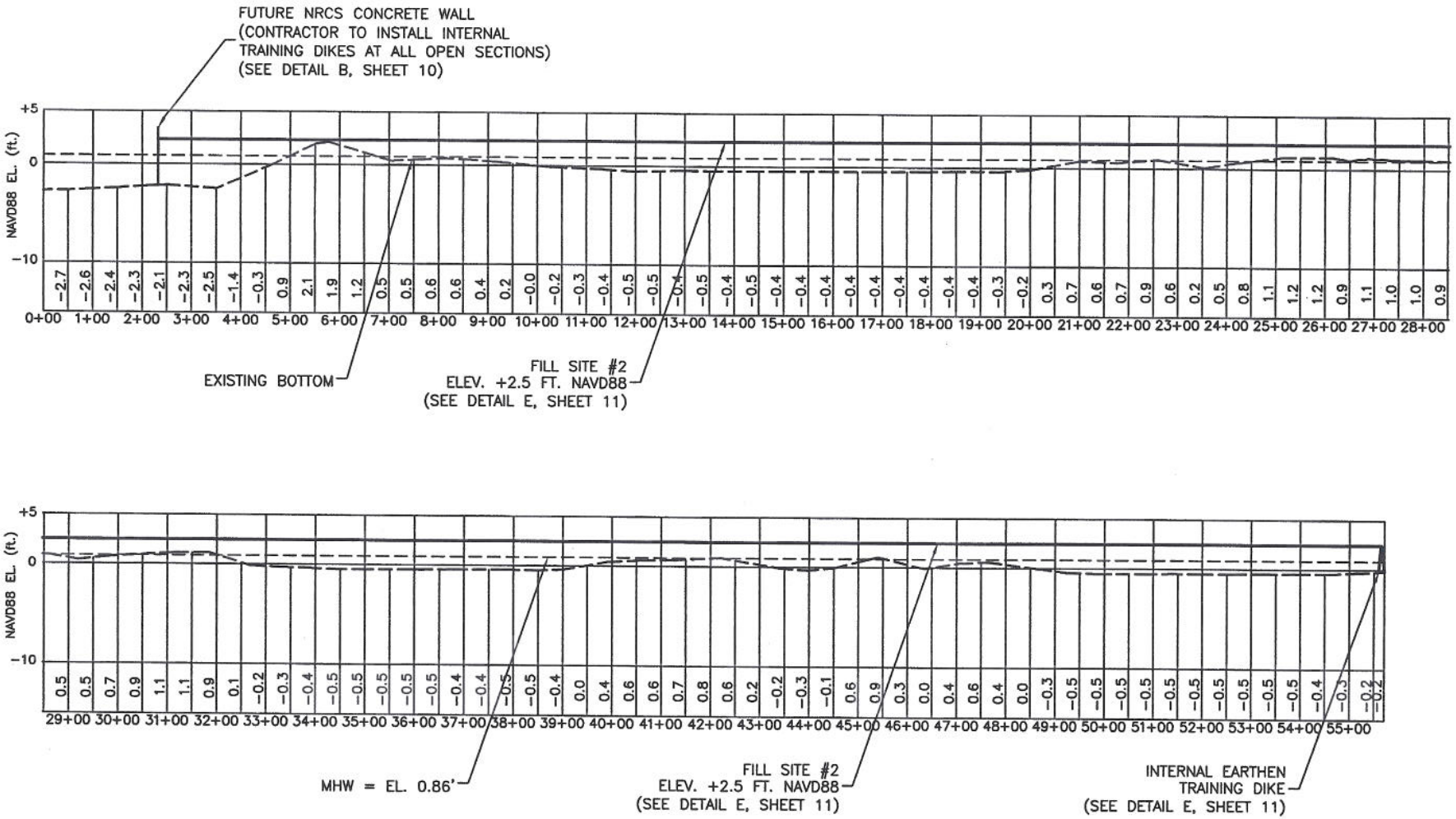

APPLICATION BY: U.S. FISH AND WILDLIFE SERVICE 646 CAJUNDOME BLVD., SUITE 400 LAFAYETTE, LA 70506	LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL RESTORATION DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802	DEDICATED DREDGING ON THE BARATARIA BASIN LANDBRIDGE	FILL SITE 2 SECTION C–C
		STATE PROJECT NUMBER: BA–36	DATE: MAY 2004
DRAWN BY: SHANE FAUST	DESIGNED BY: SHANNON HAYNES, P.E. / APPROVED BY: LUKE LEBAS, P.E.	FEDERAL PROJECT NUMBER: N/A	SHEET 8 OF 11

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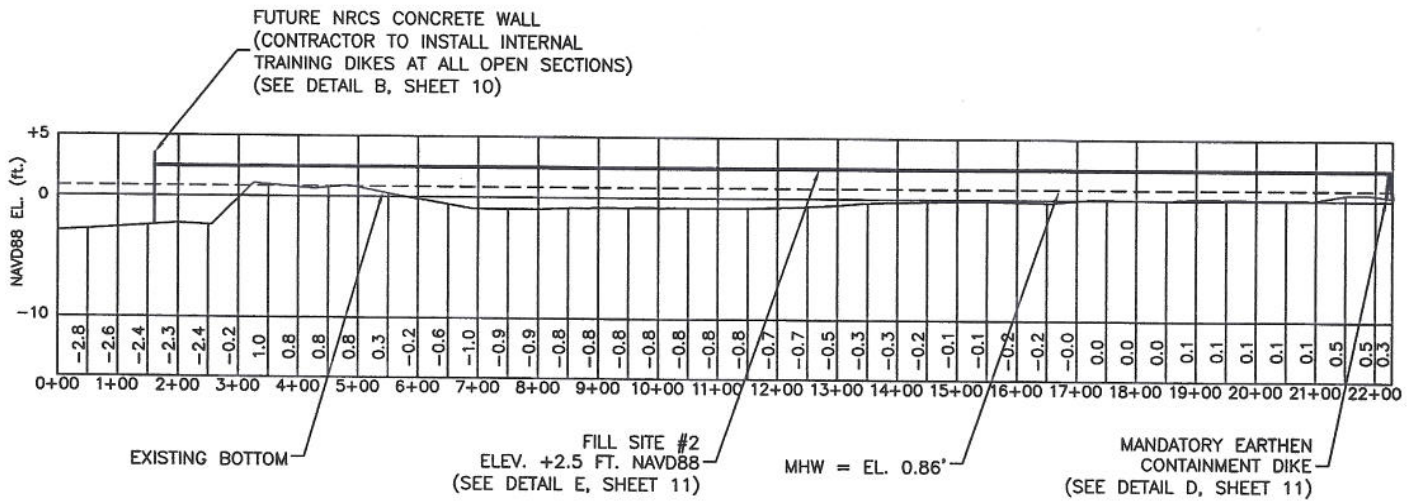

APPLICATION BY: U.S. FISH AND WILDLIFE SERVICE 646 CAJUNDOME BLVD., SUITE 400 LAFAYETTE, LA 70506	LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL RESTORATION DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802	DEDICATED DREDGING ON THE BARATARIA BASIN LANDBRIDGE	FILL SITE 2 SECTION D–D
		STATE PROJECT NUMBER: BA–36	DATE: MAY 2004
DRAWN BY: SHANE FAUST	DESIGNED BY: SHANNON HAYNES, P.E. / APPROVED BY: LUKE LEBAS, P.E.	FEDERAL PROJECT NUMBER: N/A	SHEET 9 OF 11

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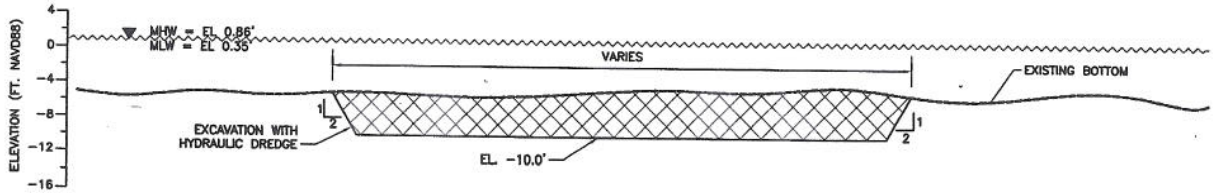
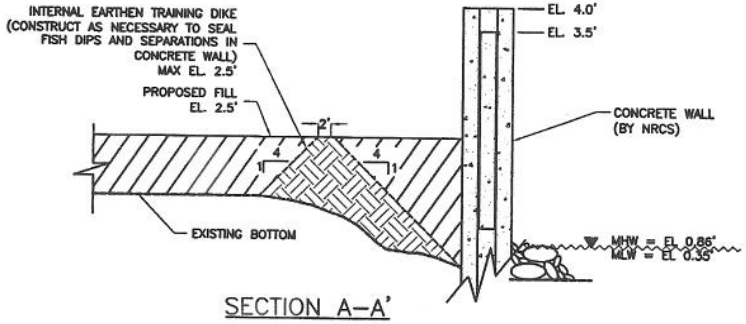
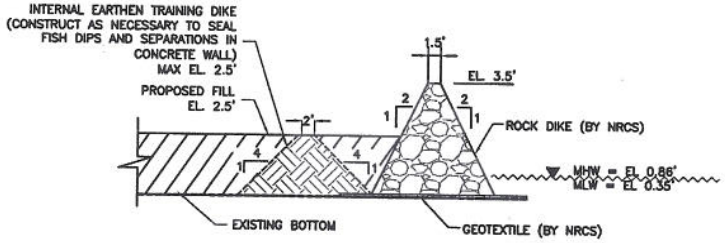


DETAIL A

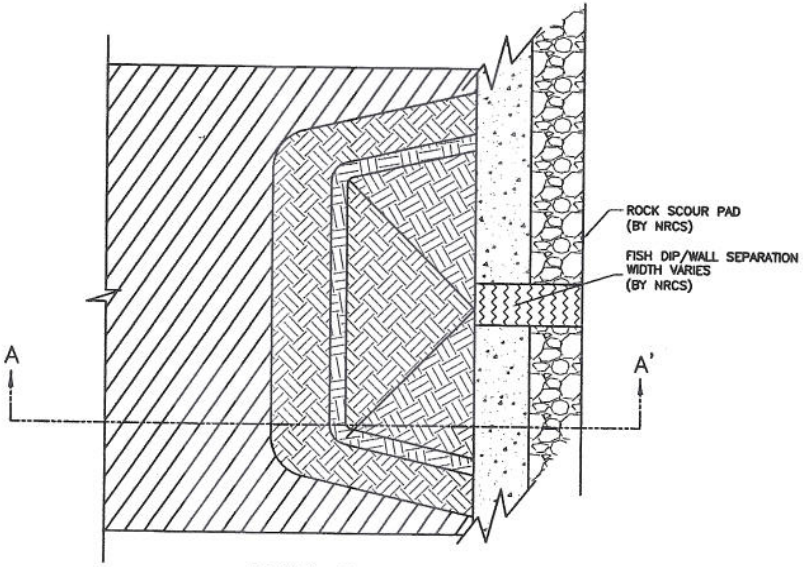
PROPOSED BORROW SITE (TYP.)
NOT TO SCALE



SECTION A–A'

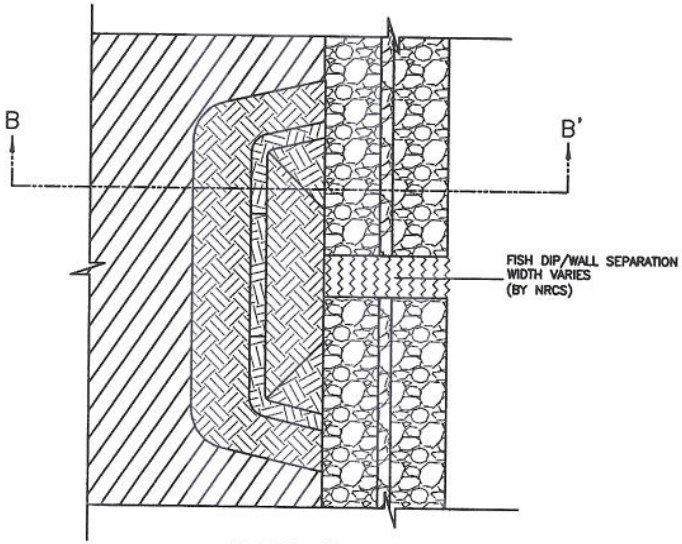


SECTION B–B'



DETAIL B

TYPICAL NRCS CONCRETE WALL
NOT TO SCALE



DETAIL C

TYPICAL NRCS ROCK DIKE SECTION
NOT TO SCALE

APPLICATION BY: U.S. FISH AND WILDLIFE SERVICE 646 CAJUNDOME BLVD., SUITE 400 LAFAYETTE, LA 70506	LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802	DEDICATED DREDGING ON THE BARATARIA BASIN LANDBRIDGE	TYPICAL DETAILS
		STATE PROJECT NUMBER: BA-36	DATE: MAY 2004
DRAWN BY: SHANE FAUST	DESIGNED BY: SHANNON HAYNES, P.E. / APPROVED BY: LUKE LEBAS, P.E.	FEDERAL PROJECT NUMBER: N/A	SHEET 10 OF 11

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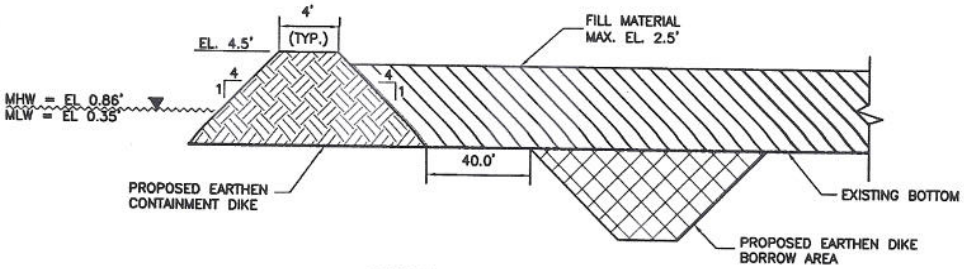

DETAIL D

PROPOSED EARTHEN CONTAINMENT DIKE
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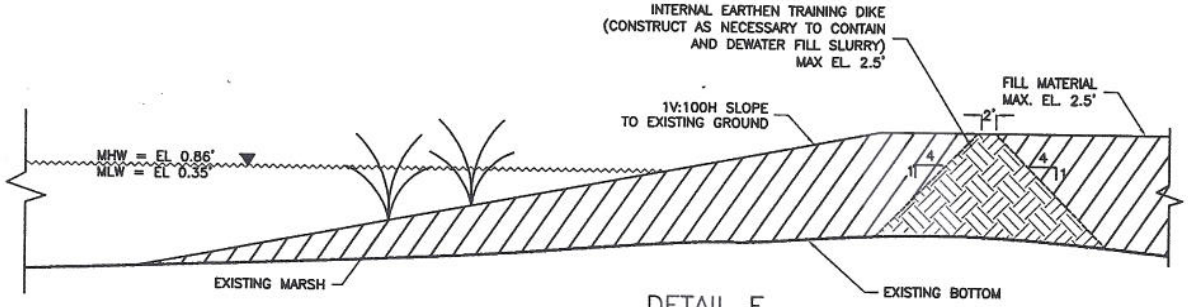

DETAIL E

PROPOSED UNCONTAINED FILL
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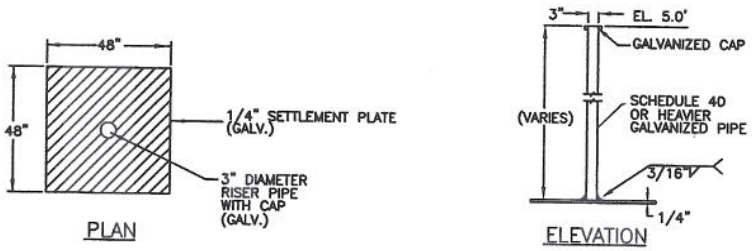

DETAIL F

PROPOSED SETTLEMENT PLATE
NOT TO SCALE

NOTE:

SETTLEMENT PLATES SHALL BE INSTALLED AT OR ABOVE MEAN SEA LEVEL WITHIN A 100 FOOT RADIUS OF EXISTING GEOTECHNICAL BORINGS AS SHOWN ON THE DRAWINGS OR AS DIRECTED BY THE PROJECT ENGINEER. AS-BUILT LOCATIONS WILL BE DETERMINED IN THE FIELD USING GPS COORDINATES OR BY SURVEY. FOR INSTALLATION METHOD REFER TO THE PROJECT SPECIFICATIONS. SETTLEMENT PLATES SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.

APPLICATION BY: U.S. FISH AND WILDLIFE SERVICE 646 CAJUNDOME BLVD., SUITE 400 LAFAYETTE, LA 70506	LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802	DEDICATED DREDGING ON THE BARATARIA BASIN LANDBRIDGE	TYPICAL DETAILS
		STATE PROJECT NUMBER: BA-36	DATE: MAY 2004
DRAWN BY: SHANE FAUST	DESIGNED BY: SHANNON HAYNES, P.E. / APPROVED BY: LUKE LEBAS, P.E.	FEDERAL PROJECT NUMBER: N/A	SHEET 11 OF 11

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APPENDIX B – Agency Comments on Draft EA

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
9721 Executive Center Drive North
St. Petersburg, Florida 33702

September 8, 2004

F/SER44/RH:jk
225/389-0508

RECEIVED
SEP 9 2004
FISH & WLDL. SERV
LAFAYETTE, LA

Mr. Russell C. Watson, Supervisor
Louisiana Field Office
U.S. Fish and Wildlife Service
646 Cajundome Boulevard
Lafayette, Louisiana 70506

Dear Mr. Watson:

The National Marine Fisheries Service (NOAA Fisheries) has received the draft Environmental Assessment (EA) titled "**Dedicated Dredging on the Barataria Basin Landbridge; BA-36; Jefferson Parish, Louisiana**" transmitted by your letter dated September 2, 2004. The draft EA evaluates the potential impacts associated with dredging almost 1,000 acres of Bayou Perot and Bayou Rigolettes water bottoms to generate sufficient fill to create more than 1,200 acres of marsh elevations in shallow water areas. The proposed borrow areas would be no deeper than -10 ft NAVD 1988 and the marsh creation areas are expected to reach intertidal elevations within 3 years of disposal. Detailed engineering and design of the project was funded under the auspices of the Coastal Wetlands Planning, Protection and Restoration Act with the U.S. Fish and Wildlife Service serving as the Federal sponsor.

NOAA Fisheries has reviewed the draft EA and finds that the document includes sufficient information regarding the proposed project and adequately addresses potential impacts to resources of concern. The document includes an Essential Fish Habitat (EFH) assessment which accurately identifies the Federally-managed species and associated life stages expected to occur in the project area, and information regarding the specific categories of EFH which would be affected by the proposed project. The document demonstrates that although some impacts to open water habitats (i.e., estuarine water bottom and estuarine water column) would occur, these impacts would be offset by benefits derived from the protection and creation of emergent and submerged wetlands.

NOAA Fisheries concurs with your agency's determination that while less productive categories of EFH would be adversely impacted by project implementation, more productive categories of EFH for most Federally-managed species would be protected. Therefore, NOAA Fisheries has no comments to provide on the draft EA, is supportive of project implementation, and has no EFH Conservation Recommendations to provide.

We appreciate the opportunity to review and comment on the draft EA.

Sincerely,

Rachel Hartman

for Miles M. Croom
Assistant Regional Administrator
Habitat Conservation Division

c:
EPA, Dallas
NRCS, Alexandria
COE, Planning
DNR, Consistency
F/SER43, Ruebsamen
Files